



# **RZR XTR**

## **SUSPENSION SYSTEM**

### **INSTALLATION INSTRUCTIONS**

**Congratulations on purchasing the Ultimate Suspension kit  
for your Polaris RZR.**

#### **INTRO**

We have spent many months racing and testing this kit to perform to the maximum level. You are quickly going to become the racer to beat out on the track!

We have broken the kit and instructions up into 4 sections since there are some many parts. It will be very helpful for you to follow these instructions to install this kit. There will be drilling required to install the shock mounts and gusset plates.

The installation of these a-arms is going to take the better part of a day for an installer that is mechanically inclined. Before you get started, please know that the tires might rub the rear fenders at full compression depending on what tires you use. We recommend using 25" tires and aluminum wheels with the minimum amount of offset for the best in performance. The factory shocks will not work. You must have shocks specifically designed for this kit. Please contact LSR if you aren't sure if the shocks you have are correct. Depending on the Axle Kit you specified, please see the supplement instructions on how to properly install your new axles. The following pages will outline how to install your new XTR A-Arm kit.

We have found that the front sway bar does more harm than good, so we don't have any mounts included in this kit to use it. We recommend removing it permanently. The rear sway bar can be used however and is recommended. We also have aftermarket sway bars available for better performance.

#### **TOOLS NEEDED**

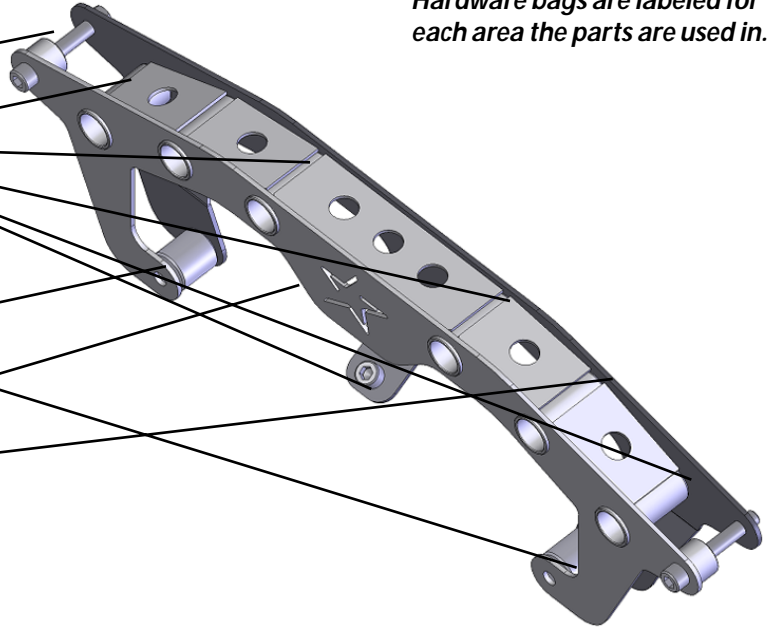
|  |  |
|--|--|
| Floor jack and/or jack stands          | DOT 3 brake fluid  |
| 13mm wrench and socket                 | Brake bleeding kit   |
| 14mm wrench and socket                 | 13/32 drill bit  |
| 15mm wrench and socket                 | Drill with 1/2" chuck  |
| 17mm wrench and socket                 | Small starter drill (1/8"-5/16")                             |
| 9/16" socket                           | CV boot strap tightener (can rent at most auto parts stores) |
| 3/4" wrench                            | Die Grinder with Cut off wheel                               |
| 5/8" wrench                            | Impact wrench or large breaker bar                           |
| 1/2" wrench                            |  |
| 1/4" wrench                            |  |
| 7/16" wrench                           |  |
| 7mm wrench                             |  |
| 27mm socket                            |  |
| 29mm socket (heavy duty axles only)    |  |
| 8mm allen socket or wrench             |  |
| 6mm allen socket or wrench             |  |
| 3/8 ratchet                            |  |
| Dead blow hammer                       |  |
| High quality water proof grease w/ gun |  |
| 17mm deep socket                       |  |
| Short 3/8 extension                    |  |
| External snap ring pliers              |  |
| Needle nose pliers                     |  |
| Diagonal pliers (cutters)              |  |
| Flat blade screw driver                |  |
| Phillips screw driver                  |  |
| #25 torx socket                        |  |

## PARTS INCLUDED

### FRONT SHOCK MOUNT

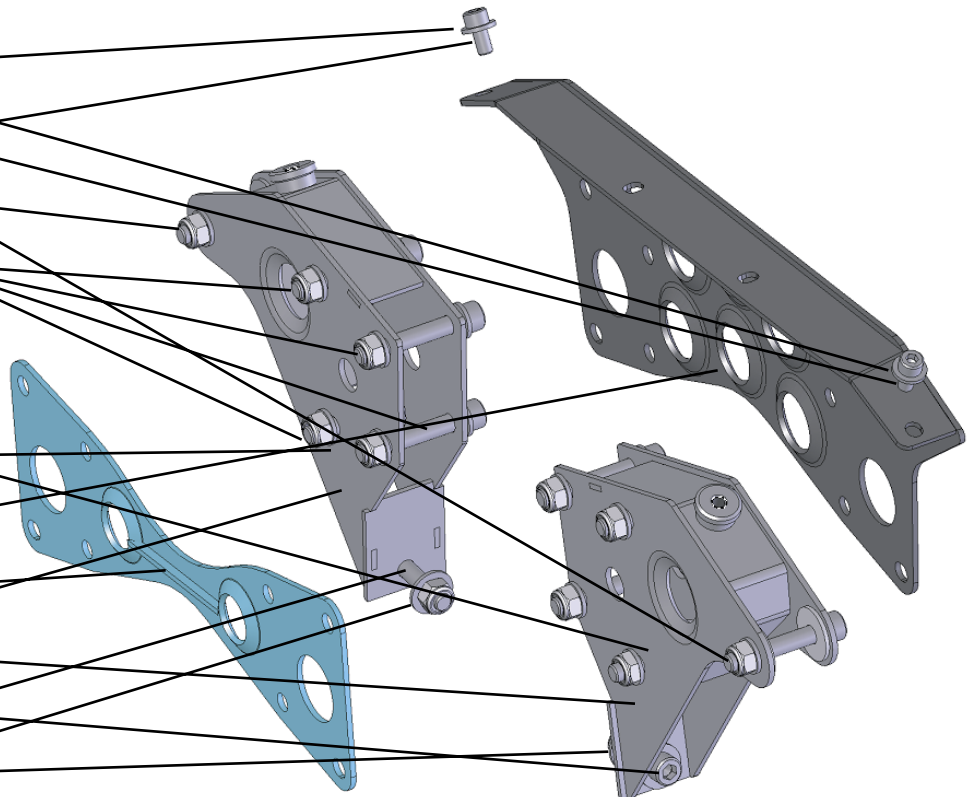
*Hardware bags are labeled for each area the parts are used in.*

- 2 - M10x 70 SOCKETHEAD BOLT
- 5 - M10x 25 SOCKETHEAD BOLT
- 7 - M10 NYLON LOCK NUT
- 14 - M10 FLAT WASHER
- 2 - OEM SHOCK MOUNT SPACER
- 1 - FRONT SHOCK TOWER FRONT PLATE
- 1 - FRONT SHOCK TOWER REAR PLATE



### REAR SHOCK MOUNT

- 2 - M8 FLAT WASHER
- 2 - M8x 16 SOCKETHEAD BOLT
- 2 - M10x 60 SOCKETHEAD BOLT
- 8 - M10x 65 SOCKETHEAD BOLT
- 12 - M10 NYLON LOCK NUT
- 20 - M10 FLAT WASHER
- 2 - OEM SHOCK MOUNT SPACER
- 1 - REAR MAIN PLATE ASSEMBLY
- 1 - FRONT MOUNT PLATE ASSEMBLY
- 2 - SIDE ASSEMBLY
- 2 - M10x 45 SOCKETHEAD BOLT
- 4 - 3/8 USS FLAT WASHER





# RZR XTR

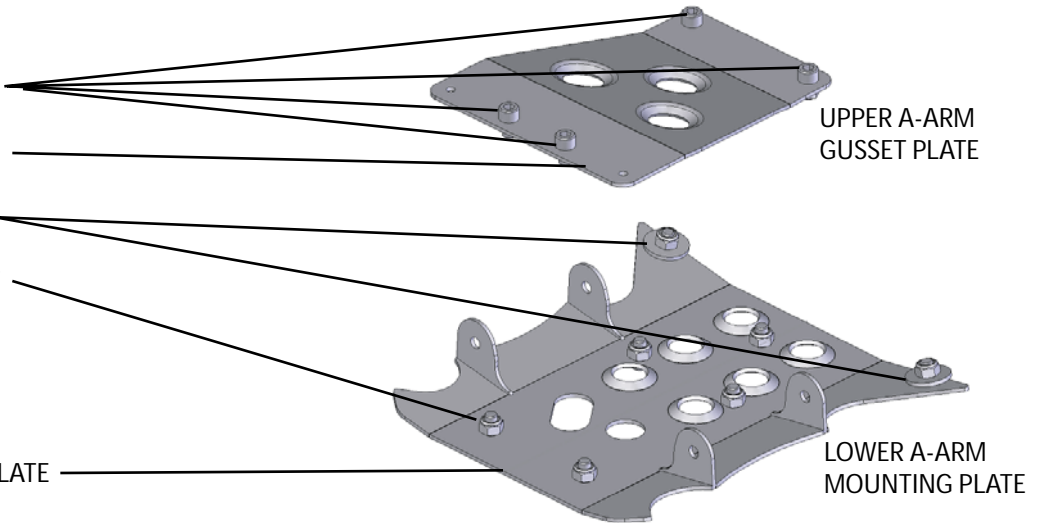
## SUSPENSION SYSTEM

### INSTALLATION INSTRUCTIONS

#### PARTS INCLUDED

##### FRONT A-ARMS

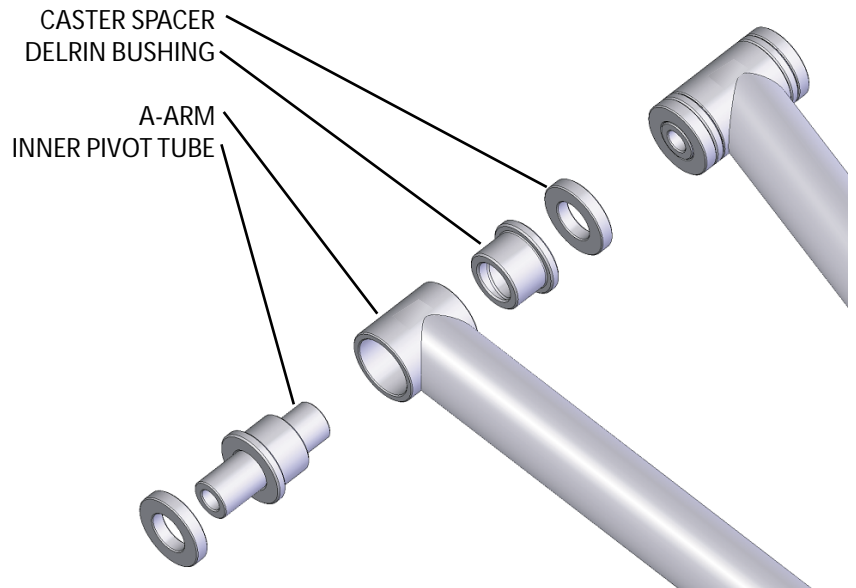
- 4 - M10x 18 SOCKETHEAD BOLT
- 1 - UPPER A-ARM GUSSET PLATE
- 2 - LARGE STAINLESS WASHER
- 7 - M10x 20 BUTTONHEAD BOLT
- 13 - M10 NYLON LOCK NUT
- 4 - M10 FLAT WASHER
- 1 - LOWER A-ARM MOUNTING PLATE



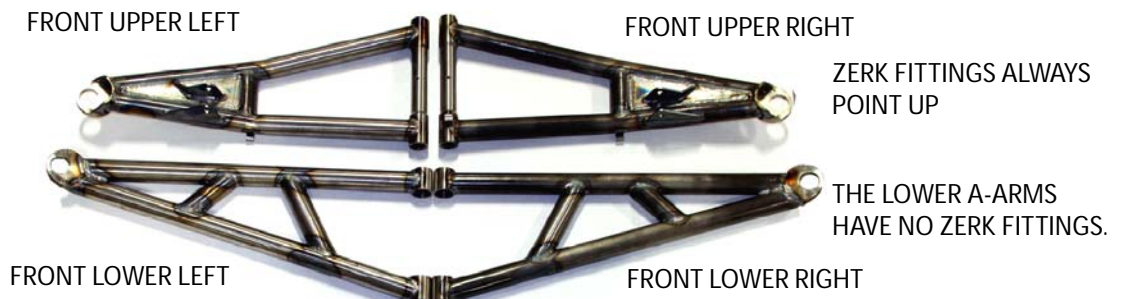
- 2 - ZERK FITTINGS
- 6 - COTTER PIN
- 8 - LSR STICKERS
- 1 - FRONT BRAKE LINE KIT
- 2 - M10x 60 SOCKETHEAD BOLT
- 4 - M10 FLAT WASHERS
- 4 - M10x 90 SOCKETHEAD BOLT
- 8 - DELRIN BUSHING
- 8 - DELRIN CASTER SPACER
- 4 - INNER PIVOT TUBE
- 2 - BLACK ZIP TIES
- 2- EXTENDED STEERING TIE RODS
- 2 - 1/2" LEFT HAND JAM NUTS
- 2 - DIFF SPACERS

- 2 - UPPER FRONT A-ARMS
- 2- LOWER FRONT A-ARMS

##### FRONT LOWER A-ARM MOUNT DETAILS



FOR CASTER SPACER ADJUSTMENT  
DETAILS, SEE PAGE 8



ZERK FITTINGS ALWAYS  
POINT UP

THE LOWER A-ARMS  
HAVE NO ZERK FITTINGS.

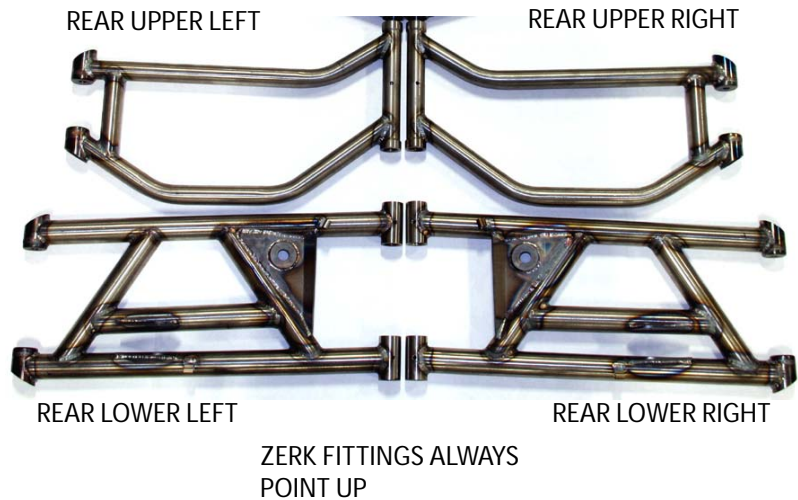


# RZR XTR SUSPENSION SYSTEM INSTALLATION INSTRUCTIONS

## PARTS INCLUDED

### REAR A-ARMS

- 6 - ZERK FITTINGS
- 1 - REAR BRAKE LINE KIT
- 2 - M10x 60 SOCKETHEAD BOLT
- 2 - M10x 120 HEX HEAD BOLT
- 2 - M10x 180 HEX HEAD BOLT
- 6 - M10 NYLON LOCK NUT
- 12 - M10 FLAT WASHER
- 2 - UPPER REAR A-ARMS
- 2 - LOWER REAR A-ARMS
- 1 - AXLE KIT (STD OR HEAVY DUTY)





# RZR XTR

## SUSPENSION SYSTEM

### INSTALLATION INSTRUCTIONS

#### FRONT SHOCK MOUNT

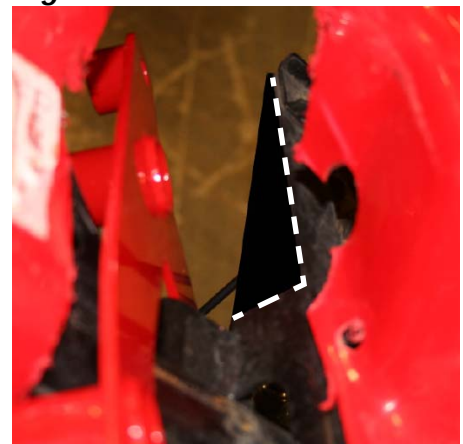
1. The first thing you need to do is jack up the front end of your RZR and rest it securely on jack stands. Make sure the RZR is very stable once you have the tires off the ground, as you are going to be applying significant force to remove and install hardware. You also need to remove the black front plastics using the #25 torx bit, and unplug the lights.
2. Remove the front hood, and loosen the front fenders from the car. It might be easier to remove the hood completely from the car, but you will have to remove part of the cage to do so. Or if you can secure the hood up out of the way, it might save some time.
3. Mark the front fenders and cut them out as shown to clear the new shock mount. **See Fig. 1**
4. Remove the front sway bar links from the a-arms and sway bar. Remove the sway bar as well.
5. Mark and cut the sway bar mount as shown with a cut off wheel to clear the front part of the shock mount on both sides. **See Fig. 2**
6. Install the front shock mount plate (one with tubes and gussets welded) The plate fits to the front side of the OEM shock mount. Take the front shock mount hardware bag, and get all of the hardware for this area. Install the rear shock mount plate (bent plate) and locate it to the back side of the OEM shock plate. Install the 6 bolts with nuts, and leave them loose. Insert the billet spacers where the stock shock used to go, and insert the OEM shock mount bolts. Then grab the last short bolt with washer and put it into the middle lower hole that goes onto the OEM shock mount plate. There is a large stainless washer that needs to go underneath with the nut. **See Fig. 3**
7. Insert the new shock mount bolts into the new holes so everything is lined up. Now tighten all hardware. You will need an 8mm allen, and a 17mm wrench. **See Fig. 4**

*Please Note, the front shock mount shown is the prototype. Yours looks different with more cross tubes and gussets.*

**Fig. 1**



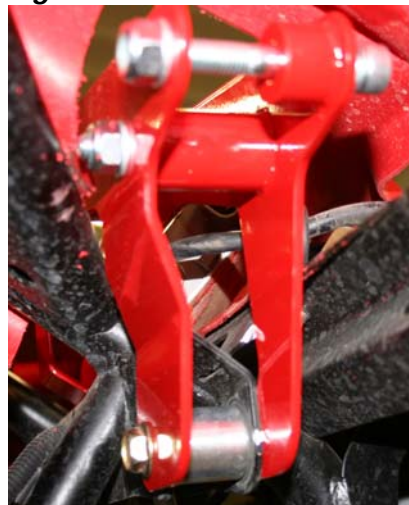
**Fig. 2**



**Fig. 3**



**Fig. 4**





# RZR XTR SUSPENSION SYSTEM INSTALLATION INSTRUCTIONS

## FRONT A-ARMS

1. Remove the front wheels using a 9/16" socket and impact wrench.
2. Remove the cotter pins, and using a 27mm socket and impact wrench, remove the axle nuts.
3. Remove the brake lines from the calipers using a 1/2" wrench, then remove the calipers using a 15mm wrench or socket. Remove the front brake lines from the master cylinder located above the driver side front a-arms.
4. Pull off the wheel hubs.
5. Remove the tie rod end from the spindle using a 15mm socket and 17mm wrench, and removing the cotter pin.
6. Remove the cross bolts that hold the ball joints into the spindle using a 13mm socket and wrench.
7. Pull the lower a-arm away from the spindle, and pull the spindle away from the upper a-arm.
8. Let the lower a-arms drop towards the floor and grasp the axle with a quick pulling motion to slide the entire shaft from the differential. It might take some force to pull the axles from the differential, but they should pop out by hand.
9. Now you can remove the bolts that hold the shocks to the chassis and a-arms, and remove the bolts that hold the a-arms to the chassis using a 15mm wrench and socket. You will be re-using these bolts and nuts for installation of the new upper a-arms only.
10. Remove the factory tie-rod ends from the tie rods. The threads are left hand, so you need to loosen them opposite normal. You can install the tie rod extenders, with jam nuts onto each end, then thread on the factory tie rod ends. Leave them loose for adjustment later.
11. Locate the Front Upper Gusset plate. You will need 4 short 10mm bolts, and 2 nuts from the main package of bolts to install this part. To install, loosen the two bolts that hold the radiator support bracket to the front of the chassis. Only remove the bolts on top that point down. Then wedge in a screw driver to bend up the tabs. **See Fig. 5** Now you can remove the two front bolts so the mount is loose. Take the new gusset plate and slide it in so the welded nuts are on the bottom side, going in first. The plate should go underneath the top plate of the steering rack support. Install the two bolts in the rear, and the two bolts with nuts on the front. Then install the OEM bolts back into the radiator support. It should look like **Fig. 6**.

**Fig. 5**



**Fig. 6**



12. Locate the Front Lower A-arm Mount, and bolt it onto the bottom of the chassis using the 7 buttonhead bolts, with nylon lock nuts. The large stainless washers go on the two rear outer tabs. You will have to drill holes through the bottom of the chassis for the 2 middle bolts. Tighten these down. If you are racing, you may want to weld this plate to the chassis to make things a little stronger, but it isn't needed for the average user. **See Fig. 7 & 8**

**Fig. 7**



**Fig. 8**



### **RZR S Model owners:**

There are two holes in the middle rear area. You need to drill out using the front hole, as the rear hole is now blocked by a gusset.

13. Remove the inner pivot tubes, and bushings from the stock upper a-arms, and install them into the new a-arms just as they were on the stock a-arms. You will also need to remove the ball joints from the stock a-arms and install them into the new a-arms. Using the external snap ring pliers, remove the snap ring, then using a hammer, tap on the ball joints.



# RZR XTR SUSPENSION SYSTEM INSTALLATION INSTRUCTIONS

## FRONT A-ARMS CONT.

They should pop out from the stock a-arms fairly easily. If not, you can use a socket and a vice to drive them out. Install them into the new a-arms and install the snap ring. **Make sure the snap ring is fully seated into the groove!** You might need to grind or trim off some of the powdercoat on the a-arm to get the snap rings to fully seat. **See Fig. 9 & 10**

14. Now take the new front lower a-arms. Apply a good amount of grease inside the delrin bushings and insert the inner pivot tubes. Locate the spacers in the correct position you desire (**see quick caster instructions on next page**) and slide the a-arms into the chassis. Using the 4 M10x 80 sockethead bolts, and nylon lock nuts, tighten the bolts to approx. 35 ft. lbs. There are no zerk fittings because they will interfere with the axles. You will have to remove the a-arm to grease them when needed.

**Fig. 9** Correct



Snap ring shown fully seated

**Fig. 10** Incorrect



Snap ring shown NOT fully seated

15. Take the Front Upper A-Arms and slide them into position using the OEM bolts. Tighten the bolts to approx. 35 ft. lbs. Now, you can grease the zerk.

16. Now, you can install the shocks using the new hardware with washers. Now, the a-arms are held up, so you can easily install the front axle shafts. Do not tighten the shock bolts until the RZR is sitting on the ground again.

17. Now, you can install the front axle shafts. Line the differential spud up into the differential and make sure the splines engage correctly, then tap on the end of the axle with a dead blow hammer to seat them into position. Make sure not to harm the threads on the axle shaft. If you are installing the heavy duty axle shafts, you will need to loosen the front differential mounting bolts, slide in the diff spacers, and tighten the diff back to the chassis. This adds extra clearance to clear the larger cv joints. **See Fig. 11**

18. The next step is to slide the spindle onto the axle shaft. Then you can attach the spindle to the upper and lower A-Arms and install the cross bolts. You can also attach the tie-rod end into the spindle. Don't worry about the length of the tie rod yet, as you will adjust that later.

19. Install the wheel hub and brake rotor into the spindle, and install the large axle nuts, tightening them to about 150 ft. lbs.

20. Install the brake calipers.

21. Install the new front brake lines (longer one goes to passenger side) using the new bolts and crush washers. The brake lines need to be clipped into position on the a-arms using the small clips that are welded to the a-arms. Close the clamps down after making sure the brake lines don't get stretched or pinched at full droop, and the steering wheel turned lock to lock. The passenger side brake line should go above the new gusset plate you installed earlier.

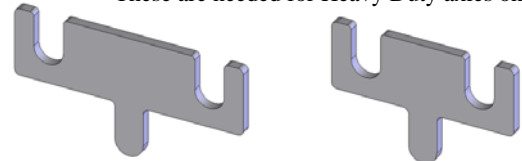
22. Install the front wheels and lower the front end down to the ground.

23. Now, is the time to tighten the shock bolts to about 35 ft. lbs.

24. Install the black front plastics opposite of how you removed them.

25. After the first ride or so, you will want to check the tightness of all hardware and tighten as required. After the castle nuts have been rechecked, you can install the cotter pins.

**Fig. 11** Front Diff Spacers  
These are needed for Heavy Duty axles only





# RZR XTR SUSPENSION SYSTEM INSTALLATION INSTRUCTIONS

## QUICK CASTER SET UP DETAILS FRONT LOWER A-ARMS

### WHAT DOES IT DO?

Quick Caster is a feature that lets you adjust how easily your vehicle will steer. The more caster you add, the stiffer the steering wheel will turn. The less caster you add, the easier the steering wheel will turn. To adjust the settings, there are 2 black delrin spacers that are supplied to be installed on each of the **front lower** a-arms. The locations of the spacers dictate the caster setting. Lone Star Racing is the originator of this feature, and currently, no other suspension kit has this feature!

### DRIVING TYPE

HIGH SPEED DESERT RACING, DUNES

GENERAL RIDING, SHORT COURSE RACING, TIGHTER TRAILS

LOWER SPEED, TIGHT TRAILS, SHORT COURSE RACING  
CRUISING THE NEIGHBORHOOD

### HIGH POSITION

If you want the most control at high speeds over rough terrain to keep the car going in a straight line, and lessen the chance of the steering wheel popping out of your hands, you want to set the caster in the high position.

### MEDIUM POSITION (like stock)

If you want a little easier steering, and don't need as much control at high speeds over rough terrain, you want to set the caster in the medium position. This position will be used by the majority of riders.

### LOW POSITION

If you want the easiest steering possible with the most maneuverability, you want to set the caster in the low position.

*Please note*, these are just suggestions, each driver will have different preferences. There is no right or wrong here, its all in how you want your car to handle.

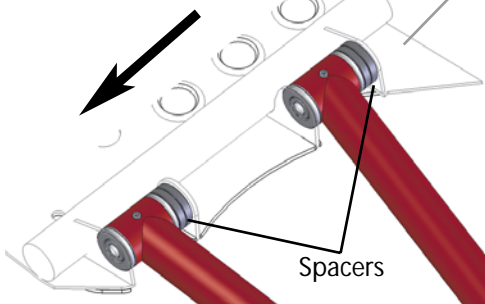
Below are close up views of the driver side front lower a-arm mounted to the chassis



**Actual Caster Settings: + or - 1 Degree**  
(Measured at ride height in Degrees)  
**High: 6.9 Positive**  
**Medium: 4.9 Positive**  
**Low: 2.9 Positive**

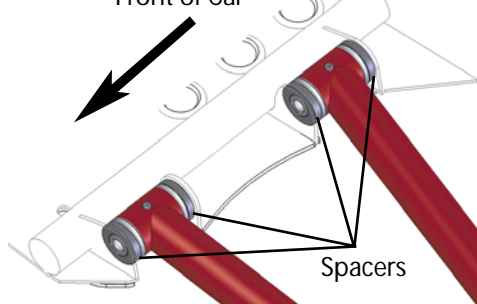
### HIGH POSITION

Spacers towards rear of car  
Front of Car



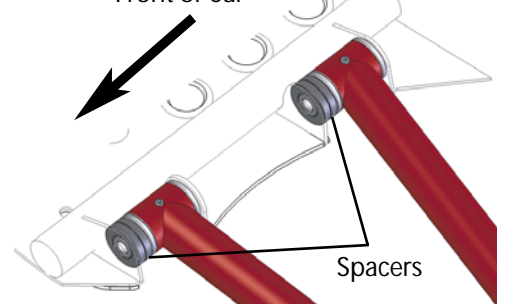
### MEDIUM POSITION

Spacers front and rear  
Front of Car



### LOW POSITION

Spacers towards front of car  
Front of Car





## REAR SHOCK MOUNT

1. Remove rear black plastics. **See Fig 12** for locations of screws. The 2 screws circled have nuts behind them that you will need a 7/16 wrench as well as the 25 torx bit to loosen. Also on the corners, there are 4 phillips screws that need to be removed. Unplug the tail light bulbs from the housings.
2. Remove the 4 bolts that hold the bed to the chassis so the plastics can be pulled up and out of the way when needed.
3. Remove the small sub frame over the exhaust muffler. This part will not be reused.
4. Jack the car up and place it on jack stands. Remove the OEM shocks.
5. Grind down the welds on the OEM shock mount so they are flat. **See Fig 13**
6. Bend tabs flat with adjustable style wrench. **See Fig 14**
7. Install these side shock mounts as shown lining up the OEM shock mount holes. **See Fig. 15**
8. Remove bolts that point down through upper part of chassis (near exhaust mount).
9. Line up the main Rear Shock Mount Plate. Install the 2 8mm bolts and washers into the side shock mounts. Then reinstall the OEM bolts that go through the top of the plate pointing down. Just hand tighten these bolts for now.
10. Line up the OEM shock mount holes and insert the billet spacers with bolts. You may have to re-drill out the OEM shock holes due to variances in OEM chassis.
11. Install the bolts into the holes above the OEM shock holes.
12. Install the front plate with the dimples pointing towards the front of the car. Now you can install the nuts on the bolts sticking through the front plate.
13. Drill the remaining 4 holes through the chassis using the 13/32 drill bit. You can use the 13/32 drill bit as a starter drill to mark the holes. Then use a smaller drill to run through all the tubing. Then go back through with the 13/32 drill to open them up. Make sure to use a new drill bit for best results.
14. Install the remaining 4 bolts and nuts and tighten them down.
15. Drill the holes through the lower legs and install the shorter bolts with gold colored washers. Tighten all bolts that hold on the shock mount. The 2 remaining bolts, washers and nuts are for the new shock mount holes. Your rear shock mount should now look like **Fig. 16 - 18**

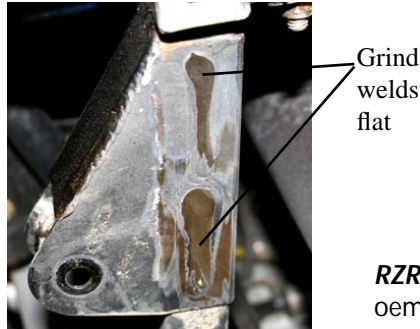
**Fig. 12**



**Fig. 14**



**Fig. 13**



**RZR S Model:** Requires more work to rear oem shock mount for proper fitment.

**Fig. 15**

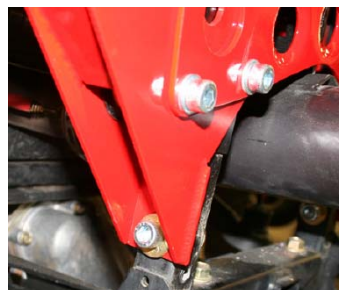


**Please Note:** If you are a racer, you may want to weld on some of these plates to the chassis. Depending on the exhaust system, the rear main or front plates may have to remain removable to be able to remove the exhaust.

**Fig. 16**



**Fig. 17**



**Fig. 18**





# RZR XTR SUSPENSION SYSTEM INSTALLATION INSTRUCTIONS

## REAR A-ARMS

1. The rear suspension is pretty self explanatory. The new parts go in just like the old ones come out with a few exceptions.
2. Remove the rear tires.
3. Remove the axle nuts just as you did on the front end. Remove the calipers and brake lines. Take off the wheel hubs.
4. Remove the bolts through the spindle up-rights using a 15mm wrench and socket and pull off the spindles.
5. Remove the bolts on the upper a-arms and remove the upper a-arms.
6. Pull out the axle shafts, just like you did on the front end.
7. Remove the sway bar end links from the lower a-arms.
8. Remove the shocks and bolts.
9. Now, loosen the lower a-arm bolts and remove the lower a-arms from the chassis.
10. Remove the pivot tubes and bushings from the stock a-arms and install them on the new a-arms just like you did on the front uppers.
11. Take the new lower a-arms and position them into the mounts on the chassis. Reusing the same hardware, tighten the bolts to about 35 ft. lbs. Grease the pivot points until you see grease coming out between the bushings and chassis. Wipe off all excess grease.
12. Now, connect the sway bar end links to the new a-arms and tighten them down. Install the new brake lines. The rear lines attach to a junction block underneath the driver seat towards the rear of the car.
13. Route the brake lines as shown in **Fig. 19**.
14. Now, it is time to install the rear axle shafts. They go in just like the fronts.
15. Install the upper a-arms using the OEM hardware and grease the joints as you did on the lowers. Tighten the bolts to about 35 ft. lbs.
16. Slide the spindle upright onto the axle shaft, using the new 10mm hex bolts and nylon lock nuts and washers, secure the spindle to the upper and lower a-arms.
17. Slide on the wheel hub. Tighten the hub nuts to 150 ft. lbs. Install the calipers. Attach the brake lines to the calipers. Cycle the suspension through the travel to see the movement of the brake lines. Tighten the bolts to make sure the lines don't get caught up or bound as suspension moves up and down. Once you have the lines fit, use a flat blade screwdriver to push down on the lip of the clamp to secure the line so it can't move.
18. Install the shocks using the new hardware. Do not tighten the bolts until the RZR is back on the ground. Now would be a good time to secure the shock reservoirs if they are equipped.
19. Put the RZR back on the ground. Tighten the shock mount bolts to about 35 ft. lbs.
20. Double check to make sure you tightened all fasteners completely, front and rear.
21. Bleed the brakes. It will help to use a brake bleeding vacuum tool to help speed the process since there is a lot of air that needs to be bled from the whole system.

**Fig. 19**



## SETTING THE TOE

1. To set the toe of the front suspension, make sure your steering wheel is straight. With the RZR on the ground at ride height, you will want to take a measurement from the inside edge of the wheel to the chassis on both sides. Adjust the tie-rods so the measurement is the same. This step insures the wheels are straight with the steering wheel.
2. Next you are going to measure for the amount of toe in. Toe in is a personal preference. We recommend about an 1/8" to 1/4" of toe-in for normal riding conditions. Basically the measurement on the front of the tire needs to be 1/8" shorter than the rear of the tire. To take a measurement, you want to be at the middle of the tire as far as height is concerned and either on the wheel or very close to the wheel for your measurements. The wheel is the best to use, because it is the most consistent. You might want to have a friend help you to take the measurements. Once you have the toe set where you want it, tighten all the jam nuts without rotating the heim joint or tie-rod extender. Make sure all steering hardware is tight. Retake your measurements to make sure nothing moved.

## AFTER YOUR INITIAL RIDE

After your initial ride, things are going to seat and adjust themselves slightly, so you want to make sure and go back and tighten all hardware. Also, make sure to tighten the main axle nuts to the proper spec. Now is a good time to install the cotter pins into the axle nuts, and the tie rod end bolts.