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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 Drag Link

Installation Instructions

Applications:
2018+ Jeep Wrangler (JL)



TITLE:
**JEEP JL HEAVY DUTY DRAG LINK
INSTALLATION INSTRUCTIONS**

SIZE	DWG NO:	REV
A	8800-01-INST	A
SCALE: N/A		PAGE 1 OF 9



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!

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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

8800-01 JEEP JL DRAG LINK		
QTY	Part Number	Description
1	4162-L	Pitman Arm Side Single Plane Heavy Duty TRE (with nut, cotter pin, dust boot and zerk)
1	4163-L	Steering Knuckle Side Heavy Duty TRE (with nut, cotter pin, dust boot and zerk)
1	880001-PC	Jeep JL Drag Link Tube, Powdercoated
1	880002-PL	Jeep JL Drag Link Flip Adapter
1	3622-10-14-PL	Synergy Double Adjuster Sleeve
2	-	1/2-20 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 are available from Synergy MFG, see parts listing above for appropriate part numbers. Replacement tie rod end boots are also available: Part number 4131-01.
- The drag link is designed to be mounted in the stock location or flipped. ‘Flipping’ the drag link to above the steering knuckle **SHOULD ONLY BE DONE IN CONJUNCTION WITH RAISING THE AXLE SIDE TRACK BAR MOUNT**, otherwise severe bump steer will occur.
- ‘Flipping’ the drag link to above the steering knuckle requires 3 inches of bump stop spacer to prevent the drag link interfering with the vehicle frame at full bump.
- The Synergy drag link will work with lift heights from stock to 6 inch. Lift heights over 3 inch should be running the drag link in the flipped position with an axle side track bar relocation bracket.

Tools Needed

- Wrenches/sockets/Pliers (Basic Hand Tools)
- Hammer/Pickle Fork/TRE remover
- 7/8" Drill Bit and Drill (For optional flip adapter installation for high steer)
- Tape Measure
- Torque Wrench

Estimated Installation Time

.5-1.5 Hours

Installation

1. Start with the vehicle on flat, level ground. Raise the passenger (right) side of the front axle and support with jack stands. Remove the passenger side wheel and tire.
2. In order to remove the drag link, the passenger (right) side of the tie rod must be removed from the knuckle. Remove the nut (21mm) securing the factory tie rod end on the passenger side knuckle. The stud may spin with the nut, and it may be necessary to use a wrench on the hex (10mm) above the threads to prevent it from spinning. **See Figure 1.**

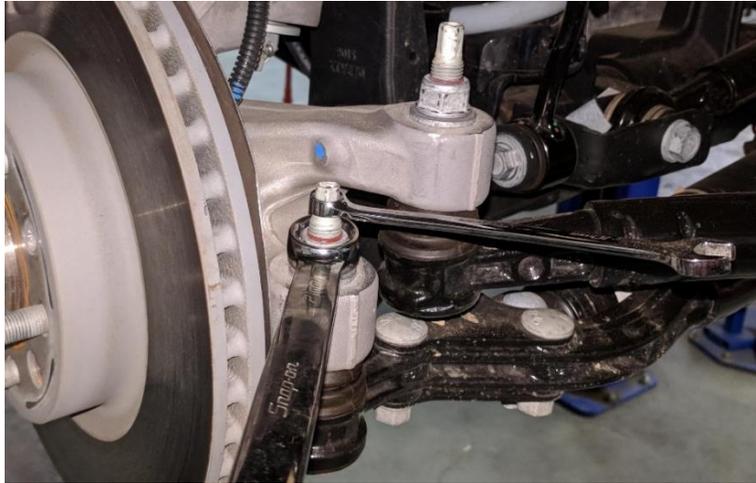


Figure 1. Using Two Wrenches to Loosen Tie Rod End Nuts

3. Remove the tie rod from the knuckle. 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. Be very careful not to damage the dust boot or tie rod end unless the tie rod is going to be replaced at this time.
4. With the tie rod end removed from the knuckle, allow the tie rod to hang by the steering stabilizer.



Figure 2. Tie Rod Removed From Knuckle

5. Loosen the nuts securing the factory drag link tie rod ends at both the steering knuckle and the pitman arm. Leave them on the tie rod ends with only one or two complete turns of engagement. This will prevent the drag link from falling when the tie rod end tapers separate. It helps to turn the steering wheel all the way to the driver side (left) in order to access the nut on the pitman arm. If the tie rod stud spins while trying to loosen the nut, the stud may be held with a 6mm allen key in the end of the stud.
6. Turn the steering wheel to point the wheels straight ahead and either lock the steering column or use the seatbelt or a tie down to prevent the steering wheel from rotating.
7. Remove the factory drag link tie rod ends from the steering knuckle and pitman arm. 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 on the knuckle side. 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. On the pitman arm side we suggest striking the pitman arm itself near the taper. Do not strike the threads or the stud on the pitman arm tie rod end, it will damage the threads and cause the end to be un-useable.
8. Loosen the nuts on both ends of the factory drag link and remove the drag link.
9. STEPS 10 AND 11 ARE FOR VEHICLES WITH A SYNERGY 8855-01 TRACK BAR BRACKET ONLY. SKIP TO STEP 12 IF NOT USING A RAISED AXLE SIDE TRACK BAR BRACKET.
10. To install the drag link above the knuckle, the stock tapered hole must be drilled out to accept the 880002-PL flip adapter. Drill out the knuckle using a 7/8" drill bit. Drilling metal works best at low RPM and lots of pressure on the bit. Too high of drill speeds will overheat the bit and cause it to go dull quickly. Ensure the hole is drilled square to the flat on the knuckle and not at an angle. **See Figure 3.**

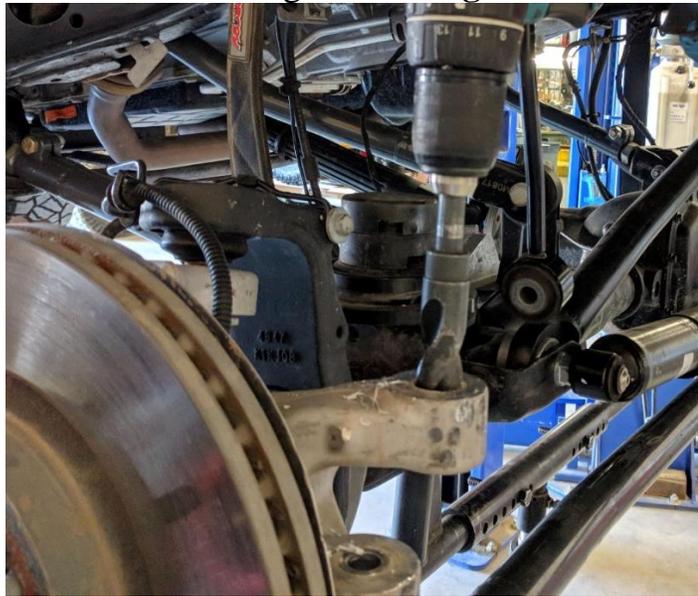


Figure 3. Drilling out Steering Knuckle

11. Once the hole is drilled to size, install the flip adapter from the top down. The flip adapter should be a slightly snug fit. If it is too tight, clean out the hole to make sure there are no burrs left. You should not need to hammer the adapter into the knuckle. The flange on the adapter should sit flat and flush against the upper surface of the knuckle. The slot in the adapter should be oriented towards the front of the vehicle. See Figure 4.



Figure 4. Flip Adapter in Steering Knuckle

12. The drag link comes assembled with the tie rod ends fully threaded in. Make sure the dust boots are seated on the lip of the tie rod ends, retaining rings and zerk fittings are installed.
13. Depending on vehicle lift height and drag link installation orientation, the overall length required will vary from vehicle to vehicle. If you are simply replacing the drag link you had, then measure the length (center of tie rod end to center of tie rod end) of your stock drag link and adjust the new one to match. If you are making other changes at this time (flipping the drag link, installing lift springs, etc.) then some trial and error will be needed to determine the correct drag link length. Typically non-Rubicon models will need to have the non-double adjuster side tie rod end threaded all the way in, while Rubicon models will need the non-double adjuster side tie rod end threaded out approximately 1/2" from fully collapsed. Stock Rubicon drag links are approximately 41.25" center to center, non-Rubicon drag links are approximately 40.75" center to center. **DO NOT THREAD THE TIE ROD END OUT FARTHER THAN THE 3" SHOWN IN FIGURE 5.**



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

14. Attach the straight end (with double adjuster) of the drag link to the pitman arm with a castle nut. Leave the castle nut hand tight. Swing the bent end of the drag link over towards the steering knuckle and observe the length change required to get the tie rod end to install in the hole in the knuckle. Adjust the drag link length with the adjuster sleeve at the pitman arm side as needed to get the tie rod end to drop into the hole on the knuckle. Make sure the adjuster sleeve end is adjusted by turning the adjuster sleeve and not the tie rod end. The amount of thread of the adjuster sleeve and tie rod end showing should be the same. **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 steering still does not line up, turn the adjuster back in a few turns. Remove the knuckle side tie rod end from the knuckle and thread it out of the drag link farther until the wheel is aligned. We recommend rotating the sleeve until one of the slots in the sleeve lines up with the slot in the drag link.



Figure 6. Maximum Length on Double Adjuster (Pitman Arm) Side

15. With the drag link adjusted to the correct length, torque both castle nuts (pitman arm and knuckle side) 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.
16. Align the drag link so that the bend is pointing forward. Support the drag link so that the bend is forward, pinch bolt on top on the pitman arm side, and back on the knuckle side. Tighten the pinch bolt on the pitman arm side. **See Figures 7 and 8.** Torque to 90 lb-ft. Let the drag link go, the bar should be held in position with the bend as oriented when the pinch bolt is tight. Tighten the knuckle side pinch bolt, torque to 90 lb-ft.



Figure 7. Drag Link Correctly Oriented, Pinch Bolt Up



Figure 8. Drag Link Correctly Oriented, Pinch Bolt Back, Bend Forward



17. Reinstall passenger side wheel and tire and put the Jeep back on the ground. Remove steering wheel strap if used and drive a short distance to verify that the steering wheel is straight. If the steering wheel needs to turn to the right, turn the adjuster sleeve to the right (clockwise). If the steering wheel needs to turn to the left, turn the adjuster to the left (counterclockwise). At this point length changes should be made on the pitman arm side with the double adjuster.
18. Finally, take a short test drive to verify that the steering wheel is indeed centered. If the steering wheel is not centered the ESP light will come on, so make sure you adjust the drag link so the steering wheel is perfectly centered. After the test drive confirm the orientation of the drag link to make sure it has not moved from the position it was originally set at. The pinch bolt at the pitman arm should be pointed up, the pinch bolt at the knuckle should be pointed towards the rear of the vehicle, with the bend in the drag link pointing forward.
19. 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