

START HERE

Install Sheet #7240 | Cognito 3" Performance Leveling Kit with Fox PS 2.0 IFP for 2001-2010 GM 1500HD/2500/2500HD/3500/3500HD 2WD/4WD Trucks, 2001-2013 GM 2500 2WD/4WD SUVs & 2003-2009 Hummer H2, H2 SUTs | SKU 110-P0753



34935 Flyover Ct. Bakersfield, CA 93308
Phone: (661) 588-8085 | Fax: (661) 588-8295

INSTALL SUMMARY SHEET:

Cognito 3" Performance
Leveling Kit with Fox PS 2.0
IFP for 2001-2010 GM
1500HD / 2500 / 2500HD /
3500 / 3500HD 2WD/4WD
Trucks, 2001-2013 GM 2500
2WD/4WD SUVs & 2003-2009
Hummer H2, H2 SUTs
SKU 110-P0753



PARTS LIST FOR SKU: 110-P0753

QTY.	PART #	DESCRIPTION
1	110-90290	Ball Joint SM Series Upper Control Arm Kit without Dual Shock Mounts
1	110-90269	Torsion Bar Keys
2	210-90210	Fox 2.0 (PSMT) Single Front Shock for Cognito leveling systems
2	210-90212	Fox 2.0 (PSMT) Single Rear Shock for 0-1" lift height

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.

INTRODUCTION

Thank you for purchasing the Cognito 3" Performance Leveling Kit. This kit is designed to level your vehicle and provide added droop travel. This kit also includes Fox Performance Series Mono Tube Shocks for all 4 corners ensuring improved ride quality and satisfaction.

TECHNICAL INFORMATION

- Proper vehicle lifting equipment is required. Always make sure the vehicle is properly supported and **never work under an unsupported vehicle**.
- Torsion bar unloading tool is needed.
- Check the parts and hardware packages against the parts list in each instruction set to assure that your kit is complete.

This Kit Install Summary will guide you through the **necessary order of steps** to install each of the individual components that comprise this kit in the required sequence to safely complete full and proper installation.

The proper installation of this combination of products is dictated by the necessary sequence in which each component must be installed to avoid access, interference or clearance issues that will result in unnecessary disassembly and reassembly and potential safety hazards.

This document will guide you through the sequence of operations, which includes preparation work and the prescribed order for installing components – by referring you to the individual instructions packaged with each Cognito component for detail on how each kit component is properly installed.

YOU MUST FOLLOW THESE STEPS IN SEQUENTIAL ORDER FOR PROPER INSTALLATION OF THIS KIT.

REVIEW TECHNICAL NOTES AND REQUIREMENTS OF THE INDIVIDUAL INSTALLATION INSTRUCTION SHEETS INCLUDED WITH THIS KIT BEFORE BEGINNING.

INSTALLATION

1. Begin by locating the 3 instruction sheets **7037**, **7068**, and **7067** included with this kit. You will need them **all** to do this install. If instructions are missing or damaged, contact Cognito Motorsports for where to find replacements.

Component Instructions Sequence (A) Install Rear Components:

2. Lift the vehicle by the frame until the rear wheels are off the ground. If no lift is available, use a jack and jack stands in a safe fashion. **NEVER WORK UNDER AN UNSUPPORTED VEHICLE.**
3. Support the rear axle and remove the OEM rear shocks.
4. Locate the included Fox (PSMT) rear shocks (210-90212) and Install them. It is easiest to install the upper mount first then compress the shock by hand to align the lower mount. Torque all hardware to factory specs.

Component Instructions Sequence (B) Install Front Lift Components:

5. Start with instruction set **7037** and work through until both torsion bars are unloaded.
6. Next use instruction set **7068**. Start at the beginning and follow through until the OEM upper control arms have been removed and the ball joints and bushings have been installed in the new Cognito arms and stop there. Do **not** follow instructions pertaining to the torsion bars or keys from **7068** because you will be replacing the front shocks.
7. Now locate the Fox (PSMT) front shocks (210-90210) and reference instructions **7067**. follow them to completion.

8. Support the lower control arm using a jack or jack stand in a safe fashion because the front shock is all that is holding it in place now. **Never remove shocks while the torsion bars are loaded.**
9. Remove the OEM front shocks and replace them with the new Fox shocks. Torque OEM hardware to factory specs. Install both front shocks before moving forward.
10. Now refer back to instruction set **7068** and start where you left off (the ball joint and bushings should be installed at this time). Work through **7068** until **both** Cognito upper control arms are fully installed but stop there.
11. Reference instruction set **7037** and install the new Cognito keys. Work through **7037** until completion but reference instructions **7068** for brake line and wire routing and the alignment guidelines.

This completes the installation steps, enjoy your new Cognito 3" Performance Leveling Kit!

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 warranted 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.



Cognito Torsion Bar Adjuster Key Kit for 8 or 6 Lug 2WD/4WD Trucks/SUVs

INSTALL INSTRUCTIONS:

Cognito Torsion Bar Adjuster Key Kit for 8 or 6 Lug 2WD/4WD Trucks/SUVs
SKU: 110-90268, 110-90269, 110-90270 & 110-90771

PARTS LIST FOR SKU: 110-90268

QUANTITY	PART #	DESCRIPTION
2	TORSION-KEY-6	1999 6-Lug Torsion Bar Adjuster Key

PARTS LIST FOR SKU: 110-90269

QUANTITY	PART #	DESCRIPTION
2	TORSION-KEY-8	2001 8-Lug Torsion Bar Adjuster Key

PARTS LIST FOR SKU: 110-90270

QUANTITY	PART #	DESCRIPTION
2	TORSION-KEYWAY-2011	2011 8-Lug Torsion Bar Adjuster Key

PARTS LIST FOR SKU: 110-90771

QUANTITY	PART #	DESCRIPTION
2	TORSION-KEYWAY-2020	2020 8-Lug Torsion Bar Adjuster Key

**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.

INTRODUCTION

Cognito Torsion Bar Keys levels the front with the rear of the truck. Their forged construction makes them practically indestructible and they bolt in for easy installation. Torsion bar keys are used to set the ride height of the front of the truck and are commonly used in leveling kits, and it is important to set the height appropriately as to leave ample suspension droop travel to maintain a good ride quality. There are several different torsion bar spring rates that GM made and put in their trucks, the rate depending on the model and features of the truck. Some trucks that have a higher spring rate may not need aftermarket torsion bar adjuster keys to obtain the maximum recommended ride height. This kit is only to be used in leveling kit applications as well as lifted applications when the higher setting of that particular lift kit range is desired

REQUIREMENTS

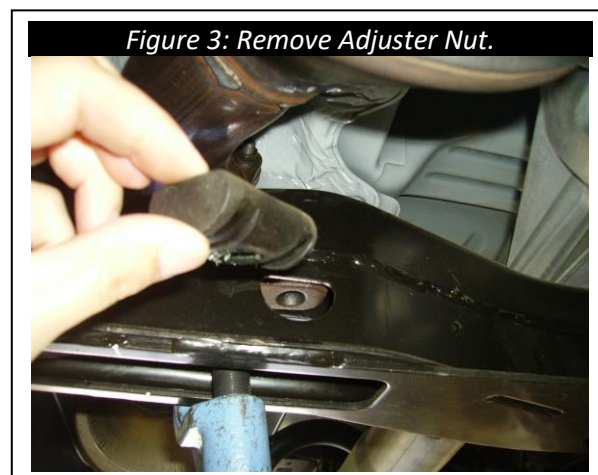
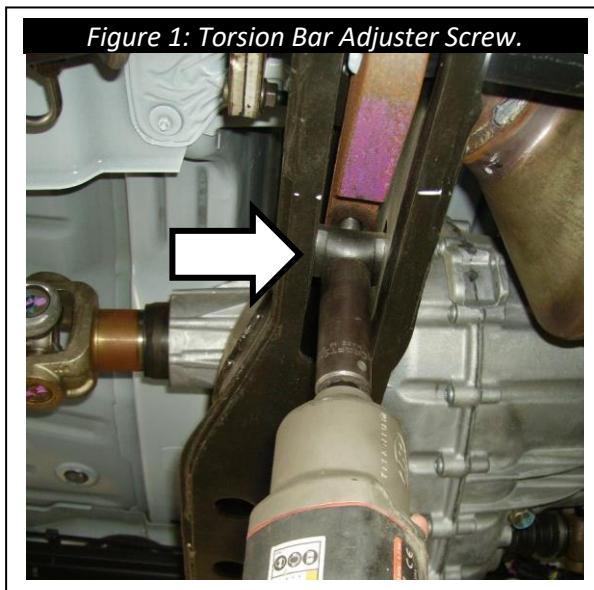
- Torsion bar loading tool is required for this installation.
- Installation requires a qualified mechanic.
- Follow the OE specifications when replacing or re-installing OE fasteners, retainers, and hardware specified in the OEM manual.
- Always wear safety glasses when using power tools.
- When a lift 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.

TECH NOTES

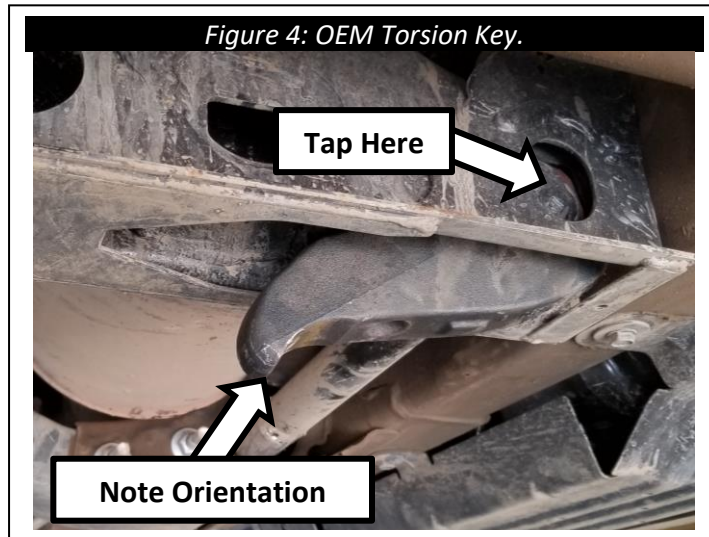
- Read instructions carefully and study the pictures (if included) before attempting installation.
- If this product was purchased as part of a kit each kit, and options to kits, are packaged separately. Therefore installation procedures are covered in separate instructions. Familiarize yourself with each specific set of instructions before beginning.
- Check the parts and hardware packages against the parts list to assure that your kit is complete before starting.

INSTALLATION

1. Rack the vehicle and lift it off the ground, or if no hoist is available then jack front of truck off the ground and support properly with jack stands.
 - **NEVER WORK ON AN UNSUPPORTED VEHICLE.**
2. Remove the torsion bar adjuster screw (Figure 1).
3. Using a torsion bar loading tool, load torsion bar (Figure 2) and remove adjuster nut (Figure 3), then unload torsion bar and remove tool. Do this on both sides of the vehicle
 - **NOTE:**
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 if other components effected in the front suspension are being worked on or replaced at this time.



4. Start replacing the torsion keys by first noting the orientation of the OEM key.
5. Slide the torsion bar forward into the lower control arm. If it seems lodged, use a hammer through the hole in the back of the torsion bar crossmember to knock it loose. This will allow the old key to be removed (Figure 4).



6. Reinstall the new adjuster key in roughly the same orientation that the OEM one was removed in (Figure 5). The Cognito key's hex shaped hole is clocked differently from the OEM key so it will not be in the exact same position, but it will be similar



7. Use the torsion bar loading tool to load the new key. Now install the adjuster nut and adjuster screw then remove the loading tool. This is the reverse order of unloading the key (Figures 1, 2, and 3).
 - **NOTE:**
Shocks must be installed and all supports under the lower control arms must be removed before the torsion bars can be loaded.
8. Tighten the adjuster bolt while the truck is still off the ground.
 - **NOTE:**
Do not tighten the adjuster bolt to raise the height of the vehicle while the vehicle is on the ground and the front suspension is holding its own weight. This will cause the adjuster bolt excess stress and will strip the threads.
9. Before lowering the vehicle, measure from the top of the wheel well directly above the center line of the wheel to the top of the tire (Figure 6). Record this measurement as (A) in Table 1 for both the driver and passenger side. These should be within 1/4" of one another.
 - **NOTE:**
It can be helpful to place a piece of painter's tape at the top of the wheel well directly above the centerline of the wheel and measure from there.
10. Subtract 3 inches from A and record this number as (B) for both the driver and passenger side.
11. Set the truck on the ground and drive forward and backward a few times to settle the suspension. Measure again from the top of the tire to the top of the wheel well as in the step above and record this measurement as (C) in Table 1 for both the driver and passenger side.
 - **NOTE:**
If (C) is larger than (B), the ride height is too tall. This can be caused by shocks or shock spacers that are too long, stacked shock spacers, spring preload devices, or any combination of the above.

Failure to use compatible shocks or limit straps to limit the vehicles front suspension may cause over-extension, as a result can cause damage to ball joints, uni-balls, tie rods, and/or CV axles, along with other related safety issues.

Warranty on Cognito products will be void if the vehicles front suspension is not properly limited to the above max ride height calculation.

Suspension Travel	Record	Measurement (Inches)	
		Driver	Passenger
Full Droop	A		
Max Ride Height	B = A – 3 in		
Ride Height	C		

Table 1. Suspension Travel Measurements



12. The difference between (A) & (C) should be 3” minimum for proper amount of droop travel to provide good ride quality and longevity of suspension components.

- **NOTE:**

On the ground, back out the adjuster bolt to lower the vehicle to the desired ride height and to level the vehicle side to side. Repeat the steps above until the proper ride height is reached on both sides of vehicle.

If the ride height is too low and there is more than 3” of droop travel measurement, then if desired the truck can be lifted back up by the frame to turn in the torsion bar adjuster bolts to preload the torsion bars more raising the ride height, then repeat steps above.

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

14. Check wheel and tire clearance through the steering cycle. Make adjustments as needed.

15. Adjust headlights per owner's manual.

16. Have the vehicle professionally aligned.

- **NOTE:**

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 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. 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 warranted 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.



Cognito Ball Joint SM Series Upper Control Arm Kit for 2001-2010 GM 1500HD / 2500 / 2500HD / 3500 / 3500HD 2WD/4WD trucks, 2001-2013 GM 2500 2WD/4WD SUVs and 2003-2009 GM Hummer H2, H2 SUTs

INSTALL INSTRUCTIONS:

Cognito Ball Joint SM Series Upper Control Arm Kit for 2001-2010 GM 1500HD / 2500 / 2500HD / 3500 / 3500HD 2WD/4WD trucks, 2001-2013 GM 2500 2WD/4WD SUVs and 2003-2009 GM Hummer H2, H2 SUTs
SKU: 110-90290

PARTS LIST FOR SKU: 110-90290

QUANTITY	PART #	DESCRIPTION
1	8302	Upper Control Arm, Driver
1	8303	Upper Control Arm, Passenger
2	90804	Bolt-In Ball Joint (14mm Thread)
1	HP9319	Hardware Pack

LIST OF PARTS PREINSTALLED ON 8302

QUANTITY	PART #	DESCRIPTION
2	6878	Pivot Bushing Assembly

LIST OF PARTS PREINSTALLED ON 8303

QUANTITY	PART #	DESCRIPTION
2	6878	Pivot Bushing Assembly

PARTS LIST FOR SKU: HP9319

QUANTITY	PART #	DESCRIPTION
2	HARDWARE-1/4-20X1/2-THRDROLL	1/4"-20 X 1/2" Zinc Hex Head Tread Rolling Screw
2	HARDWARE-33078	1/4" SAE Zinc Flat Washer
2	HARDWARE-33618	1/4" Zinc Split Washer
8	HARDWARE-15057	5/16"-18 X 1-1/4" Grade 8 Yellow Zinc Hex Head Cap Screw
16	HARDWARE-33080	5/16" SAE Zinc Flat Washer
8	HARDWARE-37262	5/16"-18 Grade C Zinc Top Lock Nut
4	HARDWARE-33088	9/16" SAE Zinc Flat Washer



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.

BALL JOINT WARNING

The ball joint / upper control arm can no longer be used as the droop limiter of the front suspension. A shock or limit strap is required to be the limiter. It is required that the proper length shock from Cognito or a limit strap kit from Cognito be installed to prevent failure which could cause an accident and serious injury. If you have questions, please contact the Cognito Sales Team to have you questions or concerns addressed.



INTRODUCTION

The Cognito Ball Joint SM Series Upper Control Arm Kit is specifically for leveled and lifted applications where an upgrade is desired to provide better performance, style, and function. This kit will work as a direct replacement of the factory upper control arms on vehicles with stock suspension as well. The boxed sheet metal arms are powder coated semi-gloss black. Cognito alloy series ball joints are included as well as new maintenance free bushings. Ample droop travel is required for good ride quality and all suspension components to last and work properly. This control arm kit will add performance to the Chevy and GMC truck by correcting the ball joint angle for lifted and leveled applications, increasing droop travel, and increases caster slightly for better highway speed drivability. Designed and made in the USA.

REQUIREMENTS

- **The upper control arm is not designed to be the droop limiter, ball joint failure will occur if the upper arm is used as the droop limiter. A shock or limit strap is required to be the limiter. It is required that the proper length shock from Cognito or a limit strap kit from Cognito be installed to prevent failure which could cause an accident and serious injury.**
- Cutting of the service perch under the front upper arm frame pivot may be needed on some vehicles.
- Recommended max tire size-33"x11.5" on 8" wide rim with 4 5/8" backspace. Max tire size on stock rim 285/75/R16 or equivalent depending on rim diameter.
- Installation requires a qualified mechanic.
- Follow the OE specifications when replacing or re-installing OE fasteners, retainers, and hardware specified in the OEM manual.
- 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.

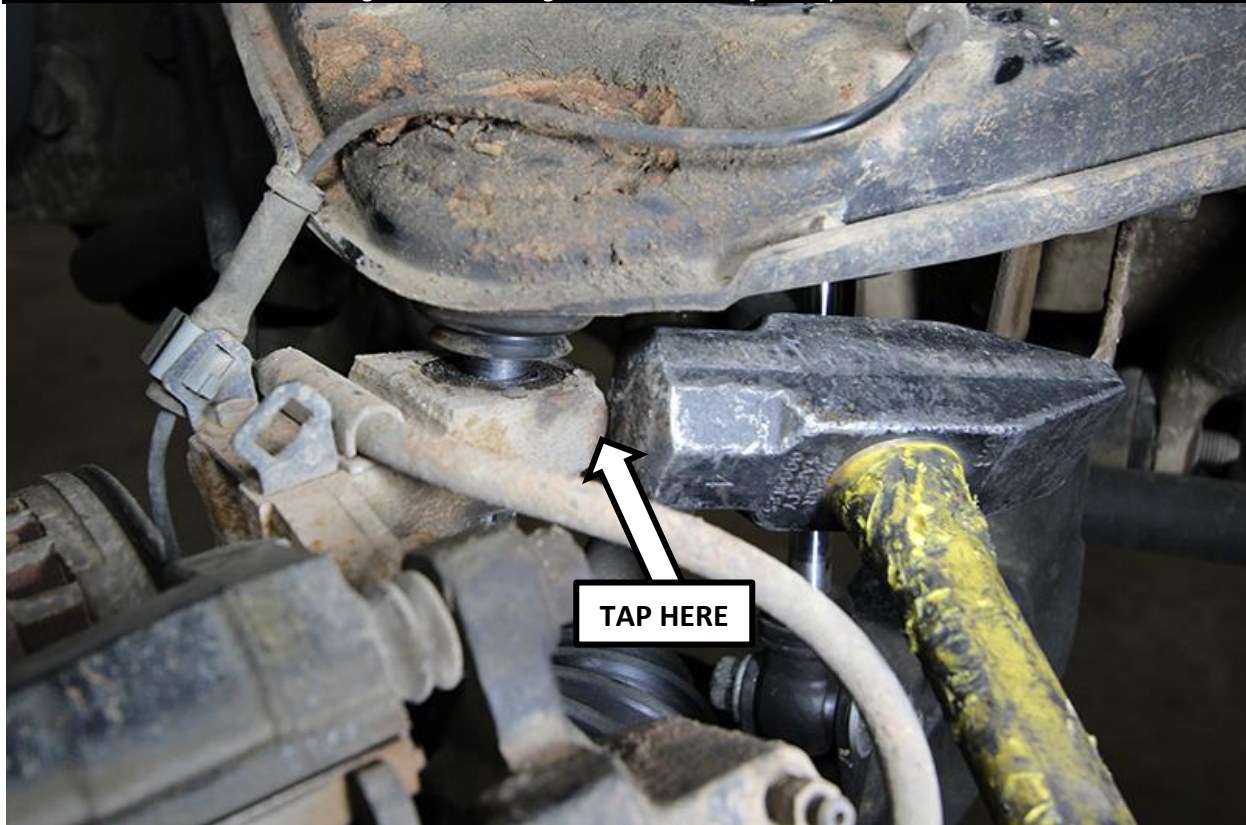
TECH NOTES

- Read instructions carefully and study the pictures (if included) before attempting installation.
- If this product was purchased as part of a kit each kit, and options to kits, are packaged separately. Therefore installation procedures are covered in separate instructions. Familiarize yourself with each specific set of instructions before beginning.
- Check the parts and hardware packages against the parts list to assure that your kit is complete before starting.

INSTALLATION

1. Rack the vehicle and lift it off the ground, or if no hoist is available then jack front of truck off the ground and support properly with jack stands. Remove the front tires and set them as side.
 - **NEVER WORK ON AN UNSUPPORTED VEHICLE.**
2. If torsion bar adjuster keys were purchased with the Cognito leveling kit, unload the torsion bars now, and remove the factory torsion adjuster keys from the vehicle. Replace with the new torsion bar keys and reload the torsion bars lightly.
3. Remove the factory upper control arms by supporting the lower control arms with a floor jack or stand used in a safe fashion. Loosen the ball joint nut of the upper control arm enough until the nut can be spun by hand, but do not remove totally. Use a pickle fork to separate the ball joint from the spindle or tap on the side of the spindle next to the ball joint stud. When the tapered seat of the ball joint breaks loose remove the ball joint nut, and separate the factory upper control arm from the spindle.

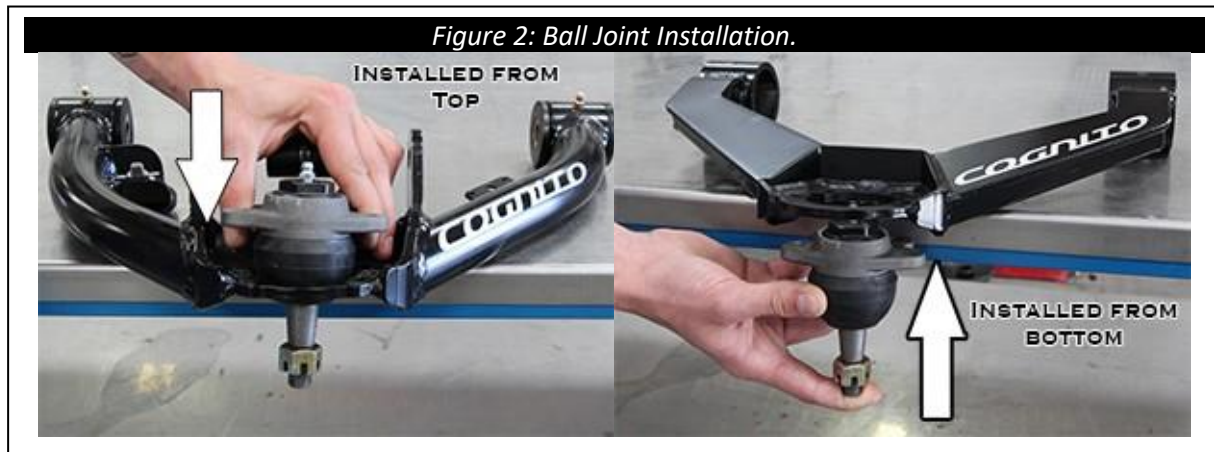
Figure 1: Breaking Ball Joint Loose from Spindle.



4. Remove the factory bolts and eccentric washers that connect the control arm to the frame and retain them for future use. Place them aside and note the order in which the components were removed, that way they may be re-installed in the same manner they came off.
 - **NOTE:**
The plastic inserts will need to be removed and discarded from the eccentric washers.

- Mount **199-90804**, Cognito Bolt-In Ball Joint, with the 5/16" bolts, flat washers, and locknuts provided in **HP9319**, to either the top or bottom of the ball joint pocket of the Cognito upper control arms depending on the application, see the chart below to determine. *If installing with a Cognito lift kit (i.e. 4"-6" lift kit) the low point of the lift kit is 4"-4.75" of lift, and the high point of the lift kit is 5"-6" of lift. Use anti-seize lubricant on the threads. Torque all hardware to **22 ft/lbs**.

Vehicle	Stock	Leveling Kit	*Low Point of Lift	*High Point of Lift
01-10 HD	Top	Bottom	Top	Bottom



- Mount the Cognito upper control arms to the frame with the factory nuts, bolts, and eccentric washers as previously removed. Set the bolts in the middle of the adjustment swing to be close enough to drive to an alignment shop. Torque alignment nuts to **90 ft-lbs**.
 - NOTE:**
THE CONTROL ARMS ARE NOT THE SAME. They are marked on the bottom side right at the ball joint mounting face, be sure to mount **8302** to the driver side, and **8303** on the passenger side.
- Mount the ball joint to the spindle with supplied hardware. Use the 9/16" flat washers supplied if the castle nut needs to be spaced down for the cotter pin to engage with its castellations, then torque the nut to **90 ft-lbs**. Install cotter pin and bend to lock into place.
 - If the castellations in the castle nut and the hole in the ball joint pin do not align once torqued to 90 Ft.-lbs continue tightening the nut until the two are aligned and the cotter pin can be installed. **NEVER LOOSEN THE NUT TO GET THE CORRECT ALIGNMENT!**
- (If equipped with Zerk fitting(s)) Grease the ball joint until the dust boot starts to swell. If these items are not greased, premature wear will result on these items! It is highly recommended to grease the ball joints every 3-5K miles.

(If equipped with Zerk fitting(s)) Grease the a-arm pivot bushing. If you do not grease these items, premature wear will result on these items! Its highly recommend to grease the pivot bushings every 3-5K miles.

- Note:**
Warranty on Cognito products will be void if damage occurs due to negligence in servicing the ball joints and pivot bushings every 3-5K miles with fresh grease.

9. The ABS and brake line must be remounted as to avoid binding and contact with any moving parts of the vehicle. Use the 1/4" hardware provided in [HP9319](#) to fasten the factory brake line bracket to the Cognito upper control arm. The bolts are self-tapping, and there is a pilot hole in the front of the arm on the underside. If necessary, slide the brake line through the bracket to obtain a suitable mounting situation. In some cases, it may be necessary to bend the factory mounting bracket to clear the sway bar. (Figure 3).
10. The abs line clip will install back into the control arm in the same area as factory control arm as shown in Figure 3. Double check the clearance of both the brake lines and the abs lines after the install with tires and wheels installed and at full droop and while the truck is on the ground through the complete steering cycle. Be sure there is no rubbing or loose cables anywhere.

Figure 3: Upper Control Arm Installed



11. Ensure that all bolts are properly torqued. Ensure there are no rubbing or loose cables anywhere after the Cognito UCA installation. Use cable ties to restrain any cables from interfering with any other part. Check that all lines are free of stress or interference while the vehicle is in full droop, full bump, and throughout the complete steering cycle.
12. Install front wheels and tires and torque lug nuts to factory manufacturer's specifications.

13. While the truck is still supported with the wheels and tires hanging at full drop measure the distance between the top of the tire and fender lip (A) as shown in Figure 4.



Record Measurement

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

14. 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 the desired ride height is reached below measurement (B). It is a good idea to record the final ride height after adjustments (C).

15. Check wheel and tire clearance one last time through the steering cycle. Make adjustments as needed.

16. Adjust headlights per owner's manual.

17. Have the vehicle professionally aligned.

- **Note:**

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 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. Camber should always be from $-.1^{\circ}$ to $+.1^{\circ}$ 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 warranted 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.



Cognito Motorsports, Inc.

Cognito Motorsports shocks by FOX Install Instructions

Application: Front shocks for 2001-2010 GM 1500HD, 2500, 2500HD, 3500HD

See figures 1 and 2 below, If using the stock upper control arm on your vehicle, the spacer must be in position directly under the lock nut as shown in Figure 1. If using a Cognito Motorsports Upper Control Arm Kit, place the spacer against the shock body as shown in Figure 2. The torque spec for the M12x1.25 upper stud nylon lock nut is 77 ft-lbs.



Figure 1: for use with stock upper arm

Figure 2: For use with Cognito upper arm

WARENTY/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.



Cognito Torsion Bar Adjuster Key Kit for 8 or 6 Lug 2WD/4WD Trucks/SUVs

INSTALL INSTRUCTIONS:

Cognito Torsion Bar Adjuster Key Kit for 8 or 6 Lug 2WD/4WD Trucks/SUVs
SKU: 110-90268, 110-90269, 110-90270 & 110-90771

PARTS LIST FOR SKU: 110-90268

QUANTITY	PART #	DESCRIPTION
2	TORSION-KEY-6	1999 6-Lug Torsion Bar Adjuster Key

PARTS LIST FOR SKU: 110-90269

QUANTITY	PART #	DESCRIPTION
2	TORSION-KEY-8	2001 8-Lug Torsion Bar Adjuster Key

PARTS LIST FOR SKU: 110-90270

QUANTITY	PART #	DESCRIPTION
2	TORSION-KEYWAY-2011	2011 8-Lug Torsion Bar Adjuster Key

PARTS LIST FOR SKU: 110-90771

QUANTITY	PART #	DESCRIPTION
2	TORSION-KEYWAY-2020	2020 8-Lug Torsion Bar Adjuster Key

**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.



INTRODUCTION

Cognito Torsion Bar Keys levels the front with the rear of the truck. Their forged construction makes them practically indestructible and they bolt in for easy installation. Torsion bar keys are used to set the ride height of the front of the truck and are commonly used in leveling kits, and it is important to set the height appropriately as to leave ample suspension droop travel to maintain a good ride quality. There are several different torsion bar spring rates that GM made and put in their trucks, the rate depending on the model and features of the truck. Some trucks that have a higher spring rate may not need aftermarket torsion bar adjuster keys to obtain the maximum recommended ride height. This kit is only to be used in leveling kit applications as well as lifted applications when the higher setting of that particular lift kit range is desired

REQUIREMENTS

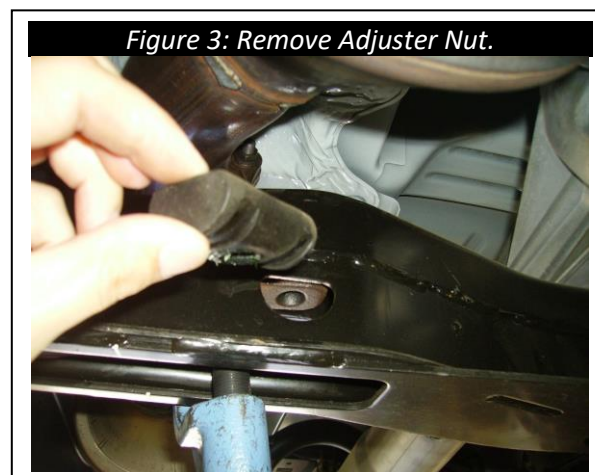
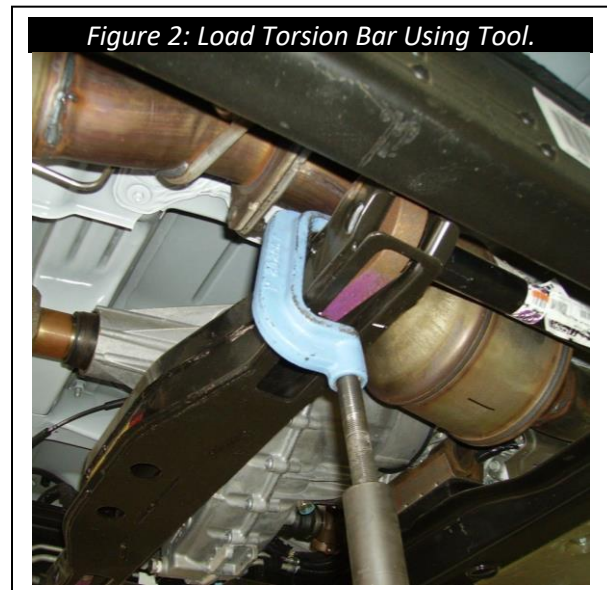
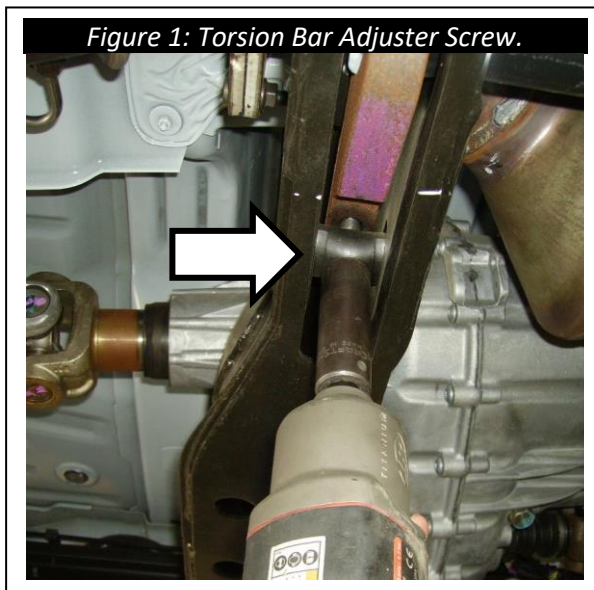
- Torsion bar loading tool is required for this installation.
- Installation requires a qualified mechanic.
- Follow the OE specifications when replacing or re-installing OE fasteners, retainers, and hardware specified in the OEM manual.
- Always wear safety glasses when using power tools.
- When a lift 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.

TECH NOTES

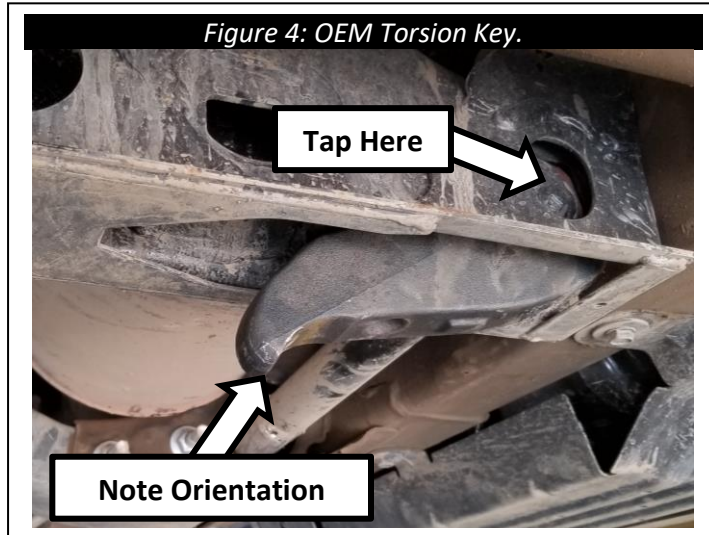
- Read instructions carefully and study the pictures (if included) before attempting installation.
- If this product was purchased as part of a kit each kit, and options to kits, are packaged separately. Therefore installation procedures are covered in separate instructions. Familiarize yourself with each specific set of instructions before beginning.
- Check the parts and hardware packages against the parts list to assure that your kit is complete before starting.

INSTALLATION

1. Rack the vehicle and lift it off the ground, or if no hoist is available then jack front of truck off the ground and support properly with jack stands.
 - **NEVER WORK ON AN UNSUPPORTED VEHICLE.**
2. Remove the torsion bar adjuster screw (Figure 1).
3. Using a torsion bar loading tool, load torsion bar (Figure 2) and remove adjuster nut (Figure 3), then unload torsion bar and remove tool. Do this on both sides of the vehicle
 - **NOTE:**
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 if other components effected in the front suspension are being worked on or replaced at this time.



4. Start replacing the torsion keys by first noting the orientation of the OEM key.
5. Slide the torsion bar forward into the lower control arm. If it seems lodged, use a hammer through the hole in the back of the torsion bar crossmember to knock it loose. This will allow the old key to be removed (Figure 4).



6. Reinstall the new adjuster key in roughly the same orientation that the OEM one was removed in (Figure 5). The Cognito key's hex shaped hole is clocked differently from the OEM key so it will not be in the exact same position, but it will be similar



7. Use the torsion bar loading tool to load the new key. Now install the adjuster nut and adjuster screw then remove the loading tool. This is the reverse order of unloading the key (Figures 1, 2, and 3).
 - **NOTE:**
Shocks must be installed and all supports under the lower control arms must be removed before the torsion bars can be loaded.
8. Tighten the adjuster bolt while the truck is still off the ground.
 - **NOTE:**
Do not tighten the adjuster bolt to raise the height of the vehicle while the vehicle is on the ground and the front suspension is holding its own weight. This will cause the adjuster bolt excess stress and will strip the threads.
9. Before lowering the vehicle, measure from the top of the wheel well directly above the center line of the wheel to the top of the tire (Figure 6). Record this measurement as (A) in Table 1 for both the driver and passenger side. These should be within 1/4" of one another.
 - **NOTE:**
It can be helpful to place a piece of painter's tape at the top of the wheel well directly above the centerline of the wheel and measure from there.
10. Subtract 3 inches from A and record this number as (B) for both the driver and passenger side.
11. Set the truck on the ground and drive forward and backward a few times to settle the suspension. Measure again from the top of the tire to the top of the wheel well as in the step above and record this measurement as (C) in Table 1 for both the driver and passenger side.
 - **NOTE:**
If (C) is larger than (B), the ride height is too tall. This can be caused by shocks or shock spacers that are too long, stacked shock spacers, spring preload devices, or any combination of the above.

Failure to use compatible shocks or limit straps to limit the vehicles front suspension may cause over-extension, as a result can cause damage to ball joints, uni-balls, tie rods, and/or CV axles, along with other related safety issues.

Warranty on Cognito products will be void if the vehicles front suspension is not properly limited to the above max ride height calculation.

Suspension Travel	Record	Measurement (Inches)	
		Driver	Passenger
Full Droop	A		
Max Ride Height	B = A – 3 in		
Ride Height	C		

Table 1. Suspension Travel Measurements



12. The difference between (A) & (C) should be 3” minimum for proper amount of droop travel to provide good ride quality and longevity of suspension components.

- **NOTE:**

On the ground, back out the adjuster bolt to lower the vehicle to the desired ride height and to level the vehicle side to side. Repeat the steps above until the proper ride height is reached on both sides of vehicle.

If the ride height is too low and there is more than 3” of droop travel measurement, then if desired the truck can be lifted back up by the frame to turn in the torsion bar adjuster bolts to preload the torsion bars more raising the ride height, then repeat steps above.

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

14. Check wheel and tire clearance through the steering cycle. Make adjustments as needed.

15. Adjust headlights per owner's manual.

16. Have the vehicle professionally aligned.

- **NOTE:**

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 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. 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 warranted 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.



Cognito Motorsports, Inc.

Cognito Motorsports shocks by FOX Install Instructions

Application: Front shocks for 2001-2010 GM 1500HD, 2500, 2500HD, 3500HD

See figures 1 and 2 below, If using the stock upper control arm on your vehicle, the spacer must be in position directly under the lock nut as shown in Figure 1. If using a Cognito Motorsports Upper Control Arm Kit, place the spacer against the shock body as shown in Figure 2. The torque spec for the M12x1.25 upper stud nylon lock nut is 77 ft-lbs.



Figure 1: for use with stock upper arm



Figure 2: For use with Cognito upper arm

WARENTY/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.



Cognito Ball Joint SM Series Upper Control Arm Kit for 2001-2010 GM 1500HD / 2500 / 2500HD / 3500 / 3500HD 2WD/4WD trucks, 2001-2013 GM 2500 2WD/4WD SUVs and 2003-2009 GM Hummer H2, H2 SUTs

INSTALL INSTRUCTIONS:

Cognito Ball Joint SM Series Upper Control Arm Kit for 2001-2010 GM 1500HD / 2500 / 2500HD / 3500 / 3500HD 2WD/4WD trucks, 2001-2013 GM 2500 2WD/4WD SUVs and 2003-2009 GM Hummer H2, H2 SUTs
SKU: 110-90290

PARTS LIST FOR SKU: 110-90290

QUANTITY	PART #	DESCRIPTION
1	8302	Upper Control Arm, Driver
1	8303	Upper Control Arm, Passenger
2	90804	Bolt-In Ball Joint (14mm Thread)
1	HP9319	Hardware Pack

LIST OF PARTS PREINSTALLED ON 8302

QUANTITY	PART #	DESCRIPTION
2	6878	Pivot Bushing Assembly

LIST OF PARTS PREINSTALLED ON 8303

QUANTITY	PART #	DESCRIPTION
2	6878	Pivot Bushing Assembly

PARTS LIST FOR SKU: HP9319

QUANTITY	PART #	DESCRIPTION
2	HARDWARE-1/4-20X1/2-THRDROLL	1/4"-20 X 1/2" Zinc Hex Head Tread Rolling Screw
2	HARDWARE-33078	1/4" SAE Zinc Flat Washer
2	HARDWARE-33618	1/4" Zinc Split Washer
8	HARDWARE-15057	5/16"-18 X 1-1/4" Grade 8 Yellow Zinc Hex Head Cap Screw
16	HARDWARE-33080	5/16" SAE Zinc Flat Washer
8	HARDWARE-37262	5/16"-18 Grade C Zinc Top Lock Nut
4	HARDWARE-33088	9/16" SAE Zinc Flat Washer



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.

BALL JOINT WARNING

The ball joint / upper control arm can no longer be used as the droop limiter of the front suspension. A shock or limit strap is required to be the limiter. It is required that the proper length shock from Cognito or a limit strap kit from Cognito be installed to prevent failure which could cause an accident and serious injury. If you have questions, please contact the Cognito Sales Team to have you questions or concerns addressed.



INTRODUCTION

The Cognito Ball Joint SM Series Upper Control Arm Kit is specifically for leveled and lifted applications where an upgrade is desired to provide better performance, style, and function. This kit will work as a direct replacement of the factory upper control arms on vehicles with stock suspension as well. The boxed sheet metal arms are powder coated semi-gloss black. Cognito alloy series ball joints are included as well as new maintenance free bushings. Ample droop travel is required for good ride quality and all suspension components to last and work properly. This control arm kit will add performance to the Chevy and GMC truck by correcting the ball joint angle for lifted and leveled applications, increasing droop travel, and increases caster slightly for better highway speed drivability. Designed and made in the USA.

REQUIREMENTS

- **The upper control arm is not designed to be the droop limiter, ball joint failure will occur if the upper arm is used as the droop limiter. A shock or limit strap is required to be the limiter. It is required that the proper length shock from Cognito or a limit strap kit from Cognito be installed to prevent failure which could cause an accident and serious injury.**
- Cutting of the service perch under the front upper arm frame pivot may be needed on some vehicles.
- Recommended max tire size-33"x11.5" on 8" wide rim with 4 5/8" backspace. Max tire size on stock rim 285/75/R16 or equivalent depending on rim diameter.
- Installation requires a qualified mechanic.
- Follow the OE specifications when replacing or re-installing OE fasteners, retainers, and hardware specified in the OEM manual.
- 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.

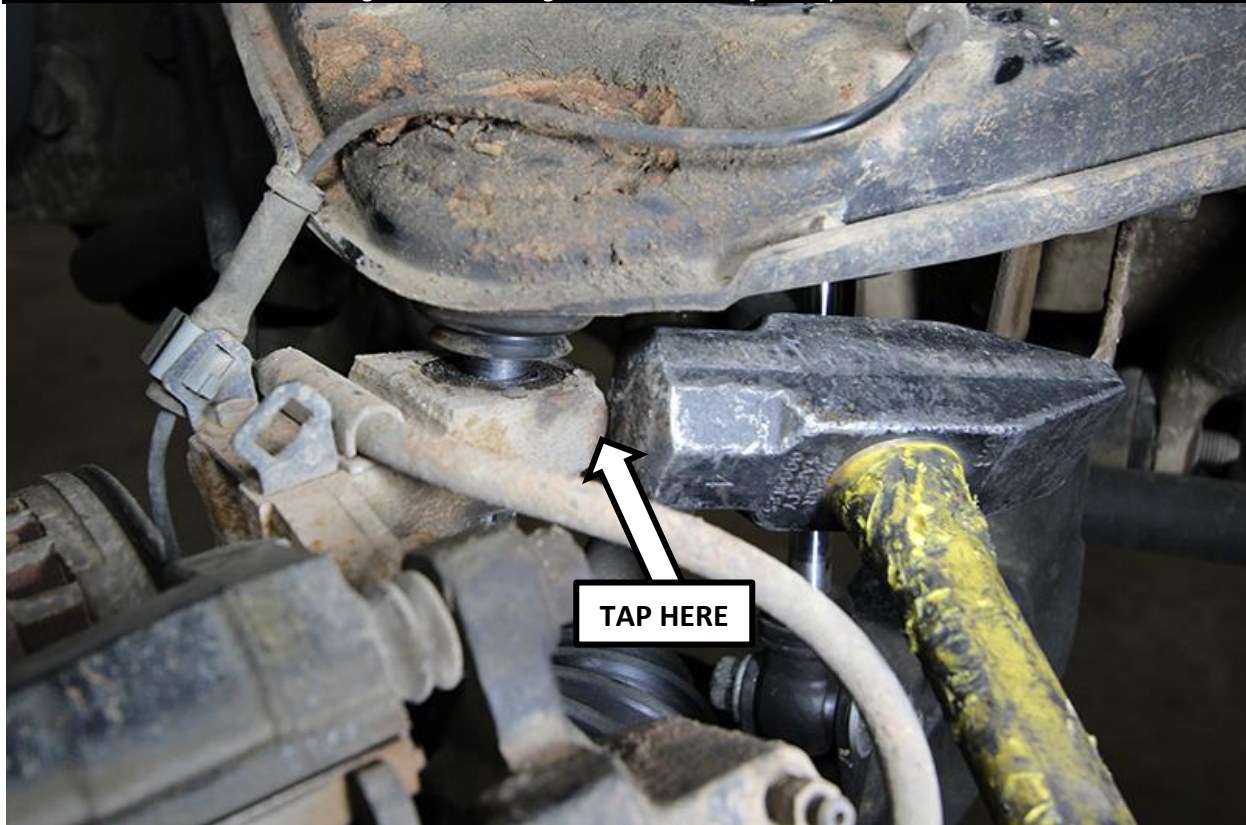
TECH NOTES

- Read instructions carefully and study the pictures (if included) before attempting installation.
- If this product was purchased as part of a kit each kit, and options to kits, are packaged separately. Therefore installation procedures are covered in separate instructions. Familiarize yourself with each specific set of instructions before beginning.
- Check the parts and hardware packages against the parts list to assure that your kit is complete before starting.

INSTALLATION

1. Rack the vehicle and lift it off the ground, or if no hoist is available then jack front of truck off the ground and support properly with jack stands. Remove the front tires and set them as side.
 - **NEVER WORK ON AN UNSUPPORTED VEHICLE.**
2. If torsion bar adjuster keys were purchased with the Cognito leveling kit, unload the torsion bars now, and remove the factory torsion adjuster keys from the vehicle. Replace with the new torsion bar keys and reload the torsion bars lightly.
3. Remove the factory upper control arms by supporting the lower control arms with a floor jack or stand used in a safe fashion. Loosen the ball joint nut of the upper control arm enough until the nut can be spun by hand, but do not remove totally. Use a pickle fork to separate the ball joint from the spindle or tap on the side of the spindle next to the ball joint stud. When the tapered seat of the ball joint breaks loose remove the ball joint nut, and separate the factory upper control arm from the spindle.

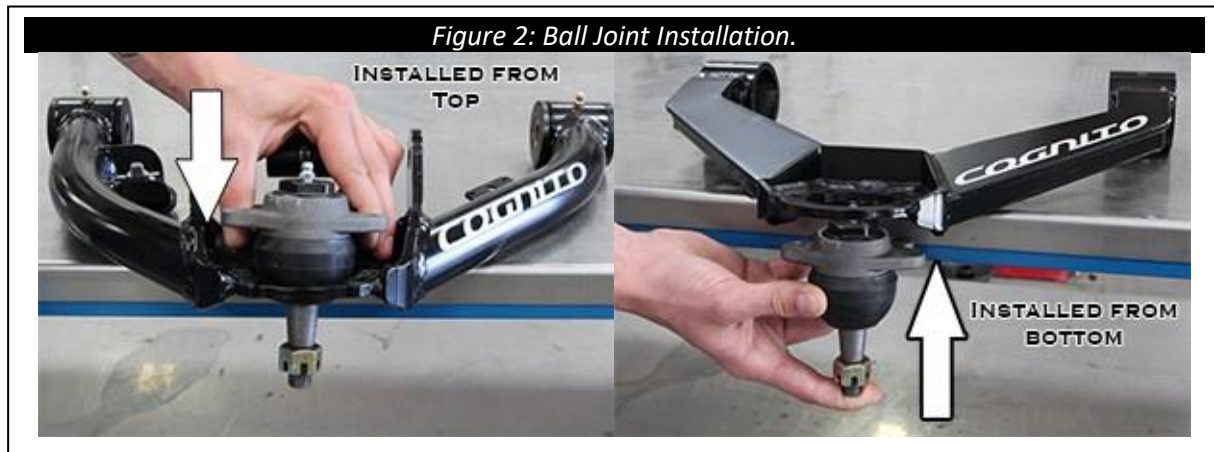
Figure 1: Breaking Ball Joint Loose from Spindle.



4. Remove the factory bolts and eccentric washers that connect the control arm to the frame and retain them for future use. Place them aside and note the order in which the components were removed, that way they may be re-installed in the same manner they came off.
 - **NOTE:**
The plastic inserts will need to be removed and discarded from the eccentric washers.

- Mount **199-90804**, Cognito Bolt-In Ball Joint, with the 5/16" bolts, flat washers, and locknuts provided in **HP9319**, to either the top or bottom of the ball joint pocket of the Cognito upper control arms depending on the application, see the chart below to determine. *If installing with a Cognito lift kit (i.e. 4"-6" lift kit) the low point of the lift kit is 4"-4.75" of lift, and the high point of the lift kit is 5"-6" of lift. Use anti-seize lubricant on the threads. Torque all hardware to **22 ft/lbs**.

Vehicle	Stock	Leveling Kit	*Low Point of Lift	*High Point of Lift
01-10 HD	Top	Bottom	Top	Bottom



- Mount the Cognito upper control arms to the frame with the factory nuts, bolts, and eccentric washers as previously removed. Set the bolts in the middle of the adjustment swing to be close enough to drive to an alignment shop. Torque alignment nuts to **90 ft-lbs**.
 - NOTE:**
THE CONTROL ARMS ARE NOT THE SAME. They are marked on the bottom side right at the ball joint mounting face, be sure to mount **8302** to the driver side, and **8303** on the passenger side.
- Mount the ball joint to the spindle with supplied hardware. Use the 9/16" flat washers supplied if the castle nut needs to be spaced down for the cotter pin to engage with its castellations, then torque the nut to **90 ft-lbs**. Install cotter pin and bend to lock into place.
 - If the castellations in the castle nut and the hole in the ball joint pin do not align once torqued to 90 Ft.-lbs continue tightening the nut until the two are aligned and the cotter pin can be installed. **NEVER LOOSEN THE NUT TO GET THE CORRECT ALIGNMENT!**
- (If equipped with Zerk fitting(s)) Grease the ball joint until the dust boot starts to swell. If these items are not greased, premature wear will result on these items! It is highly recommended to grease the ball joints every 3-5K miles.

(If equipped with Zerk fitting(s)) Grease the a-arm pivot bushing. If you do not grease these items, premature wear will result on these items! Its highly recommend to grease the pivot bushings every 3-5K miles.

- Note:**
Warranty on Cognito products will be void if damage occurs due to negligence in servicing the ball joints and pivot bushings every 3-5K miles with fresh grease.

9. The ABS and brake line must be remounted as to avoid binding and contact with any moving parts of the vehicle. Use the 1/4" hardware provided in [HP9319](#) to fasten the factory brake line bracket to the Cognito upper control arm. The bolts are self-tapping, and there is a pilot hole in the front of the arm on the underside. If necessary, slide the brake line through the bracket to obtain a suitable mounting situation. In some cases, it may be necessary to bend the factory mounting bracket to clear the sway bar. (Figure 3).
10. The abs line clip will install back into the control arm in the same area as factory control arm as shown in Figure 3. Double check the clearance of both the brake lines and the abs lines after the install with tires and wheels installed and at full droop and while the truck is on the ground through the complete steering cycle. Be sure there is no rubbing or loose cables anywhere.

Figure 3: Upper Control Arm Installed



11. Ensure that all bolts are properly torqued. Ensure there are no rubbing or loose cables anywhere after the Cognito UCA installation. Use cable ties to restrain any cables from interfering with any other part. Check that all lines are free of stress or interference while the vehicle is in full droop, full bump, and throughout the complete steering cycle.
12. Install front wheels and tires and torque lug nuts to factory manufacturer's specifications.

13. While the truck is still supported with the wheels and tires hanging at full drop measure the distance between the top of the tire and fender lip (A) as shown in Figure 4.



Record Measurement

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

14. 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 the desired ride height is reached below measurement (B). It is a good idea to record the final ride height after adjustments (C).

15. Check wheel and tire clearance one last time through the steering cycle. Make adjustments as needed.

16. Adjust headlights per owner's manual.

17. Have the vehicle professionally aligned.

- **Note:**

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 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. Camber should always be from $-.1^{\circ}$ to $+.1^{\circ}$ 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 warranted 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.