COGNITO SM Series Bolt-In Ball Joint 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:

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SKU: 110-90290



COMPONENTS INCLUDED:

QUANTITY	PART #	DESCRIPTION
1	8302	COGNITO 2001-2010 GM HD SM Bolt-In Ball Joint UCA DRVR
1	8303	COGNITO 2001-2010 GM HD SM Bolt-In Ball Joint UCA PASS
2	91334	Bolt-In Ball Joint, Large GM
4	6878	Pivot Bushing, Control Arm, 14mm
1	HP9319	Hardware Pack
2	2100	COGNITO Rivet On Logo Badge, 4.75” OAL
4	HARDWARE-RIVER-1/8	1/8” DIA X 3/16”-1/4” GRIP RANGE SS RIVET

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.

WARNING

Please read this entire instruction sheet before beginning installation. Proper installation of these components requires a qualified mechanic. Always wear safety glasses when using power tools, and take appropriate precautions when working under a vehicle. If these instructions are not properly followed you may jeopardize your, and your passenger’s safety, and severe frame, suspension or tire damage may also result from improper installation.
Modification of vehicle suspension can interfere with ride-height sensors, active suspension, lane departure features, semi-autonomous, and autonomous driving features. It is the responsibility of the installer to determine feature compatibility prior to installation. Recalibration of sensors may be required in the event of any modification.

BALL JOINT WARNING:

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. If you have questions, please contact the Cognito Sales Team to have you questions or concerns addressed.

TECH NOTES:

- Read instructions carefully and study the pictures (if included) before attempting installation.
- If this product was purchased as part of a bundle/package, familiarize yourself with each set of instructions included with the bundle/package before beginning.
- Check the parts and hardware packages against the parts list to assure that your kit is complete before starting.
- Ball joints come pre-greased from the factory.

REQUIREMENTS

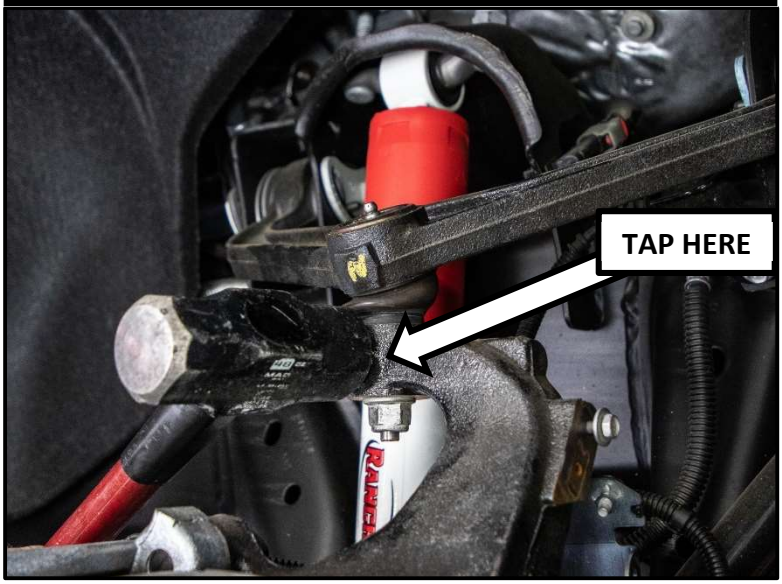
- **The upper control arm is not designed to be the droop limiter, ball joint failure will occur if the upper arm is used as the droop limiter. A shock or limit strap is required to be the limiter. It is required that the proper length shock from Cognito or a limit strap kit from Cognito be installed to prevent failure which could cause an accident and serious injury. When installing the upper control arms, it is critical that the lower control arm be properly supported to limit the movement of the suspension. Removal of droop limiting parts while the torsion bar is loaded can result is sudden and rapid movement of the suspension, potentially resulting in damage to components, serious injury or death.**
- 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.
- Proper shocks and shock lengths must be used or damage to the control arms, ball joints, and vehicle will occur.
- Trimming of inner fender well and bottom rear of steel fender may be required.
- Installation requires a qualified mechanic.
- Follow the OE specifications when replacing or re-installing OE fasteners, retainers, and hardware specified in the OEM service manual.
- Always wear safety glasses when using power tools.
- When a lift is required to perform the installation of these products ensure the vehicle is properly supported before attempting installation or serious injury may occur.

INSTALLATION

1. Place the truck on a flat surface with the parking brake engaged, chock the rear tires.
2. Use a suitable floor jack in the manufacturer designated spot on the frame to lift the front of the truck, then place a suitable jack stand under the frame and set the truck down securely on the jack stand. NEVER WORK UNDER AN UNSUPPORTED VEHICLE. Remove the front wheels and tires.
3. 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.

4. 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]**

Figure 1: UCA and Spindle Disassembly



5. 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.
6. 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**]. **[FIGURE 2]**

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

Figure 2: Ball Joint Installation



7. 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.
8. 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 [Torque the castle nut to **50 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 **50 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!***
9. (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.
10. 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]**

Figure 3: Upper Control Arm Installed



11. 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.

12. 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.

13. Repeat the steps above for the passenger side using the UCA P/N 8303.

14. Reinstall the wheels and tires [Torque lugs to factory specs].

15. 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].**

Figure 4: Distance between Top of Tire and Fender Lip



Suspension Travel	Record	Measurement (Inches)
Full Droop	**A**	
Max Ride Height	**B** = A – 2 in	
Ride Height	**C**	

16. 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).
17. Check wheel and tire clearance one last time through the steering cycle. Make adjustments as needed.
18. Adjust the headlights per your owner’s manual.
19. Get vehicle professionally aligned after the install.
    - **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.

VERIFY ALL FASTENERS ARE PROPERLY TORQUED BEFORE DRIVING VEHICLE.
RETORQUE ALL NUTS, BOLTS AND LUGS AFTER 100 MILES AND PERIODICALLY THEREAFTER.

This completes the installation steps, enjoy your new Cognito SM Series Ball Joint Upper Control Arm 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 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.

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