# USER MANUAL

SOLAR WATER HEATER

## 500 LPD FPC PLUS-PR

Harnessing the sun

# INSTRUCTION MANUAL
# FOR V-GUARD PRESSURISED
# SOLAR WATER HEATING SYSTEM

Dear Customer,

We congratulate you for being the proud owner of a **V-Guard Solar Water Heating System.** This product comes to you from a company committed to total quality and dedicated to customer delight, since 1977. The immense trust and support our valued customers give us has always been, and always will be, our motivation to strive harder and harder to live up to their expectations. By using this product you are not only helping the country save on raw materials (which goes into the generation of electricity) but also contribute towards a greener environment. We, the members of V-Guard, thank you and wish you many many years of free hot water.

**THE PRODUCT:**

a) **Collector Panel** — The collector panel is considered as the heart of the system. It consists of a rectangular, shallow box (made of aluminium) with a glass covering on top, like a window facing the sun. The inside of the shallow box consists of an array of absorber fins and tubes. Each absorber fin is given a selective black coating and the riser tubes are brazing to the top and bottom headers. The absorber fins, riser tubes and the headers are made of high quality copper. Water passes through these header and tubes.

b) **Storage Tank** — The storage tank (made of Stainless Steel 304 L grade) is well insulated and stores the hot water coming in from the riser tubes.

c) **Back up Heating System** — A Backup Heater with thermostatic controller is provided in the storage tank as a back up heating system, in case of heavily overcast days.

d) **Supports** — These support the tank and the collector panel at the required height and inclination.

**Note: The maximum permissible working water pressure of the V-Guard Pressurised Solar Water Heater is** 8 **kg/cm².**

## OPERATING PRINCIPLE:

When the sun's rays, passing through the collector glass cover, falls on the absorber fins, the energy is absorbed and transformed into heat. This heat is conducted to the water flowing in riser tubes attached to the absorber fins. The water circulates to the storage tank and continues to recirculate as long as the sun shines. The circulation takes place through the natural process of convection (Thermosyphoning).

## INSTALLATION INSTRUCTIONS:

### A. Mounting Details:

1. The system should be installed, preferably, on a flat roof.
2. The system should be installed facing **SOUTH.**
3. Fix the system in suggested direction free of shade / shadow for best results (Near by trees, buildings, over head tanks, parapet walls, clothing lines with clothes, etc. can cast shadow over the collectors, which will drastically reduce the performance of the system.)
4. The location of the system should be as near to the utility points as possible, to minimise heat loss from the plumbing lines.
5. Supports should be properly grouted.

**B. Handling Recommendations**

1. The collector panel should be handled carefully to avoid breakage of cover plate ( Glass Cover).
2. Only qualified technicians should carry out all plumbing, civil and electrical work.

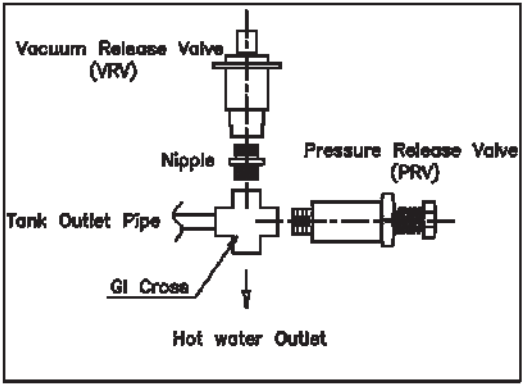
**C. Safety Precautions**

1. Read the manual carefully before installing the system.
2. Ensure that electric shock protection devices, like **ELCB,** is incorporated in the electric circuit before giving power supply to the backup heater.
3. Earth should be properly connected when connecting the back up heater line.
4. The collector should be shaded from the sun by an opaque sheeting before making any pipe connections because the collector surface develops very high temperature.
5. Ensure that the system is protected with a lightning Arrester.

**D. Plumbing Instructions**

1. A **Horizontal Type NRV** of good quality should be provided in the cold water inlet line.
2. Ensure that Vacuum Release Valve (VRV) is mounted vertically and Pressure Release Valve (PRV) is mounted horizontally, as shown in figure-1 (Vacuum Release Valve (VRV), Pressure Release Valve (PRV)

* **The fitting of VRV and PRV will be done at the site by the attending technician. Care should be taken to ensure that the location/position of the VRV and PRV should not be changed under any circumstances. It should be noted that the VRV should be mounted exactly vertical (in the upward direction) on the cross. Hot water outlet to the utility point should be taken only from the bottom port of the GI Cross.**




(Fig. 1)

3. For plumbing use only pipes which can withstand temperatures upto 100°C at the outlet, for hotwater.
4. Exposed pipelines carrying hot water from the system to the utility points should be properly insulated to avoid heat losses.

**Note:** 1. Only the assembly and provisional installation of the equipment, at site, is in the manufacturer's scope. All related plumbing, civil and electrical work will be in the scope of the customer.

2. The price of the system is for a standard system and site conditions are assumed as normal with flat roof. Any deviations from the normal installation shall incur extra cost and shall be charged to the customer accordingly.

3. To ensure sufficient hot water the next day morning, the consumption of hot water from the system, after 4.00 p.m. each day, should be kept minimum.

4. The system performance is dependent on the availability of direct sunlight and its intensity throughout the day. On a clear, sunny day the system can generate hot water with an increment of 10°C to 30°C from ambient temperature. *No heating takes place when the sky is heavily overcast.

5. **A Solar Water Heater will generate**

   **- Maximum hot water on clear, sunny days.**

   **- Moderate hot water on partially cloudy days.**

   **- No hot water on heavily overcast days.**

*** This performance is available at solar water heater tank outlet only.**

## NORMAL INLET WATER QUALITY STANDARDS

| Sl.No | Description | Desirable Limit |
|---|---|---|
| 1 | pH | 6.5-8.5 |
| 2 | Total Hardness | 300 ppm (maximum) |
| 3 | Alkalinity | 200 (maximum) |
| 4 | Total dissolved solids | 500 (maximum) |
| 5 | Chloride | 100 mg/l (maximum) |

## PRODUCT RANGE

| Capacity in litre per day | Utility Points | Number of Persons | Number of Panels | Threading size of storage tank inlet/outlet pipe |
|---|---|---|---|---|
| 100 LPD | 2 | 2-3 | 1 | 1.9 cm (3/4) |
| 125 LPD | 2 | 3-4 | 1 | 1.9 cm (3/4) |
| 200 LPD | 4 | 5-6 | 2 | 1.9 cm (3/4) |
| 300 LPD | 5 | 8-9 | 3 | 1.9 cm (3/4) |
| 500 LPD | 8 | 14-15 | 4 | 2.54 cm (1) |
| 1000 LPD | 14 | 29-30 | 8 | 2.54 cm (1) |
| | | | | |

**MAINTENANCE INSTRUCITONS:**

Though the maintenance required for this product is minimal, the customer is advised that a little bit of care (a few easy-to-do jobs) is required to maintain the high level of performance and life of the system. This is so, especially since this product is destined to be left unattended in the open air, through out it's life.

| Item | Maintenance procedure | Maintenance schedule |
|---|---|---|
| Collector glass | Clean with plain water with soft cloth | Once in every month. |
| Electric wiring | Check earthing and continuity | Once in every 3 months. |
| Plumbing | Check for leakages | Once in every 6 months. |
| Collector panel | Drain and flush with plain water | Once in every 6 months. |
| Valves | Check for smooth functioning | Once in every 6 months. |
| Supports | Re-coating/re-painting | As and when required |
| | | |

## THE WARRANTY DOES NOT COVER

1. Breakage of glass, natural erosion of sacrificial anode, rust formation on supports, damage(s) / defect(s) of any nature resulting from repairs effected by unauthorized persons, improper selection of model / capacity or misuse of any kind.
2. Any parts of the system which are replaced / repaired.
3. Accessories external to the original equipment.
4. Damage(s) due to improper selection of accessories external to the original equipment.
5. Corrosion of the absorber tubes & hot water headers inside the collector, due to hard water.
6. Tank leakage and repairs due to scale formation if the system is connected to hard water ** supply.
7. Damage(s) due to improper plumbing, civil and electrical work.
8. Damage(s) resulting from exceeding the maximum permissible water pressure as specified by V-Guard.
9. Damage(s) resulting from absence or improper installation of VRV and PRV
10. Damage(s) resulting from not grouting the supports properly.
11. Heat loss resulting from not insulating the outlet plumbing properly and / or not providing a horizontal NRV at the inlet
12. Damages(s) resulting from natural calamities such as storm, heavy rain, hail stone falling, earth quake, fire etc.

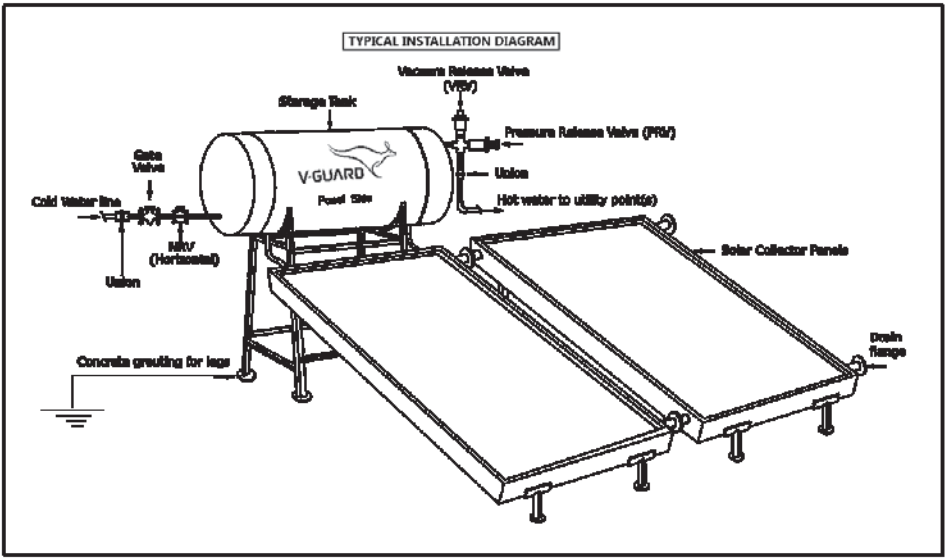
**Refer normal inlet water quality standards on page no 7.

**Note : Negative pressure, if developed inside the solar water heater storage tank, can lead to collapsing of the tank. Please note that negative pressure can develop inside the tank if vacuum release valve is not provided. In such cases V-Guard will not be responsible and the tank replacement will be on a chargeable basis. (Please refer plumbing instructions).**

## THE WARRANTY IS VOID

1. If the installation of the system is not in accordance with the installation / plumbing instructions specified by V-Guard.
2. If the installation / repairs / replacements are carried out by unauthorised persons.
3. If the negative pressure develops inside the tank due to the absence of vacuum release valve.
4. If the system is shifted to a new location from the location at which the system was originally installed by authorised direct marketing associates / dealer of the company.
5. If modifications/alterations are made by unauthorised persons.
6. Warranty does not cover if the system is connected to the water supply which does not meet the inlet water quality standards mentioned in page no 7. of this instruction manual.

Due to continuous improvement and development of the product, specifications mentioned in this manual is subjected to change without notice


TYPICAL INSTALLATION DIAGRAM
Vacuum Release Valve (VRV)
Storage Tank
Pressure Release Valve (PRV)
Gate Valve
V-GUARD
Union
Cold Water line
Hot water to utility point(s)
NRV (Horizontal)
Solar Collector Panels
Union
Drain flange
Concrete grouting for legs

## PRODUCT DISPOSAL INSTRUCTION

| Material categories | Instruction |
|---|---|
| Metals (Stainless steel, Aluminium, Galvanized iron, Mild steel, Brass, copper) | The materials shall be disposed through authorized recycler in order to protect environment at the time of product final disposal. |
| Paper (Carton box, Corrugated buffer, Instruction Manual, sticker) | |
| PUF | |
| Rockwool | |
| Rubber | |
| Thermocol | |
| Plastics | |
| Glass | |

**Plastic Waste EPR Reg. No.: BO-13-000-07-AAACV5492Q-22**

V-GUARD

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www.vguard.in

SCAN TO AVAIL THE **DIGITAL WARRANTY** BY REGISTERING YOUR PRODUCT ONLINE

V-Guard Care
0120 485 0100
1860 180 3000
customercare@vguard.in
9633503333

www.vguard.in/home/customer-care

CIN: L31200KL1996PLC010010