



2017+ Maverick X3 (All Models) Frame Gusset Kit # S3117



INSTALLATION INSTRUCTIONS

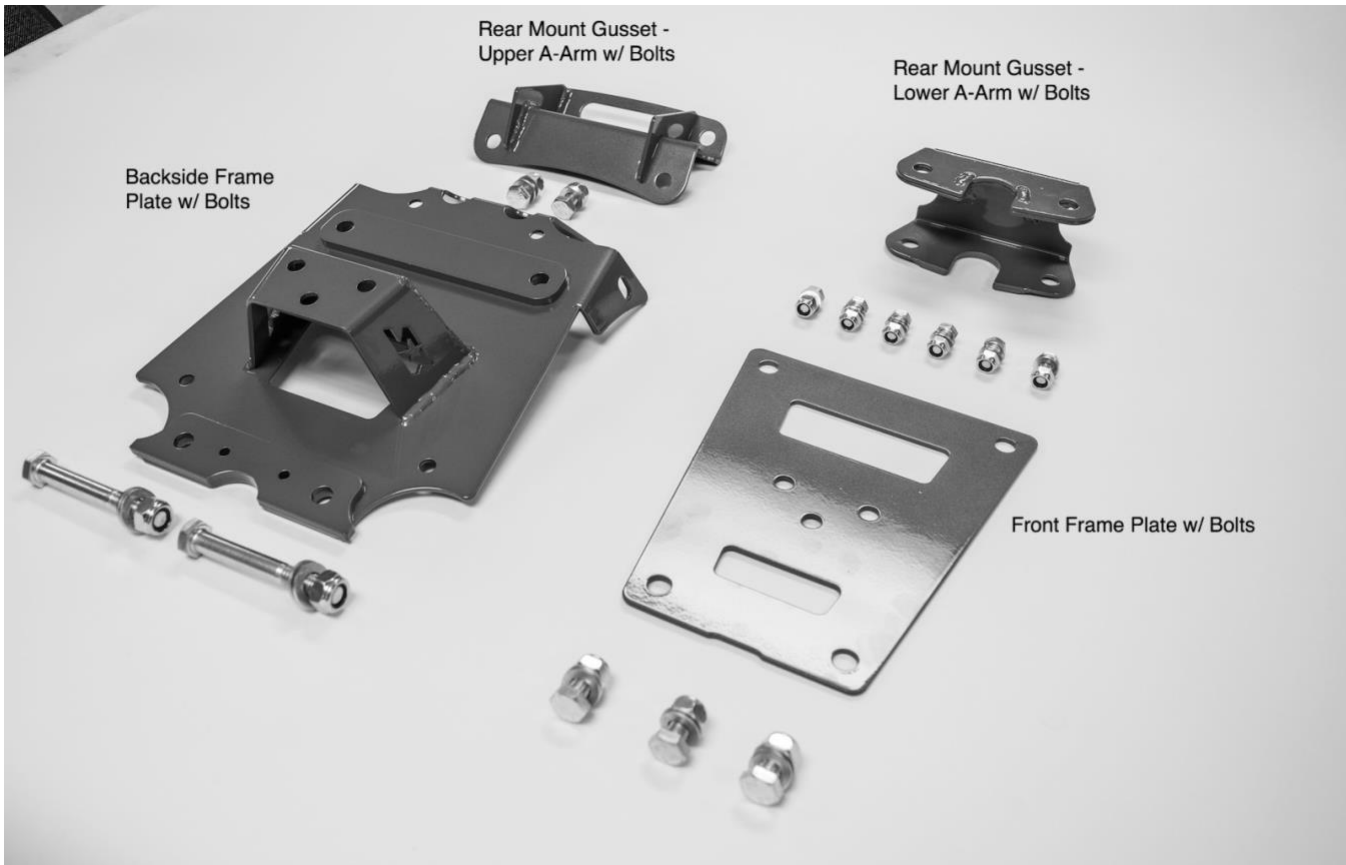
Maverick X3 – Front Frame Gusset Kit



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PARTS LIST

ITEM	PART #	DESCRIPTION	QTY
		Front Frame Plate	1
		Backside Frame Plate	1
		Rear Mount Gusset – Lower A-Arm	1
		Rear Mount – Upper A-Arm	1
		Bolt Kit – S3BK-CMAVX3-GK	1





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INSTALLATION

- 1.) Place Maverick X3 on flat solid ground and make sure it is in park.
- 2.) Remove cotter pins and axle nuts from each axle
- 3.) Remove brake calipers by removing the two bolts that secure caliper to hubs then remove the hub assembly on each side
- 4.) Remove ball joint pinch bolt and dislocate ball joint from knuckle.
- 5.) Remove shocks from both sides.
- 6.) At this point, you can lift both upper a arms which allows you to remove the CV/axle from the spindles.
- 7.) Remove upper ball joint nuts and washers from the upper ball joints. This will now allow you to remove the spindle from the upper ball joint by hitting down on the spindle with a dead blow.
- 8.) Remove the bulkhead from the front of the machine by removing the (4) nuts and the radiator bolts. (Recommendation – Strap the radiator up to keep it in position.
- 9.) At this point, you can remove the Nuts and bolts that secure the A arms and remove all A arms from the frame.
- 10.) Disconnect the tie rod bolts that hold the tie rods to the spindle and place the spindles to the side. You can leave the tie rods hanging out of the way.
- 11.) Remove the CV axles from the differential by using a slide hammer (Suggested tool) or by using the “Snatch Method” or by using a small pry bar. ****NOTE – CV will dislocate from back if pulled on too hard using the “snatch method”.**
- 12.) Remove the 4 nuts and washers holding the differential to the frame. These bolts will be located on the bottom side of the frame. ****if you have a small torch, apply small amount of heat to the bolts to loosen Loctite material from the factory****
- 13.) Remove differential from the frame area. Be careful not to turn differential sideways or upside down for too long to avoid fluid loss.
- 14.) Remove the (2) small bolts in the front of the frame that hold the “stud pack” in. Remove the stud pack.
- 15.) Remove the (2) small bolts on the side of the frame that holds the black plate to the backside of the frame.
- 16.) From here you will need to make the necessary modifications to the frame for your gusset plate.
- 17.) Start by drilling the holes in the picture. There will be two rivets in the location of where you need to drill. Use these as reference points. Using a 21/64 drill bit, drill the holes in the described locations in pictures. NOTE- the holes on the top and sides are pre-existing holes. You will enlarge them with your 21/64 drill bit.
- 18.) Next you will need to clearance your diff tray by grinding slots in the front for the lower control arm bolts to clear. ****See Pics****
- 19.) There are two more holes to drill. To locate where to make these holes, place “front diff” gusset plate into frame with the “S3” logo going through the front frame hole. ****You may need to insert the frame plate horizontally and then stand it up into place**** From here you can come in front behind the plate to mark the holes shown in the pic. NOTE- If installing a “S3 Shock Tower Brace”, now would be the time to grind down the small welds on the frame. If you are not installing a shock tower kit, disregard.



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- 20.) Remove Front diff plate and drill the marked holes with a 21/64 drill bit. NOTE- we recommend spray painting the spots that were drilled or had any grinding done to them.
- 21.) Now reinstall the gusset plate into the frame and loosely install bolts. Do not tighten at this time.
- 22.) Next, install the lower control arms gusset. Lay the gusset onto the tube in front of the rear control arm studs as shown in the pic.
- 23.) Install both lower a arms at the same time by inserting the rear bushings into the rear lower a arm gusset and sliding the gusset/control arm over the rear lower mounting studs. NOTE- IF you have a friend to help, now would be the time to use them. IF you do not, an easy way to avoid the trouble would be to remove the skid plate and drill out the rivets that hold these studs together. The guys at S3 prefer this method so we can remove one control arm at a time but it does require removing the skid plate. That takes a lot of rivet removal.
- 24.) At this point, both lower a arms should be resting downward and only connected by the rear lower a arm studs in the frame.
- 25.) Set the differential into the frame and connect the drive shaft. Do not install any differential bolts at this time. We need to be able to be able to slide the differential during a later step.
- 26.) Install the Upper control arm gusset by using (2) m10x1.5x20 bolts, washers, and nuts. Leave bolts finger tight at this time.
- 27.) Install Both upper control arms. Insert upper a arms into the rear gusset first and insert the bolts from the backside to where the nuts are facing the differential. Insert bolts in the front to where the nuts face outwards towards the bulkhead. If you have a XRC or XMR, you will use the supplied m12x1.25-90mm in the front.
- 28.) At this point, you should have all the control arm bolts in except the lower fronts. See Pic. The next few steps will differ depending on your model and/or if you are installing a S3 Bulkhead.
- 29.) If you have a XRC or XMR, install the bulkhead plate now using the (3) m10-1.5x20 button head bolts using red Loctite.
- 30.) If you are using a S3 Bulkhead you will not use the gusset plate and would install the S3 Bulkhead at this point using the Button head bolts
- 31.) Install the bulkhead by hanging it on the 2 upper control arm bolts. Thread the factory nuts on the upper bolts and leave loose.
- 32.) Install the Lower control arm bolts through the bulkhead, (bulkhead plate if used), control arm, and the gusset plate. Use the provided M12 washers. If you have a XDS or XRS you will use the M12x1.75x85 bolts.
- 33.) At this point you will notice that the upper control bolts in the bulkhead face outwards and the lower bolts face inwards. Now you can install the washers and nuts onto the bolts. This is easiest by sliding the differential around to gain access to tighten them. Use Red Loctite.
- 34.) If you have a XRC or XMR model there will be an additional bolt at the bottom of the bulkhead from the factory. This additional bolt goes through a spacer and into the frame. There will be a bolt on the top of the spacer that holds the spacer to the bulkhead. Loosen this bolt so you can slide the spacer forward and flush with the frame. Tighten both bolts.
- 35.) Tighten all (8) control arm bolts. Use Red Loctite. Note- IF you spill any Loctite, clean it up immediately. It will stain the powder. Do NOT use solvents to get it off.
- 36.) Tighten the two bolts on the upper control arm gusset. Use Red Loctite.



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- 37.) At this point you will not to bolt the differential back into the differential tray. **If you are installing our S3 Front Bumper, you will only install the 2 bolts in the rear of the differential. Also, install and tighten the driveshaft pinch bolts if you have not done so already. Check differential fluids and top the diff off with fluid if you lost too much during the removal and install process**
- 38.) If you have a S3 Show Tower brace, Go ahead and install it but leave the bolts hand tight. (See Shock tower brace instructions)
- 39.) Reinstall the front CV axles into the differential. Make sure the O-Ring is on the end of the shaft going into the differential. NOTE- if you are having trouble getting the stubs to go into the diff all the way, try turning the driveshaft on the backside of the differential.
- 40.) Next, install the spindles. Install them on the upper ball joints into the spindles first. Leave the axle nut out of the spindle so you can have room to tighten the nuts on the upper ball joints. Install the cotter pins into the upper ball joints.
- 41.) Next, route your brake lines and caliper. This will differ whether or not you are using factory control arms or our S3 A arms. Factory control arms have the brake lines on top of the upper control arms and the S3 A arms have the brake line placement tabs on the bottom side of the upper control arm. Do not bolt the caliper down or secure the lines just yet.
- 42.) Next, Install lower ball joints into the spindles and install pinch bolts. This may require some repositioning and some tapping with a small rubber hammer to get the ball joint to go into the spindle. Use Red Loctite on these as well to prevent loosening from driving the machine.
- 43.) Reinstall the Tie Rods
- 44.) Next, install the hubs onto the spindles. Make sure the CV is fully inserted onto the splines and the hub is fully inserted into the wheel bearing. Now install the washer and axle nut. Tighten with an impact and use Red Loctite on the axle nuts.
- 45.) Install Brake calipers next. Make sure the pads are separated on each side of the rotor. Use Red Loctite on brake caliper bolts as we have seen these loosen on their own in the past.
- 46.) Secure brake lines to upper a arms using the factory holders or zip tie them to the supplied brake line tabs on the S3 A arms.
- 47.) Reinstall Sway bar links. Make sure the brake lines are UNDER the sway bar links.
- 48.) Reinstall the shocks. There is a left and a right shock. The reservoir will face inward and towards the front of the machine.
- 49.) Install the radiator mounting hardware and tighten. If you have a XRC or XMR, go ahead and install the winch leads. These will need to be rerouted as well. (See Pic)
- 50.) Before installing plastics, Check all your work and make sure all the bolts are tightened down.
- 51.) Install any plastics you may have removed throughout the process and install wheels and tires. Perform an alignment on the machine to make sure everything straight IF broke lose the jam nuts on the tie rods.
- 52.) CHECK DIFFERENTIAL FLUID.

NOTE – S3 front bumper will share bumper arm mounting holes w/ Gusset kit &/Or shock tower brace if they are installed.

NOTE – IF pairing this kit with a shock tower brace kit, ground down welds on front side of frame per the shock tower instructions



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Thank you for choosing the S3 Power Sports Gusset Kit. If you have any questions or concerns, please give us a call and speak with our Sales Team. 855-221-7097

Figure A





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Figure B

Use a small die grinder and burr bit to remove excess material from differential tray to allow room for supplied bolts to slide in.





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Figure C





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Figure D





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Figure E





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Figure F



***To make it easier on this part of the install, you can notch the skid plate to have easier access to the bolts holding the a arms on. There's a small plate holding the bolts in place that you will have to remove the rivets to. After you remove the rivets, you can get to the bolts easier and remove one a-arm at a time. We do not put this in the main instructions because it's not necessary; however, it does make it easier to install the gusset kit and maintenance the machine without having to remove both a arms at once. If you have any questions at all on this process, please give us a call at the shop and we can go over everything with you on the phone! 855-221-7097. ***

Figure G



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Finished Product





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