

ROOF RACK FABRICATION & INSTALL – Ford Transit 148” Mid Roof

Supplies:

4 Pairs x Roof support brackets & supplied hardware (From Curiouscampervans.com)

2 x Aluminum side plates - 11 feet each x T6511 0.188” X 4.000” Flat bar (Metal Supermarkets)

From Amazon:

2020 beams (1/4 round - Misoomm 2020 Aluminum Extrusion Profile with Arc Round Angle 67.72 inch / 1720mm, 2Pcs T Slot T Type V-Slot V Type 20 x 20 20 Series Rounded Aluminum Extrusions Profiles Linear Rail Framing Panel Kit 2 Pack)

2020 beams (iMetrx Aluminum Extrusion 2020 2000mm v slot Aluminium profile (10pcs/pack) European Standard for 3D Printer, CNC and Laser Engraving Machine

2020 Angle brackets (20Sets Black 2020 Series Aluminum Profile Connector Set, 20pcs Corner Bracket, 40pcs T Nuts and Hex Screw Bolt for 2020 Series Aluminum Rail Accessories)

2020 T Nuts (50Pcs EU20-M5 T-Slot Hammer Head, Coated Carbon Steel T Nut, Sliding T-Slot Nut for Aluminum Profile Woodworking)

M5 x 10 Screws

M5 x 14 Screws

M5 x 20 Screws

M5 Washers

2 x Solar panels (Up to 200W each)

Solar brackets & supplied hardware

Solar extension cable (Panels are wired in series) (10AWG Solar Extension Cable, 10 Gauge Solar Wire, 30 Feet Male to Female Solar Connectors Panel Wire with Adapter Tool Kit(30 Feet Black & Red)

Solar entry gland

Plastic ties

Sikaflex 291 w/ gun

Tools:

Step ladder

Mover's blanket

Trim removal set

Clamps at least 4

Tape measure

Sharpie

Mitre saw with aluminium blade

Jig saw w/ aluminum blades

Socket wrenches & open wrenches

Hex / Allen keys

Drill press

Metal drill bits

Stepped bits

Metal file

Electric sander + 180 sandpaper

Plastic protector sheet + old newspapers

Black truck bed spray paint

Black rust paint

Paint thinner for cleaning

Masking tape

Caulking gun

Soldering iron + solder

Test meter

Various pliers

Square

Instructions:

Fabrication

Place a mover's blanket on the roof.

Loosely install 8 support brackets on the roof.

Clamp in appropriate position the side plates on the inside of the brackets, accounting for 9'2" awning.

One by one permanently secure each support bracket using Threadloc on the bolts thread and Sikaflex sealant under each mount.

Carefully measure side plates length, and mark.

Then mark all 8 mounting holes on both side plates.

Cut & shape side plates to size, then round all corners. Finish nicely with file and/or sander.

Using a drill press, drill all 16 mounting holes for M5 screws supplied with support brackets. Allow for a bit of play.

Using supplied screws, 2020 T nuts, and clamps, loosely assemble brackets and side rails.

Slide 2020 side profile pieces (4) on T nuts, and lightly tighten everything to verify fit.

Measure spacing between driver and passenger sides of the 2020 side profile pieces in order to cut cross pieces to size. Verify measurement at all support locations.

Using a mitre saw with an aluminium blade cut 2020 profile cross pieces to size carefully.

Go back on the roof. Insert 2x 2020 T nuts in each cross piece, then the angle brackets and T nuts for side rails. Slide cross pieces in place and loosely tighten 2020 angle brackets to verify fit. Allow cross pieces to slide freely at this stage.

Lift both solar panels to the roof.

Determine placement of solar panels, number of cross pieces necessary and location using solar brackets, etc. Use 4 brackets on panel's long side plus 1 in the middle of short side if necessary (or reverse). Important: Make notes for later re-assembly. Solar panels are placed across the roof, one behind the other, the first one just rear of the ceiling fan.

Cut additional cross pieces as/if necessary.

In the shop, mount brackets to solar panels as previously determined.

Back on the roof with the solar panels, do a test fitment.

Once everything is good, disassemble and take down for painting.

Painting

Paint side plates with black truck bed spray paint.

Paint solar panels brackets with black rust paint.

Paint aluminum deck angles with black rust paint

When dry & cured, mount solar brackets to both panels using supplied bolts secured with Loctite.

Assembly

Bring both side plates and screws to the roof support brackets.

Repeat here:

On one side of the van, remove screws holding brackets to the roof.

Apply Sikaflex 291 to roof under brackets one at a time, then apply Loctite to supplied bolts and loosely for now, affix bracket to roof.

Repeat for all 4 brackets on one side.

Then loosely fasten side plate to support brackets using supplied screws and 2020 T nuts.

If everything is good, go back and tighten all 4 bracket bolts in place to the roof.

Loosen all 8 support screws.

Do another test fit of 2 pieces of 2020 side profiles. Then remove them.

Remove 2020 T nuts from roof brackets mounting screws. Apply Loctite and re-install loosely.

Slide in 2020 side profiles. Then tighten support screws when everything is aligned properly.

Repeat for other side.

One cross piece at a time, loosely install an angle bracket at each end with both T nuts.

Slide it to its appropriate position. Do not tighten yet.

Position solar panels as previously determined. Slide 2020 crosspieces as necessary.

Remove all cross pieces' mounting screws one at a time, apply Loctite then re-assemble.

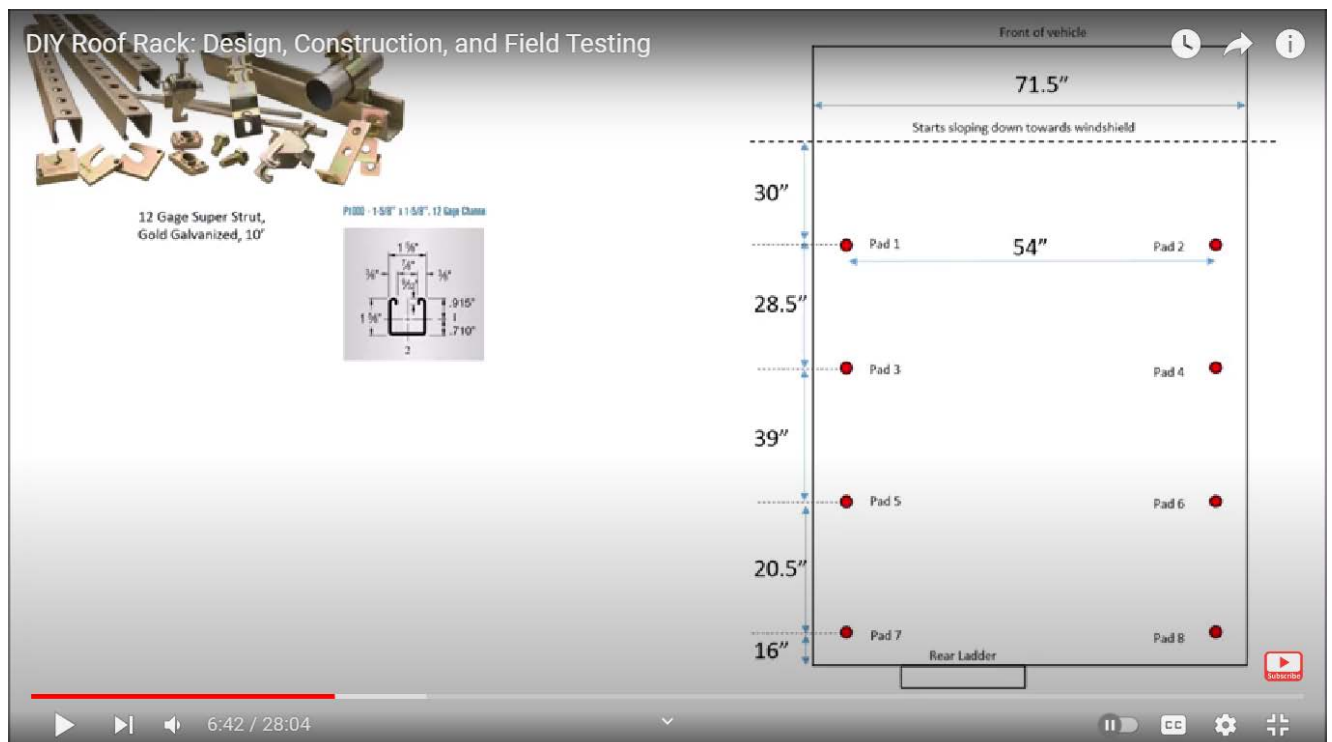
Go around and tighten all 16 support brackets screws, as well as all screws that might have been left loose.

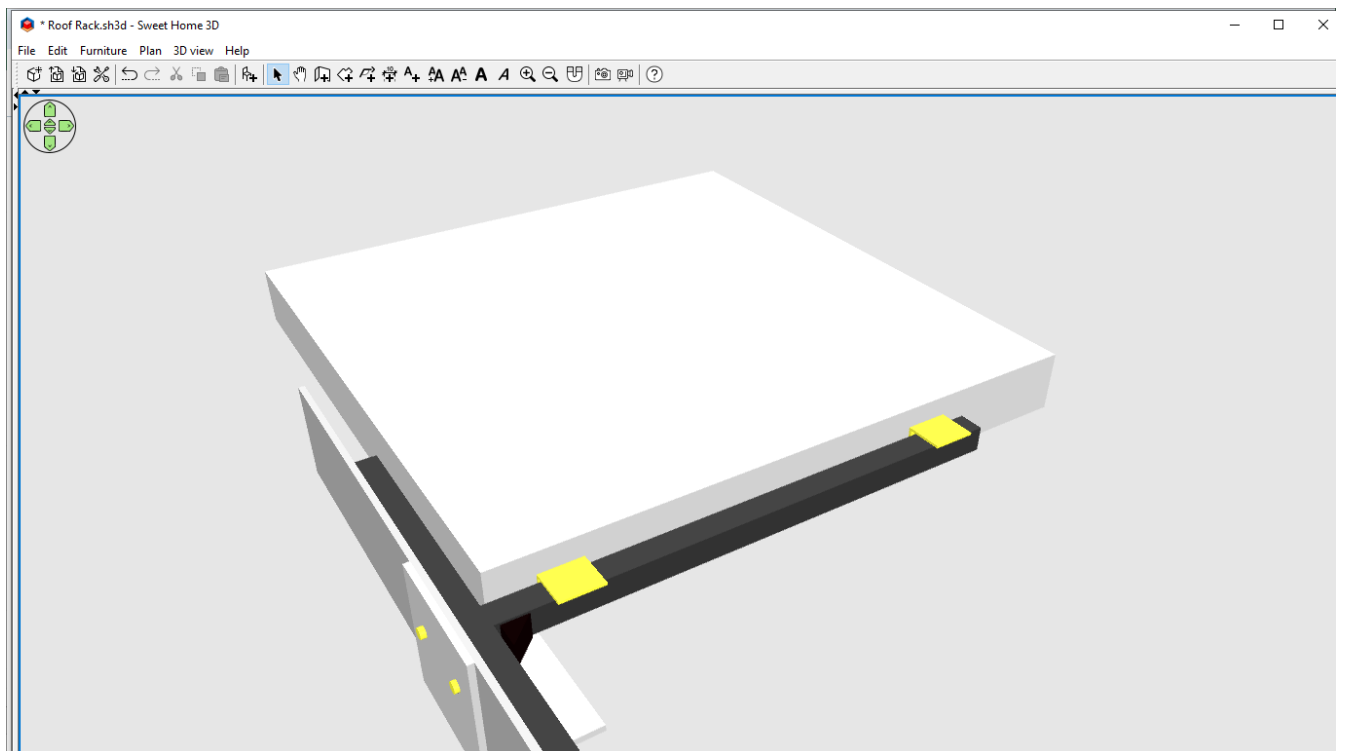
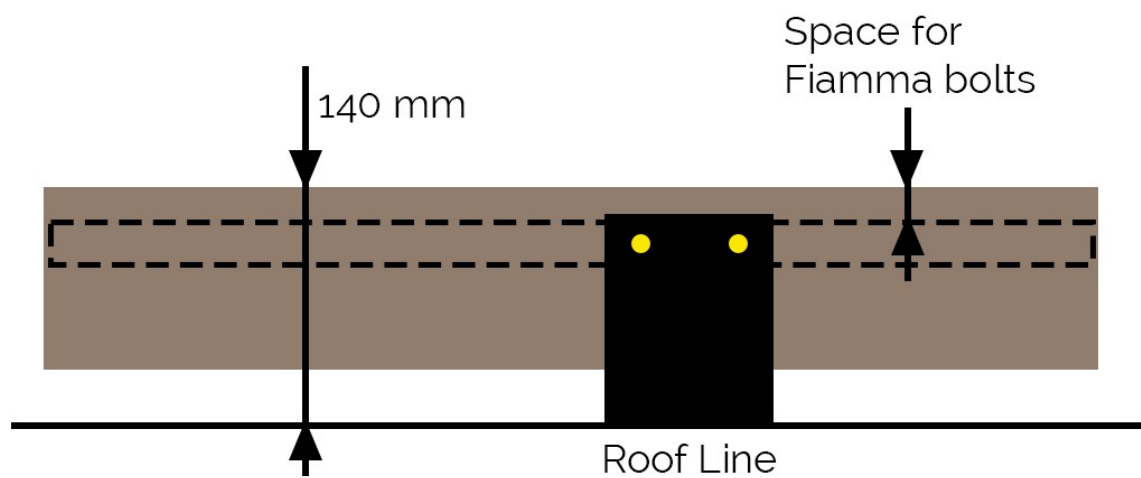
Verify that all 2020 bars are secure.

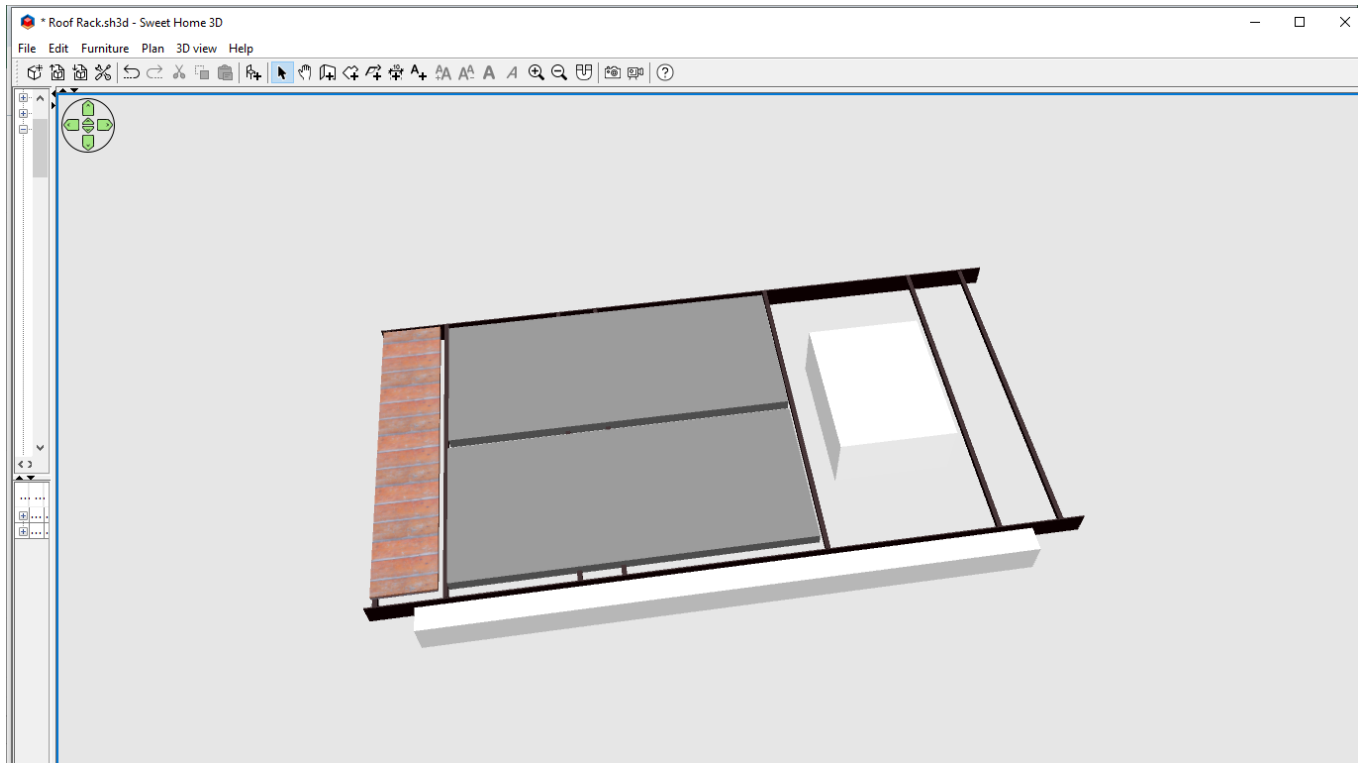
Verify that solar panels are secure.

Verify that entire roof rack is secure.

Install Solar entry gland with Sikaflex 291. When cured run cables through.







NOTE: Solar panels can be mounted transversally (Preferred) or longitudinally.}

End/