



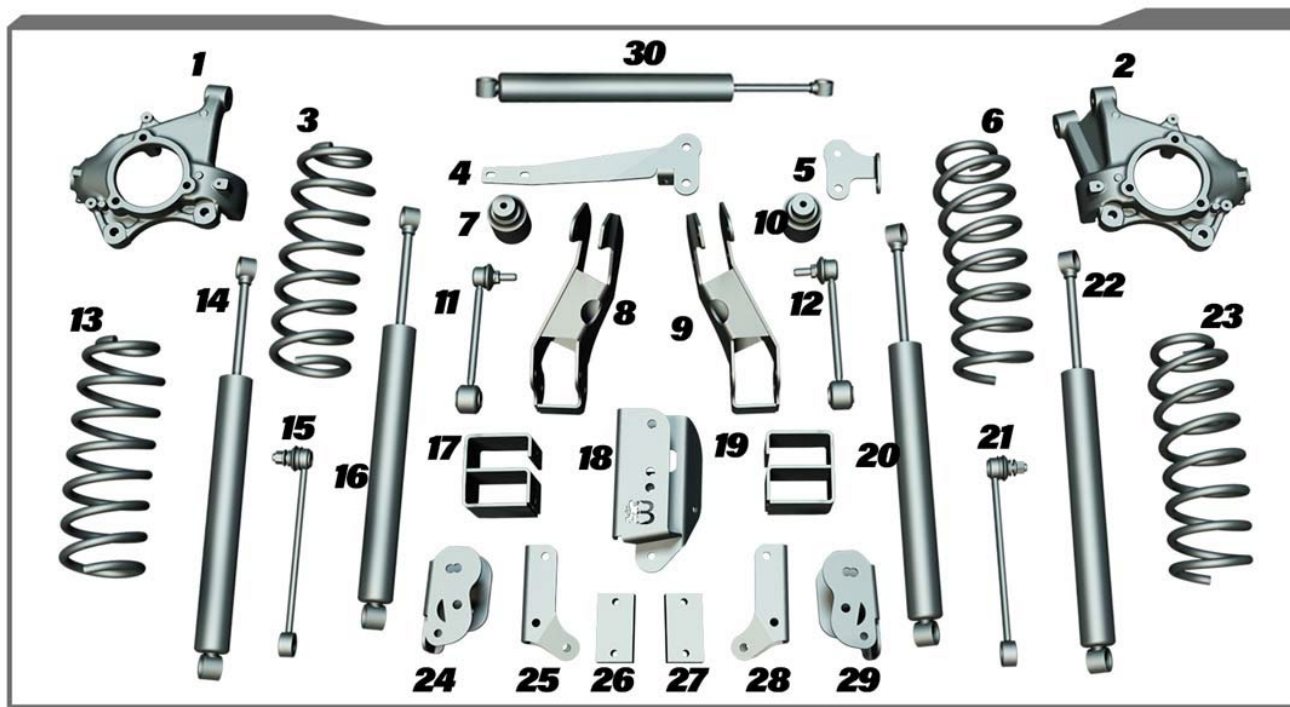
# **GEORISE 45**

## **4.5" SPORTSUSPENSION GEORISE45**

### **BEFORE YOU START:**

*To guarantee a quality installation, we recommend reading these instructions thoroughly before beginning any work. These instructions assume a certain amount of mechanical abilities.*





- |   |   |
|---|---|
| 1. Left knuckle                             | 16. GR45 tuned front shock (SHX1)       |
| 2. Right knuckle                            | 17. Rear bump stop                      |
| 3. Frequency tuned spring front spring      | 18. Rear track bar bracket              |
| 4. Front trackbar relocation bracket part 1 | 19. Rear bump stop                      |
| 5. Front trackbar relocation bracket part 2 | 20. GR45 tuned front shock (SHX1)       |
| 6. Frequency tuned spring front spring      | 21. Rear stabilizer endlink             |
| 7. Front bump stop cup                      | 22. GR45 tuned rear shock (SHX2)        |
| 8. Front control arm geometry bracket L     | 23. Frequency tuned spring rear spring  |
| 9. Front control arm geometry bracket R     | 24. Rear control arm geometry bracket L |
| 10. Front bump stop cup                     | 25. Rear shock relocation bracket L     |
| 11. Front stabilizer endlink                | 26. Rear stabilizer spacer              |
| 12. Front stabilizer endlink                | 27. Rear stabilizer spacer              |
| 13. Frequency tuned spring rear spring      | 28. Rear shock relocation bracket R     |
| 14. GR45 tuned rear shock (SHX2)            | 29. Rear control arm geometry bracket R |
| 15. Rear stabilizer endlink                 | 30. Steering shock                      |



## **VEHICLE APPLICATION:**

***Any Trim Level of 2018-Current Year***

***Jeep JL Wrangler (2-door) & Wrangler Unlimited (4-door)***

*includes notes & covers differences for EcoDiesel and JL392 (modifications with rear bumper might be necessary /factory V8 engine)*

### **NOTES & CAUTIONS BEFORE BEGINNING:**

- **\*\* Jeep must not have any suspension-related issues prior to this installation. \*\***  
If the installer is not the owner, installer should personally test drive a familiar route to confirm the Jeep is in sound condition before beginning.
- **Install time is approximately 6-8 hours** depending on method, equipment, and installer experience. Post-installation checks/drives will add additional time dependent on route length and any issues found.  
**Vehicle Precondition: Stock frame & original/stock axle housings; all factory suspension brackets intact.**
- These instructions assume the use of a drive-on vehicle lift (4 post) – a frame lift (2 post) is not recommended. Installation on the ground is feasible on a flat concrete floor/driveway.
- **Worn Front Axle Ball Joints are one of the major contributors to ‘Death Wobble’ – i.e. Shimmy – in Solid-Front-Axle (SFA) vehicles such as Jeep Wranglers/Gladiators.** If the Jeep has many miles/km and/or has been used hard off-road, the upper & lower ball joints may be worn. To test, shake the top of each front tire and note if ANY subtle clunking can be felt. If so, one or more joints should be replaced – which can be conveniently done during this installation - adding a minimum of additional time compared to a separate repair later. If this is not checked first and addressed if needed, the driver cannot blame the new steering/suspension for any Shimmy/Wobble issues after this suspension installation! Additional info and solution options are provided in section 3.
- **Aftermarket rear driveshafts with Cardan-type joints (double @ Tcase/single @ axle) will require a rear axle pinion angle adjustment that may require adjustable rear-upper arms.** A fixed correction is provided that may be sufficient on Unlimited/4-door models (see section 1).
- **Aftermarket wheels such as Bawarrion are recommended both for adequate width to mount large tires and decreased backspacing for chassis and steering clearance.** Bawarrion wheels are optimized to work with this suspension system for maximum clearance to chassis components and vehicle body/flares. **CAUTION:** Wheels with extreme offsets (shallow backspacing) may trigger ‘false activations’ of the ESP stability control – for JL/JT, this is any wheel with a negative (<0ET) offset.
- **NOTE: Wheels from different producers with different width and offset were NOT tested with this Suspension.**

### **ORDER OF INSTALLATION**

**Start with the Rear as ordered in these instructions.** There is a safety benefit to doing the rear before the front, as it makes the middle portion of the frame closer to level during Front installation. This becomes important for sections 2 & 3 when the front is supported by the frame rails aft of the front suspension arms – and is more important to this installation than it is for shorter lift heights.



## 1. JL/JLU REAR SUSPENSION

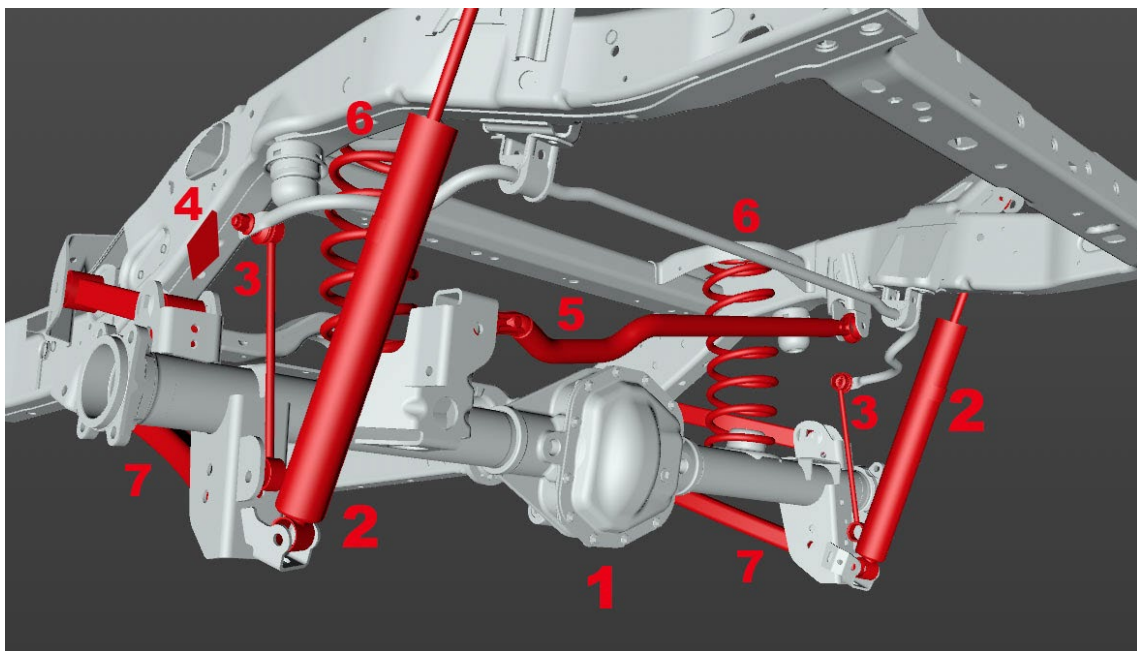
### PREPARATION

- Block both front tires in both directions (four chocks).
- Loosen all 8 rear control arm bolts, but do not remove them.
- Disconnect trackbar, park-brake cables, and all wiring (including locker actuation on Rubicons) at rear axle, but leave attached to frame/body.
- Relax suspension by supporting frame at rearmost crossmember (just ahead of bumper) with no load on springs.

### REMOVAL / DISASSEMBLY OF OEM REAR SUSPENSION

- Remove springs, shocks, and stabilizer bar end links. Retain all hardware for re-use.
- Loosen brake hose brackets on back side of UCA brackets on axle.

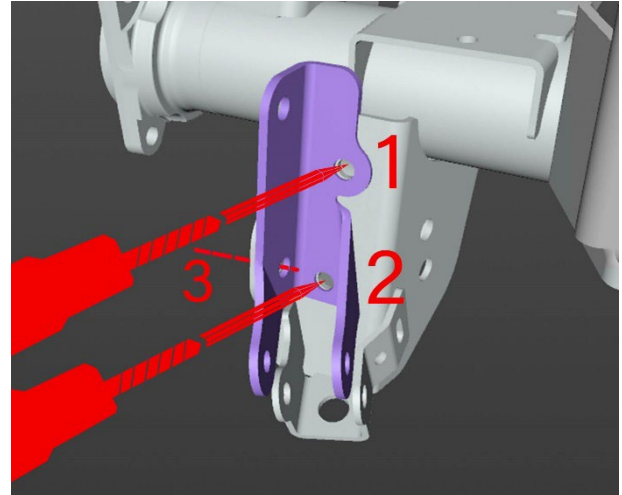
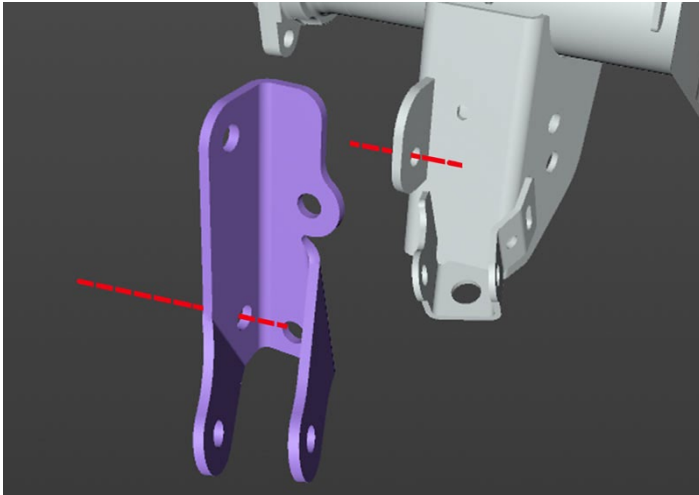
TIP: Keeping upper spring isolators in place will save time when installing springs later: Use needle nose vise-grip pliers to hold small 'nub' on each isolator from above frame. Left side nub is to left side of spring center; Right side is straight forward of center. Isolators can hang from the pliers/frame until springs are replaced later.



### INSTALLATION OF BAWARRION REAR SUSPENSION

#### SHOCK & END LINK RELOCATION

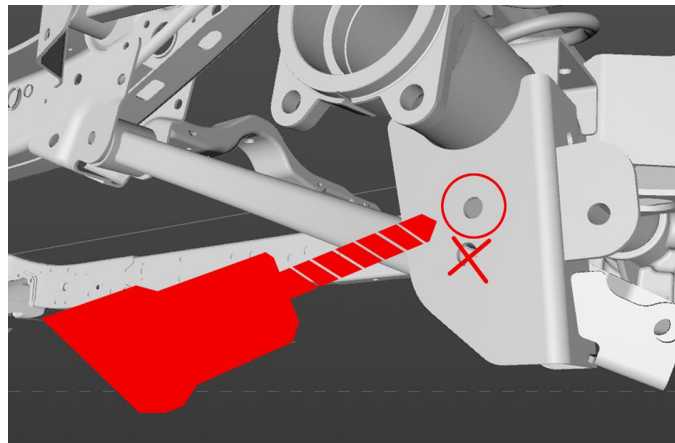
1. Disconnect *one* LCA (Lower Control Arm) at axle end & allow to hang from frame.
2. Drill out uppermost (round) hole on back side of OE LCA bracket to fit M12 (location 1 in illustration below).
3. Fit Bawarrion (in the following just BAW) bracket to OE bracket and attach with M12x30 bolt & nut at drilled-out hole; bolt head must be at rear/BAW bracket side. Rotate BAW bracket to be snug against OE stabilizer end-link tab.
4. Mark & drill for M12 bolt to OE LCA bracket at lower hole in BAW bracket (location 2).
5. Add M12x30 bolts a newly drilled hole & tab (all heads at BAW bracket side); tighten all three bolts.



NOTE: The original/OE lower shock mounting points will no longer be used. At the owner's option, the lower portion of the OE LCA brackets may be cut off – roughly through the original LCA holes and between the OE and new BAW shock mounting positions. *This is not necessary for safe suspension function, but is an option to optimize ground clearance and appearance.*

## **LOWER CONTROL ARM RELOCATION**

6. Drill out the jig holes (both sides of bracket) that are above original LCA holes to fit the OE M14 LCA bolt.

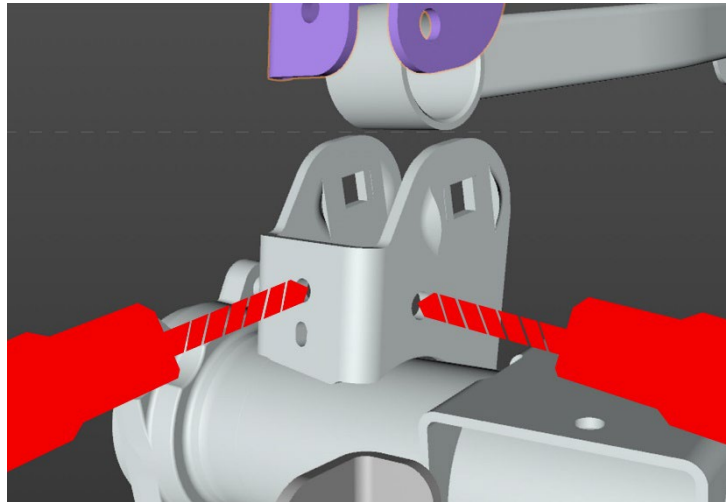


7. Re-attach LCA to this hole location. If holes will not line up, pry axle-vs-frame position (this 'bind' will be eliminated when second side is also done).

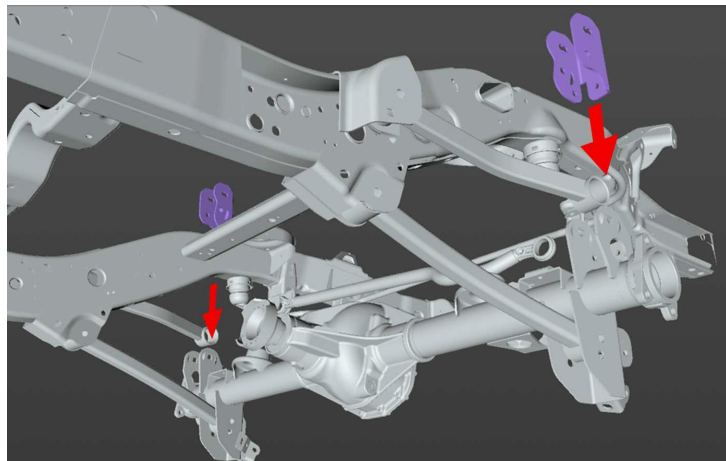
## **UPPER CONTROL ARM RELOCATION**

8. Disconnect same-side UCA (Upper Control Arm) at axle end; tie up to frame out of the way.
9. Remove brake hose bracket from back side of UCA bracket; Drill out brake bracket mounting hole in to fit M10.
10. Fit BAW UCA (upper control arm) bracket to OE bracket – flanges of new bracket go on the inboard sides of the OE bracket. Mark innermost OE flange through hole in BAW bracket.

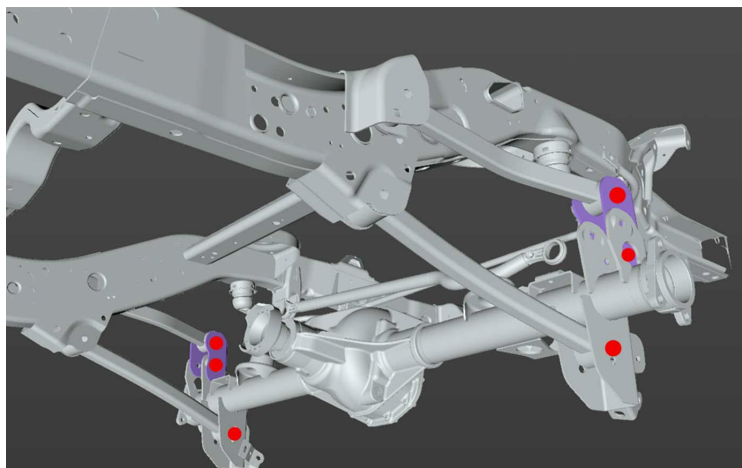
11. Remove BAW bracket and drill OE marked location to 12.0mm. \*Do not drill oversize! \* (This needs to fit snugly to an M12 bolt)



12. Install BAW UCA bracket: Use 55mm crush sleeve at original OE UCA hole location with M14x100 bolt; Add M12x30 bolt at drilled hole, and M10x30 bolt at rear. M10 should point rearward and add brake hose bracket before nut. Drill brake hose bracket to 10mm.



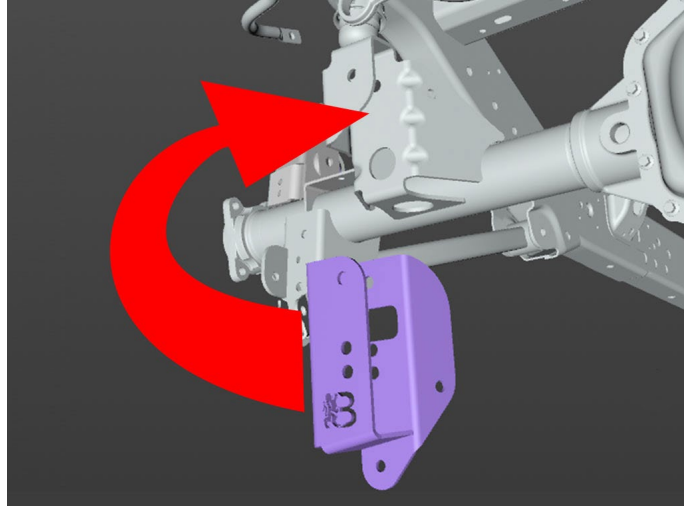
13. Bend inboard (alongside UCA bracket) portion of brake hose bracket up ~25 degrees and inboard ~5 degrees (this helps clearance and is needed for full suspension down-travel). Tighten all 3 bolts.
14. Re-attach UCA to front (in driving direction) hole of new BAW bracket using OE hardware. Snug bolts, but do not tighten at this time.



15. Repeat steps 1-14 on other side of the axle.

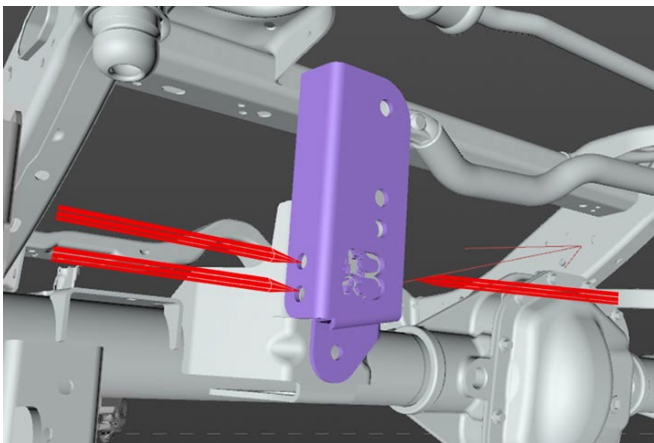
## TRACK BAR RELOCATION

16. Pre-fit BAW trackbar bracket to OE bracket on axle; Start by lining up the appropriate holes on BAW bracket with original trackbar attachment hole on OE bracket (upper set is for JL392; lower is for all other JLs) using the new drilled holes from the previous work step.

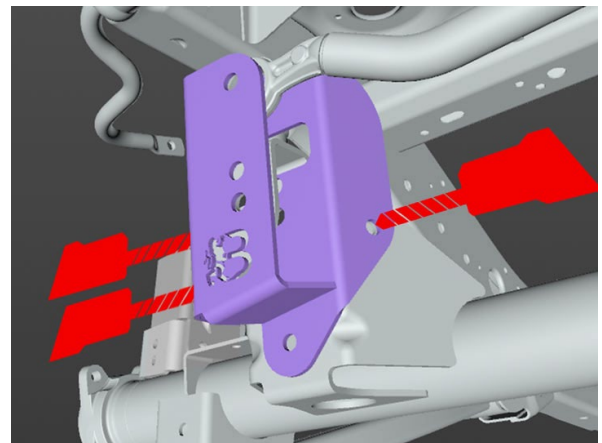


17. Stack the supplied two large-diameter washers at lowest hole location: smaller 40mm will fit *into* large hole in OE bracket, larger washer goes next to it on inside (forward) of OE bracket; Add 36mm crush sleeve at OE trackbar hole and lightly tighten new bolts M14x80 and M12x30.

18. Mark & drill three 12mm holes in OE bracket to match holes at the sides of BAW bracket. Two holes are on the driver side and one hole is on the passenger side of the OE bracket. You may remove BAW bracket for drilling, but be careful not to wander the holes. If left in place, use Bawarrion Corrosion Resistant Protection Wax Coating to avoid rust.



Mark the holes first.



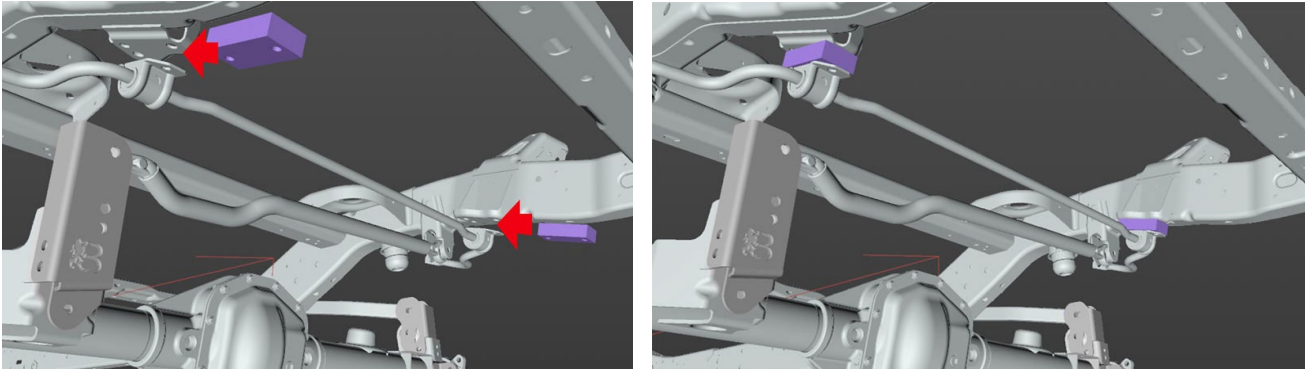
Drill the holes.

19. Add M12x30 bolts & nuts to 3 newly-drilled and 1 existing hole, then fully tighten all four trackbar bracket bolts. Do NOT re-attach trackbar to new BAW bracket at this time.



## STABILIZER BAR RELOCATION

20. Remove Stabilizer saddle bracket bolts from frame on one side and only loosen them on the other side.
21. Insert spacer block between saddle bracket/bar and frame and re-attach using supplied M10x45 bolts, but do not tighten yet.
22. Remove OE bolts on other side; Add second block and longer bolts, then tighten all four new bolts.



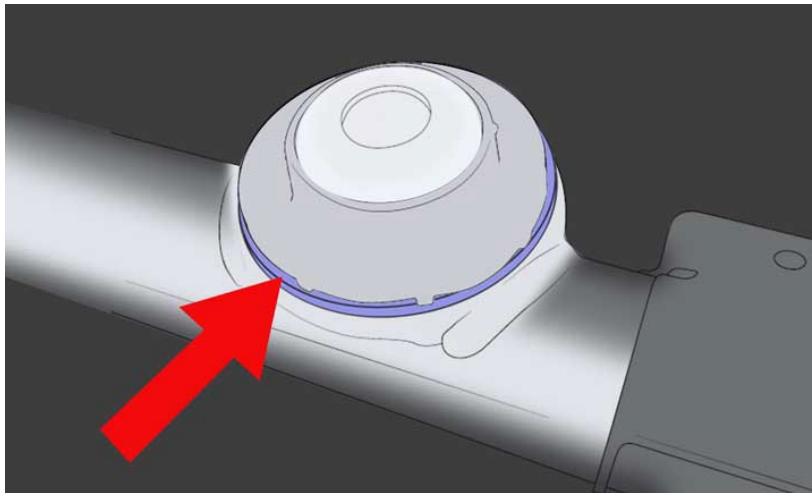
### NOTES:

- For the JL392, the clearance to the exhaust must be checked and adjusted if necessary.
- Diesel models, bar clearance to top of DEF tank will be very tight. If bar appears to be touching tank, loosen tank mounting points and shift/pry it downward and re-tighten. You should be able to achieve 1-2 mm of clearance to tank, which will be sufficient to avoid issues later.

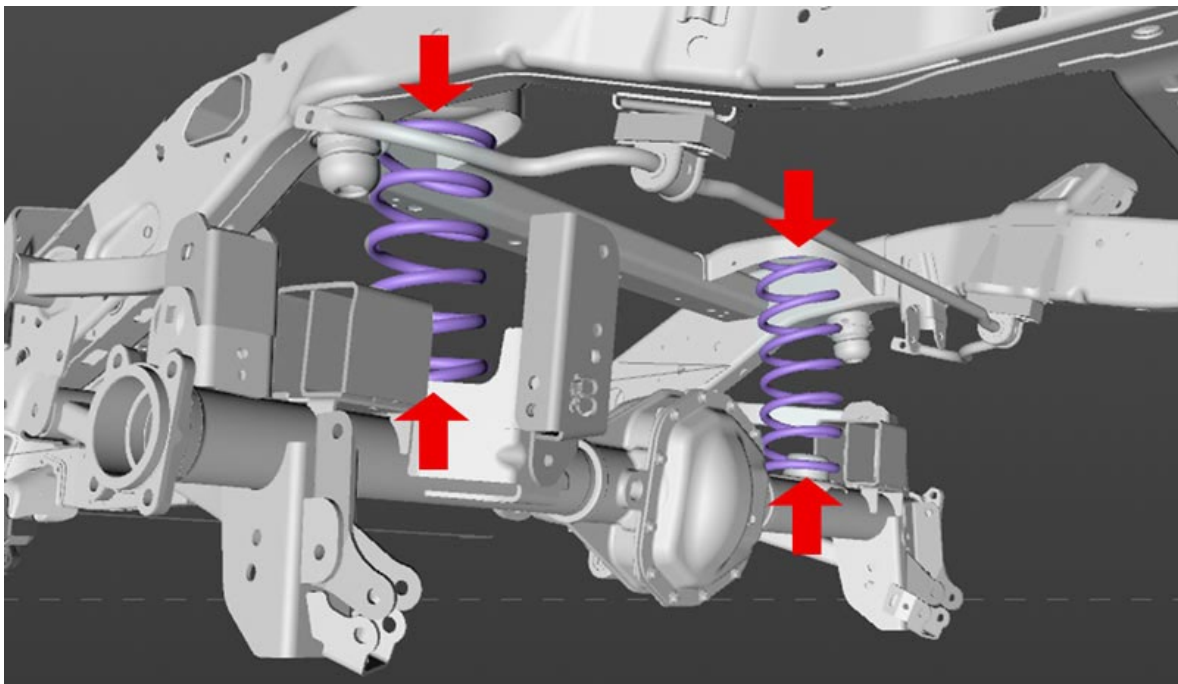
### INSTALL NEW SPRINGS & 'TRIM' SHIMS (IF NEEDED)

23. Determine if this Jeep would benefit from a rear spring shim to help level the vehicle. Most JLs typically have more weight on right side of vehicle than left. According to the powertrain as listed below, place the shim *under* the OE plastic isolator on axle. Note that if vehicle has extra added weight that is biased to the left, you may need to deviate from these guidelines, and definitely should evaluate and possibly re-shim after installation and test drives have been completed. **CAUTION:** Only one shim is provided because anything more will lead to sagging of the spring if the Jeep is used hard - Do NOT shim any spring higher than the single shim provided!
  - a. JL/JLU with 3.6L V6 usually needs a shim at right-rear location.
  - b. JL/JLU with 2.0L I4 usually needs a shim at right.
  - c. JLU with Diesels do not need a shim.
  - d. JLU 4XE usually needs a shim at right.
  - e. JL392 with 6.4L usually needs a shim at right.



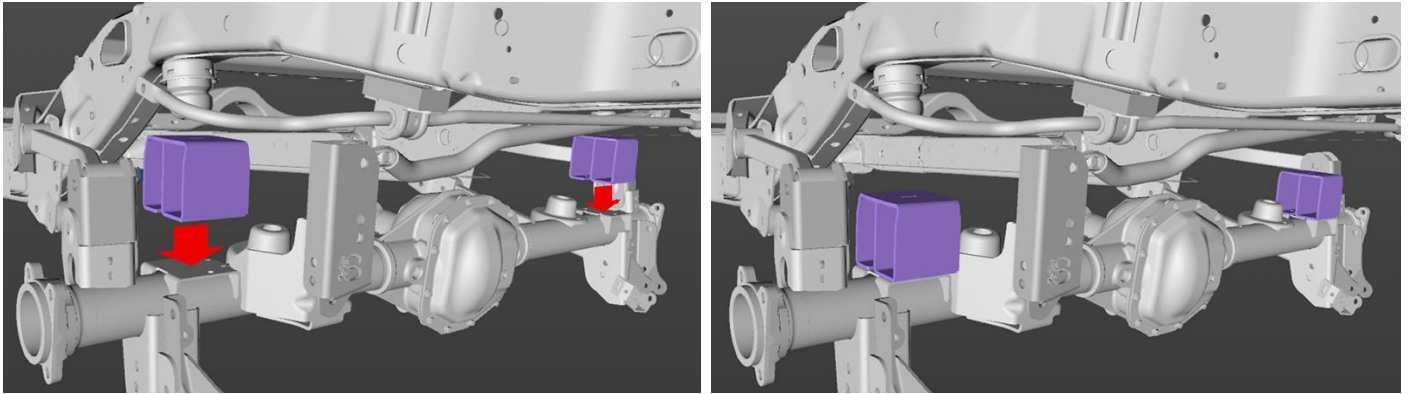


24. Place new BAW springs into position on axle seats; lower Jeep just enough so the vise-grip-retained upper isolators are fully positioned and just slightly loaded between springs and frame.



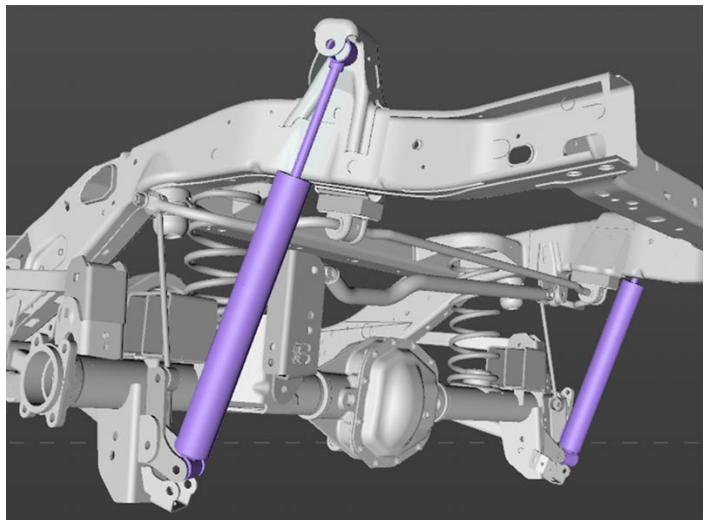
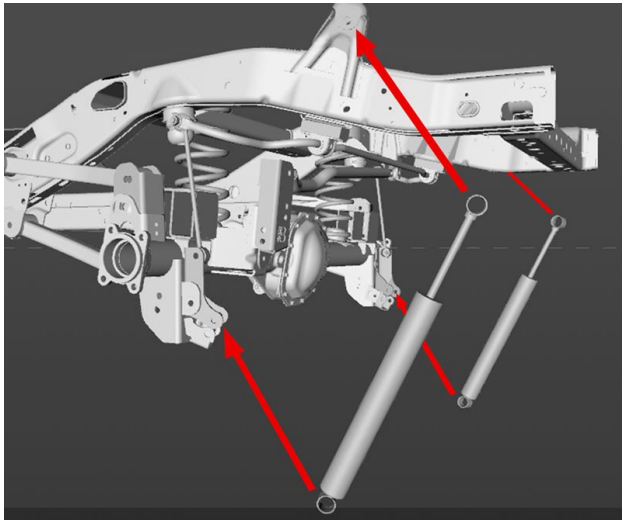
### **BUMP STOP SPACER INSTALLATION**

25. The rear spacer blocks are interchangeable left/right. For JL392, these are plastic shims with a total height of 80mm (~3-1/8"). All other JL use 105mm (4-1/8") tall metal blocks. Secure each block/shims to existing holes in OE brackets on axle with 2xM10 bolts and nuts each and bend brake hose brackets a little bit if necessary.



## **INSTALL NEW REAR SHOCKS**

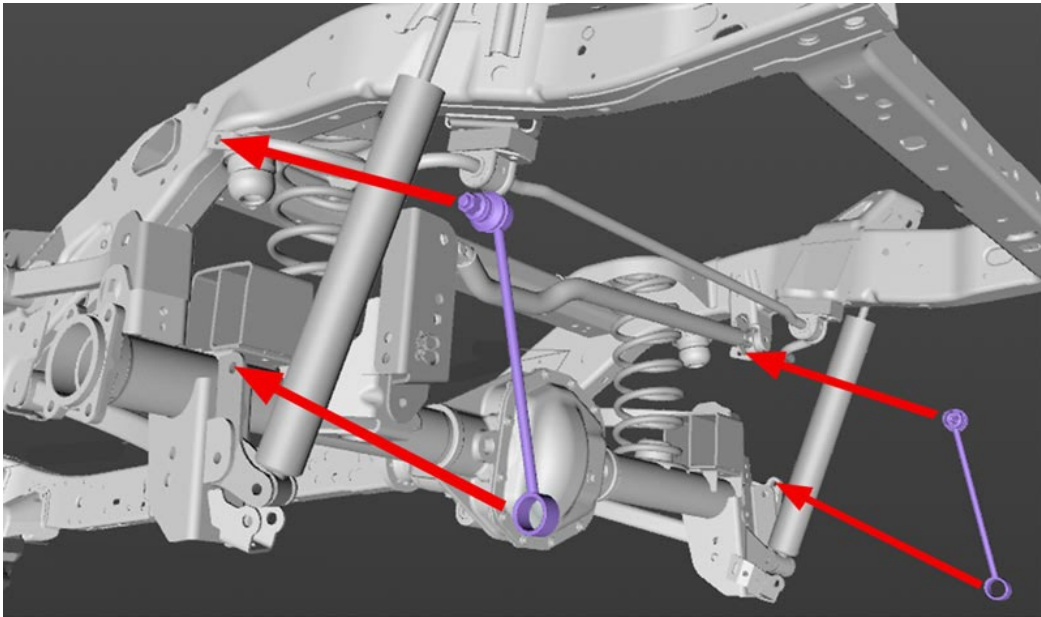
26. Install rear shocks to OE frame points and new BAW axle points using OE hardware. Offset the bushing away from the frame. Do not fully tighten bolts yet. NOTE: For the standard BAW shocks, the rod-end of the shocks MUST be attached to the frame...BAW shocks will not function correctly if installed upside-down.
27. Lower Jeep to fully rest on the new springs. Keep frame partially supported by jack stands for stability since the track bar is not connected yet.



## **INSTALL BAWARRION STABILIZER END LINKS**

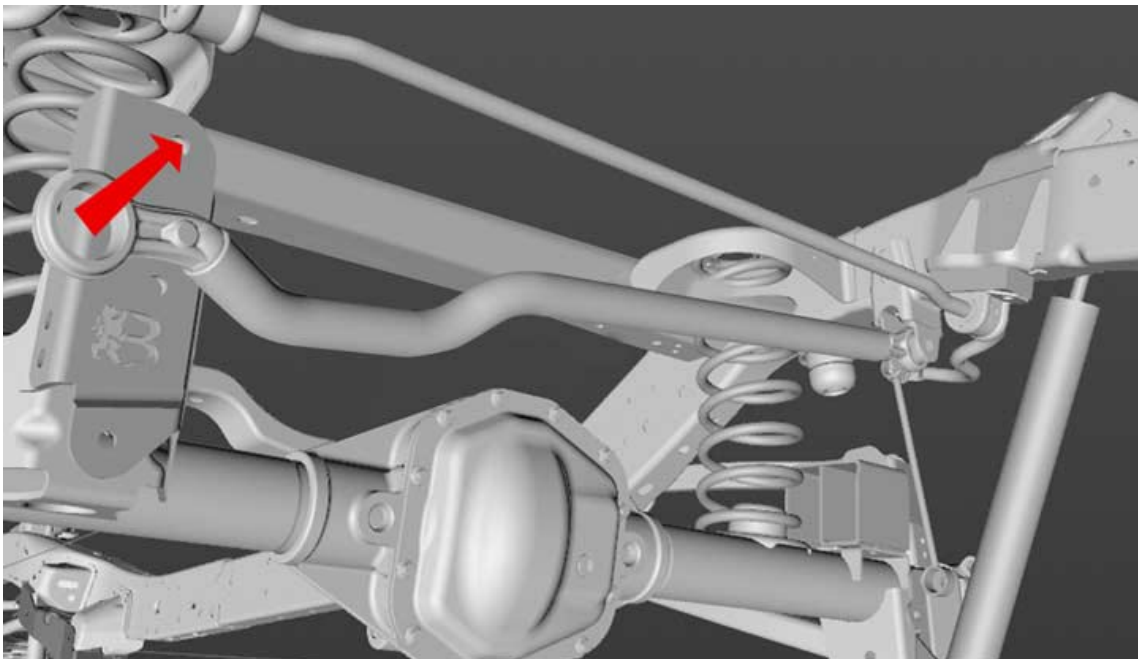
28. The new BAW stabilizer end links are ~261mm center-to-center length. Connect the upper ball-stud end to the INBOARD sides of bar-ends – this is opposite of stock. Attach the lower ends to holes in new BAW brackets on axle using OE hardware, then tighten all endlink hardware. NOTE: If there are two holes near the top of the BAW brackets, use the uppermost hole for JL392 with stock exhaust; all others use lower holes.

NOTE: For build combinations that include narrow axles, wheels with more than +12ET offset, and 12.50 wide tires (or metric equivalent), the excess length of the upper link studs will need to be trimmed off flush to the nuts to provide best-possible clearance during full articulation (rubbing may occur and must be 'friendly' to the tires). To avoid any contact while using narrow axles and/or too high offset and/or too wide tires use 5mm extra bumpstop spacing (available with Bawarrion).



### **RE-ATTACH TRACK BAR (OEM OR BAW)**

29. Attach rear track bar to new BAW bracket on axle with OE hardware; do not fully tighten yet.





**REAR SUSPENSION COMPLETION**

30. Manually bounce rear of Jeep a few times, then tighten all 10 control arm and track bar bolts to OE torque specifications.
31. On all models except 4XE, re-route park brake cables under frame crossmember, then re-attach to brakes on axle. The original retention at the underside of the body will no longer be possible, but is not necessary at this lift height. On 4XE models, extend the parking brake cables using the extension kit supplied.
32. Re-connect all electrical to axle; some OE wire loom retention points will need to be left disconnected. Axle breather/vent hose retention will need minor shifting at frame to accommodate new ride height.
33. Make sure all electrical and breather hose have enough slack to allow for full rebound travel (about 150mm below curb position) – test using lift/stands if unsure.
34. Paint-mark all bolt heads and nuts after confirming proper torques (this facilitates easy inspections later).

## 2.FRONT SUSPENSION

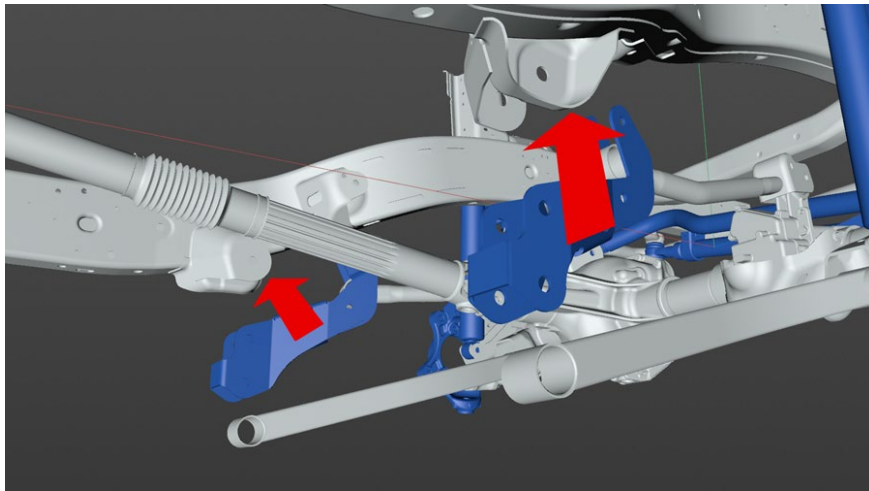
### PREPARATION

Set Parking brake; block both front tires in both directions (four chocks). NOTE: This section may be performed with the front tires/wheels removed if the axle is separately supported.

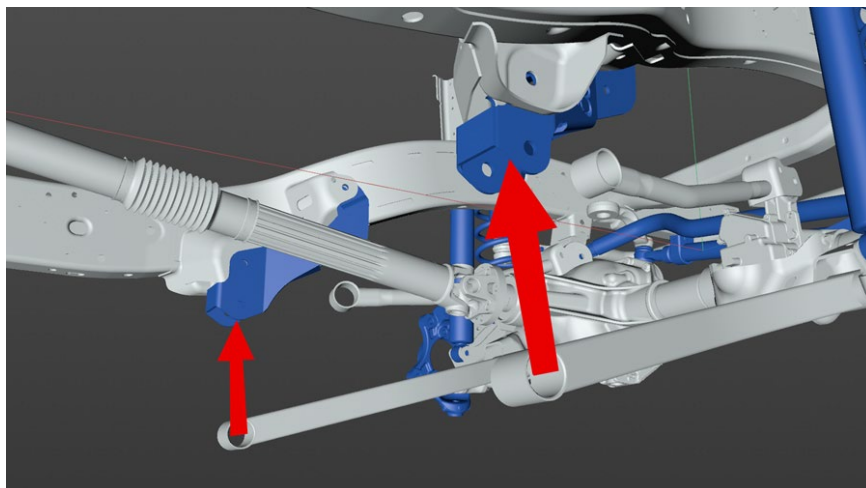
### INSTALL NEW BAWARRION GEOMETRY CORRECTION BRACKETS

NOTE: Do steps 1-3 on one side at a time, then repeat other side after first side is fully reassembled.

1. Disconnect LCA and UCA from frame end & allow to hang from axle ends.
2. Install appropriate BAW 'Drop Bracket' to frame, starting with OE bolt and flag-nut at original UCA location, then swing bracket into place and use supplied M16x100 bolt & nut plus a 65mm crush sleeve at original LCA location; Do not fully tighten bolts yet.



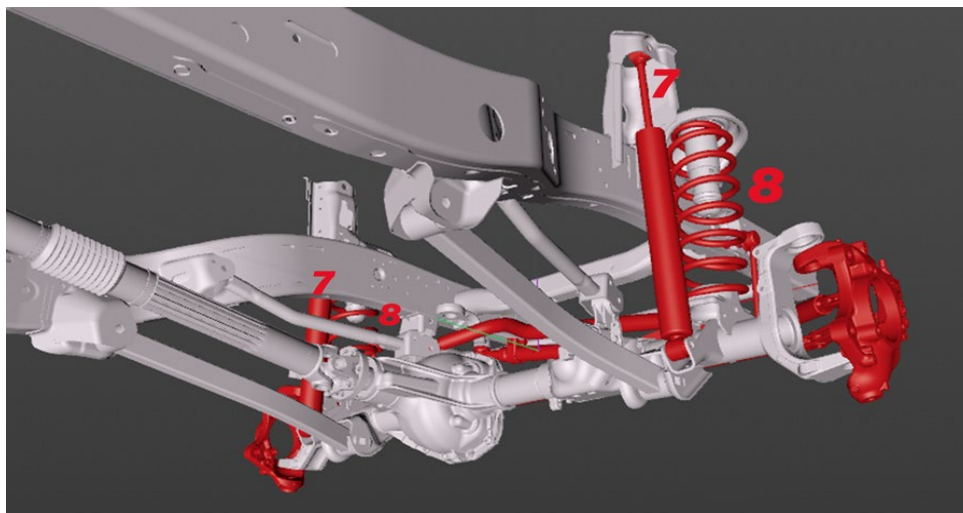
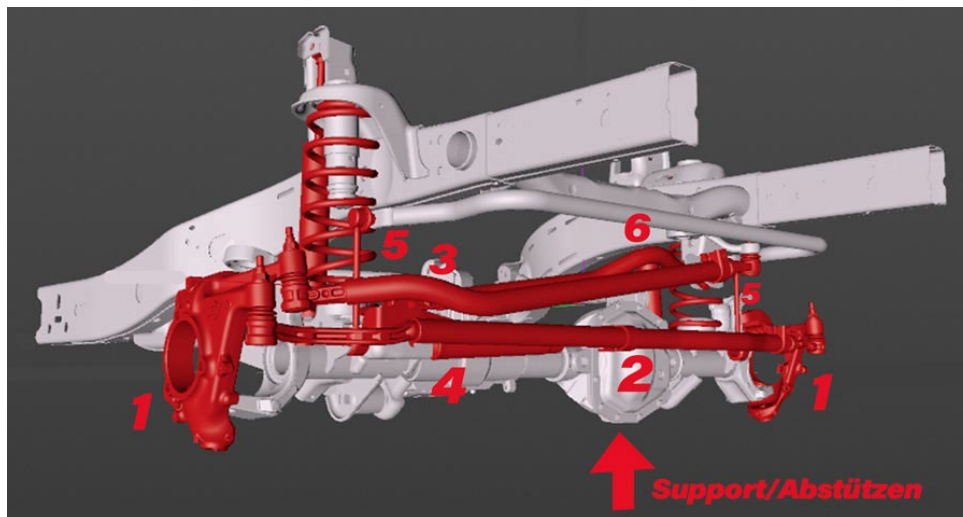
3. Re-attach UCA to new BAW bracket with supplied M12x90 bolt & nut, then LCA to BAW bracket with OE bolt & nut. Move/pry the axle to align the hole positions (any apparent bind will be gone after second side is done).



4. Repeat steps 1-3 for the other side.

## REMOVAL / DISASSEMBLY OF OEM FRONT SUSPENSION

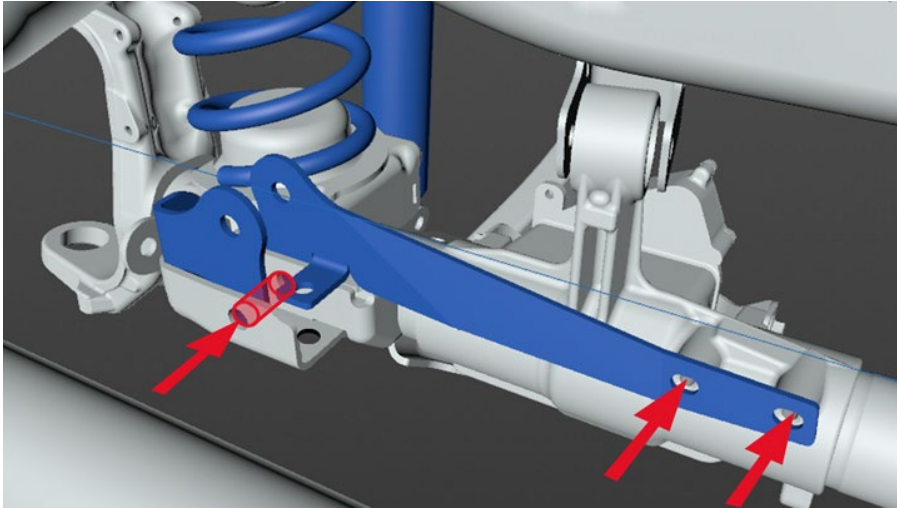
5. Remove Steering Linkages & stabilizer end links; retain steering and all hardware; discard end links.
6. Remove Damper & Damper Bracket from axle housing (near middle). These will not be re-used.
7. Disconnect track bar & electrical connectors at axle (wiring for Center Axle Disconnect & Rubicon Locker wiring)
8. Disconnect brake hose brackets from studs on LCAs. Carefully remove the brackets from the hoses. Two pliers work best for this: a locking set to hold the bracket, and an adjustable-type to pull/pry the end of the clamped portion open just enough to free the hose.
9. Loosen UCA and LCA bolts, but do not remove them.
10. *Almost* fully unload springs via lift/jackstands. CAUTION: Check for missed wire connectors & retention to UCAs...and be careful not to over-angle the front driveshaft!
11. Remove & discard front shocks, but retain the OE hardware.
12. Now fully unload the springs by lowering axle further until front driveshaft just starts to touch OE skid crossmember. Remove springs and pry factory jounce bumpers (yellow) from their cups on frame. Discard springs, retain bumpers for reuse.



**INSTALL FRONT TRACK BAR RELOCATION BRACKETS AT AXLE**

Front trackbar relocation is via two separate brackets added to OE axle bracket.

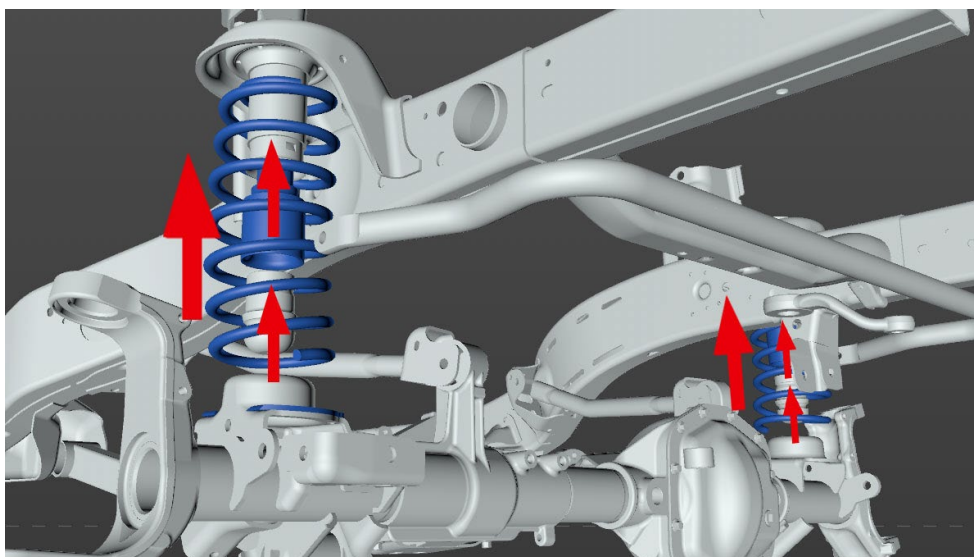
13. Place long bracket into position *rearward* of the back side of the OE bracket at the trackbar hole. Re-use the upper two OE steering damper bracket-to-axle bolts to hold the inboard end of the bracket – do not tighten.
14. Position smaller bracket and 36mm crush sleeve to *inside* of OE trackbar bracket, then insert supplied M14x80 bolt through the OE trackbar bracket hole, front BAW bracket, crush sleeve, rear OE bracket hole and into the welded nut on long bracket; tighten only to snug for now.



15. Do not re-attach trackbar to new BAW brackets at this time.

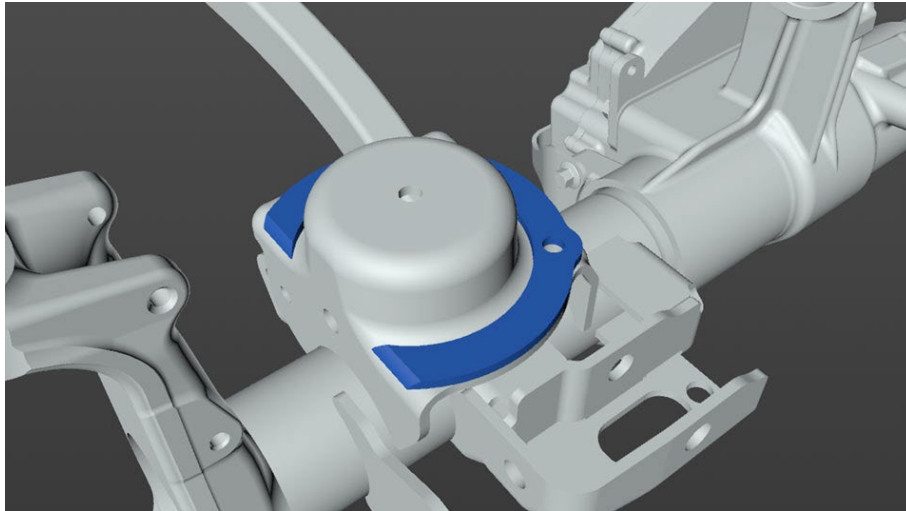
**INSTALL UPPER BUMPSTOP SPACERS & SPRINGS**

16. Insert machined BAW spacers into cups on frame. To attach them, lightly tape a supplied M12x30 bolt to a socket on a 6" extension and lower into jounce tube of frame from above (on right side of diesel models this will be difficult but *is* possible); Screw spacer onto bolt, then tighten as much as possible with short-handled ratchet (it does not need to be tighter). NOTE: Gas models use 65mm tall spacers; Diesels & JL392 use 38mm tall versions.



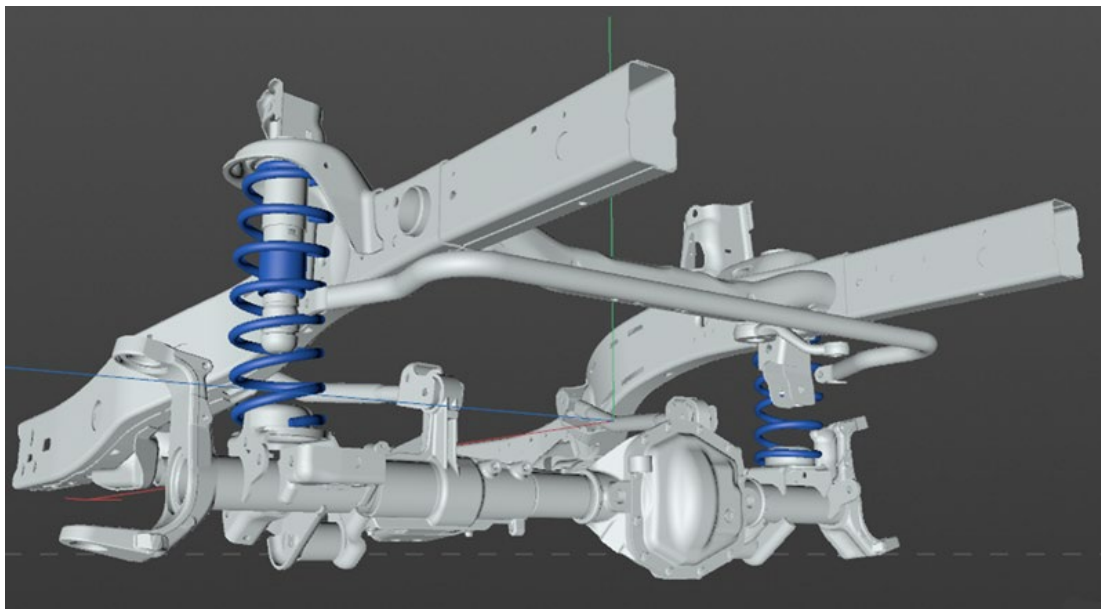
17. Like the rear, spring shim inclusion/placement is build-combination specific:

- a. All gas models normally benefit from placing the shim *under* the right-front plastic isolator.
- b. All diesels generally do not require a shim.
- c. Also like the rear: the need or location for the shim could be altered by any added weight to one side, so assessment after the suspension is complete and test-driven is recommended.
- d. Be sure to orient the c-shaped shim correctly so the hole in it lines up with the locator pin on the underside of the OE. plastic isolator.



18. Position each new BAW spring around frame-side jounce tower. Include the yellow jounce bumper inside the spring before placing onto axle-side isolator/seat; Rotate each spring until the wire end at the axle is against the stop feature of the OE plastic isolator.

19. Raise the OE bumpers within the spring and snap into new BAW spacers (substitute taller bumpers on diesel models). TIP: Wet the upper circumference of the bumper to make installation much easier.







20. Determine correct axle-side jounce spacers to optimize travel/articulation for your build combination:

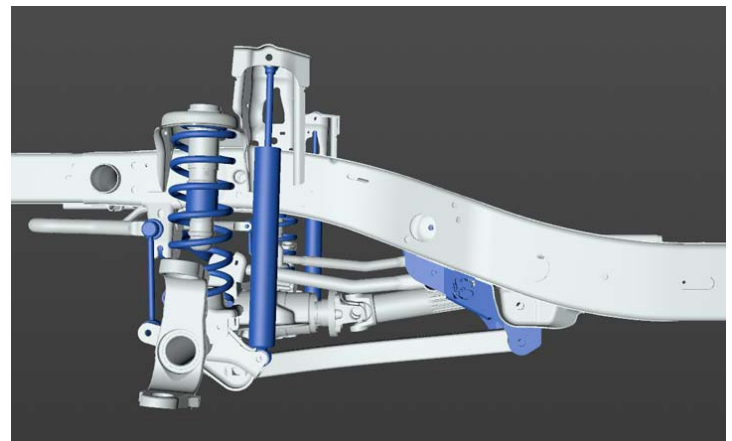
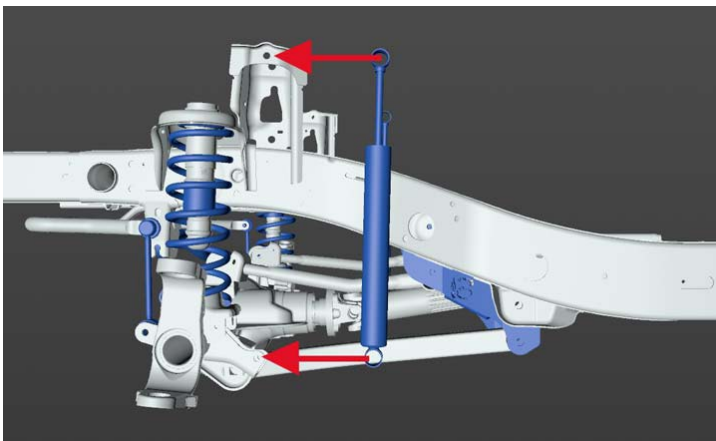
| Axle Track | Flare Size | Tire Size<br>inch dia. | Axle-Side Jounce |       |
|------------|------------|------------------------|------------------|-------|
|            |            |                        | Spacer           | Shims |
| Narrow     | Small      | 37                     | Yes              | 1     |
| Narrow     | Large      | 37                     | No               | 0     |
| Narrow     | Large      | 39                     | Yes              | 1     |
| Wide       | Small      | 37                     | Yes              | 2     |
| Wide       | Large      | 37                     | No               | 0     |
| Wide       | Large      | 39                     | Yes              | 0     |

NOTE: If no shims are required under the machined jounce spacer, the supplied 35mm bolts will be too long. In this case, trim the bolts to ~25mm (ideally they should be flush with the top side of the spacers when tightened.)

21. Insert jounce spacers & any required shims through the gaps between spring coils, position on axle seat and attach with M10x35 (or trimmed down) bolts from below/inside the OE spring seat brackets. Tighten as much as a short-handled ratchet allows.
22. Lower Jeep until springs are *lightly* loaded. Make sure they are seated correctly by confirming that the lower wire ends are at the 'stops' on the OE plastic spring isolators.

### **INSTALL FRONT SHOCKS**

23. Install shocks to OE locations using the OE hardware. Orient the offset crush sleeve in the rod-end bushing so that the shock is positioned away from frame. NOTE: the standard BAW shocks require the rod-end **MUST** be mounted to the frame for the shock to function correctly – do not attempt to swap the bushings/sleeves to put the shock body on top!

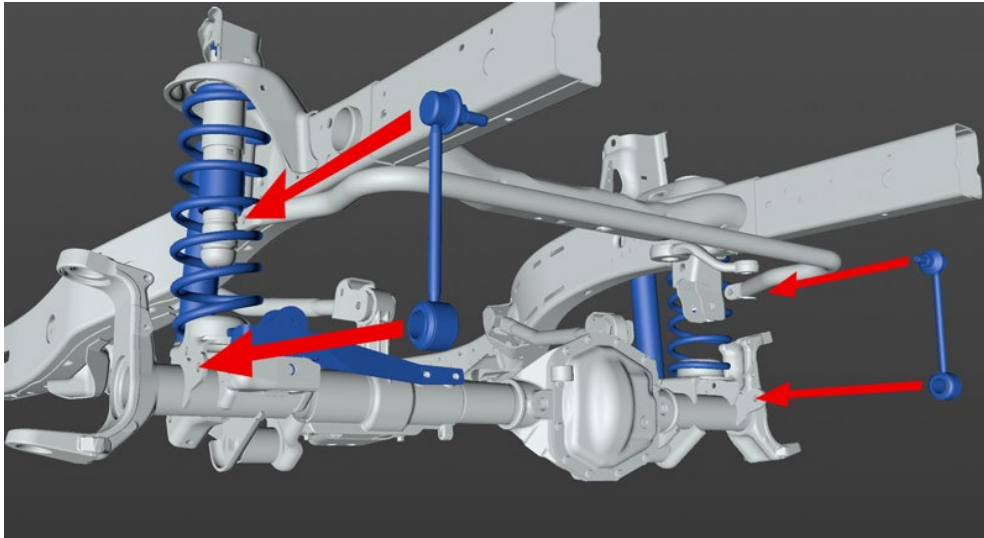


### **INSTALL NEW BAWARRION STABILIZER END LINKS**

24. Lower Jeep to *almost* fully rest on springs.

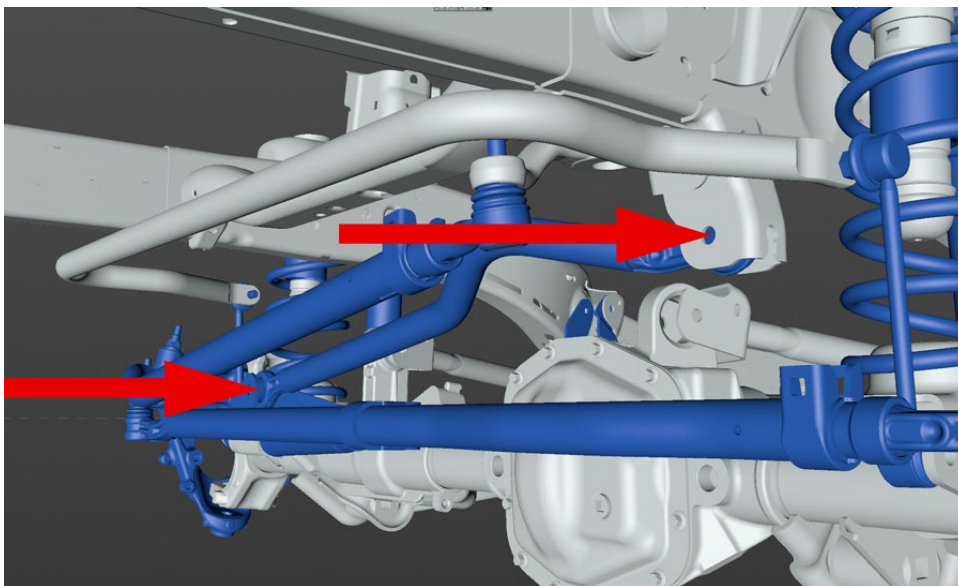


25. Install new BAW stabilizer end links (~207mm center-to-center length) to original bar and axle locations. Only the left/driver axle-end will re-use the original hardware; tighten all connections to OE torques. The passenger/right-side lower connection at the axle now includes the outboard end of the front trackbar relocation bracket previously installed, so a new/longer M10 bolt has been supplied to accommodate the added thickness.



### **INSTALL NEW BAWARRION TRACK BAR (OPTIONAL)**

26. Attach track bar to new BAW brackets on axle using OE hardware. Make sure to orient correctly with wowiee above differential on left/driver's side.



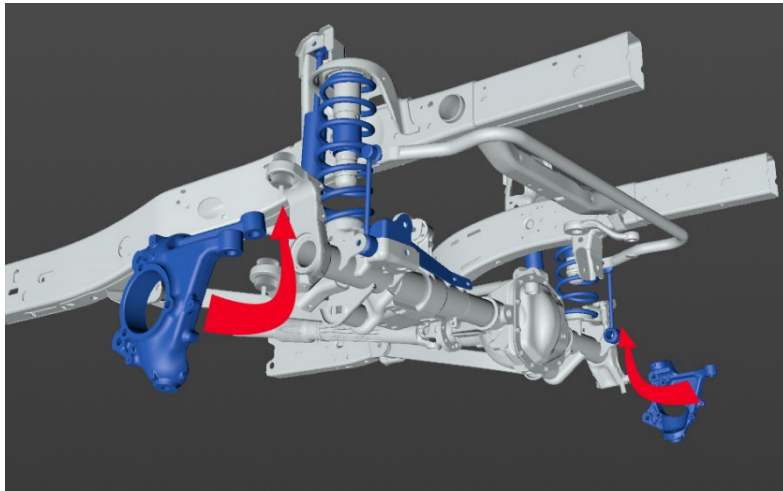
## **3. STEERING**

### **INSTALL NEW KNUCKLES**

With the front *suspension* now complete, the Jeep can now rest fully on its front springs. If the front tires/wheels are still in place, support the axle and remove the front tires/wheels.

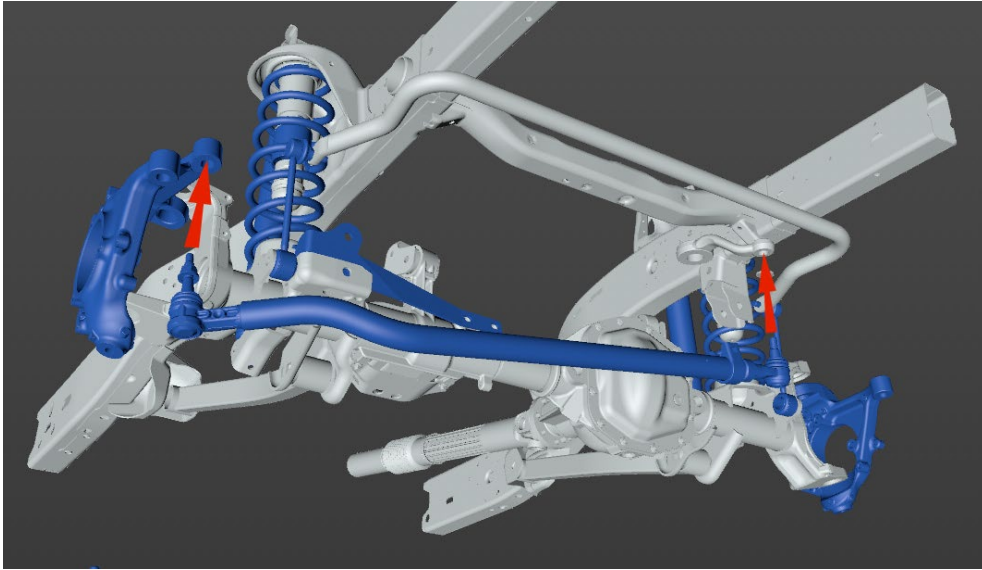
1. Dismantle the outer ends of the front axle: Remove brake calipers, rotors, and hub units (with axle shafts still attached). Retain all parts and hardware for re-installation.

2. Remove & discard the stock knuckles using the hammer ring method to preserve the ball joint boots (do not use a pickle fork!)
3. Remove the taper adapter for the upper ball joint studs from the stock knuckles and transfer them to the new BAW knuckles. Also transfer the OE steering stop bolts to the corresponding holes in the new knuckles.
4. Pre-install supplied jam nuts onto the button-head bolts and install them into the tapped holes on the new knuckles that are directly forward of the original stop bolt positions. These are supplemental steer-stop bolts to help with larger tires in severe off-road conditions. Thread these bolts as far in as they will go for now – they will be adjusted after the steering is reinstalled and aligned later.
5. Install BAW high-steer knuckles & secure with the OE nuts (@ correct torques) and cotter pins.
6. Replace axle shafts+hub units (carefully to avoid hurting the internal axle seals!), then rotors and calipers - all using OE hardware & torques.



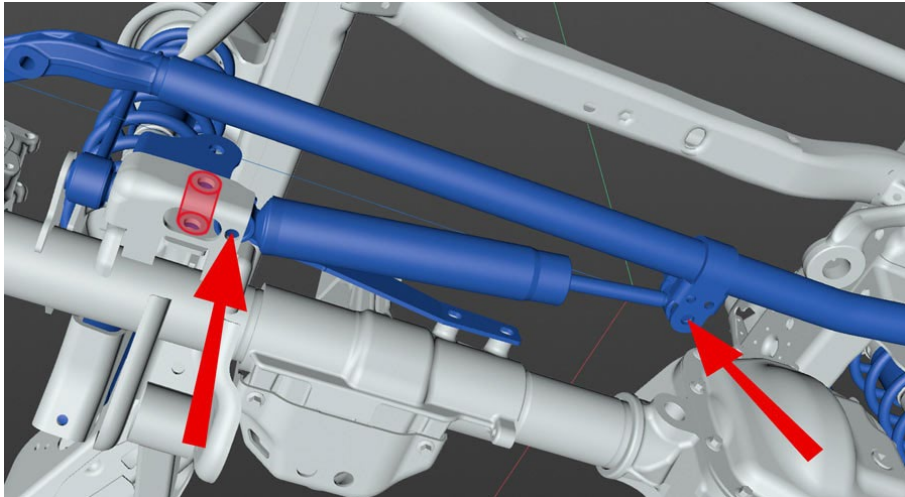
### **MODIFY OEM STEERING LINKS**

7. Locate rivet pin on each link near the adjuster at the driver's/left end; grind off one end and drive the pin out with a punch.
8. On Tie Rod only, dismantle the adjustment area fully including removal of pinch-clamp assembly from main tube.
9. Trim ~19mm from the female-threaded end of main (40mm OD) tube and debur the new end.
10. Slide the BAW steering Damper Pinch Clamp bracket onto the tube, then replace the pinch clamp onto the new end of tube.
11. Reassemble Tie Rod as normal (be sure to have ~equal thread engagement on both LH and RH threads at adjuster sleeve). Set the tierod ends level to each other; do not tighten anything yet.



## INSTALL STEERING DAMPER

NOTE: The original/OE steering damper *may not be used* with the Bawarrion suspension – it's twin-tube/emulsion design will become ineffective in the new mounting position. The new monotube damper supplied must be used and mounted in the orientation shown.



1. Drill a 13mm hole in underside of the OEM Bracket to line up with the extra 'tab' on the rear/long BAW trackbar relocation bracket.
2. Position the body-end of the damper between the tab on the rear/long trackbar bracket and the new hole drilled directly below it in the OE trackbar bracket. Attach with the OE bolt+nut.
3. Prepare the new damper clamp that was added to the modified tierod tube by inserting two supplied M8 bolts from below and nuts on top, but do not tighten yet - clamp should still be able to slide and rotate on the tube.
4. To correctly set the position of the clamp:



- a. Steer to full right-lock (right-rear stop bolt contacting axle housing end-yoke) and use bungee cord (or a helper) to hold steering wheel to maintain max steer angle.
  - b. Fully compress damper to minimum length; use a strap or rope to hold it there.
  - c. Slide clamp to align with damper bushing and attach with remaining OE bolt+nut.
  - d. Rotate damper+clamp to point just barely below level - aimed back toward the axle. This should result in a damper that is fairly level to ground but slightly lower at the axle-end.
  - e. Tighten the two M8 clamp bolts first, then the OE damper bolt.
  - f. Release strap and bungee on steering wheel and return to straight; Assure the tierod clamp does not move/slip during the steering movement. If it does, repeat the positioning process above and tighten the M8 bolts a little more next time.
  - g. Steer to full left-lock (contact at left-rear stop bolt) and check clearance to the differential cover. There should be no contact with the stock cover, but some aftermarket 'cast' covers are much larger and may interfere. If this is the case, you may be able to achieve clearance by altering the rotation of the damper clamp (repeat position process above) and/or by grinding clearance on the cover itself (be careful not to go through!) If clearance cannot be achieved, you could restrict steering by adjusting the stop bolts, but the ideal solution would be to change covers.
5. Once full steering has been established and the damper is correctly positioned, the supplemental steer-stop bolts on the knuckles can be set. To do this, steer to lock (contact at rear/OE stop bolt) in each direction and hold contact while unscrewing the forward/supplemental bolt on the opposite knuckle so that it touches at the same time, then tighten its jam nut and repeat for the other steer direction.

## 4. FINISH

### ***FINAL DETAILS***

1. Install/Replace all tires/wheels and properly torque the lug nuts. Check the freedom of movement of the drag link and tie rod. Shorten the screw if necessary.
2. Lower Jeep to fully rest on springs and tires, then manually bounce the suspension a few times, before tightening all 10 control arm & trackbar bolts to OE torques.
3. Confirm all electrical connections are replaced; The original wire retention to UCAs will need to be left loose due to the new ride height.
4. Adjust front axle breather hose - leave enough slack for ~150mm of suspension rebound/down travel.
5. Bend frame-side brake hose brackets slightly upward and inboard to optimize 'curve' of brake hose between frame and axle in side-view, and so that it does not touch/rub on the LCAs.
6. Paint-mark all new or re-tightened fasteners that do not have cotter pins with a paint pen – by drawing a line from the side of the head/nut to the adjacent bracket material. This will make later visual checks of the suspension easier/faster by replacing tests with a torque wrench with a simple visual scan.
7. Camber is not altered by the new knuckles, and caster is preserved by the GeoBrackets that were installed at the beginning of section 2. Only toe must be reset after suspension installation due to OEM specifications.



**TEST DRIVE**

1. Select a 5-10 minute loop of nearby and familiar paved roads, ideally with curves, hills, and various mild-to-severe bumps. Use this loop to:
2. Listen for any new noises that may indicate missed fasteners to be tightened, or possibly rattles between items that shouldn't be touching, etc. Find and correct any issues right away.
3. Check steering wheel alignment; adjust draglink as necessary to make it level, then fully tighten clamp.
4. After 100 and 500 miles of driving, inspect entire suspension for loose fasteners, even if there are no apparent issues while driving. Paint marks from step 4.6 will speed this process, but also push/pull/touch/shake all suspension components to assure that nothing is working loose or otherwise going to lead to a problem later.



**GEORISE 45**

**TORQUE SPECIFICATIONS**

| DESCRIPTION                  | SPECIFICATION                               | COMMENT  |
|------------------------------|---|--|
| Upper Control Arm Front Bolt | <b>55 N·m (41 Ft. Lbs.)<br/>Plus 185°</b>   | Fastener must be torqued with the vehicle at normal ride height. |
| Upper Control Arm Rear Bolt  | <b>50 N·m (37 Ft. Lbs.)<br/>Plus 135°</b>   | Fastener must be torqued with the vehicle at normal ride height. |
| Lower Control Arm Front Bolt | <b>140 N·m (103 Ft. Lbs.)<br/>Plus 145°</b> | Fastener must be torqued with the vehicle at normal ride height. |
| Lower Control Arm Rear Bolt  | <b>140 N·m (103 Ft. Lbs.)<br/>Plus 145°</b> | Fastener must be torqued with the vehicle at normal ride height. |

| DESCRIPTION               | SPECIFICATION                            | COMMENT   |
|---------------------------|--|---|
| Shock Absorber Upper Bolt | <b>70 N·m (52 Ft. Lbs.)<br/>Plus 55°</b> | Do not reuse these fasteners. If removed, a new fastener must be installed and tightened to specifications. |
| Shock Absorber Lower Bolt | <b>70 N·m (52 Ft. Lbs.)<br/>Plus 55°</b> | Do not reuse these fasteners. If removed, a new fastener must be installed and tightened to specifications. |

| DESCRIPTION                    | SPECIFICATION                 | COMMENT |
|--------------------------------|-------------------------------|---------|
| Stabilizer Bar Link Upper Nut  | <b>175 N·m (129 Ft. Lbs.)</b> | —       |
| Stabilizer Bar Link Lower Bolt | <b>90 N·m (66 Ft. Lbs.)</b>   | —       |
| Stabilizer Bar Bolts           | <b>63 N·m (46 Ft. Lbs.)</b>   | —       |
| Stabilizer Bar Actuator Bolts  | <b>25 N·m (18 Ft. Lbs.)</b>   | —       |





### TORQUE SPECIFICATIONS

| DESCRIPTION   | SPECIFICATION  | COMMENT   |
|---|--|---|
| Hub And Bearing Bolts   | 102 N·m (75 Ft. Lbs.)  | -   |
| Upper Ball Joint Nut  | 75 N·m ( 55 Ft. Lbs.)  | Once final torque is reached, manually advance the castle nut to the next castle opening for the cotter pin to be inserted, even if the hole is aligned when final torque is reached.<br><br>Do not reuse the cotter pin. If removed, a new cotter pin must be installed. |
| Lower Ball Joint Nut - Aluminum Knuckle - <b>Early NON induction hardened ball joint without "IH" marking on the ball joint.</b>  | <b>Torque Procedure:</b><br><br>1. <b>Initial Torque</b> - 20 N·m (15 Ft. Lbs.)<br>2. <b>Final Torque</b> - 45 N·m (33 Ft. Lbs.) | Once final torque is reached, manually advance the castle nut to the next castle opening for the cotter pin to be inserted, even if the hole is aligned when final torque is reached.<br><br>Do not reuse the cotter pin. If removed, a new cotter pin must be installed. |
| Lower Ball Joint Nut - Aluminum Knuckle - <b>Induction hardened ball joint with "IH" marking on the ball joint.</b>               | <b>Torque Procedure:</b><br><br>1. <b>Initial Torque</b> - 20 N·m (15 Ft. Lbs.)<br>2. <b>Final Torque</b> - 80 N·m (59 Ft. Lbs.) | Once final torque is reached, manually advance the castle nut to the next castle opening for the cotter pin to be inserted, even if the hole is aligned when final torque is reached.<br><br>Do not reuse the cotter pin. If removed, a new cotter pin must be installed. |
| Lower Ball Joint Nut - Cast Iron Knuckle - <b>Early NON induction hardened ball joint without "IH" marking on the ball joint.</b> | <b>Torque Procedure:</b><br><br>1. <b>Initial Torque</b> - 30 N·m (22 Ft. Lbs.)<br>2. <b>Final Torque</b> - 65 N·m (48 Ft. Lbs.) | Once final torque is reached, manually advance the castle nut to the next castle opening for the cotter pin to be inserted, even if the hole is aligned when final torque is reached.<br><br>Do not reuse the cotter pin. If removed, a new cotter pin must be installed. |
| Lower Ball Joint Nut - Cast Iron Knuckle - <b>Induction hardened ball joint with "IH" marking on the ball joint.</b>              | <b>Torque Procedure:</b><br><br>1. <b>Initial Torque</b> - 30 N·m (22 Ft. Lbs.)<br>2. <b>Final Torque</b> - 65 N·m (48           | Once final torque is reached, manually advance the castle nut to the next castle opening for the cotter pin to be inserted, even if the hole is aligned when final torque is reached.<br><br>Do not reuse the cotter pin. If removed, a new cotter pin must be            |



## 02 - Front Suspension / Front / Technical Specifications

**TORQUE SPECIFICATIONS**

| DESCRIPTION          | SPECIFICATION                     | COMMENT    |
|----------------------|-----------------------------------|------------|
|                      | Ft. Lbs.)                         | installed. |
| Track Bar Axle Bolt  | 145 N·m (107 Ft. Lbs.)            | –          |
| Track Bar Frame Bolt | 70 N·m (52 Ft. Lbs.)<br>Plus 115° | –          |

| DESCRIPTION         | SPECIFICATION         | COMMENT |
|---------------------|-----------------------|---------|
| Hub and Bearing Nut | 136 N·m(100 Ft. Lbs.) | –       |

**TORQUE SPECIFICATIONS**

| DESCRIPTION                 | SPECIFICATION                           | COMMENT  |
|-----------------------------|---|--|
| Upper Control Arm Rear Bolt | 100 N·m Plus 65° (74 Ft. Lbs. Plus 65°) | Fastener must be torqued with the vehicle at normal ride height. |
| Lower Control Arm Rear Bolt | 100 N·m Plus 80° (74 Ft. Lbs. Plus 80°) | Fastener must be torqued with the vehicle at normal ride height. |

| DESCRIPTION                  | SPECIFICATION                           | COMMENT  |
|------------------------------|---|--|
| Upper Control Arm Front Bolt | 100 N·m Plus 80° (74 Ft. Lbs. Plus 80°) | Fastener must be torqued with the vehicle at normal ride height. |
| Lower Control Arm Front Bolt | 100 N·m Plus 80° (74 Ft. Lbs. Plus 80°) | Fastener must be torqued with the vehicle at normal ride height. |

| DESCRIPTION                   | SPECIFICATION        | COMMENT |
|-------------------------------|----------------------|---------|
| Stabilizer Bar Link Upper Nut | 80 N·m (59 Ft. Lbs.) | –       |
| Stabilizer Bar Bolts          | 63 N·m (46 Ft. Lbs.) | –       |
| Stabilizer Bar Link Lower Nut | 80 N·m (59 Ft. Lbs.) | –       |

| DESCRIPTION                | SPECIFICATION                           | COMMENT |
|----------------------------|---|---------|
| Track Bar Bolt (Axle End)  | 100 N·m Plus 60° (74 Ft. Lbs. Plus 60°) | –       |
| Track Bar Bolt (Frame End) | 100 N·m Plus 30° (74 Ft. Lbs. Plus 30°) | –       |



**GEORISE45**

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