Installation # 7071
110-K056[0-3] (FSLK10104[0-1])

Cognito Motorsports, Inc.
Cognito Motorsports, Inc. 10”-12” Front Lift System for 2011-2019 GM IFS 2 and 4WD 2500/3500 Truck

Requirements

- Maximum wheel backspacing is 5”
- Do not use a tire that is more than 4 1/2” wider than the rim width on a 4 3/4” or more backspaced wheel.
- Set at 10 to 11”, suggested tire size is 37” tall and up to 13.5” wide on a 10” wide rim with 4.5 to 5.0” back spacing. Set at 12”, suggested tire size is up to 38” tall and up to 13.5” wide on a 10” wide rim with 4.5” to 5” back spacing. Call Cognito Motorsports with wheel and tire suggestions if necessary. Trimming of inner fender well and bottom rear of steel fender may be required.
- Follow alignment specs at the end of this instruction set.

Introduction

- 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 (if included) before attempting installation.

- Check the parts and hardware packages against the parts list to assure that your kit is complete.

- Secure and properly rack the vehicle on a hoist prior to beginning installation.

- Always wear safety glasses when using power tools.

- Use extreme caution when cutting is required under the vehicle: the factory undercoating may be flammable. Be careful of all fuel lines, fuel tanks, brake lines, and electrical harnesses.

- Front-end alignment will be necessary after completion.

- Exhaust modification may be necessary.

- Drive line(s) modification may be necessary.

Parts List

- 110-70052
  - 8291, Front Cross member
  - 8304, Rear Cross member
  - 8292, Driver sub frame connector
  - 8293, Passenger sub frame connector
  - (2) 1633, compression strut frame bracket
  - (2) 8283, compression strut
- 110-70053
  - 8295, Driver side spindle
  - 8294, Passenger side spindle
- 110-70054
  - PISK3008, pitman/idler arm support kit
  - HP9040, compression strut hardware pack
  - HP9081, hardware pack
  - HP9045, bump stop hardware pack
  - HP9123, sub frame hardware pack
  - HP9127, torsion bar drop bracket hardware pack
  - 1660, Skid Plate
  - (2) 8296, torsion bar bracket
  - SBELKHD-1010, sway bar end link kit
  - EBEK-1, emergency brake cable extension kit
  - INST7071, instruction set 7071
- 110-70055, 4WD ONLY
  - 8312, Driver-side Differential Mount (needed on 4WD only)
  - 8297, Passenger-side Differential Mount (needed on 4WD only)
  - (2) 5500, Front axle spacer (needed on 4WD only)
  - HP9121, 4WD hardware
  - (16) M10-1.5x70mm hex bolts
  - (16) 10mm or 3/8” flat washers

Front End Disassembly

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

2) Remove torsion bar adjusting screw, Figure 1.

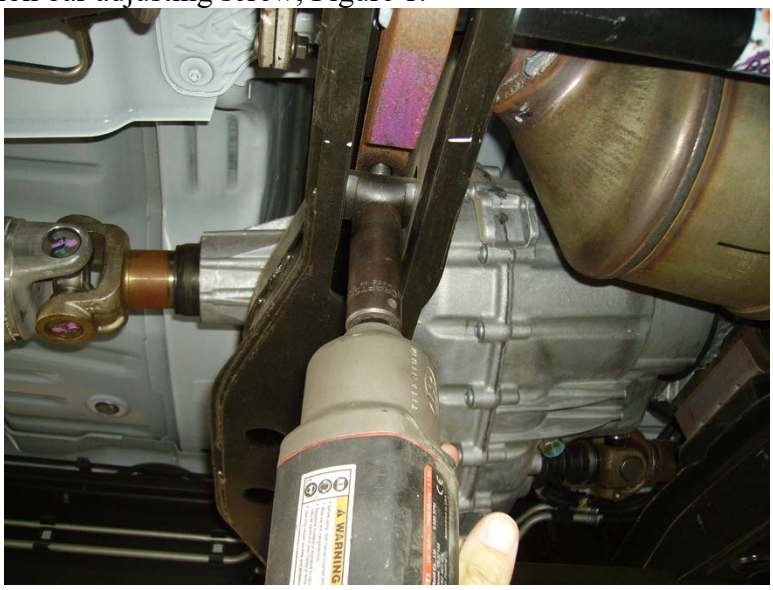

Figure 1: remove torsion bar adjusting bolt

3) Slide torsion bar forward into lower control arm, this will allow the torsion bar adjuster keyway to fall out. Repeat this to the other side.

4) Remove the factory sway bar end links, which connect the sway bar to the lower control arms, from the truck and discard.

5) Skip this step for 2WD vehicle. then remove the hub cover and the axle nut and washer using a 1.5/16" socket as seen in Figure 2. unbolt inner cv axle flange from differential then remove cv axles from truck.

Figure 2

6) unbolt factory front shocks from truck and retain the lower mounting hardware.

7) Extended brake lines are not needed; the rubber brake line can be pulled through the steel bracket for better fitment. If you are retaining the factory brake lines, skip now to the next step. You can purchase extended brake lines if desired. If installing new brake lines Then remove the front rubber brake line by taking the clip off of the top of the line and unscrewing the fitting. Next, unscrew the bolt on the banjo fitting of the caliper and discard the brake line. Repeat on the other side. Re-assemble the new lines in the opposite manner, being sure that copper crush washers are used on both sides of the banjo fitting on the caliper.

8) Unbolt the brake line bracket from the spindle and unfasten the ABS sensor line from the brake line bracket. Remove the brake calipers by removing the 2 bolts fastening the caliper to the spindle; it is easiest to hang the caliper from the front bumper bracket with a bungee cord or something of the like. Now remove the clips from the wheel studs and discard, and then remove the brake rotors by first removing the flat head torx screw. At this time, remove the clips from ALL 4 corners of the vehicle, as aftermarket wheels will not fit with these clips in place, see Figure 3.

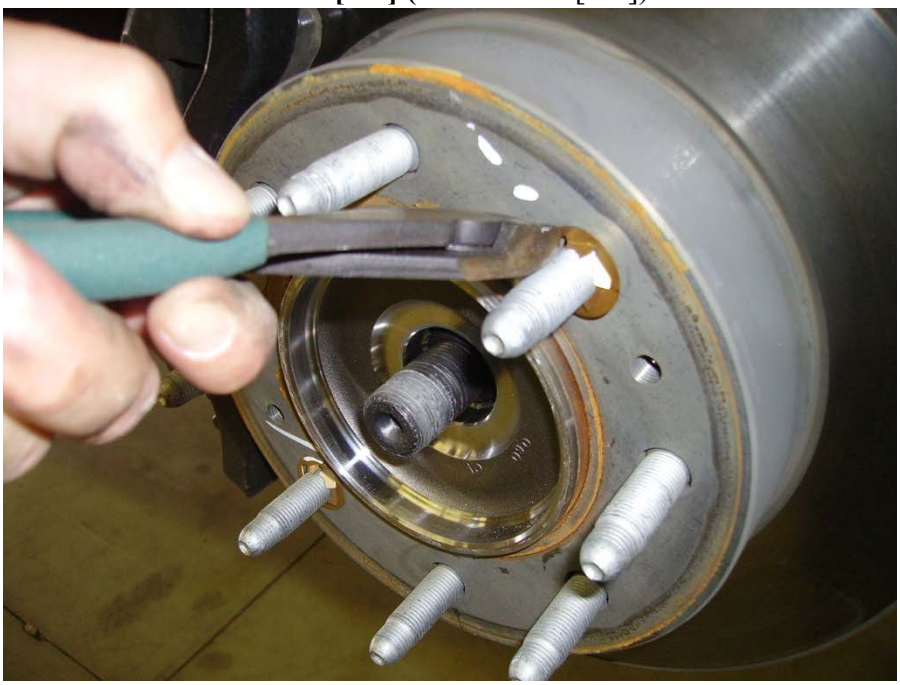

Figure 3 Remove clips from all 4 corners of vehicle. MUST DO for aftermarket wheels.

9) Remove the tie rod end nuts on the spindle. 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 as shown in Figure 4.

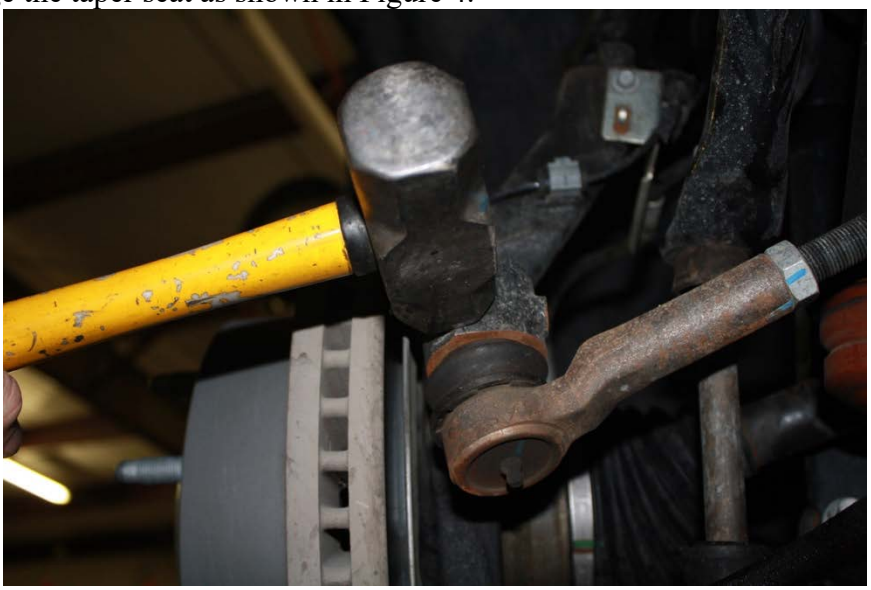

Figure 4

10) Your vehicle is equipped with an ABS brake system. Unplug the wire sensor from the wire harness terminal located on the side of the frame rail.

11) Detach the lower control arms from the spindles. Do this by loosening the nut on the lower control arm ball joint, but leave a few threads engaged. Loosen the 2 large bolts holding

the lower control arm to the frame. With the control arm and spindle assembly hanging, hit the spindle with a large hammer on the boss that surrounds the lower ball joint stud. This will dislodge the taper seat and free the lower control arm from the spindle, see Figure 5. Remove the lower control arms from the vehicle. along with the torsion bars. be sure not to mix up the torsion bars from front to back or left to right, they must go back into the vehicle the way they came out.

12) Next loosen the upper ball joint nut, 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. This will dislodge the taper seat and free the upper control arm from the spindle. Remove the spindle assembly from the vehicle and set aside.

13) If you purchased, or your kit includes the Cognito upper control arm kit, remove the factory upper control arms at this time and refer to those instructions.

14) Skip this step for 2WD vehicle. Remove front differential skid plate and discard, if so equipped. It is steel and located directly under the front differential.

15) remove the black plastic air dam from underneath the radiator; this will be re-installed.

Figure 5

16) Skip this step for 2WD vehicle. On 4WD models, unplug the black rubber vent tube from the driver side top of the differential, and unplug the wire harness from the front passenger side of the differential. Unbolt the front drive shaft from the differential yolk.

17) Skip this step for 2WD vehicle. unbolt the factory rear cross member from the frame and retain for future use if you must ever return the truck to stock suspension. this cross member is located just underneath the pinion of the front differential.

18) Skip this step for 2WD vehicle. 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.

19) Skip this step for 2WD vehicle. Loosen, but do not remove the two nuts from the studs on the passenger differential mount. then unbolt the driver side differential mount from the frame, leaving the differential mount on the differential. the remove the 2 nuts from the passenger side and lower the differential out of the frame. See Figure 6.

Figure 6

20) Skip this step for 2WD vehicle. Now using a reciprocating saw, cut the back of the driver side lower control arm rear frame pocket off as shown in Figure 7. 1" from center of hole horizontally, and 1.5" from center of hole vertically. Then do the same thing on the passenger side lower control arm frame pocket. This allows room for the differential to drop down without hitting the frame.

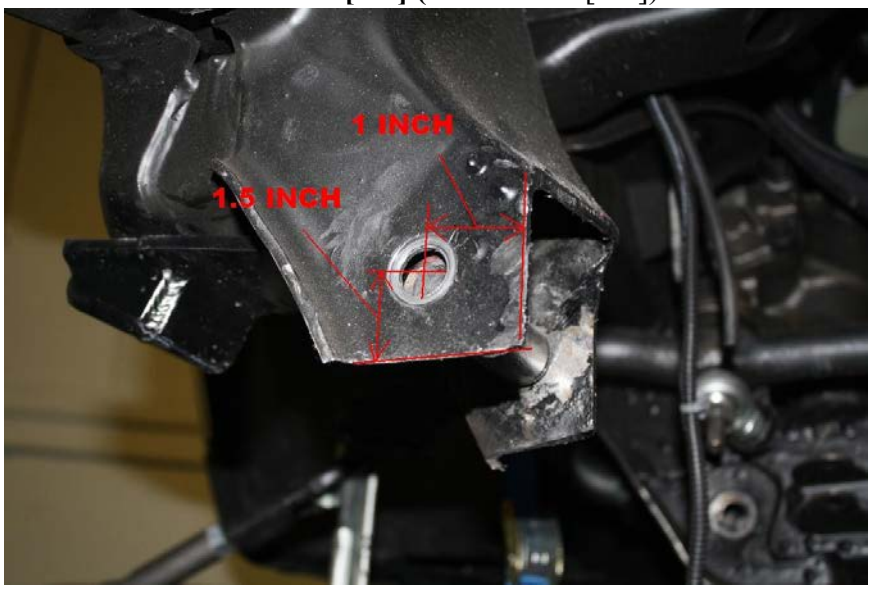

Figure 7

Lift Kit Installation and Front End Re-assembly

21) 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.

22) Install the Cognito Motorsports Pitman and Idler arm support kit at this time that is included with your lift system and has installation instructions attached to it, although at the end do not re-install the steel skid plate under the differential if it is 4WD, since it is not used on the suspension lift. Re-install the previously removed plastic air dam/skid plate that belongs under the radiator area.

23) For 2wd vehicle, skip this step. unbolt the factory driver side differential mount from the differential. Bolt the 8312 Cognito driver differential mount to the differential and then the stock mount to the Cognito mount, using Hardware package 9121, torque bolts to 50 ft.lbs. See Figure 8

24) For 2wd vehicle, skip this step. From hardware pack 9121, press the 2 poly bushings and the steel crush sleeve into the 8297 Cognito passenger differential mount, then bolt it onto the front differential with the 9/16" hardware from hardware package 9121, as shown in Figure 9. The differential has slotted holes, center the Cognito bracket onto the slotted holes and torque fasteners to 60 ft.lbs.

Figure 8

Figure 9

25) For 2wd vehicle, skip this step. 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.lbs. Reconnect the rubber vent and the wiring harness. Bolt the driveline back to the front differential yolk, tighten bolts to 20 ft.lbs.

26) Install the 8304 Cognito rear cross member in place using the factory hardware that was previously removed, do not tighten yet future torque is 90 ft/lb. If 4wd Note that the previously installed passenger differential mount ear will fit in between the tabs on top of the 8304 rear cross member, go ahead and install the 1/2x3.1/2" hardware at this time to fasten the passenger differential mount to the rear cross member, but do not tighten yet, future torque is 70 ft/lbs.

27) Bolt the 8291 Cognito front cross member to the frame with the factory hardware, do not tighten yet, future torque is 90 ft/lbs.

28) Locate the 1/4" hardware from HP9123. Loosely fasten the 8292 driver sub frame connector to the Cognito rear cross member with the 1/4" hardware (future torque 12 ft/lbs) through the clocking hole of the rear cross member to the clocking hole of the rear of the sub frame connector. This will be sure the sub frame connector is aligned properly once the lower control arms are fastened to the Cognito sub frame. Mount the 8293 passenger side sub frame connector in the same fashion.

29) Bolt the lower control arms to the Cognito front and rear cross member using the 18mm hardware from hardware package 9123, run the bolts from front to back. Make sure the bolts pass through the previously installed 8292 and 8293 sub frame connectors.

30) Now pivot the lower control arms up so they are horizontal, hold them up with a stand or jack, you can do one at a time. Then tighten the large bolts holding the control arms to the Cognito cross members at this time to 100 ft/lbs of torque. Now remove the stands, you can now torque all the other hardware previously installed.

31) From hardware pack 9081, fasten the 1660 skid plate to the 8291 front cross member, on the top side of the skid plate bracket that is part of the cross member. Then fasten the rear of the skid plate to the rear cross member, tighten all 3/8" hardware at this time to 19 ft.lbs. see figure 12.

Figure 10

32) If your kit included the Cognito upper control arms, install them now referring to the Cognito Motorsports Upper Control Arm instruction sheet included in that kit.

33) Disassemble the bearing hub assembly and brake rotor shield from each of the factory spindles. 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 and transfer all of these parts to the appropriate Cognito spindle making 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 90 ft/lbs.

34) Be sure there is no dirt or powder coat or anything in the 3 tapered holes on each spindle. If there is, clean it or scrape it out now. Now hang the spindle assemblies on the appropriate sides of the vehicle from the ball joint of the upper control arm. Then attach the lower control arm ball joint to the Cognito spindle. Tighten all ball joints to the Cognito spindles, 100 ft/lbs for the lower, and very tight with a boxed end wrench on the upper approx. 50 ft/lb.

35) All hardware installed up to this point may now be tightened.

36) Install the brake rotors and calipers on to the appropriate side Cognito spindle. Install Cognito brake line kit if purchased with suspension kit, tightening fittings to factory specifications.

37) Locate the 1633 compression strut brackets, the 8283 compression struts, and the HP9040 hardware package. use WD40 or similar lubricant to install the polyurethane bushings into the ends of the 8283 compression struts, and then the steel crush sleeves into the poly bushings.

38) Loosely bolt the 1633 bracket to one end of the 8283 compression strut and the other end of the compression strut to the tabs on the rear of the 8279 Cognito rear cross member. Note the orientation of the bracket as shown in Figure 14, the notch end of the bracket points toward the front of the truck on a 7” kit, but on a 10” kit it will go to the rear. Swing the compression strut bracket up to the frame and be sure the mounting holes of the bracket line up appropriately to the factory frame cross member as shown in Figure 14. If it does not line up, try rotating the compression strut tube 180 degrees because the tube ends are not welded on perpendicular to the long tube, and re check alignment till the proper orientation is obtained.

39) Use the 1633 bracket rear hole as a drill template and drill a 3/8" hole into the flange of the factory cross member, and bolt the bracket to the flange with the 3/8" hardware provided, as shown in Figure 14. Then remove the bolt holding the compression strut tube to the compression strut bracket, let the tube swing down and drill the front 3/8" hole into the factory cross member and fasten with the remaining 3/8" hardware, tightening to 40 ft-lbs of torque.

40) Now fasten the compression strut tube to the bracket and the Cognito rear cross member, and tighten all 1/2" diameter hardware to 60 ft-lbs.

41) From hardware pack 9045, install the bump stops to the bottom pads of the Cognito rear cross member. Use lock washer, and hex nut, tighten to 18 ft/lbs

42) Locate the two 8296 torsion bar drop brackets and hardware pack 9127. Press the poly bushings into the brackets, then the crush sleeves. The 8296 brackets are held to the stock frame brackets with the 9/16 hardware, torque to 70 ft/lbs.

43) Bolt the stock torsion bar cross member to the Cognito 8296 brackets, using the factory bolts, torque to 70 ft/lbs.

44) The ears of the Cognito bracket must be bolted to the bottom of the frame rail. Use the holes in the ears as a drill template, drill 21/64” thru hole, and make sure you will not poke anything on the inside of the frame rail. Use the self tapping 3/8” bolts to then bolt the ears to the bottom of the frame rails.

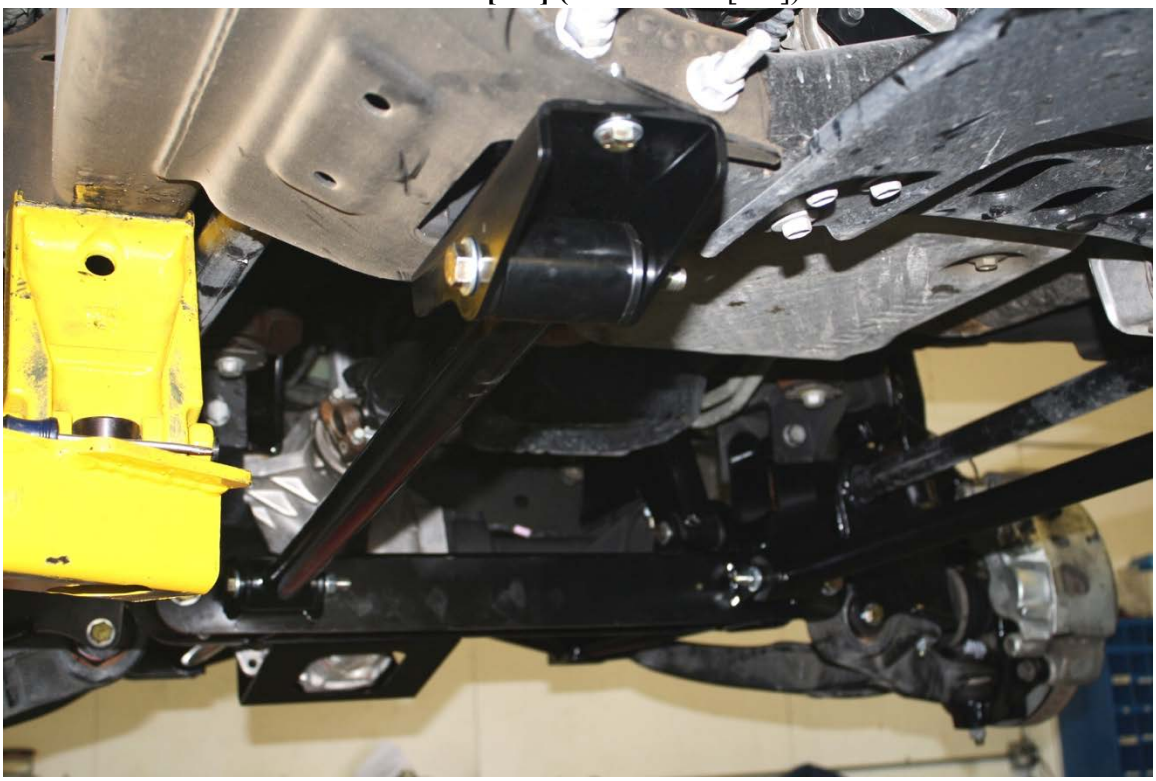

Figure 11

45) Install torsion bars the same way they came out, they are marked on the rear end of the bar. If they won't install easily, use a jack to lift the suspension all the way up until the polyurethane bump stop contacts the Cognito bump stop. 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. Once the torsion bar and torsion key is in place you can let the jack down and the suspension droop.

46) On 4WD models, install the stud/spindle end of the front drive axles into the Cognito spindles and fasten to the spindle with factory washer and nut. First making sure all mating surfaces are clean, mount the differential end of the drive axles to the differential with the 5500 spacers in between via metric bolts and washers included using a drop of thread locker on the first threads of each bolt. Fasten all hardware mentioned in this step, axle nut to 120 ft/lbs. and spacer bolts to 40 ft/lbs.

47) 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 to 50 ft.lbs. Make sure all fasteners are tight at this time.

48) If using the stock torsion bar adjuster keys, they must have a modification so that the adjuster bolt does not slip off of the adjuster key. If you have purchased Cognito aftermarket torsion bar adjuster keys you will see that this feature is already on these parts. See Figures 17-19 to add the pocket to the stock keyways on the vehicle.

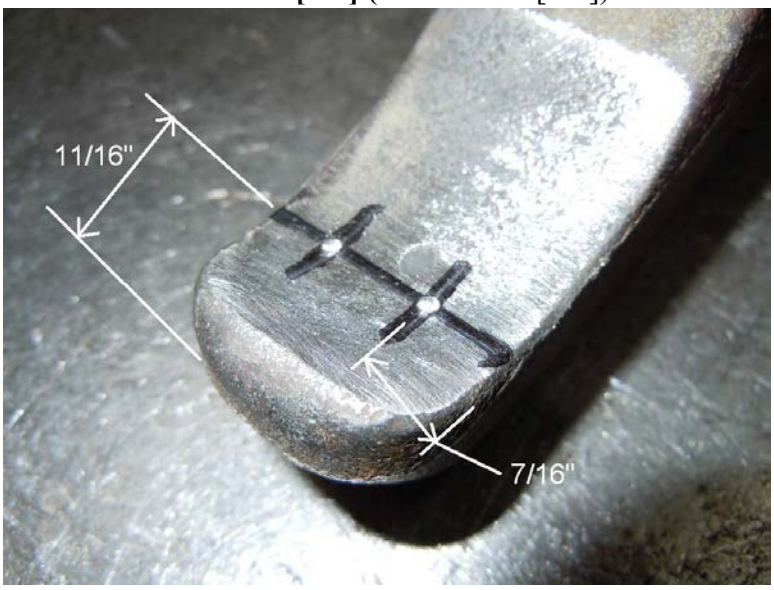

Figure 12: Center punch 2 spots, 11/16" from the end and 7/16" from each side.

Figure 13: using a drill motor and 1/2" drill bit, drill only 1/8" deep from the tip so create 2 counter sink spots.

Figure 14: Use a carbide grinding bit to connect the 2 countersink spots in order to create an oval shaped pocket as shown. Now ready to install.

49) Install the SBELKHD-1010 sway bar end link kit now per the instructions included in that kit.

50) Be sure the brake lines and ABS sensor wires are routed and restrained as to avoid any rubbing and binding.

51) Load the torsion bars and replace the adjuster nut. Unload bars and insert the adjuster screw into the nut and adjust to factory specifications.

52) Install the front shocks, if you are using the Cognito Upper Control Arm Kit then you should be using the shock extender kit SEK-2011-8-1 to take advantage of the extra 2" wheel travel available. If you are using the stock upper control arms, then just using the Cognito spec Fox or Bilstein shocks will net you an extra inch of down travel over stock. Do not use any shock spacer if not using the Cognito upper arm kit.

53) At this point, inspect all hardware to ensure everything is properly tightened.

54) 4WD models require front drive-line modification or replacement. Consult Cognito Motorsports about drive-line requirements. You MUST use the CV front driveshaft offered by Cognito Motorsports. Otherwise the stock front driveline will vibrate and damage the front differential and transfer case.

55) The front pinion angle is changed on 4WD models, check service manual and add 1/2 extra qt of fluid to the front differential to ensure proper fluid level. The rear differential pinion angle may also be changed if an axle shim or tapered lift block is used. If so, add 1 extra qt of fluid to the rear differential, see service manual.

56) Install front wheels according to factory specifications. Please note the wheel requirement stated at the beginning of this instruction set.

57) Rear lift: If you purchased new spring packs, replace the factory spring packs and use factory hardware and torque to factory specifications. The large bushing end of the spring goes toward the front of the vehicle. Use appropriate length u-bolts and torque them to 110 ft-lbs if they are 3/4". If block and u-bolt was purchased refer to those instructions to install now. If the emergency brake cable is too tight due to the lift, the included EBEK-1 emergency brake cable extension kit must be installed now, please refer to those instructions. If the e-brake is long enough, no need to install the extension kit. Install rear shocks, and then install rear wheels and shocks.

58) If included, install rear brake lines. If the rear axle has wheel speed sensors and your package included WSE-R-1, this is to extend the sensor wires. Extend the sensor wires and route them along with the brake lines for the cleanest installation.

59) Adjust the torsion bars so that the front ride height is appropriate, and so that the truck is even left to right side. Do not over crank the torsion bars to try and gain too much height. Always lift the front of the truck so the wheels droop down before turning the torsion adjuster bolt tighter. Then drive the truck briefly to settle the height before measuring.

60) Setting the ride height, Record measurement (A) in chart below. Subtract 2" from (A) to determine maximum ride height (B). This will insure the proper amount of available down travel. **NOTE:** Maximum ride height is not required if you reach desired ride height below measurement (B). It is a good idea to record your final ride height after adjustments (C).

Figure 3: Distance between top of tire and fender lip.

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Record Measurement

Full Drop Out (A)	
Subtract 2”	**-2”**
Max Ride Height (B)	
Finished Ride Height (C)	

61) Have headlights readjusted to proper settings.

62) Have the vehicle’s front end professionally aligned using these front-end alignment guidelines:

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 high, 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. 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 can’t 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.

63) **Have the vehicle professionally aligned to the following specifications:**
Caster, +2.0 to +4.5 degrees with a caster split .9 degrees higher on the passenger side.
Camber, 0 to + .2 degrees.
Toe settings, .1 degree toe in on each side.

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.