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Revisions			
Rev.	Description	Date	Approved
A	Initial Release Per ECO 18-129	11/15/18	A.S.



Jeep Wrangler Heavy Duty Tie Rod Installation Instructions

Applications:
2018+ Jeep Wrangler (JL)



TITLE:
**JEEP JL HEAVY DUTY TIE ROD
INSTALLATION INSTRUCTIONS**

SIZE	DWG NO:	REV
A	8802-01-INST	A
	SCALE: N/A	PAGE 1 OF 7



Thank you for purchasing the best aftermarket products available for your vehicle. We strongly feel that the parts you are about to install should meet or exceed your expectations for performance. Proper assembly is critical to the performance of these components and the vehicle as a whole. Please take the time to carefully read these instructions and familiarize yourself with the installation procedure before working on your vehicle. If you have any questions PLEASE contact Synergy Manufacturing BEFORE beginning installation. Thanks again for supporting Synergy – enjoy the performance benefits of the best aftermarket products available for your vehicle!

Synergy Manufacturing
Phone: (805) 242-0397
Email: support@synergymfg.com

Now for the lawyer part:

Modifying or otherwise altering vehicle components may cause the vehicle to handle differently than originally designed. It is the driver's responsibility to familiarize themselves with the performance and handling characteristics of the modified vehicle. Vehicles with larger diameter than stock tires must be driven carefully and cannot be expected to perform as stock or meet OEM performance with regard to handling, braking or crash performance. Ensure all replacement components are compatible with vehicle capacities so as not to overload components, especially tires. It is up to the individual to ensure that the vehicle and all components are compatible with the intended vehicle use, including load ratings, road conditions, and driver abilities. Thorough and frequent vehicle inspections are recommended to ensure a safe and reliable state of readiness, especially after off-highway use.



Parts List

8802-01 JEEP JL TIE ROD		
QTY	Part Number	Description
1	4164-L	Single Plane Heavy Duty TRE (with castle nut, cotter pin, dust boot and zerk)
1	4163-L	Heavy Duty TRE (with castle nut, cotter pin, dust boot and zerk)
1	880201-PC	Jeep JL Tie Rod Tube, Powdercoated
1	3622-10-14-PL	Synergy Double Adjuster Sleeve
2	-	½-20 UNF 1.75" long Grade 8 Bolt and Lock Nut

General Notes

- These instructions are also available on our website; www.synergymfg.com. Check the website before you begin for any updated instructions and additional photos or videos for your reference.
- Replacement tie rod ends and boots are available from Synergy MFG, see parts listing above for appropriate part numbers.
- The factory steering stabilizer location is not compatible with the Synergy MFG tie rod. If you wish to retain the factory steering stabilizer (or any stabilizer that mounts in the stock location) then the Synergy MFG Steering Stabilizer Relocation Kit (PN 8807-03) is required.
- The Synergy MFG tie rod is designed to replace the factory tie rod in the factory location without requiring any bump stop spacers or wheel spacers. Certain part combinations (high backspacing wheels, large diff covers, etc.) may have compatibility issues. Final part compatibility is the responsibility of the installer.

Tools Needed

- Wrenches/Sockets/Pliers (Basic Hand Tools)
- Hammer/Pickle Fork/TRE remover
- Tape Measure
- Torque Wrench

Estimated Installation Time

.5-1.0 Hour

Installation

1. Start with the vehicle on flat, level ground. Set the parking brake and make sure the vehicle is in gear or park. Raise the front axle and support with jack stands. Remove the wheels and tires.
2. Remove the nut from the bottom of the bracket holding the steering stabilizer to the tie rod. **Figure 1** shows the tie rod assembly removed from the vehicle for clarity. Remove the nut and pull the bolt out of the top side of the bracket so that the stabilizer is separated from the tie rod.



Figure 1. Removing Stabilizer Nut from Underside of Tie Rod

3. Loosen the nuts (21mm) securing the factory tie rod ends to the knuckles. The studs may spin with the nuts, and it may be necessary to use a wrench on the hex (10mm) above the threads to prevent them from spinning. **See Figure 2.**

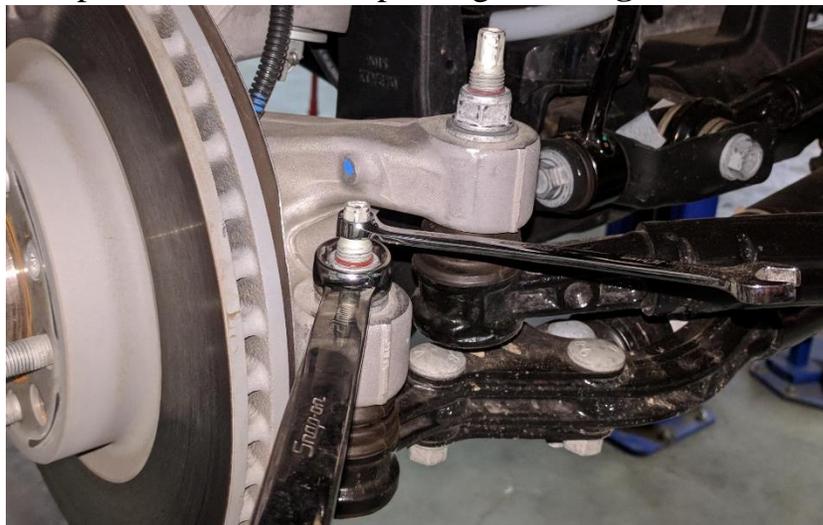


Figure 2. Using Two Wrenches to Loosen Tie Rod End Nuts

4. Separate the tie rod tapers from the knuckles. We recommend using an air hammer or ball peen to strike the stud at the top of the hex at the end of the threads. Striking the

knuckle with a ball peen hammer can be effective, but the aluminum knuckles deform very easily. A pickle fork may be used but can damage the dust boot or tie rod end.

5. Remove the tie rod ends from the knuckles and remove the tie rod from the vehicle.
6. Remove the three bolts holding the steering stabilizer bracket to the axle. See **Figure 3**.



Figure 3. Removing Axle Side Steering Stabilizer Bracket

7. The Synergy MFG tie rod is installed with the double adjuster end (with silver adjuster sleeve) on the passenger (right) side of the vehicle. The outward bend of the bar is for track bar bracket clearance at full bump. See **Figure 4**.



Figure 4. Synergy MFG Tie Rod Shown From Above

8. For non-Rubicon Jeeps, adjust the non-double adjuster side tie rod end out approximately 4 turns from fully threaded in. Some threads will still be showing when the tie rod end bottoms out in the bar. For Rubicon Jeeps, adjust the non-double adjuster side tie rod end out approximately 10 turns from fully threaded in. **DO NOT THREAD THE TIE ROD END OUT FARTHER THAN THE 3" SHOWN IN FIGURE 5.**



Figure 5. Maximum Length on Non-Double Adjuster (Driver) Side

9. Install the tie rod and leave castle nuts hand tight. Install wheels and tires. Check the toe by making a mark on the tread of each front tire. Rotate the tires so that the marks are pointing forward and measure the distance between the marks. Rotate the tires so that the marks are pointing towards the rear of the vehicle, just under the control arms. Measure the distance between the marks. This is the toe measurement. The goal is to have the tires slightly closer together in the front than the rear, approximately 1/16" to 1/8". This is toe in, or positive toe. Adjust the double adjuster sleeve and re-measure the distance between the marks until the toe is correct. We recommend rotating the sleeve until one of the slots in the sleeve lines up with the slot in the bar. **DO NOT THREAD THE DOUBLE ADJUSTER TIE ROD END OUT FARTHER THAN THE 3.5" SHOWN IN FIGURE 6.** If the adjuster is all the way out and the toe is still too far in, remove the passenger side tie rod end from the knuckle and thread it out of the bar farther until the toe is correct.



Figure 6. Maximum Length on Double Adjuster (Passenger) Side

10. With the bar adjusted to the correct length, torque both castle nuts to 55 lb-ft and install cotter pins. If cotter pin hole does not align with castle nut, **TIGHTEN** the castle nut slightly until it does. Never loosen castle nuts to align cotter pin holes.

11. Align the tie rod so that the bend is pointing forward. Support the tie rod so that the bend near the differential is forward, pinch bolts rearward. Tighten the pinch bolt on the driver side. **See Figure 7.** Torque to 90 lb-ft. Let the tie rod go, the tie rod should be held in position with the bend as oriented when the pinch bolt is tight. Make sure one of the two slots in the double adjuster sleeve lines up with the slot in the tie rod and tighten the passenger side pinch bolt, torque to 90 lb-ft.

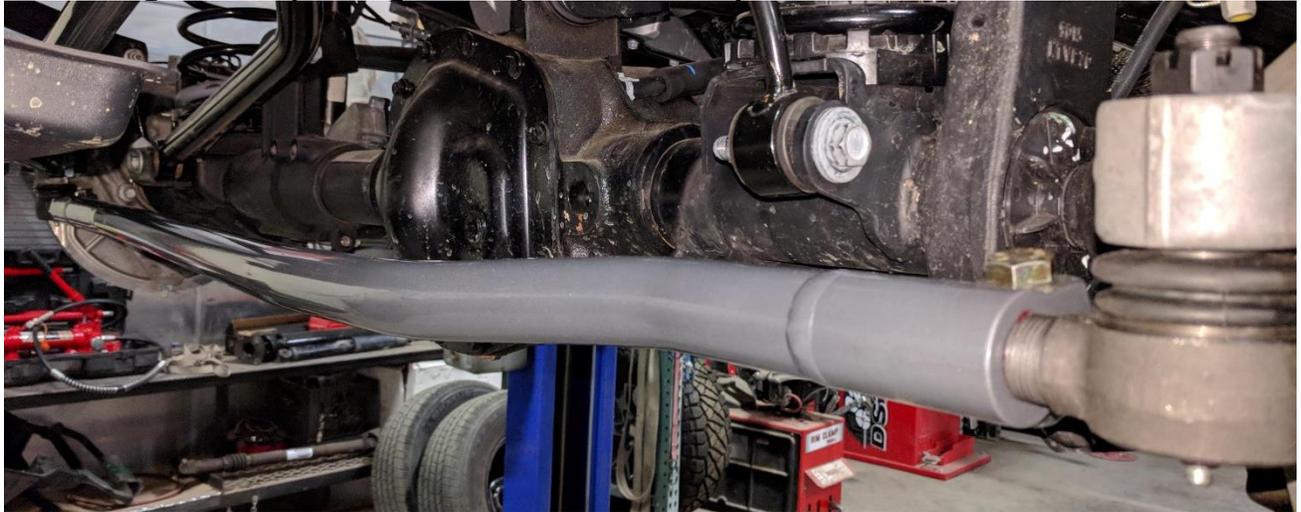


Figure 7. Tie Rod Correctly Oriented, Pinch Bolts Back

12. Re-check the toe.
13. Put the vehicle back on the ground. Torque lug nuts.
14. Double check all bolts / torques before driving and recheck bolt torques after 100 mi of driving or after off road use. Grease joints at regular intervals with one pump of grease. DO NOT over grease! Joints come pre-greased and do not need grease on install. Over greasing the joints will cause damage to the dust boots.

Installation is Complete