PRODUCT: **JL Wrangler Ball Joint Upgrade Set**

REV: B | 09-29-2023 | 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!

IMPORTANT NOTE: We use Stainless Steel Hardware where possible. Therefore, a tube of Silver Anti-seize is provided and should be used on all bolts—only a small amount is needed.

WARRANTY INFORMATION: This article is sold without warranty expressed or implied. No warranty or representation is made as to this products ability to protect the user from injury or death. The user assumes that risk. The effectiveness, warranty and longevity of this equipment are directly related to the manner in which it is INSTALLED, USED and/or MAINTAINED. THE USER ASSUMES ALL RISK. By purchasing this product and opening the packaging, purchasers expressly acknowledge, understand and agree that they take, select and purchase these MetalCloak products from Armored Works, LLC, its affiliates and distributors and agents as is and with all faults. The entire risk as to the quality and performance of these MetalCloak products is with the purchaser. Working on your vehicle can be a dangerous activity. If you are unsure of what you are doing, please leave mechanical or safety critical work to a skilled mechanic. We take no responsibility for the incorrect use and/or installation of MetalCloak products.

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.

Socket & Ratchet Wrench

9/32” Socket 10mm Socket
13mm (12-Point) Socket
14mm Socket 21mm Socket
22mm Socket

3/4” Wrench
2” Crecent Wrench

T30 Torx

5mm Allen Wrench
3/32” Allen Wrench

Needle Nose Plyers

Ball Joint Separator or
Ball Pein Hammer
Ball Joint Press
Grease Gun

Flat Head Screwdriver

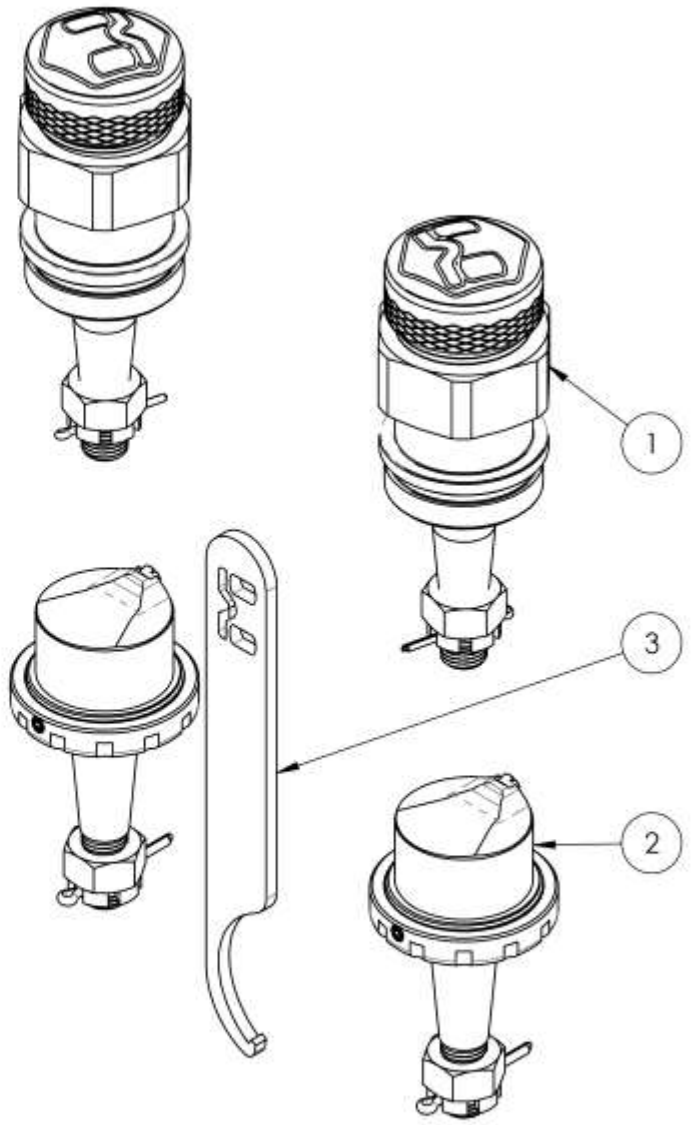
HOW TO USE THIS GUIDE: The installation guide contains ALL steps for installation. Please read and follow the instructions in order of each page top to bottom, and left to right.
Jeep Model: Instructions may apply to multiple Jeep models, but are labeled separately where appropriate (i.e. TJ vs. LJ).
Options: Because of the number of component options we offer, these instructions may contain steps that will not match your particular 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 alphabetical labels (A, B, 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-0122 UPPER BALL JOINT JL	2
2	BJ-0123 LOWER BALL JOINT JL	2
3	BJ-0116 WRENCH, LOWER BALL JOINT, JK JL	1



DO NOT SCALE DRAWING

A DIVISION OF ARMORED WORKS, LLC

PART NUMBER/DESCRIPTION

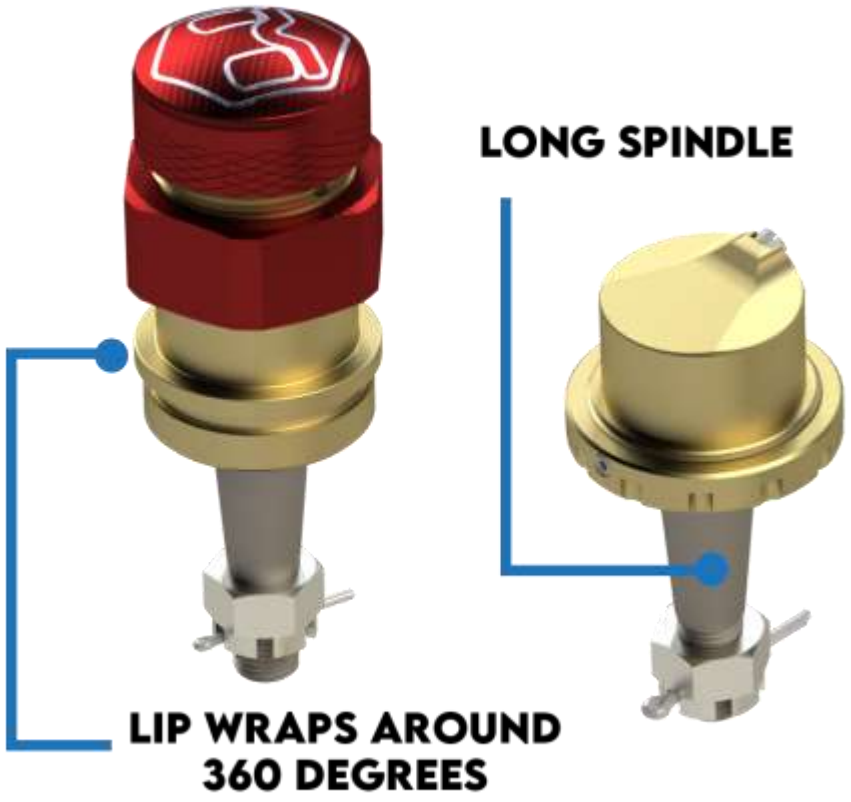
1911 JL BALL JOINT SET

Section 3: Installation Instructions

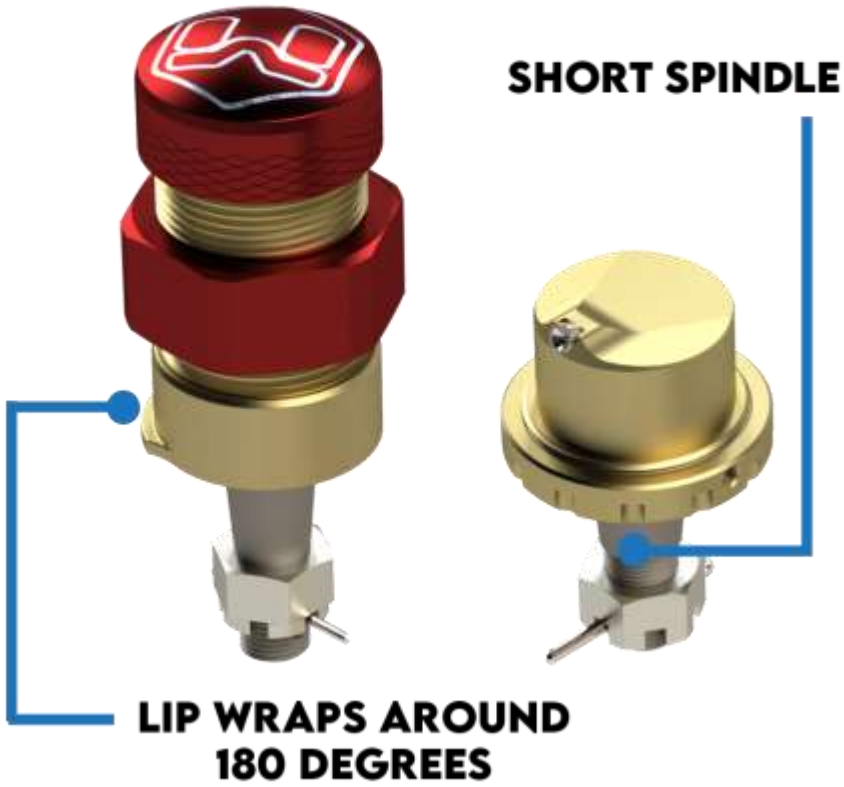
Important Note

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

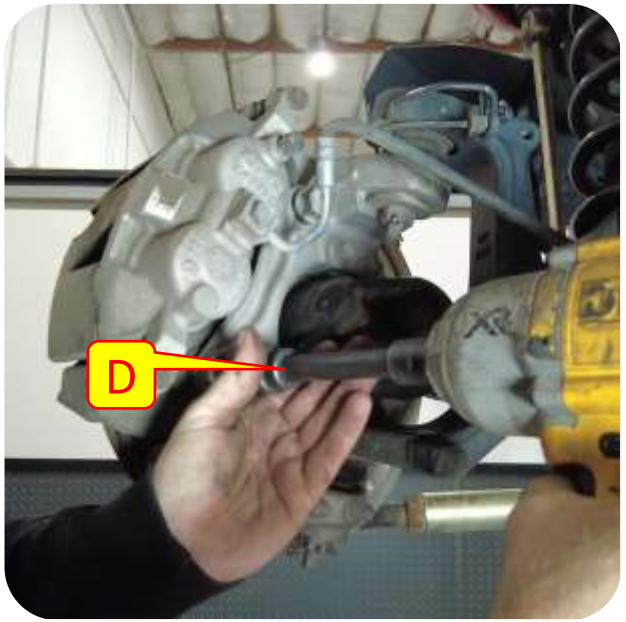
A. With the vehicle on a stable, level, surface place and park or first gear and set the emergency brake.

B. 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.

C. Remove the steering linkage *(tie rod and drag link)* with a 21mm wrench or deep socket and tie rod separator.

D. Using a 21 mm impact socket, remove the caliper bracket and caliper as an assembly from the knuckle.

E. Using a T30 torx, remove the rotor retaining bolt. Remove the rotor.



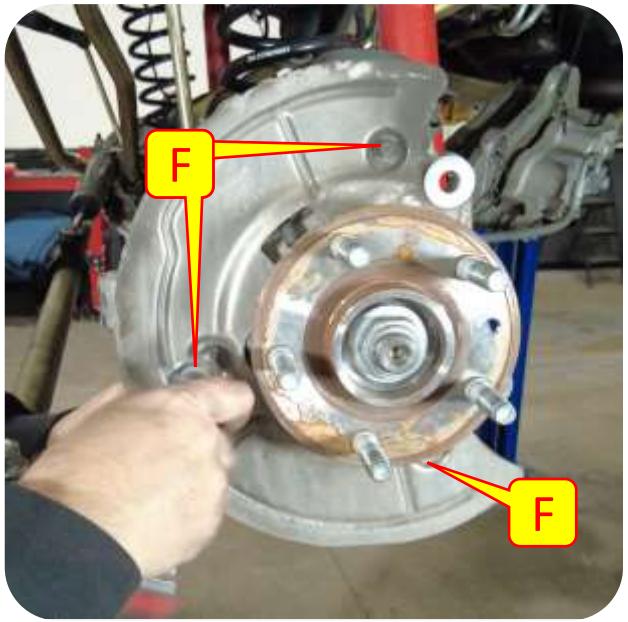
Step 1: Axle Disassembly

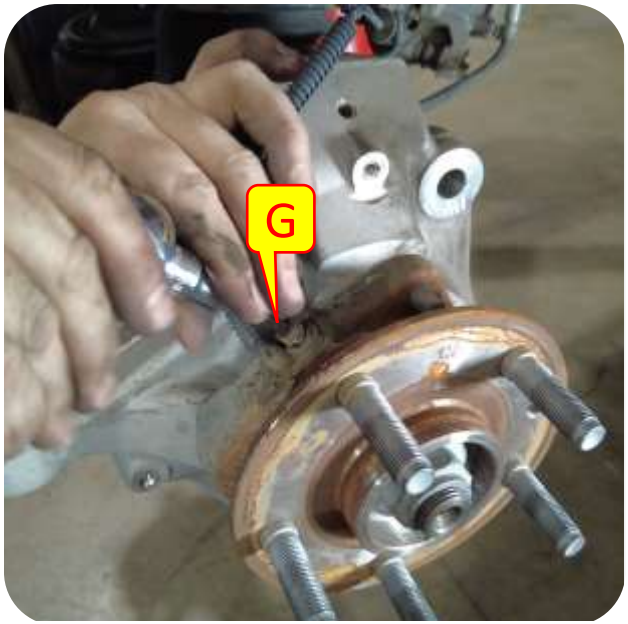
F. Using a 10 mm socket remove the three dust shield bolts from the knuckle.

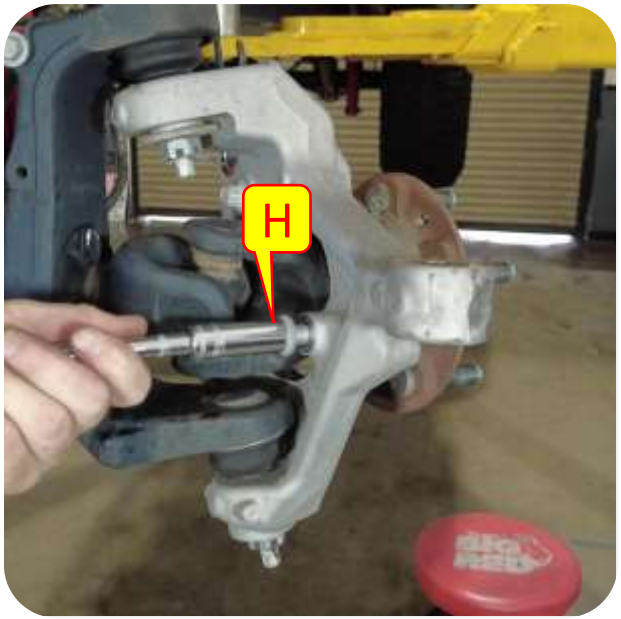
G. Using a 5 mm Allen key remove the ABS sensor from the bearing assembly.

H. Using a 13mm 12-point socket, remove the three bearing retaining bolts from the backside of the knuckle.

I. Carefully slide the unit bearing and axle shaft assembly out of the knuckle and axle housing.







Section 3: Installation Instructions

Step 1: Axle Disassembly

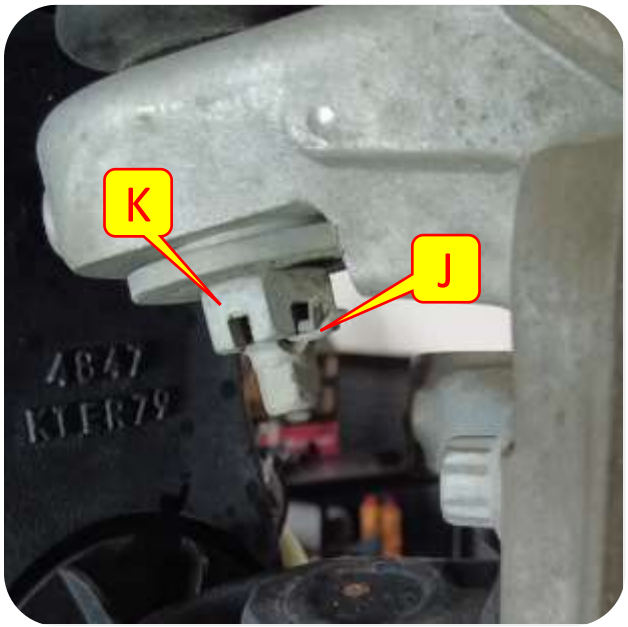
J. Remove cotter pins from ball joint spindles.

K. 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.

L. Remove the knuckle from the C of the axle housing. This can usually be achieved by tapping or hitting with a ball pein 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.**

M. 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.*



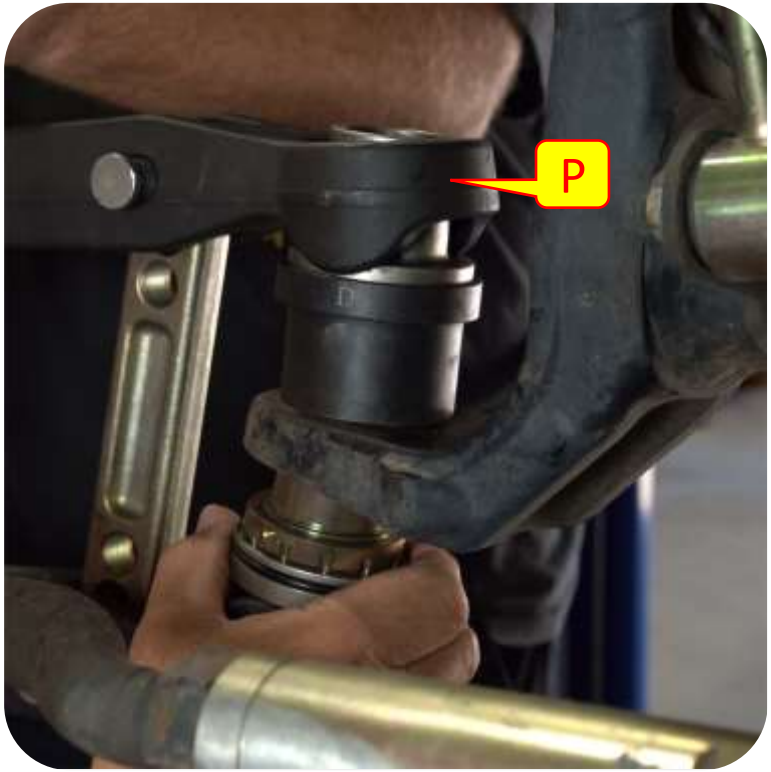
Step 2: Press in Lower Ball Joint

Important Note: *Depending on the type of ball joint installation tool used it may be necessary to install the upper or lower first.*

N. Degrease and wire brush the ID of the ball joint sockets in the axle housing C.

O. 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.**

P. Use caution to be sure that the ball joint cup is going square and smoothly into the C. Press till fully seated.



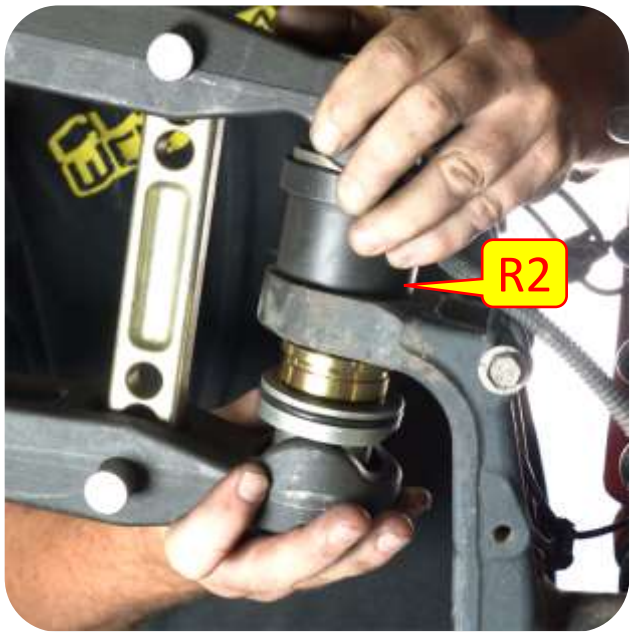
Step 3: Press In Upper Ball Joint

Important Note: *Depending on the type of ball joint installation tool used it may be necessary to install the upper or lower first.*

Q. Remove the red anodized aluminum cap and lock nut from the housing. **DO NOT USE THE LOCK NUT TO DRAW THE HOUSING UP THROUGH THE HOLE!**

R. Slide the ball joint assembly through the upper C with the set screw hole facing rearward *(R1).* Using the ball joint press, install until fully seated in the C *(R2).*

S. Once seated locate the bottom side of the lock nut with thread relief *(S1).* Install the locknut until it contacts the axle housing C *(S2).*



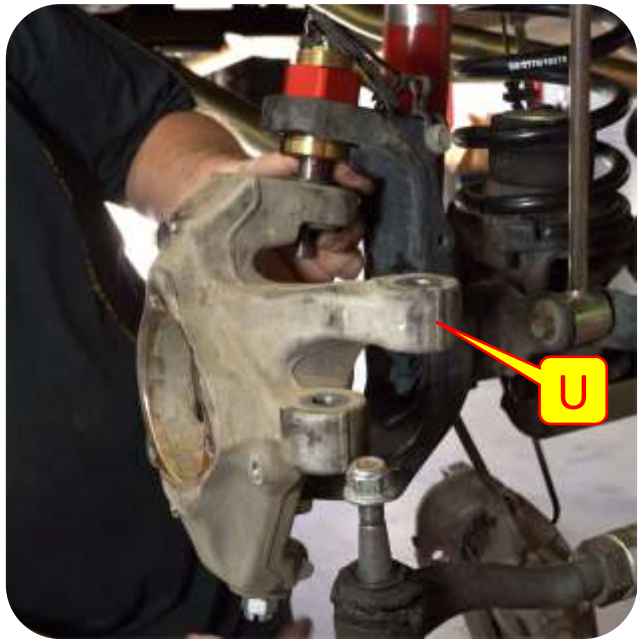
Step 4: Knuckle Re-installation

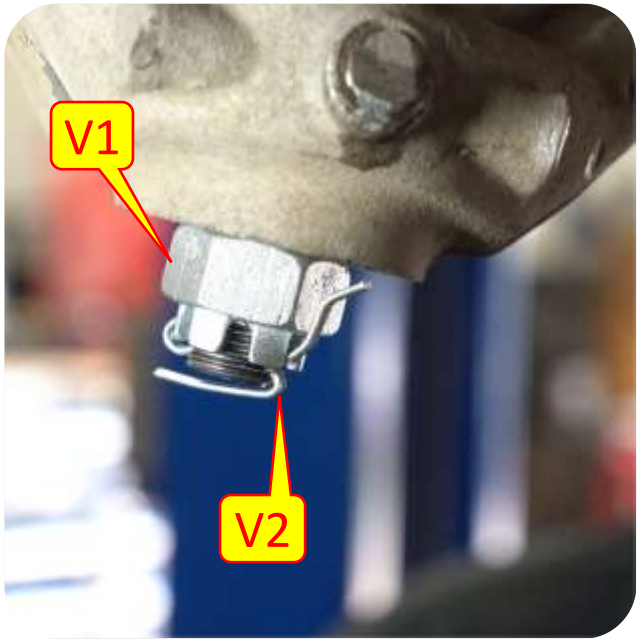
Important Notes: *Go to page 18 to see the ball joint torque sequence and reference notes.*

T. 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.

U. 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.

V. Install the supplied 14mm castle nut on the lower spindle to hold the knuckle in place *(V1).* Using a 22mm socket, torque to 20-25/ft lbs to seat the taper of the spindle into the knuckle *(V2).*





Section 3: Installation Instructions

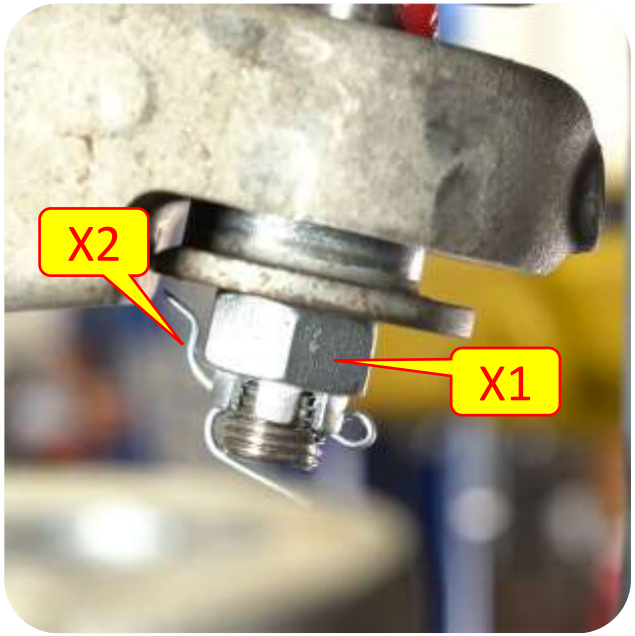
Step 4: Knuckle Re-installation

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

W. 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.

X. Torque the upper castle nut to 50 ft/lbs then using a 22mm socket or wrench *(CC1),* advance the nut to the next slot in the castle nut that aligns with the hole in the spindle and install the cotter pin *(CC2).*

Y. Re-torque the lower ball joint to 35 ft/lbs and using the same wrench as above advance the nut to the next slot for installing the cotter pin.



Step 5: Greasing the Lower Ball Joint

Z. Once seated, install the grease fitting *(Z1)* with a flathead screwdriver and using a needle tip grease gun, fill with grease *(Z2)* until a slight amount exits the seal at the spindle.

Step 6: Greasing the Upper Ball Joint

AA. Using a 9/32” socket and a 3/4” wrench install the grease fitting.

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

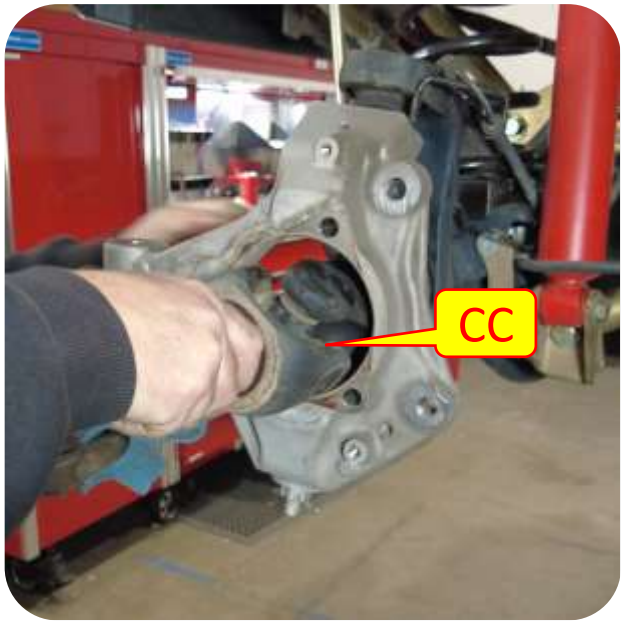
Step 7: Axle Reassembly

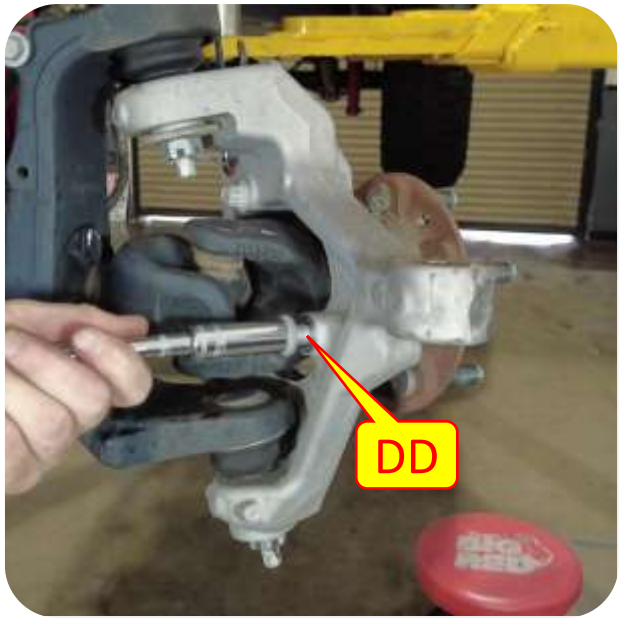
CC. Carefully slide the unit bearing and axle shaft assembly into the knuckle and axle housing.

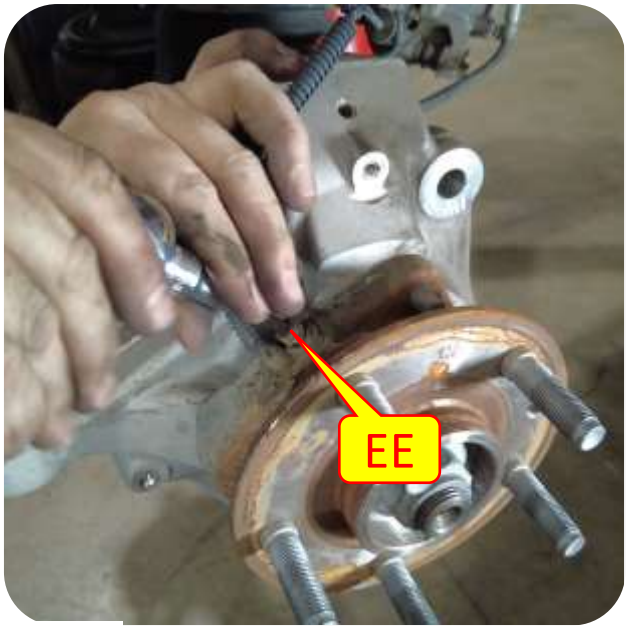
DD. Using a 13mm 12-point socket, install the three bearing retaining bolts from the backside of the knuckle.

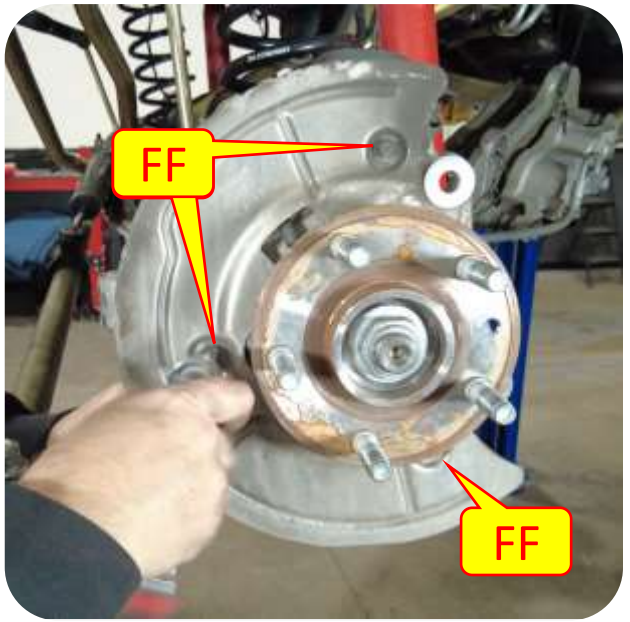
EE. Using a 5 mm Allen key install the ABS sensor from the bearing assembly.

FF. Using a 10 mm socket install the three dust shield bolts from the knuckle.









Step 7: Axle Reassembly

GG. Using a T-30 torx, install the rotor retaining bolt.

HH. Using a 21 mm impact socket, reinstall the caliper bracket and caliper as an assembly to the knuckle.

II. Install the steering linkage *(tie rod and drag link)* with a 21mm wrench or deep socket.

JJ. Install the tire wheel.

KK. Lower the Jeep to the ground.

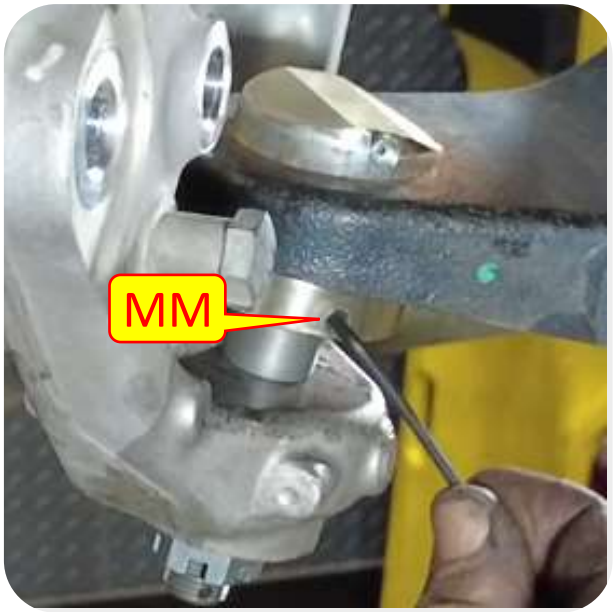
Step 8: Tensioning Upper & Lower Ball Joints

LL. Snug the lower ball joint tensioner with the included laser cut spanner wrench.

MM. Install the low profile zerk fittings into the ball joints with a 3/32” allen wrench.

NN. Using a 3/4” socket advance the upper ball joint tensioning nut until resistance is felt. This is where the tensioner has contacted the upper bearing race and spindle. Note the friction of the knuckle as turned left and right. If needed, advance the nut minimally until slightly more resistance is felt as turning the knuckle left and right.

OO. Install the set screw using a 3/32” allen wrench.



Step 8: Tensioning Upper & Lower Ball Joints

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

Important Note: *It is very important not to over tighten the assembly as this can cause a "Sticky" feeling in the steering and not return to center easily. If this condition exists after install, we recommend backing off the upper ball joint tensioner nut until loose and bringing just back into contact where resistance is felt in the wrench as tightening.*

Torque Sequence and Reference Notes

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 50 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 35 ft/lbs. Advance the nut to the next slot in the castle nut that aligns with the hole in the spindle. Install cotter pin.

