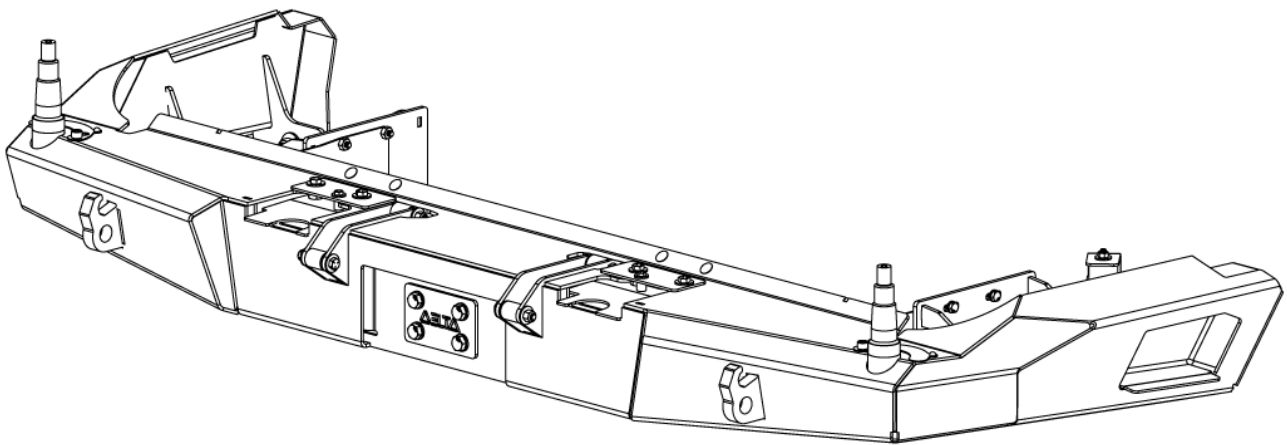


## Land Cruiser (LX450) Rear Bumper 1991-1997



## Overview

Congratulations on your purchase of the DELTA Vehicle Systems Modular Rear Bumper. This bumper has been designed in CAD, CNC laser cut, formed, fabricated, and powder coated 100% in the U.S.A.

## Product Compatibility

This bumper is compatible with the 91-97 FJ80/FZJ80/LX450, and allows for the mounting of DELTA Vehicle Systems Swing Gates and accessories.

## Parts List

<b>ID Number</b>	<b>Description</b>	<b>Quantity</b>	<input type="checkbox"/>
10347-13	Bumper Front Brace	1	<input type="checkbox"/>
10347-18	Right Rearward Bracket	1	<input type="checkbox"/>
10347-20	Left Rearward Bracket	1	<input type="checkbox"/>
10347-23	Delta Nameplate	1	<input type="checkbox"/>
10350-1	Autolatch Clasp Top Plate	2	<input type="checkbox"/>
10594	Right Forward Bracket	1	<input type="checkbox"/>
10596	Left Forward Bracket	1	<input type="checkbox"/>
10597	Right Internal Frame Plate	1	<input type="checkbox"/>
10598	Left Internal Frame Plate	1	<input type="checkbox"/>
10607	Rear Bumper Assembly	1	<input type="checkbox"/>
10787	Autolatch Post Base, Left Side	1	<input type="checkbox"/>
10789	Autolatch Post Base, Right Side	1	<input type="checkbox"/>
12139	Hardware Pack	1	<input type="checkbox"/>

## 12139 Hardware List

ID Number	Description	Quantity	<input type="checkbox"/>
10340-25	Bumper Mount Shim	4	<input type="checkbox"/>
10347-14	Bumper Mount Spacer	2	<input type="checkbox"/>
10347-29	Exhaust Hanger Bracket	1	<input type="checkbox"/>
10189	1/4" Hex Bolt	2	<input type="checkbox"/>
10392	5/16"x1" Carriage Bolt	8	<input type="checkbox"/>
10581	M12 Washer	6	<input type="checkbox"/>
10606	1/2"x1-1/2" Hex Bolt	12	<input type="checkbox"/>
10654	5/16" Washer	20	<input type="checkbox"/>
10660	1/2" Washer	30	<input type="checkbox"/>
10662	3/8" Washer	20	<input type="checkbox"/>
10800	5/16" Torque Nut	4	<input type="checkbox"/>
10802	3/8"x1-1/4" Hex Bolt	12	<input type="checkbox"/>
10818	M12 Nyloc Nut	2	<input type="checkbox"/>
10821	M8 Nyloc Nut	4	<input type="checkbox"/>
10824	M12x45mm Flange Hex Bolt	8	<input type="checkbox"/>
10836	1/2"ODx1/4"IDx5/8"L Aluminum Spacer	2	<input type="checkbox"/>
10934	1/4" Washer	2	<input type="checkbox"/>
10978	M8x25mm Hex Bolt	12	<input type="checkbox"/>
10998	Rubber Isolator	1	<input type="checkbox"/>
10999	2.375" U-Bolt Clamp	1	<input type="checkbox"/>
11044	M12x30mm Hex Bolt	2	<input type="checkbox"/>
11191	1/2" Hex Nut	4	<input type="checkbox"/>
11583	1/2" Flange Nyloc Nut	12	<input type="checkbox"/>
11622	5/16" Flange Nyloc Nut	8	<input type="checkbox"/>

**Packaged by:** \_\_\_\_\_

## Tools

- 1-1/8" (28mm), 3/4" (19mm), 11/16" (17mm), 9/16" (14mm), 1/2" (13mm) sockets
- Various sizes of socket wrenches
- 3/4" (19mm), 9/16" (14mm), 1/2" (13mm) combination wrenches
- Sawzall
- Measuring tape/ruler
- A friend to help lift heavy things

1

## Remove Exhaust Resonator



Cut the exhaust 2-1/2" upstream of the resonator.

2

## Remove Factory Exhaust Hanger



Un-bolt and remove the factory exhaust hanger bracket. Note that you will likely have to do this with the resonator still attached, so having a wobbly socket will make this step much easier.

3

### Left Side Internal Frame Plate



This plate needs to slide inside the frame rail. This might be tricky as there are nuts welded to the inside of the frame from the factory.

Slide the plate in to the right of these nuts initially. Once the plate is in far enough so that the holes are aligned with those in the frame, it can be moved to sit flush against the left side of the frame rail.

4

### Left Side Rearward Bracket



Sandwich the frame between the driver side internal frame plate and the driver side rearward bracket (pictured).

Using the two rearward most holes in the internal frame plate, start two 3/8" bolts.

**NOTE:** Do not tighten bolts all the way until specified.

5

### Right Side Internal Frame Plate



The right side plate should be much easier to install, just slide the plate in until the holes are aligned and set it flush against the inner right wall of the frame rail.

6

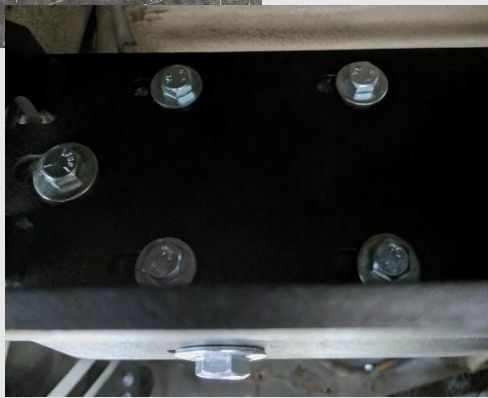
### Right Side Rearward Bracket



Using the two rearward most holes in the internal frame plate, start two 3/8" bolts.

7

### Left Side Forward Bracket

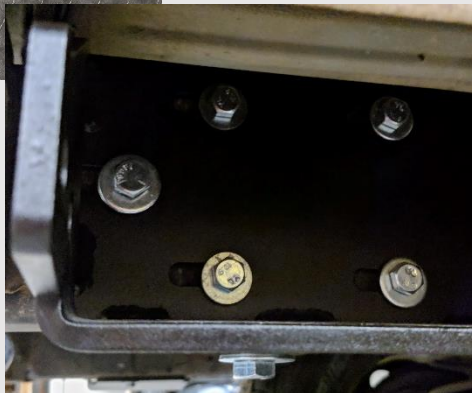


Start the four M8 bolts and the 3/8" bolt on the side of the bracket, as well as the M12 bolt on the bottom of the bracket.

While the M12 bolt on the bottom threads directly into the frame, the five bolts on the side all go into the inner frame plate. To help align this hole, you can move the inner frame plate around using the rearward bracket as a handle.

8

### Right Side Forward Bracket



Start the four M8 bolts and the 3/8" bolt on the side of the bracket, as well as the M12 bolt on the bottom of the bracket.

This process is largely the same as the left side forward bracket. However, the four M8 bolts go directly into the frame, meaning that only the 3/8" bolt on the side needs to be aligned with the inner frame plate.

9

## Place Bumper on Frame



With two people, place the bumper on the vehicle so that it rests on the frame rails.

The bumper will need to be tilted so that the mounts on the bumper will clear the forward frame brackets, as shown.

10

## Trim Fender Flare if Needed



On some vehicle models, there is a small rear boss on the fender flare that interferes with the bumper placement.

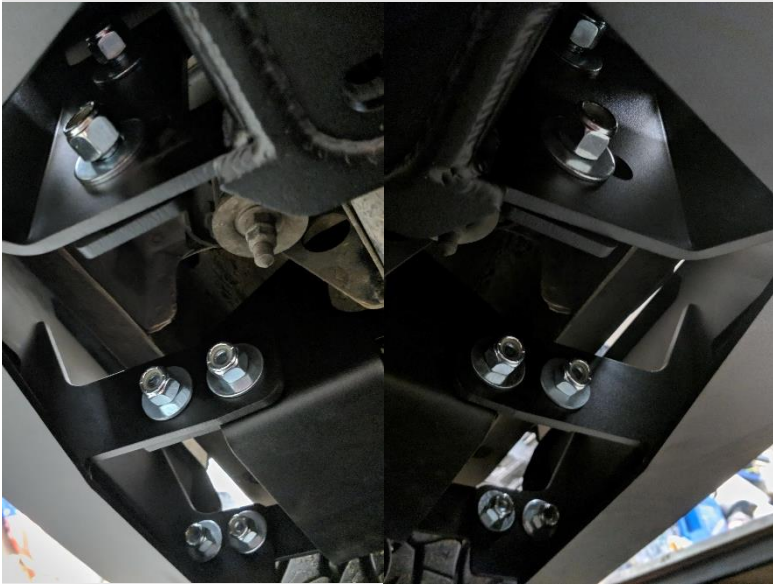
If your model has this boss, you will need to trim it down as shown, on both sides.

**Be careful when doing this!** Inhaling the particles and fumes released from fiberglass can be potentially very dangerous. Wear a safety mask!



11

## Start the Bumper Mount Bolts



Start the 1/2" bolts (using a nyloc nut and washers on both sides) holding the bumper to the frame brackets. Make sure the bolts are oriented so that the head is pointed towards the front of the vehicle.

There are six bolts on each side: two on the rearward bracket and four on the forward bracket.

12

## Insert Spacers and Shims



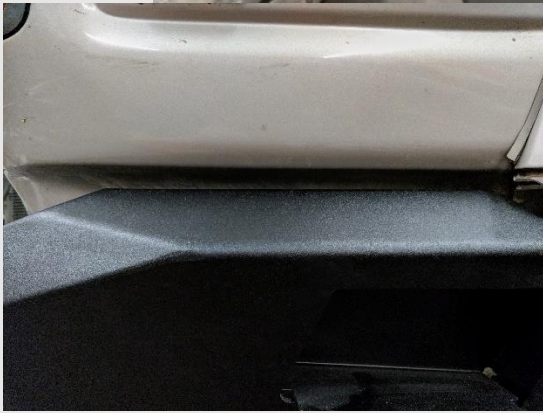
On each side, slide a spacer in between the frame and the mount on the bumper.

Then slide two\* stainless shims between the spacer and the bumper, and insert an M12 bolt with a washer up into the rearmost hole and finger-tighten it.

\*The shims are notched so that they can be added and removed without undoing this bolt, as you will need to use them to fine tune the position of the bumper.

13

### Adjust the Bumper's Position

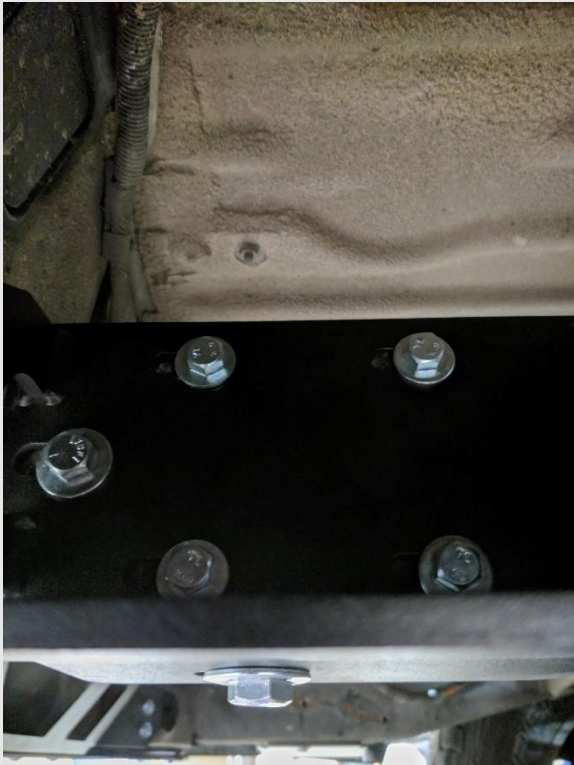


The bumper will have some movement forwards and backwards. Adjust it so that it aligns with the fender well on each side, while also centering the bumper left/right. Then adjust the frame brackets to sit flush with the mounts on the bumper.

This is where you will add and remove shims as needed; the goal is for the bumper to sit as low as possible to maximize tailgate clearance, while staying as level as possible. You can use the reveal lines on the body as a reference for this, as shown.

14

### Tighten Forward Frame Brackets



On the forward frame brackets first **snug (not tighten)** the two (one per side) M12 bolts on the bottom, then tighten the two (one per side) 3/8" bolts, then the eight (four per side) M8 bolts, and finally tighten the M12 bolts.

Tighten the M12 bolts to 99.6 ft-lbs (135Nm), the 3/8" bolts to 34 ft-lbs (46Nm), and the M8 bolts to 29.5 ft-lbs (40Nm).

Tighten and torque the forward most pair of 1/2" bolts closest to the rear tires on each side to 57 ft-lbs (77.3Nm).

15

### Snug Spacer Bolts

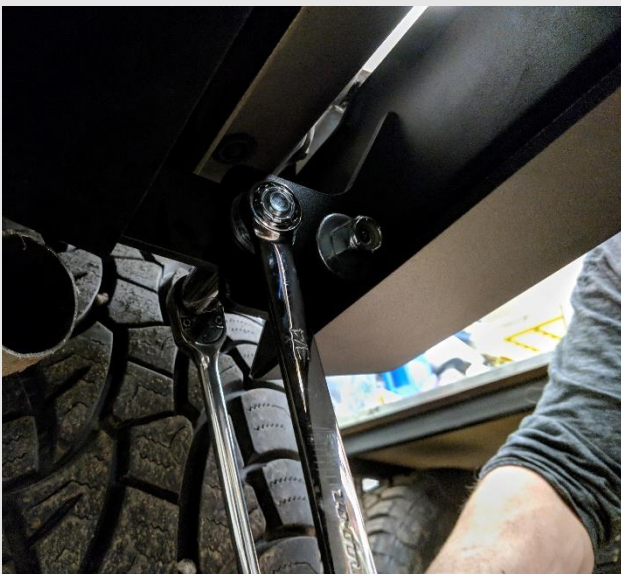


Throughout this step, your helper needs to hold the bumper up to the chassis and keep it aligned with the body line.

Add the second bolts to the shim stacks on each side and finger tighten them. As you do this, continue to watch the fender well and reveal lines on the side of the vehicle to make sure it stays properly adjusted. Then you can snug up both of these bolts, still watching carefully for the reveal lines.

16

### Tighten Forward Most Bracket Bolts



Tighten the four (two per side) forward most bolts on the forward bracket to 57 ft-lbs (77.3Nm).

17

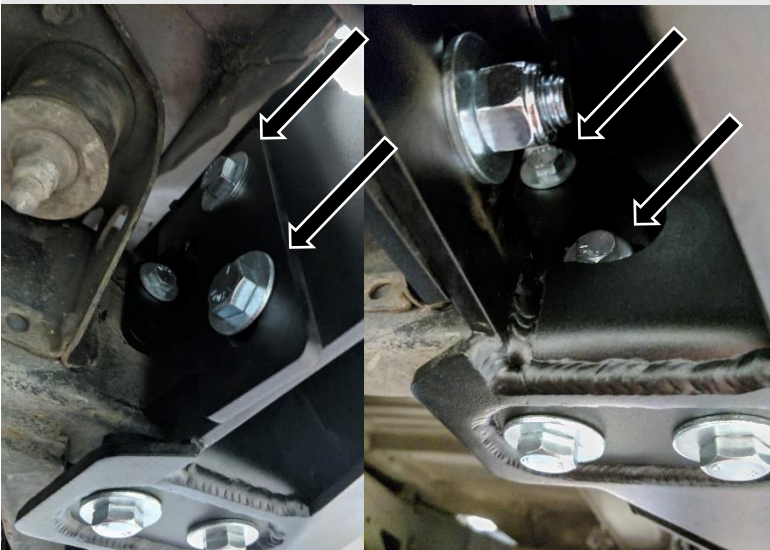
### Tighten Middle Bracket Bolts



Tighten the four (two on each side) rear most bolts on the forward bracket, again to 57 ft-lbs (77.3Nm).

18

### Tighten Remaining Bumper Mount Bolts



Tighten the remaining eight (four per side) bolts on the rearward bracket. This is another place where a wobbly socket or gearwrench makes things much easier. The larger bolts are 1/2" and should be tightened to 57 ft-lbs (77.3Nm), while the smaller ones are 3/8" and should go to 23 ft-lbs (31.2Nm).

Finally, tighten the four M12 bolts on the spacer stacks (visible in the bottom of both photos) to 99.6 ft-lbs (135Nm).

19

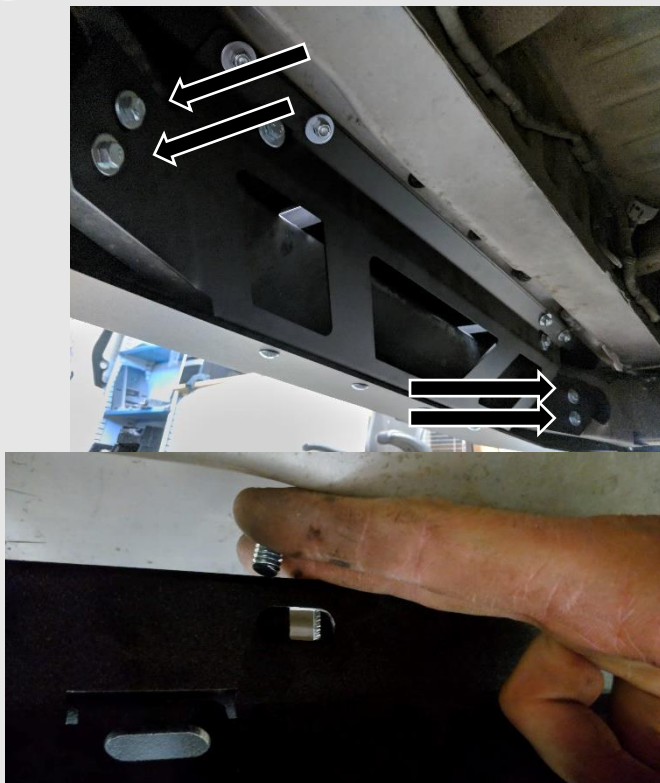
### Slide Latch Plates into Place



Slide both of the lower latch plates into place from underneath the bumper. Pictured is the correct orientation for the left side latch plate; the right side plate is a mirror image of the left.

20

### Install Inner Brace



The inner brace is held in place with eight 5/16" carriage bolts and four M8 hex bolts (each w/ a nut and washer). Tighten the 5/16" nuts to 13 ft-lbs (17.6Nm) with a 1/2" socket, and the M8 bolts to 29.5 ft-lbs (40Nm).

On some earlier vehicle models, the frame doesn't have holes for the four M8 bolts (noted in the picture). These must be drilled manually, to 3/8".

The carriage bolts along the top are dropped in place from above – there should be just enough room for your fingers. The other bolts' heads should face down.

21

### Attach Exhaust Hanger & Rubber Isolator



On the right side forward bracket, there is a tab above the exhaust. Insert one of the rubber isolator's posts into this tab from the top, and put the exhaust hanger onto the top post so that it hangs down, as shown.

Then, use two torq nuts – one on top and one on bottom (and each with a washer) – to secure this all together, but don't torque them down yet.

22

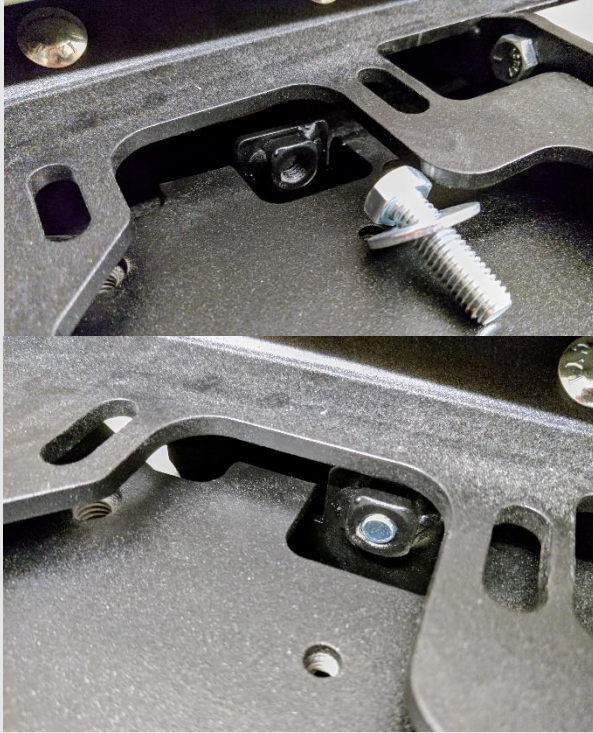
### Secure Exhaust to Hanger Bracket



Fasten the included u-bolt around the exhaust pipe and insert the u-bolt's rods through the slotted holes in the bracket. Then use the remaining two torq nuts (with washers) to tighten the u-bolt clamp down. At this point, you can torque down these nuts as well as the ones securing the exhaust hanger to the forward bracket.

23

### Latch Tensioner Bolts



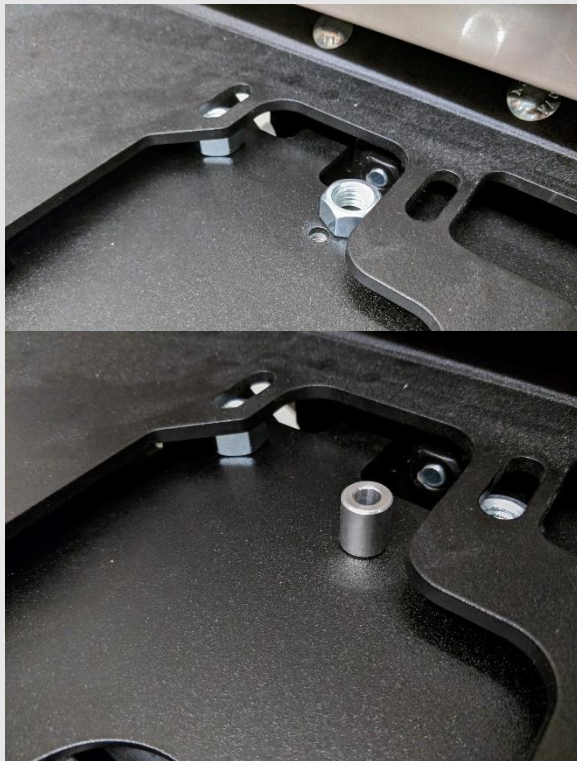
Start the two (one per side) 3/8" latch tensioner bolts with washers.

These bolts go through the inner brace and thread into the lower latch plate.

The latch plate has an intentional bend to load it against the bumper cut out. If this bolt does not go in first, it will cross-thread if installed later.

24

### Latch Assembly Spacers

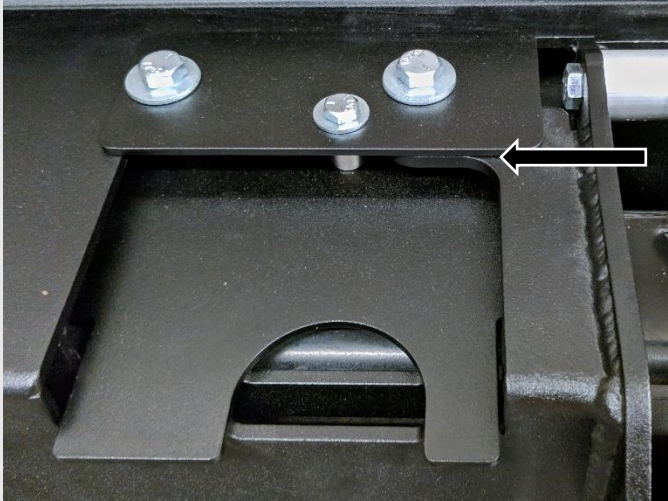


First, pull the lower latch plate as far rearward as possible.

Then, insert two half inch nuts as spacers, aligning them with the slotted holes. Then align a spacer over the hole in the latch plate as shown. Do this on both sides.

25

### Upper Latch Plate



Place the upper latch plate over these three spacers, as shown. Then start two 3/8" bolts (w/ washers) through the spacers in the left and right holes, and a 5/16" bolt + washer in the center spacer. Do this on both sides.

Before tightening any of these bolts, slide the latch plate assembly into place so that the upper latch plate is flush with the bumper at the spot noted with an arrow. After doing this, all six bolts (three on each side) can be tightened down to 23 ft-lbs (31.2Nm) for the 3/8" bolts and 13 ft-lbs (17.6Nm) for the 5/16" bolts.

26

### Delta Name Plate



Put the Delta name plate over the four holes in the center of the bumper, and insert and tighten four M12 bolts into the holes. The top two are shorter and will thread directly into the frame, while the bottom two are longer and need nyloc nuts, reachable from the inside of the bumper. Tighten them all down to 99.6 ft-lbs (135Nm).



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Enjoy Your Hard Work



You're all done! Take a step back and admire your new DELTA rear bumper.

Your bumper is now ready to accept our dual lug auto-latching swing gates. If you are not installing these, covers can be purchased from DELTA VS to protect the spindles so swing gates can be installed at a later date.