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Revisions			
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-	Initial Release Per ECO 24-075	10/17/24	MB



Jeep JL Steering Knuckles Installation Instructions

Applications:
2018+ Jeep JL
2020+ Jeep JT



TITLE:
**JEEP JL & JT STEERING KNUCKLE
INSTALLATION INSTRUCTIONS**

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SCALE: N/A		PAGE 1 OF 13



JEEP JL AND JT STEERING KNUCKLE INSTALLATION INSTRUCTIONS

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

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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

8849-10 JL/JT STEERING KNUCKLE, STOCK DRAG LINK LOCATION		
QTY	Part Number	Description
1	8849-01L	JEEP JL 2018-2024 DRIVER SIDE STEERING KNUCKLE
1	8849-01R	JEEP JL 2018-2024 PASSENGER SIDE STEERING KNUCKLE
2	NA	FLAT WASHER, GR8, 9/16" SAE
2	884901-00	JEEP JL STEERING KNUCKLE TURNING STOP SPACER, STD
2	NA	HEX HEAD BOLT, 10MM-1.25 X 30MM, GR10.9
1	NA	RED LOCTITE

8849-20 JL/JT STEERING KNUCKLE, RAISED DRAG LINK LOCATION		
QTY	Part Number	Description
1	8849-02L	JEEP JL 2018-2024 DRIVER SIDE STEERING KNUCKLE
1	8849-02R	JEEP JL 2018-2024 PASSENGER SIDE STEERING KNUCKLE
2	NA	FLAT WASHER, GR8, 9/16" SAE
2	884901-00	JEEP JL STEERING KNUCKLE TURNING STOP SPACER, STD
2	NA	HEX HEAD BOLT, 10MM-1.25 X 30MM, GR10.9
1	NA	RED LOCTITE



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 for your reference.

- Depending on what ball joints you are using, the supplied 9/16 washer may or may not be needed. It is included to ensure correct cotter pin alignment for the castle nut on the lower ball joint

TOOLS REQUIRED

- Sockets and Wrenches
- Tape measure
- Torque wrench
- Marking tool (Paint Pen or Sharpie)
- Basic hand tools

ESTIMATED INSTALLATION TIME

~ 1 Hour

INSTALLATION

1. Raise and support the vehicle.
2. Remove the front wheels.
3. Remove the steering stabilizer from the jeep.
4. Remove the tie rod.
5. Remove the drag link from the pasenger side knuckle. Only the knuckle side needs to be removed, and the drag link can be hung out of the way. See **Figure 1**.



Figure 1. Steering Removed and Drag Link Hung Out of the Way

6. Remove the 2 big caliper adapter bolts leaving the caliper attached and hang them out of the way. See Figure 2.



Figure 2. Caliper Adapter bolts

7. Remove the rotors, some rotors have the factory retainer bolt that requires the use of an impact screw bit. See **Figure 3**.



Figure 3. Rotor Retention Bolt

8. Remove the 3 bolts holding the brake rotor splash shield and remove the splash shield.
9. Remove the wheel speed sensor. See **Figure 4**.



Figure 4. Wheel Speed Sensor

10. Remove the axle nut using an impact wrench, or using a prybar in-between the lug nuts to counter the torque from a breaker bar.
11. Remove the unit bearing by removing the 3 bolts from the back side of the knuckle, and wiggling the unit bearing out. Be careful not to remove the axle shaft, or the inner seal may be damage and leak. See **Figure 5**.



Figure 5. Unit Bearing Retention Bolts

12. Loosen the upper ball joint castle nut, but do not remove it. Leave a few threads engaged
13. Loosen the lower ball joint castle nut, but do not remove it. Leave a few threads engaged
14. Separate the lower ball joint taper with a ball joint taper removal tool or by striking the knuckle with a hammer. See **Figure 6**.



Figure 6. Separating the Lower Ball Joint

15. Separate the upper ball joint taper with a ball joint taper removal tool or by striking the knuckle and caster shim sleeve with a hammer. See **Figure 7**.



Figure 7. Separating the Upper Ball Joint

16. Remove the factory steering knuckle.
17. Remove the camber sleeve from the factory knuckle and install it into the new Synergy knuckle
18. Position the synergy knuckle to the upper and lower ball joint studs
19. Loosely install the upper and lower ball joint castle nuts.
20. Initially torque the lower ball joint castle nut to 22ft-lbs to set the lower ball joint taper. If the cotter pin hole does not fully engage the castle nut, remove the castle nut and use the supplied washer underneath the castle nut and re-torque to 22ft-lbs, see **Figure 8**.



Figure 8. Cotter Pin Alignment on Lower Ball Joint

21. Tighten the upper ball joint nut to 55 ft-lbs, then tighten to align cotter pin hole with castle nut, install cotter pin
22. Tighten the lower ball joint nut to 48 ft-lbs then tighten to align cotter pin hole with castle nut, install cotter pin

23. Apply Red Loctite to the Supplied Steering stop spacer bolt and install the steering stop spacer bolt and sleeve, torque to 20 ft lbs. See **Figure 9**.



Figure 9. Steering Stop Spacer Being Installed

24. Install the unit bearing, apply red Loctite to the bolts and torque the 3 bolts to 75 ft-lbs.
25. Apply red Loctite to the axle shaft nut and install the axle shaft nut, torque to 100 ft-lbs, this can be accomplished with the brakes reinstalled or with a pry bar in-between the lug nuts to act as counter torque.
26. Install the wheel speed sensor and torque to 62 in-lbs
27. Install the brake rotor splash shield and torque to 89 in-lbs
28. Install the brake rotor
29. Install the caliper adapter apply red Loctite to the bolts and torque to 144 ft-lbs
30. Install the Drag link , if using a factory drag link, new nuts (not supplied) will be required. Tighten the factory nuts to **30 Ft. Lbs. + 125°**. If using a Synergy drag link 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.
31. Install the tie rod, if using a factory tie rod, new nuts (not supplied) will be required. Tighten the factory nuts to **30 Ft. Lbs. + 125°**. If using a synergy tie rod 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.
32. Install the steering stabilizer, torque mounting bolts to 50 ft lbs.
33. If you chose to use the brakes to tighten the axle hub nut, use a helper to hold the brake pedal, tighten the axle nut to 100 ft-lbs

34. Perform a Toe alignment. This can be done in the shop by reinstalling the front wheels temporarily or using Synergy Alignment Plates (3102-01). 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. The difference in measurement 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. If you are using Synergy Alignment plates, Simply measure the distance between the front of the plate and rear of the plate and adjust to the same specs as the wheels, see **Figure 10**.



Figure 10. Adjusting Toe with Synergy Alignment Plates

- 35. Install the wheels and torque the lug nuts to 130 ft lbs.
- 36. Remove supports and lower vehicle.
- 37. If the steering wheel is not straight, adjust the drag link until it is correct.

Installation is Complete

Table 1. Bolt Torques

Bolted Joint Location	Torque
Lower Ball Joint Nut – Initial Torque	22 ft-lb
Lower Ball Joint Nut – Final Torque	48 ft-lb
Upper Ball Joint Nut	55 ft-lb
Unit Bearing/Hub Bolts	75 ft-lb
Brake Rotor Splash Shield Bolts	89 in-lb
Caliper Adapter	144 ft-lb
Wheel Speed Sensor	62 in-lb
Factory Tie Rod Nut	30 Ft. Lbs. + 125°
Synergy Tie Rod Nut	55 ft-lb
Factory Drag Link Nut	30 Ft. Lbs. + 125°
Synergy Drag Link Nut	55 ft-lb
Axle Nut	100 ft-lb
Lug Nuts	130 ft-lb
Steering Stop Spacer Bolt	20 ft-lb
Steering Stabilizer Bolts	50 ft-lb