



Vroom Rack™ for RVs

2-Rail Adjustable Rack

Revision 1.4

Thank you for purchasing The Vroom Rack™ for RVs! It is a durable, well-engineered roof rack system that will provide years of safe, reliable service when properly installed and maintained. Proper installation of the Vroom RV Rack is critical for the safety of the user and others on the highway. The level of difficulty of this assembly is considered advanced, and we recommend that it be installed by an industry experienced technician such as an RV dealer or trailer manufacturer.

Prior to assembly, we recommend reading through the manual to become familiar with all the parts and steps, then watching the video on our [website](#). The **IMPORTANT NOTES** throughout the instructions will clarify the more complex aspects of the installation. It's very important to not skip any steps or take shortcuts. Contact us at info@vroom-power.com with questions.



Installation Overview

1. Good safety practices
2. Additional tools & Materials
3. What's in the box(es)
4. Planning and Layout
5. Determine Installation Method
6. Install the Vroom Rack™ for RVs
7. Solar Panel Attachment
8. Final inspection

Safety

Your safety and the safety of others is most important to us. Installation of the Vroom Rack™ for RVs is not intended for novices or the inexperienced as it requires the use of ladders, tools, and other potentially dangerous items. If you are not trained in the use of these items, you should contact a trailer dealer who can perform the installation. Please work safely and never take a shortcut or risk that could cause you (or others) injury.

Additional Tools & Materials

Graph Paper and Pencil
20' Measuring Tape
Marker Pen
Drill Motor (or light duty impact driver)
5/16" Nut Driver Bit
1/2" Combination Wrench
5/16" Torque Wrench
5/16" Ratchet Wrench
1/2" (or 13mm) Shallow and Deep
Sockets (3/8" drive)
Two Ladders - tall enough to safely
access the RV roof
Leather Gloves
Safety Glasses
Box Blade Knife or Scissors

What's in the Box(es)

Before installation, take an inventory of the kit contents according to the parts list. Your Vroom Solar Rack™ for RVs includes the hardware required to install the rack on a typical RV.

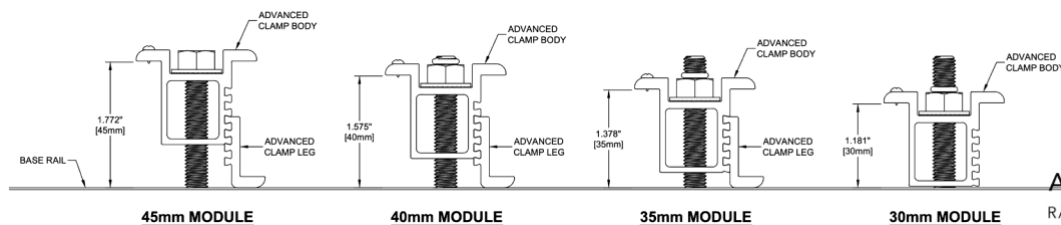
Rail // Quantity 2

A long aluminum beam that supports the solar panels. It spans across the width of the trailer, from passenger side to driver's side. The rail is specifically designed and tested to withstand the extreme forces the wind transmits through the attached solar panels when traveling at highway speeds. The rail is

designed to allow for unlimited adjustment of the solar panel down its length.

End Clamp // Quantity 4

The End Clamp is used to fasten the outer edges of a solar panel to the rail at the Triangle Mounting Bracket A on both ends of each rail. Four are required and easily assembled by connecting the grooved End Clamp height-adjustment leg (labeled here as Advanced Clamp Leg) to a Mid Clamp (labeled here as Advance Clamp Body). This diagram shows the various height settings:




ADVANCED
RACKING & SOLAR
Patent #10,605,282 B1



Top to bottom:
Rail, End Clamp,
Mid Clamp, Triangle
Bracket A

Mid Clamp // Quantity 6

The Mid Clamp is used between two solar panels to clamp them to the rail. Each rail will have a clamp between each solar panel and one on the outer edges of the solar panels. With a four panel installation, six mid-clamps are required.

Triangle Bracket A // Quantity 4

A triangle shaped aluminum bracket that mounts to the trailer (vertically) at the roofline. It acts as

the vertical support for the Rail. Two of these brackets are used for each rail. This bracket can be installed with the mounting flange facing inward or outward (with one exception explained later in installation instructions).

Channel Bracket B // Quantity 4

An aluminum channel that adapts the rail to Triangle Bracket A. With three perpendicular mounting tabs on one end, and square holes located on each long side, it fastens to the rail on one end and the Triangle Bracket A on the other end. Two of these brackets are used for each rail, one at each end of the rail.

Sealing Tape // Quantity 4

A small length of tape is installed between Triangle Bracket A and the RV roof. It is used to seal the holes created by the fasteners.

T-Bolts // Short Quantity 8; Long Quantity 10

Short: A specialized, 5/16 thread, male fastener that has a rectangular head and a serrated flange nut. It is used to fasten the Rail to Channel Bracket B. Two of these bolts are used to fasten Channel Bracket B to one end of the rail.

Long: Same as SHORT T-Bolt except longer. One of these is used (along with a spring) on each End-Clamp, and on each Mid-Clamp. NOTE CORRECT INSTALLATION OF LONG T-BOLTS ON CLAMPS: the integrated T-Bolt should be positioned in the BOTTOM rail slot, with the spring ON TOP of the rail (photo above).

5/16" Carriage bolts, Star Washers, and NyLock Nuts // Quantity 12ea

Used to fasten the rail to the Triangle Bracket A.

1/4" x 1 1/2" Hex-head Self-tapping Screws //Quantity 16

Used to fasten the Triangle Bracket A to the RV's aluminum (or steel) structural beams (subframe).



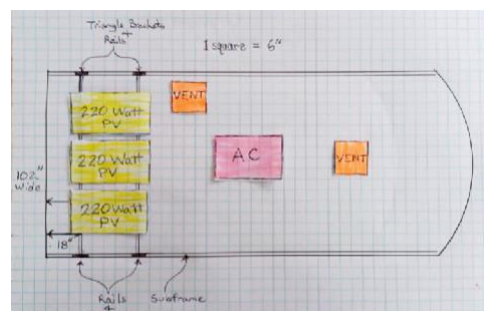
Top to bottom:
Channel Bracket
B, Sealing Tape,
T-Bolts, Carriage
Bolts, Self-tapping
Screws

You'll need
Tape Measure
Graph Paper
Pencil
Ladder

Planning and Layout

Overview: Measure roof, sketch roof and attachments to scale on graph paper, add solar panels to sketch, add rails to sketch.

1. With each graph square equaling 6" or less, draw the outline of your RV roof.
2. Using exact measurements, add all vents and



other attachments that you want to avoid.

3. Determine the best use of space and add the solar panels to your drawing. The standard orientation for the solar panels is portrait.
4. Add rails to your drawing (see example above). Each of the two rails should be located 6" to 12" inward from the edge of the solar panel.



Top to bottom:
Build on Floor installation
method, Build on Roof
installation method,
Build on Floor assembly
hoisted up by forklift

5. Locate the RV's internal structural beam (subframe) along the top edge of the RV. This beam will be used to anchor the rack system to the RV, therefore, you must know its exact location. If you are in doubt, verify the beam's *exact location* from the RV manufacturer. The screws provided are self-drilling/tapping and intended for use with RVs that have > 16-gauge steel or aluminum structural beams (subframe). *It's the installer's responsibility to select the appropriate fasteners for attaching the rack to the subframe of the RV.* If there is ever a concern or question please contact your Vroom Power Dealer or info@vroom-power.com for assistance before you mount the rack to the RV.

Determine Installation Method

As mentioned in the overview, there are two methods to install this racking system:

- 1) BUILD ON FLOOR: assemble on a level floor and lift to the roof for final installation, or,
- 2) BUILD ON ROOF: assemble in place on the roof. There are advantages and disadvantages to each method. Building on the floor requires less trips up and down the ladder and working aloft, however, the final assembly is heavy and awkward to lift to the roof (a forklift is recommended). As previously mentioned, building in place requires taking all tools and parts to the roof and working entirely on the ladder. Building in place has the advantage of form-fitting the rack to the roof without need for adjustment.

IMPORTANT NOTE

Triangle Bracket A can be installed with the foot plate facing outward or inward. If you need 92" or less of total rail space for solar panels, mount Triangle Brackets A outward. With an outward mount (easiest installation), the complete rack w/solar panels can be fully assembled on the ground, then hoisted up to the RV roof for the final lockdown (see forklift photo below). An inward mount can be used to get an additional 2" of rail length for solar panel mounting, but requires mounting the Mounting Triangles to the RV roof first, then attaching the rails. This approach allows adequate access for tools in attaching the Mounting Triangles to the RV roof.

The next section gives instructions for BUILD ON ROOF. If you choose to BUILD ON FLOOR, simply do so and lift it to the roof when the panels are mounted to the rails.

Vroom Rack™ for RVs Installation

Overview: 1. mark centerlines of rail locations on RV, 2. mount Triangle Brackets to rail Channels, 3. mount Bracket Assembly to Roof, 4. attach Rails

1. Roof Layout

Tools: tape measure, marker, ladder

Refer to your scale sketch to verify the exact location of each rail. Double check your measurements and mark the rail centerlines on the RV roofline edge. This mark will be used to center Triangle Bracket A and it will also be the centerline of each rail.

2. Assemble Triangle Bracket A to Channel Bracket B

Tools:

1/2" socket

12" ratchet

torque wrench

Parts:

2 - Triangle Bracket A

2 - Channel Bracket B

6 - 5/16" carriage bolts

6 - toothed washers

6 - 5/16" NyLoc nuts

Top to bottom:
Build on Floor installation
method, Build on Roof
installation method,
Build on Floor assembly
hoisted up by forklift

The ideal space between the top of the Rail and the RV roof is 2". There are three elevation choices on the Triangle Bracket A to achieve this. To determine the proper elevation hole and, using the assembly drawing, fasten Triangle Bracket A to Channel Bracket B to a using the middle set of holes. Hold the assembly in the mounting position on the RV and measure the space between the roof and the top of Channel Bracket B. Adjust accordingly to achieve a 2" minimum space.

IMPORTANT NOTE

*You may need to trim the rail if
you use the lowest adjustment*

Attach the remaining Channel Bracket Bs to the remaining Triangle Mounting Brackets A. Torque all bolts to 25 ft/lb and set the assemblies aside for step C.

IMPORTANT NOTE

*The following procedure
only applies to RVs with
subframes that are >16
gauge steel or aluminum.*

3. Mount the Triangle Bracket Assembly to the RV

Tools:

drill motor or light duty impact driver
3/8" nut driver for drill

Parts:

2 - Bracket Assemblies (1 Assembly = 1 Triangle Bracket A bolted to 1 Channel Bracket B)
8 - ¼"x1 ½" Self-Tapping Screws (or appropriate fasteners for your application)
2 - Pieces of Sealing Tape

IMPORTANT NOTE

The Bracket Assembly must be firmly attached to the trailer with absolutely no movement. VroomSolar has included self drilling/tapping screws that are designed for use in > 16 gauge steel or aluminum subframes. While these screws are adequate for many RVs, they may not be appropriate for your application. Ultimately, it is the installer's responsibility to choose the appropriate screws and ensure they connect securely to the RV's subframe. A properly attached screw will pull in tight and not continue to spin. If the screw continues to spin, it is either stripped or did not penetrate the subframe.

Overview: Install Sealing tape on each Triangle Mounting Bracket A, before attaching the Triangle Mounting Bracket assembly to RV.

a. Attach Sealing Tape - Attach sticky side of Sealing Tape to the bottom of the mounting foot on Triangle Bracket A, centering the Sealing Tape over the mounting holes. Peel the paper from the other side of the Sealing Tape just before setting Triangle Bracket A on the RV roof.

b. Install Bracket Assembly to RV - Center Triangle Bracket A over the rail centerline mark on the roof and stick it to the roof. Using the appropriate fasteners, attach the Triangle Bracket to the RV roof edge. Repeat this process with the remaining Bracket Assemblies.



Top to bottom:
Build on Floor installation method, Build on Roof installation method, Build on Floor assembly hoisted up by forklift

4. Mounting the Rail

Tools:

1/2" (or 13mm) socket 3/8" drive
Ft./Lb. torque wrench 3/8" drive

Parts:

4 - SHORT 5/16" T-Bolt
4 - 5/16" Serrated Flange Nuts

Overview: Mount Rail to the two Bracket Assemblies using special T-Bolt fasteners.

a. Lay a piece of Rail into the Channel Bracket on both sides of the trailer.

b. Install a 5/16" Flange Nut a few threads onto a Short T-Bolt and insert the T-Bolt through the rectangle holes on both sides of the Channel Bracket and into the rail. Rotate the shaft of the

SHORT T-Bolt until it locks into the rail. Tighten the Flange nut finger tight.

- c. Tighten the Flange Nut to 25 ft/lb of torque.
- d. Repeat steps b. - c. on the opposite end of the Rail.
- e. Repeat steps a. - d. for the remaining two Rails.

5. Final Assembly Check

Measure the space between the roof and the top of the Rail. Adjust to 2" if necessary and retorqued fasteners to 25 ft/lbs. Double check all bolts have been torqued properly and proper clearances are in place.

Solar Panel Installation

Overview: mount center solar panel, mount outer solar panels

Tools:

- 3/8" Ratchet
- 3/8 ft/lb Torque Wrench
- 1/2" (or 13mm) Socket
- 1/2" (or 13mm) Combination Wrench

Parts:

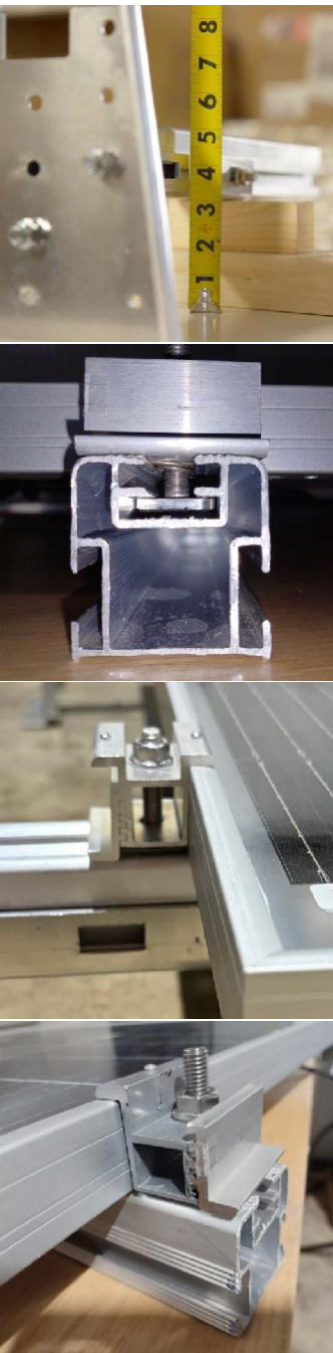
- 4 - End Clamps
- 4 - Mid-Clamps (6 - Mid-Clamps for four Panel Installations)
- Up to 4 - Solar Panels

MID-CLAMP: One Mid Clamp is used to clamp two adjacent solar panels to the rail. When properly tightened, the Mid-Clamp should apply equal pressure to both solar panel edges simultaneously.

END CLAMP: When properly positioned, one End-Clamp edge will rest on the outer edge of the solar panel and the other will rest slightly on the rail and act as a brace for the clamp when tightened. When properly tightened, the End Clamp will apply pressure to the rail and the solar panel when the fastener is tightened.

IMPORTANT NOTE

SOLAR PANEL CLAMPS To mount either clamp, insert the integrated T-Bolt through the top slot in the Rail and push it down to the BOTTOM rail slot. With the spring base on top of the rail, rotate the T-Bolt shaft clockwise until it stops and slide down the Rail into position. When in position, the clamps should be tightened to 25ft/lb of torque.



Top to bottom:
2" above the roof, Mid-clamp,
End clamp

After torquing the T-Bolts to 25 ft/lbs torque, ensure that each clamp is firmly pressing the solar panel to the rail. If it is loose, it is not positioned correctly and you must make an adjustment.

1. Install Center Solar Panel in Rail

a. Position center Solar Panel(s) on the Rails, centering in both directions. The rail should be between 6" and 12" from the end of the solar panel.

b. Install Mid-Clamps, on each rail, between center solar panels and on the outer edge of center solar panels.

c. Slide the Clamps up to the edges of the center Solar Panel and hand tighten the fasteners. Repeat on the opposite side.

d. Make sure that the minimum distance between the bottom of the Solar Panel and the RV roof is 2". Adjust by moving the Channel Brackets up or down on the Triangle Brackets. If you choose to use the lowest level, you will need to slightly trim the rail. (See section 8.b.i)

2. Install the Outer Solar Panels:

a. Lay a Solar Panel on the rails adjacent and aligned with the center Solar Panel.

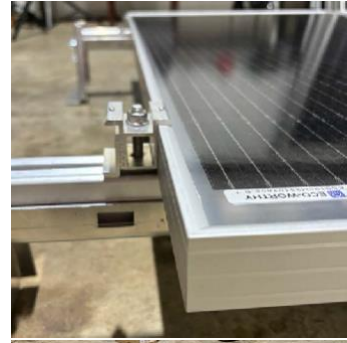
b. Slide the solar panel into the adjacent Clamps used to hold the center Solar Panel. Hand tighten for the time being.

c. Slide an End Clamp on each Rail and slide the two clamps onto the edge of the Solar Panel. Hand tighten for the time being.

d. Repeat steps i-iii to install the Solar Panel on the opposite end of the rail.

e. Adjust all panels and Clamps, making sure that there is a minimum of 2" to the roof, 6"-12" overhang from the rails, and all Clamps are positioned properly on the Solar Panel frames.

f. Tighten all clamp bolts to 25 ft/lbs torque.



Top to bottom:
Solar panel clamped down,
Mid-clamp between panels.
End clamp

Safety Check

Your safety and the safety of others on the highway are most important to VroomSolar. Please review your installation one last time before use, checking each clamp and fastener for proper fitment and tightness.

Maintenance of the Vroom Rack™ for RVs

It is very important to keep your Vroom Rack maintained to prevent failures.

1st Year of Use

4 weeks after installation

Verify torque on all bolts (25 ft/lbs)

Check roof attachment for sturdiness

Quarterly

Verify torque on all bolts (25 ft/lbs)

Check roof attachment for sturdiness

Every 3,000 Miles Thereafter

Verify torque on all bolts (25 ft/lbs)

Check roof attachment for sturdiness

IMPORTANT NOTE

We recommend sealing around the feet with silicone caulk after install for extra leak protection. And the silicone should be checked and reapplied as needed every year.

Limited Warranty

The Vroom RV Rack is a sturdy, well-engineered roof rack system that will provide years of safe, reliable service. When properly installed and maintained, Vroom Solar warrants product and parts against defects in material and workmanship for a period of two years from date of purchase. Proof of Purchase is required for all warranty claims. Please register your purchase on our website [here](#). Should you have a part failure, contact your dealer for replacement or contact us at info@vroom-power.com for assistance. See the full warranty [here](#).

Liability Waiver

Proper installation of the Vroom Rack is critical to safety for the user and others on the highway. Therefore, the Vroom Rack system must be installed by a trained and authorized Vroom Power dealer technician. All product liability is waived if the Vroom Rack™ is installed by untrained/ unauthorized persons.

Vroom Power is not responsible for leaks. Sealing and leak proofing is the responsibility of the installer.