SUNBIRD
SOLAR HOTWATER SYSTEMS for life

Manufactured, Sold and Serviced
in Sri Lanka since ***1989***
by ***SUNBIRD Renewable Energy Systems***
(A division of Jude Fernandopulle Assoc. Pvt Ltd)

USER MANUAL

Version 8.23.1

Download at: www.jfalanka.com/downloads/SBmanual.pdf

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CONTENTS

GENERAL

Welcome to the **SUNBIRD** Hot-Water Club.

Sunbird solar hot water systems are enjoyed by people in all walks of life with the satisfaction of enjoying uninterrupted hot water.

Enjoy your new **SUN BIRD** Solar Hot-water System, the unit that provides hot-water round-round-the-clock – 24hrs a day

The capacity is recommended according to the total average usage over a day and night period. Therefore, there is no problem with 2 (or more!) people using hot-water at the same instant!

However, efficient and conscientious management of your water usage will help to conserve our precious resources. Hot-water generation by solar is limited to available sunlight and should be carefully used.

- ### A Background On **SUNBIRD** Solar Hot-Water Systems

SUNBIRD began in 1989 with the purchase of the technology from National Engineering Research and Development Centre of Sri Lanka, with the idea of providing a free/cost effective means of sustainable water heating for the homes being constructed by our sister company Tropical Homes.

The company utilized readily available, quality raw materials and local talent and skills in the production of these units. In time to come the technology was further enhanced with in-house research and development, which continues to this day with the highly efficient product with a **10 Year Genuine Guarantee** and has won accolades from many government and industrial institutions, notably the Energy Award from the Sri Lanka National Energy commission and the Product Award by Sri Lanka Institute of Architects.

Our company has an Island-wide branch network and is recognized as the best after sales service provider in this industry. We also have an outreach program in the Maldives, with several units being installed and maintained there.

We have also commenced operations in the Renewable Energy sector with SENSE PV Solar Energy Systems and offer a wide range of On-Grid (Grid-tied) PV modules and Inverters for homes and industries.

- ### How A Solar Water Heater Works

Have you ever had hot water come out of a hose that has been left lying out in the sun? This is the same effect that is used in the technology for solar hotwater generation.

In the simplest of terms, the suns heat is captured to heat water in an array of risers which then circulates to a storage tank. There is a basic principle that a hot liquid will rise to the top, and this is what creates the Solar-Syphon Effect in a Solar Hotwater System.

Hot water in the risers (vacuum tubes or copper risers) will rise along the panel and will be stored in the upper layers of the insulated storage tank, and the cold water in the bottom layer will flow back out to the panels to begin the cycle over again.

INTRODUCTION TO **SUN BIRD**

SUN BIRD Super-Solar Hot-water Systems, is a product well known in the market for quality and durability. The manufacturing plant of Solar Water Heating Systems began in 1989 and since then we have successfully installed our systems in all parts of the country, from coastal areas to the dry zone to the cool climates of the central hills, and few exports made abroad.

Fabrication of **SUN BIRD** Solar Water Heating Systems became an integral part of the Company because of the necessity of hot-water for homes, hotels and Industry. It became a felt need due to the demand we had for construction of the said categories. Also, the increase in Electricity Bills made it most clear that an alternative energy source was essential to curtail the problem.

Keeping the above fact in mind, we marched forward to make the best use of the solar energy that is prevalent in our country. We put things together and installed the first commercial unit in December 1991. Since then, SUN BIRD has grown high in demand. At present our factory is streamlined with an upgraded manufacturing process integrated with a quality assurance program. We stood tests and challenges and have emerged confidently to face the future.

We have strived to make awareness in the hearts of the people that the importance of switching to Renewable Energy Sources such as solar power will help to cut costs on energy bills, to support the Nation in its drive to preserve the environment and receive pay back on your investment on savings from electricity bills.

The Government Electricity Board (CEB) and the National Engineering Research & Development Centre (NERDC) of Sri Lanka have recommended our products to be of economical and of high standard, even more suitable than the NERDC system for the hill-country. The whole system itself is less in weight than comparable imported systems, and installation is carried out to the specific requirements of international standards to assure the maximum absorption of solar energy. By keeping the entire structure very light in weight it allows the capability to install on normal existing roof structures without any modifications. We also cater to many industrial organizations according to their specific needs by providing custom units, since we have the capability to do so.

With these easy-to-install and efficient systems that comes at an affordable price, you get a continuous supply of hot-water 24hours a day at no running cost. Our systems are economical and cost-effective suitable to the Sri Lankan people. You will find your electricity bills considerably lower, and you could recover the initial investment within two years if the usage is kept according to instructions.

To take maximum advantage of SUN BIRD systems, you must have an un-shaded, south-facing location (a roof, for example) on your property. (South being the best direction, however other directions can be utilized with slight drop in efficiency – which can be compensated by using a higher capacity system if required)

PATENTS & AWARDS

SUN BIRD has an ongoing Research and Development effort in solar hot water systems suitable for the tropical climate of Sri Lanka, and as such we have made several improvements to the world standard of Solar Hotwater System, for which we have won Awards for our product, and obtained Patents for the specific technological breakthroughs we have developed and implemented.

Patents:

Patent for high efficiency design innovation

Product Awards

Institute Of Incorporated Engineers of Sri Lanka ***Sri Lanka Institute of Architects***

PRESIDENTIAL AWARD - Sri Lanka Inventors Commission

WARRANTY INFORMATION

SUNBIRD GENUINE WARRANTY EXPLAINED...

a. GENERAL TERMS

✓ **Warranty 10 Years**

All types of Systems (except VPC systems) only for potable water* and installed within Sri Lanka - with standard warranty terms and conditions.

✓ **Warranty 5 Years**

* **VPC** Systems only for potable water and installed within Sri Lanka.

* **CCP** and **PTN** Systems for non-potable water* conditions and installed within Sri Lanka.

* **Overseas installations** (only for potable water*) – However, costs of shipping, customs clearance & taxes, transportation, labour, external accessories etc. are not covered by the warranty.

× **NO Warranty** *(Local and overseas)*

All types of Systems (except CCP / PTN systems) which are subject to non-potable* or bad-water conditions*.

** potable/non-potable/bad water - Refer section on "Water Quality" on page 16*

- *External Influences:*
  Sunbird products, by nature, depend on external factors such as adequate sunlight, weather conditions, end-user usage/wastage and different short- and long-term scenarios for efficient and adequate functionality. Changes to location conditions (direction/shading), weather/climatic changes (seasonal movement of the sun), future usage activities (additional outlets/extra persons) all have an effect on performance that may be different from the initial months/years of the products lifetime.
- *Limited Liability:*
  Sunbird will not be liable for any injury and/or damages to persons or property or any other damages arising from usage or any type of malfunction or fault of our system.

b. GUIDELINES

- *Tank damage*/leaks caused by bad water quality is excluded from general warranty. We recommend appropriate preventive measures be taken to avoid these issues: ie. Water filtering (dirt), water treatment (pH/hardness) etc.
- *Glass Panels / Tubes are* subject to damage occurring from external media and influences (falling objects such as stones / cricket balls, and shadows such as trees/buildings/roofs), and unauthorized tampering or removal etc.
- *Stands/Structures* even when purchased from and/or installed our company, are not covered by the unit warranty.
- *Accessories* such as mixer taps, auto-valves, filters, monitoring panels etc. are not covered as part of the unit (even if affixed to the unit) and may or may not have its own warranty and conditions.
- *Other* - External items such as pipes, valves, filters and electrical connections, main switches, circuit breakers etc. are not covered and will not be attended by Sunbird Technicians. Please get a professional plumber/electrician to inspect and do the necessary repairs/adjustments.

c. How to Claim

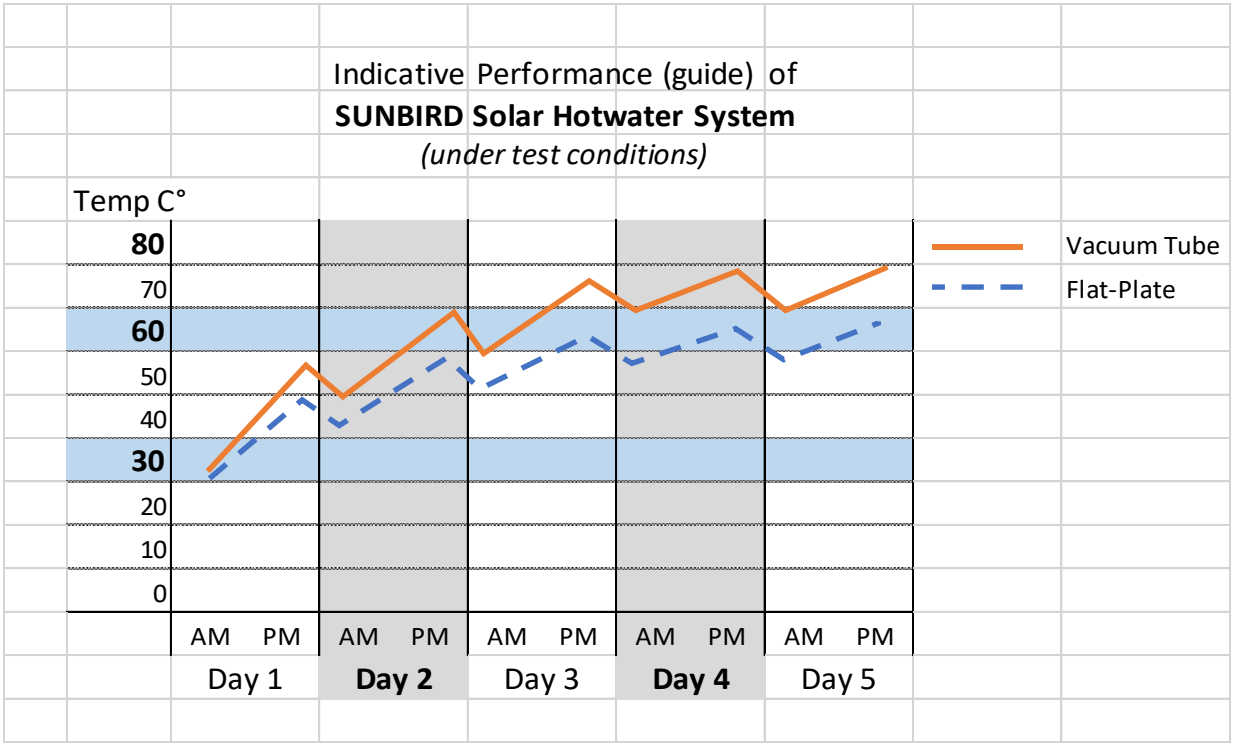
- During normal working days/times, please call our Hotline (0777 165 165) and select option 1 for "services".
- You should have your unit and ownership details (model/capacity/serial number(s) and owner name/site address/invoice number – available in the user's file/documentation) for reference.
- Please do inspect your warranty for validity and conditions.
- Give a brief description of the problem and discuss the options with our technical manager who may help you troubleshoot the issues.
- Should you have a general handyman available (or a maintenance staff at a commercial establishment), we could immediately try to solve most of the general issues experienced by the user.
- We may require further inspection of the unit at site, and possible replacement of spares (check if this is covered under your warranty).
- If unit needs to be removed for deep repairs at our factory, we will inform you if this will be under warranty after inspection and identification of the problem.

Overnight Temperature Drop

The standard overnight heat-loss in SUNBIRD units under test conditions is typically **5°C** during the period of no production (no adequate sunlight) from 4pm to 10am the next day. This is approx. 0.27°C per hour. This is due to superior insulation and other enhanced heat-retention techniques researched and developed by our company and incorporated in our patented product.

Temperature and Performance Chart

Please use this guide for the performance of a Sunbird unit from a fully discharged (new installation or re-installation) state to normal stable operation:



PRODUCT GUIDE

SUN BIRD FTP SERIES

Stainless Steel Tank with Flat-Plate Panels – *(pressure bearable type)*

The inner storage tank is made of high-grade Stainless Steel and is recommended for operational pressure up to maximum 0.6MPa (6bars), with high density Polyurethane Foam insulation for long lasting heat retention.

The panels are made with Copper Risers enclosed in durable Aluminium frame with protective glass covered aperture. SUNBIRD FTP Systems are the proud recipient of the Presidential Award in Energy, with the innovation for the LOWEST OVERNIGHT HEAT LOSS by our patented design and technology. These systems reach temperatures of approx. 55-60°C depending on various input and usage factors.

Capacities available (Liters): 75, 100, 150, 225, 300, 450

SUN BIRD VTP SERIES

Stainless Steel Tank with Vacuum Tubes – *(pressure bearable type)*

The inner storage tank is made of high-grade Stainless Steel and is recommended for operational pressure up to maximum 0.6MPa (6bars), with high density Polyurethane Foam insulation for long hours of heat retention.

These systems are equipped with heat-pipe (vacuum) tubes, which are the latest advancement in solar hot water technology and can heat up to a temperature of 90-95°C depending on various input and usage factors.

Capacities available (Liters): 100, 150, 200, 300

SUN BIRD VTN SERIES

Stainless Steel Tank with Vacuum Tubes – *(pressure non-bearable type)*

The inner storage tank is made of high-grade Stainless Steel with high-density Polyurethane Foam insulation for long hours of heat retention. These systems are very economical, and suitable for installation where the water line has low pressure only (less than 0.05Mpa / 0.5bars)

The standard vacuum tubes are highly efficient in converting solar irradiation for water heating and can heat up to a temperature of 90-95°C depending on various input and usage factors.

Capacities available (Liters): 80, 100, 150, 200, 300

SUN BIRD VPC SERIES

Indirect Stainless Steel Coil System with Vacuum Tubes *– (pressure bearable type)*

This system uses a pressure-bearable stainless steel coiled heat-exchanger to give you the best of both worlds. Economical, yet suitable for pressured water supply.

Combined with highly efficient Vacuum Tube technology, it produces optimum heating even in low-sun areas. The water comes direct from the supply and at the same pressure, ensuring no imbalance between the hot and cold mixing.

Capacities available (Liters): 80, 100, 150, 200, 300

SUN BIRD CCP CERAMKOAT / PTN POLYTHERM SYSTEMS

Special Versions for Non-Potable Water Quality

SUNBIRD is the pioneer in introducing the **Ceramkoat** (a ceramic-coated, 3mm thick Mild-Steel Tank - pressure bearable), and **Polytherm** (plastic tank for pressure non-bearable use) versions **with warranty**, specifically designed for use in areas with Non-potable (Hard/bad) water quality. These tanks can withstand the deterioration/corrosion caused by calcium sedimentation, thus increasing their lifetime.

Capacities available (Liters): 80, 100, 150, 200, 300

SIZING CHART FOR SOLAR HOT WATER MODELS

75/80 LTR FOR 2 PEOPLE	Recommended for small single-story houses/ apartments. Typically for individual use and 1 bathroom only.
100 LTR FOR 3 PEOPLE	Recommended for a small family, single-story house with 1-2 bathrooms.
150 LTR FOR 4 PEOPLE	Standard family unit, recommended for use of 3-4 persons average use, in 1-2 bathrooms and with basic usage in the kitchen.
200/225 LTR FOR 6 PEOPLE	Suitable for larger family of 4-6 persons or extra family usage for kitchen/pantry. Suitable for multi-story houses with 2-4 bathrooms.
300 LTR FOR 8 PEOPLE	Recommended for large family and large houses with 3-4 bathrooms and kitchen/pantry and some laundry use.
450 LTR FOR 12 PEOPLE	For high usage with large capacity requirement such as hotels/hospitals and large multi-story houses with >5 bathrooms.

REQUIRED UNIT VOLUME CALCULATION

Required liters of Hot water per day, per person: 37.5 *(approx.)*

i.e.: Typical family of **4 persons**: 4 x 37.5 = 150 Liters per day = 150 Ltr unit

SUNBIRD HOT WATER SYSTEMS ARE MANUFACTURED IN SRI LANKA TO INTERNATIONAL STANDARDS.

BEFORE FIRST USE

After proper installation by our authorized personnel is completed, you should be familiar with the following:

WARNING – Hot-water direct from the unit/tap can be TOO HOT TO HANDLE. Please take necessary precautions for usage – especially by children, and be advised of correct usage/mixing.

Electrical Connections – Even if an electrical connection to the booster is not initially supplied, ensure that a proper "grounding" (Earth) connection is provided at the soonest. This helps to prolong the lifetime of the electrical booster element and is essential for your safety of any electrical leakages when the connection is live.

Initial Charging - Allow at least one full day of bright sunshine (or boost with electricity for 2-3 hours) before any usage, to jump start your system.

A special note on installing during rainy season – due to the poor sunlight conditions in rainy weather, we recommend you use the booster to initially charge-up the system.

Leakages – Observe your entire hot-water plumbing system (from the unit right up to the outlet faucet) for any water leakages and rectify as soon as possible. Even a tiny leak however trivial will degrade the efficiency of the solar unit. If there is any doubt, please check by pressure-testing the lines for any loss in pressure due to small leaks. Our installation team will be most happy to do this for you.

Water Management – Since hot-water is obtained by using solar radiation it is essential to understand that the process takes time and is not "instant" like an electrical geyser. Therefore the system is not capable of immediately replenishing hot-water used and needs time with good sunlight (sun-"heat") to re-charge. Therefore, managing your usage of hot-water is essential to enjoy interruption-free supply from our system.

We give below some guidelines for your information.

Lever-type mixer taps – these taps use both hot and cold water in the middle position and therefore at most times hot-water is drawn from the unit even for a trivial use such as washing a cup or hands. This hot-water does not come out of the tap but is drawn down the plumbing lines and left to cool.

Usage of hot-water in equipment – providing hot-water from our system to equipment such as bathtubs, dishwashing machines and clothes washing machines etc is not recommended.

Waste – minimize waste by controlling the use of hot-water by using hidden valves under the sink in kitchens / pantry / hand wash basins / visitors' bathrooms etc.

Heavy use – electrical boosting should be used to compensate for occasional high usage of hot-water. The loss in hot-water / temperature may not be apparent on the first such day/evening but would manifest on following days given the higher withdrawn volume due to lower mean temperature. The unit will need more time and bright sunlight to recover automatically, but you can help it along by switching on the backup electrical booster element for 1-2 hours.

GUIDELINES ON USAGE

Recommendations & Guidelines on Solar Powered Hot-water Usage in Sri Lanka

- Free hot-water from solar energy is an effective way to reduce your energy bills whilst still enjoying the luxury and relaxation of it. However, the hot-water supply capacity of any solar hot-water system is dependent on the amount and intensity of sunshine per day (in Sri Lanka around 4-5 hours per day), and very much depends on careful usage and good water management practices.

- In European countries, the tap water temperature is only about 20^{0}C - so using at pantry/kitchen needs mixing with hot-water to wash-off oily utensils/hands etc. However, in Sri Lanka the tap-water temperature is around 30- 35^{0}C - which is sufficient to wash away the oily residue.

- Consider a lever-type tap is usually kept in the "center" (both hot +cold) position - again a generality for the colder-climate countries, and hot water is used along with cold water un-noticed.

- Furthermore, there is a generic wastage of hot-water which is stagnated in the pipe-line – and this is especially so in the kitchen/pantry (i.e. using a lever-type tap in center position to fill a "cold" cup of water still draws hot-water from the system.)

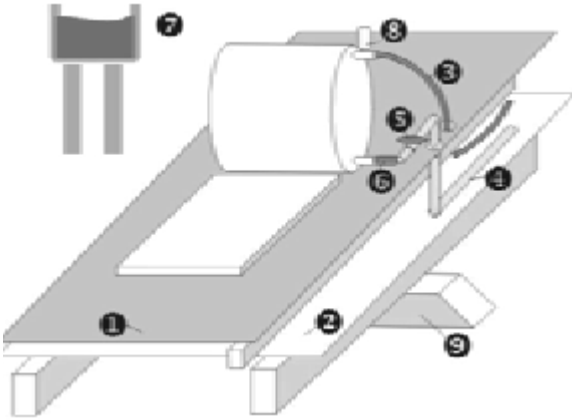
- Where the hot-water in the residence/establishment is used primarily by the owner/investor (as it is in most western countries), the management of water is self-motivated, but, in Sri Lanka the usage in the kitchen/pantry is mostly by the household-help who are not. Ultimately the investor of this expensive system gets a diminished luxury he/she was expecting and is not happy at all!

- In a practical way, a solar-power hot-water unit should be installed closest to the main usage location (which is usually the main bedroom/bathroom) and depending on the availability of sunlight; in this scenario the hot-water delivery pipelines to the pantry/kitchen are generally long and there is a fair amount of heat-loss and redundant wastage. This wastage is typically double the amount of water contained in the pipe - on opening the hot-water tap, the cooled water already in the line needs to be flushed out before hot-water emerges, and then when the tap is closed the stagnant water in the pipe cools down again.

- If hot water is really crucial to pantry or kitchen, you may consider splitting the requirement: which means installing an additional smaller unit for the pantry/kitchen use.

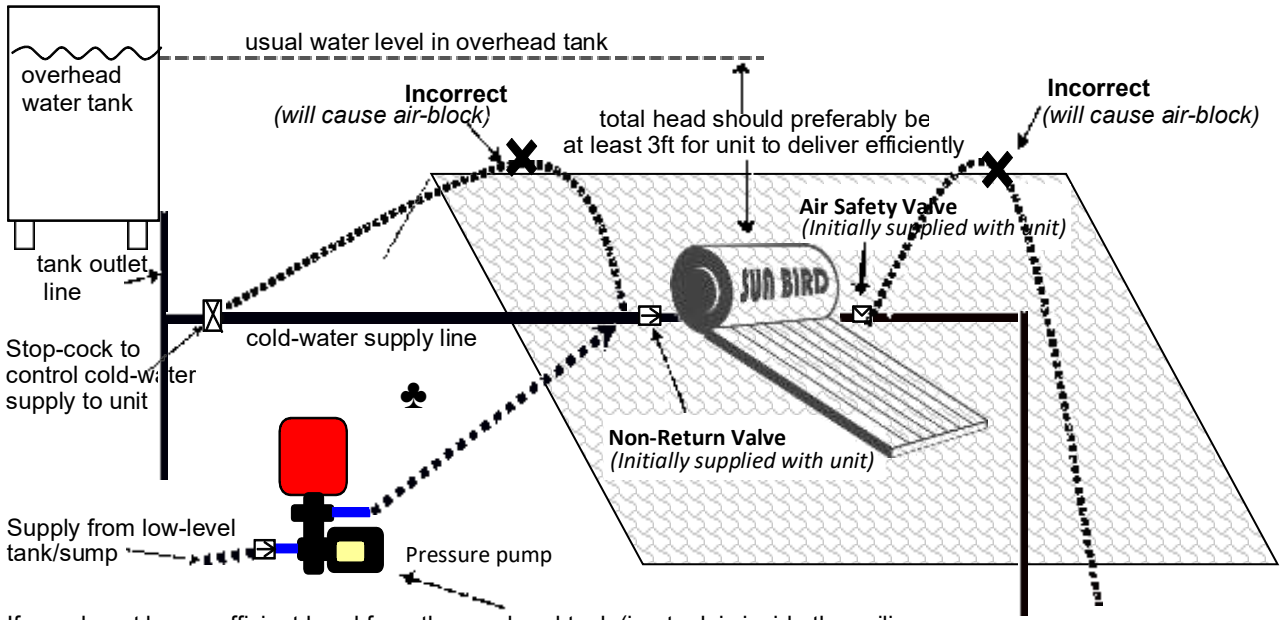
INSTALLATION

TYPICAL ROOF INSTALLATION



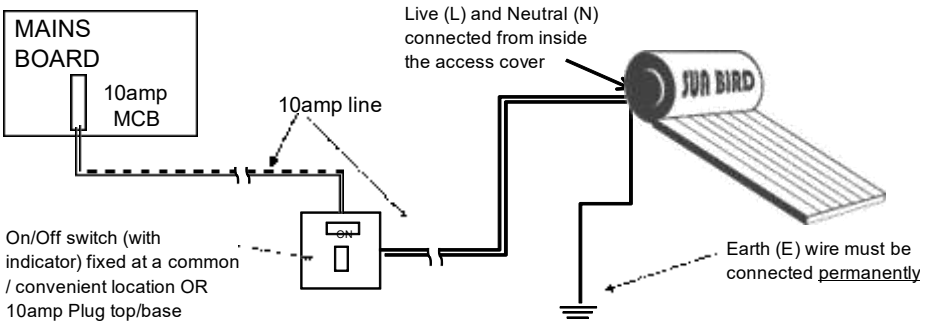
1. Roof tile/sheets
2. Ceiling
3. Hotwater delivery pipe to house
4. Cold water supply to unit
5. Stop valve (to be supplied by customer)
6. Non-return valve and connection to coldwater inlet (provided by Sunbird)
7. Unit best installed lover than Overhead Water Tank.
8. Air-relief valve and Hotwater Outlet connection (provided by Sunbird)
9. Unit located over Main Beam for stability and structural integrity.

WATER / ELECTRICAL CONNECTIONS

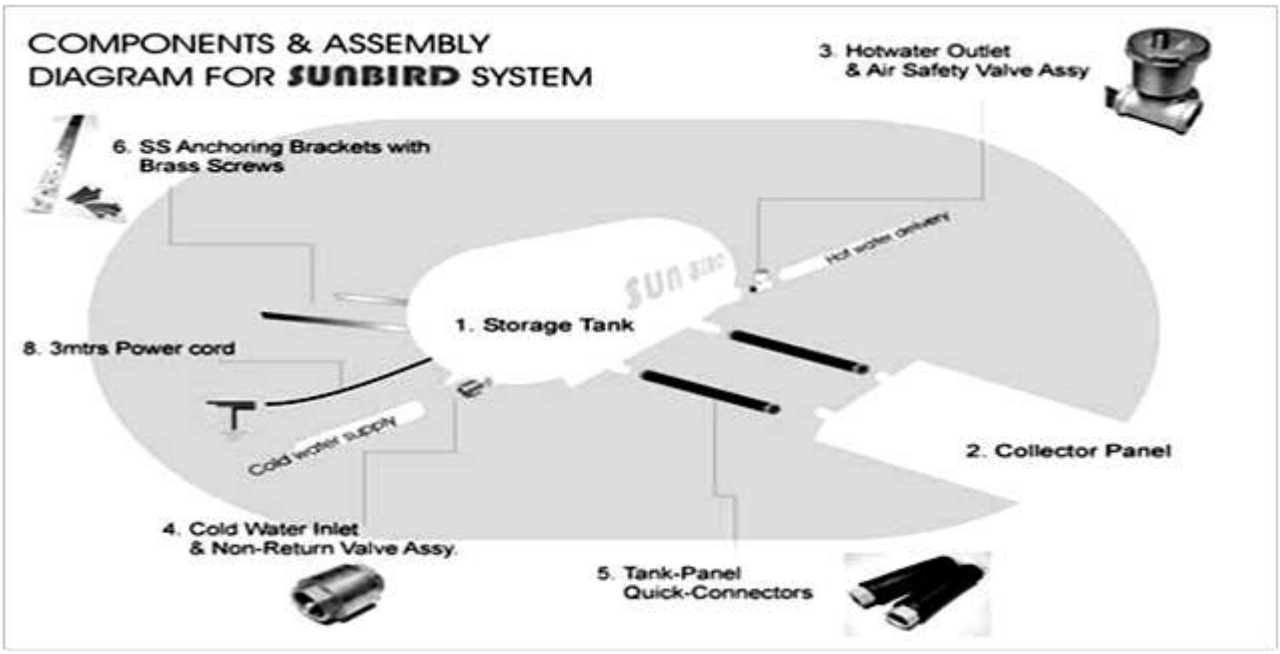


If you do not have sufficient head from the overhead tank (i.e. tank is inside the ceiling, or lower than the roof/location of SUNBIRD unit) then optionally you can install a "Pressure-Pump" as shown

♣ *NOTE*: Please ensure there is a **direct connectivity** to the unit for cold-water supply in adequate (1") capacity. This means a water line taken directly from the main tank/main line - preferably just before/after main gate valve, and NOT from other branch lines or smaller-diameter lines. This will ensure good water flow, and will avoid formation of **air-blocks,** and to minimize any vacuum damage to the unit.



COMPONENTS & ASSEMBLY

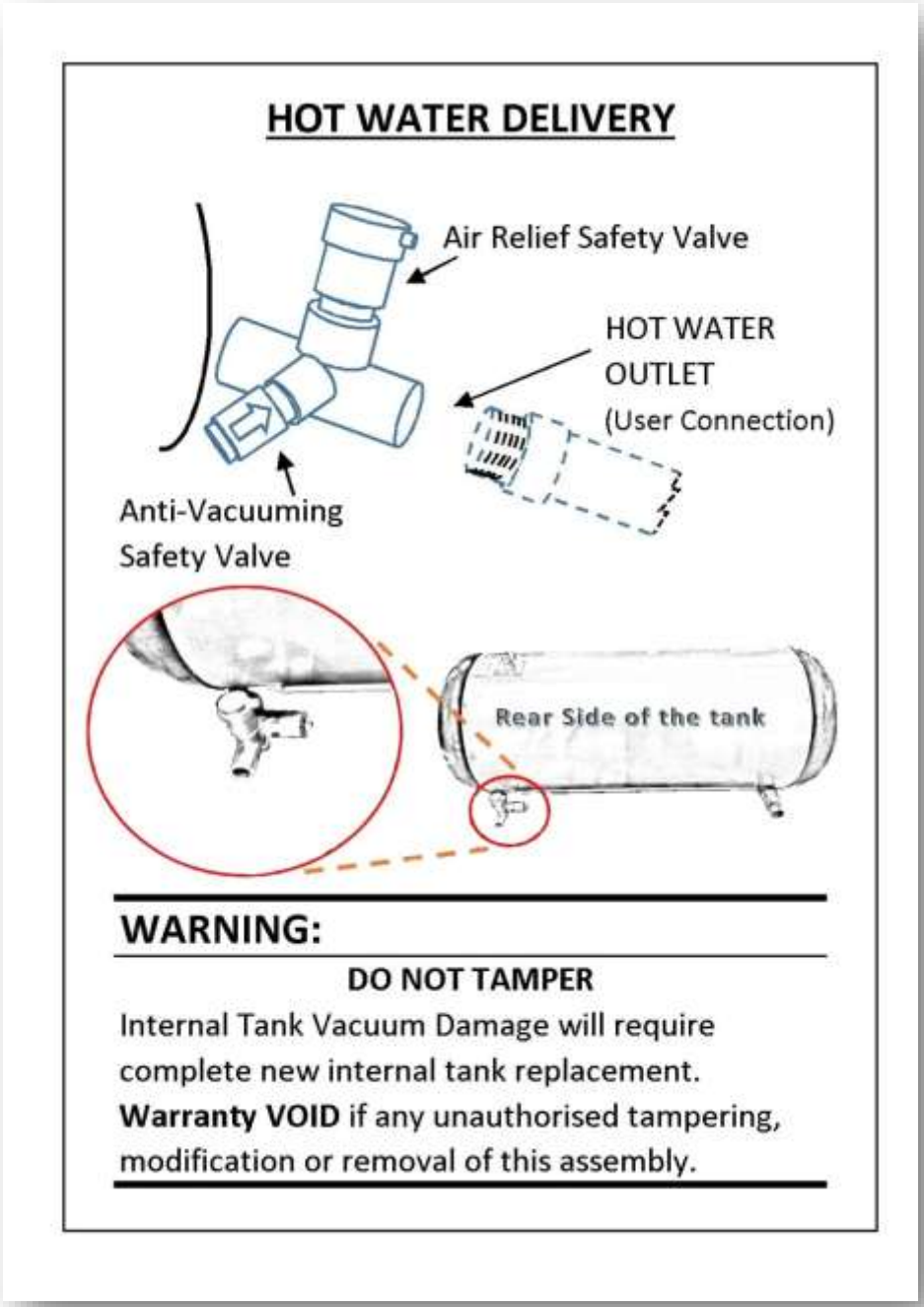


SAFETY EQUIPMENT ON SUNBIRD

3. Anti-Vacuuming valve	*This protects the inner tank from vacuuming effect.*
3. Air release valve	*To bleed air trapped in the unit, and provide smooth delivery flow*
7. Thermostat control	*Auto switch-on electrical backup booster when low heat and switch off again on reaching required temperature.*
9. High Temperature release valve	*This safety valve will dispel steam when overheating occurs.*
9. High Pressure release valve	*This safety valve will dispel internal pressure build-up when high pressure occurs.*
11. Sacrificial Anode	*This protects the inner SS tank, and other SS/Cu components from electrocatalyst deterioration and prolongs life of booster element.*

Product: / Component	**FTP** (Pressure)	**VTP** (Pressure)	**VTN** (Non-Press.)	**VPC** (Pressure)	**CCP** (Pressure)	**PTN** (Non-Press.)
1. Insulated Hotwater Storage Tank	Stainless Steel 1.2mm	Stainless Steel 1.2mm	Stainless Steel 0.9mm	Stainless Steel 0.9mm	Mild Steel 3mm *Ceramkoat*	*Polytherm*
2. Collectors	Cu/Alu Fin	Heat Pipe	Vacuum Tube	Vacuum Tube	Cu/Alu Fin	Vacuum Tube
3. Outlet Anti-Vacuum and Air-Relief safety kit	✓	✓	✘	✓	✓	✘
4. Inlet Non-return Valve	✓	✓	✘	✓	✓	✘
5. Tank-Panel Connectors	✓	✘	✘	✘	✓	✘
6. Anchoring Brackets		Stainless Steel 1.2mm anchoring brackets				
7. Electrical Booster and thermostat control	SS/Incoloy	SS/Incoloy	Copper	Copper	Incoloy	Incoloy
9. Safety Valve : Pressure/Temperature	*PRV*	*PTV*	✘	✘	*PRV*	✘
10. Vent (or Assistant Tank)	✘	✘	✓	✓	✘	✓
11. Sacrificial Anode	✓	✓	✘	✘	✓	✓
12. Tank Flushing Valve	✘	✘	✘	✘	✓	✓
13. Sensor/s		Optional (only with remote monitor)				

TAMPER WARNING LABEL



** Not applicable for **Vacuum Tube Non Pressure-bearable** product*

Please heed the tamper warning label for the Outlet Assembly, which is essential for the safety of the unit. Removal or tampering with this could result in heavy vacuum damage to the system which is NOT covered under our warranty.

BOOSTER ELEMENT AND SACRIFICIAL ROD

Our aim is not to provide an electrically operated Hot-water System, but to give the user a fallback device in poor-weather and occasional high usage situations. On its own the Solar Hot-water System should be of sufficient capacity to provide the average daily consumption of hot-water. Frequent usage of this accessory could mean the system is of insufficient capacity for your usage.

Each unit is pre-installed with a 1500W/3000W Backup Electrical Booster Element with automatic thermostat control factory set to 45~55°C (+/-3°C). When connected, if the water temperature in the solar hotwater storage tank falls below the lower limit, the electrical booster will get activated and when heated to the upper limit it will automatically switch off.

This accessory should be manually plugged or switched on (i.e. using a conventional electrical geyser type switch) when required, and incorporates a thermostat control to automatically maintain the temperature. You may use this to boost the unit during rainy/cloudy days or for high-usage situations.

Please ensure proper and continued "grounding", which is essential for your safety and prolonged life of the Element. We recommend switching on / using the element once a month to discharge built-up static energy and to observe its integrity.

REPLACEMENT OF BOOSTER ELEMENT

The Electrical Backup/Booster Heating Element can be replaced by any qualified plumber/electrician (recommended) or DIY enthusiast (no liability).

1. Close cold-water supply (inlet) line.
2. Disconnect mains supply.
3. Remove access cover.
4. Disconnect Phase(+) and Neutral(-) wires from Element
5. Use Socket Tool or Wrench to unscrew (counterclockwise) the Element
6. Insert new/replacement element, making sure of the integrity of the Helite Seal.
7. Tighten well by screwing (clockwise) the element.
8. Open cold-water supply line and observe for leakages, tightening as necessary.
9. Re-connect the Phase(+) and Neutral(-) wires using appropriate connectors/lugs.
10. Test for proper electrical connectivity and any Earth-leakages.
11. Close the access cover and make sure water-proof seal is ok.
12. Please boost with the electrical element for 1-2 hours to ensure proper operation and to replenish any hotwater which was wasted.

SACRIFICIAL ROD

The Sacrificial Rod is provided to prolong the life of the inner SS tank and the electrical element. Due to the constant effect of static electricity within the tank, this consumable part is used to negate the effect of cathodic reaction with the electrical element and inner surface of the tank, sacrificing itself instead. This accessory needs replacement when depleted and should be checked once every 5 years in normal conditions or much more frequently in bad-water conditions (in hard-water or coastal areas) even as often as every 6 months. *(Charges may apply for inspection service – please inquire)*

OPERATING PARAMETERS

Standard SUN BIRD units are operable within the following parameters/guidelines:

General

- Daily 4-6 hrs of good/strong sunlight under normal usage conditions.
- Panel Inclined at: Min 18° - Max 30° degrees from the horizontal.

PANEL DIRECTION (FACING)

- South - 100% efficiency
- North - 90-100% efficiency (Except November to February when there is a drop in efficiency due to the sun's Southerly position)
- West - 80-95% efficiency (morning sun cannot be used to maximum)
- East - 70-90% efficiency (afternoon sun cannot be used to maximum)

OVERHEAD WATER TANK HEIGHT

- Generally, 1m above the unit elevation will ensure good gravity flow to the unit.
- However, if not possible, a pressure pump could be used instead – matched with the appropriate model.
- For extreme tank height (ie. >45m / 150ft) you may consider pressure reduction valves (additional accessory) for better control of water flow/wastage.

COLD WATER SUPPLY

- min 0.065 bars
- max 6 bars (1 bar = 32ft water head)

WATER QUALITY

POTABLE WATER	Desirable	Max. permissible
• pH	7.0-7.2	6.5-7.5
• Total Hardness	<100ppm	200 ppm
• Iron	< 0.05 ppm	0.1 ppm

Water quality testing can be provided at nominal charge. Sample must be taken from the site and relevant outlet into a clean water bottle which has been rinsed out with same water prior to filling and then well sealed. (Sample must be forwarded to JFA office within 8 hrs of collection)

BAD WATER QUALITY / NON-POTABLE WATER

Water quality in excess of above maximum permissible range/s is considered as Non-Potable Water, and is liable to impact the performance and lifetime of the tank/panels and accessories such as heat element/safety valves etc.

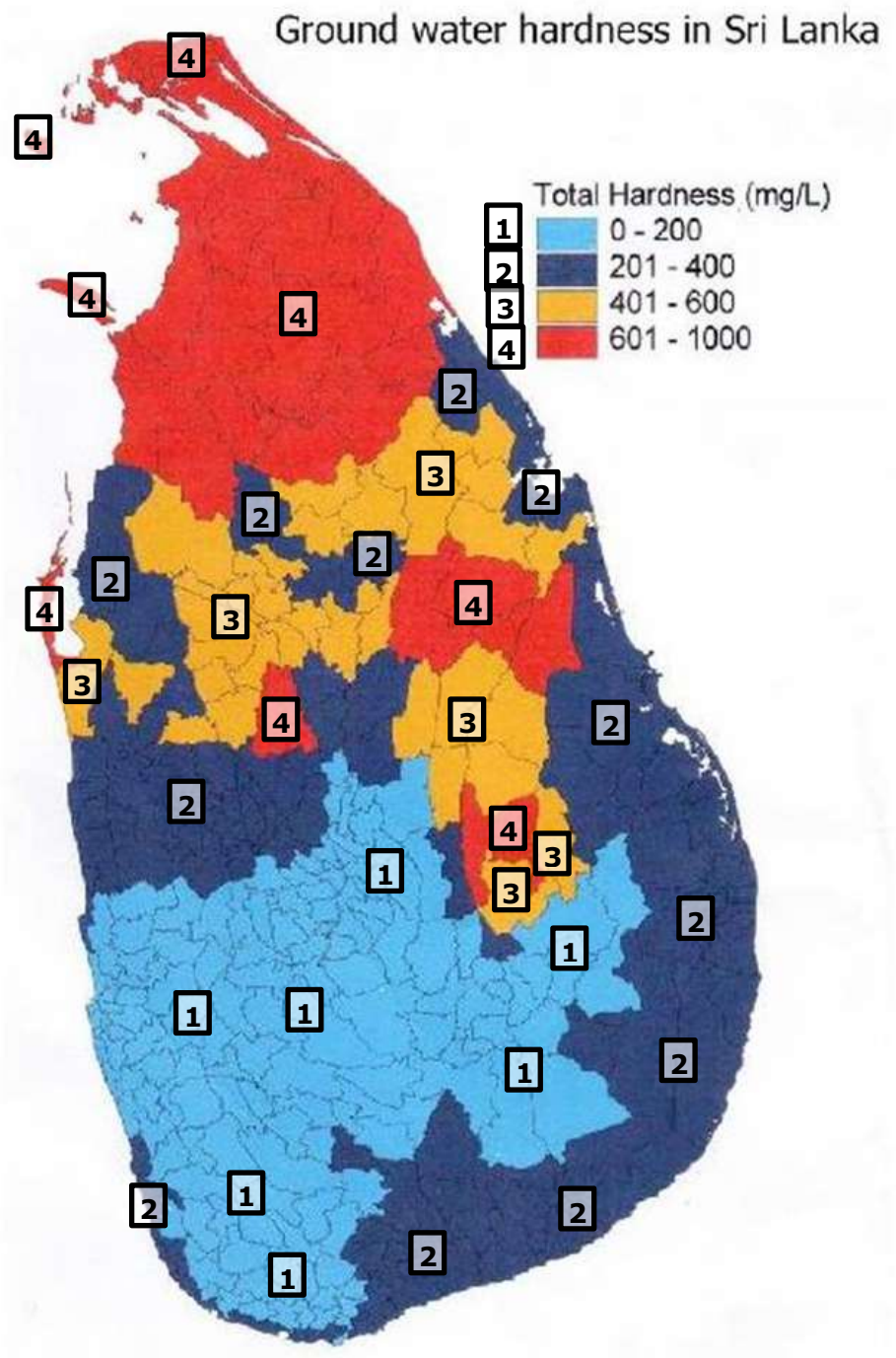
Also, please note that dirt/mud and other liquids/chemicals being used or added to the water supply is also considered under this situation.

For areas with high mineral content in the water supply, our ceramic-coated or plastic tanks - **SUNBIRD CCP (Ceramkoat) / PTN (Polytherm)** systems are available with special warranty.

NOTES ON HARD WATER

Hardness level >180mg/L is considered as "Very Hard", and in these areas, the ground-water Iron content is extremely high, and it is recommended that adequate water filtering/purifying equipment for hard-water is used throughout your home to protect many user-apparatuses from clogging and deteriorating.

We do recommend the **SUNBIRD** Flat Plate Ceramic-coated tank, which is specifically manufactured for this situation.

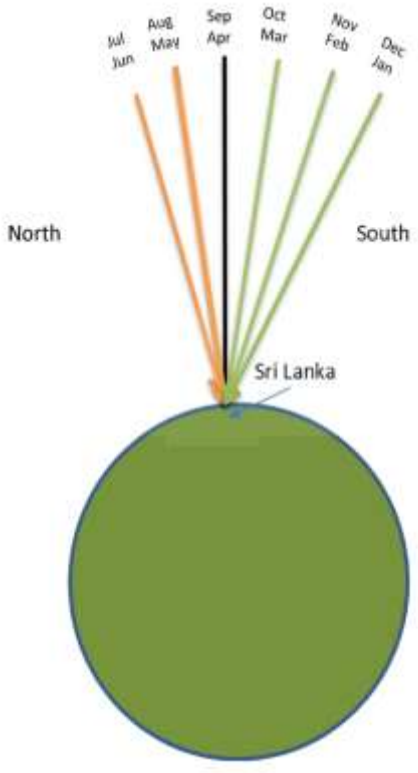


NOTES ON AIR BLOCKS

Air blockages are caused when air is drawn in to the cold/hot water line, and gets trapped without being able to bleed out. This happens when there are peaks ("^") in the line between end-points and is caused by poor plumbing design. (i.e. excessive pipe left inside the ceiling, or pipes being taken over the apex of a roof). Please check with professional plumber to correct these issues.

SEASONAL EFFECT ON HOT WATER PRODUCTION

The sun traverses a different path during the year, and in Sri Lanka the direction of the sun varies during the months October-March (Southerly path) and May-August (more Northerly path). During these times the panels may receive less sunlight during a particular season due to the angle of attack of the sunlight and any consequent shade falling on the panels. – see chart below:



- As depicted in the diagram, the Sun's position will be directly overhead in September and April, and will gradually move north/south during other months. During the months of December and January, it will be at its most Southern position.
- Accordingly, panels that are oriented to the North will have less advantage of the Sun's southern traverse during more months of the year and especially during the cooler months.
- By orienting panels to the South, it is possible to harness better efficiency during more months and the "winter" season.

Sun is oriented toward the north (4 months)		Sun is directly overhead (2 months)	Sun is oriented to the south (6 months)		
Jul	Aug	Sep	Oct	Nov	Dec
Jun	May	Apr	Mar	Feb	Jan

Data from http://suncalc.net

WATER LEAKS – SUNBIRD VS. CUSTOMER RESPONSIBILITY

Water leakage from the Unit itself (Tank/Panels) is generally the responsibility of Sunbird and is covered by the conditions of our warranty. Any leakages external to the unit and integrated components, are not directly our responsibility and should be checked for cause and corrective measures by customer (a maintenance technician / plumber). Please do call our Service hotline for advice and phone assistance to troubleshoot the problem.

TIMELY MAINTENANCE

This product depends entirely on the availability of adequate sunlight. Therefore, please ensure you have a periodic maintenance schedule to clean the panels and ensure the unit receives enough daily sunlight at most days of the year. (i.e. elimination of shade and shadow and optimize the best placement for direction of the sun during its annual traverse.

1. Recommended: Wash/clean panels twice annually.
2. Observe and remove/correct any obstruction to sunlight on the panels such as trees and other shades at least once annually.
3. Check operation of electrical backup booster element. (at least once every 2 months)
4. Check the integrity of Sacrificial Rod (at least once every 5 years)

Bad water-quality areas

5. Flushing out of the unit (tank/panels) every 2-3 months (or more frequently if necessary)
6. Check/replace Sacrificial Rod frequently (even as often as every 6 months)

BEFORE CALLING FOR SERVICE

- Is the complaint a SUNBIRD / Plumber / Electrician / Others responsibility?
- **Please do check about Chargeable/Non-chargeable services.**
- Our service teams travel island-wide from our main facility at Welihena, Kochchikade. Proper scheduling is extremely important, but delays do occur. Please take into consideration 2-3 working days for standard response time.
- Each system installation requires a Stop Valve to be fitted to the cold-water supply line (by your plumber) for maintenance and emergency purposes. You may close this valve until the service team arrives to avoid excess water leakages/wastage. However, please note that water in the hot-water tank would still leak out / deliver until the tank gets fully empty.
- Normally our initial inspection Technician will arrive by motorcycle and does not have a ladder for access to the roof. Please organize roof access or kindly inform us so we may schedule a suitable vehicle (with a ladder).
- Please see the Maintenance and Troubleshooting chapter.

MAINTENANCE &TROUBLESHOOTING

Symptom	Cause	Corrective Action
1) No water coming from any of hot- or cold-water taps	General water supply is interrupted.	Correct water supply problem. *(not SUNBIRD duty)* Is overhead tank empty? Is pressure pump working? Is the municipal water supply stopped?
2) No cold-water supply to unit	Inlet valve is closed. Inlet line is blocked Air blockage of inlet line	Open the inlet stop valve. *(not SUNBIRD duty)* Check and rectify. *(not SUNBIRD duty)* Check and rectify. *(not SUNBIRD duty)*
3) No water coming from hot-water tap	No water supply to unit. *(check by plumber)*	Check and correct water supply. Is water supply coming up to unit? Is supply-end gate-valve closed?
	Air blockage in hot-water plumbing lines. *(check by plumber)*	Open hot-water tap until water comes. Is Air-Relief-Valve clean and operating ok? Try disconnecting outlet at unit until water flows out smoothly and reconnect.
4) Water from hot-water tap is cold – even after allowing time for water to flow from unit location to user outlet.	Unit is in completely discharged state.	Allow minimum of 6hrs bright sunshine (1-2 days) to re-charge. Or boost with built-in backup electrical booster element for 2 hrs.
	Unit not heating due to poor weather conditions	
5) Water from hot-water tap is not hot (warm)	Hot-water usage is high. *(SUNBIRD not liable)*	Re-charge unit by electrical boosting for 1-2 hrs. Is usage (Liters per day) exceeding unit capacity?
	Hot-water is flowing back along the supply line. *(SUNBIRD not liable)*	Check inlet Non-return Valve for correct operation and dirt blockages. If the water supply is not upto standard, rectify quality of supply water. Replace NRV if required.
	Hot-water is being wasted.	Check for any leaks from unit. *(Call for SUNBIRD Service)* Check for faulty plumbing/taps etc. *(SUNBIRD not liable)* Check on usage (mixer taps, kitchen etc) *(SUNBIRD not liable)*
	Hot-water production is low.	Check for blockage (mud/dirt) in the panel risers. Needs flushing of panels. *(Call for SUNBIRD Service – charges may apply)* *(SUNBIRD not liable)*
6) Leakages external to product modules	*(SUNBIRD not liable)*	Observe and correct as required

7) Unit not charging after switching on Electrical Booster Element for 2-3 hrs.	Electrical booster Element not working	Check if electrical supply to unit is ok. (i.e. plugged in and correctly switched on, electricity available and lines connected, circuit breakers are ok) - *(SUNBIRD not liable)* If element is burnt, please replace element. *(Call for SUNBIRD Service – charges may apply)*
8) Electrical Circuit Breaker trips when booster switch is used.	Electrical booster element needs replacement. (If no general fault in electrical connection).	See Warranty Excluded Items for service options. *(Call for SUNBIRD Service – charges may apply)*
9) High usage of backup electrical booster element.	Unit capacity not sufficient for usage. *(SUNBIRD not liable)*	Study usage and reduce by adopting good water-management practices. Call our hotlines for advice. Consider upgrade option.
10) Hot water comes from the Cold water tap	There is a cross-connection between hot and cold water lines.	-Check if the Non-Return Valve at Inlet Assembly is in proper working order. There may be dirt clogging it and allowing the hotwater to flow-back along the cold water lines. (Possibility of damages and leaks as cold lines are not suitable for hotwater) -Check mixer taps for faulty operation. -Check by-pass connections of hot-cold lines -Check faulty (or un-switched) equipment such as washing machines and dishwashers, and old or unused electrical geysers.
11) Unit operated fine for years, but now is inadequate	New shadows on unit Increased usage	Check for shadows from previously nonexistent objects such as trees/branches and new buildings and consider re-location. Possibility of new family members (ie) and need to consider additional unit or upgrade.
12) Problems due to water quality (ie: Particles in water (muddy/dirty water) and pH/ Hardness issues	Please consult our Services Department: Water quality is NOT covered by our standard warranty and damages created can render the unit inoperable and un-repairable – needing replacement components such as inner-tank, vacuum tube or risers, at extra cost + additional service charges. *(SUNBIRD not liable)*	
13) Hot-water is dirty/ muddy/discoloured.	Input water quality is bad. *(SUNBIRD not liable)*	
14) Frequent replacement of Electrical Backup Booster Element.	This could indicate improper electrical connections, high voltage or depletion of the sacrificial rod. *(check by electrician)*	
15) Frequent replacement of Sacrificial rod	This could be due to bad water quality – please have a water quality check and take corrective measures to improve the quality of water supply. *(check by plumber) – SUNBIRD is not liable for any water quality issues.*	

SPARE PARTS

Part No		Part Name / Details
802		**SUNBIRD Vacuum Tube** 58x1800mm vacuum Tube Only
811		**SUNBIRD Heat Pipe** 58x1800mm including inner copper heater rod
804		**Silicon washer** Fitting 58mm Vacuum Tubes
816		**Rubber Grease** For heat pipe, 50g
868		**Assistant Tank** 5 Liters capacity
810 860		**Electric "Rod" Element** Rod-type. SS 1500w,240v/50Hz Rod-type. SS 3000w,240v/50Hz
723		**Electric "Coil" Element** Incoloy 1500w
553		Incoloy 3000w
866		**Bi-Metallic Disk Thermostat** 240v/50Hz/10A, 42-55'C(+/3'C)
801 821		**Sacrificial Rod** #30 25 - 30cm #60 55 - 60cm
819		**Brass nut for Sacrificial Rod** fits 3/4 socket
800		**Tube Adaptor for Sacrificial Rod** to fit 58mm tube

110		**Air Relief Valve (Auto-Vent)** 1/2" inch, Resistant up to 10bar/110'C
820		**P/T valve** Pressure + Temperature release Valve

OPTIONAL ACCESSORIES

889		**Auto-Mixer Mini Valve** (Non- Adjustable) To automatically control temperature of delivery water to a pre-set degree.
888		**Auto-Mixer Mini Valve** (Adjustable) To automatically control temperature of delivery water (with manual setting)
865		**Auto-Mixer Valve - Luxury** User adjustable auto mixer tap for use inside bathrooms/shower.
979 980		**Controller SR609c** 1500W 3000W Remote control and monitoring of tank water temperature and water level, and timer /temperature control of electrical booster.

Recommended Hotwater Pipes/Fittings (in Sri Lanka)

- Dux (New Zealand) –available at most leading hardware stores

http://www.dux.co.nz/product-category/hot-and-cold/pro-fit-qicktite/

AFTER-SALES & SERVICES

* PLEASE DO CHECK ABOUT CHARGEABLE/NON-CHARGEABLE SERVICES.

	Item	Description	Free/Charged
1.	Inspection	After warranty period	Charged
2.	Services	After warranty	Charged
3.	Factory Repairs	After Warranty	Charged
4.	Electrical Booster (1.5/3.0kw)	Local SS	Free for Do-it-yourself
		Imported SS	Free replacement under warranty
		Incoloy	Free replacement under warranty
5.	Thermostat	Stud type	Free for Do-it-yourself
6.	Sacrificial Rod	Periodic inspection and Replacement if necessary	Charges apply for inspection + parts
7.	Panel Glass	Broken Glass replacement	Charges apply
8.	Vacuum Tube	Tube breakages	Charges apply
		Tube defects	Free (Under warranty)
9.	Relocation	Unit removal	Charges apply
		Reinstallation	Charges may apply
10.	Transport	Local area – scheduled	Free
		Local area – emergency	Charged
		Outstation	Charges apply
	Optional Items		
11.	Monkey Guard	Per unit size	Charged, No warranty
12.	Stands and Platforms	Per unit size	Charged, No warranty

SERVICES HOTLINE: 0777 165 165 (Select #1)

Services available 8am-5pm Mon-Fri / 8am-1pm Saturday

Our Services Offices are closed on Week-ends and all Public/Mercantile holidays

Services are scheduled within 2-5 working days. Please allow for traffic and unforeseen delays.

You may contact our office for phone-assistance for your Plumber or In-house maintenance technician or competent person.

CONGRATULATIONS on owning a SUNBIRD Super Solar Hotwater System!

YOU ARE DOING YOUR PART FOR THE ENVIRONMENT

Solar water heaters do not pollute. By investing in one, you will be avoiding carbon dioxide, nitrogen oxides, sulfur dioxide, and the other air pollution and wastes created when your utility generates power, or you burn fuel to heat your household water. When a solar water heater replaces an electric water heater, the electricity displaced over 20 years represents more than 50 tons of avoided carbon dioxide emissions alone. Carbon dioxide traps heat in the upper atmosphere, thus contributing to the "greenhouse effect."

Solar water heaters offer long-term benefits that go beyond simple economics. In addition to having free hot water after the system has paid for itself in reduced utility bills, you and your family will be cushioned from future fuel shortages and price increases. You will also be doing your part to reduce this country's dependence on foreign oil. Adding a solar water heater to an existing home raises the resale value of the home by the entire cost of the system.

PLEASE DO CONTACT US FOR FURTHER INFORMATION

HOTLINE – 0777 165 165

www.jfalanka.com

Up-to-date version available online at:
www.jfalanka.com/downloads/SBmanual.pdf

Printed Version:8.23.1 (JFA.S_B.UserManual/vw)