samlexpower®

28" Adjustable Solar Tilt Mount

ADJ-28

Owner's Manual

Please read this manual BEFORE installing your solar tilt mount

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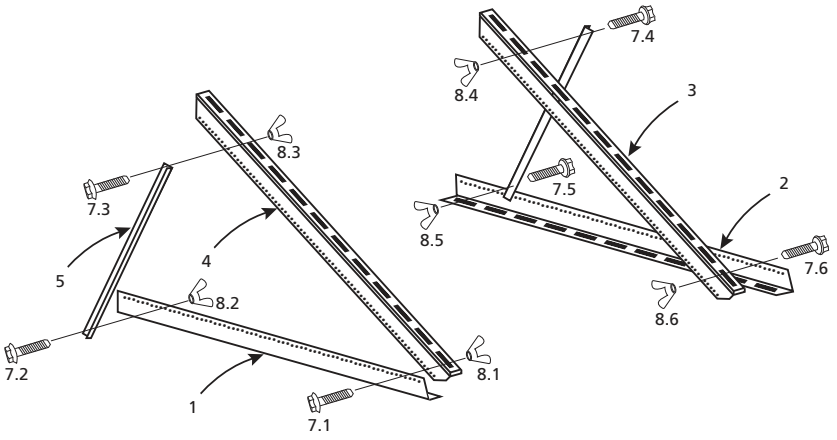
DETAILED PRODUCT INFORMATION

For a complete user manual including specifications, application notes, installation instructions, trouble shooting and more, please visit the web page for this product on www.samlexamerica.com. Product page can be found using the "Search by Model" field.

SECTION 1 | Introduction

Mounting your solar panel inclined to an optimized angle with respect to the horizontal axis can lead to increased annual collection of sunlight. Depending on the location and time of the year, this could lead to up to 50% more solar energy collection compared to horizontally mounted panels. Typically, for optimal annual performance, the solar panel should be tilted at an angle equal to 0.9 times the latitude of the location with respect to the horizontal. For optimal summer performance, the solar panel should be tilted to an angle equal to latitude – 15 degrees and optimal winter performance the solar panel should be tilted to angle equal to latitude + 15 degrees with respect to the horizontal.

The ADJ-28 Tilt Mount kit includes 4 Nos. sturdy 28" Aluminum mounting rails, 2 Nos. 14" Aluminum brackets (Fig. 1) and stainless steel hardware required to securely fasten a solar panel to the roof of your Recreational Vehicle (RV) or any other flat surface. The inclination of the solar panel can be adjusted to a desired angle with respect to the horizontal axis.



1, 2	28" Mounting Rail (for base support)
3, 4	28" Mounting Rail (for supporting solar panel)
5, 6	14" Aluminum Bracket for setting tilt angle
7.1 to 7.6	Carriage bolts
8.1 to 8.6	Wing nuts

Fig.1. ADJ-28 Tilt Mount

SECTION 2 | Components & Required Tools

List of Parts (included in the kit)

Part Description	Quantity	Illustration
28" Aluminum mounting rail for base support	2	Fig. 1
28" Aluminum mounting rail for supporting solar panel	2	Fig. 1
14" Aluminum bracket for setting tilt angle	2	Fig. 1
¼" - 20 x 1" stainless steel carriage bolts	6	Fig. 1
¼" - 20 stainless steel wing nuts	6	Fig. 1
Stainless steel serrated flange bolt ¼" - 20 x ¾"	4	Fig. 2
Stainless steel nylon insert locknut, ¼"	4	Fig. 2
Stainless steel flat washer, ¼" - 20	8	Fig. 2
Well nut-nut thread: ¼" - 20, length: 1", shank diametre: ½"	4	Fig. 8
Stainless steel serrated flange bolt, ¼"- 20 x 1¼"	4	Fig. 8

Required Tools (not included in the kit)

- 7/16" wrench
- 3/8" wrench
- Hand Drill
- ½" drill bit
- Pliers
- Punch or Awl

SECTION 3 | Installation

Pre-installation

With the incidence of sunlight on all photovoltaic modules, a voltage appears at the output terminals of the photovoltaic module turning it into a live power source. To avoid a shock hazard make sure the solar module is covered with an opaque (dark) material such as paper / cloth.

Stainless Steel can be subject to a process called "thread galling" in which bolts can twist off and/or the bolt threads seize to the nut's thread. Apply anti-galling lubricant available at most hardware or auto-parts stores to all the stainless steel fasteners before installation. If anti-galling lubricant is not available, any standard lubricant will minimize the occurrence of "thread galling".

Well Nut For Anchoring 28" Base Support Mounting Rails To The RV Roof Or Flat Surface

A Well-Nut is a bushing of tough neoprene rubber with a flange at the top end and a captive brass nut mounted within the bore at the bottom end (Fig. 2). This is used to anchor the 28" base support mounting rails (1, 2 of Fig.1) on to the roof of the RV or to other flat surface. Typical installation is shown in Figs 3 to 6. Tightening a conventional machine bolt or screw engages the captive nut thereby causing the bushing to expand outwards. This fastens securely to thinner RV roofs by bulging up and against the bottom surface of the roof (Fig. 5). If used in a blind hole in a solid surface material, the rubber will expand outwards to create a secure fastening (Fig. 6). The neoprene and brass resist most environmental conditions. Additionally, the Well-Nut seals the drilled hole effectively against air and liquid leakage.

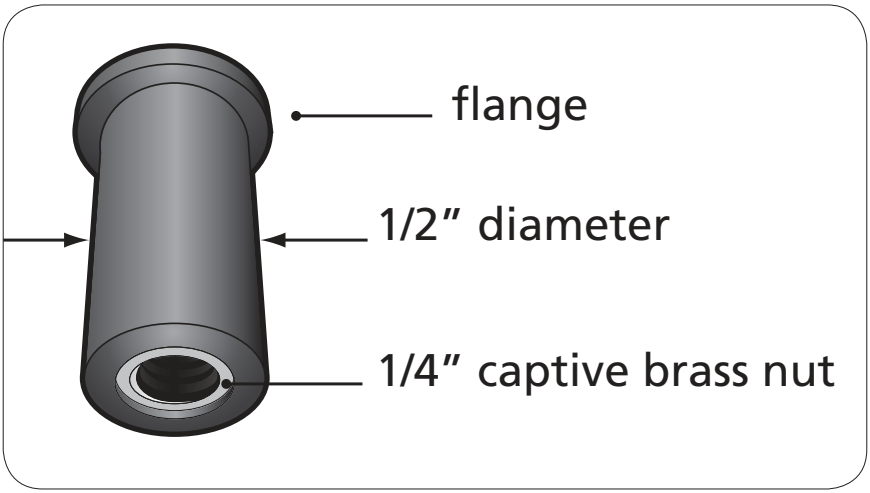


Fig. 2. Construction of a Well Nut

Typical Installation Of A Well-Nut

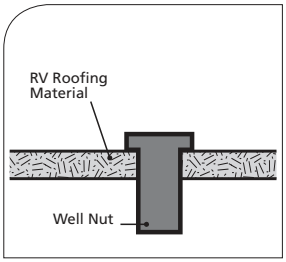


Fig. 3. Well-Nut is inserted into a pre-drilled hole with its flange against the outer surface. There is no need for access to the inner side.

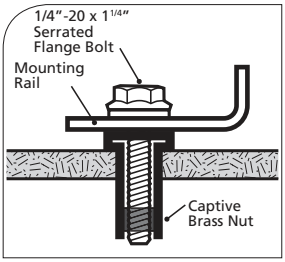


Fig. 4. The 28" mounting rail is placed against the flange of the Well-Nut and is secured by the 1/4"-20 x 1 1/4" serrated flange bolt engaging the captive brass nut.

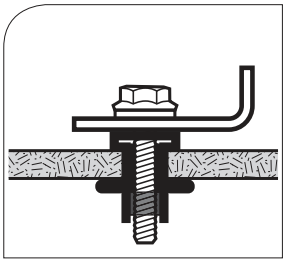


Fig. 5. As the bolt is tightened, the neoprene body of the Well-Nut is compressed and expanded, forcing it tightly into the bolt's threads and against the inner surface of the thin RV roof material.

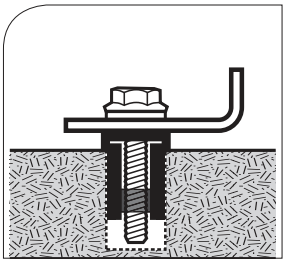


Fig. 6. Installed in a blind hole in a solid material, the body of the Well-Nut expands tightly against the walls of the hole, effecting a secure, dependable fastening.

Installation Procedure

Determine the position of the solar panel on the RV roof or flat surface. While positioning panels, avoid shading of the solar panel by neighboring obstacles such as vents, air-conditioners, TV antennas etc. As far as possible, position the panels to minimize wiring distance between the solar panel and the charge controller. Place the panel at least 8-10 inches away from the RV roof edges and leave sufficient space to walk around the panel and access the mounting hardware.

Make sure the thickness of the roof at the installation location is at least ½" thick and the material is strong enough to provide mechanical support to the solar panel and

mounting hardware against possible wind loading. Place the panel length-wise to reduce the effects of wind loading on the RV.

The slots on the mounting rails are sized to accept the ¼" hardware supplied with the unit.

Fixing The Solar Panel To The Mounting Rails

1. The solar panel frame comes with pre-cut holes to accept external mounting hardware. Identify these holes.

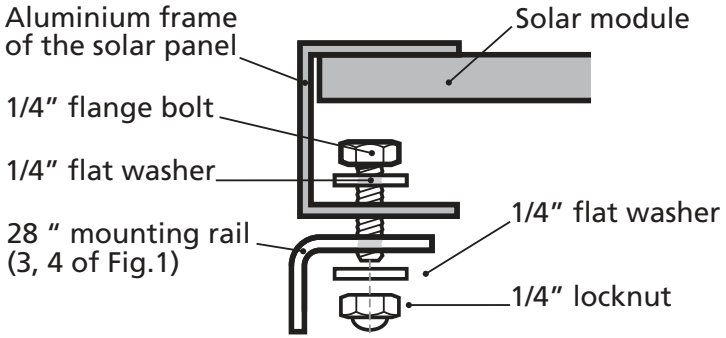


Fig. 7. Attaching Solar Panel to 28" Mounting Rail

2. Fix one pair of 28" mounting rails (3, 4 of Fig.1) to the shorter sides of the solar panel frame using the slotted opening and the ¼"-20 x ¾" Flange Bolt, Nylon Lock-nut and flat washer (Fig. 7). Using a 7/16" wrench, tighten the nuts to secure the mounting brackets to the PV panel. Recommended tightening torque is 15 lbs.

3. Attach the second pair of 28" mounting rails (1, 2 of Fig.1) to the first pair of mounting rails at one end using the wing nut and the ¼"-20 x 1" carriage bolt, so that it pivots at one end (Point A in Fig. 9).

Anchoring 28" base support rails (1, 2 of Fig.1) to the RV roof or flat surface with the help of Well-Nuts

4. Position the second pair of 28" mounting rails (1, 2 of Fig.1) on the RV roof or flat surface at the desired location and mark two sets of mounting hole positions on each 28" rail. It is desirable to have the mounting holes located as close to the extremities of the 28" mounting rails (1, 2 of Fig.1) as possible.
5. To install the Well-Nuts to anchor the two base support mounting rails (1, 2 of Fig.1), drill holes 1¼" deep at the marked positions using a ½" size drill bit. Make sure that drilling does not interfere with pre-existing wiring installations.

6. Apply silicone or any appropriate sealant recommended by your RV dealer to the drilled holes for water-proofing.
7. Insert the ¼" Well nut into the drilled holes so that only the flange section remains above the roof surface (Fig. 3).
8. Fasten the base support mounting rails (1, 2 of Fig.1) to the roof surface by inserting the ¼ x1¼" serrated flange bolt into the Well-Nut. Tighten using a 3/8" wrench to a recommended torque of 15 lbs. When the serrated flange bolt is screwed into the Well-Nut, the material surrounding the well nut bulges slightly securing the structure to the RV roof (Fig. 5, Fig. 8).

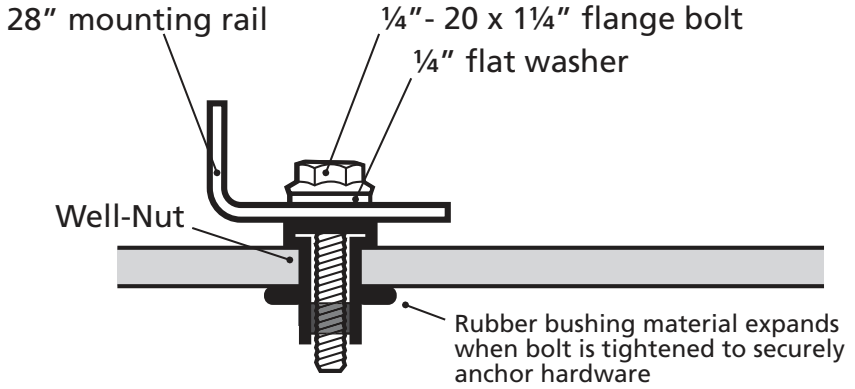


Fig. 8 Attaching 28" base support mounting rails (1, 2 of Fig.1) to the RV roof or other flat surface

Setting The Tilt Angle

9. Fix the 14" Aluminum brackets to the free ends of the mounting rail pairs as shown in Figure 9 using the ¼"-20 x 1" carriage bolts and the ¼" wing nuts to obtain the desired tilt angle (Point B and Point C in Fig. 9).

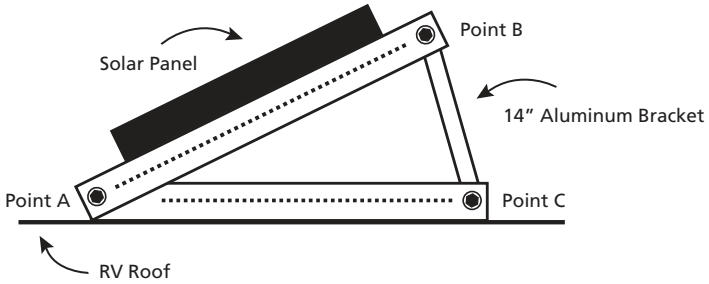


Fig. 9 Tilt-up position (Side view)

10. Fig. 9 corresponds to one possible tilt-angle. Other tilt-angles maybe possible by using different hole combinations.

Travelling mode

11. The mounting hardware should be connected in the tilted position only when the RV is stationary. When the RV is in motion, the mounting hardware should be in the flat mount position.
12. In order to do this remove the ¼”-20 x 1" carriage bolt carriage bolts by loosening the ¼” wing nuts at points B and C (Fig. 9).
13. Lower the 28” mounting rails and the 14” brackets so that the square holes of each set of the mounting rails and brackets align with each other and the solar panel is flat (Fig. 10).
14. Using the ¼”- 20 x 1" carriage bolts and the ¼” wing nuts, secure the structure in this position (Fig. 10).

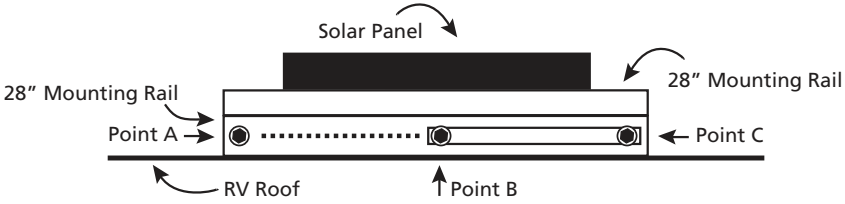


Fig. 10 Travelling Mode

SECTION 4 | Warranty

2 YEAR LIMITED WARRANTY

ADJ-28 Adjustable Solar Tilt Mount, manufactured by Samlex America, Inc. (the "Warrantor") is warranted to be free from defects in workmanship and materials under normal use and service. The warranty period is 2 years for the United States and Canada, and is in effect from the date of purchase by the user (the "Purchaser").

Warranty outside of the United States and Canada is limited to 6 months. For a warranty claim, the Purchaser should contact the place of purchase to obtain a Return Authorization Number.

The defective part or unit should be returned at the Purchaser's expense to the authorized location. A written statement describing the nature of the defect, the date of purchase, the place of purchase, and the Purchaser's name, address and telephone number should also be included.

If upon the Warrantor's examination, the defect proves to be the result of defective material or workmanship, the equipment will be repaired or replaced at the Warrantor's option without charge, and returned to the Purchaser at the Warrantor's expense. (Contiguous US and Canada only)

No refund of the purchase price will be granted to the Purchaser, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. Warranty service shall be performed only by the Warrantor. Any attempt to remedy the defect by anyone other than the Warrantor shall render this warranty void. There shall be no warranty for defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion.

No other express warranty is hereby given and there are no warranties which extend beyond those described herein. This warranty is expressly in lieu of any other expressed or implied warranties, including any implied warranty of merchantability, fitness for the ordinary purposes for which such goods are used, or fitness for a particular purpose, or any other obligations on the part of the Warrantor or its employees and representatives.

There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives for injury to any persons, or damage to person or persons, or damage to property, or loss of income or profit, or any other consequential or resulting damage which may be claimed to have been incurred through the use or sale of the equipment, including any possible failure of malfunction of the equipment, or part thereof. The Warrantor assumes no liability for incidental or consequential damages of any kind.

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NOTES

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