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INSTALL SUMMARY SHEET:
Cognito 4” Front Suspension Lift Kit for 2020 GM 2WD/4WD 2500/3500 Trucks

PARTS LIST FOR SKU: 110-70120

QUANTITY	PART #	DESCRIPTION
1	8687	Front Crossmember
1	8688	Rear Crossmember
1	1545	Clip Nut Bar for Front Crossmember

PARTS LIST FOR SKU: 110-70121

QUANTITY	PART #	DESCRIPTION
1	8691	Spindle, Driver
1	8692	Spindle, Passenger

PARTS LIST FOR SKU: 110-70122

QUANTITY	PART #	DESCRIPTION
1	1527	Skid Plate
2	6773	Sway Bar Endlink
1	8695	NTBD Bracket, Driver
1	8696	NTBD Bracket, Passenger
1	8697	NTBD Frame Bump, Driver
1	8698	NTBD Frame Bump, Passenger
2	8715	Rear Bumpstop Spacer
1	**91067**	Misc. Parts Box

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. Failure to properly follow these instructions can also lead to severe frame, suspension, tire, or other vehicle component damage.

PARTS LIST FOR SKU: 91067

QUANTITY	PART #	DESCRIPTION
1	2791	Rear Brake Line Drop Bracket
1	2796LEFT	Front Brake Line Drop Bracket, Driver
1	2796RIGHT	Front Brake Line Drop Bracket, Passenger
2	2806	Retainer Bracket, Keyway Adjuster
2	5501	Mandrel Lower Control Arm
1	**HP9117**	Hardware Pack Subframe
1	**HP9279**	Hardware Pack NTBD
1	**HP9280**	Hardware Pack Brake Line Drop & Spindle

PARTS LIST FOR SKU: HP9117

QUANTITY	PART #	DESCRIPTION
8	HARDWARE-M18-FLATWASHER	M18 Flat Washer
4	HARDWARE-M18X2.5-LOCKNUT	M18-2.5 Lock Nut
2	HARDWARE-M18X2.5X120	M18-2.5 x 120mm Bolt
2	HARDWARE-M18X2.5X140	M18-2.5 x 140mm Bolt
9	HARDWARE-15107	3/8" – 16 x 1-1/4" Bolt
15	HARDWARE-33082	3/8" Flat Washer
6	HARDWARE-37264	3/8-16 Lock Nut
3	HARDWARE-33622	3/8 Lock Washer
3	HARDWARE-CLIP-NUT-3/8-16	3/8"-16 Clip-On Nut

PARTS LIST FOR SKU: HP9279

QUANTITY	PART #	DESCRIPTION
1	2807	3/8" Rivet Install Tool
2	POLY-BUMPSTOP-M22978-BK-01	Poly Bump Stop
1	**HP9279-1**	Sub-Hardware Pack NTBD

PARTS LIST FOR SKU: HP9279-1

QUANTITY	PART #	DESCRIPTION
4	HARDWARE-RIVET-NUT-3/8-16	3/8”-16 Rivet Nut
4	HARDWARE-15107	3/8”-16 x 1-1/4” Bolt
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” Bolt
8	HARDWARE-33086	1/2” Flat Washer
4	HARDWARE-37268	1/2"-13 Lock Nut
2	HARDWARE-15210	1/2"-13 x 1-3/4” Bolt
2	HARDWARE-36106	3/8-16 Lock Nut
4	HARDWARE-32468	3/8”-16 x 1” Self-tapping Screw

PARTS LIST FOR SKU: HP9280

QUANTITY	PART #	DESCRIPTION
2	HARDWARE-15055	5/16”-18 x 1” Bolt
4	HARDWARE-33080	5/16” Flat Washer
2	HARDWARE-37262	5/16-18 Lock Nut
4	HARDWARE-M6-1.0X25-FB	M6-1.0 x 25mm Bolt
4	HARDWARE-M6-1.0X25-FB	M6-1.0 Lock Nut
10	HARDWARE-63124	6” Black Cable Tie

PARTS LIST FOR SKU: 110-70123

QUANTITY	PART #	DESCRIPTION
1	2772	Differential Drop Bracket, Driver
1	2773	Differential Drop Bracket, Passenger
1	**HP9287**	Hardware Pack 4WD Differential Mount
1	HARDWARE-M12X1.75X50	M12-1.75 x 50mm Bolt
1	8241	Spacer, 1.5” x 0.65” x 0.625”

PARTS LIST FOR SKU: HP9287

QUANTITY	PART #	DESCRIPTION
3	HARDWARE-M12X1.75X30	M12-1.75 x 30mm Bolt
3	HARDWARE-M12-FLATWASHER	M12 Flat Washer
3	HARDWARE-M12-FLATWASHER	M12 Lock Washer
2	HARDWARE-15260	9/16”-12 x 1-3/4” Bolt
4	HARDWARE-33088	9/16” Flat Washer
2	HARDWARE-37270	9/16”-12 Lock Nut
3	HARDWARE-15217	1/2”-13 x 3-1/2” Bolt
6	HARDWARE-33086	1/2" Flat Washer
3	HARDWARE-37268	1/2"-13 Lock Nut

REQUIREMENTS

- Always wear safety glasses when using power tools.
- When a lift is required to perform the installation of these products and always ensure the vehicle is properly supported before attempting installation or serious injury may occur.
- 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.
- Follow alignment specs at the end of this instruction set.

TECH NOTES

- Installation requires a qualified mechanic.
- 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.
- Use extreme caution when cutting is required under the vehicle. Be careful of all fuel lines, fuel tanks, brake lines, and electrical harnesses.
- It is recommended that all cut areas be smoothed to get rid of any sharp edges and spray painted to prevent corrosion.
- Front-end alignment will be necessary after completion.
- If this kit is being installed on a 2WD truck, there will be unused components.

TOOLS YOU WILL NEED

- Drill
- Reciprocating saw or cutoff wheel
- Metal Sanding Tools (Sanding/grinding disk)
- Hammer
- Measuring Tape
- Proper Vehicle Lifting Equipment
- Torsion Bar Unloading Tool
- Torque Wrench

Wrenches & Sockets

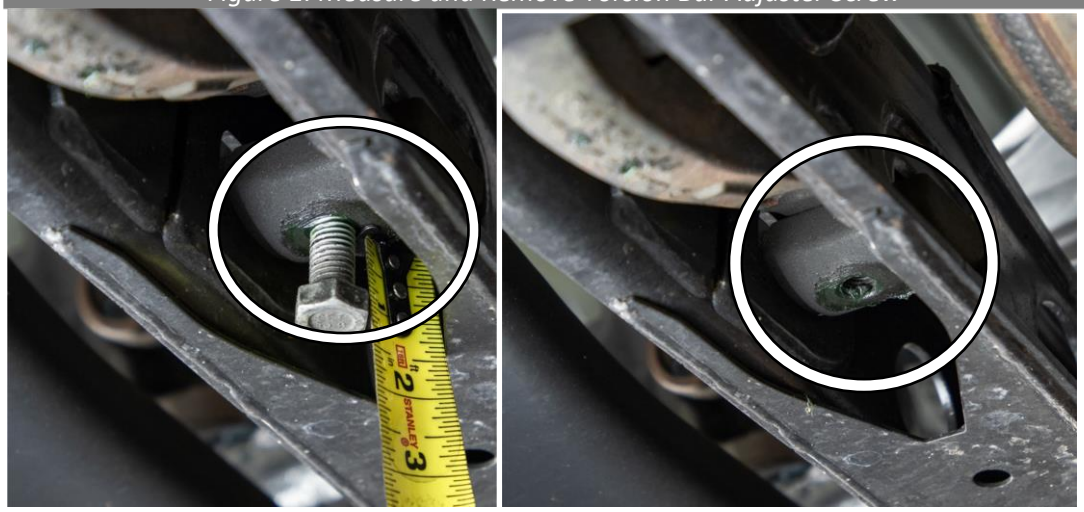
- 6-mm Allen wrench
- 10-mm
- 11-mm
- 13-mm
- 15-mm
- 18-mm
- 19-mm
- 21-mm
- 22-mm
- 24-mm
- 36-mm
- 11/32”
- 3/4"
- 9/16”
- 13/16”
- 7/8”

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.

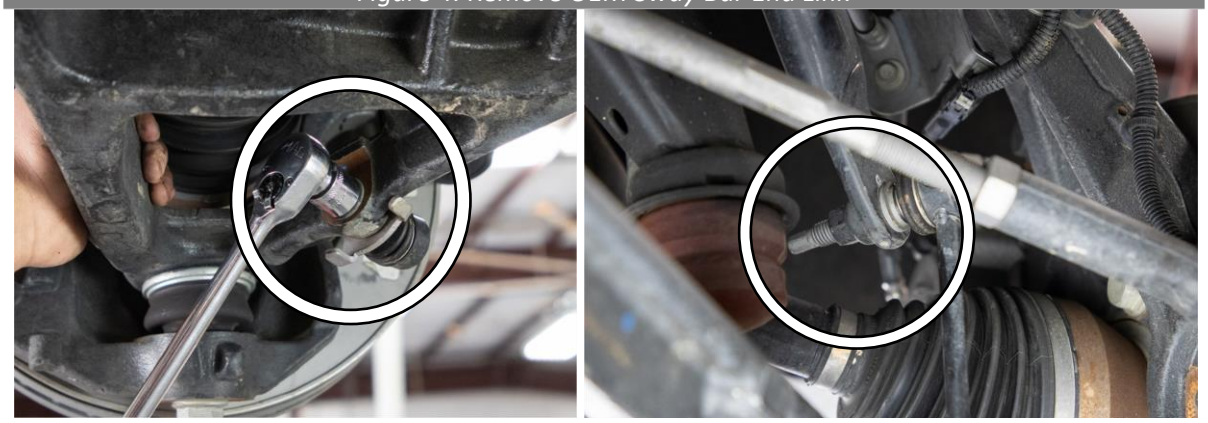
Figure 2: Load Torsion Bar

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).

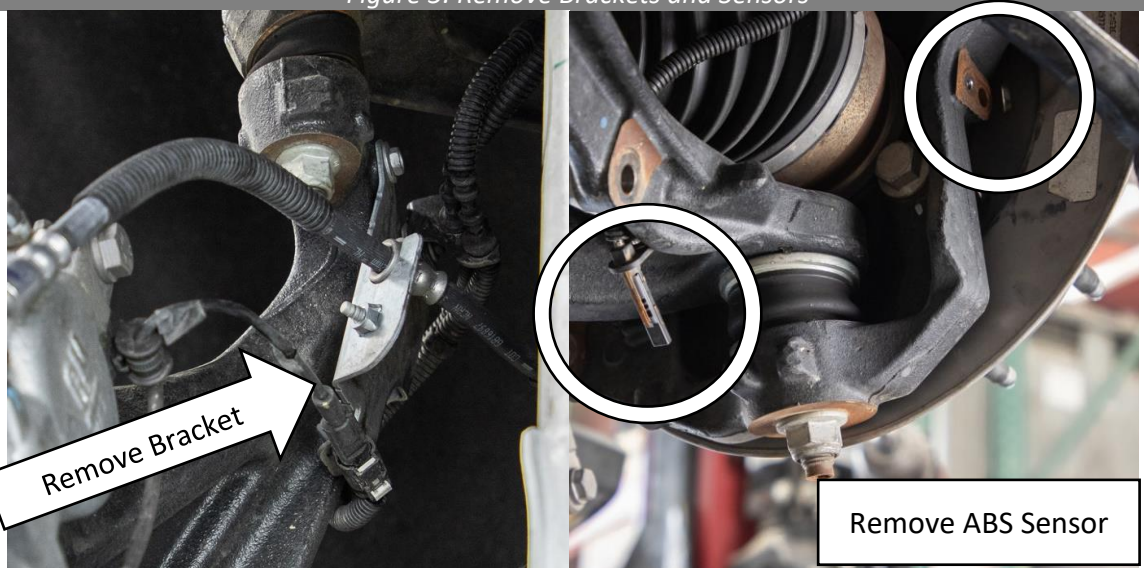
Figure 4: Remove OEM Sway Bar End Link



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

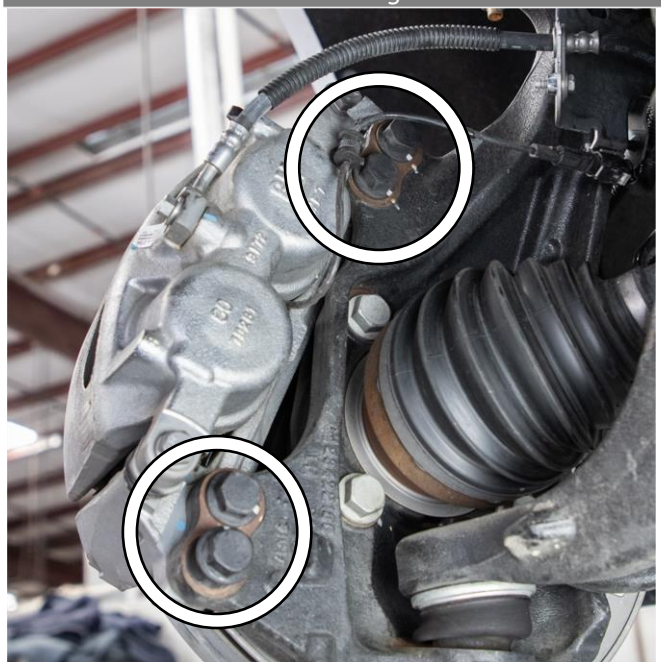
7. Unbolt the brake line bracket from the spindle and unfasten the ABS sensor line located just under the steering tie rod end using a 10mm socket. (See Figure 5). Remove the wires from the bracket. The bracket will not be used for reinstallation so it may be discarded.

Figure 5: Remove Brackets and Sensors



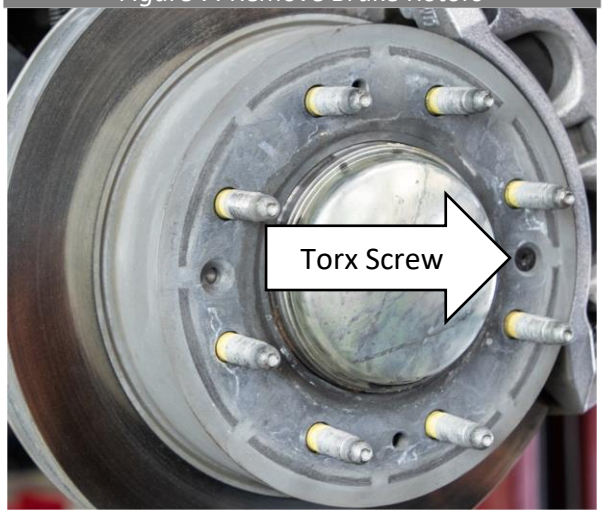
8. Remove the 4 large bolts holding the caliper to the spindle using a 21mm socket and hang the caliper out of the way so that the brake lines and sensor wires are not stressed (See Figure 6).

Figure 6: Remove and Hang Calipers



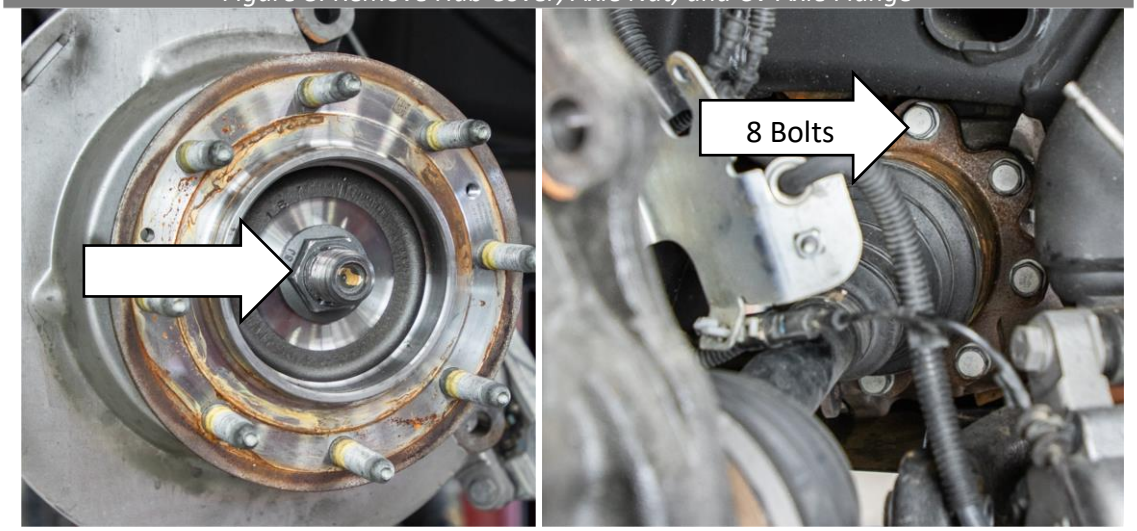
9. Now remove the brake rotors by first removing the flat head T30 torx screw (See Figure 7).

Figure 7: Remove Brake Rotors



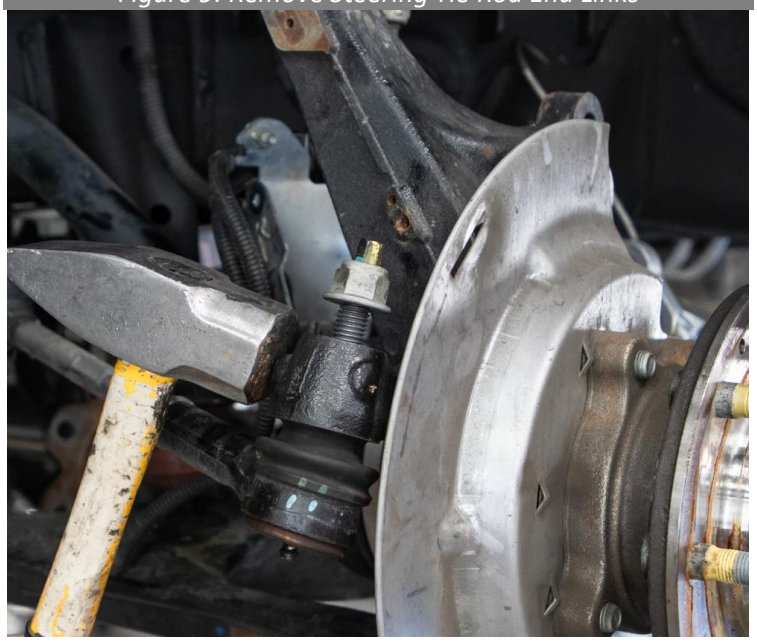
10. **<u>Skip this step for 2WD vehicles</u>**. Remove the hub cover and the axle nut and washer with a 36mm socket. Unbolt the inner cv axle flange from differential with a 18mm socket and save all hardware (See Figure 8).

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

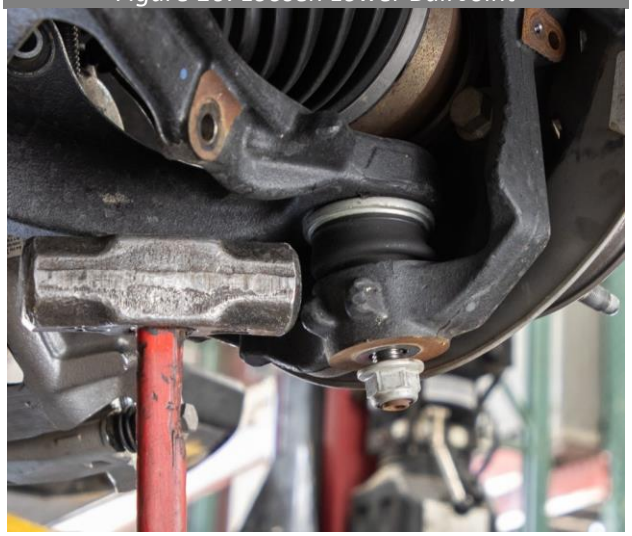
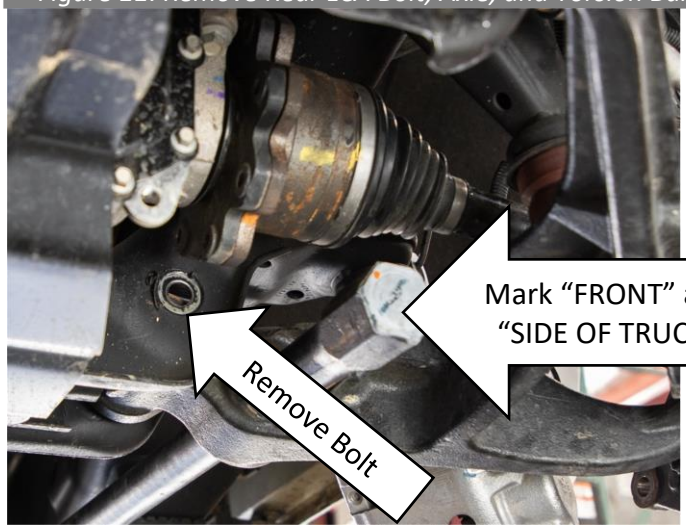


Figure 11: Remove Rear LCA Bolt, Axle, and Torsion Bar



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).

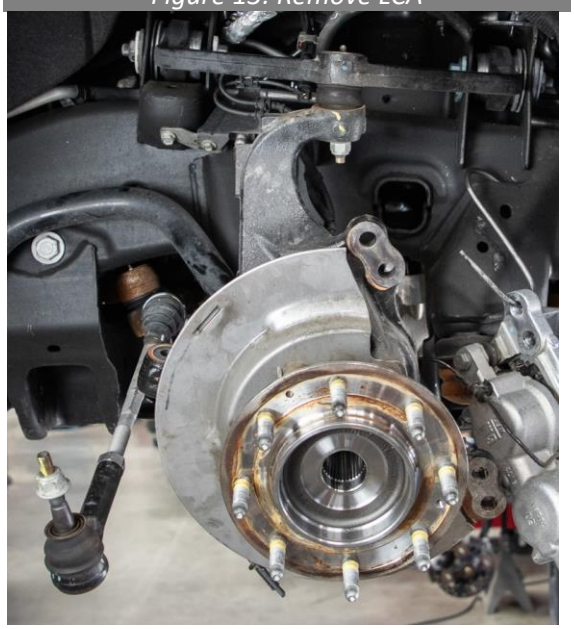
14. You can now remove the torsion bar but make sure to mark them in their correct orientation and vehicle side they were removed from (See Figure 11).

15. 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

16. 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



17. 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 Seat

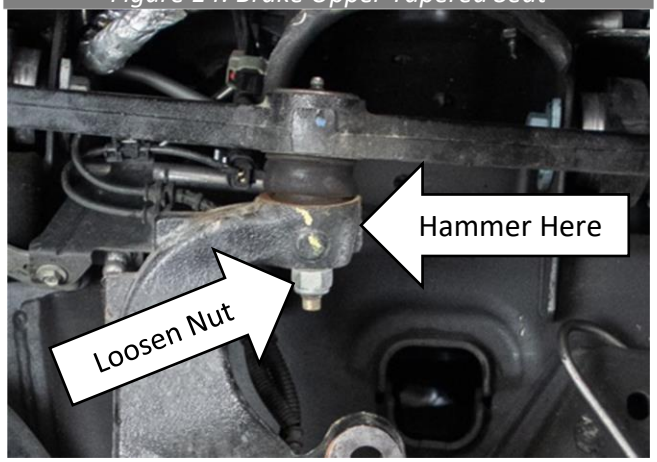
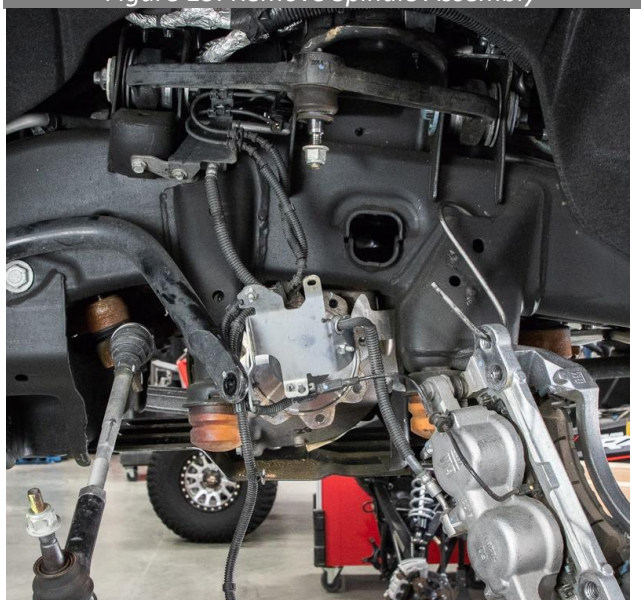
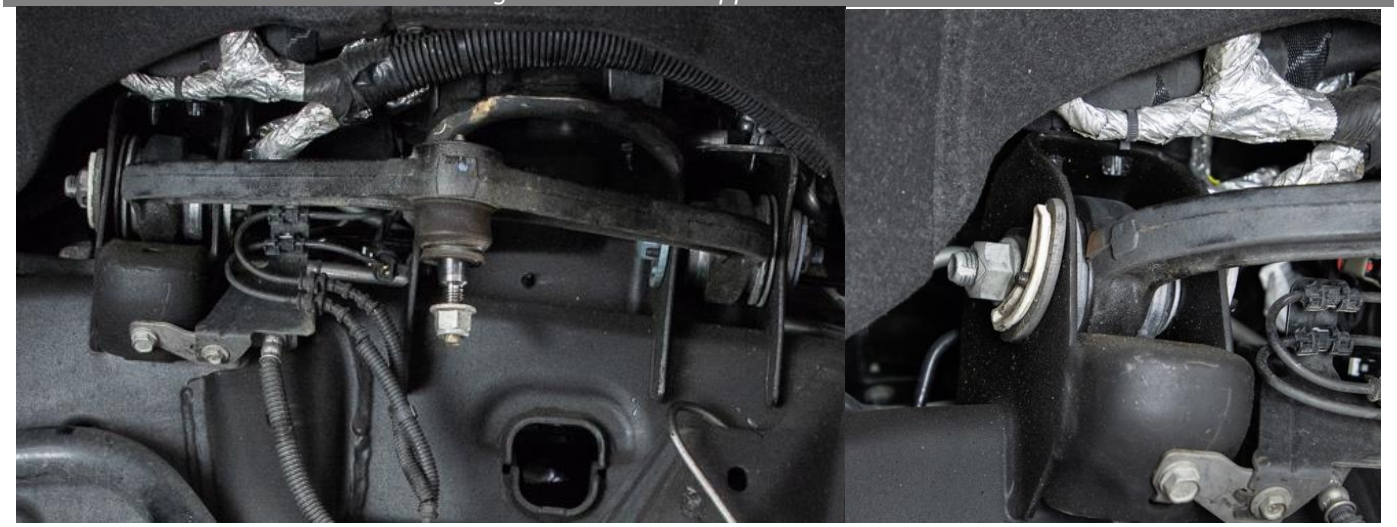


Figure 15: Remove Spindle Assembly



18. 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



19. **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).

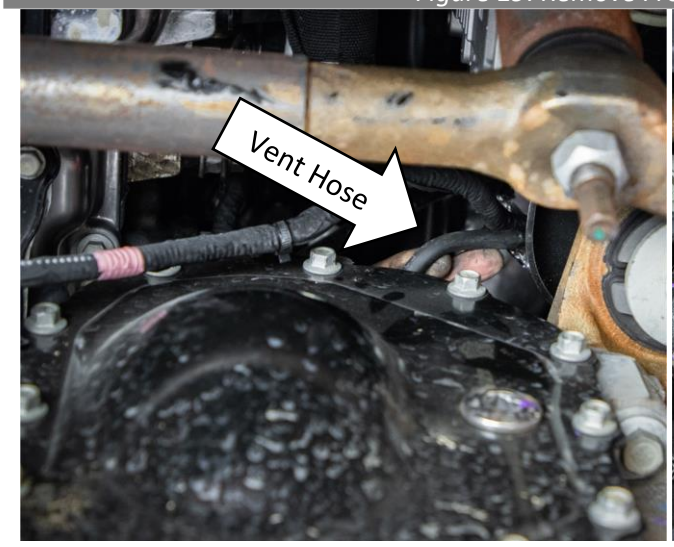
Figure 17: Remove Skid Plate

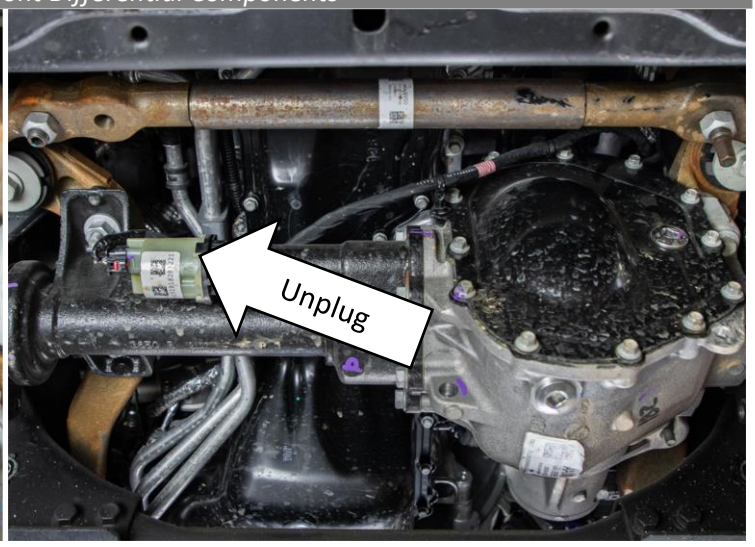
20. Remove the black plastic air shroud from underneath the radiator with a 15mm wrench. This will be re-installed so keep the shroud and hardware (See Figure 18).

Figure 18: Remove Plastic Air Shroud

21. **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).

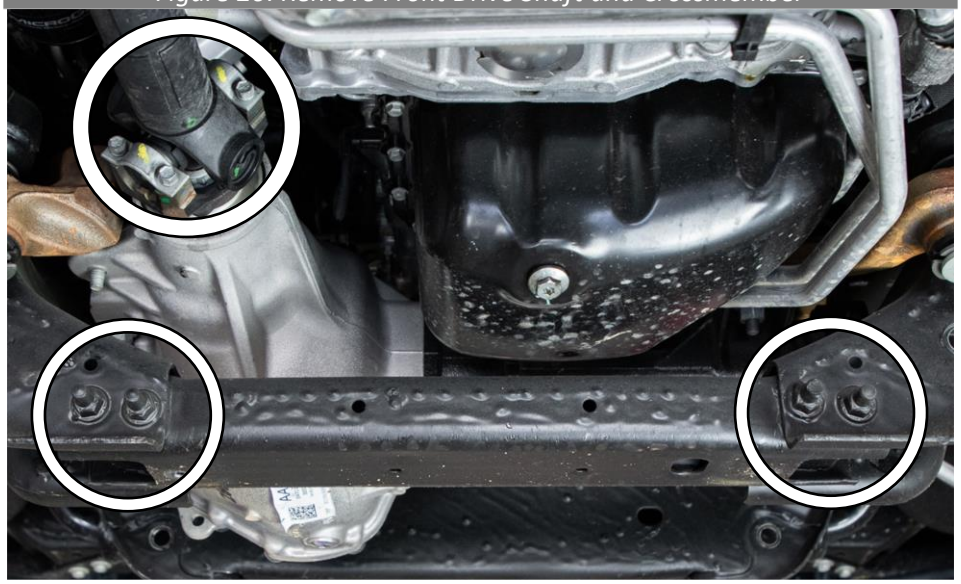
Figure 19: Remove Front Differential Components





22. Unbolt the front drive shaft from the differential yolk using a 11mm wrench (See Figure 20).

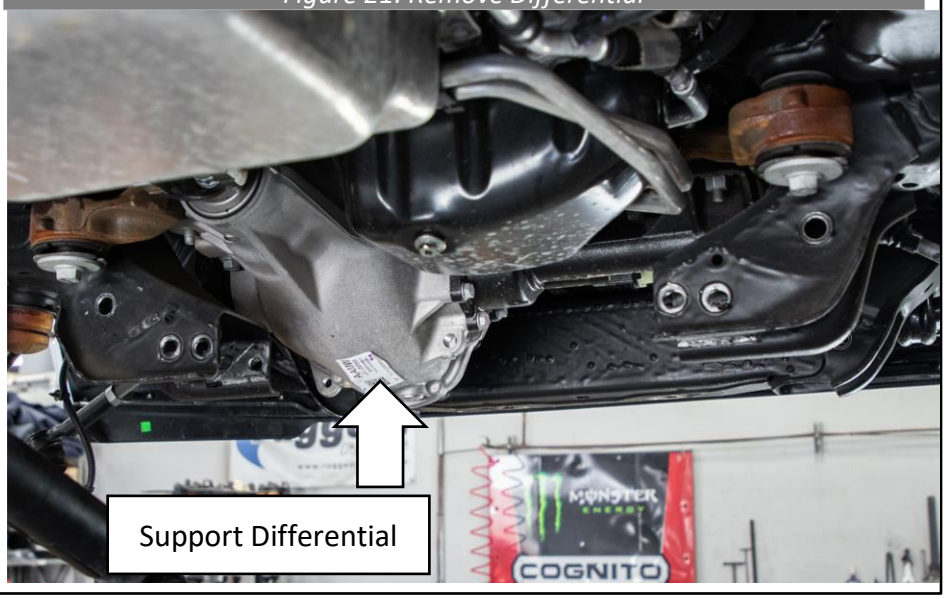
Figure 20: Remove Front Drive Shaft and Crossmember



23. 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).

24. **<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).

Figure 21: Remove Differential



25. **<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

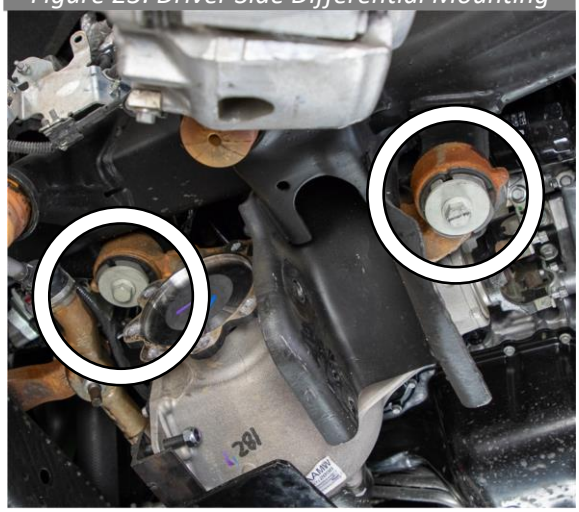
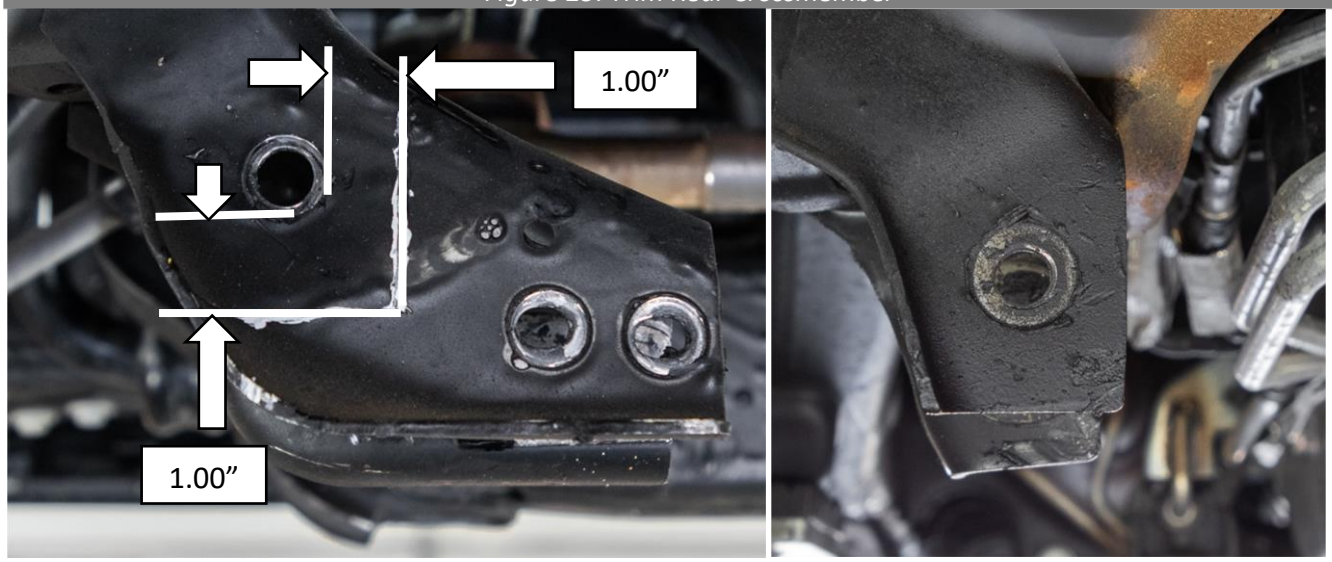


Figure 24: Lower Differential from Vehicle

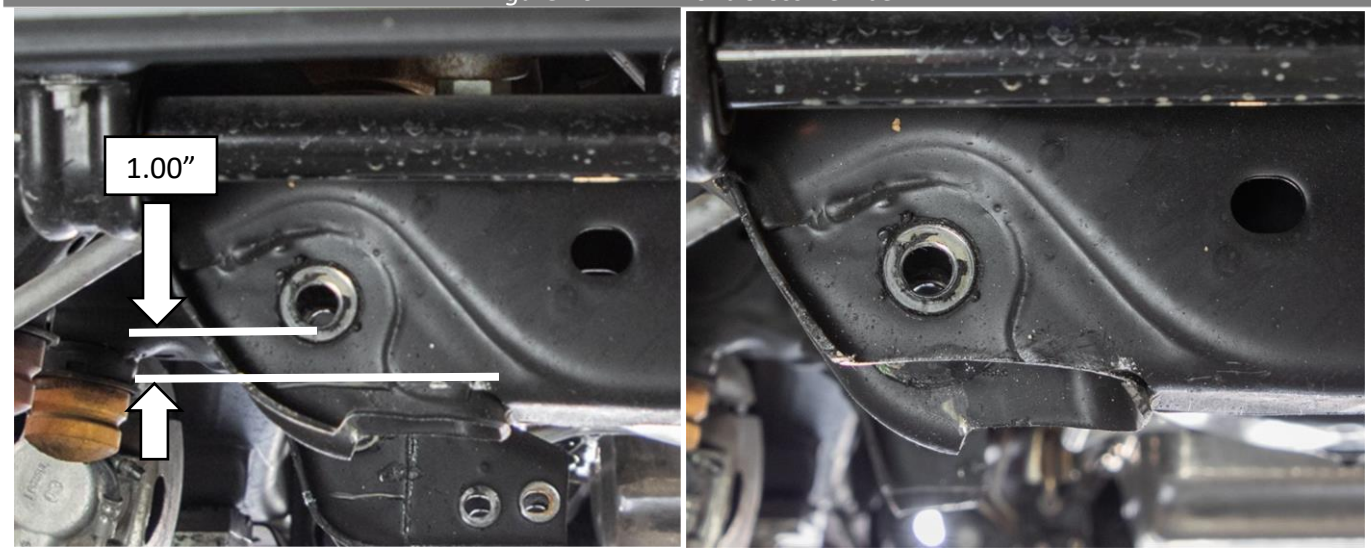
26. Now using a reciprocating saw, cut the lower control arm rear frame pocket. Cut the front and rear flange off on each side from mounting hole edge, horizontal line 1” down and vertical line 1” to the inside of truck (Study Figure 25).

Figure 25: Trim Rear Crossmember



27. Move to the front lower control arm frame pocket and make a cut on the front most flange only – do this to both sides of the vechicle. From mounting hole edge, horizontal line 1.00” down (Study Figure 26).

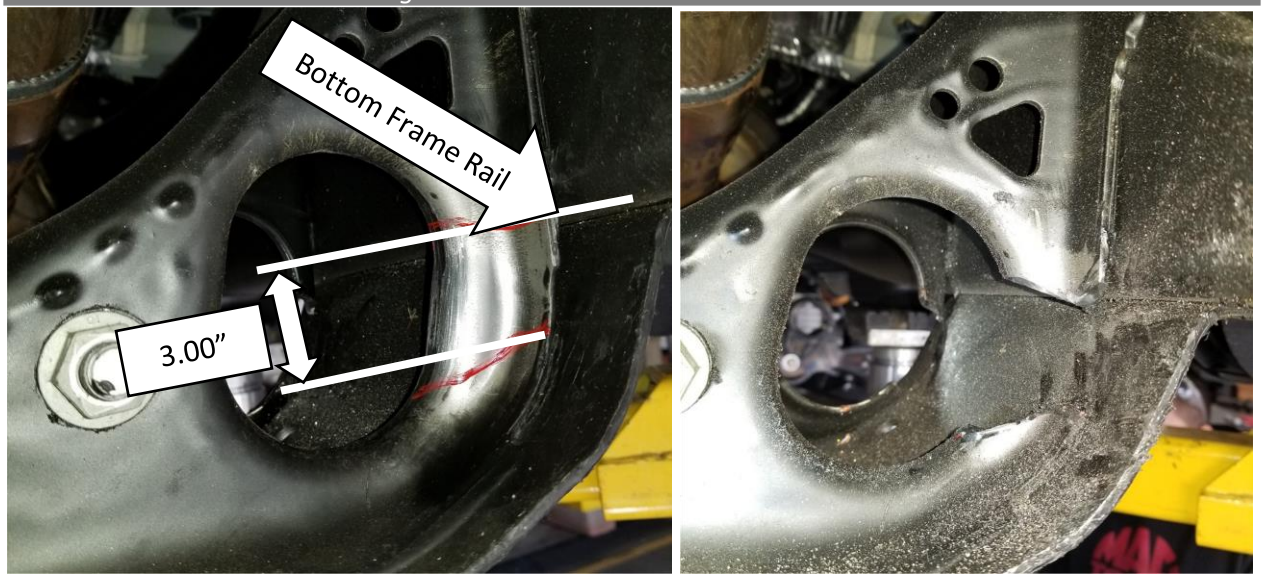
Figure 26: Trim Front Crossmember



28. 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



29. This step will begin the installation process. **Do not tighten any fasteners until instructed to.** 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.

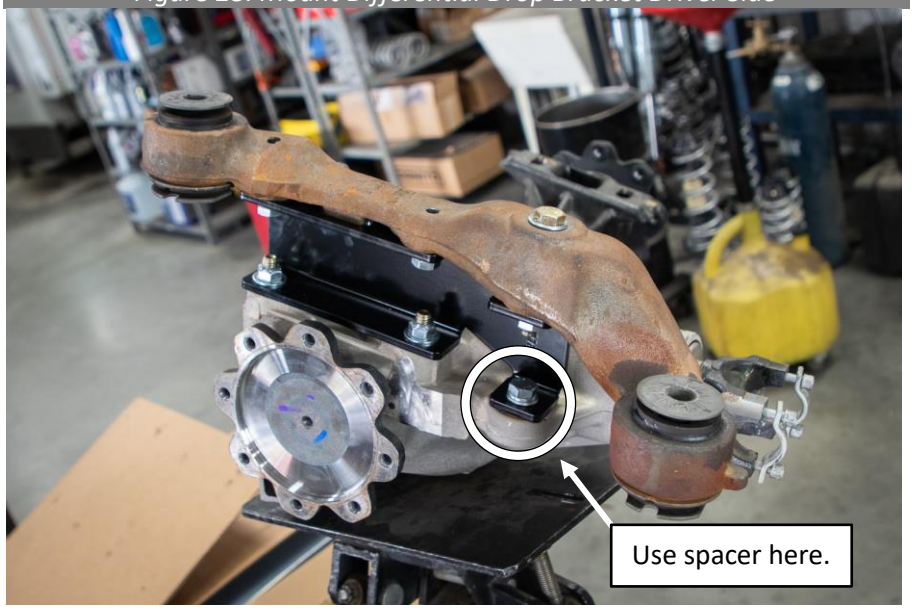
30. If you purchased the Cognito Motorsports Pitman and Idler arm support kit, this is the time to install it. Locate and follow the installation instructions associated with it, but at the end do not re-install the steel skid plate under the differential if it is 4WD. It is not used on this 4" suspension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

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

32. **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 **2772** Cognito driver differential mount to the differential and then the stock mount to the Cognito mount, using Hardware package **9287** and a 3/4" and 19mm wrench. Place spacer **8241** between **2772** and differential. Use **HARDWARE-M12X1.75X50** with spacer. Torque bolts to 50 ft-lbs. (See Figure 28). 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 28: Mount Differential Drop Bracket Driver Side



33. **Skip this step for 2WD vehicle.** Bolt **2773** Cognito passenger differential mount onto the front differential in the orientation shown in figure 29 with the 9/16" hardware from hardware package **9287** 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 29). On some trucks it might be necessary to slightly grind on the OEM slotted hole.

Figure 29: Mount Differential Drop Bracket Passenger Side

34. **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 30). reconnect the rubber vent and the wiring harness removed in step 21. Bolt the driveline back to the front differential yolk using factory torque spec 18 ft-lb.

Figure 30: Reinstall Differential

35. The rearmost front foam bump stop and retainer must be cut from the frame (See Figure 31). Do this by cutting the stitch welds and knocking it off the frame, then grind the welds off flush with the frame (See Figure 32). There is a hole left that was concentric with the bump stop retainer (See Figure 32). Drill the hole out using a 17/32 drill bit.

Figure 31: Rearmost Front Bump Stop

Figure 32: Drill Out Hole for Bump Stop

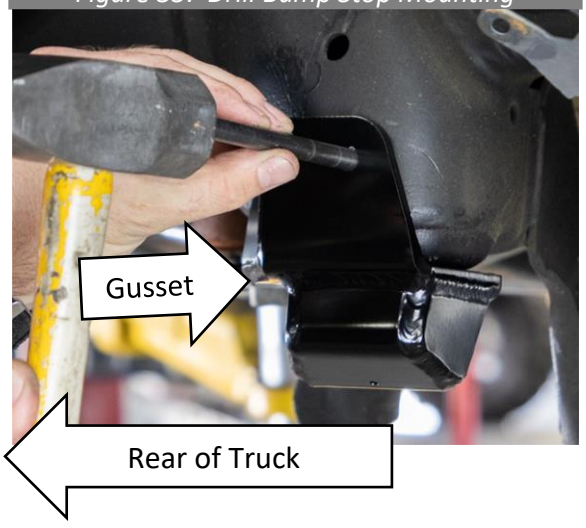
36. Install a rivet nut into the hole shown in Figure 33. Do this by opening hardware package **9279**, obtain a 3/8" bolt, rivet nut and the hex shaped installation tool. Place the tool on the bolt and then thread the rivet nut onto the bolt, flange side first, until it touches the installation tool (See Figure 33). Now 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 an impact driver for this**, only hand tools. When turning the bolt, you will feel it start tight, get loose for a few turns, and then start to get tight again. This means the rivet nut has crushed and is installed. Back out the bolt and retain the installation tool for the next rivet nut installation (See Figure 33).

Figure 33: Install Tool for Rivet Nut

37. The bump stops must be partially installed so they can be used for a drill guide. Mount the Cognito bump stops with the installed rivet nuts with the 3/8 X 1.25 bolt from hardware pack **9279** and tighten it. The bolt can be accessed from the back side of the bump stop with a 9/16” wrench (See Figure 34). Make sure to use **8697** on the driver side and **8698** on the passenger side. The triangular gusset should be towards the rear of the vehicle (See Figure 35). Now use a centering transfer punch to mark the location. Remove the bump stop and drill a 17/32 hole through the frame in the location marked (See Figure 35).

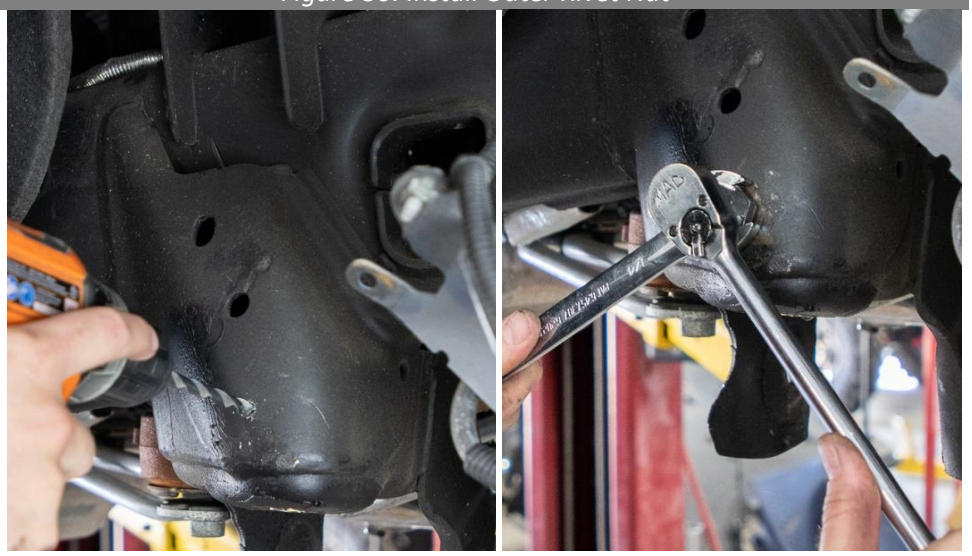
Figure 34: Bump Stop Installed

Figure 35: Drill Bump Stop Mounting



38. Now remove the bump stops, drill the marked location to 17/32”, and install the 3/8 rivet nut into the hole that was just drilled (See Figure 36).

Figure 36: Install Outer Rivet Nut



39. You may now fully install the bump stop. Make sure to use the washers and lock washers provided in hardware pack **9279** (See Figure 37). Torque the 3/8” hardware to 30 ft-lb.

Figure 37: Bump Stop Fully Installed

40. Repeat above steps to install the other side of the vehicle.

41. Bolt the Cognito rear crossmember **8688** 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 and then an additional 60° (See Figure 38).

Figure 38: Install Rear Crossmember

42. From hardware pack **9117**, insert the 3 clip nuts onto the **1545** Cognito clip nut plate. Then insert the plate into the galley of the front cross member to aid in accessibility in installing the **1527** Cognito skid plate (See Figure 39).

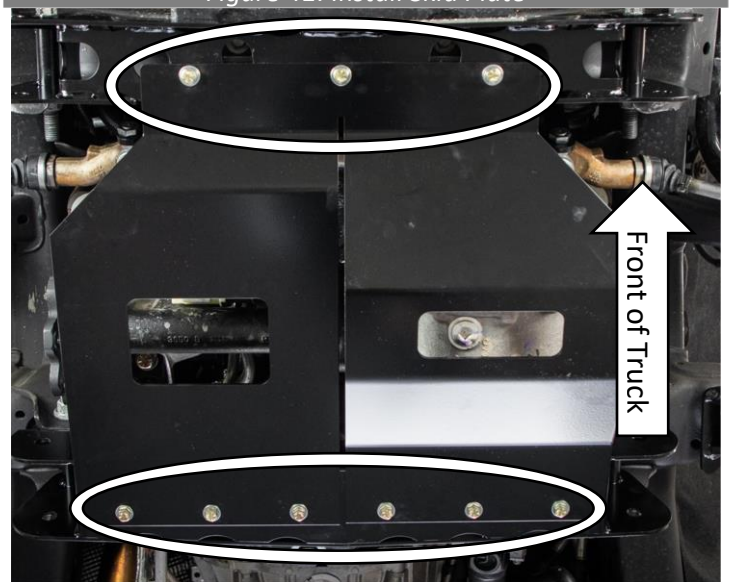
Figure 39: Install Nut Plate

43. After the nut plate is placed inside the front crossmember, make sure the plastic shroud is reinstalled and proceed to install the front crossmember **8687**. Use the factory lower control arm hardware and torque to factory spec of 133 ft-lb and then an additional 60° (See Figure 40).

Figure 40: Install Front Crossmember

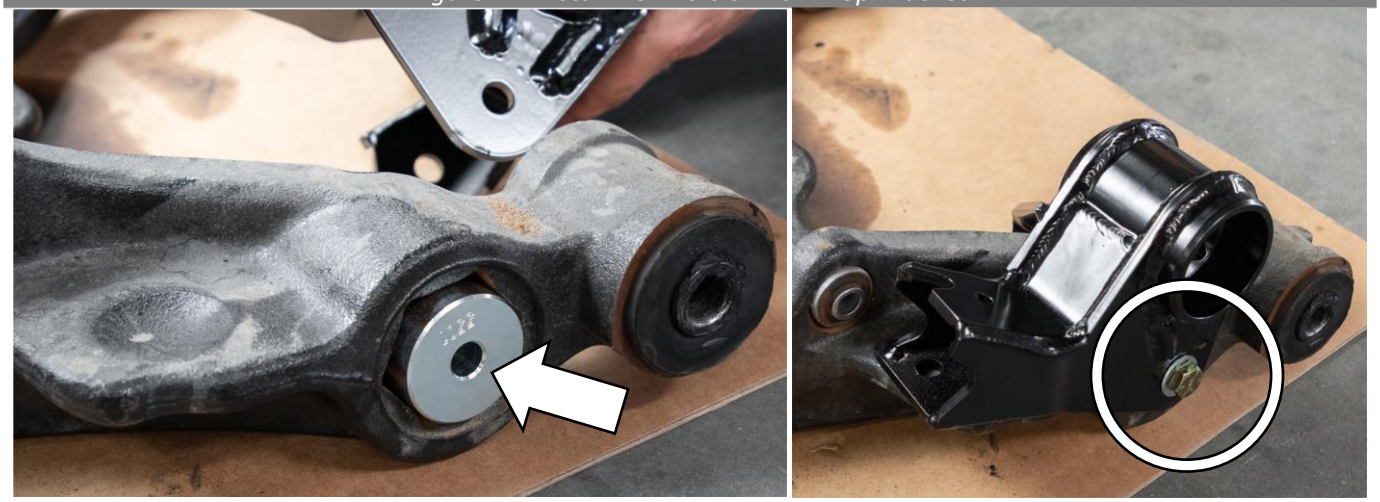
44. From hardware package **9117**, locate the three 3/8" X 1.25" hex bolts, insert a 3/8" flat washer then a 3/8" lock washer onto each bolt, then use them to fasten the front of the skid plate to the bottom of the front cross member, threading the bolts into the clip nuts on the bar on the inside of the front cross member (See Figure 48). Using a support or having a friend hold the skid plate completely flat against the bottom of the front crossmember will make it easiest to install. Then fasten the rear of the skid plate to the rear cross member using the 3/8" X 1.25" hardware, lock nuts, and flat washers (See Figure 41). Tighten all 3/8" hardware at this time to 20 ft-lb.

Figure 41: Install Skid Plate



45. 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 **8695** Cognito driver non torsion bracket 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 42).

Figure 42: Install Non Torsion Bar Drop Bracket



46. Using the hole in the **8695** as a drill template, use a centering transfer punch and drill a 1/2" hole thru the pad on the lower control arm (See Figure 43).

Figure 43: Drill Through OEM Lower Control Arm

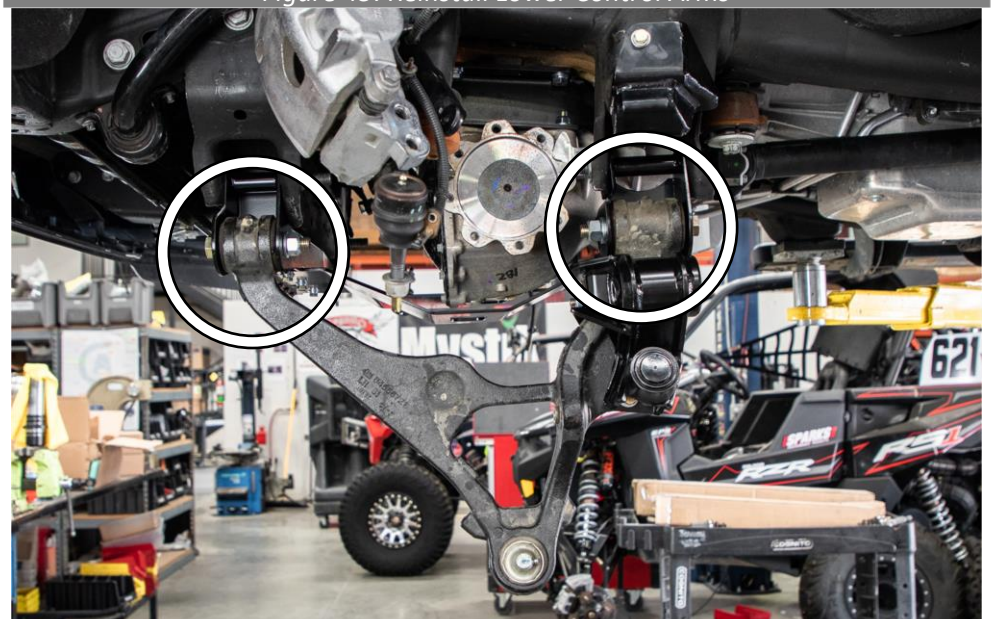
47. Install the 1/2" X 1.75" hardware from package **9279** through the hole that was just drilled and tighten to 80 ft-lb using a 3/4"wrench and socket. Bolt the polyurethane bump stop to the bracket with a 3/8" flat washer, then 3/8" lock washer, then a 3/8" nut from hardware pack **9279.** Tighten until snug and the rubber starts to slightly deform with a 9/16” wrench (See Figure 44).

Figure 44: Install Outer Mounting Bolt and Bump Stop

48. Install the **8696**, Cognito passenger non torsion drop bracket to the passenger lower control arm using the same steps from above.

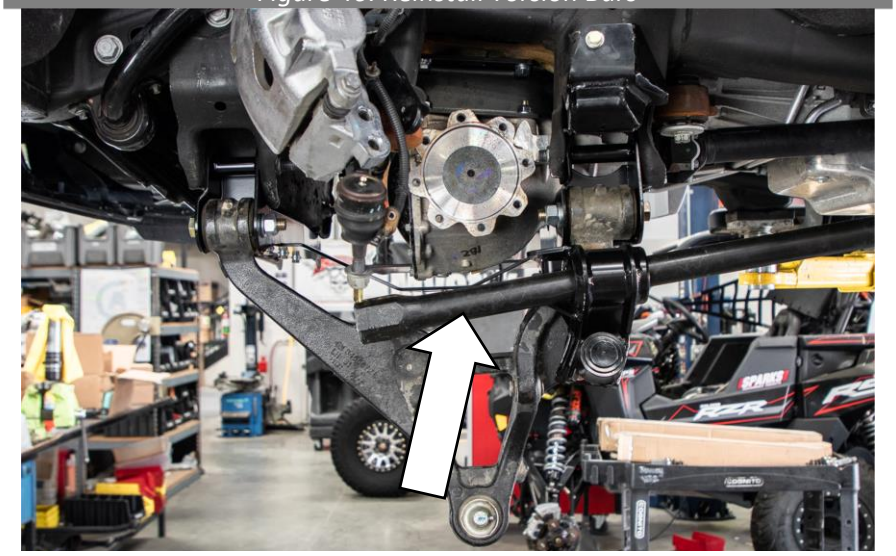
49. Bolt the lower control arms to the Cognito front and rear cross member using the 18mm hardware from hardware package **9117**, run the bolts so that the nuts will be closest to the axle. do not tighten yet, future torque on these will be 200 ft-lb (See Figure 45).

Figure 45: Reinstall Lower Control Arms



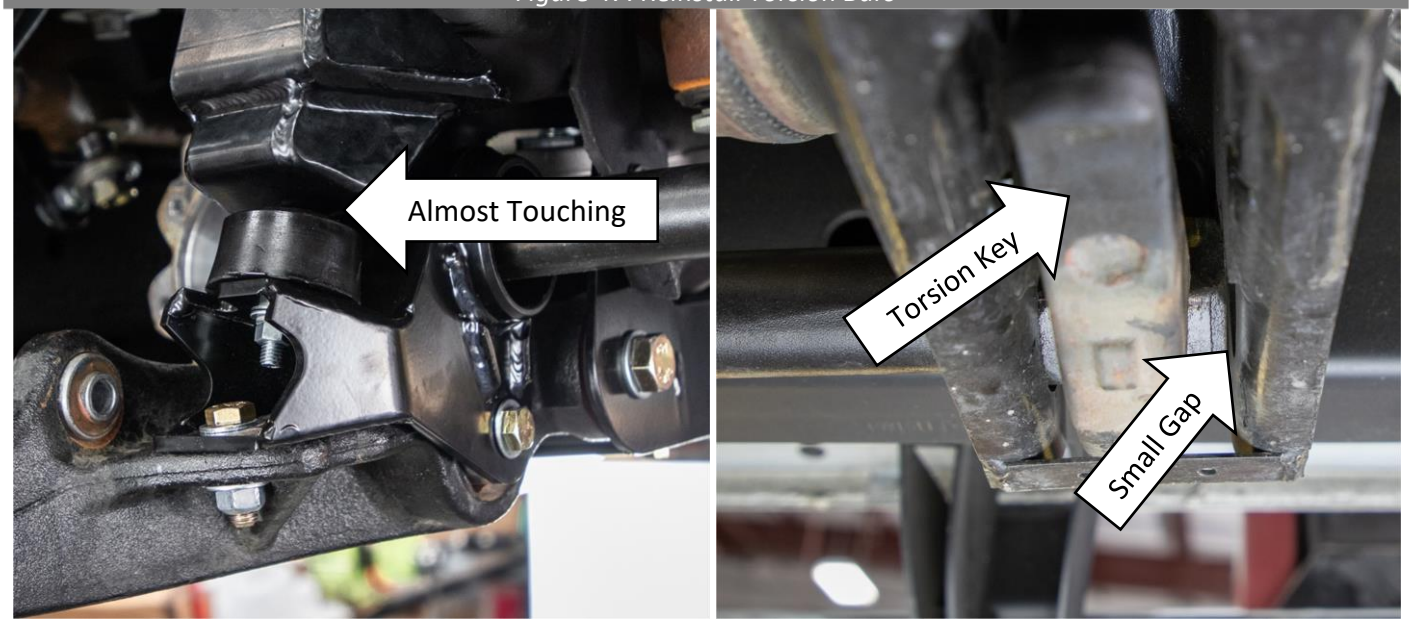
50. Slide the torsion bars into the hex holes of the Cognito brackets. Make sure to install the torsion bar on the same side of the truck and in the same orientation as it was removed (See Figure 46).

Figure 46: Reinstall Torsion Bars



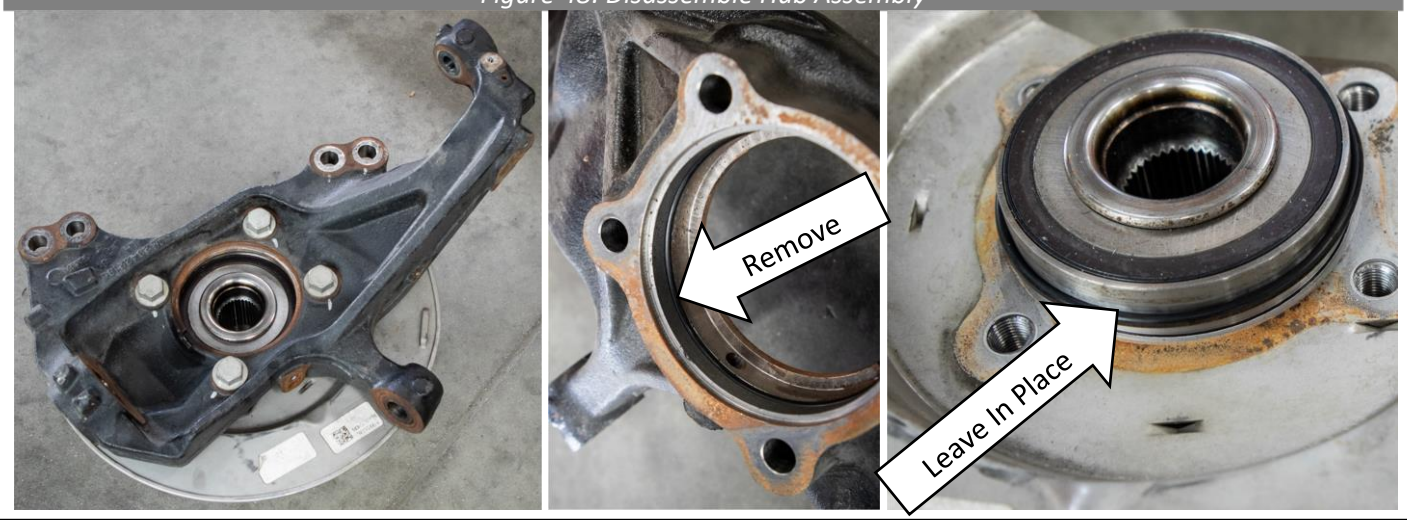
51. Use a jack to lift the suspension all the way up until the polyurethane bump stop almost contacts the Cognito frame bump. **Do not lift any higher than this because you could start lifting the truck and it could shift on the vehicle hoist or even fall off**. Now push the torsion bar all the way back 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 47).

Figure 47: Reinstall Torsion Bars



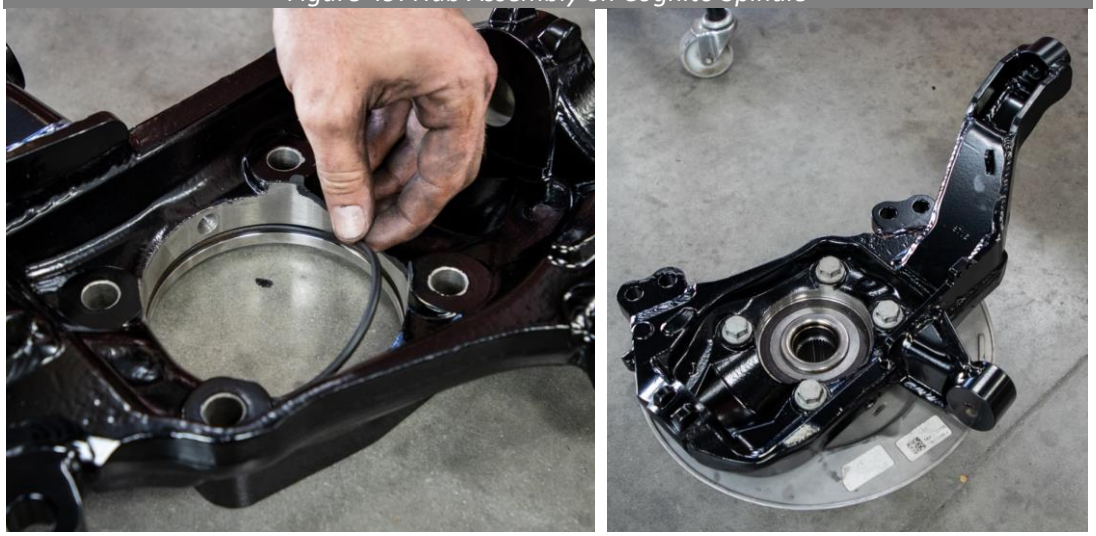
52. Disassemble the bearing hub assembly and brake rotor shield from each of the factory spindles. Bearing hub bolts require a 21mm wrench. Also remove the O-ring from the bore of the spindle, careful not to damage it. Clean the mating surfaces of the bearing hub and brake rotor shield thoroughly. Leave the second O-ring in the OEM position (See Figure 48).

Figure 48: Disassemble Hub Assembly



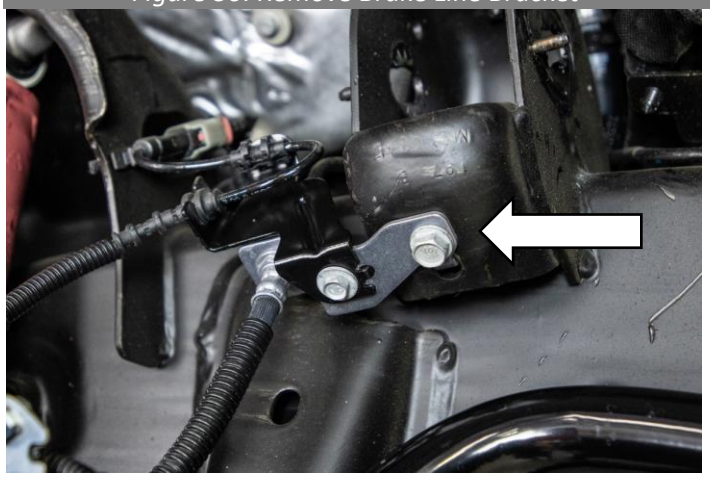
53. Transfer all the parts to the appropriate Cognito spindle, **8691** is the driver side and **8692** is the passenger side. Make sure that the bore and O-ring groove of the Cognito spindles is clean and free from debris. Torque the bearing hubs to the spindles with the factory bolts to factory torque spec 133 ft-lb (See Figure 49).

Figure 49: Hub Assembly on Cognito Spindle



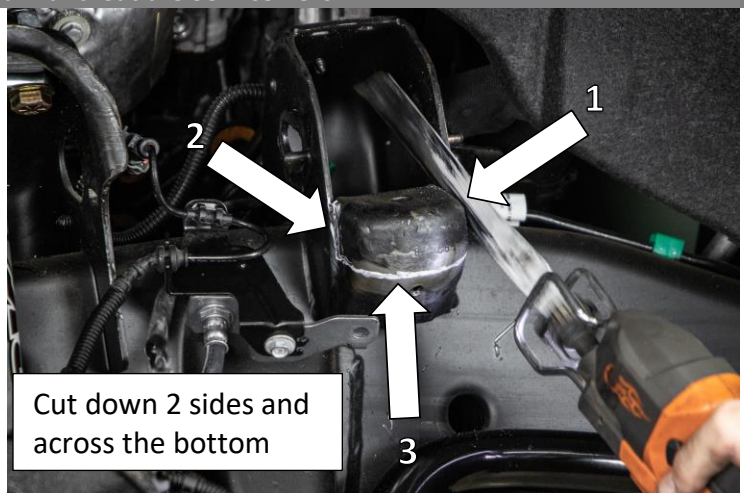
54. The service perch under the upper control arm, which is welded to the frame, must be partially cut off. Start by removing the 13mm screw for the brake line bracket attached to the service perch but do not discard it. It will be used in reassembly (See Figure 50).

Figure 50: Remove Brake Line Bracket



55. Mark the service perch in the 3 locations shown in Figure 58 with the lower horizontal line 1/2 inch above the brake line bracket mounting hole. Do not cut the mounting hole off. 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 51: Mark and Cut the Service Perch



56. 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. Future torque will be 90 ft-lb.

57. Install the front shocks at this time.

58. Be sure there is no dirt, powder coat, or any other debris in the 3 tapered holes on each spindle. If there is, clean it or scrape it out now (See Figure 52).

59. It is recommended that a transmission jack or other lifting equipment be used for installation of the Cognito spindles. Lift the appropriate side spindle into place inserting the lower ball joint tapered set into their mounting locations and install the lower ball joint nut a few threads (See Figure 5).

Figure 52: Prepare Spindle

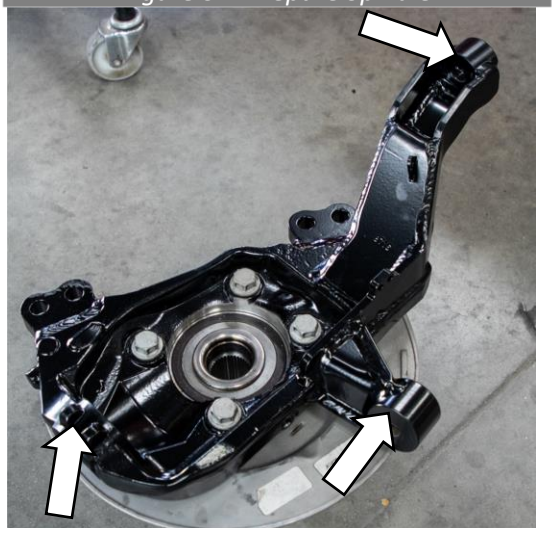
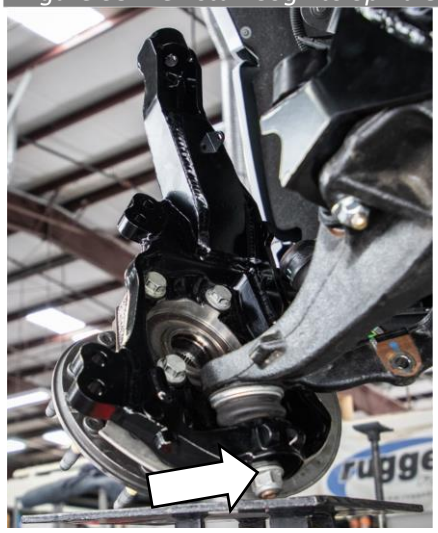


Figure 53: Reinstall Cognito Spindle



60. Reinstall the front axle spline side first and fasten the flange bolts using a 18mm wrench and torque to the factory torque spec 58ft-lb (See Figure 54).

Figure 54: Front Axle Installation

61. Now install the upper ball joint. Tighten both ball joint nuts, 100 ft-lb for the lower, and 50 ft-lb for the upper using a 24mm and 22mm socket. Tighten the axle nut to factory specifications 188 ft-lb.

62. Install the brake rotors and calipers on to the appropriate side Cognito spindle. Tighten the 4 caliper bolts to 100 ft-lb.

63. If you purchased the Cognito tie rod upgrade kit, follow those directions in this step, otherwise reattach the factory tie rod end to the Cognito spindles. The tie rod ends will be flipped 180° from the OEM position (See Figure 55). Torque to factory spec 26ft-lb and an additional 90° using a 21mm wrench.

Figure 55: Reinstall Steering Tie Rod Ends

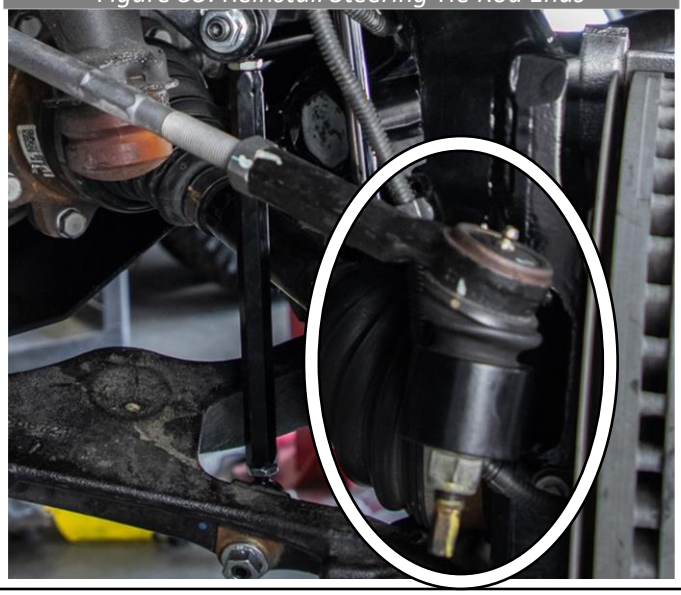
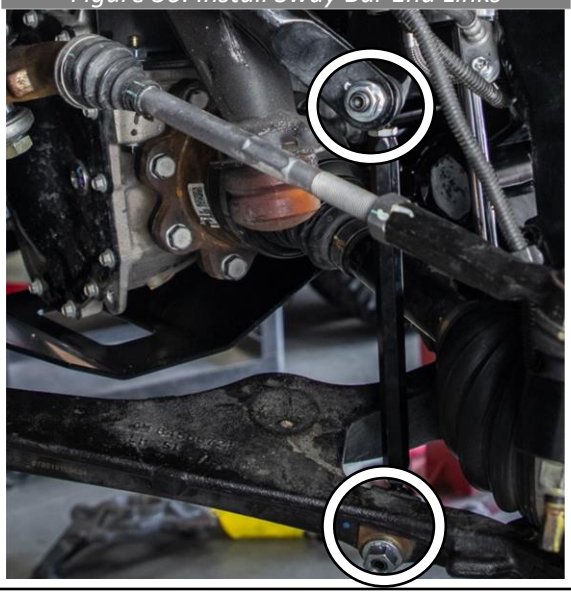


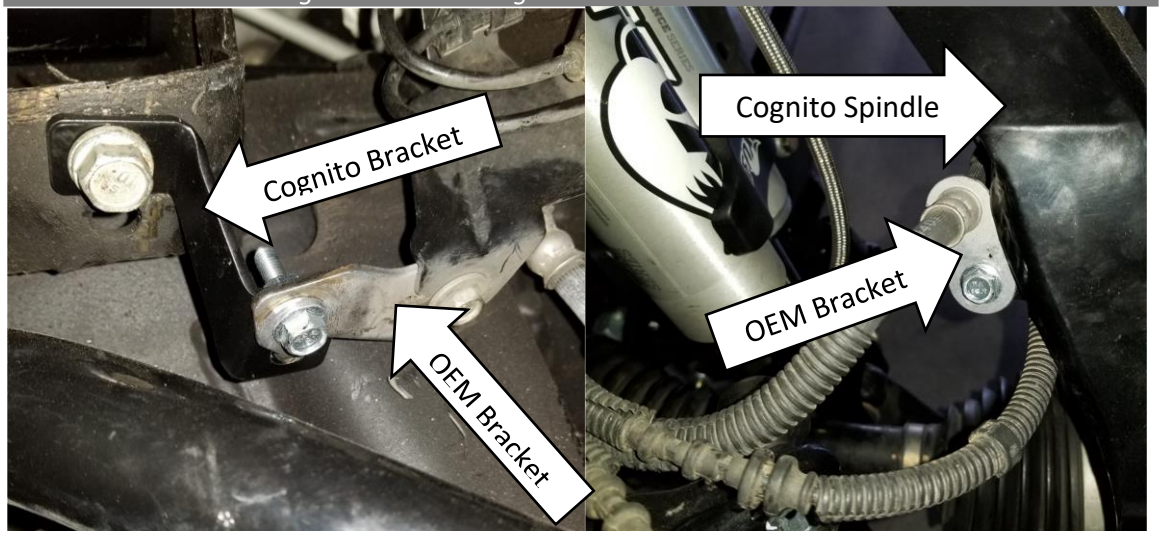
Figure 56: Install Sway Bar End Links



64. Install the sway bar end links **90873** so that the studs point towards the front of the vehicle (See Figure 56). Use a 3/4" wrench and 6mm Allen wrench. Torque to 62 ft-lb.

65. Locate the OEM front brake line bracket removed in step 54 that attaches to the lower portion of the service perch. Use the OEM hardware to attach the Cognito bracket **2796** in the same position as the OEM. Now mount the OEM bracket to the Cognito bracket using the provided M6 hardware in hardware pack **9280** and a 10mm wrench. Locate the OEM brake line mount on the hose and use the provided M6 hardware to attach it to the spindle (See Figure 57).

Figure 57: Install Cognito Front Brake Line Brackets

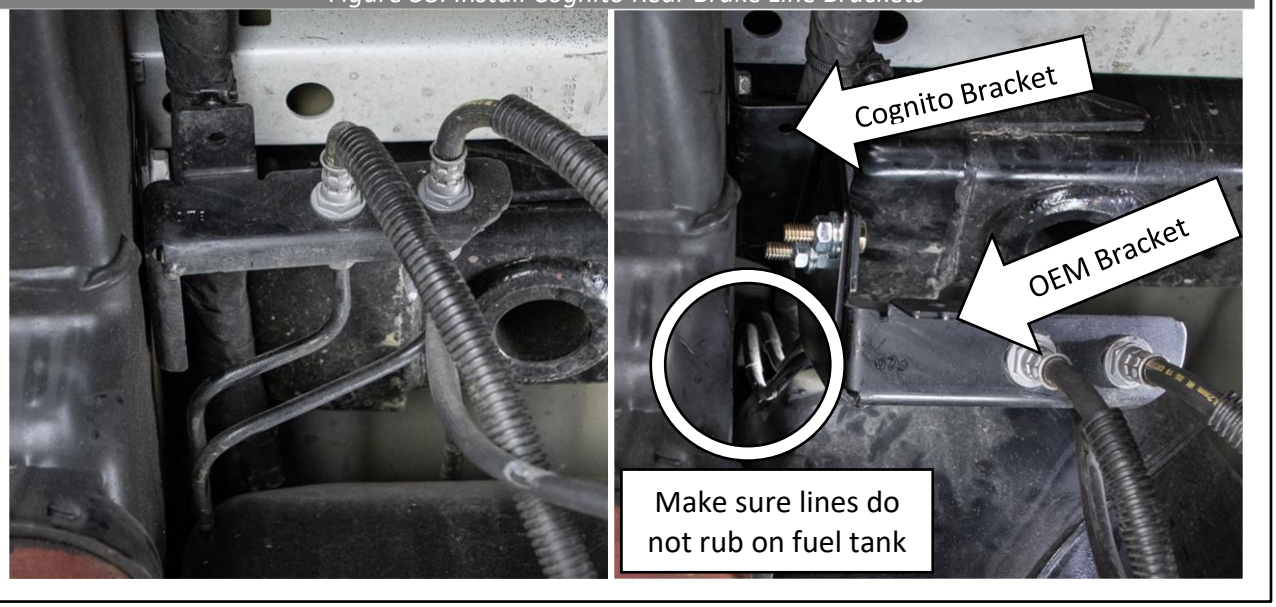


66. Be sure the brake lines and ABS sensor wires are routed and restrained as to avoid any rubbing and binding. The provided cable ties should be used to attach the wires to the tab on the back of the spindle.

67. 2” of lift in the rear is recommended for this Cognito 4” front lift kit. If you have purchased a Cognito rear lift system, refer to the instructions and install it and the rear shocks now. The U-bolts may require trimming.

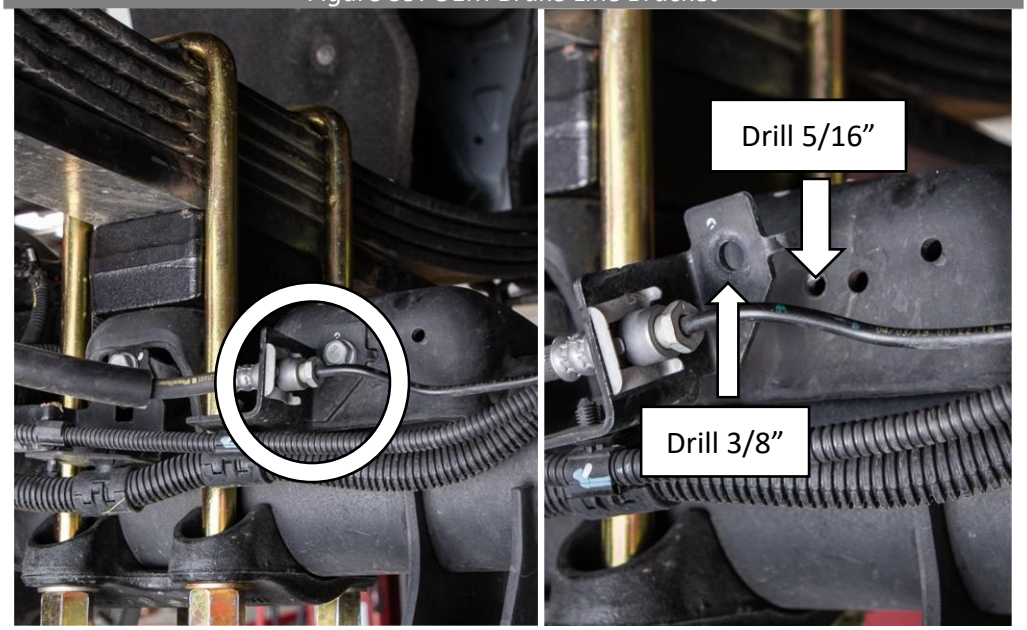
68. Install the rear brake line drop bracket **2791**. Remove the OEM bracket just behind the fuel tank and mount the Cognito bracket in its place using a 13mm wrench. Next use the provided 5/16 hardware in **HP9280** to attach the OEM bracket to the Cognito bracket using a 13mm wrench. Torque hardware to 15 ft-lb. Check that the hard lines are clear of the fuel tank and bend them out of the way if necessary (See Figure 58).

Figure 58: Install Cognito Rear Brake Line Brackets



69. Install the rear bump stop spacers **8715**. Start by removing the OEM brake line retainer bracket with a 13mm wrench. Use a 3/8” drill bit to open up the hole in the brake line bracket. Now use a 5/16” drill bit to open up the hole where the brake line retainer bolt was removed from the axle bump stop (See Figure 59).

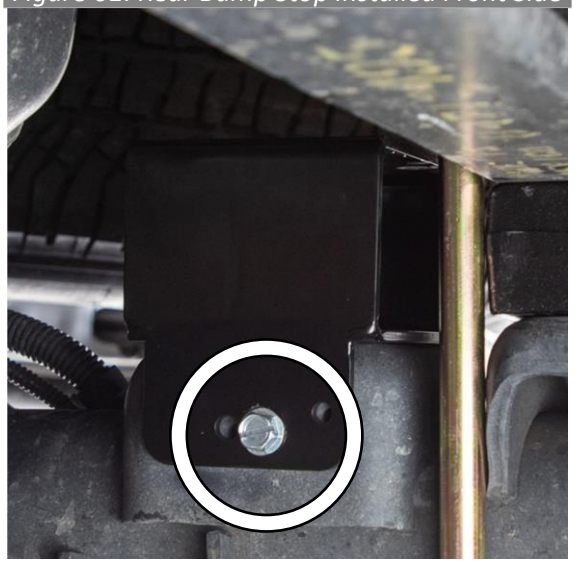
Figure 59: OEM Brake Line Bracket



70. Install the Cognito bump stop directly over top of the OEM bump stop (See Figure 60). Now locate the provided 3/8” self-tapping screws in **9279** and install them so they go through the retainer bracket, Cognito part **8715,** and thread into the axle bump stop. Now move to the front side and using the Cognito bump stop as a drill guide, drill out the middle hole shown in Figure 68 using the 5/16 drill bit and install the 3/8 self-tapping screw. Torque 3/8 screws to 25 ft-lb. Do not over torque.

Figure 60: Rear Bump Stop Installed Rear Side

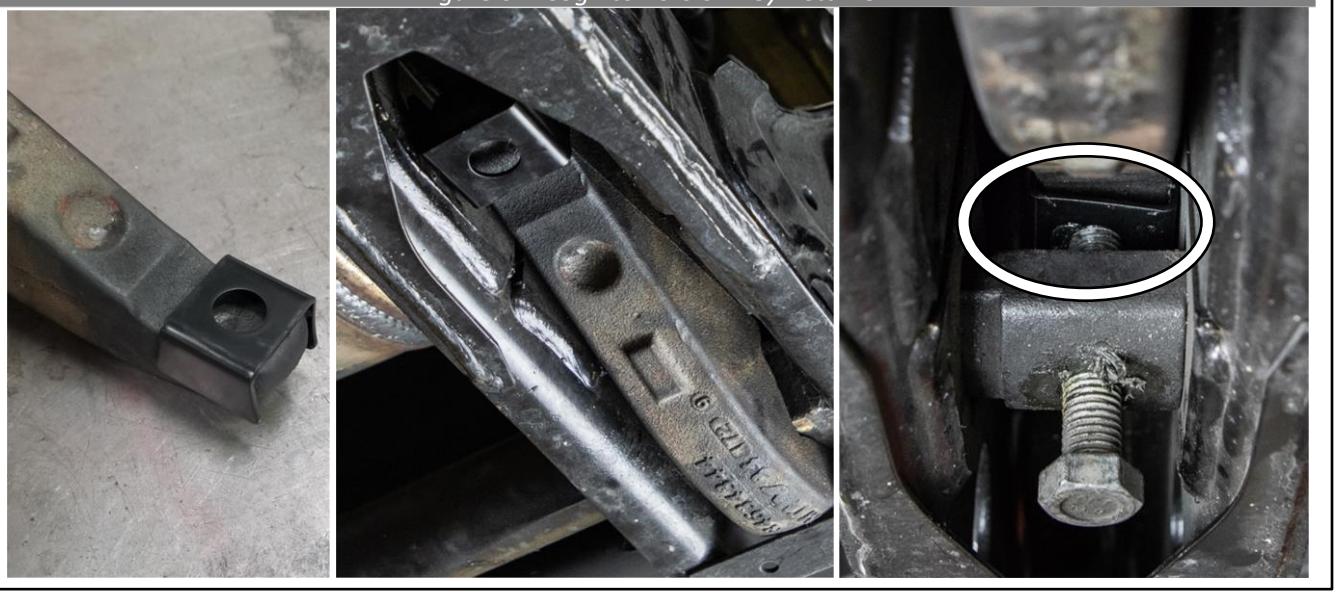
Figure 61: Rear Bump Stop Installed Front Side



71. **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**.

72. If using the stock or anything other than the Cognito torsion bar adjuster keys, you must use Cognito 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 62). If you have purchased Cognito Torsion keys, you will notice bowl-like feature in this location and the retainer clips are not needed.

Figure 62: Cognito Torsion Key Retainer



73. 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). Never tighten torsion key adjuster screws when the truck is on the ground (See Figure 62).

74. **At this point, inspect all hardware to ensure everything is properly installed and torqued.**

75. Install front wheels according to factory specifications.

76. 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 63). Write the measurement here:

    Droop Measurement; Driver side_____, Passenger side_____.

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

Figure 63: Full Droop Measurements

77. 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_____.

78. 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.

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

80. 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.

81. Have a buddy 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.

82. Re-adjust the headlights per owner's manual (2-3 full turns normally is the range needed), and have the front end professionally aligned to factory specifications.

83. 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.

84. Have the vehicle’s front end professionally aligned using these <u>front-end alignment guidelines:</u>
Some Cognito upper control arms have added caster built into them to increase drivability performance, therefore it’s important to be sure the correct control arm is installed on the correct side of the vehicle. It’s also important to make your alignment shop aware that if caster is higher than normal for OEM, that is the intention by design.

Cross caster is important in making your vehicle track straight down the road. Most roads have crown to them, high in the middle for water runoff. This crown will make your vehicle want to pull to the right. Vehicles with stock tires on them have a narrow contact patch on the ground and are not as affected as a vehicle having larger wider tires. With larger wider tires it’s important to have cross caster proper in order for the vehicle to track straight on these roads. Trucks with dual rear wheels have more tire on the ground and require more cross caster. The length of the wheelbase will also affect cross caster needed.

Generally, crew cab short and long bed trucks like .8 degrees of cross caster. For example, the driver side would have 2° while the passenger side would have 2.8° of caster. Dual rear wheel trucks like .9-1.0 degrees of cross caster. Your area might have roads that are crowned more or less than average therefore these numbers may need to change, and your alignment shop should understand this. If your alignment tech is stating they cannot align the truck, that typically means they can’t get the alignment to OEM spec, and that’s fine because your vehicle is no longer OEM. A good tech will understand this and the numbers and let caster run slightly out of OEM spec (Caster should always be above 2 degrees positive) while maintaining cross caster needed for the vehicle and roads so you enjoy your vehicle with aftermarket Cognito parts and your driving experience. Camber should always be from -.1° to +.1° and toe should always be .125” to .250” toe in for best tire wear.

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.