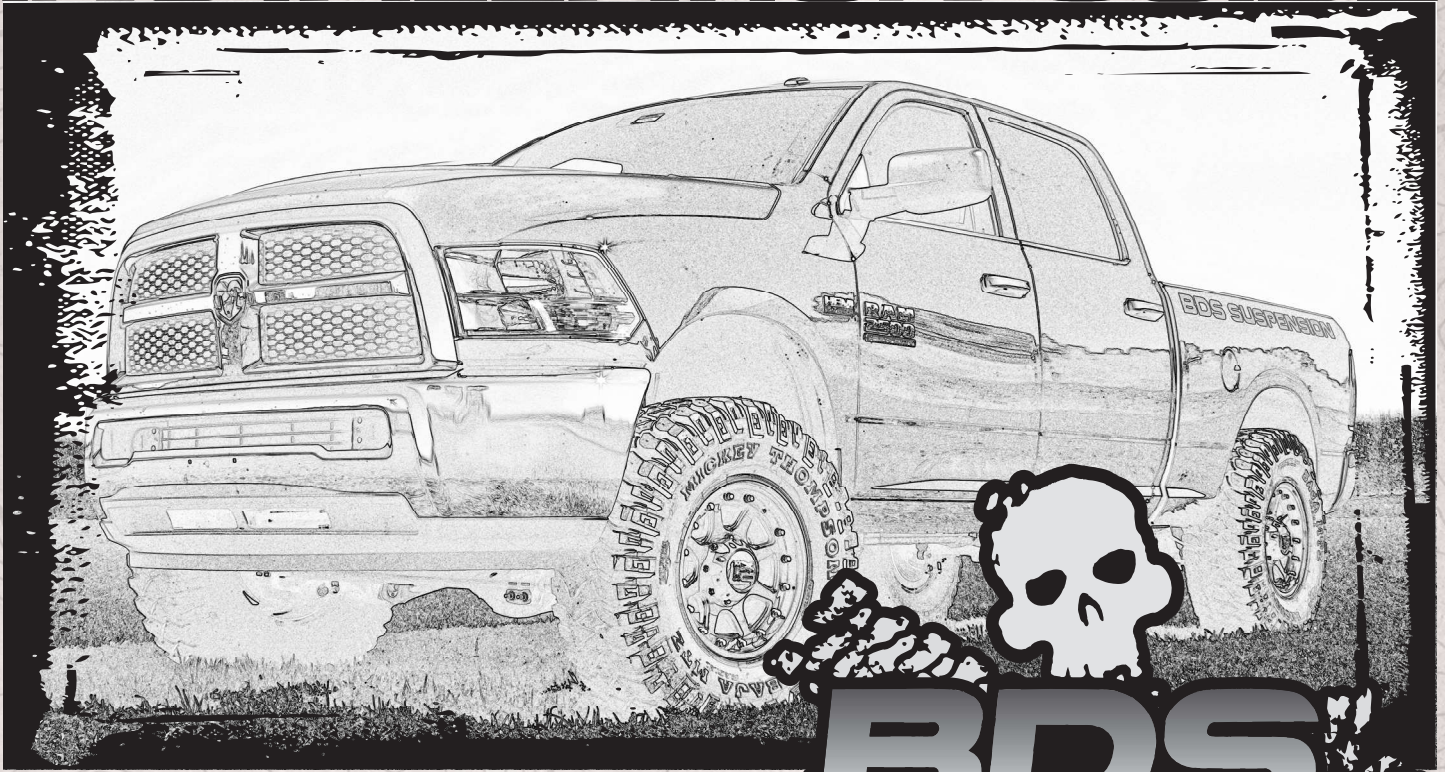


# INSTALLATION GUIDE



Part#: 122408, 123409



**HARDCORE LIMITED LIFETIME WARRANTY**

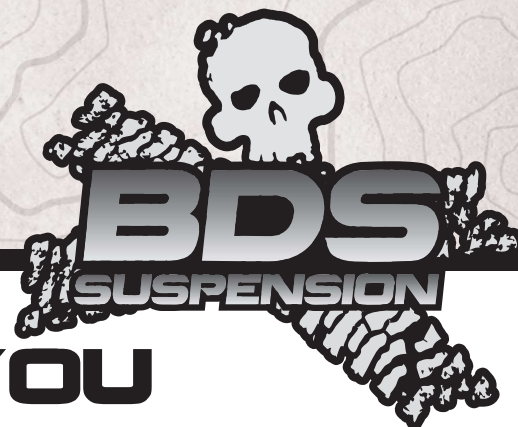
## Dodge Ram 3500 Recoil Traction Bar System

Rev. 030520

491 W. Garfield Ave., Coldwater, MI 49036 • Phone: 517-279-2135

Web: [www.bds-suspension.com](http://www.bds-suspension.com) • E-mail: [tech-bds@ridefox.com](mailto:tech-bds@ridefox.com)

# Read And Understand All Instructions And Warnings Prior To Installation Of System And Operation Of Vehicle.



## THANK YOU

Your truck is about to be fitted with the best suspension system on the market today. That means you will be driving the baddest looking truck in the neighborhood, and you'll have the warranty to ensure that it stays that way for years to come. Thank you for choosing BDS Suspension!

### BEFORE YOU START

BDS Suspension Co. 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.

### FOR YOUR SAFETY

Certain BDS 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. BDS Suspension Co. 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.

### BEFORE INSTALLATION

Special literature required: OE Service Manual for model/year of vehicle. Refer to manual for proper disassembly/reassembly procedures of OE and related components.

Adhere to recommendations when replacement fasteners, retainers and keepers are called out in the OE manual.

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.

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.

Secure and properly block vehicle prior to installation of BDS Suspension components. Always wear safety glasses when using power tools.

If installation is to be performed without a hoist, BDS Suspension Co. recommends rear alterations first.

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.

### BEFORE YOU DRIVE

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.

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. Longer replacement hoses, if needed can be purchased from a local parts supplier.

Perform head light check and adjustment.

Re-torque all fasteners after 500 miles. Always inspect fasteners and components during routine servicing.

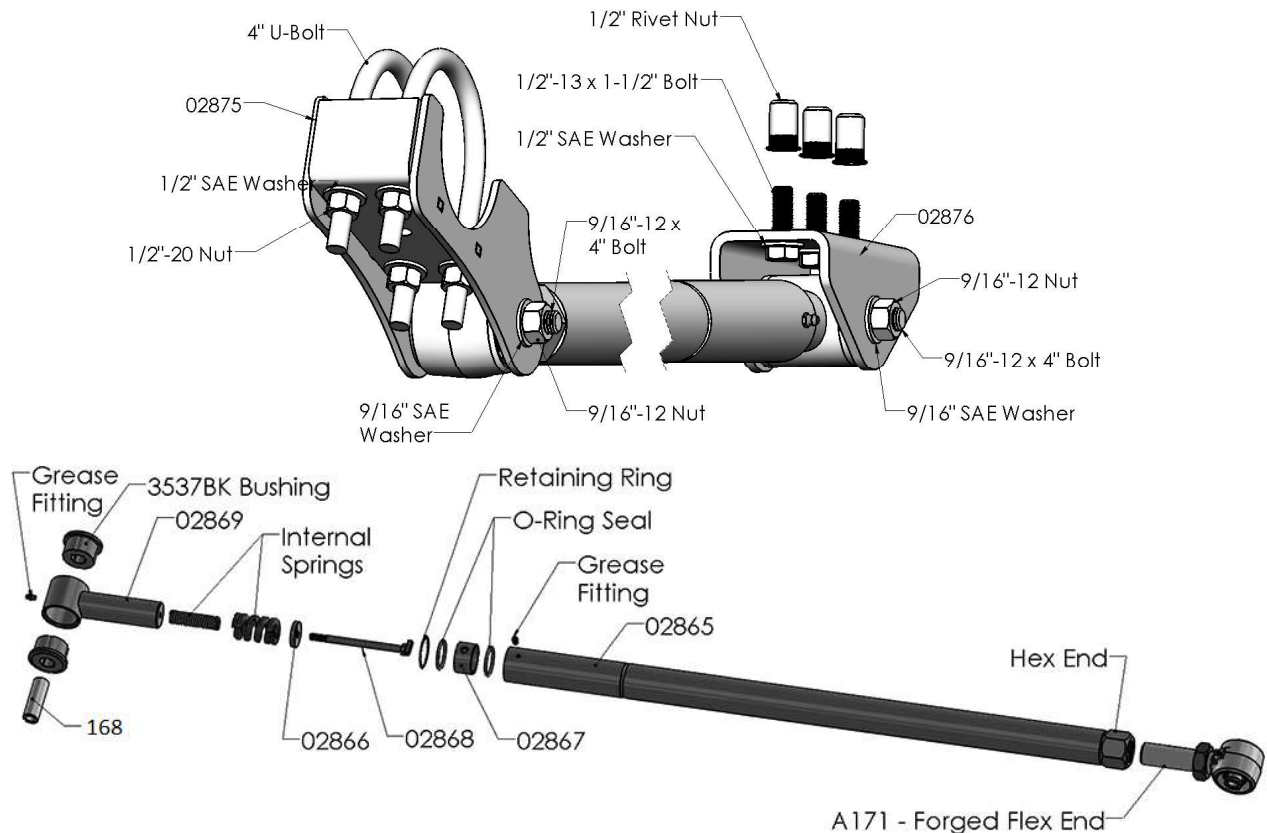
# CONTENTS OF YOUR KIT

## Box Kit 122408

Part #	Qty	Description
02876	2	Frame Bracket
02875	2	Axle Bracket
124000534RB	4	1/2" x 4" x 5-3/4" Round U-bolt
02910	2	Jam Nut Wrench
B1152	1	Bag Kit
799	1	Bolt Pack (Rivet Nut Installation)
	1	1/2"-13 x 2" Bolt - Grade 8
	1	1/2" SAE Washer
	1	1/2" Star Washer External Tooth
	1	9/16"-18 Hex High Nut
962	1	Bolt Pack (Axle Mount)
	8	1/2"-20 Prevailing Torque Nut
	8	1/2" SAE Washer
963	1	Bolt Pack (Frame Mount)
	6	1/2"-13 x 1-1/2" Bolt - Grade 8
	6	1/2" SAE Washer
964	1	Bolt Pack (Traction Bar Hardware)
	4	9/16"-12 x 4" Bolt - Grade 8
	4	9/16"-12 Prevailing Torque Nut
	8	9/16" SAE Washer
95105A169	7	Rivet Nuts

## Box Kit 123409

Part #	Qty	Description
A255	2	Traction Bar Assembly
02865	1	Traction Bar
02866	1	Spacer Washer
02867	1	Bushing
02868	1	Guide Bolt
02869	1	Traction Bar Slider End
033001	1	Heavy Rate Spring
033002	1	Light Rate Spring
9452K63	2	O-Ring
91985A231	1	Internal Retaining Ring
3537BK	2	Bushings
168	1	Sleeve
4138209	2	Flush Mount Grease Fitting
A171	1	Forged Flex Joint End



## TROUBLESHOOTING INFORMATION FOR YOUR VEHICLE

1. If equipped with a DEF Tank Skid plate, modification of the skid plate may be required for frame bracket installation.

# INSTALLATION INSTRUCTIONS

## AXLE BRACKET INSTALLATION

1. Park the vehicle on a clean, flat surface and block the rear wheels for safety.

**! Caution** *This installation should be done with the weight of the vehicle on the rear axle.*

2. Starting on the driver side, install two of the provided U-bolt around the axle facing down. The U-bolts should be installed 2" over from the leaf spring perch, in line with the frame rails.

FIGURE 1

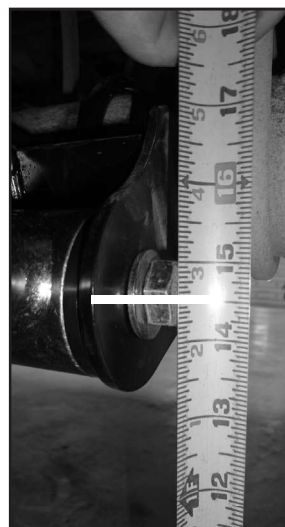


3. Install the U-Bolts through the slots in the axle mount bracket (02875), attaching the 1/2"-fine thread nuts and 1/2" SAE Washers to the U-Bolts from Bolt Pack 962. The axle mount bracket should cradle the axle. Make sure the mounting tabs on the bracket are facing towards the front of the vehicle. Do not tighten hardware at this time.
4. To set the angle of the axle mount, start by measuring the distance from the ground to the top of the factory leaf spring perch as shown in Figure 2. Next measure the distance from the ground to the center of the eye on the axle mount bracket as shown in Figure 3. The center of the eye on the axle mount bracket should be at least 5-1/2" to 6" below the factory leaf spring perch. In the example in Figures 2 and 3 the factory leaf spring perch is 20" from the ground. The center of the eye on the axle mount bracket is approximately 14-1/2". This results in a difference of 5-1/2". ( $20" - 14.5" = 5.5"$ ). *Note: The distance between these two points can be greater than 6" if desired for better leverage to prevent axle wrap, but ground clearance is affected and damage to the axle mount brackets or Recoil Traction Bar may result.*

FIGURE 2



FIGURE 3



6. After the axle bracket is set at the correct height, tighten the 1/2" nuts on the axle bracket to 45 ft-lbs

FIGURE 4

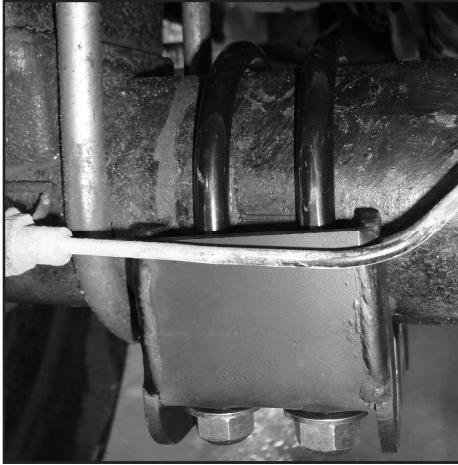
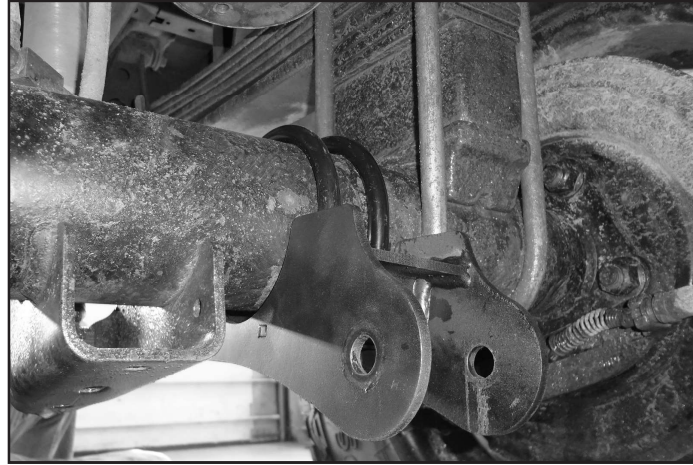


FIGURE 5



7. Repeat axle bracket installation on the passenger's side of the vehicle.



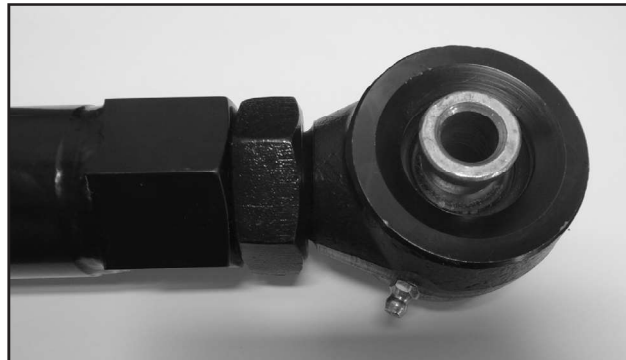
**Tip**

*While this system was designed and tested as a "bolt-on" kit, the axle and frame bracket can also be tack welded to the vehicle. This would only be necessary if increased torque/leverage was consistently applied over the normal loads.*

## TRACTION BAR INSTALLATION

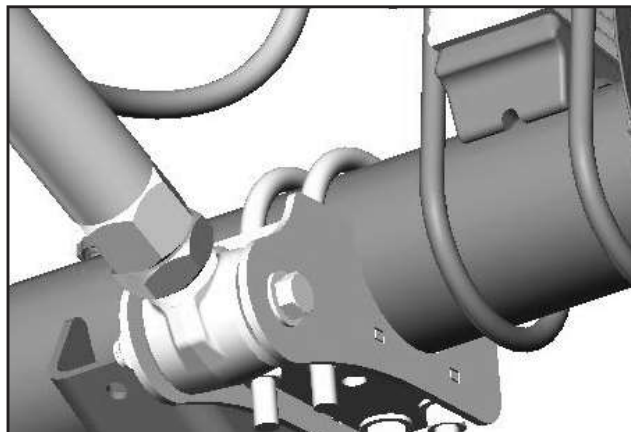
8. Check that the jam nut on the Forged Flex End (A171) is threaded in as far as it can go on the shaft of the Forged Flex End. Make sure the Forged Flex End is completely threaded into the Recoil Traction Bar (02865) up to the jam nut as shown in Figure 6.

FIGURE 6



9. Attach the Recoil Traction Bar to the axle bracket with a 9/16"x 4" bolt, 9/16" nut and 9/16" SAE washers from Bolt Pack 964. Install the Recoil Traction Bar so that the Forged Flex End (A171) is mounted to the axle bracket. Leave mounting hardware loose at this time.

FIGURE 7



10. Measure the length of the bar from the center of the bolt at the axle to the center of the eye on the Forged Flex End (A171). The length should be approximately 59-3/4" +/-0.25". If not, press firmly on the traction bar slider end to seat the springs.

## FRAME BRACKET INSTALLATION

11. Starting on the driver's side, loosely attach the provided frame bracket (02876) with a 9/16" x 4" bolt, 9/16" nut and 9/16" SAE washer from Bolt Pack 964 to the Traction Bar Slider End (02869).
12. Raise the Recoil Traction Bar to the frame rails and position the bracket such that the holes in the bracket run down the center of the frame rail. While holding the bracket in place, use the holes and center of the two slots in the frame bracket as a template, mark the locations to be drilled on the frame. Lower the Recoil Traction Bar assembly from the frame and remove the frame bracket. *Note: On some models the mount for the DEF tank may interfere with the frame mount from laying flush on the frame. In this case the axle mount may need to be rotated down further than 5-1/2" to 6" as noted in Step 4 (do not exceed 7") until the frame mount can clear the mount for the DEF tank. If the frame mount still cannot clear the mount for the DEF tank the mount for the DEF tank may need to be cleared out to allow the Traction Bar frame mount to lie flush on the frame rail.*



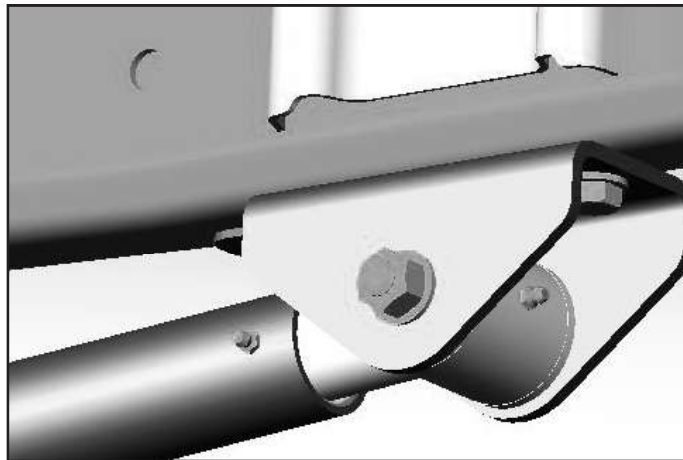
### Tip

**The Recoil Traction Bar should be close to parallel with the leaf spring. If not, loosen the axle bracket and slide it to make the Recoil Traction Bar more parallel with the spring.**

**When marking the location to drill the holes, make sure Forged Flex End is threaded all the way in, the traction bar slider end is seated firmly on the springs, and the length of the Recoil Traction Bar is approximately 59-3/4" +/-0.25" eye to eye.**

13. Drill 11/16" holes at each of the three marks on the frame, a step drill bit is highly recommended
14. Insert the rivet nut into the hole with 1/2" x 2" bolt with 9/16" high nut and serrated edge washer from Bolt Pack 799. Place a wrench on the high nut and tighten the 1/2" bolt until the rivet nut seats. Repeat for each hole. There is once extra rivet nut included with the kit if one is installed incorrectly. See detailed rivet nut installation instructions at the end of this instruction sheet.
15. Place the bracket up to the frame and align the holes with the rivet nuts in the frame. Attach with three 1/2" x 1-1/2" bolts and 1/2" SAE washers in the three holes from Bolt Pack 963. Torque the 1/2" bolts to 65 ft-lbs. *Note: There will be two additional 1/2" x 1-1/2" Bolts and 1/2" SAE Washers in Bolt Pack 963 that will not be used in this kit.*
16. Lightly grease the slider end of the traction bar by hand to work grease into the O-ring seals. The traction bar slider end may need to be pulled out a bit and rotated so the grease can fully be worked into the O-rings.
17. Reattach the Recoil Traction Bar to the frame brackets using the 9/16" x 4" bolt, nut and 9/16" SAE washer. Torque to 90 ft-lbs at the frame and axle brackets.

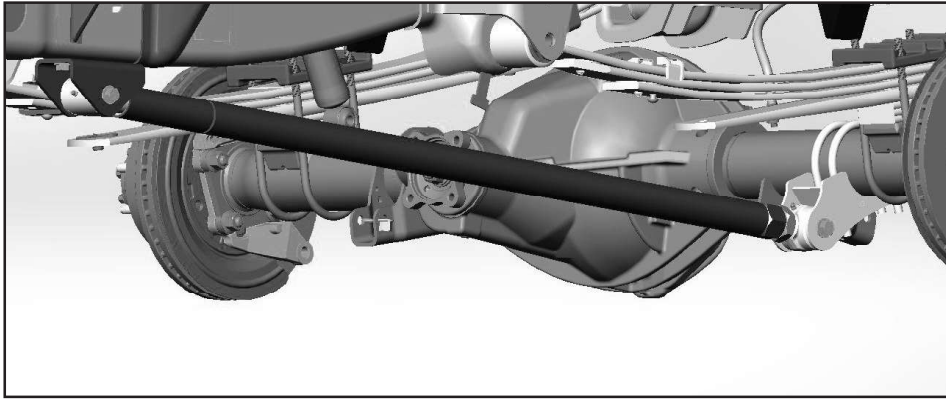
FIGURE 8



18. Grease all bushings and the Recoil Traction Bar before use. Do not over grease the Recoil Traction Bar, it is recommended to grease the Recoil Traction Bar one pump of grease every 10,000 miles.

*Note: Traction bar frame end will need a needle nozzle to grease the flush mount grease fittings.*

FIGURE 9



19. Repeat installation on the other side of the vehicle.
20. Check all hardware for proper torque.
21. Check hardware after 500 miles.

## TRACTION BAR ADJUSTMENT

22. Loosen the jam nut at the frame end with the two provided wrenches. Utilize a 1/2" ratchet or breaker bar in the wrench if needed.

FIGURE 10



23. Use the levels on the wrench to gauge how much force is inputted into the Recoil Traction Bar. The wrench is designed to be used at the traction bar slider end as shown in Figure 11. Make sure the wrench is pressed firmly against the bushing / tube for an accurate measurement.

FIGURE 11

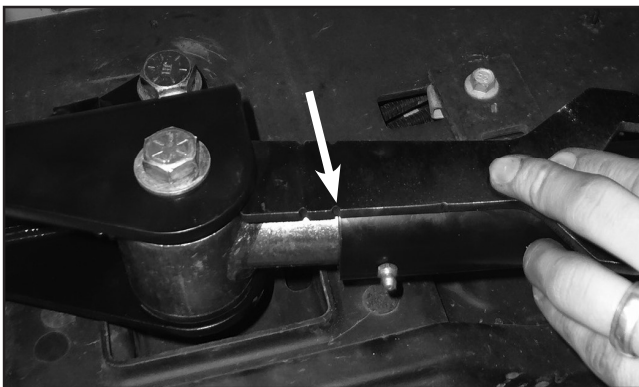
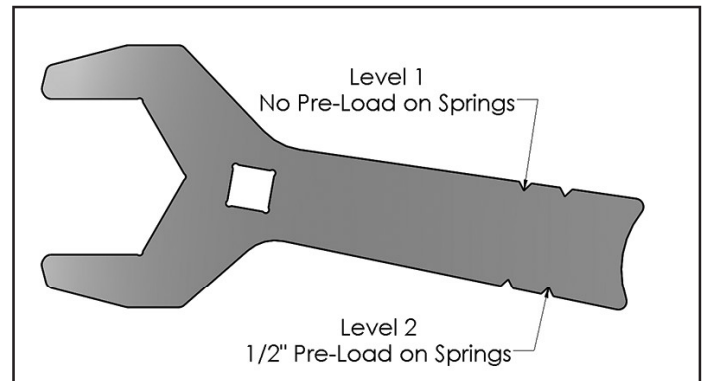
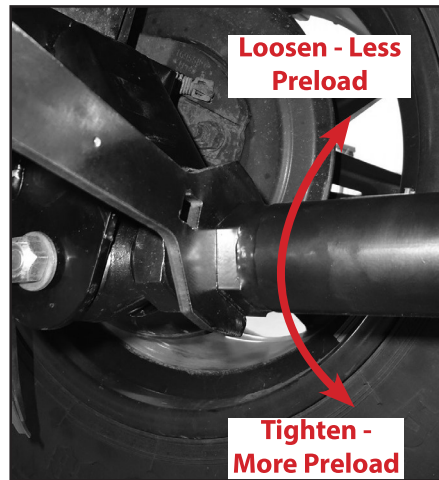


FIGURE 12



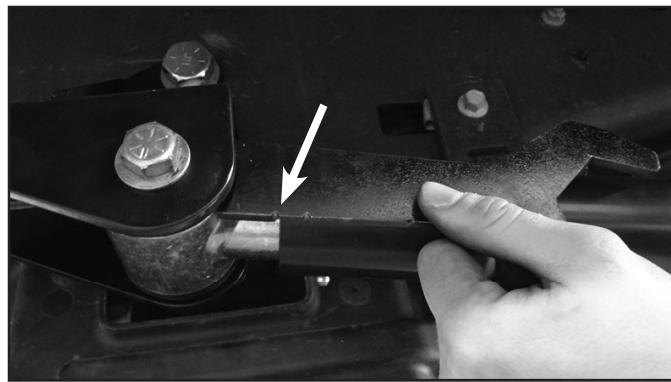
24. Utilizing the Levels on the wrench, spin the Recoil Traction Bar either clockwise to add more force into the dual coil springs setup to reduce axle wrap, or loosen the Recoil Traction Bar by spinning it counter clockwise in order to reduce the input the Recoil Traction Bar has on the suspension system. *Note: Depending upon lift height, the Recoil Traction Bar may need to unthreaded from the Forged Flex End until the First Level is reached on the wrench. At this point the dual coil spring setup are in contact and there is no preload in the springs.*

FIGURE 13



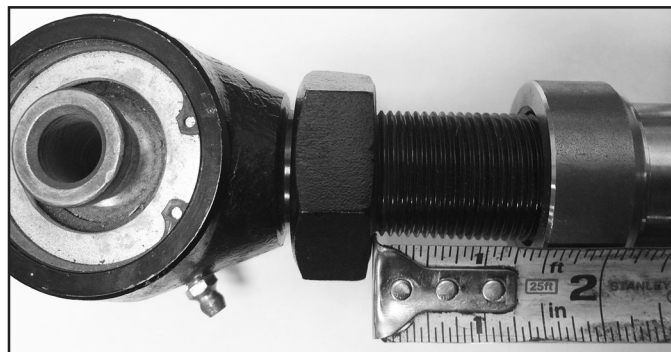
25. It is recommended when pulling or hauling heavy weights that Recoil Traction Bar be set at a minimum of the Second Level on the Jam Nut Wrench to help reduce axle wrap. The Second Level is 25% of the maximum force the springs output. The maximum amount of force that can be preloaded in the spring is 12 full rotations of the Recoil Traction Bar when starting at the First Level. This equals 1" of total preload in the dual coil spring setup in the Recoil Traction Bar. At this point, the dual coil spring setup creates a solid link between the frame and axle when in compression. DO NOT tighten the Recoil Traction Bar past this amount

FIGURE 14



26. Utilize the Jam Nut Wrench to set a desired force setting (Minimum of the First Level). Depending upon suspension setups, different spring preload may need to be tried to find a good setup to reduce axle wrap. After the desired force is set, lock off the jam nut with the two provided Jam Nut Wrenches and repeat this process on the other Recoil Traction Bar. *Note: Never unthread the forged flex end past 1-1/2" of adjustment. This can cause thread damage and weaken the joint. See Figure 15.*

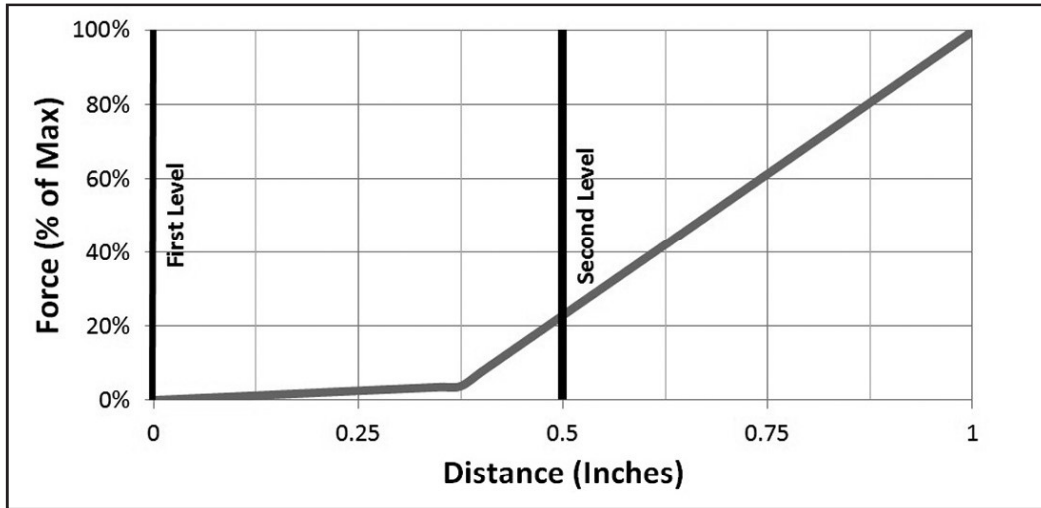
FIGURE 15



27. The dual coil spring setup is utilized to always create contact between both ends of the Recoil Traction Bar. Having dual coil spring setup allows the Recoil Traction Bar system to not affect suspension performance at a lower force as seen at the First Level, allowing greater articulation and less affect on the suspension system. As the Recoil Traction Bar is adjusted and the dual coil spring setup are compressed, a higher force is exerted on the axle in order to reduce axle wrap. Each Level below corresponds to the levels on the wrench, representing different amounts of force in the Recoil Traction Bar system. *Note: It is recommended to never fully compress the spring past the 1" of compression. This can be measured 1" from the First Level on the Jam Nut Wrench.*



FIGURE 16



## RIVET NUT INSTALLATION INSTRUCTIONS

### RIVET NUT SIZING

1. 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

### HOLE PREPARATION

2. Drill hole to appropriate size for rivet nut installation. 1/2" Rivnuts require an 11/16" hole and 3/8" Rivnuts 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.



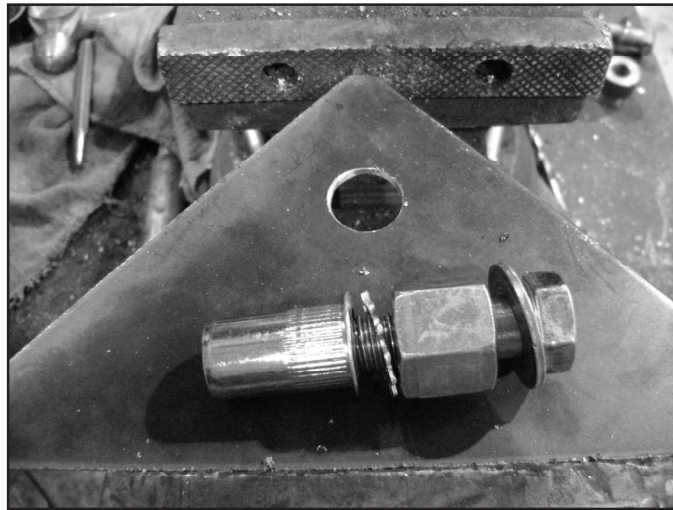
**Tip**

*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 until the rivet nut fits tight.*

### RIVET NUT INSTALLATION TOOL ASSEMBLY

3. 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 1 Thread this tool assembly into the rivet nut.
4. 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. (Fig. 1)

FIGURE 1 - 1/2" RIVET NUT SHOWN



## RIVET NUT INSTALLATION

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. (Fig. 2)



**Tip** 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.

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. (Fig. 2)

FIGURE 2 - 1/2" RIVET NUT SHOWN



## TORQUE SPECIFICATIONS

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



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

## RIVET NUT TOOL REMOVAL

- 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.



**Caution** *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.*

- Verify proper installation by checking for consistent rivet nut deformation to see the threads are square and centered to the rivet nut. (Fig. 3)

FIGURE 3



### **WE WANT TO SEE YOUR RIDE!**

Grab photos of your BDS-equipped truck in action and send them in for a chance to be featured. Send it in to our Bad Ass Rides customer gallery at [bds-suspension.com/bar](http://bds-suspension.com/bar) and post them on the BDS Fan Page on Facebook at [facebook.com/BDSsuspensions](https://facebook.com/BDSsuspensions). Don't forget about your BDS swag! BDS offers t-shirts, hoodies, decals and more available on the BDS website or through your local BDS distributor.

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## **TIME TO HAVE SOME FUN**

**Thank you for choosing BDS Suspension.**

For questions, technical support and warranty issues relating to this BDS Suspension product, please contact your distributor/installer before contacting BDS Suspension directly.