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### **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 (Old SKU:  
UCAK100010)



### **PARTS LIST FOR SKU: 110-90290 (Old SKU: UCAK100010)**

| QUANTITY | PART #    | DESCRIPTION                 |
|----------|-----------|-----------------------------|
| 1        | 8302      | Driver upper control arm    |
| 1        | 8303      | Passenger upper control arm |
| 2        | 110-90142 | Heavy duty ball joint       |
| 1        | HP9124    | Hardware package            |

### **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.

### **REQUIREMENTS**

- Installation requires a qualified mechanic.
- Read instructions carefully and study the pictures (if included) before attempting installation.
- Check the parts and hardware packages against the parts list to assure that your kit is complete.
- Cutting of the service perch under the front upper arm frame pivot may be needed on some vehicles.
- Always wear safety glasses when using power tools. Some cutting is required.

### **WHEEL AND TIRE SPECS**

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

1. Rack the vehicle and hoist 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. The Cognito Upper Control Arm Kit is a direct replacement of the factory upper control arms on vehicles with stock suspension. If you have purchased and are replacing the torsion bar adjuster keys along 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 some kind of stand used in a safe fashion. Loosen the ball joint nut of the upper control arm enough until you can spin the nut with your fingers, but do not remove totally, and use a pickle fork to separate the ball joint from the spindle, or tap the side of the spindle next to the ball joint stud. When the tapered seat of the ball joint breaks loose, you may then remove the ball joint nut, and separate the factory upper control arms from the spindles. **See Figure 1**

*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 in order, so that they may be re-installed in the same manner they came off. The plastic inserts will need to be removed and discarded from the eccentric washers.
5. Mount the supplied ball joints (**#6292**) with the 5/16" bolts, flat washers, and locknuts provided in **Hardware Package 9124**, to either the top or bottom of the ball joint pocket of the Cognito upper control arms depending on your application, see the chart below to determine (**Figure 2**). \*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. Tighten all hardware in this step to 22 ft/lbs. of torque.

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

Figure 2: ball joint installation



6. From the **Hardware Package #9124**, insert the polyurethane bushings, crush sleeves, and grease fittings into the ends of the Upper control arms. If required, WD-40 may be used to aid installation of bushings into the arm and a small amount of grease to aid installation of sleeves into bushings. Push the bushings into the arms first, then the sleeve through the bushings. NOTE: **Do not** grease the bushings before pressing them into the arms. Do not over tighten the grease fitting; tighten until it is snug (**Figure 3**).

Figure 3: brushing and crush sleeve installation



7. 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 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.
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 in order for the cotter pin to engage, and tighten to no more than 50 ft/lbs. of torque, making sure the cotter pin hole will line up with the castle nut notch. You may have to chase the small end of the tapered hole in the spindle with a 9/16" drill bit due to the slightly larger ball joint stud. Insert the cotter pin and bend ends around the nut to secure (**Figure 4**).
9. **Grease the ball joint until the dust boot starts to swell. Also, grease the upper control arm pivot bushings. If you do not grease these items, premature wear will result! We highly recommend greasing the ball joints and pivot bushings every 3-5K miles.**
10. The ABS and brake line must be remounted as to avoid binding and contact with any moving parts of the vehicle. Use the ¼" hardware provided 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 4**).

11. The abs line clip will install back into the control arm in the same area as factory control arm as shown in **Figure 4**. 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 4: Driver side Cognito control arm installed



12. Install front wheels, torque lugs to manufacturers' specification. 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 5**.

Figure 5: Distance between top of tire and fender lip



**Record Measurement**

|                                 |            |
|---------------------------------|------------|
| <b>Full Drop Out (A)</b>        |            |
| <b>Subtract 2"</b>              | <b>-2"</b> |
| <b>Max Ride Height (B)</b>      |            |
| <b>Finished Ride Height (C)</b> |            |

13. Record measurement (A) in chart below. Subtract 2" from (A) to determine maximum ride height (B). This will insure the proper amount of available down travel. **NOTE:** Maximum ride height is not required if you reach desired ride height below measurement (B). It is a good idea to record your final ride height after adjustments (C).
14. Check wheel and tire clearance one last time through the steering cycle. Make adjustments as needed.
15. **Have the vehicle's front end professionally aligned using these front end alignment guidelines:**

Some Cognito upper control arms have added caster built into them to increase drivability performance, therefore it's important to be sure the correct control arm is installed on the correct side of the vehicle. It's also important to make your alignment shop aware that if caster is high, that is the intention by design.

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

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

16. Adjust headlights per owner's manual. See "Wheel and Tire Specs" on page 1.

## 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.