



## Installation Instructions:

### Ram ProMaster Roof Rack Bracket



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The Unaka Gear Co Team is here to help. If you have issues or questions, please do not hesitate to contact us at [info@unakagearco.com](mailto:info@unakagearco.com).

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## 1. Disclaimers

**Installation:** The installation should be performed by qualified persons only.

**Roof Rack Load Rating:** Unaka Gear Co. encourages all customers to follow the vehicle manufactures guidelines with respect to the load capacity of their van roof. If the load capacity of the van roof is exceeded, this will void any warranty with respect to the roof rack.

**Roof Top Decks:** Unaka Gear Co. does not recommend building any sort of roof deck platform on your van roof. Vehicle roofs are high above the ground and any sort of fall can result in serious injury or death.

## 2. Overview

This set of instructions is a basic guideline on how to install our Ram ProMaster Roof Rack Brackets and 8020 adapter brackets. Since our brackets are designed to be flexible for DIY projects this set of instructions may not cover everything for your specific installation. If you have questions or issues with our product do not hesitate to contact us at [info@unakagearco.com](mailto:info@unakagearco.com).

Our roof rack brackets are designed specifically for the DIY type so that you can select and work with the materials you are most comfortable with. Our brackets work seamlessly with Uni-Strut and should not require any modifications to the slots in the strut. Another common material which is shown in this manual is 8020. This offers more flexibility than Uni-strut but at a higher cost. This also requires purchasing our Unaka 8020 Adapter Brackets. In addition to these two materials, we have had customers use aluminum angle, aluminum tubing, welded frames, and many more options so the sky is the limit with how you use our brackets.

## 3. DIY Rack Options

### 3.1. How Many Sets of Unaka Brackets Do I Need?

If you have purchased our Ram ProMaster Roof Rack Brackets you plan to build a rack to mount solar panels, build a deck, or possibly just to install a single rail to mount an awning. If you plan to build a rack you will need at least 2 sets of our brackets which will give you 4 attachment points. If you plan to install a single rail you may be able to get by with 1 set of 2. Table 1 lists the # of mounting studs each size ProMaster has, the minimum # of sets of Unaka Brackets to build a base rack, and the # of sets of Unaka Brackets to build a full rack.

Table 1: Ram ProMaster Attachment Points & Unaka Bracket Sets Required

Van Size	# of Roof Rack Mounting Studs	Minimum Sets of Brackets to build a small rack	Sets of Unaka Brackets to Build a Full Rack
1500 118 WB	6	2	3
1500 136 WB	6	2	3
2500 159 WB	8	2	4
3500 159 WB Extended	10	2	5

\*Note each set of Unaka Brackets comes with 2 mounting brackets. To build a full rack for a 2500 159 WB van you would need to purchase 4 sets which would give you 8 mounting points.

It is not uncommon for customers to split the difference between the minimum # of sets and the full # of sets depending on the size of rack they are trying to build. For example, if all you are trying to do is mount 2 or 3 x 100-Watt Solar panels you may be able to get by with 2 sets of brackets depending on where your fans may fall on your roof and how many points you can easily attach to.

### 3.2. Roof Rack Load Rating

Even though the Unaka Gear Co rack mounts can support more weight per point, we DO NOT recommend that anyone to exceed the vehicle manufacturer's specifications. Ram ProMaster publishes the maximum loads per roof attachment points as well as the max allowable load for any rack. Go to their website here (<https://www.ramtrucks.com/ram-commercial/body-builders-guide.html>), select the model year, scroll over and select Ram ProMaster, then under the document drop downs select Design Recommendations and open the document. This document contains many design recommendations including the roof rack mount point dimensions and loading for that specific year.

Check the link above to confirm the load ratings for your specific year but most years have the following load rating. Each ProMaster mounting point can hold up to 25 kg (55 lbs) with a max load of 150Kg (330 lbs) per van roof no matter what size or the number of attachment points.

### 3.1. Roof Rack Terminology

Figure 1 shows a high level overview of the components that make up most roof racks. This image shows a rack made using 8020 side rails and cross bars but Uni-strut, aluminum angle, aluminum tubing, or other materials can be used just as easy with our Unaka roof rack brackets. Table 2 outlines the main parts that make up a roof rack highlighted in Figure 1.

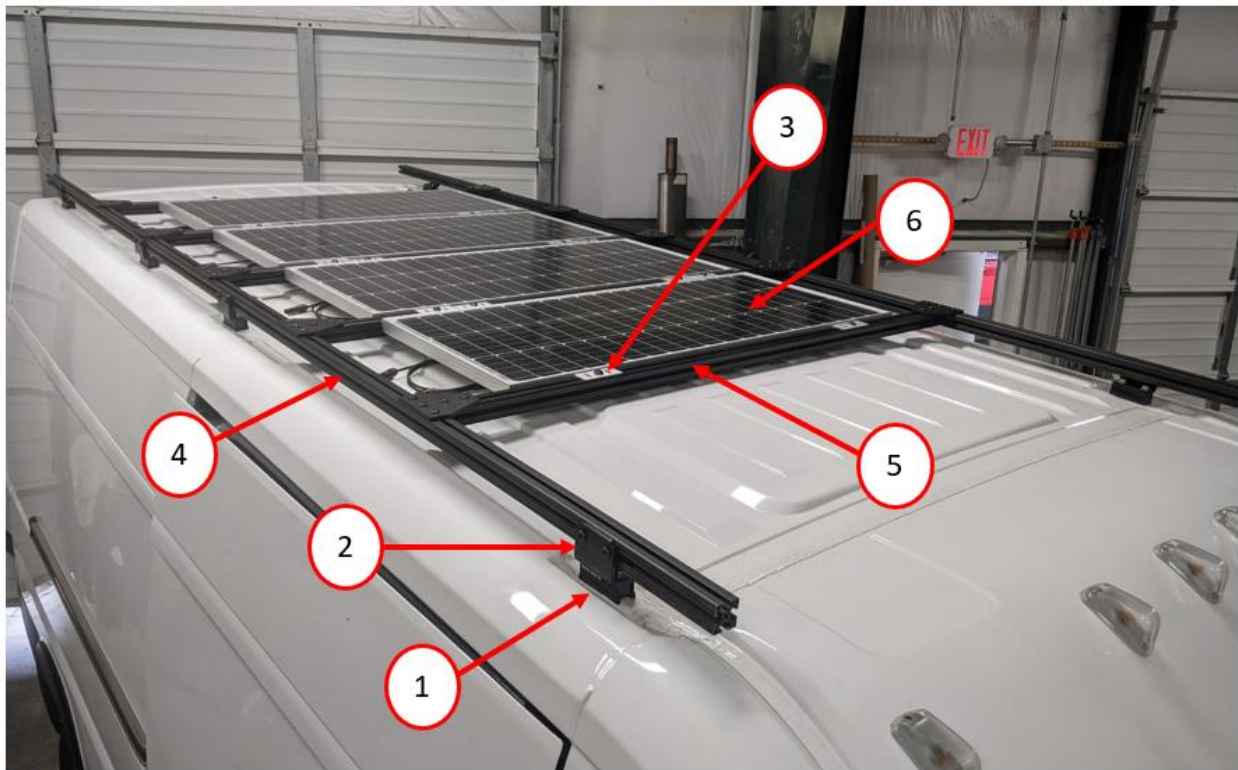


Figure 1: Roof rack overview and terminology

Table 2: Roof rack part breakdown

Item #	Item	Notes
1	Unaka Roof Rack Bracket	Sold in sets of 2, to build a small rack a minimum of 2 sets of brackets is required to give you 4 mounting points
2	Unaka 8020 Adapter	Sold separately as sets of 2, these make building an 8020 rack easy. **These are not required if using Uni-strut as your rail material**
3	Unaka Flush Mount Solar Panel Brackets	Our flush mounting solar panel brackets allow you to easily install your solar panels flush or near flush with the top of your 8020 side rails giving you a truly sleek look.
4	Side Rail	Side rails run along the length of your van. Side rails can be made using Uni-Strut, 8020, or other materials. This example shows 15 Series 8020 side rails.
5	Cross Bar	Cross bars run perpendicular to your side rails. These can be made from Uni-Strut, 8020, or other materials. They can sit flush with your side rails as shown in this example or they can sit on top of your side rails.
6	Solar Panel *Unaka Sells Solar Panels, contact us today!	The most common reason to install a rack is to mount solar panels without drilling extra holes in your van roof. Solar panel mounting depends on the size of the panels and your roof rack design.

## 4. Safety

Working with tools involves inherent risks that could result in injury or in extreme cases death. It is important to know how to perform the job and perform it safely. Always use the correct tools for the job and wear the required personal protective equipment (PPE) necessary for the job. If you are unsure of how to complete a task safely consult a friend or a professional. Below are some suggestions for PPE to help stay safe but as individuals may approach a job differently, they may need to adjust the required PPE accordingly.

Suggested PPE:

- Safety Glasses
- Gloves
- Hearing Protection

**Ladder Safety:** Ladders are dangerous and should only be used with appropriate training in addition to following the ladder manufactures usage instructions. Incorrect use of ladders can result in injury or death. Installing a roof rack will require the use of one or more ladders and the location of these ladders will have to be moved to varying positions during the installation. Always take the extra time to move the ladder to appropriate position to ensure that you do not have to lean or reach out while on the ladder. We highly recommend having someone hold or stabilize the bottom of the ladder while someone is working from it.

**Fall Protection:** Accessing the roof of your van will put you at extreme risk to potential falls which can result in injury or death. Appropriate fall protection should be used when accessing your van roof. For general use situations, OSHA requires that fall protection be provided at elevations of four feet in general industry workplaces.



## 5. Required Tools

The following tools or a combination of these tools should be used for this installation.

### 5.1. Tools Required for Unaka Roof Rack Brackets

- Standard socket set (must include ½" socket)
  - ½" Socket is the size required for this job.
- ½" Box wrench
- Torque Wrench (Must go up to 144 in-lbs or 12 ft-lbs and be compatible with a ½" socket)

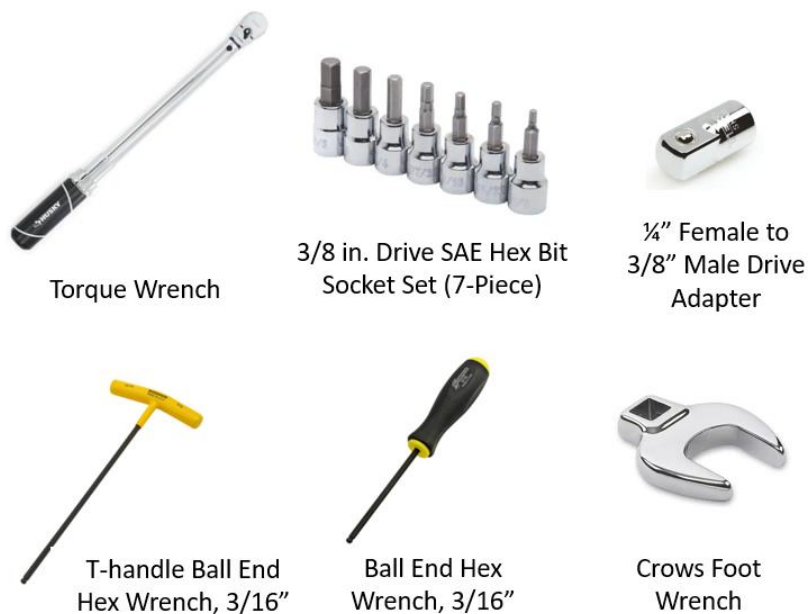
### 5.2. Tools Required for Unaka 8020 Adapters

- Standard Allen Wrench Set (must include 3/16" Allen Key)
- Torque Wrench (Must go up to 180 in-lbs or 15 ft-lbs and be compatible to use with 3/16" Allen Key)

### 5.3. Suggested or Example Tool Options

The example tools below cover items which may be used for both the ProMaster Roof Rack brackets and the 8020 adapters.

- [¼" Drive Torque Wrench, 40 in/lbs. to 200 in/lbs.](#) (The key is to make sure the torque wrench you use has the appropriate torque range)
- [1/4 in. Drive \(F\) x 3/8 in. \(M\) Adapter](#) (This will allow you to use the ¼" drive torque wrench with 3/8" drive sockets or other accessories)



\*\*Images above not shown to scale\*\*

Figure 2: Suggested tool example pictures

- [3/8 in. Drive SAE Hex Bit Socket Set \(7-Piece\)](#) (The 3/16" Allen should be the only size required for this job but sometimes it is easier to purchase an entire set. This will work with your torque wrench, and any socket wrench with a 3/8" drive or a 1/4" drive plus the adapter above)
- SAE Crowfoot Wrench Set for 3/8" drive (The right set should allow you to use your torque wrench to tighten your rack bracket bolts even with the 8020 in place)
- T-handle Ball End Hex Wrench, 3/16" (This will make installing the bolts and t-nuts much easier than using a standard Allen wrench)
- Ball End Hex Driver, 3/16" (Works well in addition to the t-handled listed above)

## 6. Required Materials

- Blue 242 Loctite
- Minimum of 1 Set of Ram ProMaster Roof Rack Brackets
  - Most installs require more than one set to build a rack.
- Rail or Rack Materials (Uni-Strut, 8020, Aluminum Angle, Wood, Etc.)

Figure 3 shows a detailed breakdown of the parts that make up a single Unaka mounting bracket. Note each Set of brackets that you order from Unaka comes with 2 complete mounting brackets and associated hardware.

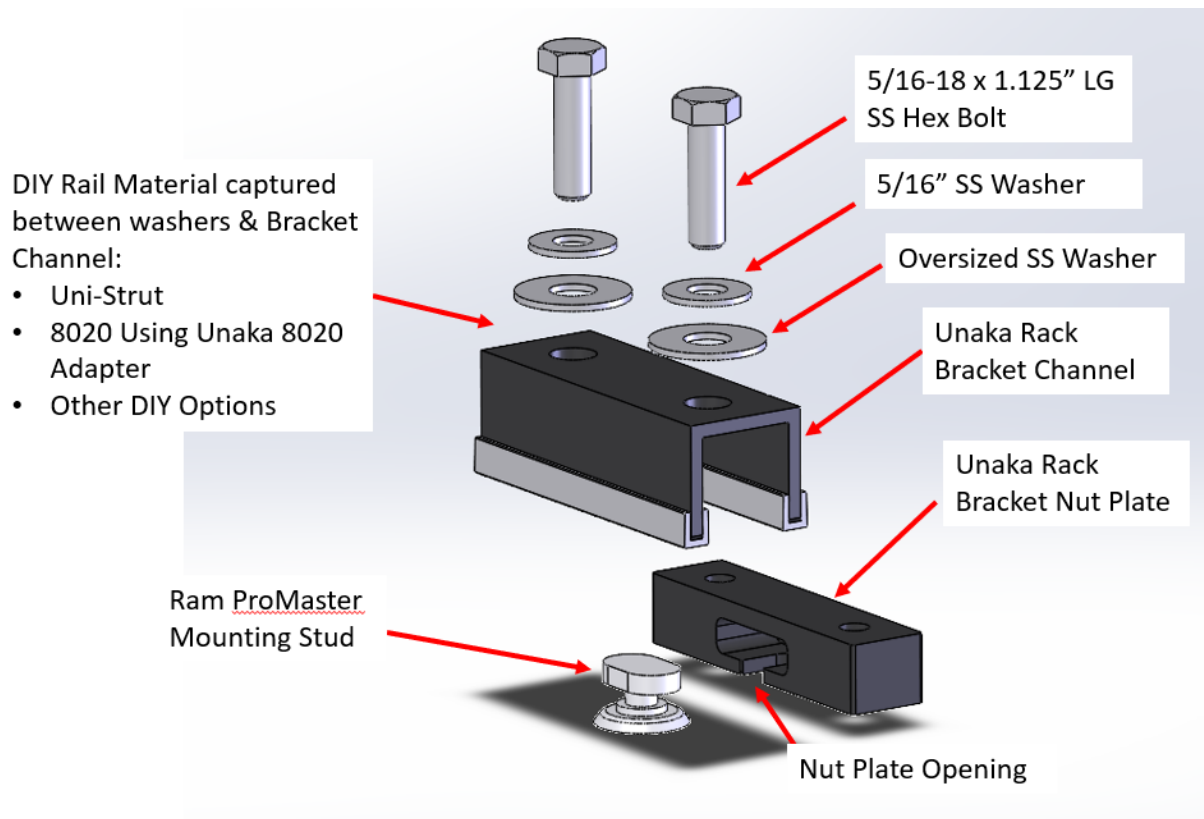


Figure 3: Unaka rack bracket component breakdown

## 7. Roof Rack Bracket Installation Steps

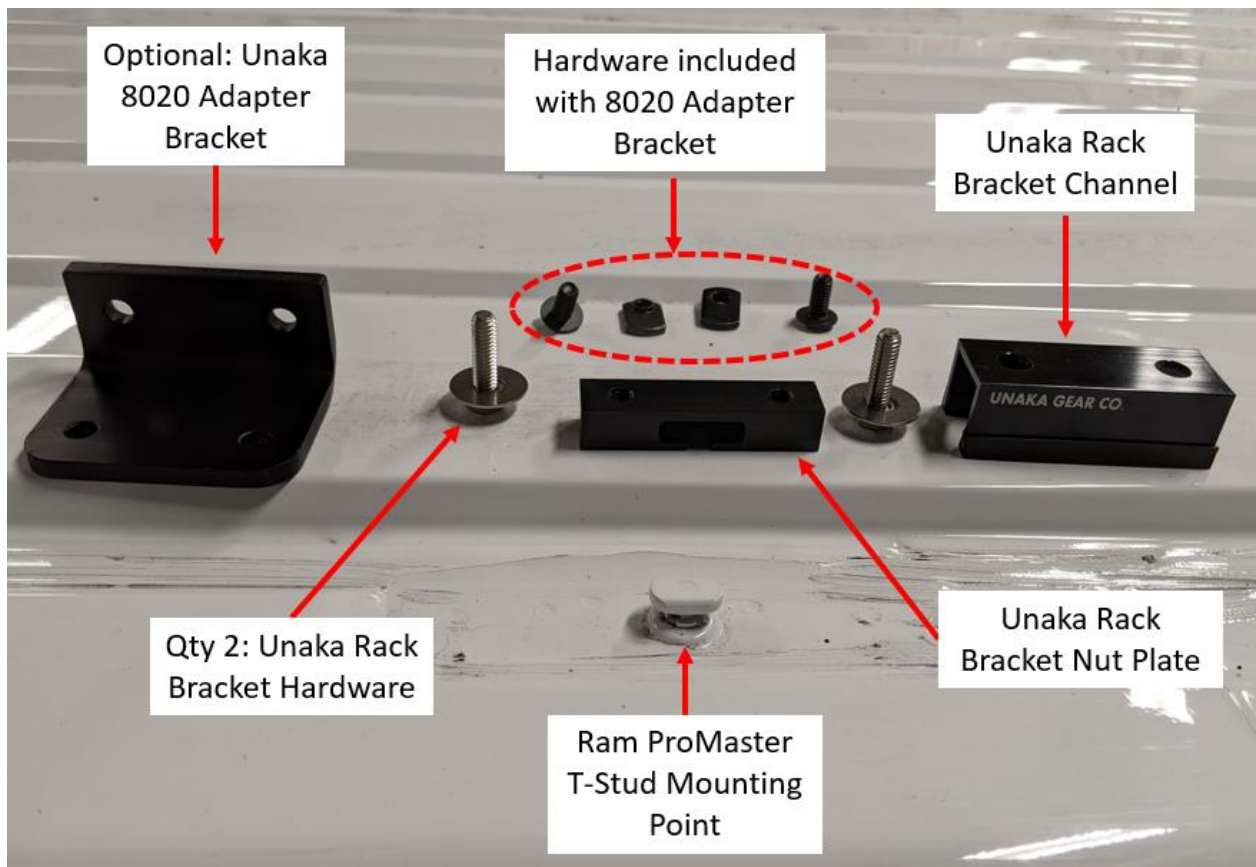
**\*\*Important:** Read all the directions below before beginning your installation!

### 7.1. Roof Rack Bracket Installation

These instructions do not cover how to install your specific rack but only how to connect our brackets to your Ram ProMaster and your main rails.

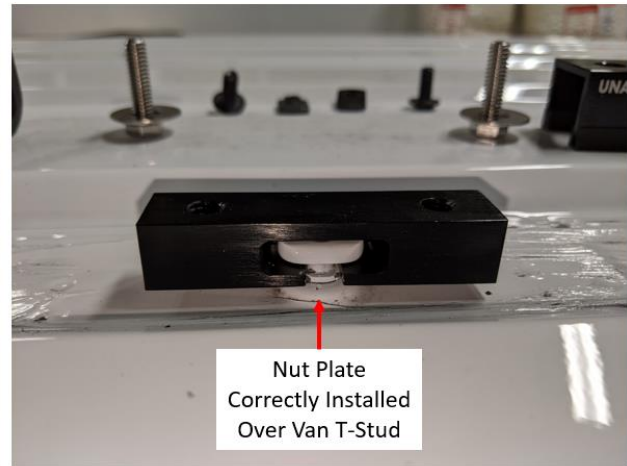
1. Un-wrap your roof rack brackets and remove the hex bolts and washers.
2. Place a bracket and its hardware at each mounting point you plan to use on the van roof.

Note: The image below shows our Unaka 8020 adapters and hardware which are optional and only suggested if you plan to install 8020 side rails.

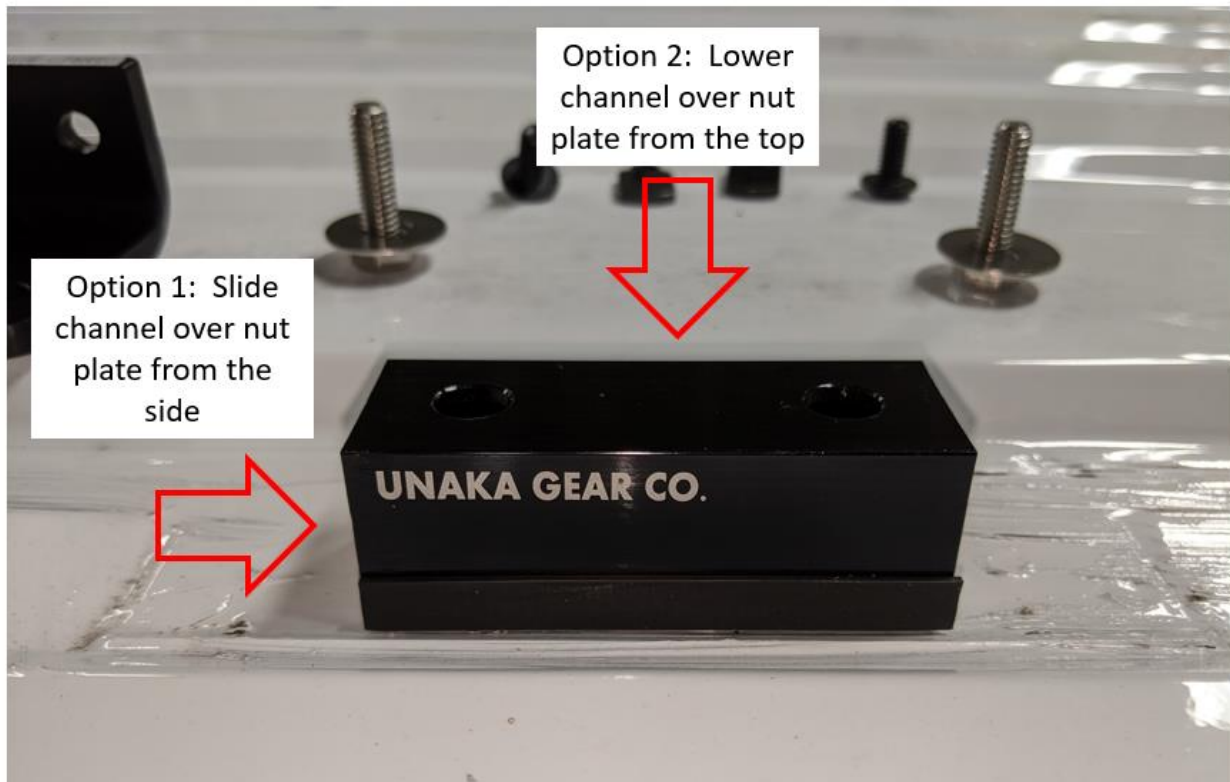




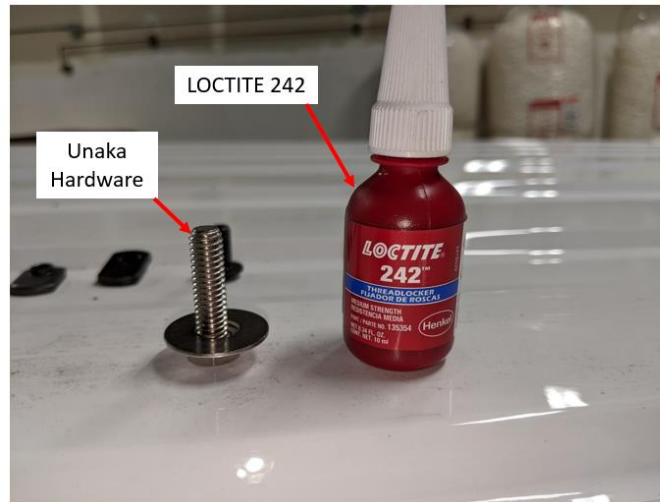
- Slide the Unaka Nut Plate over the ProMaster T-Stud. Note it does not matter if the opening in the nut plate faces towards the center of the van or towards the outside of the van. Pick one or the other and be consistent.



- Slide the Unaka channel over the nut plate from the side. Ensure the holes in the channel are in line with the tapped holes in the nut plate. Note: The channel can also be lowered over the nut plate from above.



5. After fit up and before final installation of any hardware, apply LOCTITE 242 to the hardware per their directions.



6. With all the Unaka mounts in place on one side, place your DIY material (Uni-strut, Unaka 8020 Adapters, or other material) on top of the mounts, apply LOCTITE to hardware, and insert hardware and hand tighten. Repeat for opposite side rail. **\*\*SEE next step before tightening hardware! \*\*** Figure 4 shows the installation of Unaka 8020 adapters and Figure 5 shows installation of Uni-Strut side rails. Detailed instructions on installing your 8020 side rails is covered in the next section.

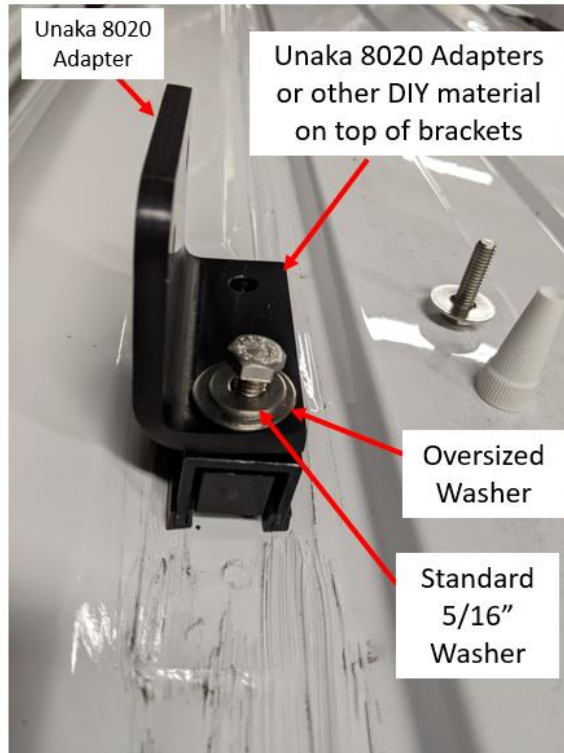


Figure 4: Installing Unaka 8020 Adapter Bracket

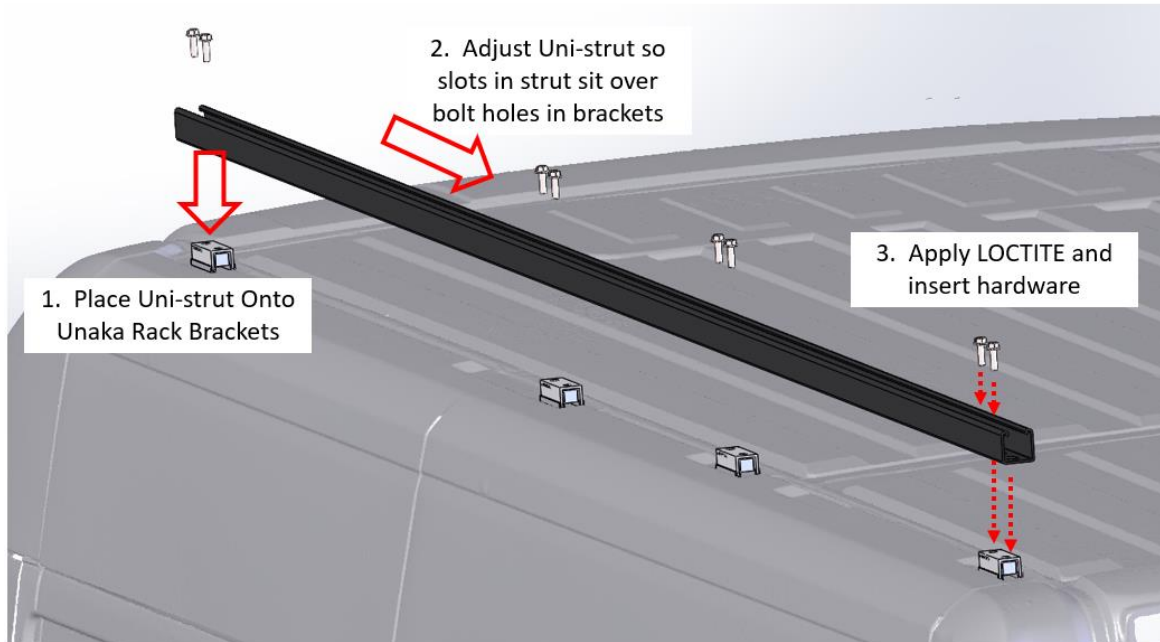


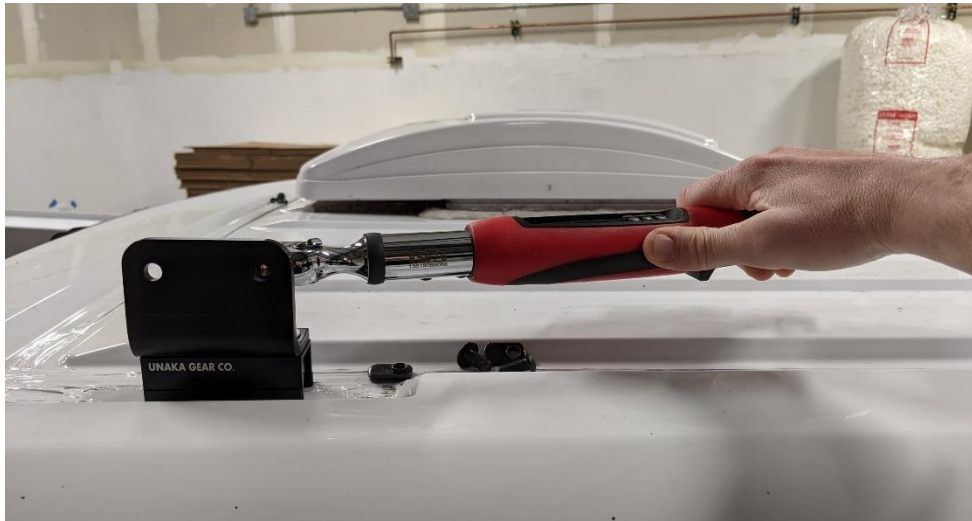
Figure 5: Installation of Uni-Strut side rail on Unaka Brackets

7. Slowly tighten hardware using a  $\frac{1}{2}$ " socket going back and forth between the two bolts as you go to maintain a uniform gap between the nut plate and the channel as you go.

Pro Tip: Do NOT fully tighten this hardware yet, leave it slightly loose. Check the alignment of all brackets along the length and the spacing from one side rail to the other. As you get things in place slowly snug up a few pieces of hardware to hold it in place. If you are using 8020 you may want to hold up or temporarily bolt it in place to check the alignment. Re-check and once everything are in place and parallel go back and tighten all the hardware still maintaining an even gap between the channel and nut plate on both sides of the bracket.



8. Once rails are in place and hardware is snug, Torque hardware to 130 in-lbs.



9. If you installed Uni-Strut your side rail installation is complete. If you are installing 8020 side rails, these can now be installed.

## 7.2. 8020 Side Rail Installation

The previous section covers how to install the Unaka Ram ProMaster roof rack brackets and includes images of the installation of the 8020 adapters. The remainder of this section briefly covers how to install your 8020 side rails.

1. At this point all the roof rack brackets and 8020 adapters should be in place but with the hardware still slightly loose or barely snug.
2. Place your 8020 side rail on the roof of your van on the inside of the rack brackets. You may want to put a towel or rags down on each end to help protect your van roof from the ends of the extrusion.
3. Pick a t-slot in the extrusion (typically the top or the side closest to the adapters). Slide 2 x T-nuts into the extrusion for each 8020 adapter you will be bolting to. Space the T-nuts so they are 2" to 3" outside of the 8020 adapter profile on each side, Figure 6. This will allow you to slide them into place when you are ready to insert the hardware. We typically place the long end of the t-nut towards the center of the bracket. Note 8020 specifies the boss on the t-nut should be facing the middle of the extrusion as shown in Figure 7.

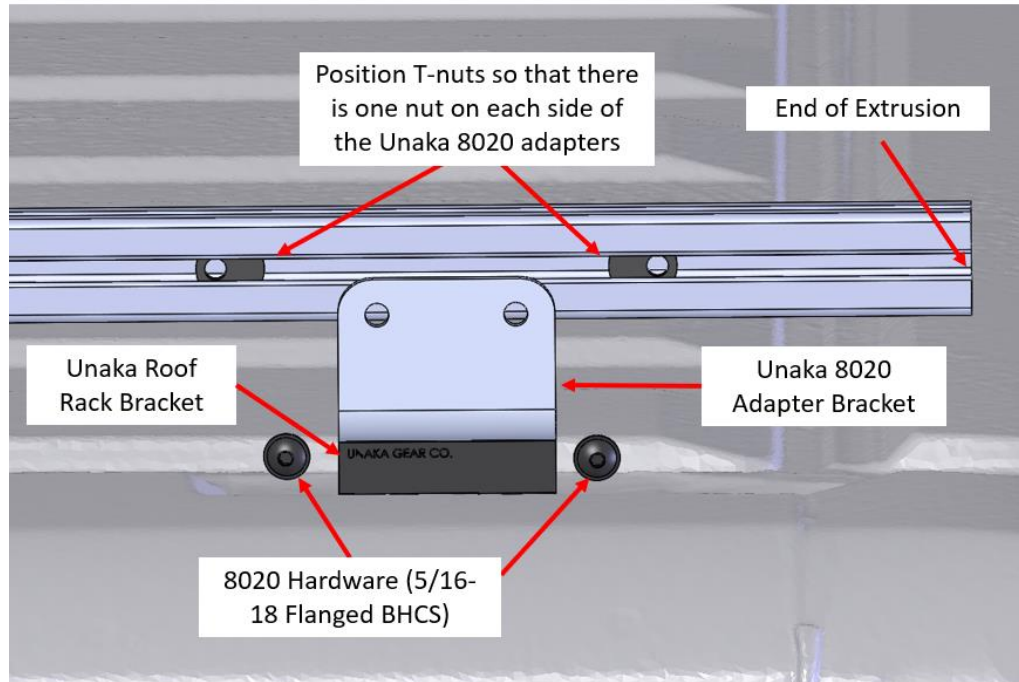


Figure 6: Unaka 8020 adapter hardware installation

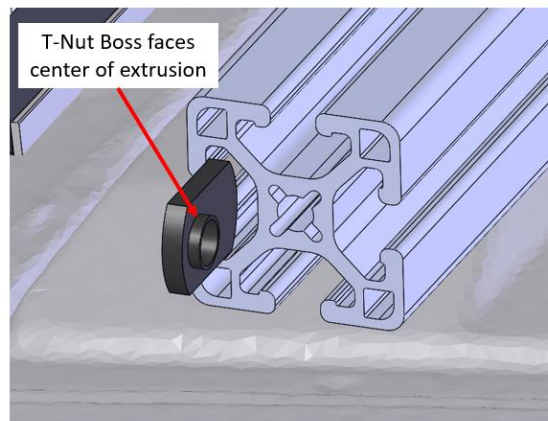


Figure 7: 8020 T-Nut Installation

4. Once all the hardware for one side rail is in place and spaced on both sides of the Unaka 8020 adapters, the rail can be bolted to the adapters. Start at one end of the 8020. Place the 8020 against the Unaka 8020 adapter, slide one of the 2 nuts so that it lines up with the hole in the Unaka Adapter, then insert the Flanged Button Head Cap Screw and tighten it using a 3/16" Allen Key. Do not fully tighten, leave this loose.
5. Go to the opposite end of your side rail and repeat the previous step of aligning the nut, and loosely inserting the bolt.
6. Now go through and repeat this process for all the nuts along the length of the side rail. Leave all bolts loose until you get all the bolts in place on both side rails.



**Installation Instructions:**

Ram ProMaster Roof Rack Bracket



7. Once both side rails are positioned with respect to each other as desired, go back and snug up all of the side rail hardware using your 3/16" Allen Key.
8. Once all the 8020 hardware is snug, torque to 13 ft-lbs (156 in-lbs).
9. This completes the installation of your 8020 side rails.

**Legal Disclaimer:**

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