UNAKA
GEAR CO

HSLD Rack Installation Manual:

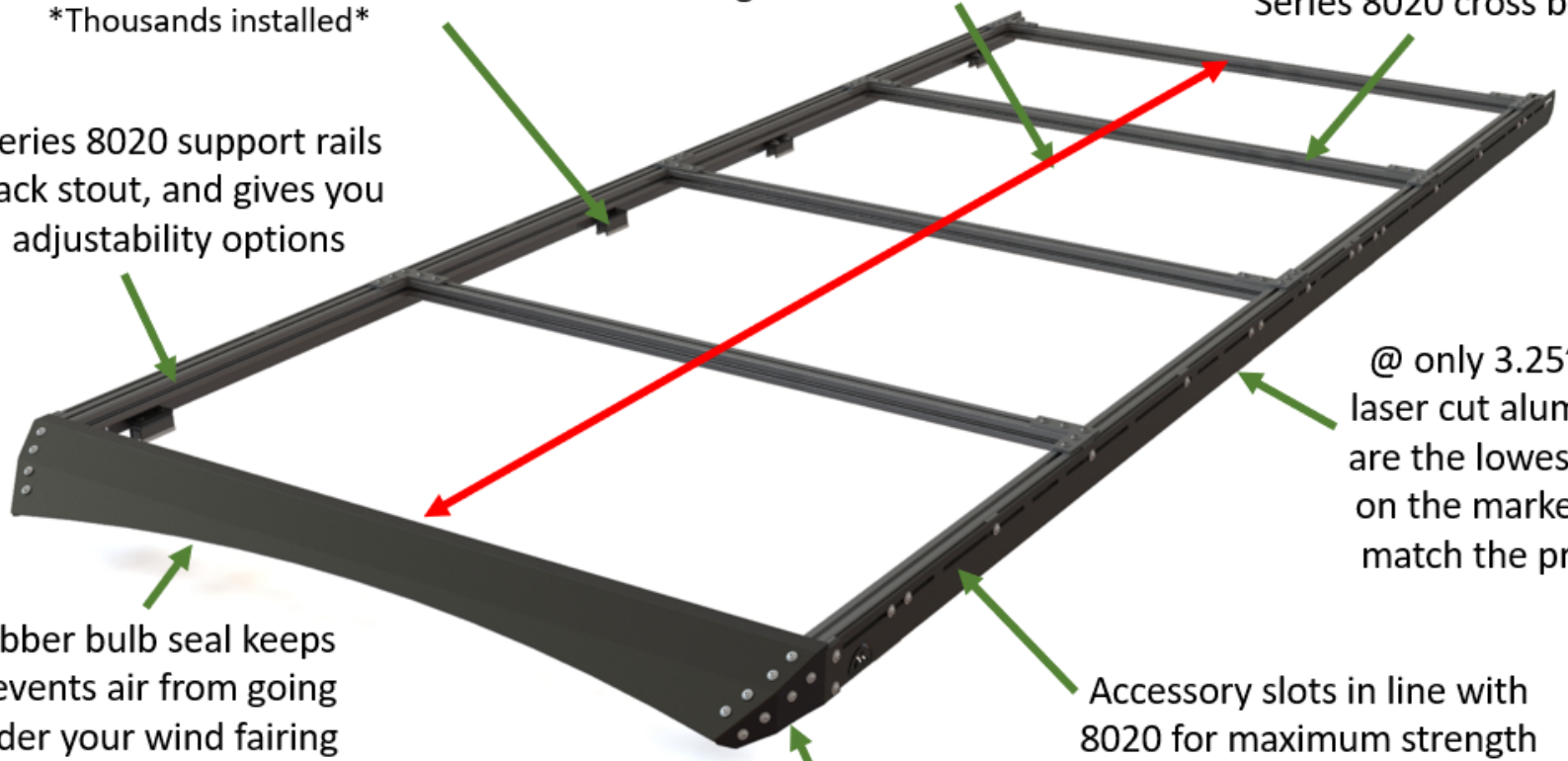
Ram ProMaster 159” WB

SKU: 1001-MK50-01

Date: 7/17/23

Revision: 2

Rack Features



Unaka original mounting brackets, customer tested and approved
Thousands installed

Cross bars can be positioned anywhere along the full length of the rack

Rack comes standard with 4 x 15 Series 8020 cross bar & SS hardware

Hidden 15 Series 8020 support rails makes this rack stout, and gives you full length adjustability options

@ only 3.25" tall, these CNC laser cut aluminum side plates are the lowest profile side rails on the market and seamlessly match the profile of your van

Rubber bulb seal keeps prevents air from going under your wind fairing
Bulb seal not shown on this image

Accessory slots in line with 8020 for maximum strength

Unaka's original Bi-directional wind fairing breaks direct and indirect air flow as you drive down the road

**Note: The image above is for the ProMaster 159" WB None Extended. The 136" WB and 159" WB Extended contain different side rail lengths, and different quantities of brackets

Rack Accessories

The HSLD rack does not include any additional accessories, and this manual does not include the installation of these accessories. Failure to review accessory installation manuals may result in extended installation time.

Use this link to find the manuals for any accessories and Review them before beginning this installation.
https://unakagearco.com/pages/manuals

Some of the common accessories purchased separately are listed below.

- Flush Mount Solar Panel Brackets: **Our most popular accessory makes for the cleanest solar panel installation
- Extrusion Tie Down Kits
- Ram ProMaster Side Mount Ladder
- More to come!

Safety and PPE

Ladders: Installation of this roof rack requires two ladders for two people to help with the installation. Make sure that your ladders are tall enough, and that you have a level area to use them on. Accessing the roof of your van will put you at extreme risk to potential falls which can result in injury or death.

Warning: Ladders are dangerous and should only be used with appropriate training. Incorrect use of ladders can result in injury or death.

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.

Required Tools

- 1 to 2 tall sturdy ladders
- Standard set of box wrenches
- Standard socket set
- 5/32” and 3/16” Allen Wrench
- Torque Wrench
- Measuring Tape

Loctite & Anti-seize

A small tube of Blue Loctite 242 and Loctite anti-seize are provided with each kit. Follow manufactures recommendation for application and safety.

Loctite 242

Blue Loctite 242

- Apply this to any bolt that is not used with a nylock nut

Loctite Anti-seize

- Apply a dab of anti-seize to the side of each bolt that will be paired with a nylock nut. Nylock nuts have a small plastic insert to make them vibration resistant.

Loctite C5-A Anti-Seize

Installation Overview

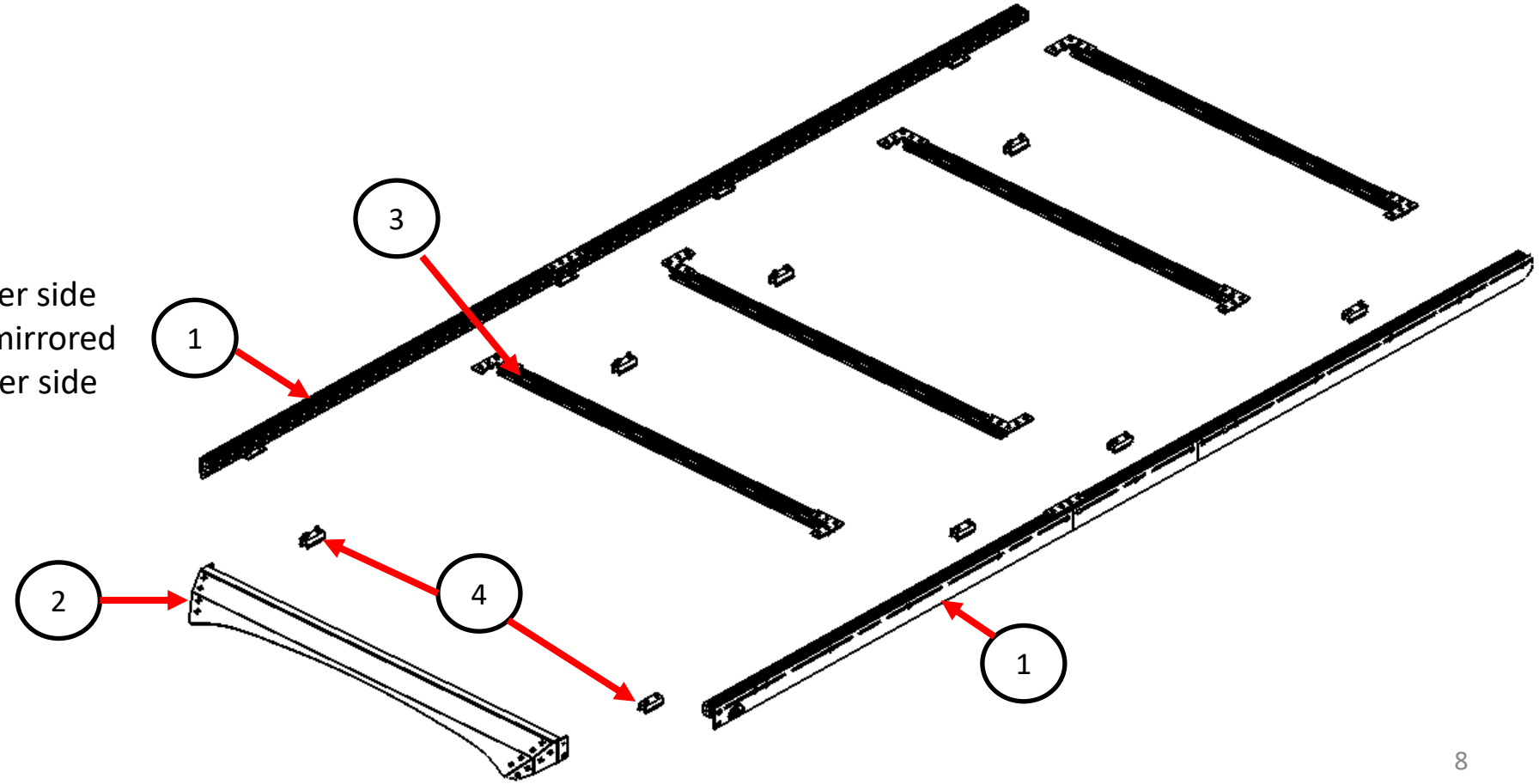
1. Layout and identify all parts
   - Keep hardware separate, some types may be only slightly different and are not interchangeable
2. Assemble side rail assemblies
   - Add additional hardware to top of extrusion slot as needed for flush mount solar panel brackets or other accessories
3. Assemble cross bar assemblies
   - Add additional hardware to top of extrusion slot as needed for flush mount solar panel brackets or other accessories
4. Assemble wind fairing
5. Loosely install rack brackets on the van t-studs
6. Loosely install side rails onto roof rack brackets on van
7. Loosely install cross bars on rack
8. Loosely install wind fairing to rack side rails
9. Use cross bars and wind fairing to set the spacing of the side rails, ensuring they are parallel
10. Snug up cross bar and wind fairing hardware making rack fairly uniform
11. Tighten and torque bolts securing rack to rack brackets
12. Loosing and adjust cross bar positions as needed, install solar panels, and re-tighten everything
13. Torque all hardware

159” WB HSLD KIT COMPONENTS:

NOTE: Components do not come pre-assembled. Review the rest of the manual for individual component assembly procedures.

ITEM NO.	Manufacturer	PART NUMBER	DESCRIPTION	MATERIAL	QTY.
1	Unaka Gear Co.	1001-MA51-01 REV 1	RAM PROMASTER 159 NON EXT HSLD SIDE RAIL ASSEMBLY	ASSEMBLY	2
2	Unaka Gear Co.	1001-MA52-00 REV 1	PROMASTER HSLD WIND FAIRING ASSEMBLY	ASSEMBLY	1
3	Unaka Gear Co.	1005-MK02-00-56.75	8020 Roof Rack Cross Bar Assembly, Flat L-Brackets, 56.75" Long	ASSEMBLY	4
4	Unaka Gear Co.	1001-MK10-00	RACK BRACKET ASSEMBLY, SET OF 2	ASSEMBLY	4

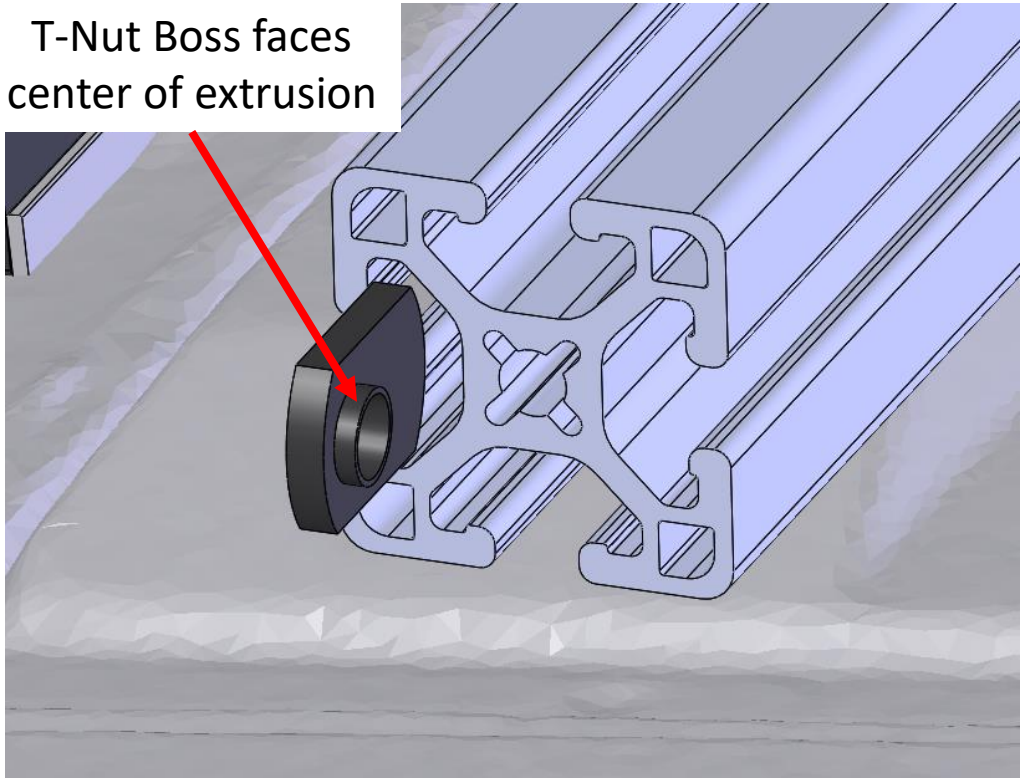
Note, the passenger side rail assembly is a mirrored version of the driver side



Extrusion T-Nut Installation Overview: Part # 3678 or similar

1. T-nuts are used to connect 8020 style extrusion and other components
2. When installing T-nuts, leave the flat side towards the outside of the extrusion, and have the boss facing the center of the extrusion
3. Once inside the extrusion, slide the t-nut to the desired location

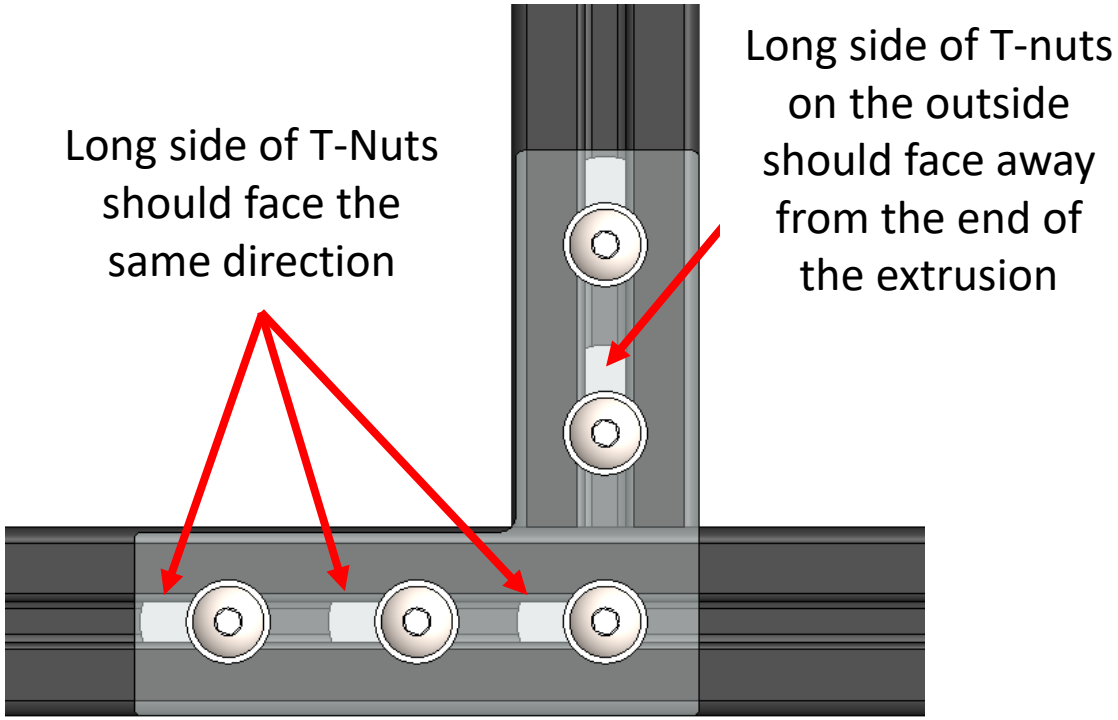
Correct way to Orient T-nuts when sliding into extrusion



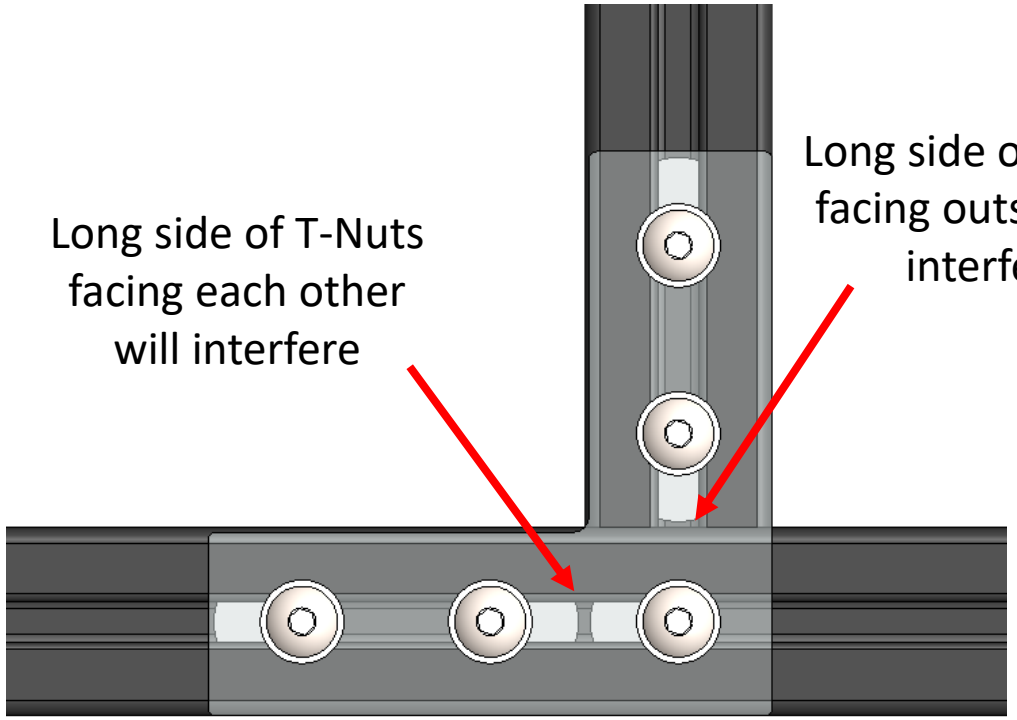
Extrusion T-Nut Installation Overview: Part # 3678 or similar

1. One side of the t-nut is longer than the other
2. When the long side is pointed at the long side of another t-nut, in some cases they can physically interfere
3. When the long side is pointed at the end of the extrusion, in some cases they can extend past, and physically prevent 1 piece from correctly touching the other

Correct way to Orient T-nuts to prevent interferences



Warning: T-nuts installed in the orientation below will create interferences



Long side of actual t-nuts is longer than shown in the image and will interfere

159” WB Side Rail Assembly:

This section covers the HSLD side rail assembly. Note the images shown are for the Driver side assembly. The passenger side assembly is a mirrored image.

Below is the bill of material (BOM) for Qty 1 side rail assembly. The BOM for the driver side, and passenger side rail assemblies are identical and match the table below.

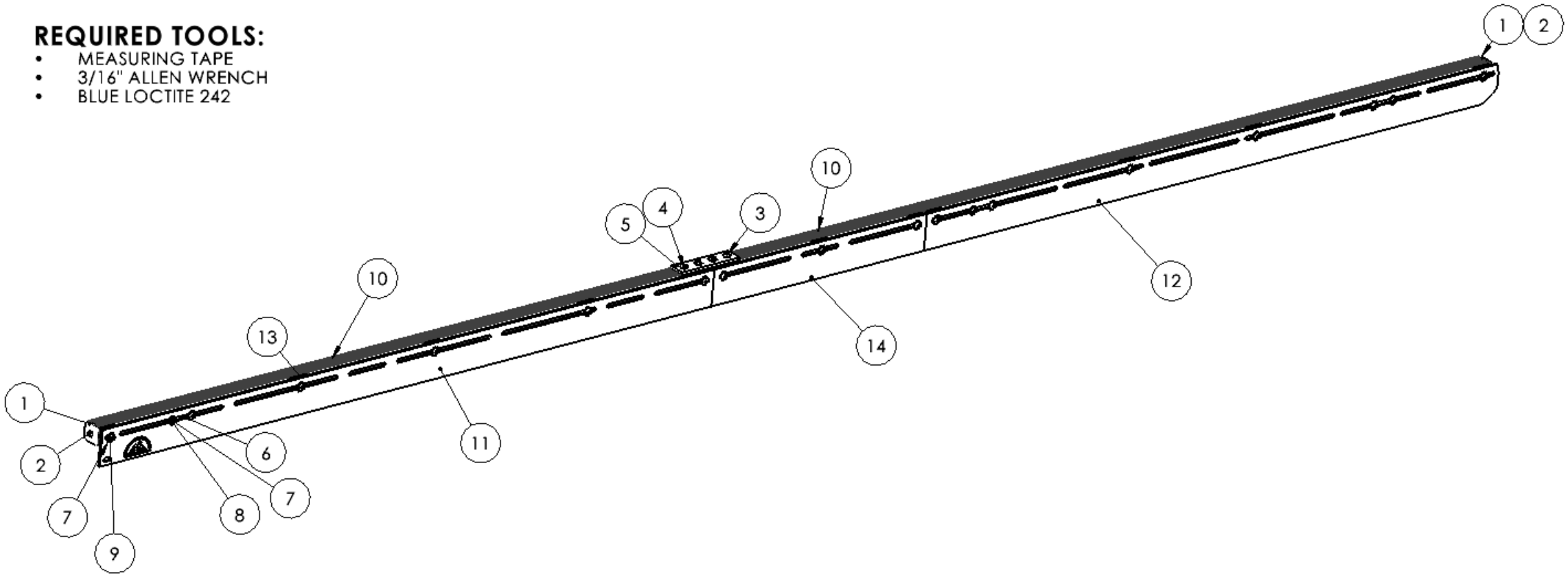
ITEM NO.	Manufacturer	PART NUMBER	DESCRIPTION	MATERIAL	LENGTH	QTY.
1	8020	203001-PLAIN	END CAP, 15 SERIES, PLAIN, BLACK	NA		2
2	8020	8020-3267 SELF TAPPING END CAP SCREW	SELF TAPPING END CAP SCREW, M7 X 0.36"	NA		2
3	8020	8020-3607	BHCS, FLANGED, 5/16 X 0.687" LG., S.S.	NA		4
4	8020	8020-3678	T-NUT, ECONOMY, 5/16 THREAD, SS	NA		22
5	8020	8020-4305-BLACK 15 SERIES 4 HOLE STRAIGHT FLAT PLATE	STRAIGHT FLAT PLATE, 15 SERIES, 4 HOLE, BLACK ANODIZED	6061 Aluminum		1
6	ANY	1001-MP12-01	PROMASTER ROOF RACK BRACKET 8020 ADAPTER	5052-H32	3.125 IN.	4
7	ANY	92141A030	FLAT WASHER, 5/16" SCREW SIZE, 0.344" ID, 0.75" OD, 18-8 SS	NA		18
8	ANY	92949A583	BHCS, 5/16-18 X 7/8" LG, FULLY THREADED, 18-8 S.S.	NA		17
9	ANY	92949A854	BHCS, 5/16-18 X 1-1/8" LG, FULLY THREADED, 18-8 S.S.	NA		1
10	UNAKA	UNAKA 8020 SIDE RAIL CONFIGURABLE	15 SERIES 8020 SIDE RAIL FRONT	Material <not specified>		2
11	Unaka Gear Co.	1001-MB50-01	RAM PROMASTER FRONT SIDE PLATE	5052-H32	64.000 IN.	1
12	Unaka Gear Co.	1001-MB50-02	RAM PROMASTER REAR SIDE PLATE	5052-H32	59.875 IN.	1
13	Unaka Gear Co.	1001-MB50-03	RAM PM 0.25" SIDE PLATE SPACER	5052-H32		10
14	Unaka Gear Co.	1001-MB50-04	RAM 159 NON EXT SPLICE SIDE PLATE	5052-H32	22.250 IN.	1

159” WB Side Rail Assembly:

Driver Side HSLD Side Rail

REQUIRED TOOLS:

- MEASURING TAPE
- 3/16" ALLEN WRENCH
- BLUE LOCTITE 242

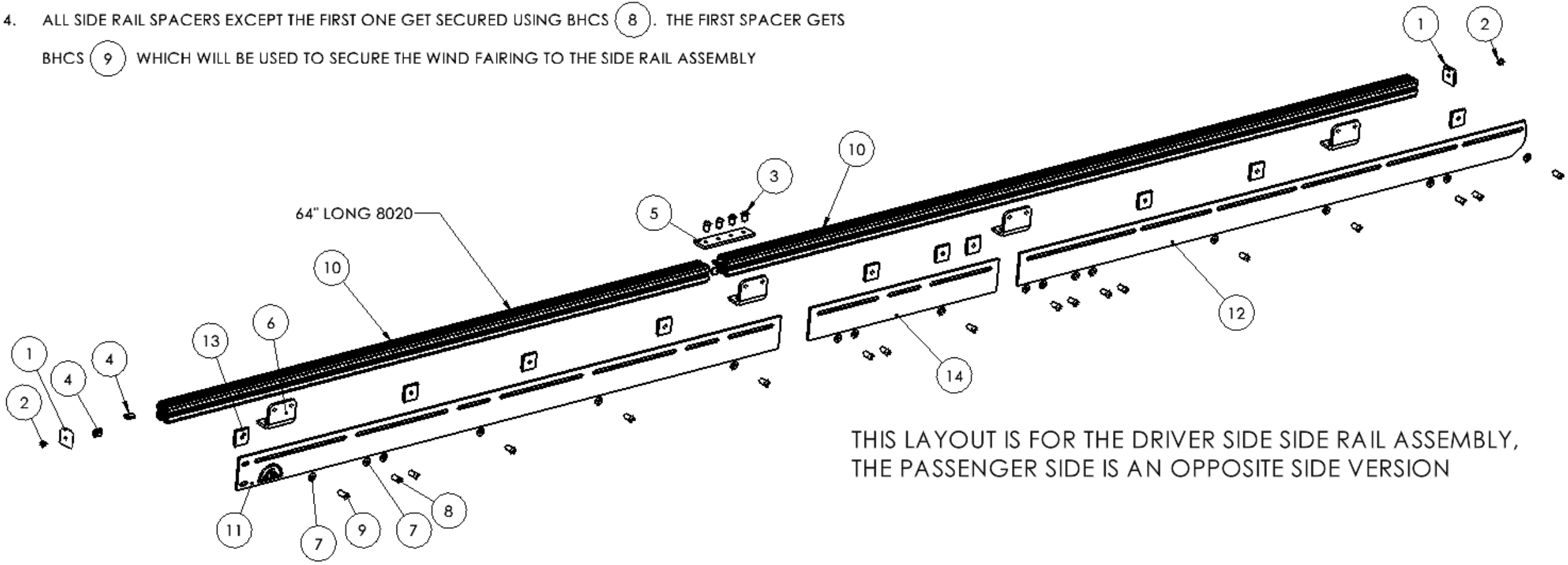


159” WB Side Rail Assembly:

Driver Side HSLD Side Rail

ASSEMBLY STEPS:

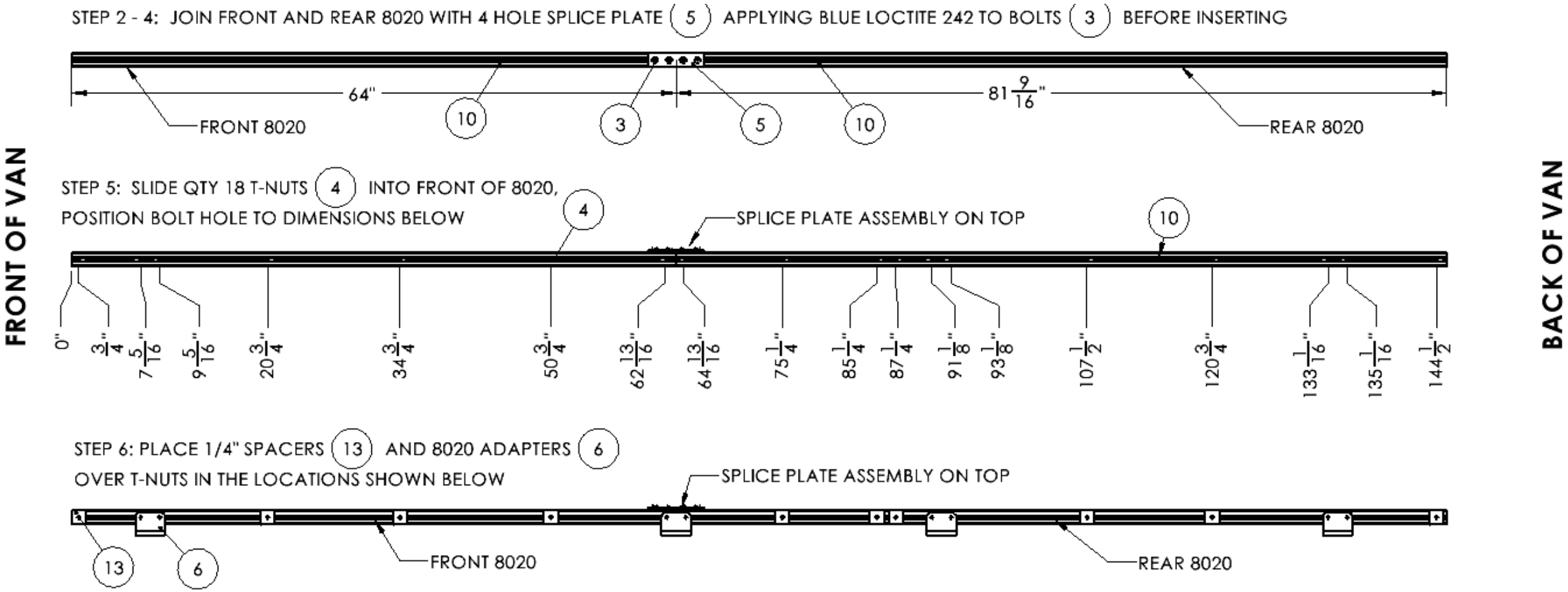
1. LAYOUT PARTS, ENSURE SIDE PLATE ITEMS (11), (12), (14) AND 8020 ADAPTER BRACKETS (6) ORIENTATIONS ARE CORRECT FOR THE SIDE RAIL YOU ARE ASSEMBLING
2. FOR PASSENGER SIDE RAIL ASSEMBLY, LAYOUT PARTS TO ENSURING YOU WILL BE CREATING AN OPPOSITE HAND VERSION TO THE DRIVER SIDE ASSEMBLY SHOWN BELOW.
3. DO NOT INSTALL END CAPS ITEM (1) AND (2) AT THIS TIME. THEY WILL BE INSTALLED AFTER ALL T-NUTS FOR THE CROSS BARS ARE INSTALLED
4. ALL SIDE RAIL SPACERS EXCEPT THE FIRST ONE GET SECURED USING BHCS (8). THE FIRST SPACER GETS BHCS (9) WHICH WILL BE USED TO SECURE THE WIND FAIRING TO THE SIDE RAIL ASSEMBLY



THIS LAYOUT IS FOR THE DRIVER SIDE SIDE RAIL ASSEMBLY, THE PASSENGER SIDE IS AN OPPOSITE SIDE VERSION

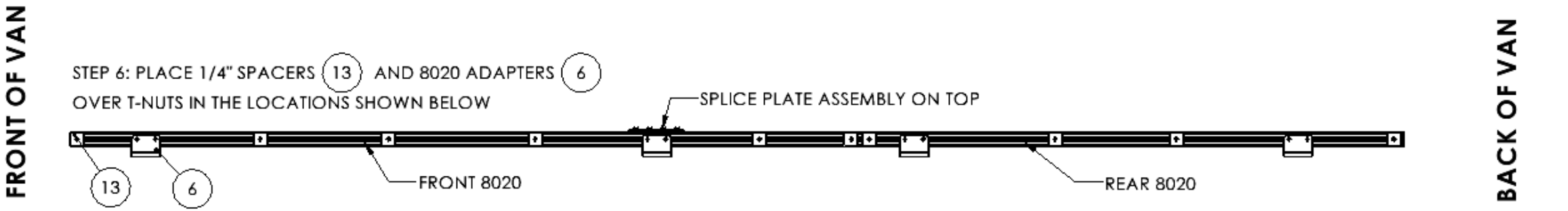
159” WB Side Rail Assembly:

Driver Side HSLD Side Rail

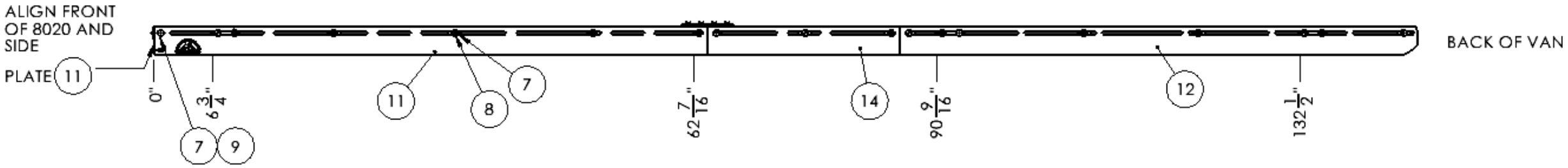


159” WB Side Rail Assembly:

Driver Side HSLD Side Rail



STEP 7: ALIGN FRONT SIDE PLATE (11) WITH FRONT OF 8020. PLACE WASHER (7) ONTO BHCS (8), APPLY BLUE LOCTITE 242 TO SIDE OF BHCS (8), SECURE SIDE PLATES TO 8020 RAIL GOING THROUGH THE SIDE PLATE SLOTS, SPACERS / 8020 ADAPTERS, AND INTO THE T-NUTS (4) ALREADY POSITIONED IN THE 8020. DO NOT FULLY TIGHTEN BOLTS GOING INTO THE LAST THREE 8020 ADAPTERS AT THIS TIME, POSITION THE LEADING EDGE OF THE 8020 ADAPTER TO THE DIMENSIONS BELOW, AND SNUG UP AS THESE MAY NEED TO BE ADJUSTED TO MATCH ROOF RACK BRACKETS



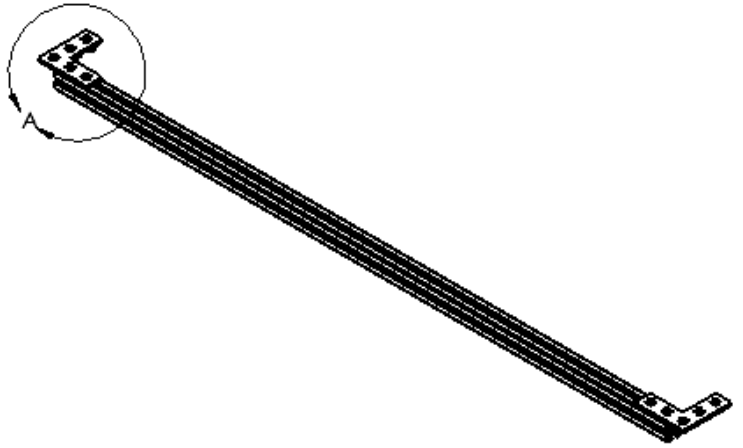
NOTE: BHCS (9) IS USED TO SECURE THE WIND FAIRING TO THE 8020, DO NOT ATTEMPT TO FULLY TIGHTEN, DO NOT APPLY LOCTITE TO THIS BOLT UNTIL INSTALLING WIND FAIRING ON VAN

Cross Bar Initial Assembly: Standard kit comes with Qty 4 cross bars, additional bars can be purchased separately

ITEM NO.	Manufacturer	PART NUMBER	DESCRIPTION	MATERIAL	QTY.
1	8020	3607	BHCS, FLANGED, 5/16 X 0.687" LG., S.S.	NA	10
2	8020	3678	T-NUT, ECONOMY, 5/16 THREAD, SS	NA	10
3	Unaka Gear Co.	1005-MB02-01	L-BRACKET, FLAT, 5 HOLES, 15 SERIES, BLACK	6061 Alloy	2
4	Unaka Gear Co.	1515-UL-BLACK-56.75	8020 Style Extrusion, 15 Series, Ultra Lite, Grooved, Black, 56.75" LG.	6061 Alloy	1

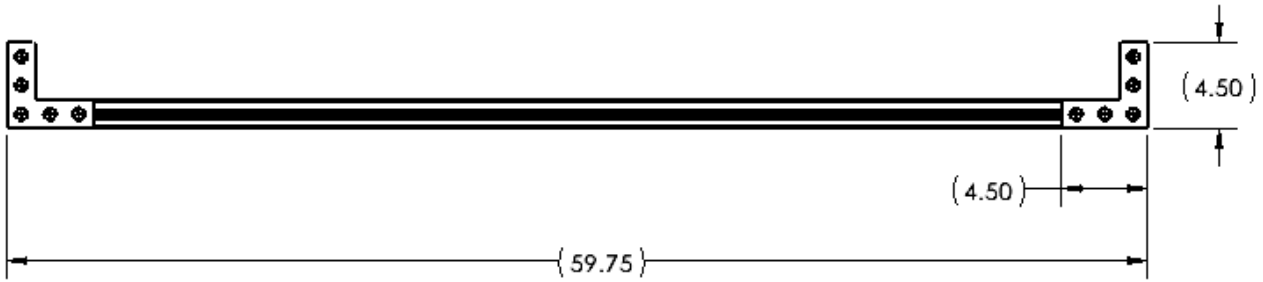
REQUIRED TOOLS:

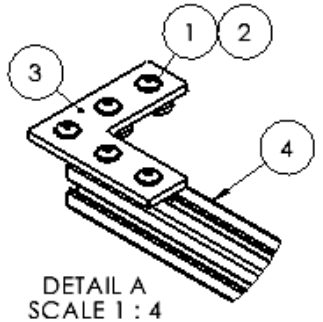
- 3/16" ALLEN WRENCH
- BLUE LOCTITE 242



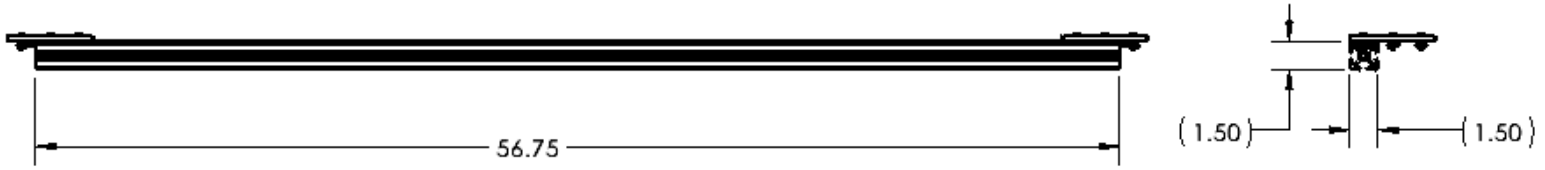
ASSEMBLY STEPS:

1. SLIDE ANY T-NUTS INTO TOP OF 8020 REQUIRED FOR FLUSH MOUNT SOLAR PANEL BRACKETS OR OTHER ACCESSORIES. NOTE THESE ADDITIONAL T-NUTS ARE NOT PROVIDED WITH THIS CROSS BAR ASSEMBLY
2. SLIDE QTY 2 ITEM (2) INTO TOP OF BOTH ENDS OF 8020, APPLY BLUE LOCTITE 242 TO SIDE OF BOLT (1), USE BOLT TO SECURE THE 5 HOLE L BRACKETS (3) TO TOP OF 8020. SNUG BOLTS UP ONLY IN CASE L BRACKET NEEDS TO BE ADJUSTED WHEN INSTALLED ON VAN RACK
3. REMAINING QTY 6 OF BHCS AND T-NUTS WILL BE USED TO SECURE THIS CROSS BAR TO THE RACK SIDE RAIL ASSEMBLY ON THE ROOF OF THE VAN
4. WHEN SECURING CROSS BAR TO 8020 SIDE RAIL ON ROOF OF VAN, PLACE BLUE LOCTITE 242 ON SIDE OF BOLT BEFORE INSERTING IT THROUGH BRACKET AND INTO T-NUT



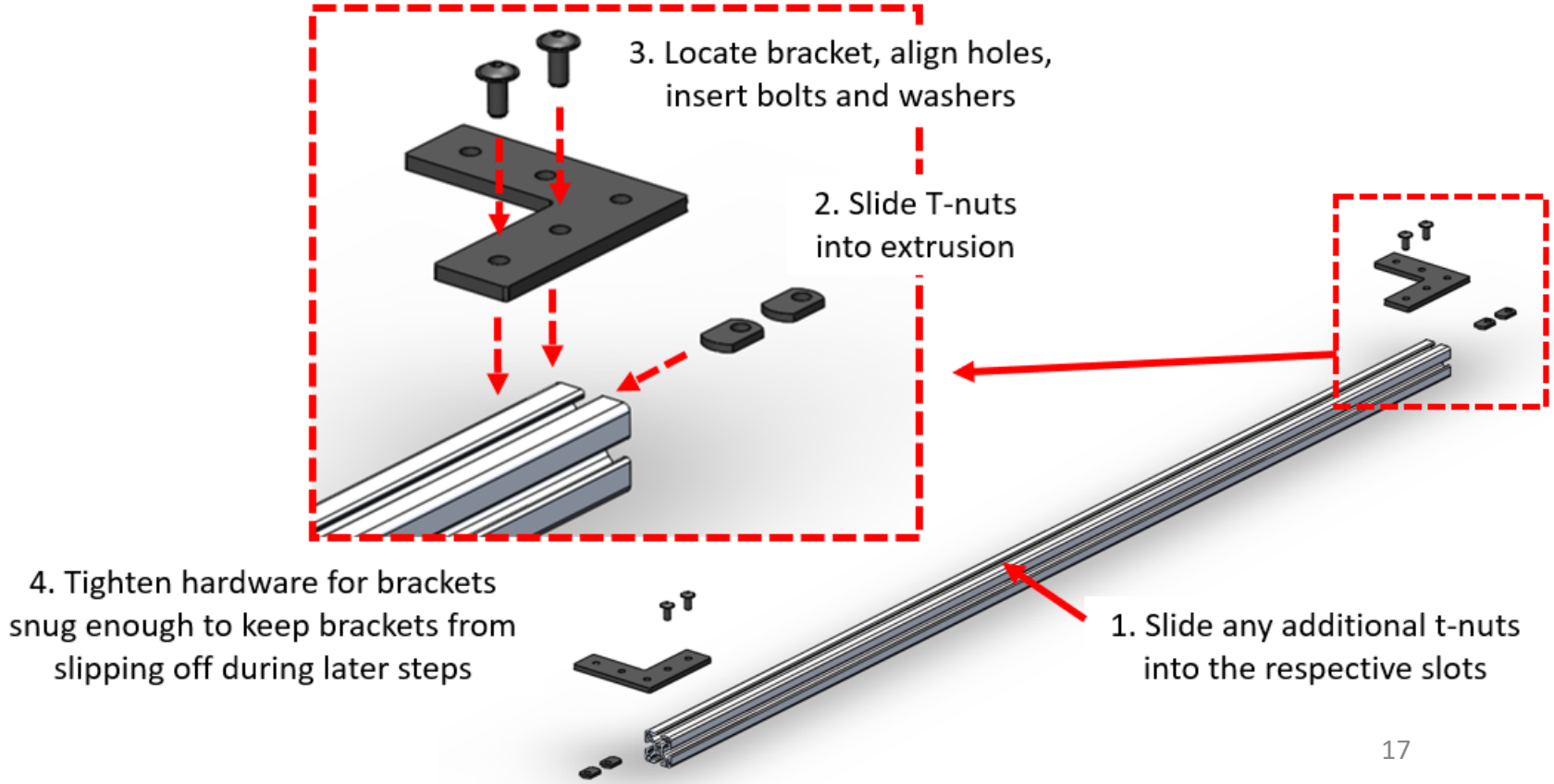


DETAIL A
SCALE 1 : 4



Cross Bar Initial Assembly:

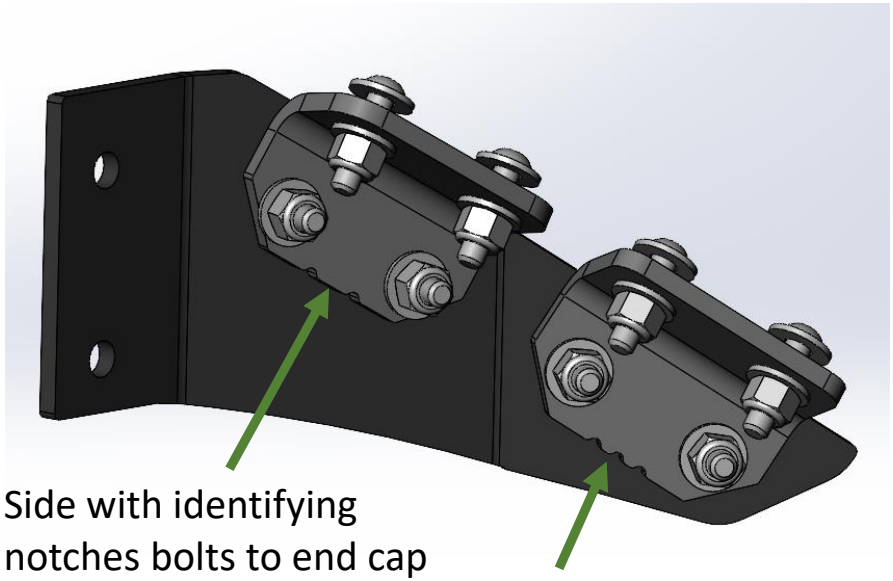
1. If you haven't done so, double check to see if any other parts in future steps will need to be attached to your cross bars and how many t-nuts will be required for each item. This includes flush mount solar panel brackets, other 8020 brackets, the tie downs, etc.
2. Install the brackets required to secure your cross bar to the side rails. The Unaka standard option is the flat 5 hole L-brackets which each use 5 bolts and t-nuts. Other options include using cross bars that use 4 x 2 hole corner brackets or your own custom solution.
3. Do not fully tighten the hardware at this time. Leave at least one or two pieces of hardware tight enough where the brackets won't come loose and slide off the end of the extrusion while lifting and lower the cross bars into place.
4. If cross bar assemblies include different quantities of hardware for different accessories, mark them so that they get installed in the correct order or location on the roof rack

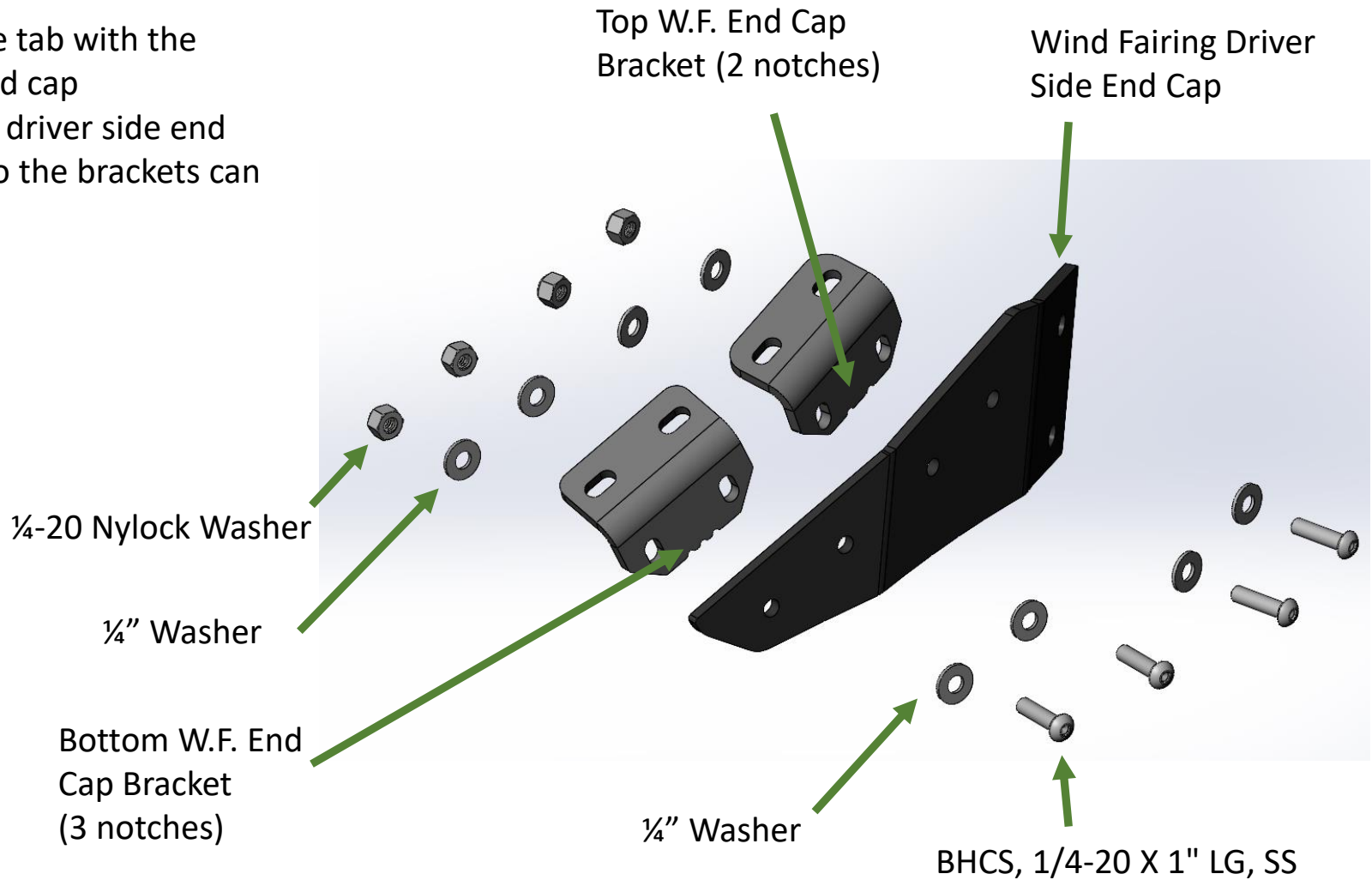


Assemble Wind Fairing End Caps

1. Apply anti-seize to all bolts in this step during installation
2. Warning: Top and bottom end cap brackets look very similar, but they have identifying notches. Lower bracket has 3 notches, upper bracket has 2 notches.
3. End cap brackets should be installed with the tab with the chamfered corners bolting to wind fairing end cap
4. Bolt top and bottom wind fairing brackets to driver side end cap. ***Leave the bolts just loose enough so the brackets can float around in their slots
5. Repeat process for passenger side end cap

Driver Side End Cap Assembled

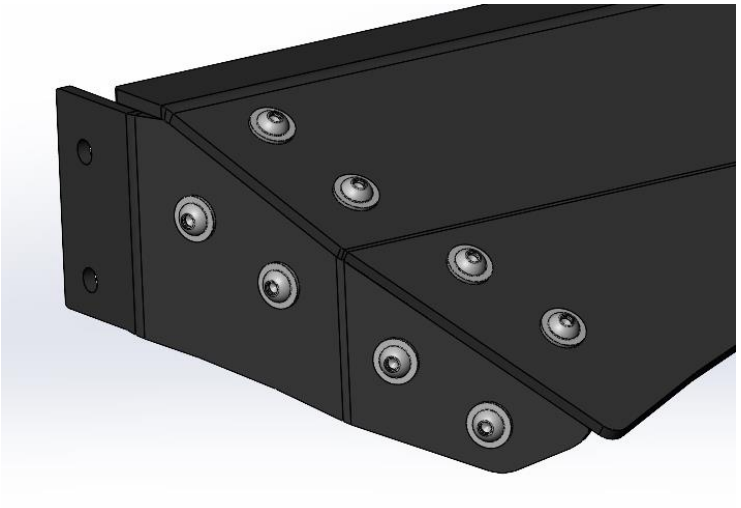


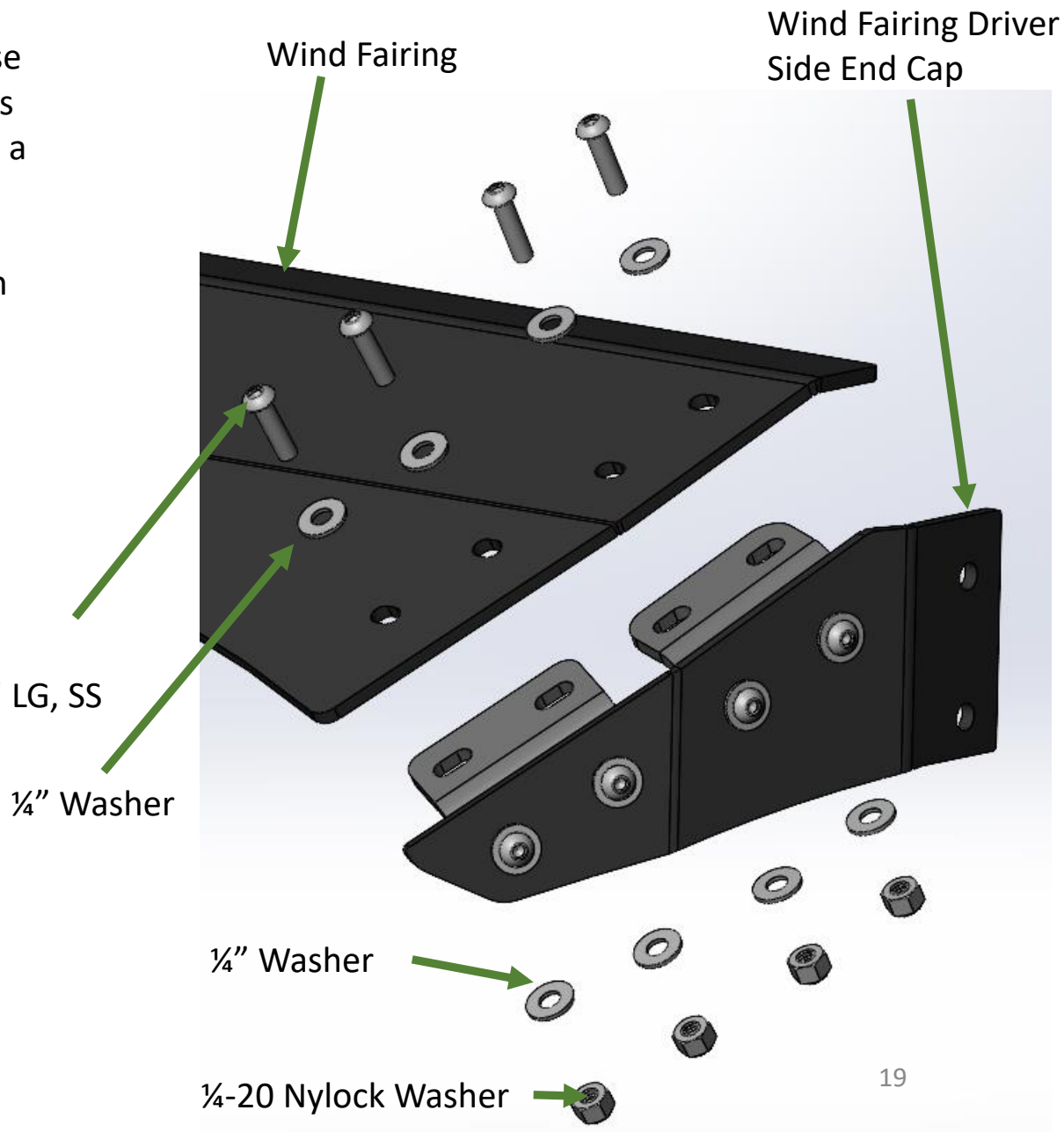


Bolt wind fairing to end caps

1. Apply anti-seize to all bolts in this step during installation
2. Hardware holding end cap brackets to the end cap still slightly loose
3. Loosely bolt the wind fairing to the wind fairing end cap assemblies
4. **Tighten the hardware carefully. Do not tighten hardware one at a time. Holding / position the wind fairing to align the edges of the fairing with the end cap as best you can. All edges may not be perfectly aligned due to manufacturing tolerances. Move between the bolts tightening them each a bit slowly until everything is nice and tight. If you tighten one bracket to much, it may not allow the adjustment slots in the brackets to compensate for manufacturing and installation tolerances
5. Repeat for the passenger side end cap
6. Install the bulb seal on the front edge of the wind fairing

Completed passenger side end cap / wind fairing





Install Rack Brackets Onto Van

1. Each side of the van gets the following brackets:
   a) 136” WB: 3 bracket assemblies per side
   b) 159” WB: 4 bracket assemblies per side
   c) 159” WB EXT: 5 bracket assemblies per side
2. Locate and install the rack brackets onto the Promaster t-sudds.
3. Do not install hardware yet. Leave the 5/16 bolts and washers and the HSLD spacer next to each bracket

HSLD Spacer is only used on kits shipped before June of 2023. New kits do not require this part

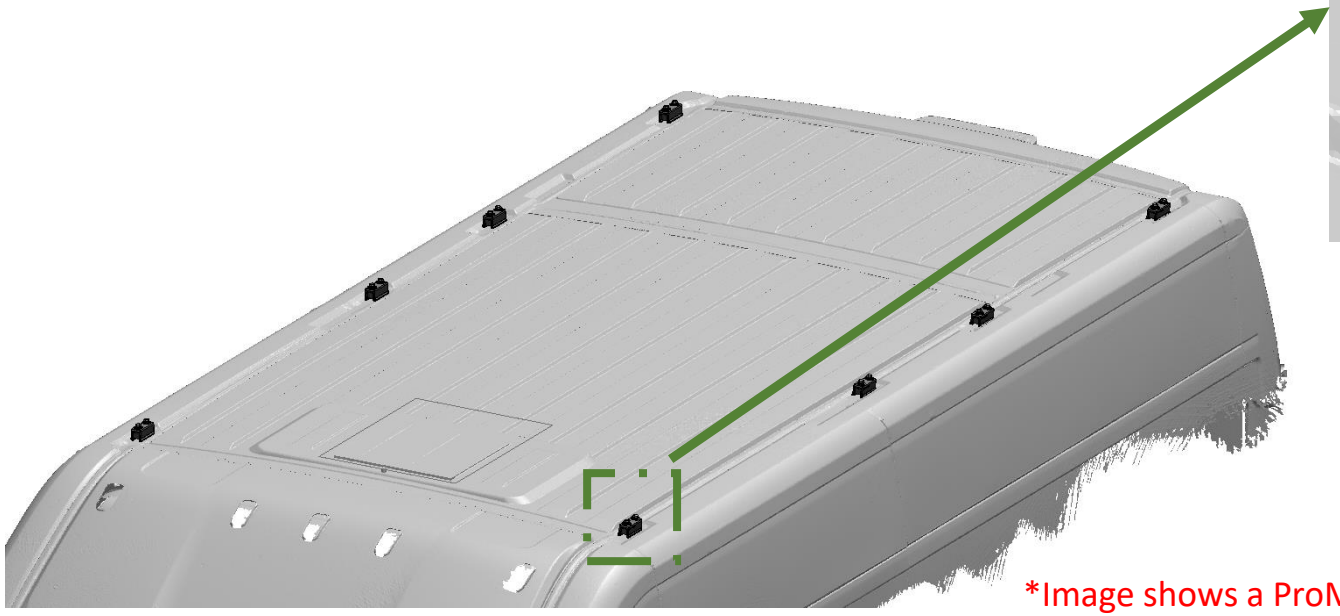
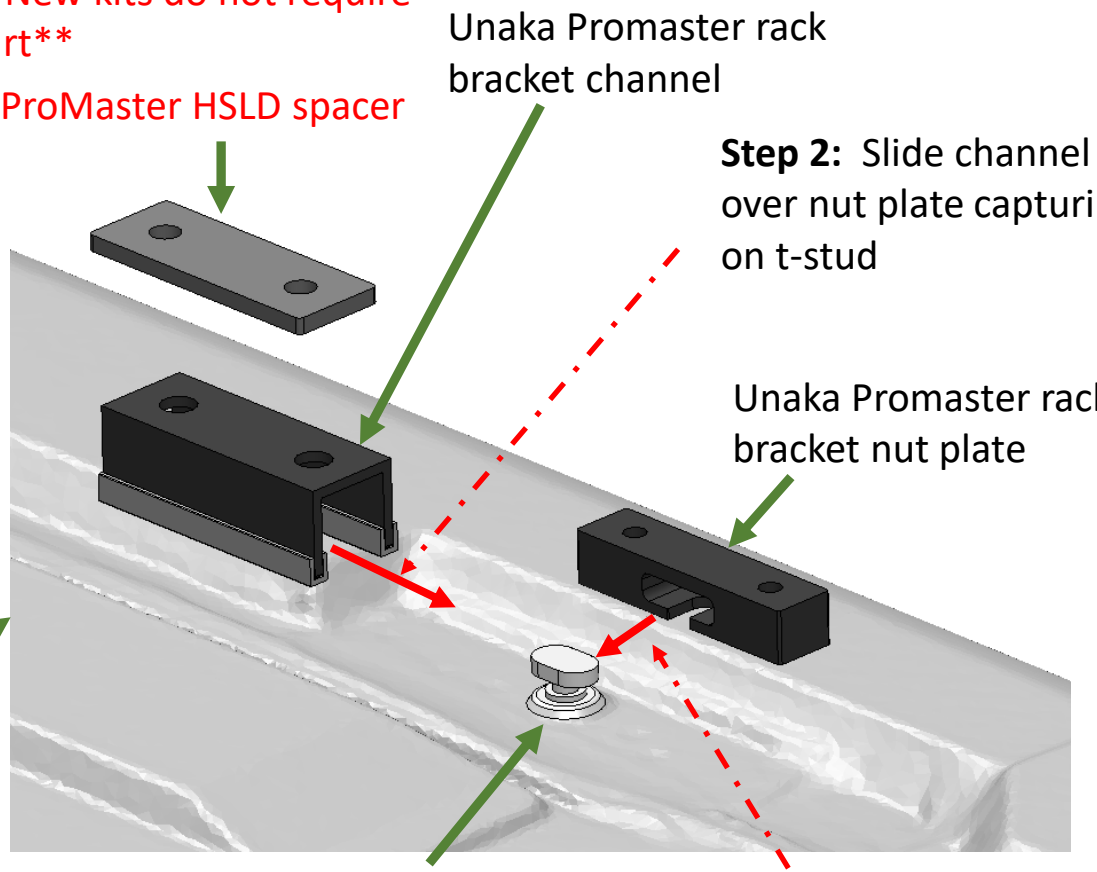


*Image shows a ProMaster 159” WB



Loosely Install Side Rail Assemblies

1. Install 1 side rail assembly at a time using 2 people
2. Lower the side rail assembly onto the roof rack brackets placing a HSLD spacer between the top of the bracket and the bottom of the 8020 adapter (spacer only required with kits shipped before June of 2023)
3. Insert the hex bolt through both washers, apply a dab of Loctite 242 to the side of the bolt, and maneuver it through the 8020 adapter, through the spacer, and into the rack bracket nut plate
4. Turn the first bolt until it just starts to thread in (if you thread it to far you may have a hard time engaging the 2nd bolt
5. Install the 2nd bolt until following the steps above until it just starts to thread in. If you have trouble you can loosen the first bolt a touch or try to lift on the nut plate to help it engage.
6. Snug both bolts up evenly but do not tighten yet

NOTE: The dimensions we set the rear three 8020 adapters to during the side rail assembly should be close but may not be perfect for every van. You may need to loosen some of the 8020 adapters and reposition to get the holes to line up with the rack bracket / nut plate.

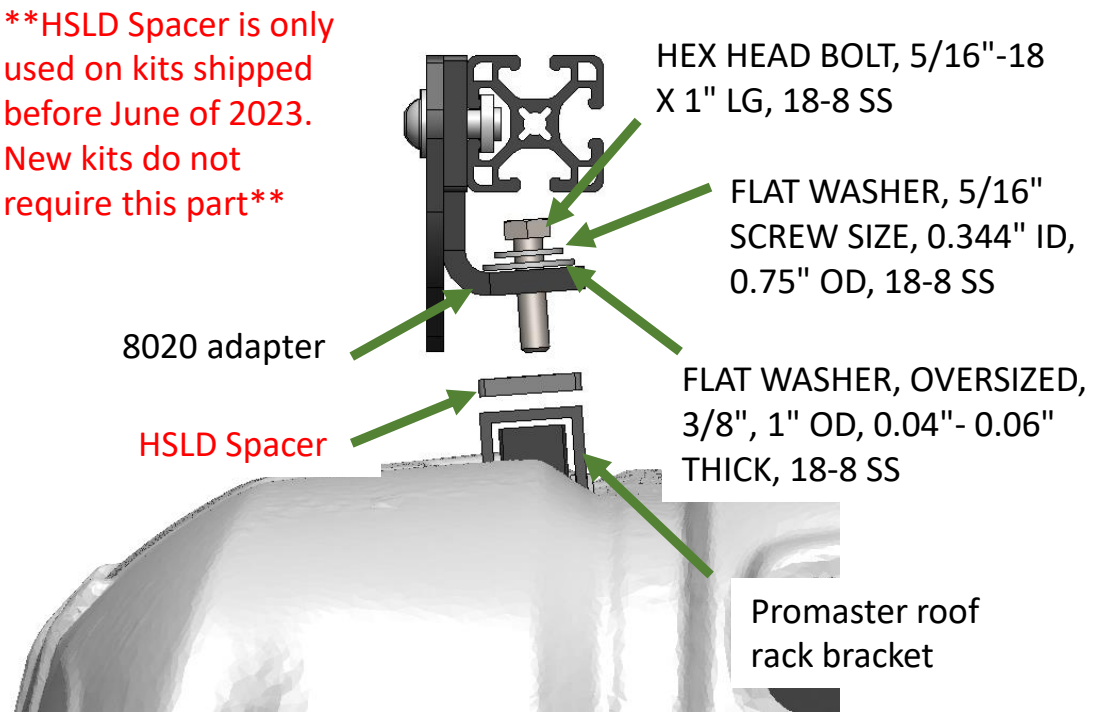
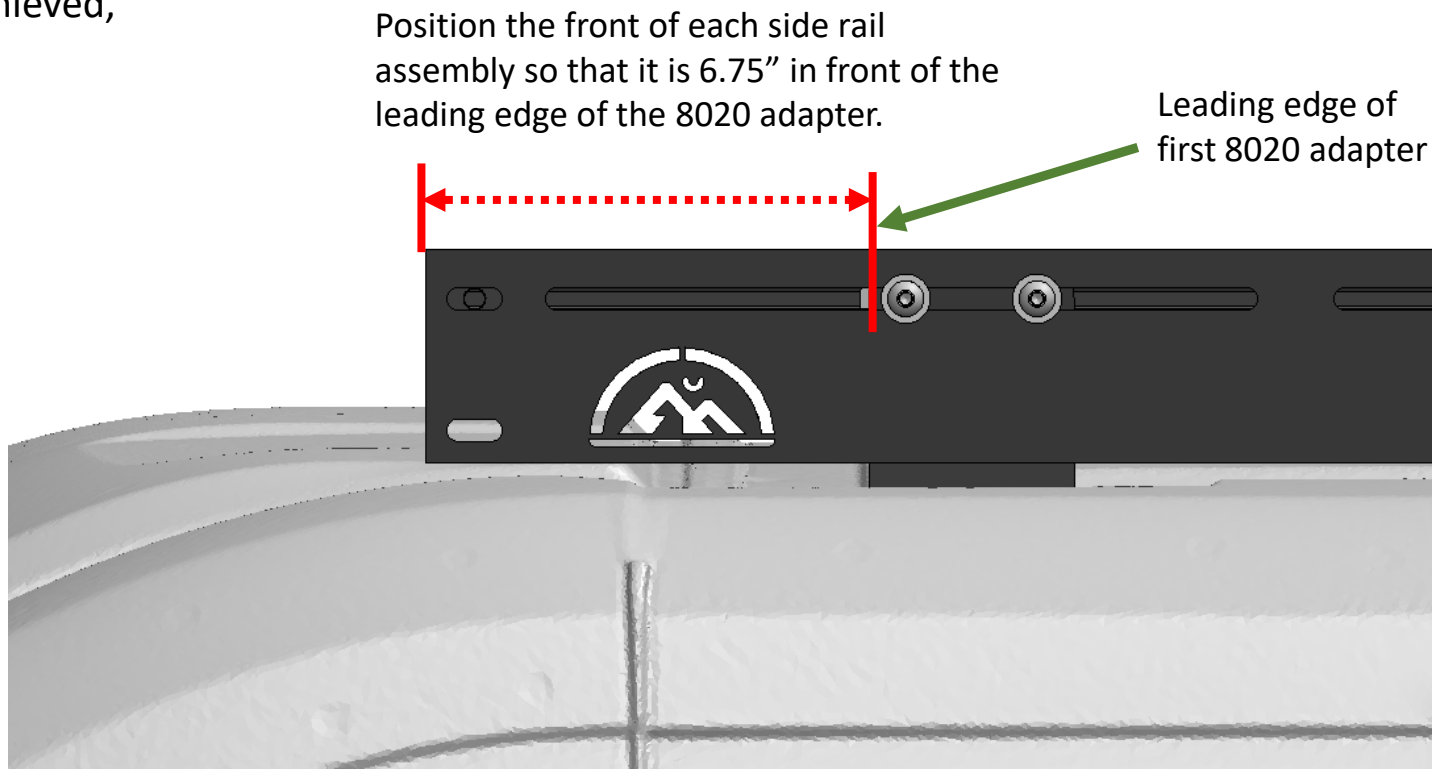


*Image shows a ProMaster 159” WB

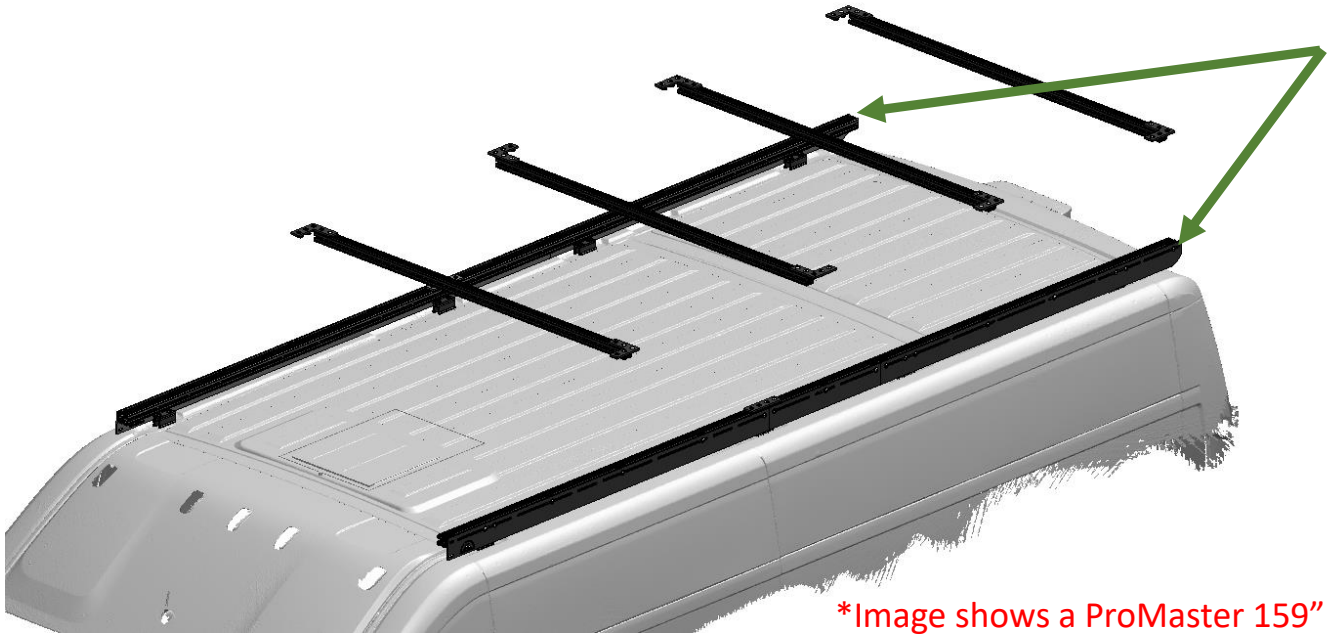
Position Side Rail Assemblies

1. The side rail position with respect to the first 8020 adapter should have been set during the side rail assembly process
2. Confirm that both driver and passenger side rail assemblies are 6.75” in front of the leading edge of the 8020 adapter after they are installed.
3. If they are not, loosen the hardware securing the side plates to the 8020 adapters (not spacer plates), slide the side rail assembly forward or back until 6.75” is achieved, then tighten everything back down.



Loosely Install Cross Bar Assemblies

1. Rough position your cross bars in their desired locations. In order to set the side rail to rail spacing in a later step, you will need at least one towards the front, one towards the middle, and one towards the back even if you move them based on your design needs later.
2. Slide 3 t-nuts into the top of each side rail assembly for each cross bar L bracket.
3. Some of these t-nuts will need to be installed from the front, and others from the back. Unless you remove the splice plate you will not be able to install all t-nuts from the front or back.
4. Now is also a good time to add any additional t-nuts into the top of your 8020 side rails that you may need for other accessories (awnings, etc.). Even if you get them close and have to remove one L bracket to re-position them bolts past it, at least you won't have to remove all of them.
5. In some cases, your 4 hole splice plate may interfere with your desired cross bar location. If this is the case, slide the 4 hole splice plate to one side, or just use the 5 hole cross bar L-bracket as the splice plate.
6. Lower your cross bars onto the 8020 side rails, apply Blue Loctite 242 to the sides of the hardware provided with the cross bar assemblies, and thread them into the installed t-nuts. Do not fully tighten.



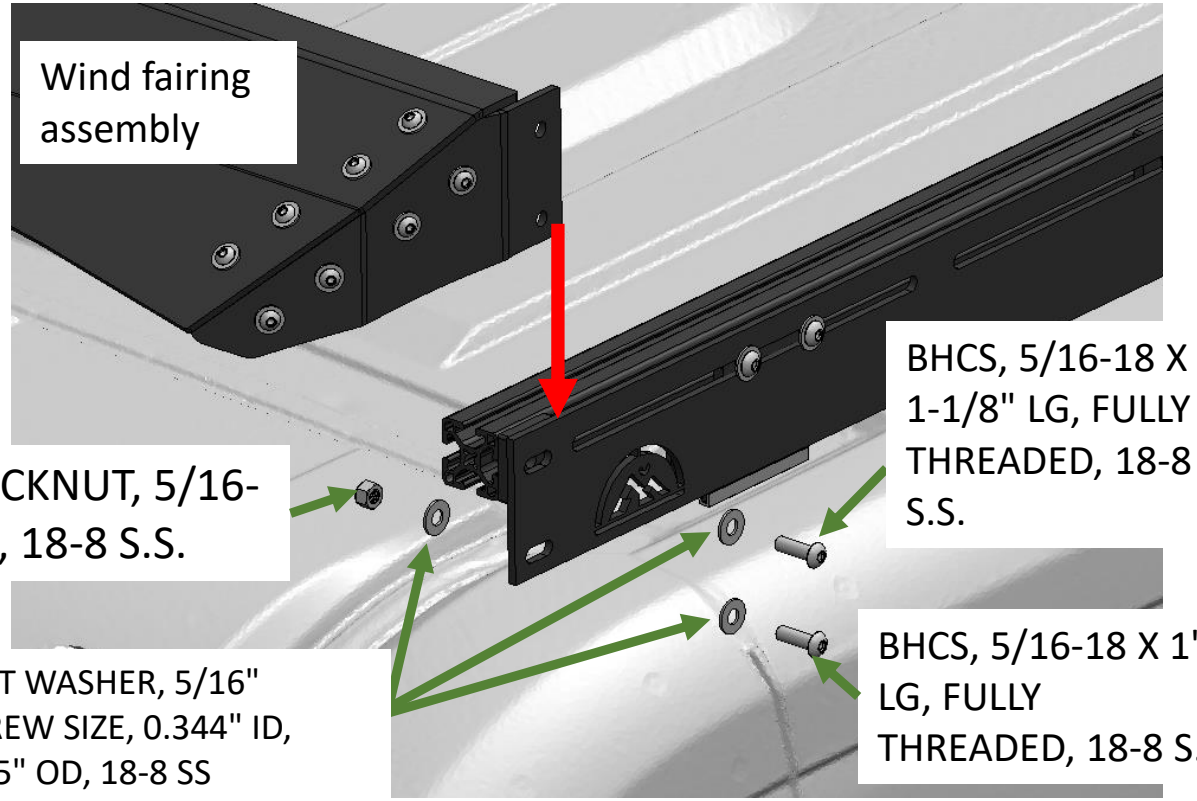
For every cross bar, slide 3 t-nuts into the top of each 8020 side rail. If cross bars are located in front of the 4 hole splice plate, insert those t-nuts from the front

*Image shows a ProMaster 159" WB

Loosely Install Wind Fairing Assembly

This step should be completed with 2 people using 2 ladders
Tip: Use rags as needed to protect the van if you need to sit the wind fairing on the van roof
Warning: Take extra precautions to not drop the wind fairing onto the wind shield, and down the front of the van
Note: The slots in the side plate allow for forward / backward adjustment of the wind fairing, as well as gives the ability to adjust the angle of the wind fairing

1. Install rubber bulb seal onto the leading edge of the wind fairing assembly
2. Lower the wind fairing assembly down so it is on the outside of the side plates, if you previously installed the 5/16-18 x 1-1/8” long BHCS in the front spacer during the side rail assembly, it will need to be removed to get the wind fairing in place
3. Insert the 5/16-18 x 1-1/8” long BHCS through the 5/16” washer, apply Blue Loctite 242 to the side of the bolt, insert through the side plate, through the spacer, and into the t-nut. Do not fully tighten.
4. Insert the 5/16-18 x 1” long BHCS through the 5/16” washer, apply anti-seize to the side of the bolt, insert through the side plate, through the 2nd 5/16” washer, and into the nylock nut. Use a 3/16” allen wrench and a ½” socket wrench to tighten, do not fully tighten.
5. Use the slots in the side rail assembly to position the wind fairing as desired. Tighten all hardware.
6. ``

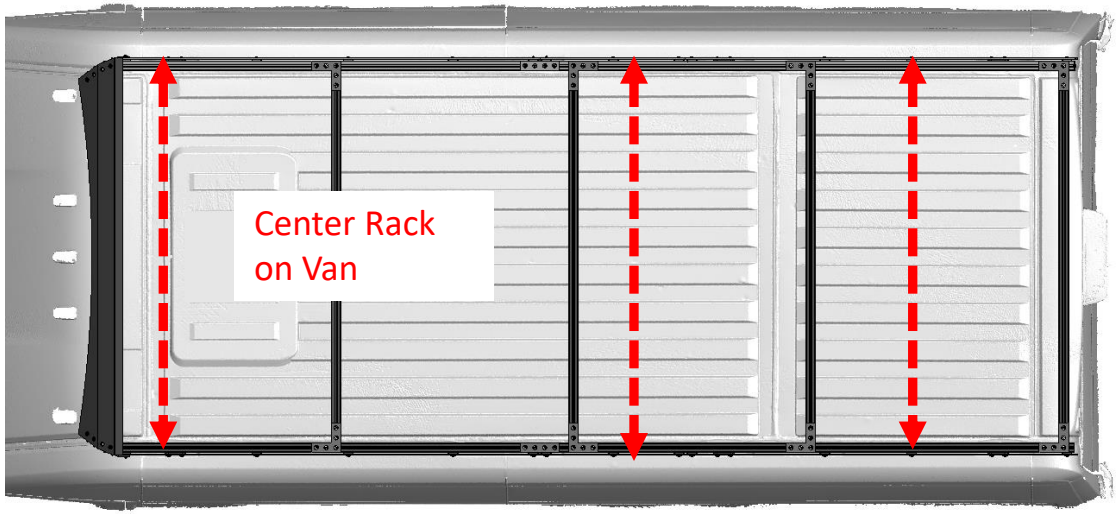


Set side rail to side rail spacing

This step should be completed with 2 people using 2 ladders

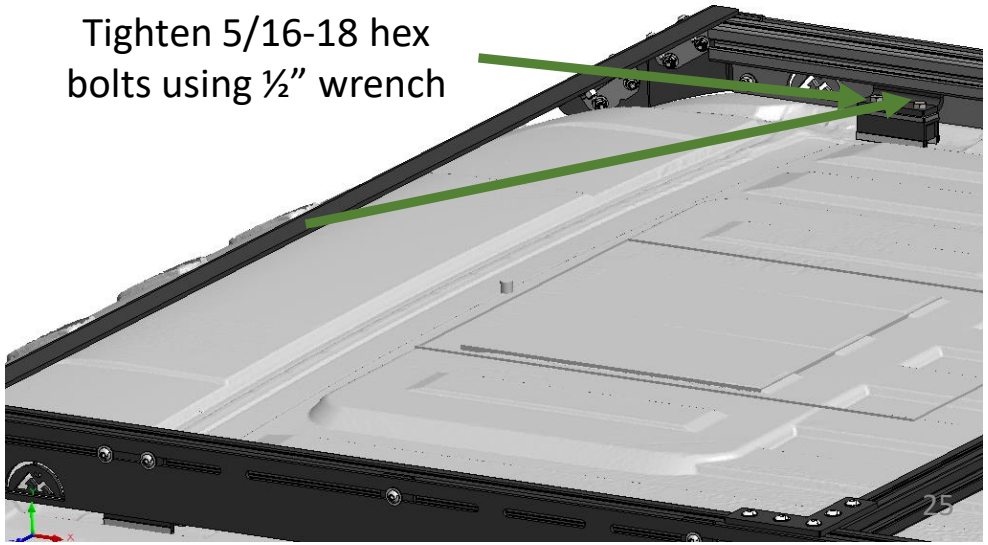
1. Position 3 to 4 of the installed cross bars along the length of the rack
   a) At a minimum place one towards the front, one towards the middle, and one towards the back
   b) Do not place cross bars directly over a rack bracket
2. Loosely bolt the cross bars to the 8020 rails
3. Once the cross bars are in place, center the rack on the van and set the side rail to side rail spacing so that the cross bars are tight, but can still be removed, or adjusted forward or backwards. As you adjust, the rail to rail spacing, snug up the roof rack brackets and cross bar hardware
   a) If the rack brackets are too tight, loosen them just enough to allow the rail to rail spacing to be set
4. Once everything is parallel and even with each other, tighten the rack brackets to the van roof. Tighten both bracket bolts evenly by alternating from bolt to bolt. Torque to 90 in-lbs.
5. Double check that all rack brackets are tight before moving to the next step. Once solar panels and other items are installed, tightening and checking this hardware is difficult.

*Image shows a ProMaster 159" WB



Temporary cross bars near front, middle, and rear

Tighten 5/16-18 hex bolts using ½" wrench



Final Install of Cross Bar Assemblies

1. Remove and reposition any cross bars that were not located in their final locations during the rail to rail spacing step
2. The final position of the cross-bar assemblies can now be set
   - See later page about potential cross bar and splice plate interferences
3. If you completely loosen, or find your self loosening a bolt that already has Loctite on it several times, remove it and apply some more

Final Torque Checks

Once everything is installed, go back and check that all hardware is tight.

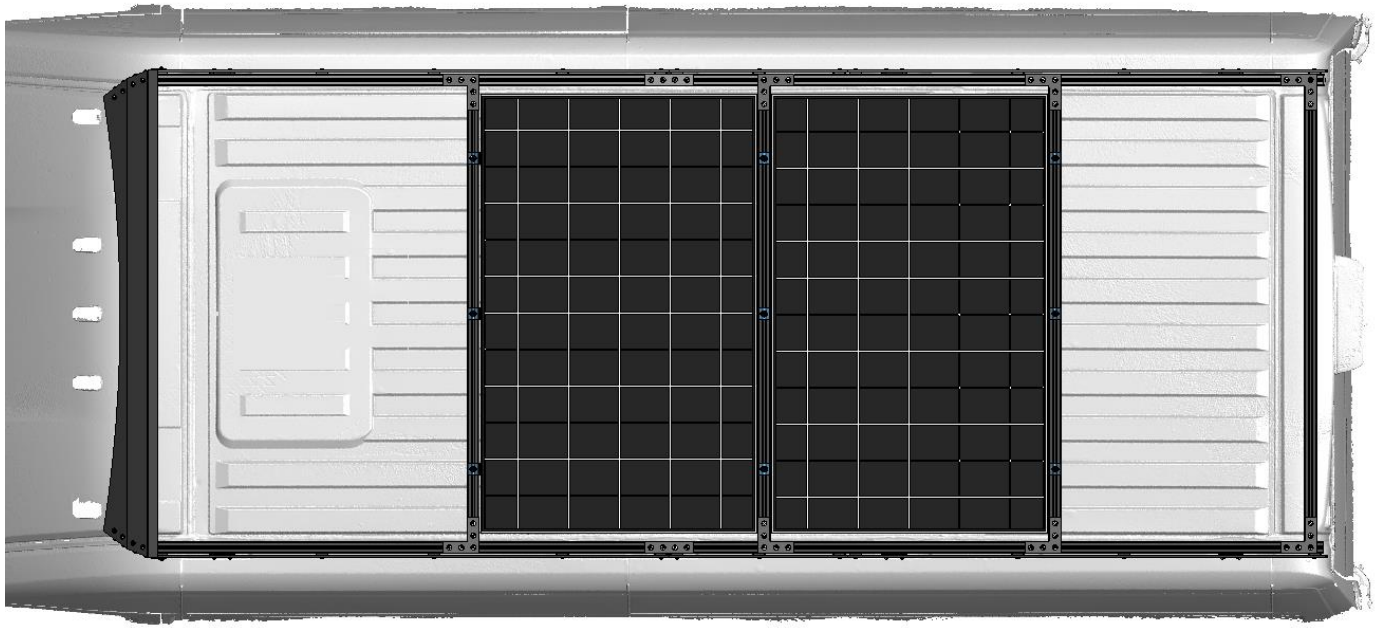


*Image shows a ProMaster 159” WB

Potential Cross Bar to Splice Plate Interference

In some cases, your rack layout may require your cross bars to occupy the same space as the splice plates, see Figure 8. In this example, there are no fans or other items on the roof that would prevent the solar panels and cross bars from being installed a few inches further back to eliminate the interference. If this was not an option, the L-bracket can simply be rotated 180 degrees so that it is pointed away from the splice plates instead of towards them.

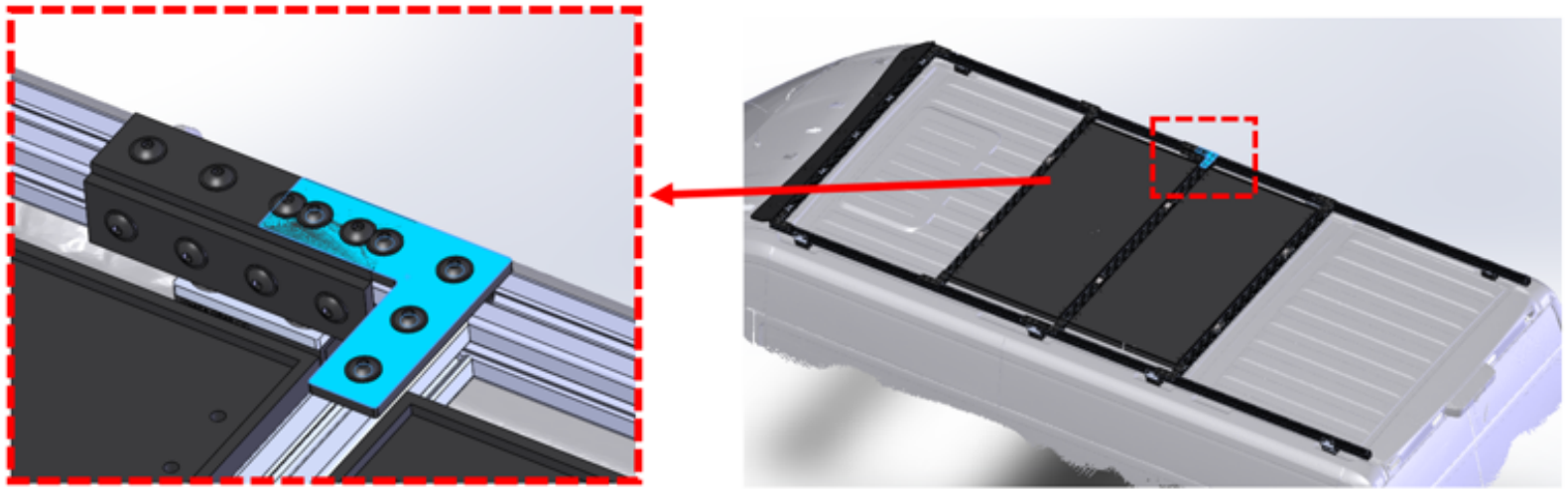


*Image shows a ProMaster 159" WB

Figure 8: Top splice plate and cross bar bracket interference, flip L-bracket 180 degrees or move splice plate

If you cannot re-arrange your layout the following options can be used to eliminate the interference

- If possible, rotate the L-brackets 180 degrees so they do not interfere with the splice plates.
- If the rack is only supporting solar panels and the front and rear side rail are being joined at an Unaka 8020 adapter bracket on one side, then consider just using 1 splice plate instead of both plates.

Preventative Maintenance Checks

Even though we do not expect any of the hardware to come loose, we recommend checking your roof rack hardware from time to time to help minimize the chance of something coming loose over time. Using the appropriate wrenches check the roof rack hardware to ensure nothing is coming loose at the intervals below.

- Initial check after 4 to 7 days of moderate driving
- Follow Up Check 1 month after moderate driving
- Routine checks 3 to 4 months of moderate driving
- Anytime after moderate driving on bumpy roads or gravel roads

This completes the installation of your HSLD kit.

Legal Disclaimer

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