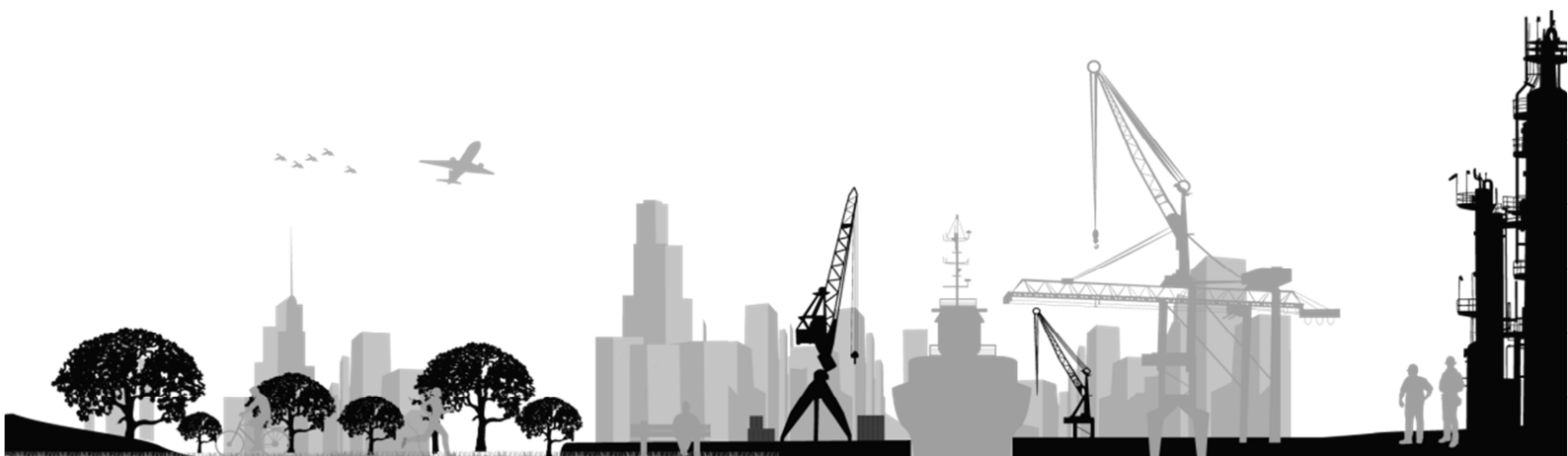


# **VPS Series**

## **Solar Panel Kits**

VPS1, VPS3 & VPS5 Series

# **User Manual**



# About This Users' Guide

## Intended Audience

This manual is intended for people who want to setup any of the VPS power series solar kits. You will need a basic knowledge of electrical power technology.

## Related Documentation

### Technical Specification

The Technical specification is designed to provide you with all the technical specifications related to the VPS power series.

### KBC Networks' Website

Please refer to [www.kbcnetworks.com](http://www.kbcnetworks.com) for additional support documentation and product certifications.

## Feedback

We welcome all comments, questions and suggestions relating to our User Guides. Please contact us on:

Technical Department  
KBC Networks Ltd  
25691 Atlantic Ocean Drive  
Suite B3  
Lake Forest  
CA 92630

Email: [techsupport@kbcnetworks.com](mailto:techsupport@kbcnetworks.com)

# Document Conventions

## Warnings and Notes

These are how warnings and notes are shown in this Guide.

### **!Warning!**

Warnings tell you about things that could harm you or your device.

### **Note:**

Notes tell you other important information or recommendations.

## Syntax Conventions

Items within the solar kits may be referred to as the 'device', the 'product' or the 'system' in this guide.

## Safety Warnings

**!Warning!** For your safety please read the following warning notices and instructions.

## Safety, Approvals and Regulatory Domain Information

### Safety Instruction

For your protection, please read and observe all safety instructions before operating this system and keep this sheet and any additional instructions for future reference.

### Installation and Use

**OBSERVE WARNINGS:** All warnings in the operating instructions should be carefully followed. Do not make any modifications to any items within the solar kit, or any other KBC Networks electronic device, as the unit(s) will no longer comply with legal regulations and therefore void its warranty.

**ATTACHMENTS:** Use only KBC Networks' supplied or recommended products with these kits

**REPLACEMENT PARTS:** When replacement parts are required, use only replacement parts specified by KBC Networks. Unauthorized substitutions may result in damage to the system and could void the warranty.

TABLE OF CONTENTS

ABOUT THIS USERS' GUIDE ..... 2

DOCUMENT CONVENTIONS ..... 2

SAFETY WARNINGS..... 3

SAFETY, APPROVALS AND REGULATORY DOMAIN INFORMATION ..... 3

1 OVERVIEW ..... 5

2 ASSEMBLY ..... 5

3 WIRING THE SYSTEM: ..... 8

4 KBC TECHNICAL ASSISTANCE..... 10

5 WARRANTY ..... 11

# 1 Overview

## 1.1 Introduction

This manual covers all the functions of the products that form the VPS Series solar panel kits. These kits are available in North and Latin America. For further product information, please see the VPS series specification sheet which is available in the KBC website downloads section.

# 2 Assembly

## 2.1 Step 1

Optional - Add a Grounding Wire between the door and enclosure if you choose. Remove any plastic covers from the studs on inside of door and inside of the enclosure. Add jumper wire between the 2 studs and use copper washers and nuts to secure.

## 2.2 Step 2:

Add wire cable glands and any necessary connectors into the bottom of the enclosure. If necessary finish attaching the connector plate to the bottom of the enclosure using provided screws



## 2.3 Step 3:

If pole mounting the enclosure, use Strut Pole Clamps for the VPS1, heavy duty hose clamps for the VPS3, or heavy duty U bolts for the VPS5 to secure both the top and bottom of the enclosure. If you are mounting to a wood post use lag bolts.



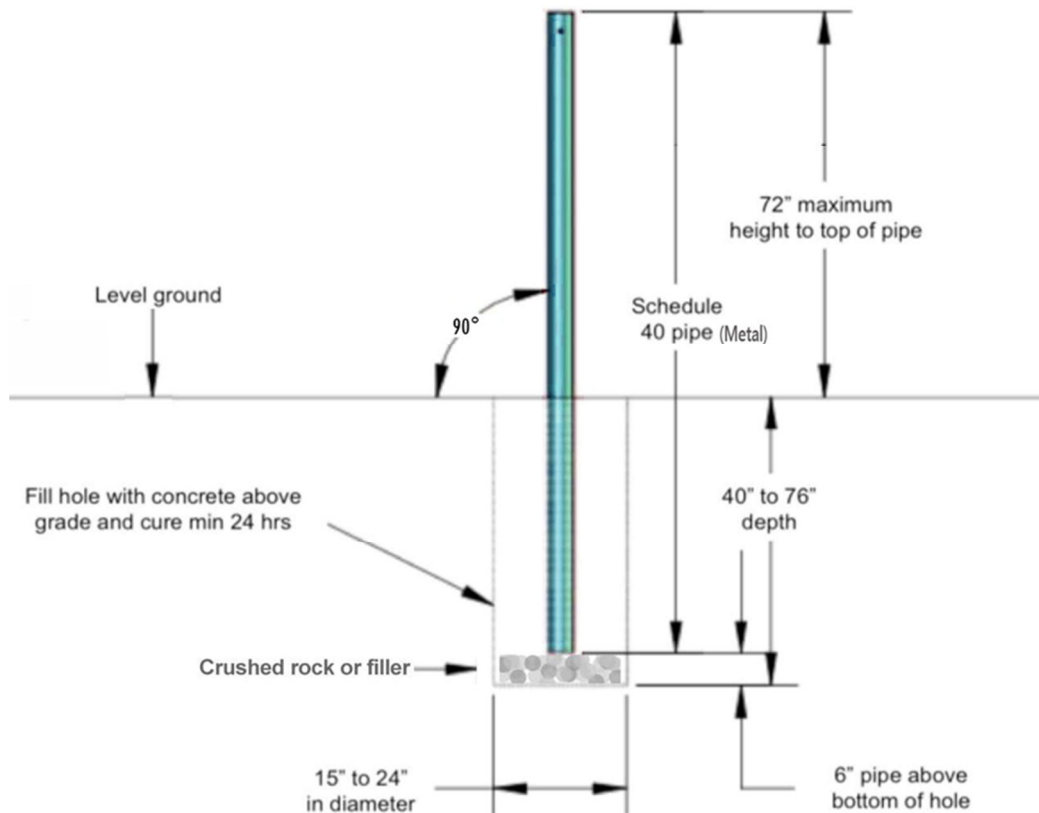
VPS1 Pole mount



VPS3 & VPS5 Pole mount

## 2.4 Step 4:

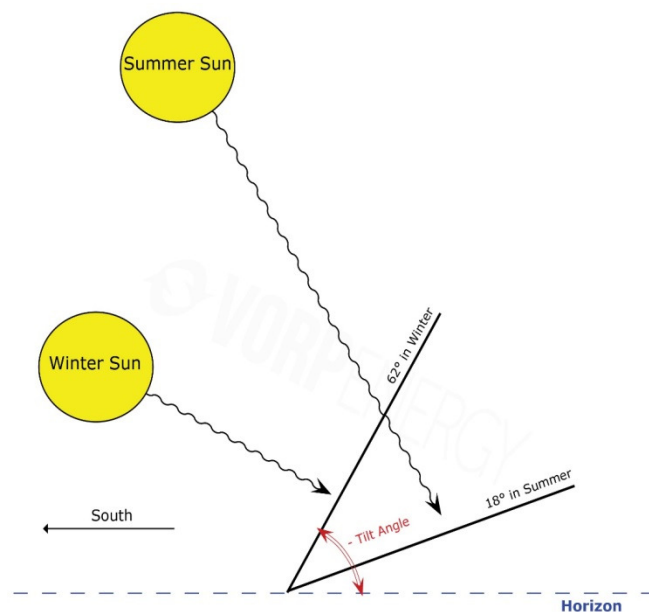
If you need a pole to mount your equipment on then follow the diagram below. Vorp kits require a 4-6" schedule 40 Metal pipe (or equivalent) cemented into the ground.



## 2.5 Step 5:

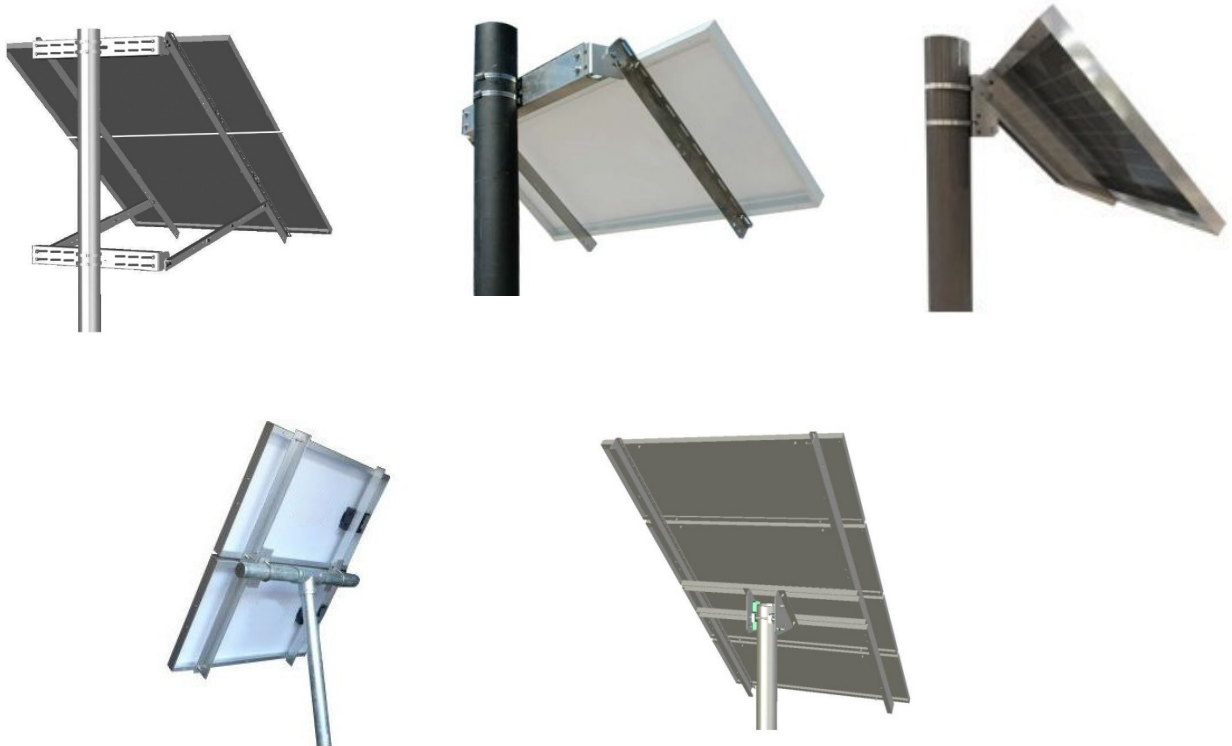
Assemble the solar panel mount and set the correct tilt angle based on your Latitude. There is a useful tool to calculate optimum angle at:

[www.vorpenenergy.com/design-calculator.html](http://www.vorpenenergy.com/design-calculator.html). If you will be using a fixed angle all year we recommend using the optimum angle for winter sun. Mount the solar panel mount to the pole using hose clamps provided. Be sure to mount high enough so the door of the enclosure clears the solar panel mount when opened. You can also mount the panel to a wall with lag bolts.



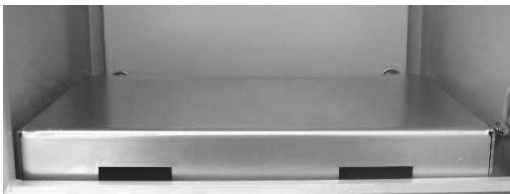
## 2.6 Step 6

Attach the solar panel to the solar panel mount so that the black wire junction box is towards the top or side.



## 2.7 Step 7

If included place the battery mount in the bottom of the enclosure VPS1 Series. The battery platform elevates the battery so wires can travel underneath.



## 3 Wiring The System:

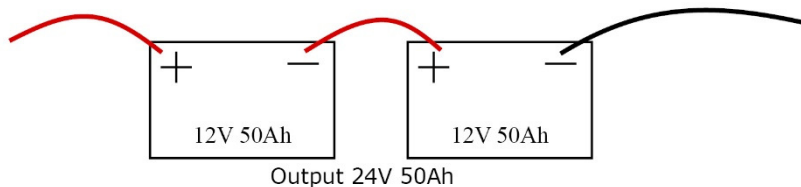
**!Warning!** Ensure that the correct polarity is observed

### 3.1 Step 8:

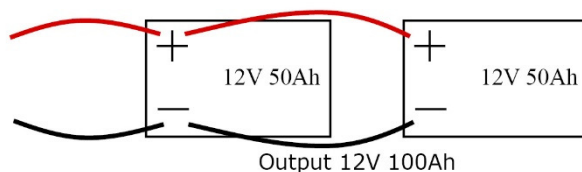
Check that all breakers are in the off (OFF = Green) position before connecting anything to the terminal blocks. Install the batteries in the enclosure. If using multiple batteries, connect in parallel for a 12V output or in series for a 24V output.

#### Application Diagram Connecting Batteries (Series vs Parallel)

Connecting in **Series** - Doubles Voltage but Amps (Ah) stay the same



Connecting in **Parallel** - Same Voltage but Amps (Ah) Double



#### Breaker Positions

Green = OFF

Red = ON

### 3.2 Step 9:

Connect the pre-terminated battery cables to your battery

**Note:**

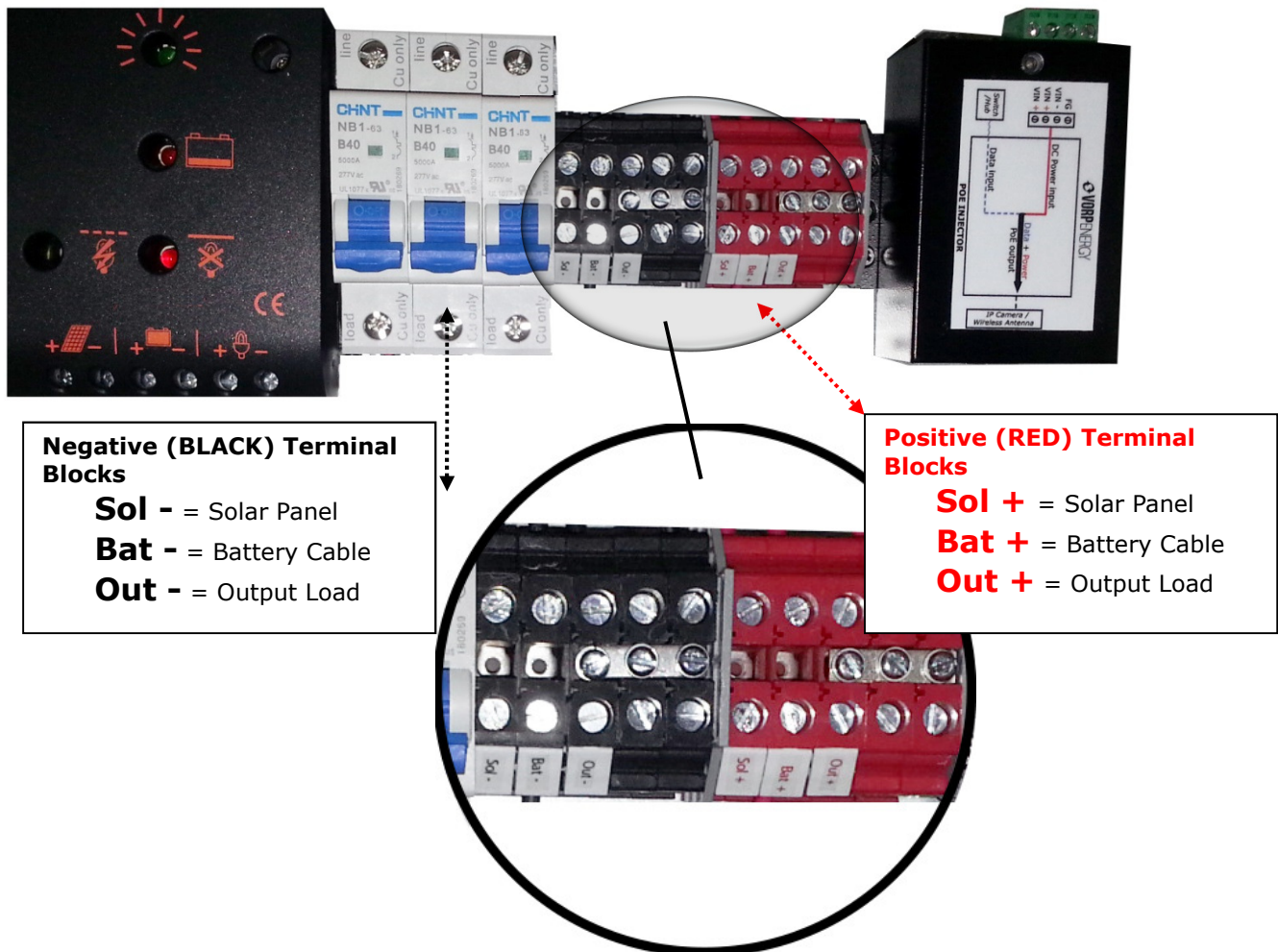
*If batteries are installed on their side, apply an insulator to the top of the battery terminals. This prevents the battery terminals from touching the metal enclosure and shorting if the battery shifts inside the enclosure during an earthquake or very strong wind.*





### 3.3 Step 10:

Route the solar panel cables up through the installed cable glands on the bottom of the enclosure and into the Black and Red terminal blocks labeled **SOL +** and **SOL -**. Give yourself a few inches of slack in the cable and then tighten glands. Connect cables coming out of the enclosure to the cables coming from the solar panel.



### 3.4 Step 11:

If the accessories or your equipment is DIN rail mountable then mount to available DIN rail. If not then place equipment in any available area. Connect the power from the accessories and your equipment to the Red and Black outputs on the terminal blocks labeled OUT + and OUT -

**Note:** To prevent battery over-discharge all equipment loads must be hooked to the terminal block for output power. This output will disconnect the load if the battery voltage drops below 11V and this will protect the battery from over-discharge. If batteries get completely discharged because the equipment was connected directly to the battery, you will reduce the battery life and you will most likely need to supercharge them with a good quality 10A automotive battery charger.

## 4 KBC Technical Assistance

### NORTH AMERICA

Our technical support hotline is available during regular US west coast business hours, Monday through Friday on all non-major holiday business days. KBC will follow up on all electronic inquiries before the end of the following business day.

+1 888-366-4276: Monday – Friday 10am-8pm Eastern (7am-5pm Pacific) (Toll free)  
[techsupport@kbcnetworks.com](mailto:techsupport@kbcnetworks.com): 24hr availability, response time varies

### HAWAII & ALASKA / GUAM, PR & OTHER US TERRITORIES

+1 949-297-4930: Monday – Friday 7am-5pm Pacific Time  
[techsupport@kbcnetworks.com](mailto:techsupport@kbcnetworks.com): 24hr availability, response time varies  
Note: the toll free 888# does not work from Alaska

### CENTRAL / SOUTH AMERICA

[latamtechsupport@kbcnetworks.com](mailto:latamtechsupport@kbcnetworks.com): 24hr availability, response time varies

Technical support is offered in English; however, KBC Networks has worldwide representatives who can provide technical support in many local languages.

**Note:** *technical assistance is available after having read through this manual. Comprehension of terms and topics will assist in trouble-shoot procedures.*

## 5 Warranty

### 5.1 Warranty Information

KBC extends the following LIMITED WARRANTY to the original owner/purchaser of this product as follows:

- Five years from the date of initial sale for Ethernet switches.
  - Two years from the date of initial sale for all wireless and other network products.
  - Five years from the date of initial sale for all fiber products.
- 1) If, within the specified warranty period, this product, or any part or portion thereof, shall prove upon examination by KBC, to be defective in material or workmanship, KBC will repair or replace such part or portion at KBC's option. The warranty period on the repaired or replaced part or portion of this product shall be limited to the unexpired term of the original warranty. The buyer shall be responsible for all shipping and transportation of the product to KBC for any performance under this warranty.
  - 2) Conditions and Exceptions:
    - a) Any accident to this product, any misuse or abuse, alternation, use in modified form, or any attempt to repair this product shall void this warranty. These conditions to the warranty include, but are not limited to, incorrect power connections, physical damage due to mechanical shock, exposure to moisture, and circuit modification.
    - b) SHOULD THIS PRODUCT PROVE DEFECTIVE FOLLOWING PURCHASE, THE BUYER, NOT THE MANUFACTURER, DISTRIBUTOR, OR RETAILER, ASSUMES THE ENTIRE COST OF ALL SERVICING OR REPAIR, EXCEPT AS OTHERWISE PROVIDED BY THE TERMS OF THIS WARRANTY.
    - c) FOR BREACH OF ANY WRITTEN OR IMPLIED WARRANTY ON THIS PRODUCT, THE BUYER IS LIMITED TO THE FOLLOWING DAMAGES. (1) THE COST OF LABOR TO REPAIR OR REPLACE DEFECTIVE PARTS OR PORTIONS OF THIS PRODUCT, AND (2) THE COST OF THE REPAIRED OR REPLACE PARTS OR PORTIONS OF THIS PRODUCT.
    - d) NO OTHER EXPRESSED OR IMPLIED WARRANTIES HAVE BEEN MADE OR WILL BE MADE ON BEHALF OF KBC WITH RESPECT TO THE SALE, REPAIR, INSTALLATION, OPERATION, OR REPLACEMENT OF THIS PRODUCT. KBC DISCLAIMS ANY IMPLIED WARRANTY OF MERCHANTABILITY OF THIS PRODUCT OR ITS FITNESS FOR ANY PURPOSE, AND THE BUYER AGREES THAT THIS PRODUCT IS SOLD "AS IS" AND THAT THE ENTIRE RISK OF QUALITY AND PERFORMANCE OF THIS PRODUCT IS WITH THE BUYER, EXCEPT AS OTHERWISE PROVIDED BY THE TERMS OF THIS WARRANTY.
    - e) Some states/jurisdictions do not allow exclusions or limitations of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you.
    - f) If you do not wish to be bound by any of the provisions in this warranty, please return the product(s) immediately.
  - 3) Contact your dealer regarding return authorizations for out of warranty repairs and any further product information.

This warranty does not apply in Australia.



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