



PRODUCT: JL Wrangler Ball Joint Upgrade Set

REV: D | 08-18-2025 | II-1911

**READ INSTRUCTIONS IN FULL BEFORE INSTALLATION.
QUESTIONS? CALL 916-631-8071 M-F 7:00 AM – 5:00 PM PST**

The MetalCloak experience includes the ease of installation of our products. We design for most contingencies, but installation may be different based on different Jeep condition, configuration and/or year.

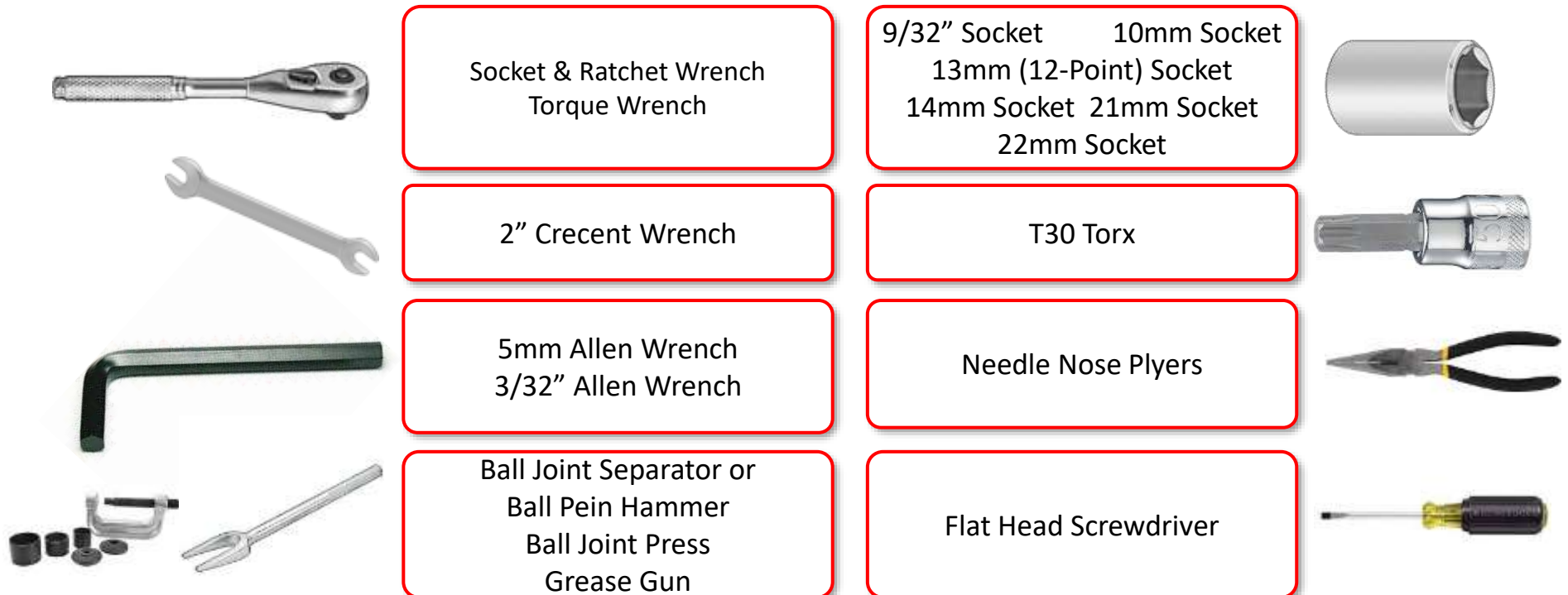
We are continually trying to improve our products and instructions – please help us by providing feedback and pictures if you find any part of the instructions that do not match your particular Jeep or are not easily understandable.

If you have any difficulties at all, please give us a call. Thank you and enjoy your MetalCloak Products!

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Section 1: Tools & Notes on Installation

Tools Required: This list is the recommended tools for ease of installation. Other versions of the same tool can be used. For example, Allen Wrenches instead of Allen Drive Sockets.



HOW TO USE THIS GUIDE: The installation guide contains ALL steps for installation. Please read and follow the instructions in order of each page top to bottom and left to right.

Jeep Model: Instructions may apply to multiple Jeep models but are labeled separately where appropriate (i.e. TJ vs. LJ).

Options: Because of the number of component options we offer, these instructions may contain steps that will not match your configuration. You can skip these steps.

Images: Pictures are provided and parts are labeled throughout the instructions. Each text box contains guidance based on the pictures next to it. The text will refer to numerical labels (1, 2, etc.) found in the images.

Installation Notes: Terms may be used in the body of the instructions that you may not be familiar with, if you have any questions feel free to contact us at the number below, or email techhelp@metalcloak.com

QUESTIONS: Any questions or comments about the instructions? Call us at 916-631-8071 M-F 7:00 AM – 5:00 PM PST.

Section 2: Product Components

DC-0001 Rev B

SHEET 1 OF 1

ITEM	PART NUMBER/DESCRIPTION	QTY.
1	BJ-0116 WRENCH, LOWER BALL JOINT, JK JL	1
2	BJ-0123 LOWER BALL JOINT JL	2
3	BJ-0145 UPPER BALL JOINT JL	2
HARDWARE KIT		
4	FA-2026 GREASE FITTING, FLUSH MOUNT	2
5	FA-2032 COTTER PIN, .094 X 1.25 STL ZN	4
6	FA-2037 GREASE FITTING, 0.25-28 STANDARD MOUNT	2
7	FS-02335 SET SCREW, 10-32 X 0.187L FLAT TIP BLK OX	4

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DO NOT SCALE DRAWING

PART NUMBER/DESCRIPTION METALCLOAK
A DIVISION OF ARMORED WORKS, LLC

1911 JL BALL JOINT SET

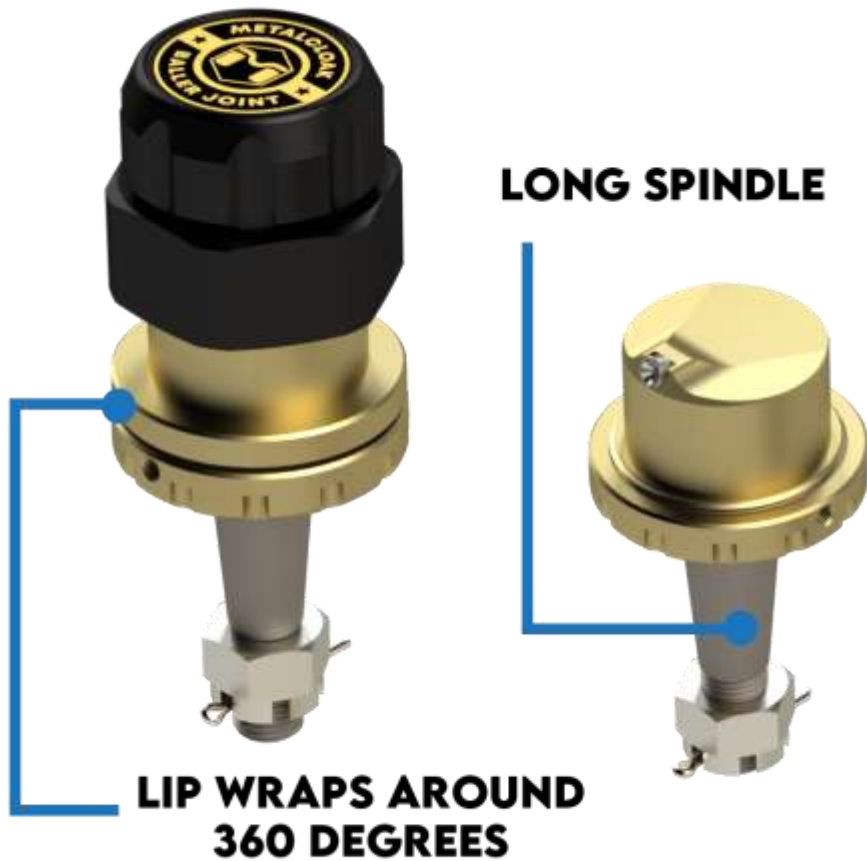
Section 3: Installation Instructions



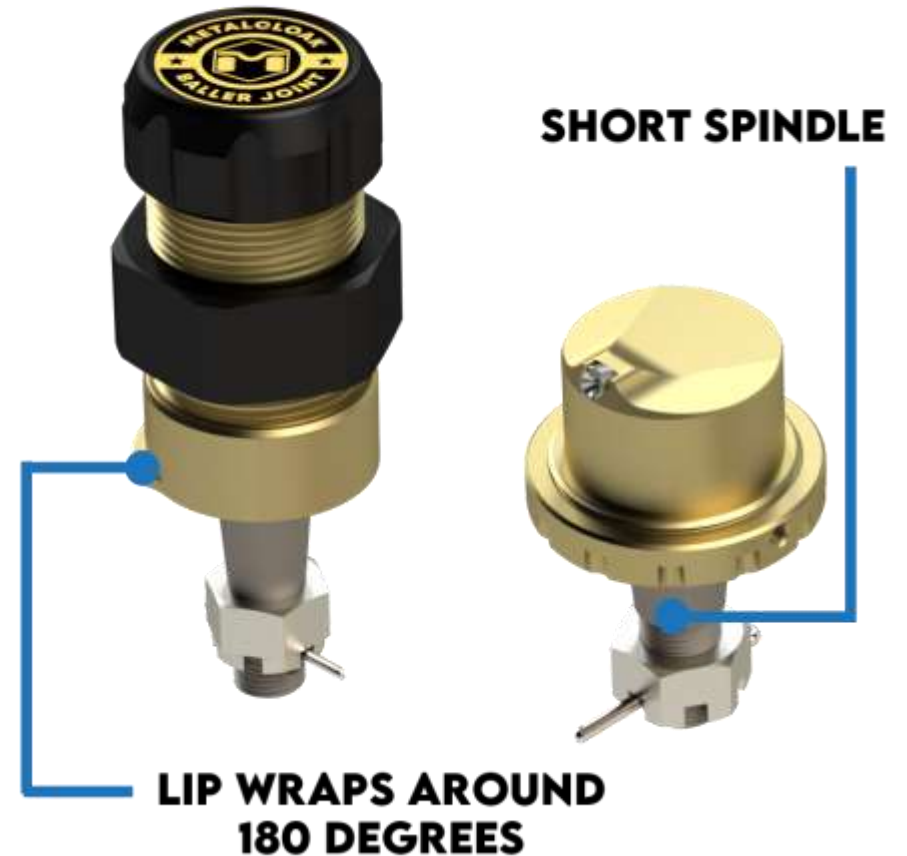
Important Note

Before starting on the ball joint install make sure you have the correct ball joints for your rig.

JL WRANLGER & JT GLADIATOR



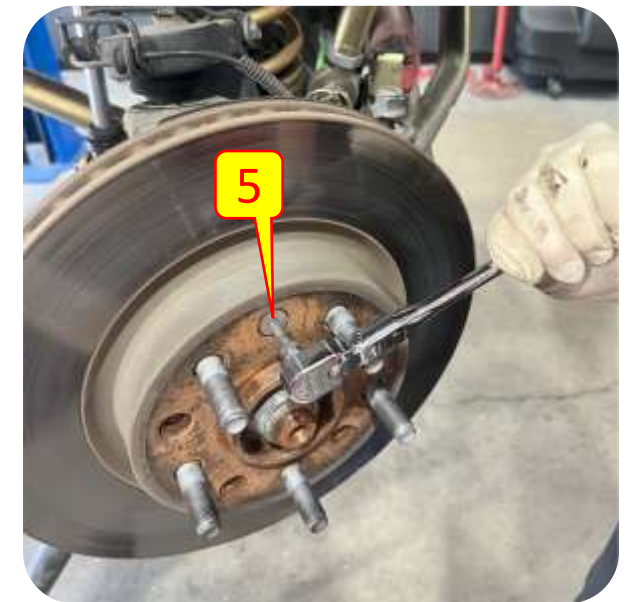
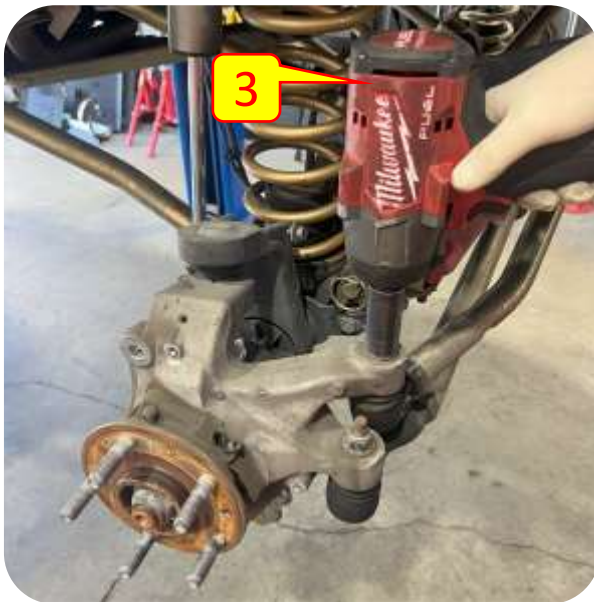
JK WRANLGER



Section 3: Installation Instructions

Step 1: Axle Disassembly

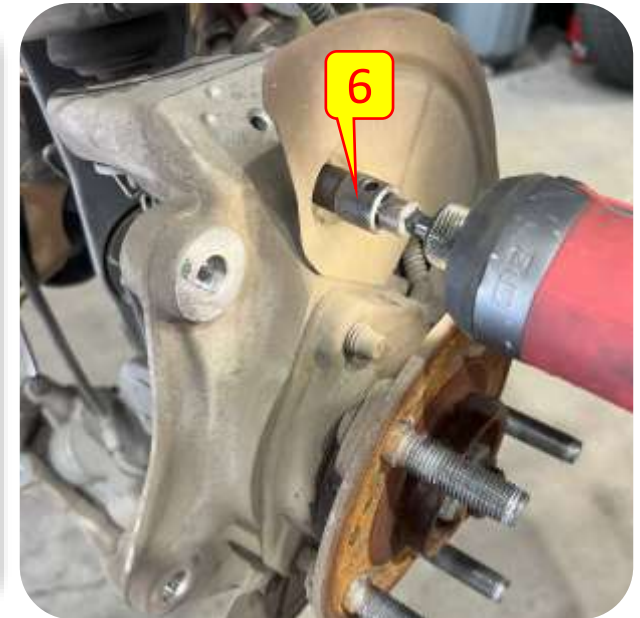
1. With the vehicle on a stable, level, surface place and park or first gear and set the emergency brake.
2. Using a floor jack raise the driver side wheel just off the ground to be removed. Support the axle with a locking type of jack stand. Remove the tire wheel.
3. Remove the steering linkage (*tie rod and drag link*) with a 21mm wrench or deep socket and tie rod separator.
4. Using a 21 mm impact socket, remove the caliper bracket and caliper as an assembly from the knuckle.
5. Using a T30 torx, remove the rotor retaining bolt. Remove the rotor.



Section 3: Installation Instructions

Step 1: Axle Disassembly

6. Using a 10 mm socket remove the three dust shield bolts from the knuckle.
7. Using a 5 mm Allen key remove the ABS sensor from the bearing assembly.
8. Using a 13mm 12-point socket, remove the three bearing retaining bolts from the backside of the knuckle.
9. Carefully slide the unit bearing and axle shaft assembly out of the knuckle and axle housing.



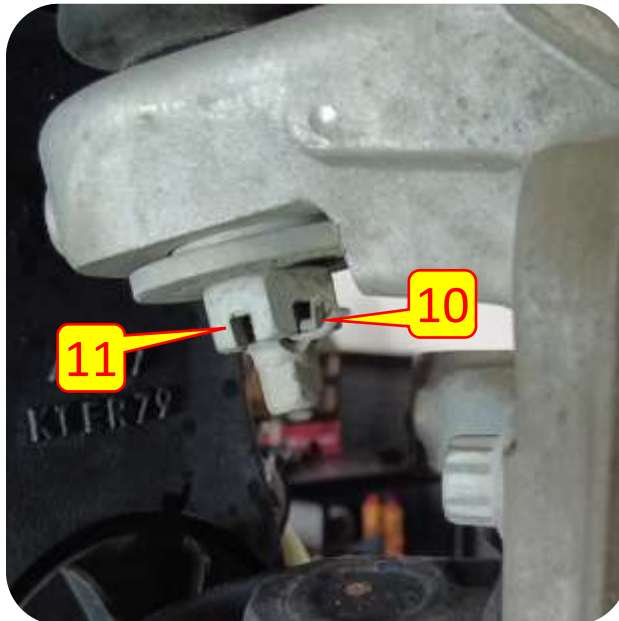
Section 3: Installation Instructions



Step 1: Axle Disassembly

10. Remove cotter pins from ball joint spindles.
11. Using a 22mm socket or wrench, remove the retaining nut from the upper and loosen the lower ball joint. Leave the lower nut on a few threads to catch the knuckle from falling when the ball joint spindles release from the knuckle taper.
12. Remove the knuckle from the C of the axle housing. This can usually be achieved by tapping or hitting with a ball peen hammer on the knuckle around the outside of the ball joints spindle (*a ball joint separator can be used as well*). **Use caution not to damage the knuckle.**
13. Using a ball joint removal and installation tool remove the upper and lower ball joints from the axle housing C.

Note: Depending on the type of tool used it may be required to remove the upper before the lower or vice versa.



Section 3: Installation Instructions

Step 2: Press in Lower Ball Joint

14. Degrease and wire brush the ID of the ball joint sockets in the axle housing C.
15. Install the ball joint from the bottom up with the ball joint fully assembled (*as shipped in the package*). **Before pressing in the ball joint make sure to rotate the housing so that the grease port is facing 30 to 45° inward towards the steering stop cast into the C for Maximum U-joint clearance. This will allow for max clearance when using RCV axles.**
16. Use caution to be sure that the ball joint cup is going square and smoothly into the C. Press till fully seated.



Section 3: Installation Instructions



Step 3: Press In Upper Ball Joint

17. Remove the black anodized aluminum cap and lock nut from the housing.
18. Slide the ball joint assembly through the upper C. Using a ball joint press, install the assembly until fully seated. **DO NOT USE THE LOCK NUT removed in step 19 to draw the ball joint assembly into the C.**
19. Once seated locate the bottom side of the lock nut with thread relief. Install the locknut until it contacts the axle housing C.



Section 3: Installation Instructions



Step 4: Grease Ball Joints

20. Using a 2" wrench or crescent wrench, secure the lock nut. This will only require a slight amount of force on a large enough wrench or crescent wrench. We recommend using electrical tape on the inside of the wrench flats to help prevent marking the red anodized surface of the aluminum nut.
21. Once seated, install the grease fitting with a flathead screwdriver and using a needle tip grease gun, fill with grease until a slight amount exits the seal at the spindle.



Section 3: Installation Instructions

Step 4: Grease Ball Joints

22. Install the grease fitting.

23. Using a needle tip grease gun, fill with grease until a slight amount exits the seal at the spindle.

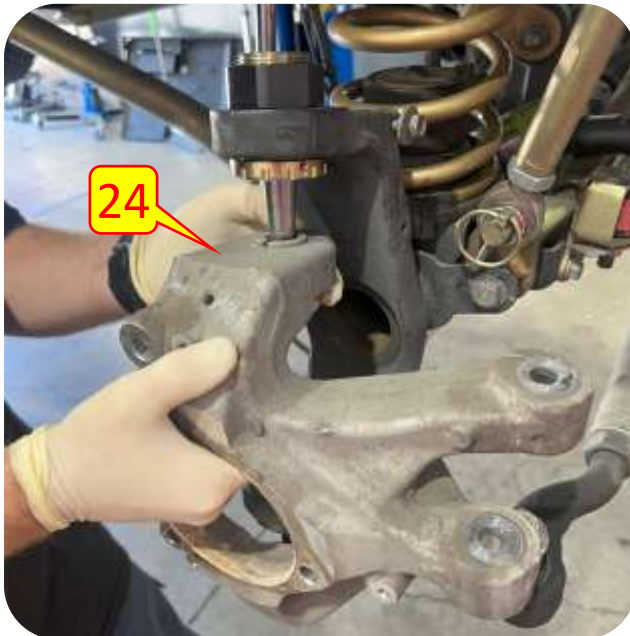


Section 3: Installation Instructions

Step 5: Knuckle Re-installation

24. Clean the tapered hole and large bore of the knuckle and upper ball joint taper sleeve. Install the sleeve completely into the knuckle and hold in place while feeding both studs into the lower and upper locations in the knuckle. *(See Important Note).*
25. Install the supplied 14mm castle nut on the lower spindle to hold the knuckle in place. Using a 22mm socket, torque to 25/ft lbs (*Iron Knuckle 60ft lbs*) to seat the taper of the spindle into the knuckle.

Important Note: After **ball joint installation and before** knuckle re-installation, use the provided spanner to snug the ball joint tensioners. Doing so will take up all internal clearance for proper installation of the knuckle and make for more consistent post install adjustment. (Yes, snug is subjective... with the tensioner “snug” it should be somewhat difficult to move the spindle side to side in the housing by hand.)



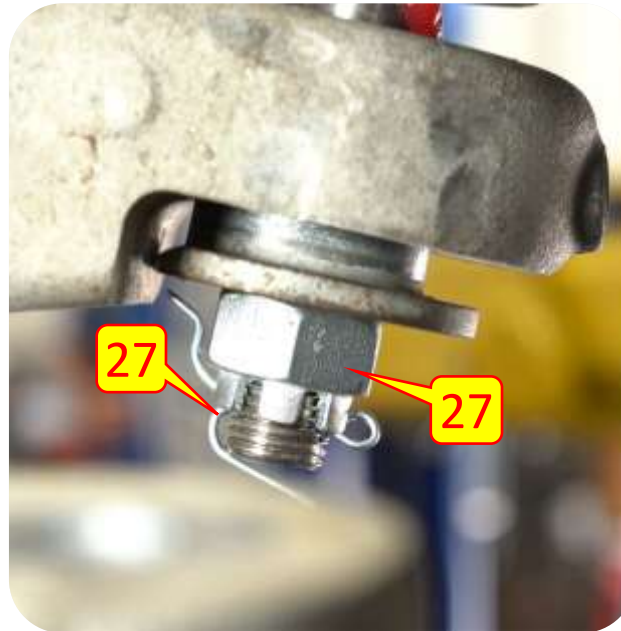
Section 3: Installation Instructions



Step 5: Knuckle Re-installation

Important Notes: Go to page 18 to see the ball joint torque sequence and reference notes.

26. While pushing the taper sleeve up to contact the taper of the spindle, install the 14 mm castle nut on the upper stud to prevent the tapered sleeve from falling out. There should be approximately a 1/8" gap between the tapered sleeve flange and the bottom of the knuckle.
27. Torque the upper castle nut to 70 ft/lbs. and advance to the next slot in the castle nut to install the cotter pin. This applies to both aluminum and iron knuckles.
28. For ALUMINUM knuckles, re-torque lower ball joint to 40 ft/lbs. and advance to the next slot in the castle nut to install the cotter pin. For IRON knuckles, re-torque to 70 ft/lbs. and advance to the next slot in the castle nut to install the cotter pin.



Section 3: Installation Instructions



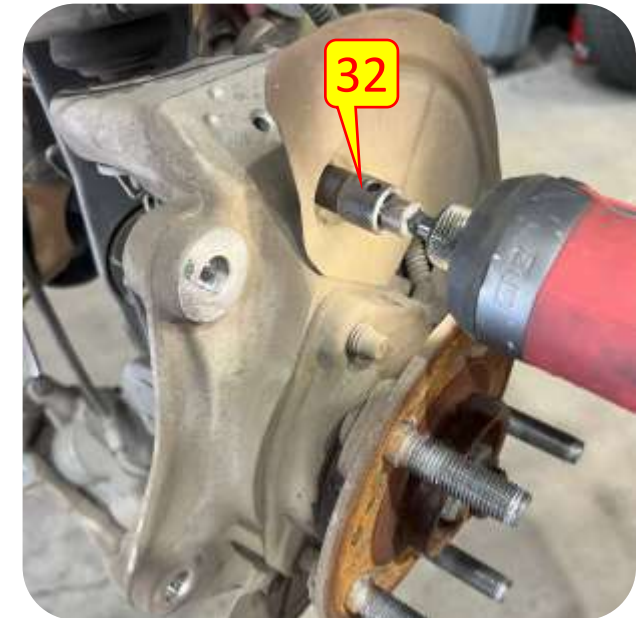
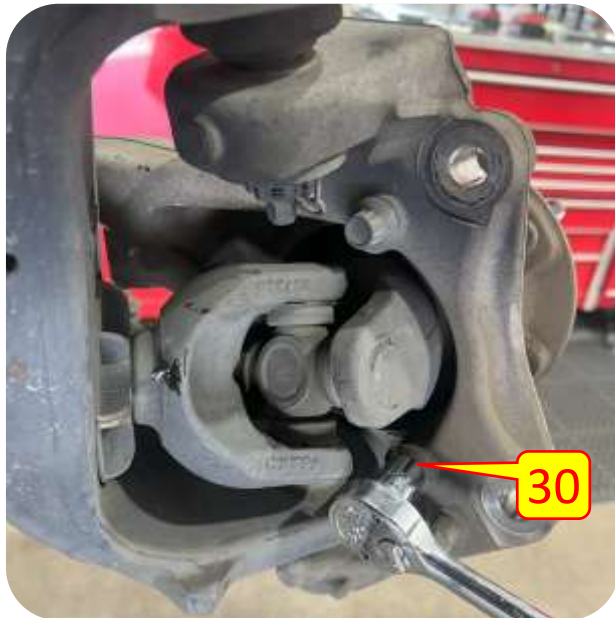
Step 5: Knuckle Re-installation

Important Note: *At this point, the knuckle may be very difficult to move left to right. Using the supplied spanner wrench, loosen the tensioner approximately 45 degrees from the starting point. Do both upper and lower equally. Rotate the knuckle left to right 4 or 5 times, the knuckle should have some drag. Typically, we find that tightening slightly after loosening off is a good starting point. Although pre greased during assembly at our factory, now is a good time to add additional grease until seen exiting the seal at the spindle. Install set screws in tensioners and lightly tighten.*

Section 3: Installation Instructions

Step 6: Axle Reassembly

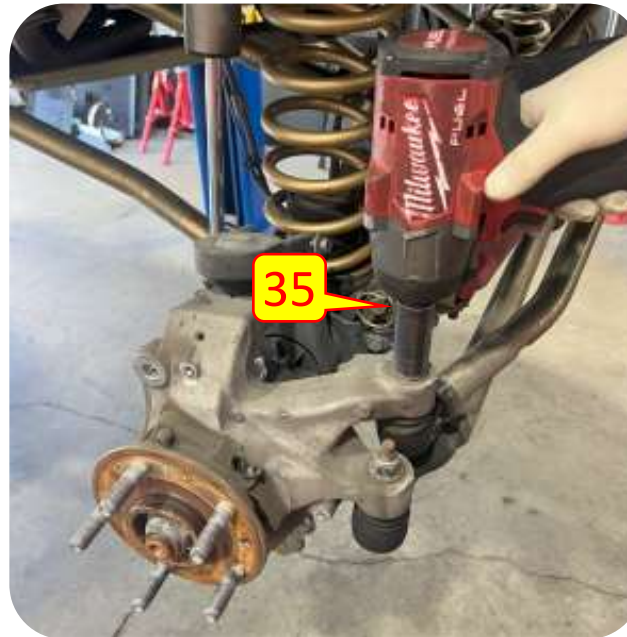
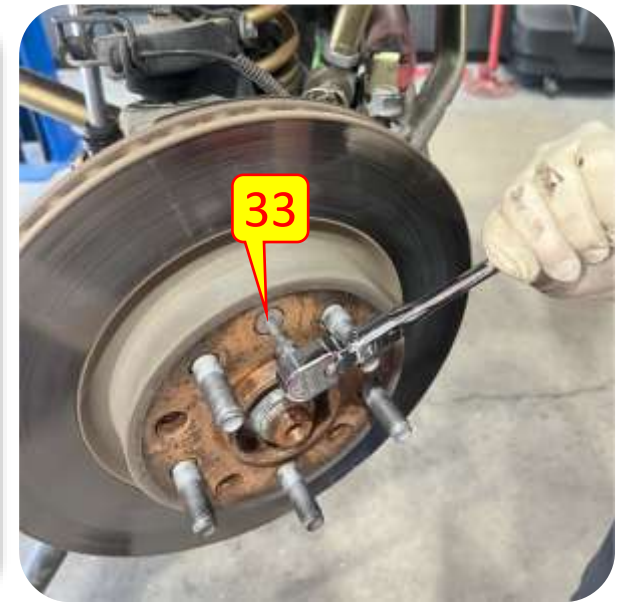
29. Carefully slide the unit bearing and axle shaft assembly into the knuckle and axle housing.
30. Using a 13mm 12-point socket, install the three bearing retaining bolts from the backside of the knuckle. Torque to factory specifications.
31. Using a 5 mm Allen key install the ABS sensor from the bearing assembly.
32. Using a 10 mm socket install the three dust shield bolts from the knuckle.



Section 3: Installation Instructions

Step 6: Axle Reassembly

33. Using a T-30 torx, install the rotor retaining bolt.
34. Using a 21 mm socket, reinstall the caliper bracket and caliper as an assembly to the knuckle. Torque to factory specifications.
35. Install the steering linkage (*tie rod and drag link*) with a 21mm wrench or deep socket. Torque to factory specifications.
36. Install the tire wheel. Torque to factory specifications.
37. Lower the Jeep to the ground.

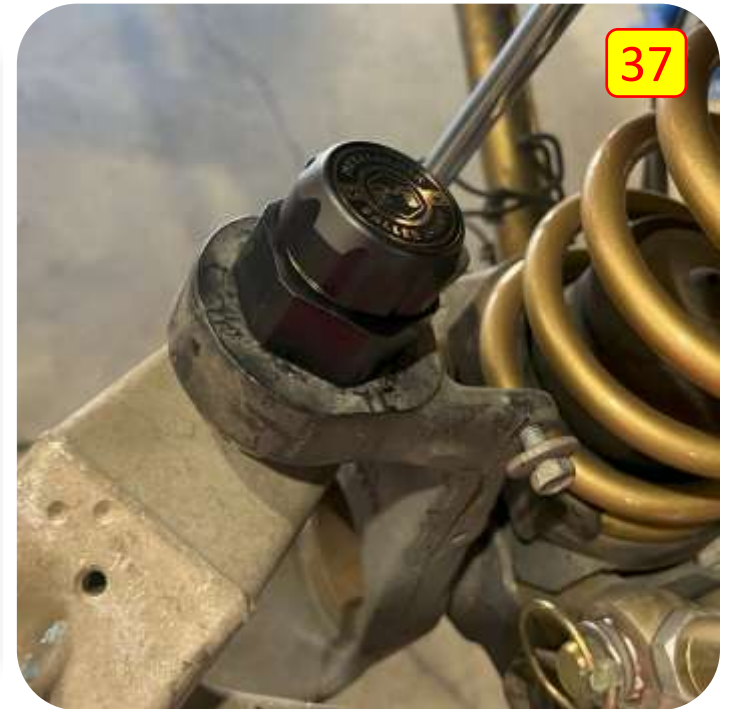


Section 3: Installation Instructions



Step 7: Tensioning Upper & Lower Ball Joints

38. Install aluminum cap hand tight till the O-ring seals against the housing.



Important Note: It is very important not to overtighten the assembly as this can cause a sticky feeling in the steering and not return to the center easily. If this condition exists after installation and a driving road test, we recommend backing off the upper and lower tensioners equally in slight increments. Making a mark by a tool notch in the tensioner on the C as a reference works well to loosen or tighten one tool notch per adjustment.

Section 3: Installation Instructions



Torque Sequence and Reference Notes

Aluminum Knuckles

1. With both upper and lower spindle nuts installed on spindles hand tight, torque the lower spindle nut to 20-25 ft/lbs to ensure the taper has seat in the knuckle.
2. While holding the tapered sleeve up to the taper in the spindle, torque the upper spindle nut to 70 ft/lbs. Advance the nut to the next slot in the castle nut that aligns with the hole in the spindle. Install cotter pin.
3. Re-torque the lower spindle nut to 40 ft/lbs. Advance the nut to the next slot in the castle nut that aligns with the hole in the spindle. Install cotter pin.

Iron Knuckles

1. With both upper and lower spindle nuts installed on spindles hand tight, torque the lower spindle nut to 25 ft/lbs. to ensure the taper has seat in the knuckle.
2. While holding the tapered sleeve up to the taper in the spindle, torque the upper spindle nut to 70 ft/lbs. Advance the nut to the next slot in the castle nut that aligns with the hole in the spindle. Install the cotter pin.
3. Re-torque the lower spindle nut to 70 ft/lbs. Advance the nut to the next slot in the castle nut that aligns with the hole in the spindle. Install the cotter pin.