Cognito 7-9” Front Suspension Lift Kit for 2020+ GM 2WD/4WD 2500/3500 Trucks

INSTALL INSTRUCTIONS:

Cognito 7-9” Front Suspension Lift Kit for 2020+ GM 2WD/4WD 2500/3500 Trucks

PARTS LIST FOR SKU: 110-70130

QUANTITY	PART #	DESCRIPTION
1	8278	7” FRONT CROSSMEMBER
1	8797	7” REAR CROSSMEMBER
1	8762	7” SUBFRAME CONNECTOR DRIVER

PARTS LIST FOR SKU: 110-70131

QUANTITY	PART #	DESCRIPTION
1	8758	2020 GM 8-LUG 7” SPINDLE DRIVER
1	8759	2020 GM 8-LUG 7” SPINDLE PASSENGER

PARTS LIST FOR SKU: 110-70132

QTY	PART #	DESCRIPTION
1	110-70077	FRONT WHEEL SPEED SENSOR EXTENDER KIT, STABILITRAK
1	110-70129	STAINLESS STEEL BRAKE LINE KIT FOR 7-9” LIFT KIT
2	2806	RETAINER BRACKET TORSION KEYWAY
2	2880	SM COMPRESSION STRUT FRAME BRACKET
1	2882	7” CROSSMEMBER SKID PLATE
2	5501	LOWER CONTROL ARM MANDREL
2	6763	7” LIFT KIT SWAY BAR ENDLINK
2	8768	SM COMPRESSION STRUT
1	8771	BUMP STOP BRACKET DRIVER
1	8772	BUMP STOP BRACKET PASSENGER
1	8773	NTBD ASSEMBLY DRIVER
1	8774	NTBD ASSEMBLY PASSENGER
1	**HP9040**	COMPRESSION STRUT HARDWARE PACK
1	**HP9081**	SKID PLATE HARDWARE PACK
1	**HP9123**	SUBFRAME HARDWARE PACK
1	**HP9279**	NON-TORSION BAR DROP HARDWARE
1	**HP9295**	FRONT BRAKE LINES AND SENSORS HARDWARE PACK



WARNING

Please read this entire instruction sheet before beginning installation. Proper installation of these components requires a qualified mechanic. Always wear safety glasses when using power tools, and take appropriate precautions when working under a vehicle. If these instructions are not properly followed you may jeopardize your, and your passenger’s safety, and severe frame, suspension or tire damage may also result from improper installation.

Modification of vehicle suspension can interfere with ride-height sensors, active suspension, lane departure features, semi-autonomous, and autonomous driving features. It is the responsibility of the installer to determine feature compatibility prior to installation. Recalibration of sensors may be required in the event of any modification.

PARTS LIST FOR SKU: 110-70133

QUANTITY	PART #	DESCRIPTION
1	1631	DIFFERENTIAL MOUNT DRIVER
2	6690	FRONT DIFFERENTIAL AXLE SPACER
1	8241	SPACER, 1.5” OD X 0.65” ID X 0.625”
1	8282	DIFFERENTIAL MOUNT PASSENGER
1	HARDWARE-M12X1.75X50	M12-1.75X50MM CLASS 10.9 YELLOW ZINC CAP SCREW
1	**HP9121**	FRONT DIFFERENTIAL MOUNT HARDWARE PACK
1	**HP9296**	7” CV AXLE SPACER HADWARE PACK

PARTS LIST FOR SKU: HP9040

QUANTITY	PART #	DESCRIPTION
8	HARDWARE-33086	1/2” FLAT WASHER
4	HARDWARE-37268	1/2” - 13 LOCK NUT
4	HADWARE-15221	1/2” -13 X 4.5” BOLT
4	5012	CRUSH SLEEVE
8	POLY-BUSHING-2130G	POLYURETHANE BUSHING

PARTS LIST FOR SKU: HP9081

QUANTITY	PART #	DESCRIPTION
8	HARDWARE-33082	3/8” FLAT WASHER
4	HARDWARE-37264	3/8” - 16 LOCK NUT
4	HARDWARE-15107	3/8” - 16 X 1.25” BOLT

PARTS LIST FOR SKU: HP9123

QUANTITY	PART #	DESCRIPTION
8	HARDWARE-M18-FLATWASHER	M18 FLAT WASHER
4	HARDWARE-M18X2.5-LOCKNUT	M18-2.5 HEX NUT
2	HARDWARE-M18X2.5X120	M18 - 2.5 X 120MM YELLOW ZINC CAP SCREW
2	HARDWARE-M18X2.5X140	M18 - 2.5 X 140MM YELLOW ZINC CAP SCREW
4	HARDWARE-15107	3/8" - 16 X 1.25" YELLOW ZINC CAP SCREW
8	HARDWARE-33082	3/8” FLAT WASHER
4	HARDWARE-37264	3/8” - 16 LOCK NUT
2	HARDWARE-15005	1/4"-20 X 1" YELLOW ZINC CAP SCREW
4	HARDWARE-33078	1/4” FLAT WASHER
2	HARDWARE-37260	1/4" - 20 LOCK NUT

PARTS LIST FOR SKU: HP9295

QUANTITY	PART #	DESCRIPTION
10	HARDWARE-0708765	1/2” WIRE/TUBE P-CLAMP
6	HARDWARE-15005	1/4” - 20 X 3/4” YELLOW ZINC CAP SCREW
12	HARDWARE-33078	1/4" FLAT WASHER
6	HARDWARE-37260	1/4” - 20 LOCK NUT

PARTS LIST FOR SKU: HP9279

QUANTITY	PART #	DESCRIPTION
1	2807	3/8” NUT RIVET INSTALL TOOL
4	HARDWARE-RIVET-NUT-3/8-16	HEAVY-DUTY RIVET NUT
4	HARDWARE-15107	3/8” – 16 X 1.25” YELLOW ZINC CAP SCREW
6	HARDWARE-33622	3/8” LOCK WASHER
6	HARDWARE-33082	3/8” FLAT WASHER
2	HARDWARE-1/2-13X5-G8HB	1/2” – 13 X 5” YELLOW ZINC CAP SCREW
8	HARDWARE-33086	½” FLAT WASHER
4	HARDWARE-37268	1/2" – 13 LOCK NUT
2	HARDWARE-15210	1/2" – 13 X 1.75” YELLOW ZINC CAP SCREW
2	POLY-BUMPSTOP-M22978-BK-01	POLYURETHANE BUSHING
2	HARDWARE-36106	3/8” – 16 HEX NUT
4	HARDWARE-32468	3/8” – 16 X 1 SELF TAPPING SCREW

PARTS LIST FOR SKU: HP9121

QUANTITY	PART #	DESCRIPTION
2	HARDWARE-M12X1.75X30	M12 - 1.75 X 30MM YELLOW ZINC CAP SCREW
1	HARDWARE-M12X1.75X50	M12 - 1.75 X 50MM YELLOW ZINC CAP SCREW
3	HARDWARE-M12-FLATWASHER	M12 FLAT WASHER
3	HARDWARE-M12-LOCKWASHER	M12 SPLITLOCK WASHER
2	HARDWARE-15260	9/16” – 12 X 1.75” YELLOW ZINC CAP SCREW
4	HARDWARE-33088	9/16” FLAT WASHER
2	HARDWARE-37270	9/16” - 12 LOCK NUT
4	HARDWARE-15217	1/2" – 13 X 3.5” YELLOW ZINC CAP SCREW
8	HARDWARE-33086	1/2" FLAT WASHER
4	HARDWARE-37268	1/2” - 13 LOCK NUT
1	5018	CRUSH SLEEVE
2	POLY-BUSHING-2130G	POLYURETHANE BUSHING

PARTS LIST FOR SKU: HP9296

QUANTITY	PART #	DESCRIPTION
16	M12-1.75X70	M12-1.75 X 70MM HEX BOLTS
16	M12-FLATWASHER	M12 FLAT WASHERS

TECH NOTES

- Use extreme caution when cutting is required under the vehicle. The factory undercoating may be flammable.
- Be cautious of all brake lines, electrical harnesses, fuel lines, and the fuel tank.
- Prior to installation on used vehicles, carefully inspect the vehicle's steering and driveline systems, paying close attention to the tie rod ends, pitman and idler arms, ball joints, and wheel bearings. Also check steering to frame attaching points for stress cracks. The overall vehicle must be in excellent working condition: repair or replace all worn parts.
- Read instructions carefully and study the pictures before attempting installation.
- Check the parts and hardware packages against the parts list to assure that your kit is complete.
- Work through these instructions on both sides of vehicle at the same time to completion. The order of the steps is important.
- It is recommended that all cut areas be smoothed to get rid of any sharp edges and spray painted to prevent corrosion.
- Maximum wheel backspacing is 4.75".
- Do not use a tire that is more than 4.50" wider than the rim width on a 4.75" or more backspaced wheel.
- Set at 7 to 8"
    - Suggested tire size is 35" tall and up to 12.5" wide on a 12" wide rim with 4.5 to 4.75" back spacing.
- Set at 8 to 9"
    - Suggested tire size is up to 37" tall and up to 13.5" wide on a 10" wide rim with 4.50 to 4.75" back spacing.

REQUIREMENTS

- Installation requires a qualified mechanic.
- Always wear safety glasses when using power tools.
- Proper vehicle lifting equipment is required.
- Secure and properly rack the vehicle on a hoist prior to beginning installation.
- Trimming of inner fender well and bottom rear of steel fender may be required.
- Cutting of the service perch and OEM crossmembers is required.
- Trimming of the front differential housing may be required. Sometime between the years of 2020 and 2022, some GM HD trucks started coming with a larger front differential housing that may require trimming.
- Stock front driveline is not compatible with this kit. Cognito 210-90983 front driveline is required.
- Headlight height must be adjusted after installation of this kit.
- Have the vehicle professionally aligned to the alignment specs at the end of this instruction set.
- Front-end alignment will be necessary after completion.

REQUIRED TOOLS

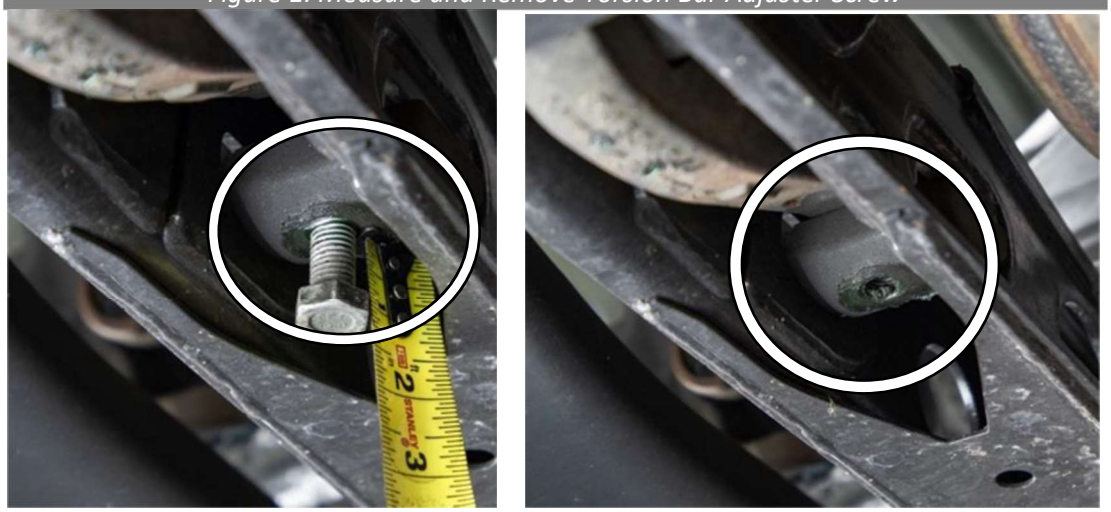
- Rachet
- Rachet Socket Extensions
- Torque Wrench (ft-lbs)
- Drill
- Metal Cutting Tools
  - Reciprocating Saw
  - Cutoff Wheel
- Metal Sanding Tools
  - Sanding Disk
  - Grinding Disk
- Measuring Tape
- Torsion Bar Unloading Tool
- Hammer
- Proper Vehicle Lifting Equipment
- Torx Bits
  - T30
- Drill Bits
  - 5/16”
  - 3/8”
  - 1/2”
- Sockets:
  - 11/32”
  - 9/16”
  - 3/4"
  - 13/16"
  - 7/8”
  - 10-mm
  - 11-mm
  - 13-mm
  - 15-mm
  - 18-mm
  - 19-mm
  - 21-mm
  - 22-mm
  - 24-mm
  - 36-mm
- Allen Wrench
  - 6-mm
- Line Wrenches
  - 14-mm
  - 18-mm

INSTALLATION

1. Always work on a properly supported vehicle. With the vehicle on a car hoist, lift the vehicle off the ground by the frame and remove the front wheels.

2. First measure and record the length of the torsion bar adjuster screw and how many threads are visible and record it here: Driver (_____) Passenger (_____). This will be used for reassembly. Now remove the torsion bar adjuster screw with a 21mm socket. (See Figure 1).

Figure 1: Measure and Remove Torsion Bar Adjuster Screw

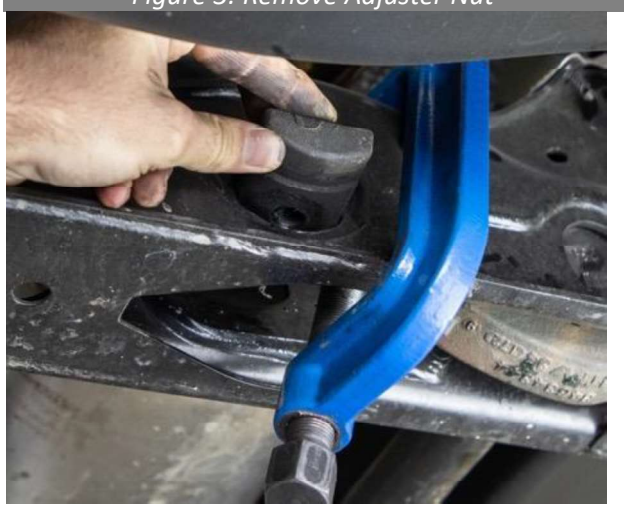


3. Using a torsion bar loading tool, load torsion bar (See Figure 2) and remove adjuster nut (See Figure 3), then unload torsion bar and remove tool. Do this on both sides of the vehicle.

Figure 2: Load Torsion Bar



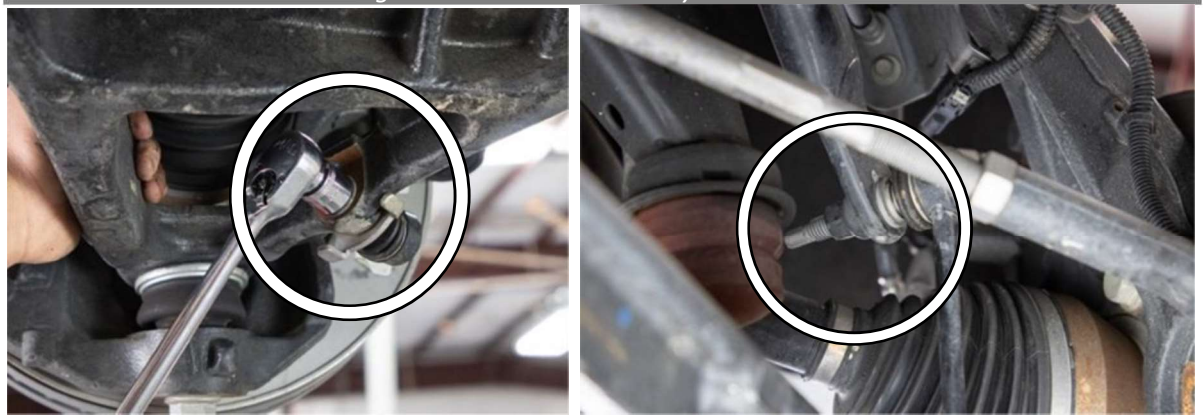
Figure 3: Remove Adjuster Nut



4. Suspension torsion bars hold a lot of energy and both sides of the front suspension are connected through the sway bar. If one torsion bar is loaded, it will affect both sides of the suspension. Unloading them both first is safe practice.

5. Remove the factory sway bar end links, which connect the sway bar to the front of the lower control arms, from the truck using a 18mm and 11/32” wrench and discard (See Figure 4).

Figure 4: Remove OEM Sway Bar End Link



6. Now remove the OEM shocks with a 21mm wrench and socket. Keep the lower mounting hardware for reinstallation.

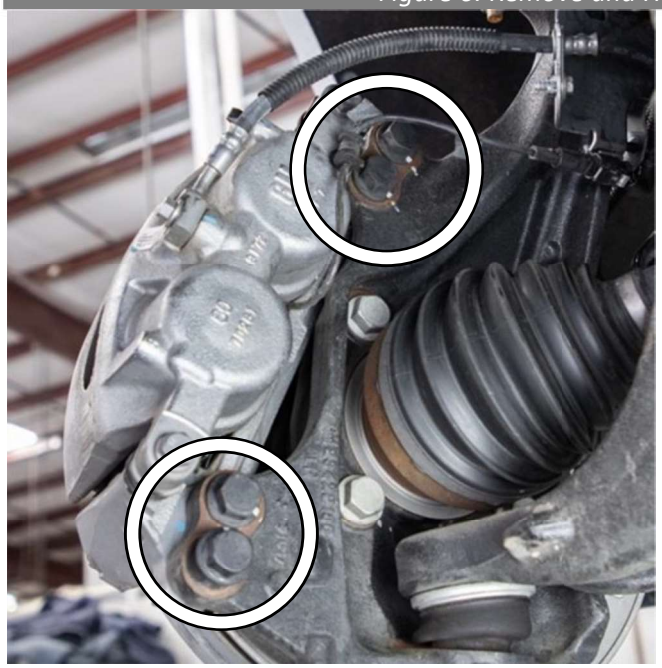
7. Unbolt the brake line bracket from the spindle and unfasten the ABS sensor line located just under the steering tie rod end using a 10mm socket. (See Figure 5). The bracket will not be used for reinstallation so it may be discarded.

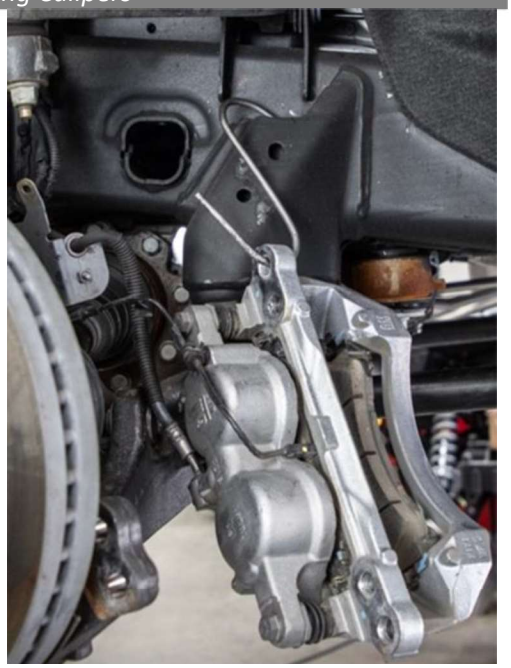
Figure 5: Remove Brackets and Sensors



8. Remove the 4 large bolts holding the caliper to the spindle using a 21mm socket and hang the caliper out of the way so that the brake lines and sensor wires are not stressed (See Figure 6).

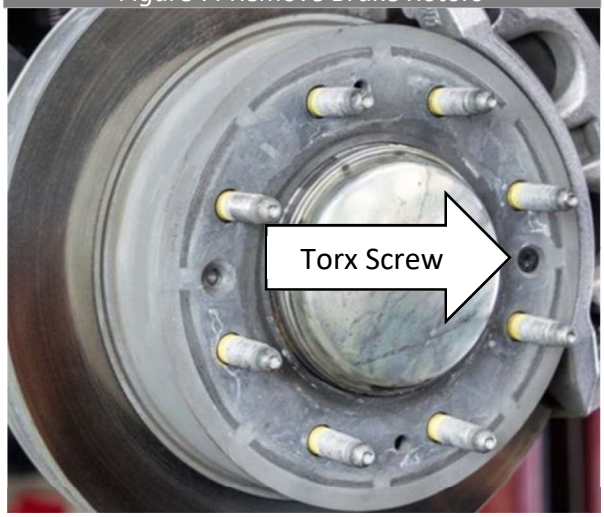
Figure 6: Remove and Hang Calipers





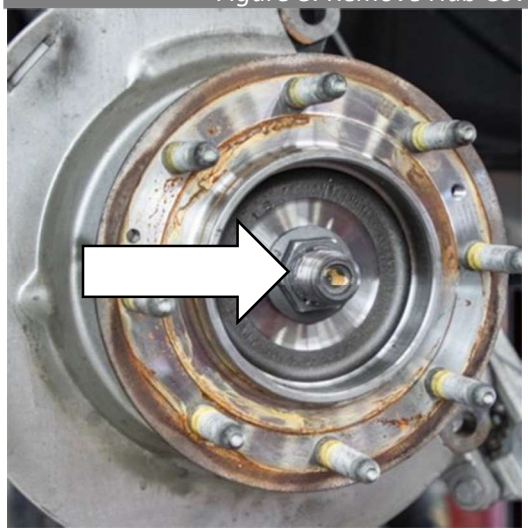
9. Now remove the brake rotors by first removing the flat head T30 Torx screw (See Figure 7).

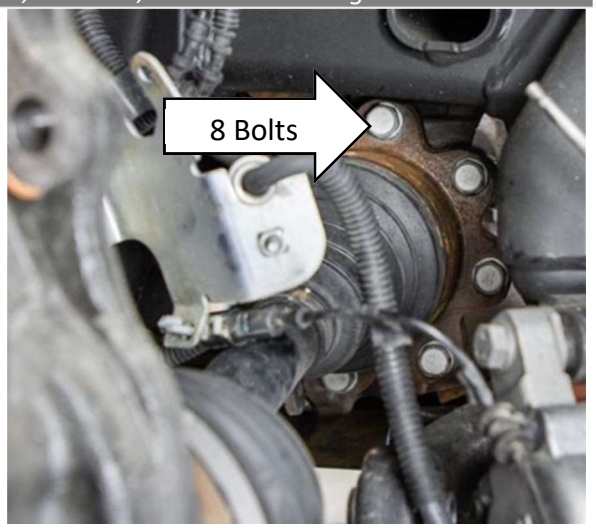
Figure 7: Remove Brake Rotors



10. **<u>Skip this step for 2WD vehicles</u>**. Remove the hub cover and the axle nut and washer with a 36mm socket. Unbolt the inner cv axle flange from differential with a 18mm socket and save all hardware (See Figure 8).

Figure 8: Remove Hub Cover, Axle Nut, and CV Axle Flange





11. Remove the tie rod end nuts on the spindle using a 21mm wrench. Using a pickle fork, or hammer, dislodge tie rod from spindle. Pull down on the tie rod and hit the spindle casting with a hammer to dislodge the taper seat (See Figure 9).

Figure 9: Remove Steering Tie Rod End Links



12. Use a 24mm socket to loosen the lower control arm ball joint but do not completely remove the nut. Now break the tapered set apart by using a pickle fork or hit the spindle casting with a hammer (See Figure 10).

Figure 10: Loosen Lower Ball Joint

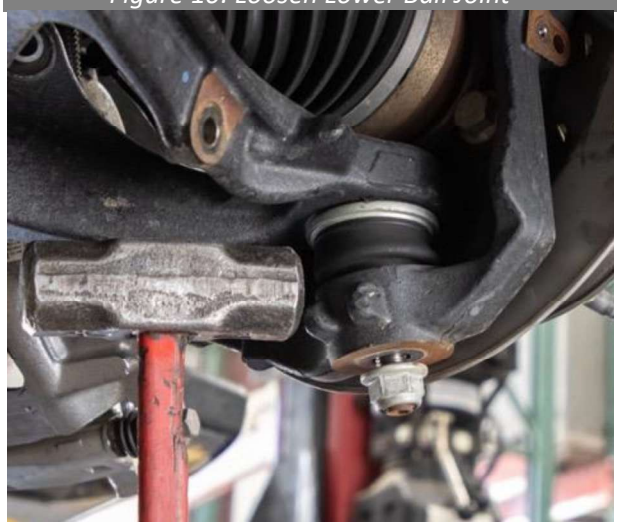
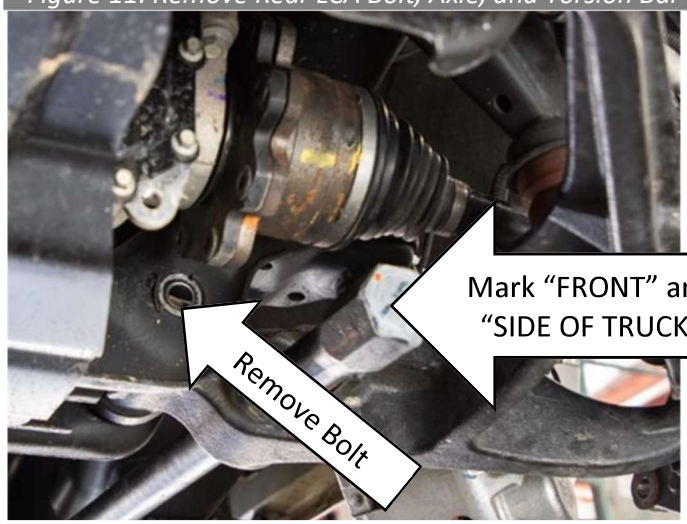


Figure 11: Remove Rear LCA Bolt, Axle, and Torsion Bar



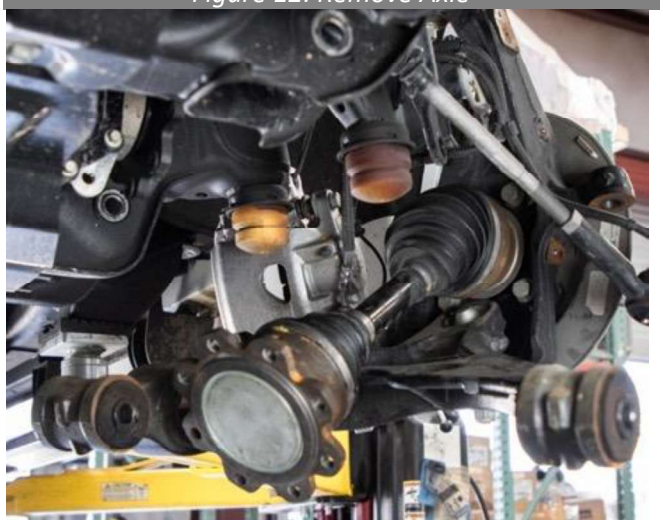
13. Now remove the rearmost lower control arm bolt that holds it to the frame with a 24mm and 21mm wrench and let the lower control arm hang down in the back (See Figure 11).

14. You can now remove the torsion bar but make sure to mark them in their correct orientation and vehicle side they were removed from (See Figure 11).

15. After removing the torsion bars, unfasten and remove the torsion bar crossmember from the factory frame. Place the factory torsion bar crossmember and the factory hardware safely aside, these will be reused later.

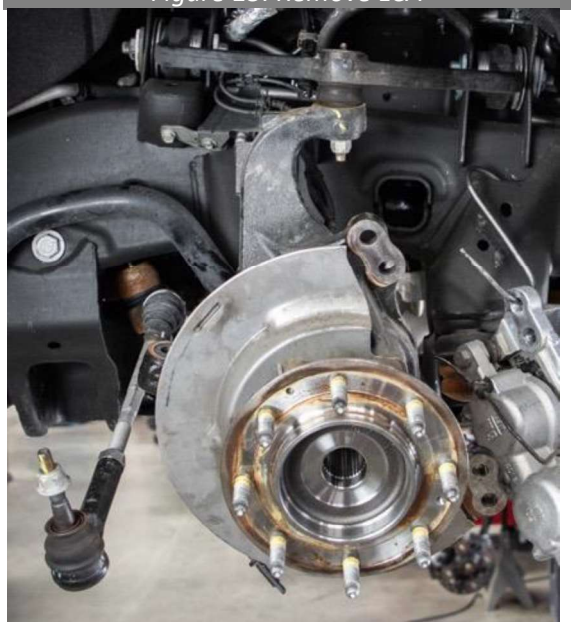
16. Now unbolt the forward lower control arm bolt using the 24mm and 21mm wrench and let it hang freely. The axle can now be easily removed (See Figure 12).

Figure 12: Remove Axle



17. Detach the lower control arm from the spindle. Do this by removing the already loose nut from the lower ball joint (See Figure 13).

Figure 13: Remove LCA



18. Next loosen the upper ball joint nut with a 18mm wrench but leave engaged by a few threads. With the spindle assembly hanging from the upper control arm, hit the spindle with a large hammer on the boss that surrounds the upper ball joint stud (See Figure 14). This will dislodge the taper seat and free the upper control arm from the spindle. Remove the nut and spindle assembly from the vehicle and set aside (see Figure 15).

Figure 14: Brake Upper Tapered Set

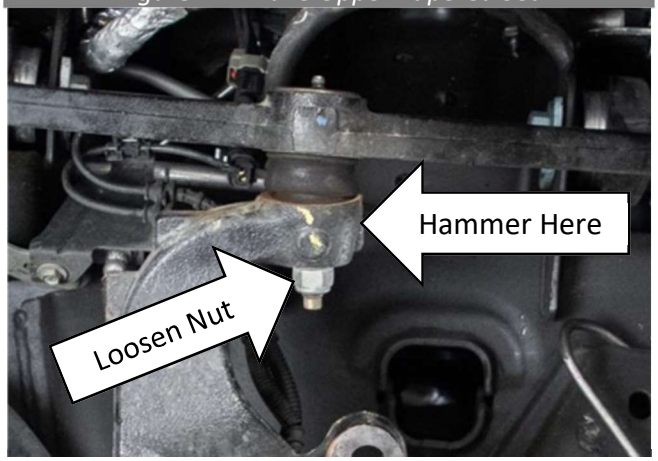
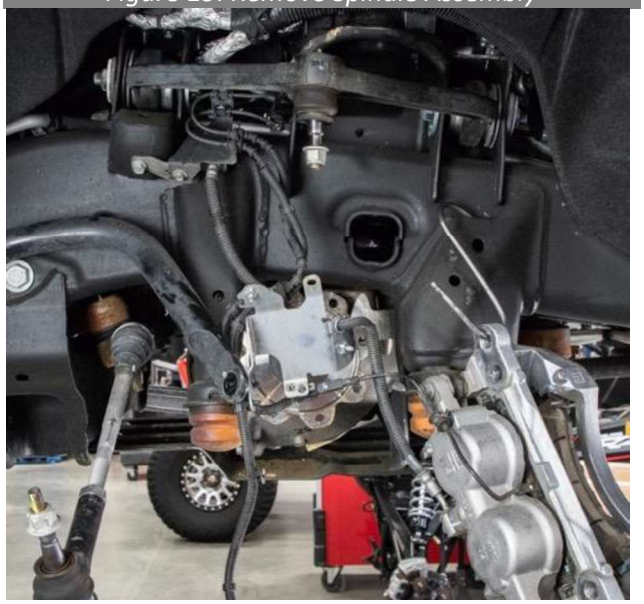
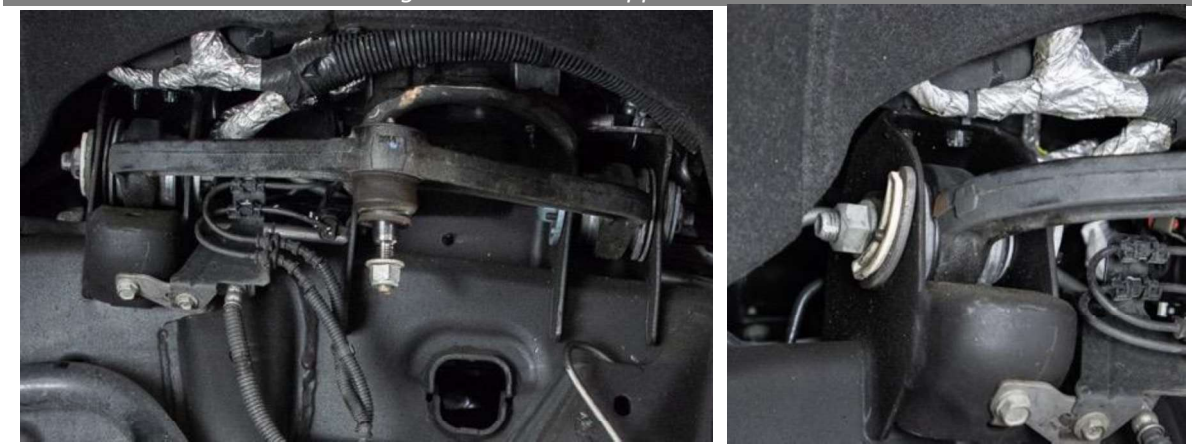


Figure 15: Remove Spindle Assembly



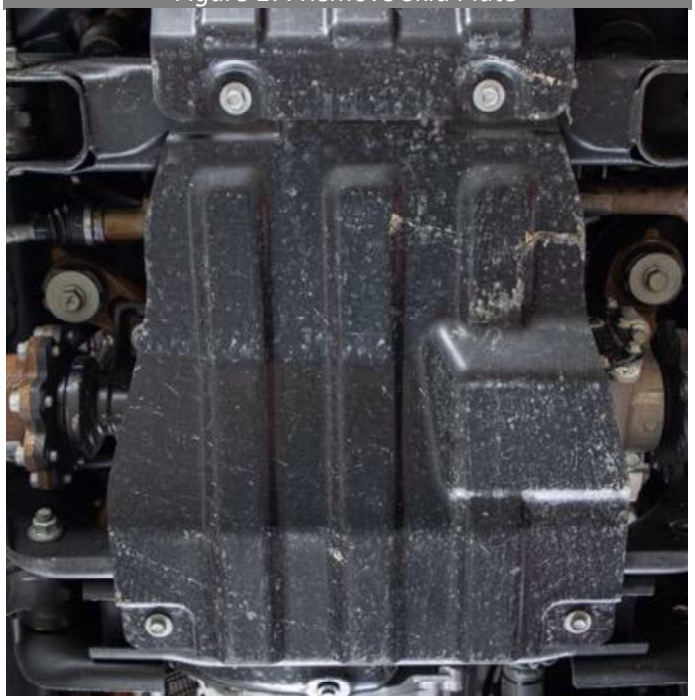
19. Remove the upper control arms at this time using a 24mm wrench but **keep track of the hardware and the orientation it was removed for reinstallation**. Leave the plastic alignment inserts in the hardware (See Figure 16).

Figure 16: Remove Upper Control Arm



20. **Skip this step for 2WD vehicle**. Remove the front differential skid plate with a 15mm wrench and discard. It is steel and located directly under the front differential (See Figure 17).

Figure 17: Remove Skid Plate



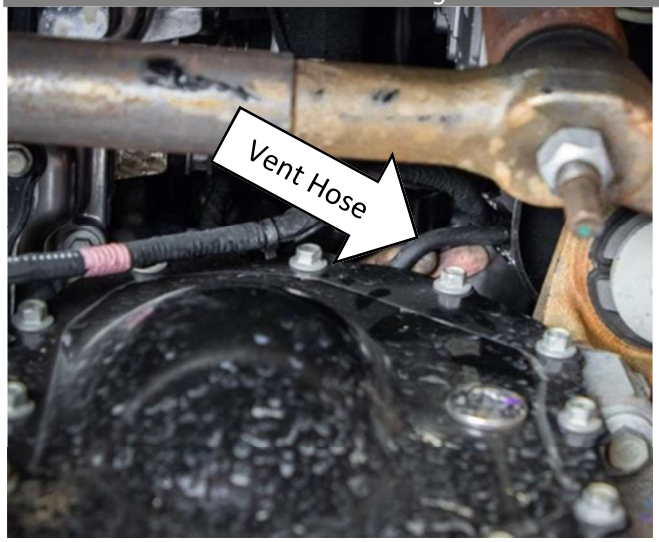
21. Remove the black plastic air shroud from underneath the radiator with a 15mm wrench. This will be re-installed so keep the shroud and hardware (See Figure 18).

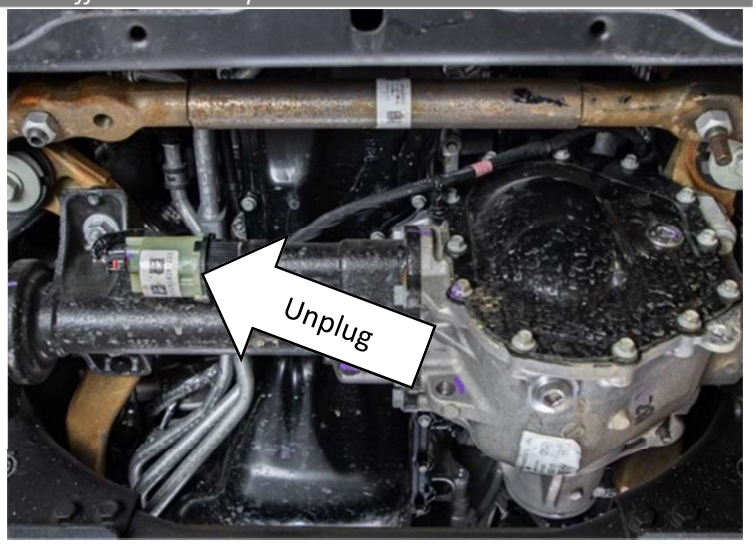
Figure 18: Remove Plastic Air Shroud



22. **Skip this step for 2WD vehicle.** On 4WD models, unplug the black rubber vent tube from the top of the differential, remove the 3 Christmas tree fasteners and unplug the wire harness from the front passenger side of the differential (See Figure 19).

Figure 19: Remove Front Differential Components

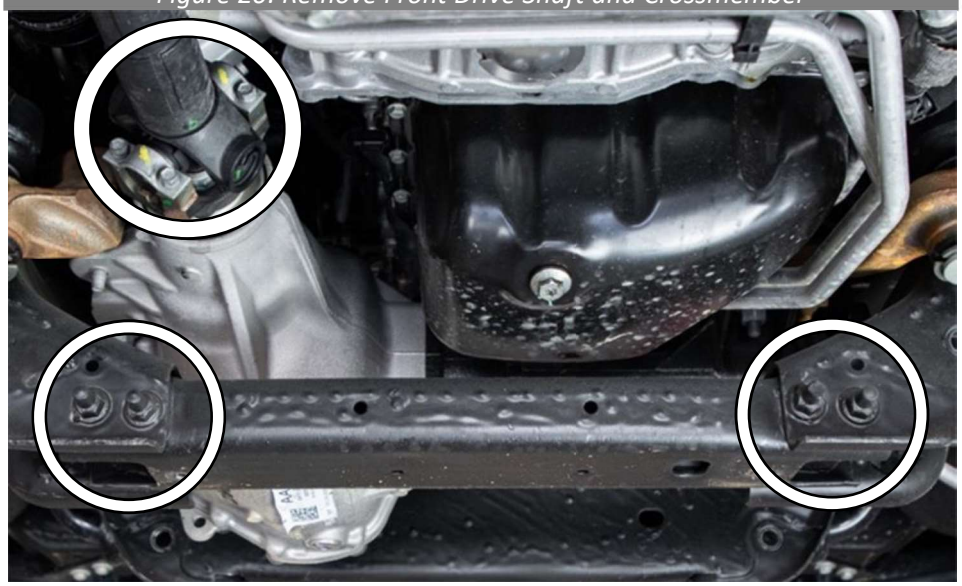




23. Unbolt the factory front driveline from the differential yolk using a 11mm wrench (See Figure 20). Pull the driveline from the transfer case of the vehicle and remove from vehicle, as it is not compatible with this kit. Ensure that a Cognito 210-90983 (or appropriate aftermarket alternative) has been purchased with this kit. Set aside for now.

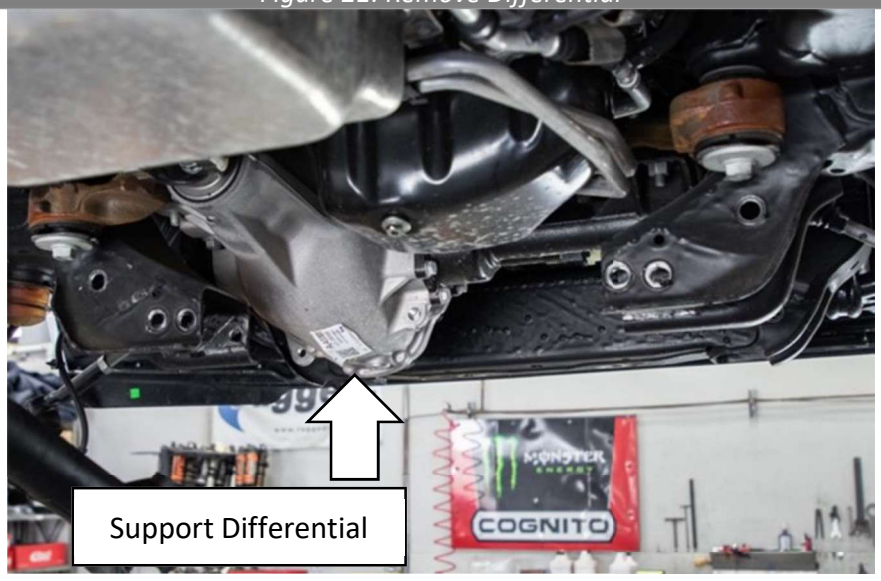
24. Unbolt the factory rear cross member from the frame using a 18mm wrench and discard. This cross member is located just underneath the pinion of the front differential (See Figure 20).

Figure 20: Remove Front Drive Shaft and Crossmember



25. **<u>Skip this step for 2WD vehicle.</u>** Support the front differential with a transmission jack to prepare to lower it from the frame. It is best to use a bracket on a transmission jack that will bolt or clamp to the front differential so it will stay fastened to the jack (See Figure 21). Lower cautiously.

Figure 21: Remove Differential



26. **<u>Skip this step for 2WD vehicle</u>**. Loosen, but do not remove the two nuts from the studs on the passenger differential mount with a 21mm wrench (See Figure 22). Then unbolt the driver side differential mount from the frame with a 21mm wrench, leaving the differential mount on the differential (See Figure 23). Then remove the 2 nuts from the passenger side and lower the differential out of the frame (See Figure 24)

Figure 22: Passenger Side Differential Mounting

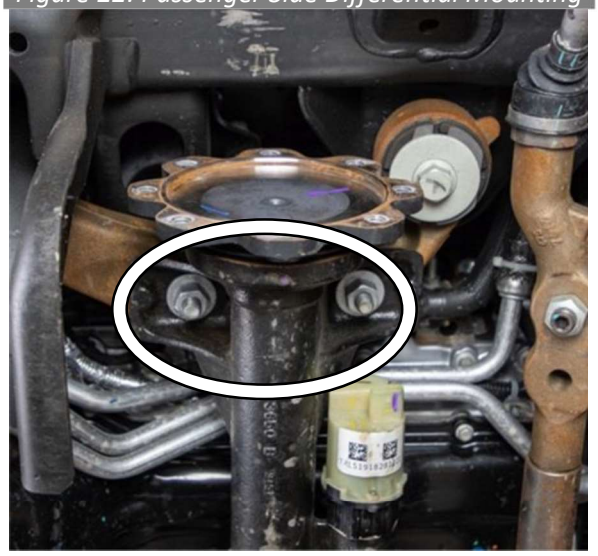


Figure 23: Driver Side Differential Mounting

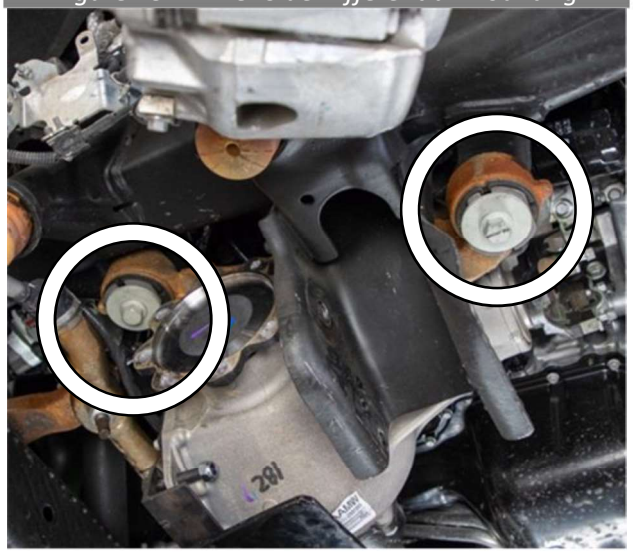


Figure 24: Lower Differential from Vehicle



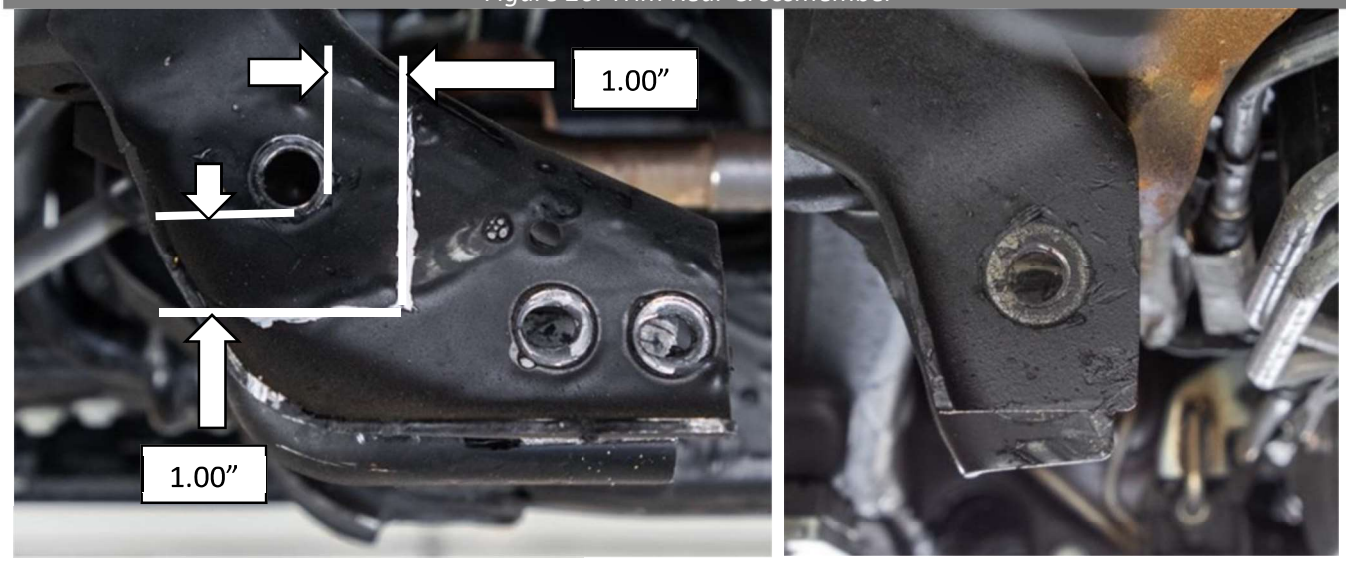
27. **Skip this step for 2WD vehicle.** After removing the differential from the vehicle, cut or grind a .25” notch out of differential case. The notch will be made near the bolt hole closest to the yoke on the driver side of the differential. (See Figure 25)

Figure 25: Notch on Differential



28. Now using a reciprocating saw, cut the lower control arm rear frame pocket. Cut the front and rear flange off on both the driver and passenger side from mounting hole edge, horizontal line 1” down and vertical line 1” to the inside of truck (See Figure 26).

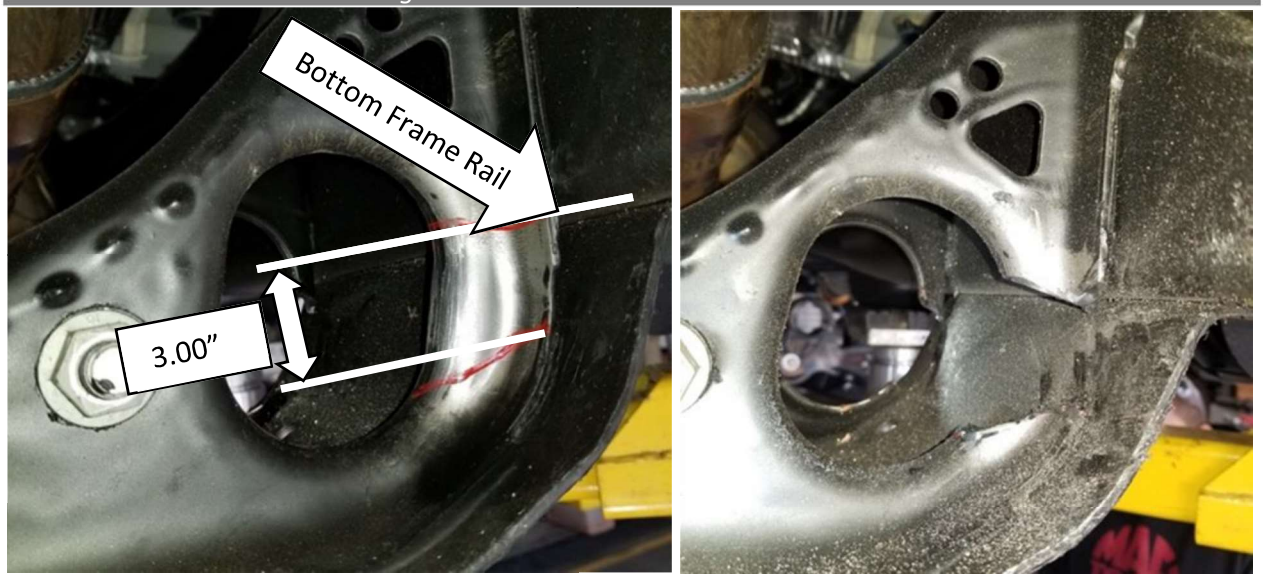
Figure 26: Trim Rear Crossmember



29. Using a reciprocating saw, cut **both the front and back walls** of the transmission crossmember of each torsion bar hole. The cut should start at the bottom of the frame rail and extend 3.00" downward (see Figure 27).

    Note: The nature of the non-torsion bar drop kit makes the torsion bar swing in a bigger arc than stock. Due to this, the torsion bar will rub on the transmission cross member. Failure to cut both the front and back walls of the transmission crossmember will result in suspension issues such as noise (knocking and/or squeaking), torsion bars damage, frame damage, etc.

Figure 27: Cut Crossmember For Clearance



30. This step will begin the installation process. **<u>Do not tighten any fasteners until instructed to</u>.** Unless otherwise specified, flat washers will always be used under the heads of bolts and under nuts. Therefore, one bolt with one nut will require 2 flat washers.

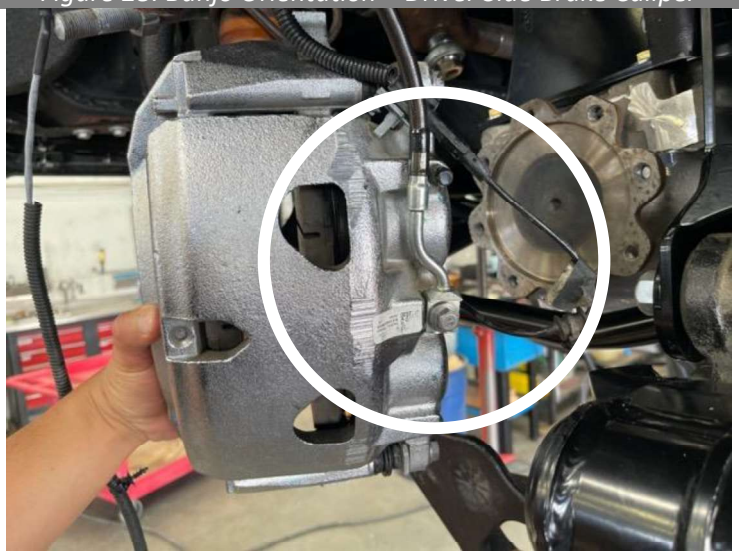
31. If you purchased the Cognito Motorsports Pitman and Idler arm support kit, this is the time to install it. Locate and follow the installation instructions associated with the kit, but do not re-install the steel skid plate under the differential if it is 4WD as specified at the end of those instructions. It is not used on this suspension lift.

32. If you purchased the Cognito Motorsports Extreme Duty Tie Rod and Center Link Kit, this is the time to install it. Locate and follow the installation instructions associated with the kit.

33. Locate the **110-70129** Stainless-Steel Brake Line Kit for the 7”-9” lift kit. Using line wrenches, slightly loosen the stock brake lines nearest to the upper control arm.

    Note: the banjos have a specific orientation. The bend on the banjo should go towards the center of the brake caliper. (see Figure 28). Take care to not have the banjo bolt put pressure onto the caliper’s bleeder nipple while tightening.

Figure 28: Banjo Orientation – Driver Side Brake Caliper

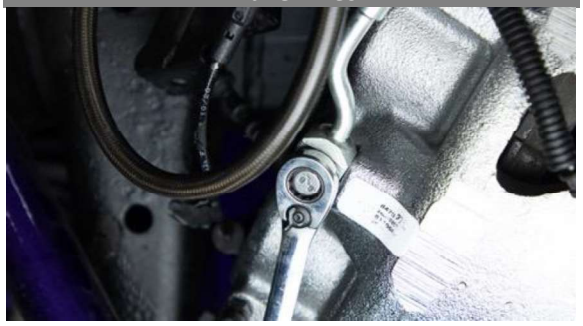


34. Pop off the clip holding the stock brake lines to the brake line bracket and quickly unfasten the stock brakes lines.
35. Install the Cognito Stainless-Steel Brake Line Kit using 13-mm and 18-mm wrenches (See Figure 29).
36. The brake line bracket will be fastened back in the original location (see Figure 29).
37. Unfasten the banjo bolt located on the brake caliper using an 11-mm socket and ratchet.
38. Remove the crush washer that sits between the back of the banjo and the face of the brake caliper and install one of the copper washers included within the Cognito Brake Line Kit.
39. Fasten the banjo bolt back to the brake caliper and torque to 25 ft-lbs (See Figure 30).
40. Wipe away and clean any brake fluid that may have spilled and repeat steps 33 – 37 for the opposite side of the vehicle.

Figure 29: Cognito Extended Stainless-Steel Brake Lines



Figure 30: Cognito Extended Stainless-Steel Brake Lines



41. Re-install the previously removed plastic air dam/skid plate that belongs under the radiator area using the OEM hardware.

42. **Skip this step for 2WD vehicle**. ***NOTE****: Sometime between the years of 2020 and 2022, the 3500HD started coming with a larger front differential housing, the 2500HD appears to still have the original housing and should not need the trimming described here. If the vehicle is a 2020-2023 3500HD, the Cognito left side differential bracket may have an interference on this larger differential housing, and require some grinding. Fit the left side differential mount onto the differential, if the larger housing is present, you will notice 1 or 2 areas that have interference. Use a die grinder to grind the aluminum diff housing to make room for the left side Cognito differential bracket.*

    Unbolt the factory driver side differential mount from the differential using a 18mm and 15mm wrench. Bolt the **1631** Cognito driver differential mount to the differential and then the stock mount to the Cognito mount, using hardware package **HP9121** and a 3/4" and 19mm wrench, Place spacer **8241** between **1631** and differential. Use **HARDWARE-M12X1.75X50** with spacer. Torque bolts to 50 ft-lbs. (See Figure 31). Hardware that does not get a nut should have a lock washer. ***Note:*** *Older versions of this kit will not use spacer 8241. If your kit has a spacer, you will also have one leftover bolt.*

Figure 31: Mount Differential Drop Bracket Driver Side



43. **Skip this step for 2WD vehicle.** Bolt **8282** Cognito passenger differential mount onto the front differential in the orientation with the 9/16" hardware from hardware package **HP9121** and a 13/16” and 7/8” wrench. The differential has slotted holes, center the Cognito bracket onto the slotted holes and torque fasteners to 60 ft-lb (See Figure 32). On some trucks it might be necessary to slightly grind on the OEM slotted hole.

Figure 32: Mount Differential Drop Bracket Passenger Side



44. **Skip this step for 2WD vehicle.** Raise the front differential back up into the frame and fasten the passenger Cognito differential mount to the factory passenger differential mount with the factory hardware and torque to 60 ft-lbs. Fasten the factory driver differential mount to the frame with the factory hardware and torque to 60 ft-lb (See Figure 33).

45. **Skip this step for 2WD vehicle.** Install Cognito 210-90983 front driveline into transfer case and bolt onto differential yoke. Torque yoke bolts to 18 ft-lb. Stock driveline is not compatible with this kit.

Figure 33: Differential Installation



46. **Skip this step for 2WD vehicle.** To reconnect the rubber vent tube to the front differential, cut the bottom-most tape holding the vent tube and differential wiring harness together. Open the hood and look near the fuse box, unclip the top of the vent tube from the harness it is attached to, and then go under the vehicle and pull down on the tube until it is long enough to be reconnected. Clip the top part of the vent tube back onto an appropriate harness after it has been pulled down.

47. Using cutting tool, cut the stitch welds off the rearmost front bump stop and then grind the welds off flush with the frame (see Figure 34).

Figure 34: Rearmost Front Bump Stop: Cut and Grind



48. Using a drill and a 17/32” drill bit, drill out the hole that was left behind (see Figure 35).

Figure 35: Drill Out Hole for Bump Stop



49. Locate **HP9279**, get a 3/8" bolt, rivet nut, and the rivet nut installation tool and install the rivet nut into the hole that was just drilled out in the previous step (see Figure 36).

    To install the rivet nut, place the tool on the bolt and then thread the rivet nut onto the bolt, flange side first, all the way until it touches the installation tool. Next, push the rivet nut through the hole in the frame and use a 3/4" wrench to hold the installation tool from turning while you turn the bolt with a 9/16" wrench or socket (**do NOT use air tools or impact drivers for this procedure).** When turning the bolt, you will feel that it is initially tight to turn, then get loose for a few turns, and then final become difficult to turn again. Once it becomes difficult to turn again, the rivet nut has crushed and in fully installed. Remove the bolt and installation tool, and repeat on the opposite side.

Figure 36: Install Tool for Rivet Nut



50. In order for the bump stop to be used as a drill guide, it must be partially installed. Mount the Cognito bump stop to the installed rivet nuts with a 3/8" X 1.25" bolt from hardware pack **HP9279** and tighten. The bolt can be accessed from the back side of the bump stop with a 9/16" wrench (see Figure 37).

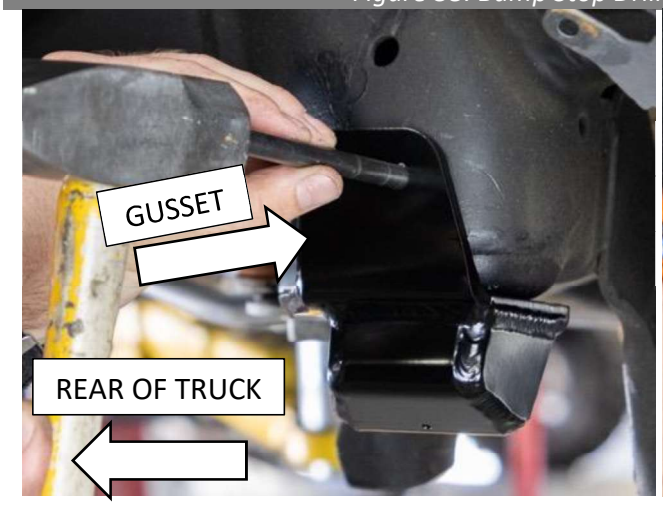
    Note: There is a driver and passenger side bump stop. Use part **8771** on the driver side, and **8772** on the passenger side. The triangular gusset should be towards the rear of the vehicle.

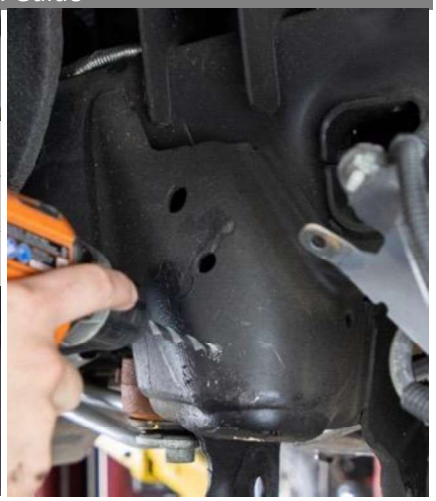
Figure 37: Bump Stop Installed



51. Use a centering transfer punch to mark the hole location that will need to be drilled out. After marking the hole, remove the bump stop and use a 17/32” drill bit and drill through the frame in the marked location (see Figure 38).

Figure 38: Bump Stop Drill Guide





52. Using the newly created hole, install a 3/8” rivet nut.

53. After installing the rivet nut, fully install the bump stop. Make sure to use the washers and lock washers provided in hardware pack **9279** (See Figure 39). Torque the 3/8” hardware to 30 ft-lbs. (see Figure 40).

Figure 39: Install Outer Rivet Nut

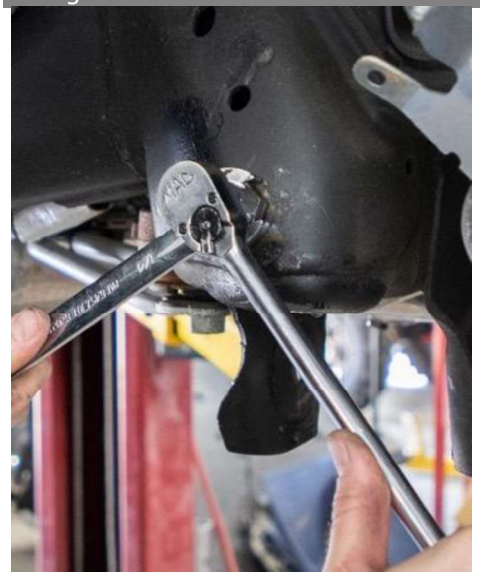
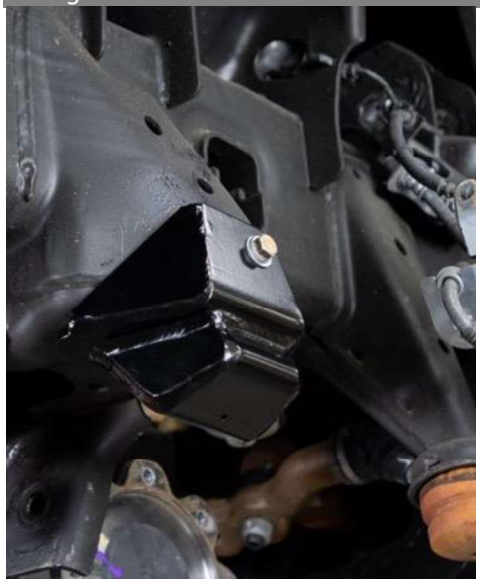


Figure 40: Install Outer Rivet Nut



54. Repeat the above steps and install the bump stop on the opposite side of vehicle.

55. Bolt the **8797** Cognito rear crossmember to the frame with the factory hardware. It will only fit one way, but it is worth mentioning that the bend in the crossmember points toward the rear of the truck. Torque to factory spec of 133 ft-lb (See Figure 41).

Figure 41: Install Rear Crossmember



56. **Skip this step for 2WD vehicle.** Locate **HP9123** and loosely fasten the passenger differential mount to the rear crossmember using the 1/2" x 3.5" Yellow Zinc Cap Screw (See Figure 42).

Figure 42: Differential Mount and Rear Crossmember



57. Reinstall the factory plastic air-dam.

58. Install the **8291** front crossmember. Use the factory lower control arm hardware and torque to factory spec of 133 ft-lb (See Figure 43).

Figure 43: Install Front Crossmember



59. With the driver lower control arm on a bench or the floor, locate and insert the **5501** mandrel through the hex hole in the control arm. then attach the **8773** Cognito Non-Torsion Bar Drop Bracket Driver to the mandrel with the 1/2" X 4.5" hardware from package **9279**, tighten to 80 ft-lb using a 3/4"wrench and socket (see Figure 44).

Figure 44: Non-Torsion Bar Drop Bracket Install



60. Using the hole in **8773** as a drill template, use a centering transfer punch and drill a 1/2" hole through the pad on the lower control arm (see Figure 45).

Figure 45: Drill Guide



61. Install the 1/2" X 1.75" hardware from package **9279** through the hole that was just drilled and tighten to 80 ft-lb using a 3/4"wrench and socket.

62. Bolt the polyurethane bump stop to the bracket with a 3/8" flat washer, then 3/8" lock washer, then a 3/8" nut from hardware pack **9279.** Tighten until snug and the rubber starts to slightly deform with a 9/16” wrench.

63. Follow the same steps above and install **8774** onto the passenger side.

Note: **HP9279** includes hardware that is only used in the Cognito Motorsports GMC 2500/3500HD 4” Lift Kit.

The following hardware will be leftover with your 7” Lift Kit (see Figure 46),

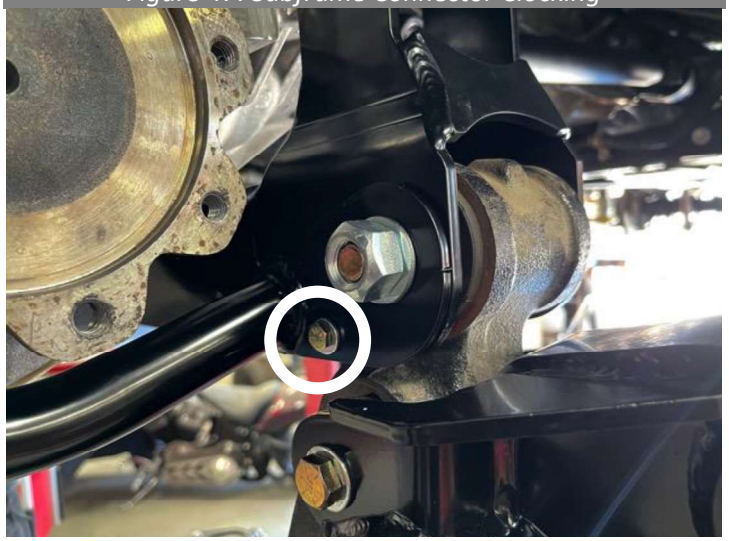
- 3/8” – 16 X 1 Self Tapping Screws, Qty 4
- 3/8” Split Lock Washers, Qty 4

Figure 46: Unused Hardware in HP9279



64. Locate the **8762** driver sub-frame connector, and the 1/4" hardware from **HP9123**. Loosely fasten the driver sub-frame connector to the rear cross member with the 1/4” hardware through the clocking hole of the rear cross member and the clocking hole of the sub-frame connector. This will ensure the sub-frame connector is properly aligned (See Figure 47).

Figure 47: Subframe Connector Clocking

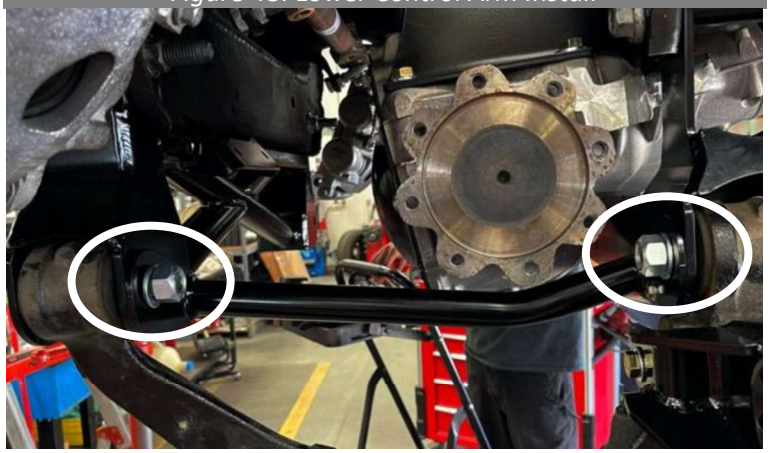


65. Locate the **8763** passenger sub-frame connector and mount the passenger sub-frame connector to the rear cross member following the directions listed in the step above.

66. Bolt the lower control arms to the Cognito front and rear cross member using the 18-mm hardware from **HP9123**. Do do this on both sides of the vehicle. Do not tighten these bolts yet (see Figure 48).

    Note: Run the bolts so that the nuts will be closest to the axle. If ever needed, this will make it so that the bolts are easier to remove when the axle is installed. Also, be sure that the bolts pass through the previously installed sub-frame connectors on both the driver and passenger side.

Figure 48: Lower Control Arm Install



67. Locate the **2883** Cognito skid plate and the hardware pack **HP9081**. Using the hardware pack, fasten the skid plate to the front cross member on the top side of the skid plate bracket. Next, fasten the skid plate to the rear cross member and tighten the four bolts to 19-ft·lbs (See Figure 49).

Figure 49: Cognito Skid Plate



68. Slide the torsion bars into the hex holes of the Cognito brackets. Make sure to install the torsion bar on the same side of the truck and in the same orientation as it was removed (see Figure 50).

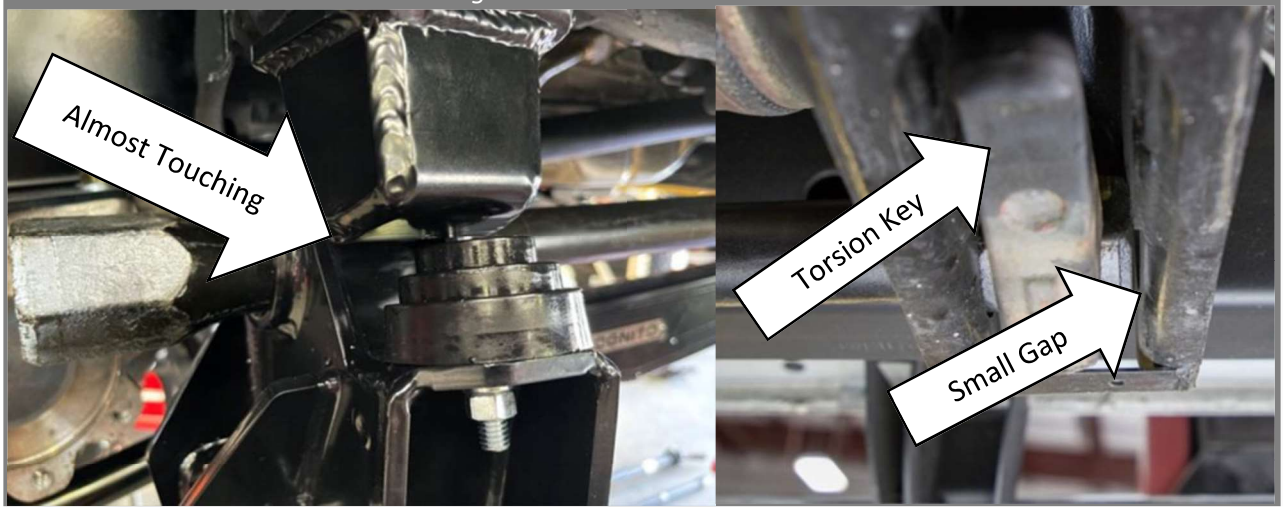
Figure 50: Torsion Bar Installation into Cognito Bracket



69. Install either the Cognito torsion bar keys if purchased or the OEM torsion bar keys into the torsion bar crossmember, but do not load the torsion bar (see Figure 51).

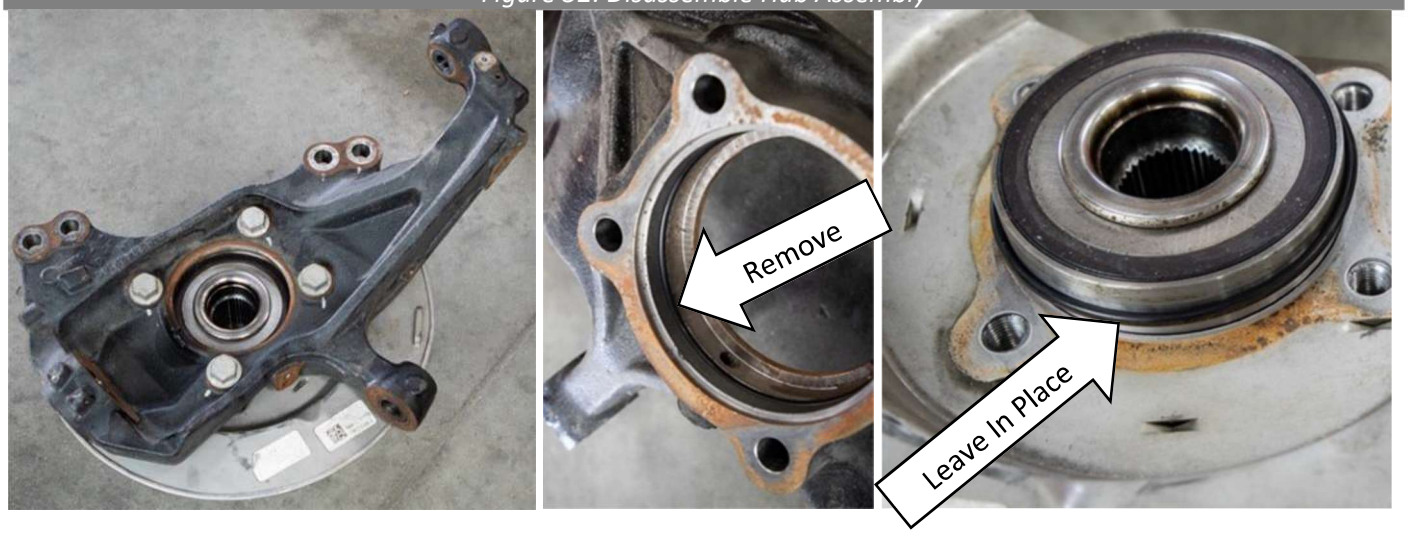
70. Use a jack to lift the suspension all the way up until the polyurethane bump stop almost contacts the Cognito frame bump. **Do not lift any higher than this because you could start lifting the truck and it could shift on the vehicle hoist or even fall off**. Now push the torsion bar all the way back into place with the torsion keyway in place inside the torsion bar cross member, the torsion bar should pass all the way thru the torsion key and almost touch the back of the key compartment. A hammer and punch may be necessary to tap it into place. Once the torsion bar and torsion key are in place you can let the jack down and the suspension droop (See Figure 51).

Figure 51: Reinstall Torsion Bars



71. Disassemble the bearing hub assembly and brake rotor shield from each of the factory spindles. Bearing hub bolts require a 21mm wrench. Also remove the O-ring from the bore of the spindle, careful not to damage it. Clean the mating surfaces of the bearing hub and brake rotor shield thoroughly. Leave the second O-ring in the OEM position (See Figure 52).

Figure 52: Disassemble Hub Assembly



72. Transfer all the parts to the appropriate Cognito spindle, **8758** is the driver side and **8759** is the passenger side. Make sure that the bore and O-ring groove of the Cognito spindles is clean and free from debris. Torque the bearing hubs to the spindles with the factory bolts to factory torque spec 133 ft-lb (see Figure 53).

Figure 53: Reassemble Hub Assembly



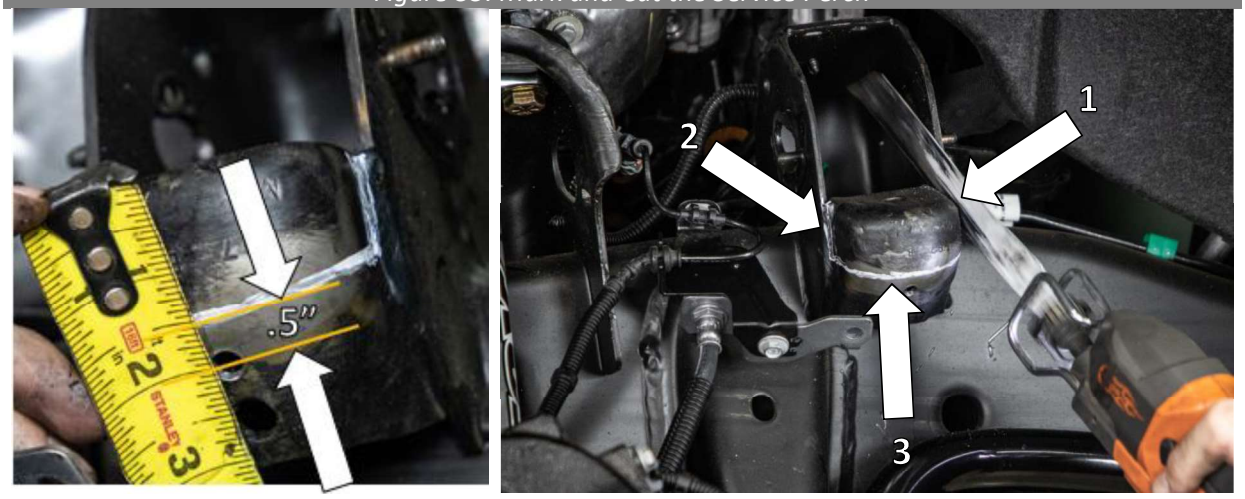
73. The service perch under the upper control arm, which is welded to the frame, must be partially cut off. Start by removing the 13mm screw for the brake line bracket attached to the service perch but do not discard it. It will be used in reassembly (See Figure 54).

Figure 54: Remove Brake Line Bracket



74. Mark the service perch with the lower horizontal line 1/2 inch above the brake line bracket mounting hole (see Figure 55). Do not cut the mounting hole off, this is reused. Tie the lines and wires up so they are clear of the cutting area. Take great care to keep the lines and wires safe during the cut and make sure to shield them from sparks if any kind of grinder is used. Wear safety glasses.

Figure 55: Mark and Cut the Service Perch



75. Due to the geometry of the Cognito spindle, the male tie rod adapter will need to be trimmed. Begin by removing the outer tie rod arm from the vehicle.

76. Mark the male tie rod adapter approximately 0.5” away from the end that threads into the outer tie rod arm and cut using a cutting tool (see Figure 56).

77. Sand and chamfer the male tie rod adapter to clean up the cut that was just made. This will ensure that the threads within the outer tie rod arm do not get damaged.

78. Reinstall the outer tie rod arm to the male adapter and repeat this process on the opposite side.

Figure 56: Mark and Cut the Tie Rod



79. Be sure there is no dirt, powder coat, or any other debris in the 3 tapered holes on each of the Cognito spindles. If there is, clean it or scrape it out now.

80. If you have also purchased a set of Cognito upper control arms, install them now referring to the instruction sheet included in that kit. Otherwise, reinstall the OEM upper control arms using OEM hardware in the same orientation it was removed. Tighten but wait to fully torque.

81. Lift the appropriate spindle onto the passenger and driver side into place by inserting the lower ball joint tapered set into their mounting locations and install the lower ball joint nut by only a few threads.

82. Reinstall the front axle spline into the hub assembly (see Figure 57).

Figure 57: Front Axle into Spindle



83. Place the **6690** Front Axle Spacers between the differential mount axle face and the front axle. Be sure that the center bore is place snuggly against the axle face on the differential mount axle face. Fasten the flange bolts using a rachet and 19-mm wrench and torque to factory torque spec 58 ft·lbs (see Figure 58).

Figure 58: Front Axle Spacers



84. Install the upper ball joint, and torque both the upper and lower ball joint nuts to 50 ft·lbs and 100 ft·lbs using a 22-mm and 24-mm socket, respectively.

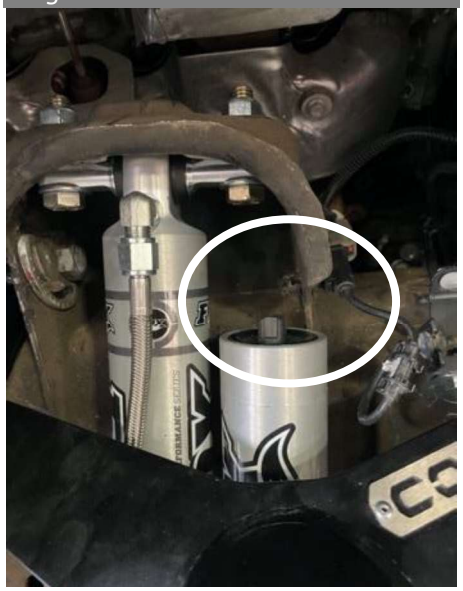
    Note: If you are using Cognito upper control arms, install the cotter pin into the ball-joint pin after torquing down the upper ball joint nut included with that kit.

85. Fasten the stock axle nut onto the axle and torque to 188 ft-lbs.

86. Install the front shocks at this time. If your kit included front shock extenders, refer to those instructions at this time.

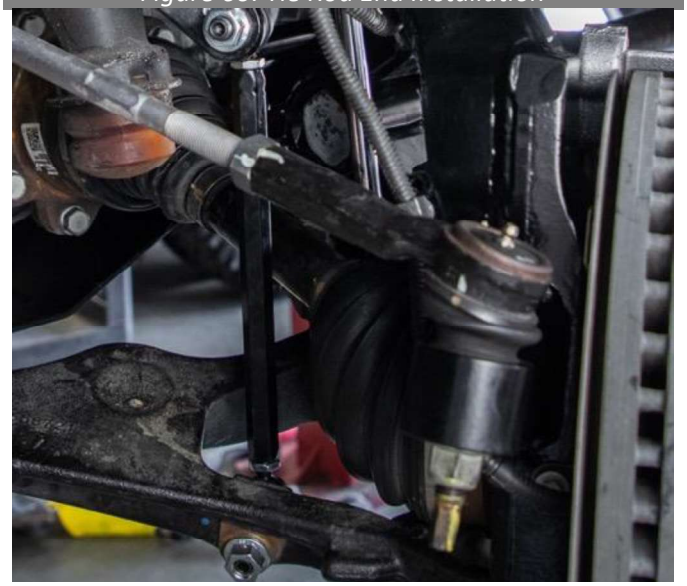
    Note: If your kit includes the Fox PSRR performance series remote reservoir front shocks, be sure to mount the reservoir upward and close towards the frame without touching (see Figure 59). Failure to do so can result in interference issues with the p-clamps that will be installed in the steps ahead while turning your vehicle.

Figure 59: Shock Remote Reservoir



87. Reattach the factory tie rod end to the Cognito spindles. The tie rod ends will be flipped 180° from the OEM position (See Figure 60). Torque to factory spec 26ft-lb and an additional 90° using a 21mm wrench.

Figure 60: Tie Rod End Installation

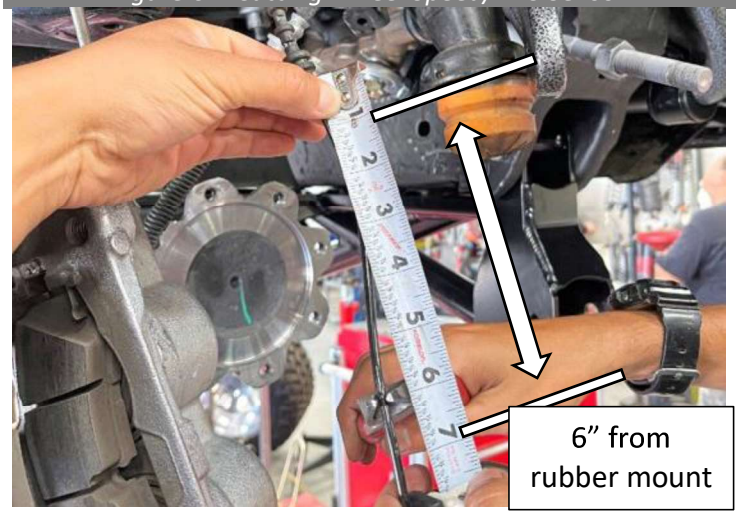


88. Install the brake rotors and calipers onto the appropriate side Cognito spindle. Torque the caliper bolts to 100 ft·lbs.

89. Remove the wheel speed/ABS sensor from the stock bracket near the upper control arm service perch and remove the stock clips mounted to the black plastic sleeve.

90. Remove the black plastic sleeve from the harness to expose the silicone wire sleeve. Cut the wires approximately 6” from the rubber mount (see Figure 61).

Figure 61: Cutting Wheel Speed/ABS Sensor



91. Locate the **110-70077** Front Wheel Speed Sensor Extender Kit. Splice the wheel speed/ABS wires and use the butt connectors to crimp together the gray wire extensions included in this kit to the ABS wires. Do this process on both sides of the vehicle.

    Note: Do not forget to add the heat shrink wraps around the wires prior to crimping the wires together. You cannot get them over the sensor at the bottom. There are two different size wraps. Be sure the bigger wrap can go over two butt connectors.

92. Locate **HP9295.** This hardware pack includes clamps to route the brake lines, wheel speed sensor, and the brake pad wear sensor (located on driver side only).

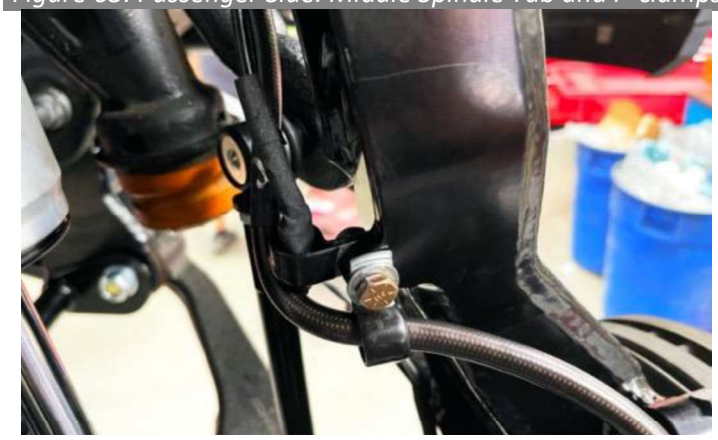
93. For the passenger side, place two clamps around the brake line and three clamps around the wheel speed/ABS sensor. Attach one of the P-clamps around the brake line to the outside of the topmost spindle tab and one of the p-clamps around the wheel speed sensor to the inside of the topmost spindle tab (see Figure 62).

Figure 62: Passenger Side: Top Spindle Tab and P-clamps



94. For the passenger side, attach the second p-clamp around the brake line and the second p-clamp around the wheel speed sensor to the middle spindle tab in a similar manner as the previous step (see Figure 63).

Figure 63: Passenger Side: Middle Spindle Tab and P-clamps



95. For the passenger side, attach the final p-clamp on the wheel speed sensor to the bottommost spindle tab.

96. For the driver side, there is an extra sensor wire that leads to the brake caliper. For the top and middle spindle tab, the brake pad wear sensor wire will share a p-clamp with the wheel speed/ABS sensor (see Figure 64 and 65). Mount the p-clamps in a similar manner as the passenger side.

Figure 64: Driver Side Top Spindle Tab & P-clamps

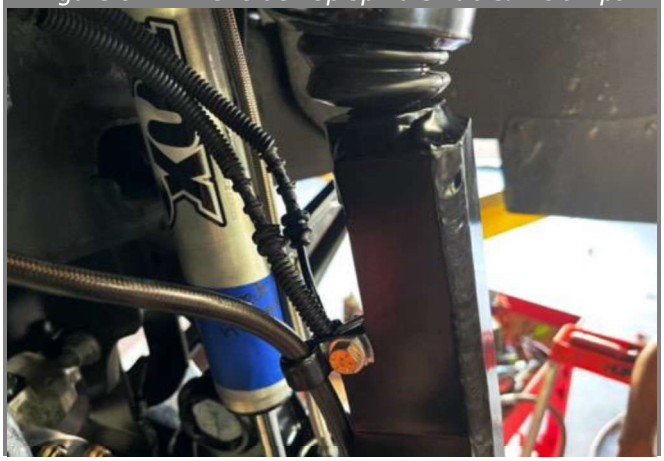
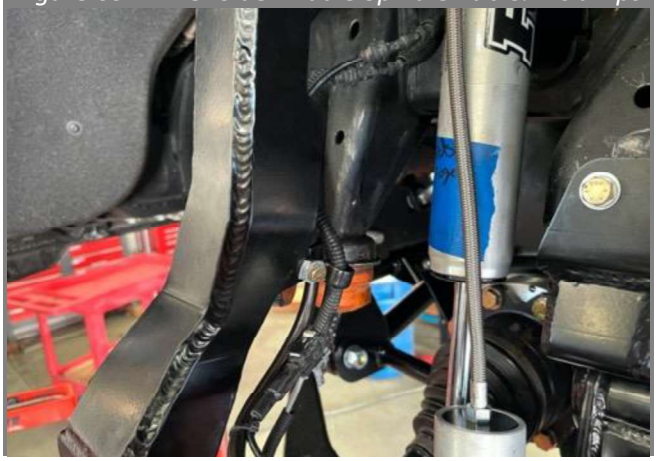


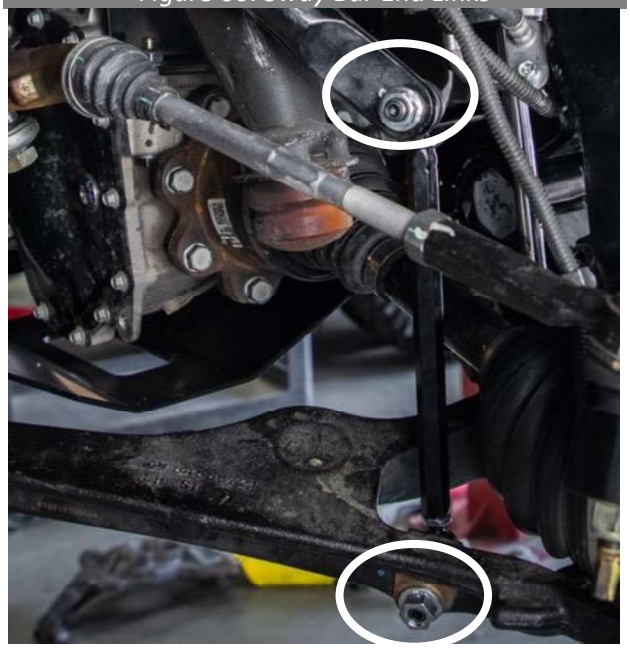
Figure 65: Driver Side Middle Spindle Tab & P-clamps



97. After the p-clamps are fastened and tightened down, insert the wheel speed/ABS sensor into the side of the spindle and tighten the bolt to factory specifications.

98. Install the Sway Bar End Links. The end link's studs will point towards the front of the vehicle. Use a 3/4" wrench and a 6-mm allen key and torque to 60 ft·lbs (See Figure 66).

Figure 66: Sway Bar End Links



99. Locate the **2880** Compression Strut Frame Brackets, the **8768** Compression Struts, and the **HP9040** Compression Strut Hardware Pack. Using WD40 or a similar lubricant, install the polyurethane bushings into the ends of the driver and passenger compression struts, and then insert the steel crush sleeves into the polyurethane bushings.

100. Loosely bolt the **8768** compression struts onto the rear crossmember compression strut tabs using the 1/2" hardware located within the **HP9040** hardware pack. The compression strut's knee will be closer to the front of the truck (See Figure 67).

Figure 67: Compression Strut and Rear Crossmember



101. Loosely bolt the **2880** compression strut frame bracket to the other end of the compression struts using the 1/2" hardware located within the **HP9040** hardware pack.

Note: The notch end of the bracket will point towards the front of the truck on the 10" Cognito Motorsports Lift Kit and point towards the rear of the truck on the 7" Cognito Motorsports Lift Kit. (Figure 68)

Figure 68: Orientation of compression strut frame bracket.



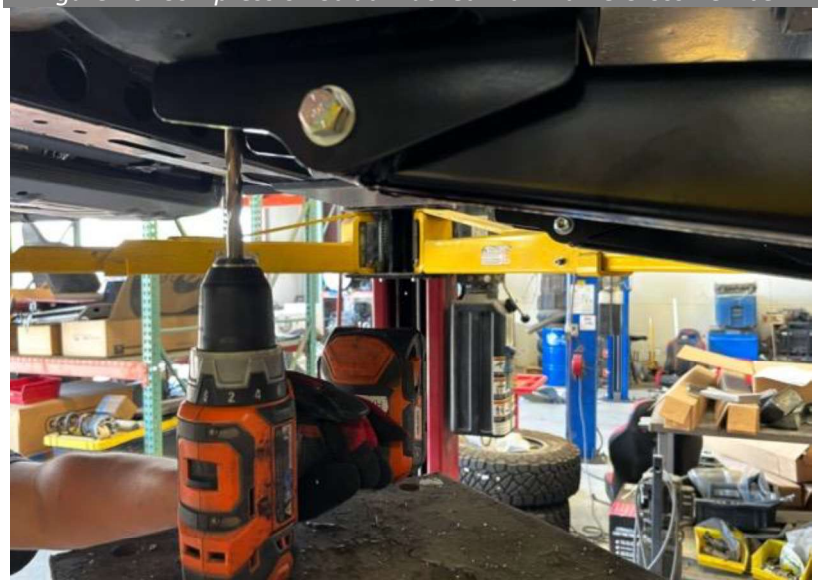
102. Swing one of the compression strut brackets up to the frame of the truck and be sure the mounting holes of the compression strut bracket line up appropriately to the factory frame cross member (Figure 69). If the mounting holes do not line up, slightly move the bracket and the compression strut towards the outside of the vehicle until the holes line up under both bracket flanges. You should be able to drill through both flanges.

Figure 69: Compression Strut Bracket wtith Frame Crossmember.



103. Using the compression strut bracket as a drill temple, drill a 3/8” hole into the flange of the factory crossmember and bolt the bracket to the flange with the 3/8” hardware provided within the **HP9123** sub-frame hardware pack (see Figure 70).

Figure 70: Compression Strut Bracket with Frame Crossmember



104. After bolting the bracket to the frame crossmember, remove the compression strut from the bracket, and drill the second mounting hole.

105. Loosely fasten both bolts on the compression strut frame bracket and reattach the compression strut to the bracket. Torque the 1/2” hardware fastening the compression strut to the bracket to 60 ft·lbs and then torque the 3/8” hardware fastening the bracket to the factory frame to 40 ft·lbs. Lastly, torque the 1/2” hardware fastening the compression strut to the rear crossmember to 60 ft·lbs.

106. Repeat this process for the other compression strut.

107. **Make sure there are no supports under the lower control arms and the suspension is at full droop with the shocks fully installed and torqued down before loading the torsion keys.**

108. Install the torsion adjuster nut, and adjuster screw into the torsion bar crossmember (see Figure 71).

Note: If using the stock or anything other than the Cognito torsion bar adjuster keys, you must use Cognito Retainer Bracket part **2806** to keep the adjuster screw from slipping off the key. Slide the retainer bracket on from the front of the key so that the hole lines up with the scratched area. This will be close to where the adjuster screw will sit (See Figure 69). If you have purchased Cognito Torsion keys, you will notice bowl like feature in this location and the retainer brackets are not needed.

Figure 71: Cognito Torsion Key Retainer



109. Load the torsion bars and install the adjuster nut in the reverse of their removal. Now unload the bars and insert the adjuster screw into the nut making sure it goes through the hole in the retainer bracket if using stock keys. Tighten the adjuster screws until they are the same length as removed (recorded in step 2). Do not over crank the torsion bars to try and gain too much height**.**

Never tighten torsion key adjuster screws when the truck is on the ground.

110. **At this point, inspect all hardware to ensure everything is properly installed and torqued (see Torque Specification List Below).**

Do NOT torque the lower control arm hardware on both the driver and passenger side at this point (See Figure 72). These will be torqued after the vehicle has been settled in step 112.

TORQUE SPECIFICATIONS LIST

- Cognito Driver Differential Mount to Front Differential
  - 50 ft-lbs
- Cognito Rear Crossmember Upper Bolts (Factory Bolts)
  - 130 ft-lbs
- Cognito Sub-Frame Connectors Clocking Bolt
  - 12 ft-lbs
- Front Differential Yoke and Driveline
  - 20 ft-lbs
- Cognito Non-Torsion Bar Bracket and Mandrel
  - 80 ft-lbs
- Cognito Spindle Upper Ball Joint Nut
  - 50 ft-lbs
- Cognito Spindle Tie Rod Nut
  - 40 ft-lbs
- Cognito Compression Struts to Bracket and Rear Crossmember
  - 60 ft-lbs
- Cognito Torsion Bar Drop Bracket to Factory Torsion Bar Crossmember
  - 70 ft-lbs
- Factory Axle Nut
  - 175 ft-lbs
- Lower Control Arm to Cognito Rear Crossmember
  - 130 ft-lbs
- Cognito Passenger Differential Mount to Front Differential
  - 60 ft-lbs
- Cognito Front Crossmember Upper Bolts (Factory Bolts)
  - 130 ft-lbs
- Cognito Passenger Differential Mount to Cognito Rear Crossmember
  - 70 ft-lbs
- Cognito Skid Plate
  - 20 ft-lbs
- Cognito Rear Crossmember Bump Stops
  - 20 ft-lbs
- Cognito Spindle Lower Ball Joint nut
  - 90 ft-lbs
- Cognito Compression Strut Bracket
  - 40 ft-lbs
- Cognito Torsion Bar Drop Brackets to Factory Frame
  - 70 ft-lbs
- Upper Control Arm to Factory Frame Mount
  - 140 ft-lbs
- Wheel Speed Sensor Mounting Bolt
  - 13 ft-lbs

Figure 72: Lower Control Arm Bolts that do NOT get torqued at this step



111. Locate **110-70129** and install the Cognito rear brake lines included with the kit at this time.

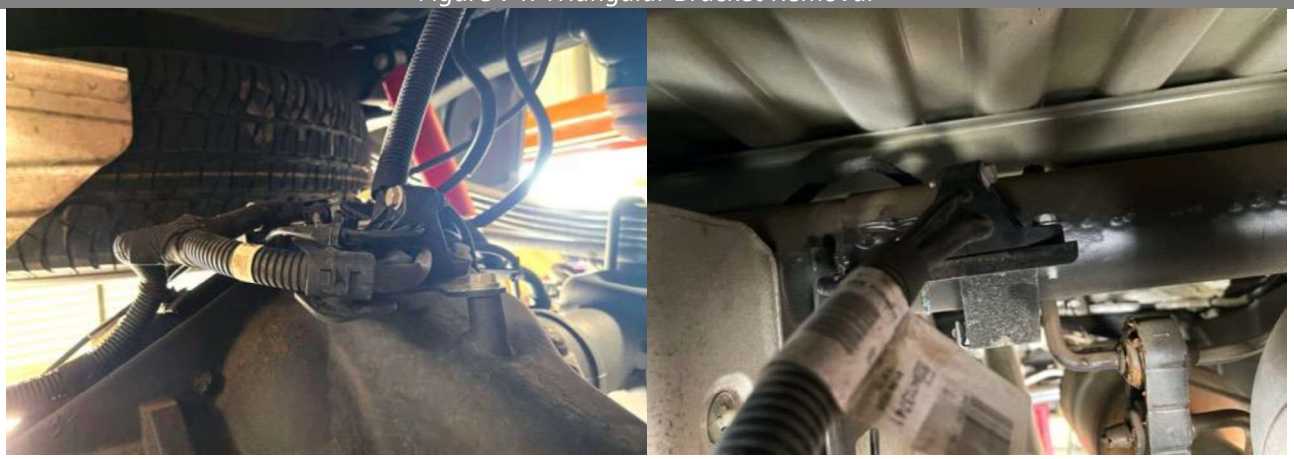
112. The rear emergency brake harness is held by two triangular plastic brackets (see Figure 73).

Figure 73: Triangular Plastic Bracket for Rear Brake Harness



113. Remove these two triangular brackets from the bracket mounted to the top of the rear differential, and from the bracket under the body of the truck (see Figure 74). This will prevent tension on the emergency brake harness.

Figure 74: Triangular Bracket Removal



114. It is recommended that a 5” lift in the rear is used for this Cognito 7” front lift kit and a 6” lift in the rear is used for the Cognito 9” front lift kit. If you have purchased a Cognito rear lift system, refer to the instructions and install the kit and the rear shocks now.

Note: If your kit included a set of Deaver Leaf Springs, remove the OEM leaf springs, and install the Deaver Leaf Springs at this time. Be sure to support the rear axle while removing the OEM leaf springs.

115. Install the front wheels according to factory specifications.

Note: The stock wheels will no longer fit while using this kit. The tie rods will press into the side wall of the tires and the rim of the wheel if you attempt to use them.

116. Before setting the truck back on the ground, while the tires are still at full droop, measure from top of tire to fender well (see Figure 75). Write the measurement here:

Droop Measurement; Driver side_____, Passenger side_____.

These should be within 1/4” of one another.

Figure 75: Full Droop Measurements



117. Set the vehicle on the ground and drive the vehicle backward at least 10 feet, and then forward at least 10 feet to allow the suspension to settle into place at ride height. Measure from top of tire to fender well and write the measurement here:

Ride Height Measurement; Left side_____, Right side_____.

Subtract the measurement from the measurements above and write them here:

Droop Travel Measurement; Left side_____, Right side_____.

118. The difference should be 3” minimum for proper amount of droop travel to provide good ride quality and longevity of suspension components. On the ground, you may back out the adjuster bolt to lower the vehicle to the desired ride height and to level the vehicle side to side. If you do, repeat step 77 until you reach proper ride height on both sides of vehicle. If the ride height is too low and you have more than 3” of Droop Travel Measurement, then you may lift the truck back up by the frame and turn in the torsion bar adjuster bolts to preload the torsion bars more, then repeat steps above.

119. Torque the Lower Control Arm Hardware to 130 ft-lbs after achieving 3” of minimum droop travel on both sides.

120. Do not set the ride height too high for the given application, adverse effects will occur.

121. Raising the height of the vehicle results in higher tie rod angles which will cause premature wear of the pitman and idler arms; therefore, it is recommended to also install the Cognito Motorsports Pitman and Idler Arm Support System.

122. Have a second person cycle the steering full right and left while you double check that the brake lines and sensor wires are not stretched or pinched and are properly tied out of the way. Also check the tire clearance through the steering motion at this time. Trimming of the fender well might be necessary.

123. The front differential pinion angle is changed on 4WD models, check your service manual, and add an extra 1/4 quart of gear oil to the front differential to ensure proper fluid level.

124. The rear differential pinon angle may also be changed if an axle shim or tapered lift blocks were used. Check your service manual and add an extra 1/2 quart of gear oil to the rear differential to ensure proper fluid level.

125. Re-adjust the headlights according to the owner's manual and state laws.

126. Have the front end professionally aligned to factory specifications.

127. The vehicle will handle differently due to increased ride height, please take time to re-familiarize yourself with the handling characteristics of your modified vehicle.

WARRANTY / RETURN POLICY / SAFETY

Cognito Limited Lifetime Warranty

Cognito Motorsports, Inc. hereinafter "Cognito," warrants to the original retail purchaser, that its suspension products are free from workmanship and material defects for as long as the purchaser owns the vehicle on which the product(s) were originally installed. This warranty will be void if any modifications are made to the components, including alterations to the surface finish, i.e.; painting, powder coating, plating, and/or welding, or if they are improperly installed. Cognito truck suspension products are not designed nor intended to be installed on "competition" vehicles used in race applications, stunt or for exhibition purposes that are outside of the intended operating conditions specified by the manufacturer. Racing and competition are defined as any contests between two or more vehicles; or vehicles competing individually on off road circuits in timed events (whether or not such contests are for an award or prize).

This warranty does not include coverage for police, taxi, government or commercial vehicles, and the warranty does not cover Cognito products sold outside of the USA. Cognito's obligations under this warranty are specified and applied at its sole discretion, and warranty coverage is limited to repair or replacement of the defective product(s). Any and all costs of removal, installation or reinstallation; freight charges, incidental or consequential damages associated with the covered products are expressly excluded from this warranty.

The following items are exempt from Cognito limited warranty coverage: bushings, bump stops, tie-rod ends (Heim joints) and limiting straps. These parts are "consumables" and designed to wear as a normal part of their duty cycle, therefore they are not considered defective when worn. The aforementioned products are warrantied separately against defects in workmanship, for 60 days from the date of purchase. As a condition of warranty validation, respective Cognito suspension components must be installed as a complete system (not combined with non-Cognito hardware or ancillary parts). Any substitutions or omission of required components will void the warranty. Some minor cosmetic wear and imperfections may occur to parts during shipping, which is not covered under this warranty. This limited warranty does not apply to any components that have been subjected to collision damage, negligence, alteration, abuse, or misuse, and coverage does not extend to products manufactured by third-party companies. Cognito reserves the right to supersede, discontinue, or change the design, finish, part number and/or application of its parts when deemed necessary, without notice.

Return Policy

Product returns will not be accepted without prior written approval from an authorized Cognito representative. All products being returned must be shipped via trackable, prepaid freight. Returned products are subject to a 25% percent restocking fee. The eligible return period for products purchased directly from Cognito is 30 days from the verified date when the product(s) were originally received by the purchaser.

Product Safety Advisory

The installation of Cognito steering and suspension components will modify your vehicle's original factory equipment and geometry, which may cause it to handle differently than a stock (unaltered) vehicle. Installation of these components is not intended to strengthen nor reinforce the vehicle's frame, nor are they designed to increase rollover protection. It is necessary to periodically inspect all suspension and drive train components for proper attachment, torque specifications, operation, and for any potential unusual wear or damage. Installation of these parts will modify the height of the vehicle and may raise the center of gravity. Modifying vehicle height combined with off road operation may increase your vehicle's susceptibility to rollover conditions, which may cause serious injury or death. Many states regulate allowable vehicle height modifications, and it is your responsibility to know and comply with the legal requirements specified by the laws where you reside. Modifications to your vehicle's ride height may also affect the ride quality, driver input response, trackability and handling, and wear to your vehicle's suspension components and tires.