



## **D1603 Installation Instructions**

### **2023 Ram 2500**

### **2019 Ram 3500**

### **5.5" Gas & 6.5" Diesel Radius Arm**

### **Suspension Lift**

## **Read and understand all instructions and warnings prior to installation of product and operation of vehicle.**

Zone Offroad Products recommends this system be installed by a professional technician. In addition to these instructions, professional knowledge of disassembly/ reassembly procedures and post installation checks must be known. Minimum tool requirements include the following: Assorted metric and standard wrenches, hammer, hydraulic floor jack and a set of jack stands. See the "Special Tools Required" section for additional tools needed to complete this installation properly and safely.

### **»» PRODUCT SAFETY WARNING**

Certain Zone Suspension Products are intended to improve off-road performance. Modifying your vehicle for off-road use may result in the vehicle handling differently than a factory equipped vehicle. Extreme care must be used to prevent loss of control or vehicle rollover. Failure to drive your modified vehicle safely may result in serious injury or death. Zone Offroad Products does not recommend the combined use of suspension lifts, body lifts, or other lifting devices.

You should never operate your modified vehicle under the influence of alcohol or drugs. Always drive your modified vehicle at reduced speeds to ensure your ability to control your vehicle under all driving conditions. Always wear your seat belt.

### **»» TECHNICAL SUPPORT**

[www.zoneoffroad.com](http://www.zoneoffroad.com) may have additional information about this product including the latest instructions, videos, photos, etc.

Send an e-mail to [tech-zone@ridefox.com](mailto:tech-zone@ridefox.com) detailing your issue for a quick response.

**888.998.ZONE** Call to speak directly with Zone tech support.

### **»» PRE-INSTALLATION NOTES**

1. Special literature required: OE Service Manual for model/year of vehicle. Refer to manual for proper disassembly/reassembly procedures of OE and related components.
2. Adhere to recommendations when replacement fasteners, retainers and keepers are called out in the OE manual.
3. Larger rim and tire combinations may increase leverage on suspension, steering, and related components. When selecting combinations larger than OE, consider the additional stress you could be inducing on the OE and related components.
4. Post suspension system vehicles may experience drive line vibrations. Angles may require tuning, slider on shaft may require replacement, shafts may need to be lengthened or trued, and U-joints may need to be replaced.
5. Secure and properly block vehicle prior to installation of Zone Offroad Products. Always wear safety glasses when using power tools.
6. If installation is to be performed without a hoist, Zone Offroad Products recommends rear alterations first.
7. Due to payload options and initial ride height variances, the amount of lift is a base figure. Final ride height dimensions may vary in accordance to original vehicle attitude. Always measure the attitude prior to beginning installation.

### **Difficulty Level**

easy 1 2 3 **4** 5 difficult

Estimated installation: 6 hours

### **Special Tools Required**

Pitman Arm Puller

Cutoff Wheel

Drill Bits 9/16", 11/16"

### **Tire/Wheel Fitment**

*37x12.50 w/ 9" wide 4-1/2"~5-1/2" Backspacing*

*37x13.50 w/ 9" wide 5-5/8" Backspacing*

**\*Important\* Verify you have all of the kit components before beginning installation.**

## D1603 Kit Contents

### Qty Part

2	Coil Spring (Diesel Only) or
2	Coil Spring (Gas Only)
2	Bump Stop
1	Pitman Arm
1	4" Zone Track Bar Bracket
1	Radius Arm Drop Bracket, DRV
1	Radius Arm Drop Bracket, PASS
2	Sway Bar Drop Bracket
1	Fish Wire
1/1	Brakeline Bracket (DRV/PASS)
2	Zip Tie
1/1	Drive Shaft Boot Clamps
4	1/2" Bolt Tab
2	Radius Arm Spacer
5	1/2" Rivet Nut
1	Bolt Pack
2	14mm-2.00 x 35mm Bolt, Clear Zinc
4	14mm Washer, Clear Zinc
2	14mm-2.00 Prevailing Torque Nut, Clear Zinc

1	Bolt Pack
2	1/4" USS Washer, Clear Zinc
2	5/16"-18 Prevailing Torque Nut, Clear Zinc
1	Bolt Pack
2	3/4"-10 x 5-1/2" Bolt, Yellow Zinc
4	3/4" SAE Washer, Yellow Zinc
2	3/4"-10 Prevailing Torque Nut, Yellow Zinc
4	1/2"-13 x 1-3/4" Bolt, Yellow Zinc
4	1/2"-13 Hex Nut, Yellow Zinc
8	1/2" SAE Washer, Yellow Zinc
1	Bolt Pack
1	1/2"-13 x 2" Bolt, Yellow Zinc
1	1/2" SAE Washer, Yellow Zinc
1	1/2" Star Washer External Tooth, Clear Zinc
1	9/16"-18 Hex High Nut, Yellow Zinc
1	Bolt Pack
1	10mm-1.50 x 55mm Bolt, Clear Zinc
1	10mm Washer, Clear Zinc

### Important—measure before starting!

Measure from the center of the wheel up to the bottom edge of the wheel opening

LF \_\_\_\_\_ RF \_\_\_\_\_

LR \_\_\_\_\_ RR \_\_\_\_\_

## » PRE-INSTALL NOTES

*Notes: Gas Models will require extensive exhaust modifications.*

*Notes: Separate instructions are provided with the Index ring & Rear Box kits.*

## INSTALLATION INSTRUCTIONS

1. Park vehicle on clean, flat, and level surface. Block the rear wheels for safety.
2. Remove the front trackbar bolt from the frame rail. Retain all hardware. **Figure 1**

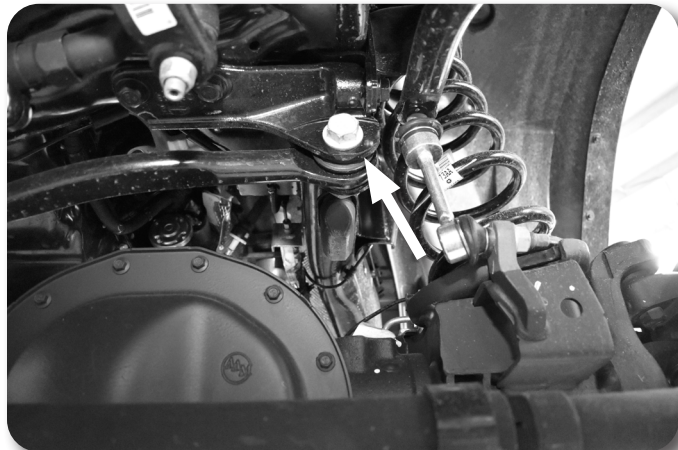


Figure 1

3. Raise the front of the vehicle and support the frame rails with jack stands. Do not support the vehicle by the radius arms, they will be removed during the installation.
4. Support the front axle with a hydraulic jack.

5. Remove the factory wheels, remove the retaining clips that hold the rotor on and may interfere with aftermarket wheels.
6. Disconnect the front drive shaft from the front axle. Hang the drive shaft from the frame. Retain all hardware
7. Break the jam nuts loose on the adjusting collar of the drag link. **Figure 2**



Figure 2

8. Disconnect the tie rod from the pitman arm, do not damage the tie rod boot. Mark the orientation of the pitman arm and remove the pitman arm from the sector shaft. **Figure 3**



Figure 3

9. Disconnect the sway bar links from the sway bar. Keep the nuts. **Figure 4**



Figure 4

10. Disconnect the brake line bracket from the top of the radius arm mount on the axle, retain bolt, discard bracket. **Figure 5**



Figure 5

11. Disconnect the factory shock from the lower shock mount. **Figure 6** Lower the front axle and remove the coil springs.



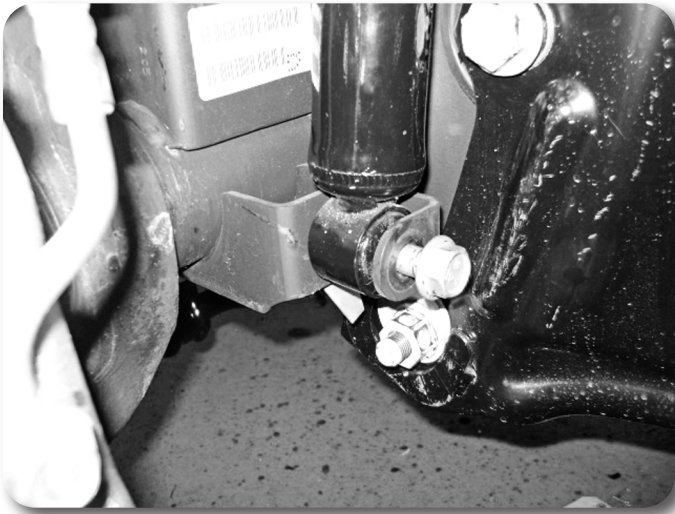


Figure 6

12. Raise the front axle and reattach the stock shocks with factory bolts. It is not necessary to put the nut tab back on. The shocks will be there to keep the axle secure. Keep a jack under the axle for extra support.
13. Remove the passenger's side radius arm. Retain all hardware. It will be necessary to remove the shock bolt and move the shock out of the way to get the upper hardware out. Reinsert the lower shock bolt when the arm is removed.
14. Place the radius arm drop bracket up to the frame rail. Insert  $\frac{3}{4}$ " bolt to locate the bracket. Mark the center of the slots on the bottom of the frame rail, mark the center of the holes on the side of the frame rail. Figure 7 & 8

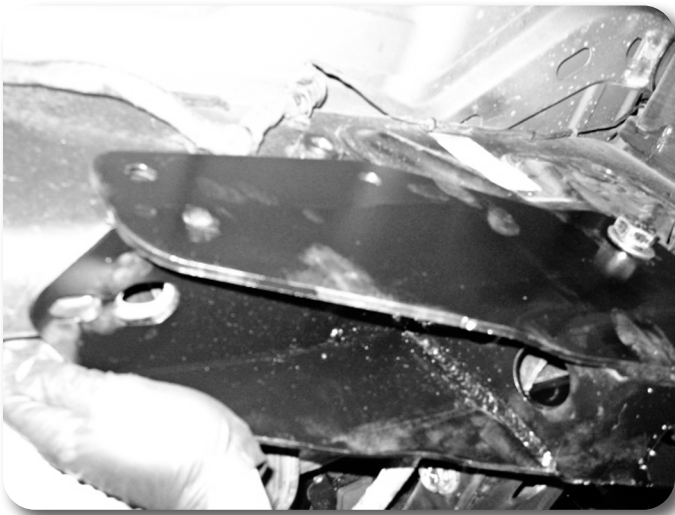


Figure 7

### **Rivet Nut Installation:**

See end of instruction sheet for detailed rivet nut installation. Use bolt pack #799 for installation.

### **Radius Arm Bracket Note:**

It easiest to install the badge on the bracket at this time. Bolt Pack 492

### **Step 17 Note:**

Hardware for the radius arm relocation bracket is in #794

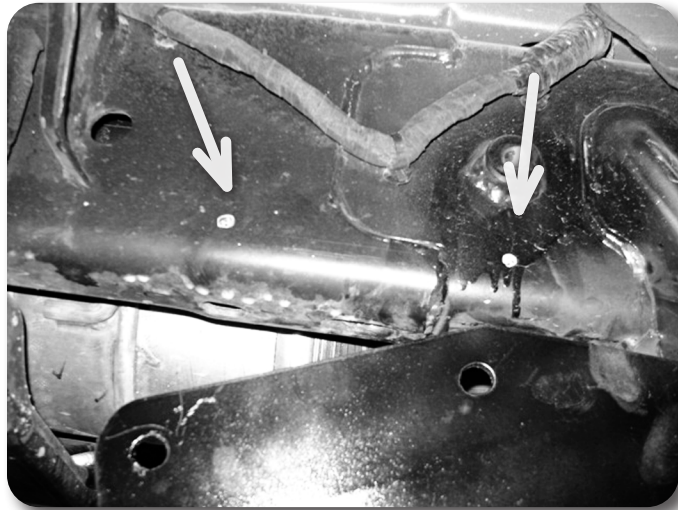


Figure 8

15. Remove the bracket and drill the 2 holes in the SIDE of the frame rail to 11/16". Drill the 2 holes in the bottom of the frame rail to 9/16". Paint any bare metal.
16. Install the rivet nuts into the side of the frame rail. See detailed instructions at the end of the instruction sheet for proper installation.
17. Reinstall the bracket with the spacer sleeve for the 3/4" bolt. **Figure 9.** 1/2"x1-3/4" bolts go into the side of the frame **Figure 10.** Bolt tabs go from the top down inside of the frame rail. Use the fish wire to pull the bolts through the frame rail. Torque all hardware to the following: 3/4" 227 ft-lbs, 1/2" 90 ft-lbs **Figure 11, 12, & 13**

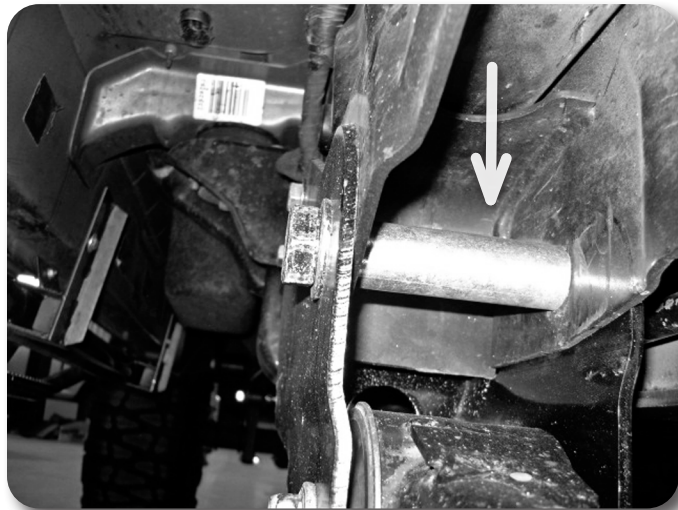


Figure 9



Figure 10



Figure 11



Figure 12



Figure 13

18. With a jack still under the axle, disconnect the radius arm from the driver's side frame bracket. Reinstall the passenger's side radius arm with factory hardware. Adjust the cam so the bolt head is as far forward as possible. Tighten the hardware at the axle to 133 ft-lbs Plus 90deg. **Figure 14**



Figure 14

19. Repeat the bracket installation procedure on the driver's side.
20. Reinstall the driver's side radius arm with factory hardware. Adjust the cam so the bolt head is as far forward as possible (same as Pass side). Tighten the radius arm hardware at the axle to 133 ft-lbs Plus 90deg. Leave the radius arm pivot hardware loose at the relocation brackets.
21. Remove the factory bump stops, it is easiest to hit them from the side with a hammer to pop them out. **Figure 15**





Figure 15

22. Grease the new replacement bump stops and the raise axle with a hydraulic jack to press the bump stops into position. These will be a tight fit. Figure 16



Figure 16

23. Remove the factory track bar bracket, retain the vertical hardware that goes into the cross member.
24. Install the provided trackbar bracket with factory bolts through the original vertical trackbar bracket holes in the crossmember, do not tighten.
25. Use the provided 14mm hardware, Bolt the new trackbar bracket to the Frame tab with the nut on the inside of the frame tab. Use OE hardware in the 3 remaining

### Step 25 Note:

14mm hardware in bolt pack  
#494



holes. Torque the OE bolts to 118 ft-lbs and provided 14mm hardware to 148.4 ft-lbs. Figure 17

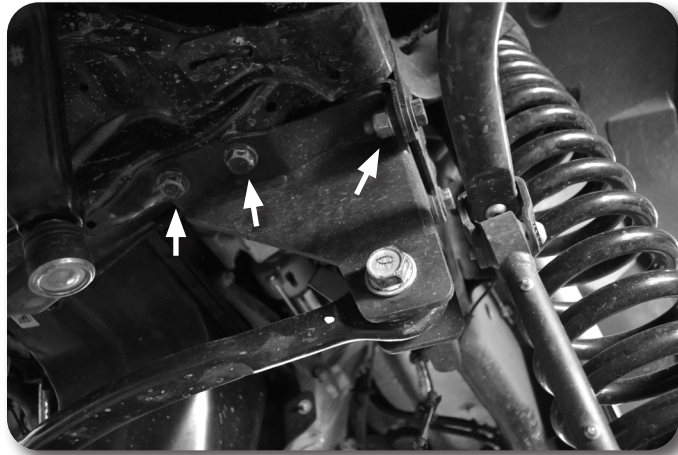


Figure 17

26. Support the front axle and remove the stock shocks. Retain the lower hardware, discard the shocks and upper hardware.
27. Gas Kits Only:  
Lower the axle and install the new coils with factory isolator. The passenger's side upper mount will need to be reindexed. There is a template at the end of the instruction sheet. Cut this out and place over the passenger's side upper mount, mark hole center, and drill to 1/2". The hole should now be directly to the 'outside' of the vehicle. Install isolator with new coil spring. Ensure that coils are seated properly, have someone help if necessary. Figure 18a, 18b, 18c, 18d

**Fig 18a-18h Note:**

Index the Passenger's side coil only as shown



Figure 18a

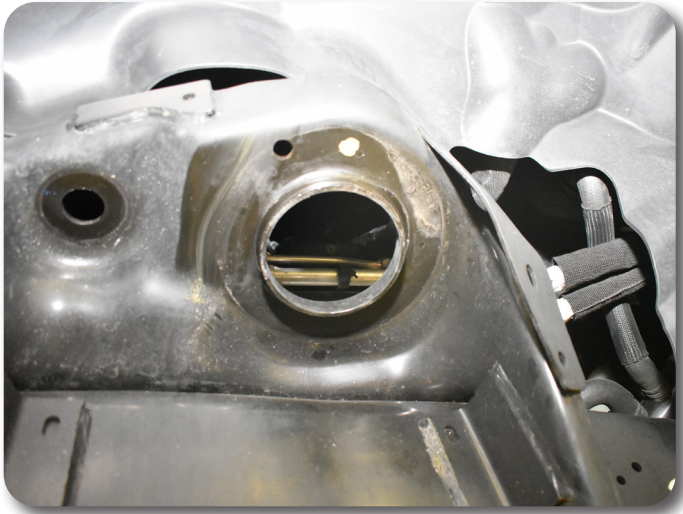


Figure 18b



Figure 18c



Figure 18d

**Diesel Kits Only:**

Lower the axle and install the new coils with factory isolator. The passenger's side upper mount will need to be reindexed. There is a template at the end of the instruction sheet. Cut this out and place over the passenger's side upper mount, mark hole center, and drill to 1/2". The hole should now be directly to the 'REAR' of the vehicle. Install isolator with new coil spring. Ensure that coils are seated properly, have someone help if necessary. **Figure 18e, 18f, 18g, 18h**



**Figure 18e**

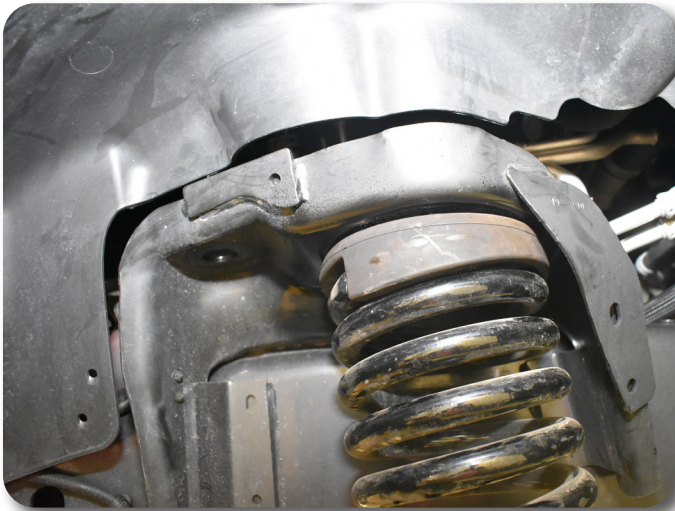


**Figure 18f**





Figure 18g



28. **Figure 18h** Attach the lower shock with factory hardware. Tighten hardware to 65 ft-lbs.
29. Grease and install the bushings and sleeves into the shocks. Install the new shocks with cup washers, bushings, and ½" nut at the top mount. Tighten the nut until the bushings begin to swell.
30. Mark or measure the amount of exposed threads on the drag link sleeve. Loosen the drag link sleeve until you can rotate the tie rod end 180deg. Rethread the drag link sleeve to the original Location. This is a starting point and will need to be adjusted after the installation is complete. **Figure 21 & 22**

#### **Step #28 Note:**

Due to radius arm design - hook up the lower shock mount first for easiest installation

#### **Step #30 Note:**

Tie rod end should be facing up.

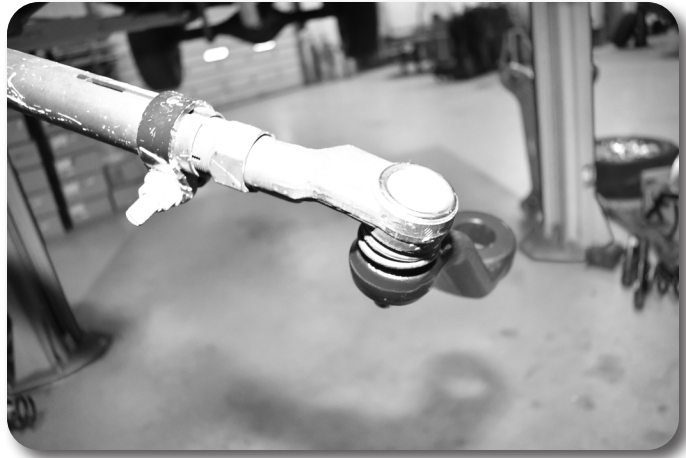


Figure 21



Figure 22

31. Install the new pitman arm, use alignment mark made earlier. Loctite factory nut and install with lock washer tighten nut to 332 ft-lbs. **Figure 23**
32. Attach drag link to pitman arm with factory nut. Tighten to 27 ft-lbs plus 180 deg. **Figure 23**



Figure 23

### Step 33 Note

Use a small adjustable wrench or pliers to help bend the bracket slightly.

33. Disconnect the brake line bracket from the frame location. **Figure 24 (Driver Side), 25 (Passenger Side)**. Mount the factory brake line bracket to the axle with OE



hardware. Slightly bend the axle bracket to give the brake line more slack, torque to 10ft-lbs.

34. Mount the brake line relocation bracket to the factory brake line mount location at the axle with factory hardware, torque to 9ft-lbs. Mount the brake line to the relocation bracket using the provided 5/16" hardware, torque to 101in-lbs. Figure 24 (Driver Side), 25 (Passenger Side)

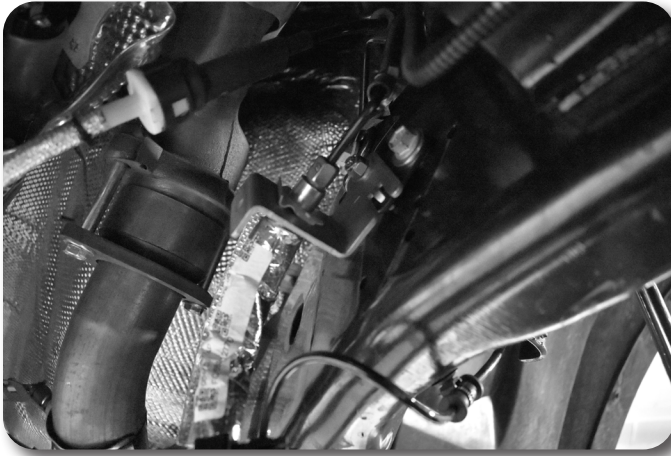


Figure 24

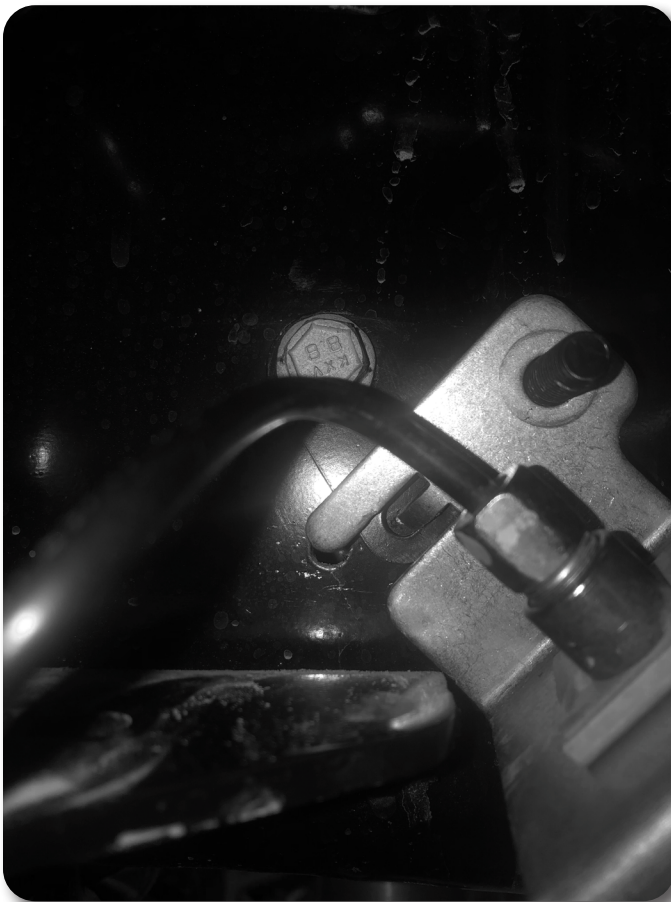


Figure 25

### Step 34 Note

The bracket will only rotate the brake line about 45deg. On the passenger side the bracket will end up resting against the motor mount frame bracket.

### Step 35 Note

Sway bar hardware is in bolt pack #796

35. Install the sway bar drop brackets between the sway bar and frame. Use the provided 12mm hardware. Torque to 43 ft-lbs Figure 26

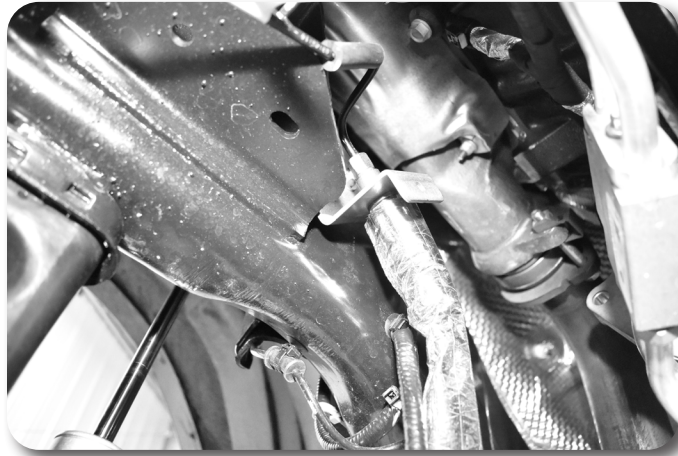


Figure 26

36. Reconnect the sway bar links to the sway bar with the factory hardware, torque to 60ft-lbs
- 37. PLEASE SEE INDEX RING KIT INSTRUCTIONS AT THIS TIME.**
- 38. PLEASE SEE REAR KIT INSTRUCTIONS AT THIS TIME.**
39. Install wheels and tighten lug nuts to factory specifications. Lower the vehicle to the ground.
40. Tighten radius arm hardware to 258 ft-lbs.
41. Turn the steering wheel to get the trackbar sleeve to align with the hole in the bracket. Install new 18mm bolt tighten to 250 ft-lbs.
42. Recheck all hardware, check again at 500 miles, and again at regularly scheduled maintenance intervals.
43. Straighten the wheels, adjust the steering wheel to center. Do not drive the vehicle with the wheel off center or adverse traction control events may occur. An alignment is recommended at this time.

## Rivet Nut Installation Instructions

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### » HOLE PREPARATION

1. Drill hole to appropriate size for rivet nut installation. 1/2" Rivet nuts require an 11/16" hole and 3/8" Rivet nuts require a 17/32" drill. It is critical that this hole is drilled to the correct size. Remove any burrs that could keep the rivet nut from seating flat against either side of the hole surface. **Figure 1A/B.**

### Step 1 Note

If the correct drill size is not available, it is possible to drill the hole to an available smaller size and slowly grind it out to until the rivet-nut fits tight.

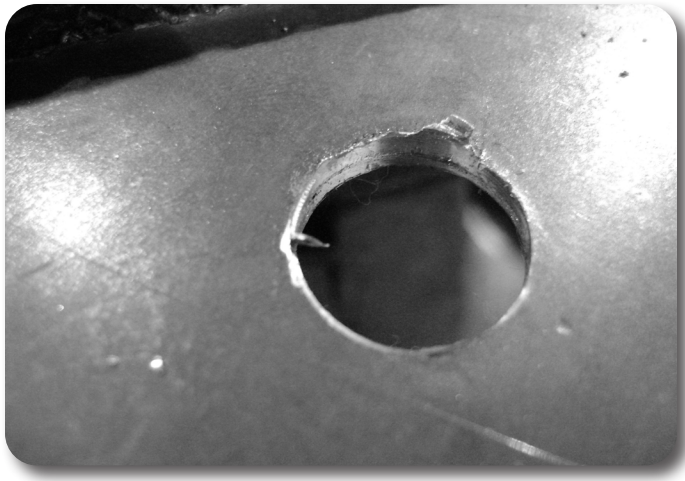


Figure 1A

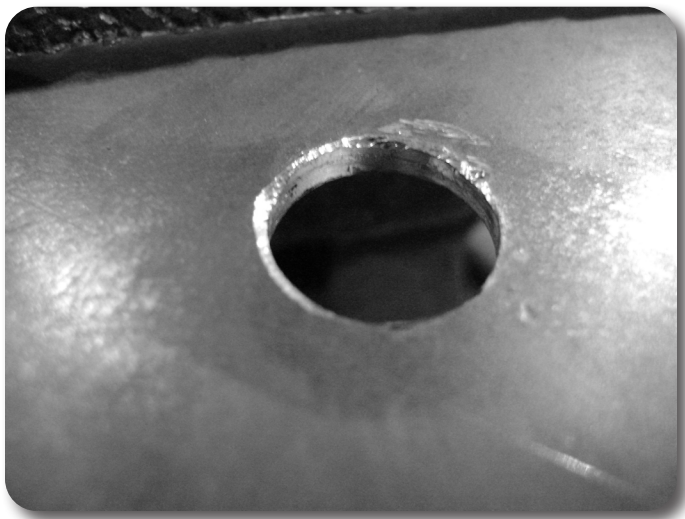


Figure 1B

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## » RIVET NUT INSTALLATION TOOL ASSEMBLY

2. For a 3/8" rivet nut, place the provided 3/8" SAE flat washer on the 3/8" x 1-1/2" bolt, followed by 7/16" hex nut and then a 3/8" serrated washer. **Figure 2** Thread this tool assembly into the rivet nut.
3. For a 1/2" rivet nut, place the provided 1/2" SAE washer on a 1/2" x 2" bolt followed by a 9/16" high nut and 1/2" serrated edge lock washer. Thread this tool assembly into the rivet nut as shown. **Figure 3.**

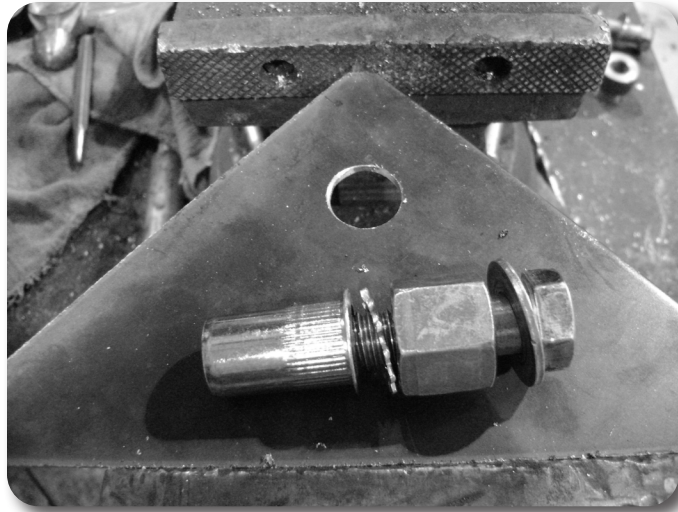


Figure 3 - 1/2" Rivet Nut Shown

## » RIVET NUT INSTALLATION

4. Verify the correct size rivet nut for the application based on the thickness of material where the rivet nut is to be installed using the following chart.

Part Number	Thread Size	Body Length (in)	Material Thickness (in)		Drill Size (in)
			Min.	Max.	
95105A159	3/8-16	.690	.027	.150	17/32
95105A168	3/8-16	.805	.150	.312	17/32
95105A169	1/2-13	1.150	.063	.200	11/16
95105A170	1/2-13	1.300	.200	.350	11/16

### Step 6 & 7 Note

If available, an impact gun is recommended for tightening the bolt to ensure the rivet nut remains square to the hole and to ease holding the nut from spinning.

5. Place the installation tool with the rivet nut threaded on the end into the appropriately sized hole.
6. For a 3/8" rivet nut, hold the nut closest to the rivet nut still with an 5/8" wrench and tighten the 3/8" bolt with a 9/16 wrench to set the rivet nut. Be sure to hold the rivet nut flush to the surface and square to the hole as it is tightened. **Figure 4**
7. For a 1/2" rivet nut, hold the nut closest to the rivet nut still with an 7/8" wrench and tighten the 1/2" bolt with a 3/4" wrench to set the rivet nut. Be sure to hold the rivet nut flush to the surface and square to the hole as it is tightened. **Figure 4**





Figure 4 - 1/2" Rivet Nut shown

### Step 8 & 9 Note

If using the recommended impact gun, use caution to not exceed the recommended torque specifications.

### Step 10 \*IMPORTANT\*

It is very important to hold the nut as the bolt is loosened because the grip of the star washer will try to spin the rivet nut and ruin the installation.

## » TORQUE SPECIFICATIONS

8. 3/8" rivet nuts will approach 40 ft. lbs for maximum grip strength. Do not exceed 45 ft-lbs when setting the rivet nut.
9. 1/2" rivet nuts will approach 90 ft lbs for maximum grip strength. Do not exceed 100 ft-lbs when setting the rivet nut.

## » RIVET NUT TOOL REMOVAL

10. Once the center bolt is tightened, remain holding the nut from spinning with the wrench and loosen the center bolt to remove the installation tool.
11. Verify proper installation by checking for consistent rivet nut deformation to see the threads are square and centered to the rivet nut. Figure 5.



Figure 5

## Post-Installation Warnings

1. Check all fasteners for proper torque. Check to ensure for adequate clearance between all rotating, mobile, fixed, and heated members. Verify clearance between exhaust and brake lines, fuel lines, fuel tank, floor boards and wiring harness. Check steering gear for clearance. Test and inspect brake system.
2. Perform steering sweep to ensure front brake hoses have adequate slack and do not contact any rotating, mobile or heated members. Inspect rear brake hoses at full extension for adequate slack. Failure to perform hose check/ replacement may result in component failure.
3. Perform head light check and adjustment.
4. Re-torque all fasteners after 500 miles. Always inspect fasteners and components during routine servicing.



