# **START HERE**

Install Sheet #7250 | Cognito 3" Performance Uniball Leveling Lift Kit for 2020 GM 2500HD/3500HD 2WD/4WD Trucks | SKU: 110-P0882



34935 Flyover Ct. Bakersfield, CA 93308 Phone: (661) 588-8085 | Fax: (661) 588-8295 INSTALL SUMMARY SHEET: Cognito 3" Performance Uniball Leveling Lift Kit for 2020 GM 2500HD/3500HD 2WD/4WD Trucks SKU: 110-P0882

PART	PARTS LIST FOR SKU: 110-P0882			
QTY.	PART #	DESCRIPTION		
1	110-90805	Uniball SM Series Upper Control Arm Kit		
1	110-90771	Torsion Bar Keys		
2	210-90774	Fox 2.0 (PSMT) Single Front Shock (Performance Series Mono Tube). NOTE: Only for use with Cognito upper control arms.		
2	210-90212	Fox 2.0 (PSMT) Single Rear Shock for 0-1" lift height		
1	110-91031	1" Block and 16" U-bolt Kit		



## 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 Uniball Leveling Lift Kit. This kit is designed to lift your vehicle 3" in the front and 1" in the rear while providing added droop travel with the Cognito Ball Joint SM Series Upper Control Arms. This kit also includes Fox 2.0 Performance Series Shocks for the front and rear to ensure improved ride quality and satisfaction.

## **TECHNICAL INFORMATION**

- This leveling kit may only be installed on a truck that has not already been leveled. You cannot stack leveling kits or shock spacers.
- Only the shocks supplied in this kit can be used with this leveling package.
- This INSTALL SUMMARY SHEET will guide the installer through the proper order of steps to install the individual components that comprise this package leveling kit, by referring to the specific Instruction Packets provided with each Cognito component.
- This kit requires advanced mechanical procedures that should only be performed by a qualified mechanic.
- Read each set of instructions carefully and study the pictures before attempting installation.
- Check the parts and hardware packages against the parts list in <u>each</u> instruction set to assure that your kit is complete.
- Cutting of the service perch under the front upper arm frame pivot is required.
- Unloading the torsion bars is required.

Install Sheet #7250 | Cognito 3" Performance Uniball Leveling Lift Kit for 2020 GM 2500HD/3500HD 2WD/4WD Trucks | SKU: 110-P0882

This Kit Install Summary will guide you through the <u>necessary order of steps</u> 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 work to prepare for the installation and the prescribed order for installing components – by referring you to the <u>individual instructions packaged with each</u> 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 INDIVDUAL INSTALLATION INSTRUCTION SHEETS INCLUDED WITH THIS KIT BEFORE BEGINNING.

## INSTALLATION

- 1. Begin by locating the <u>3</u> instruction sheets <u>7233</u>, <u>7037</u>, and <u>7024</u> included with this kit. You will need them <u>all</u> to do this install. If instructions are missing or damaged, contact Cognito Motorsports for replacements.
- Start working in the rear with instruction set <u>7024</u>. Start at the beginning and follow to completion but use the rear shocks provided with this kit <u>210-90212</u>. Use the OEM hardware and torque spec for the new shocks (85 ft-lb). Use a 21mm wrench or socket.
- 3. Start working in the front with instruction set **7037**. Start at the beginning and work through the steps until <u>both</u> torsion keys are unloaded and the adjuster screw nuts are removed.
- 4. Now reference instruction set **7233**. Start with the removal of the OEM upper control arms and work through until the Cognito upper control arms are fully assembled and the service perch has been cut off but stop before installing the new arms.
- 5. Use a jack or jack stand to support the lower control arm and remove the OEM shock using a 21mm wrench or socket. Do this on both sides of the vehicle and save the lower shock mounting hardware.
- 6. Locate the provided front Fox Shocks <u>210-90774</u> and start by installing the lower shock mount using the OEM hardware. If there is a ¼" shock spacer included with the Fox shock, use it along with the provided ½" hardware to install the upper shock mounts. If no spacer is included, install the upper shock mounts using only the ½" hardware. Torque the ½" hardware to 50ft-lb using a ¾" socket and the lower shock mounts to the factory specification 89 ft-lb. Stacking or adding spacers that are not permitted will cause damage to the vehicle.
- 7. Pick up where you left off from instruction set **7233** and continue until both Cognito upper control arms are fully installed and greased but stop there.
- 8. Refer to instruction set **7037** where you left off (installing the Cognito torsion keys) and work through to the end setting the ride height but use **7233** for alignment guidelines.

Install Sheet #7250 | Cognito 3" Performance Uniball Leveling Lift Kit for 2020 GM 2500HD/3500HD 2WD/4WD Trucks | SKU: 110-P0882

This completes the installation steps, enjoy your new Cognito Performance Leveling Lift 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.

#### INGENUITY · QUALITY · PERFORMANCE

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-	1999 6-Lug Torsion Bar Adjuster	
	KEY-6	Кеу	

PARTS LIST FOR SKU: 110-90269			
QUANTITY	PART #	DESCRIPTION	
2 TORSION-		2001 8-Lug Torsion Bar Adjuster	
КЕҮ-8 Кеу			

PARTS LIST FOR SKU: 110-90270			
QUANTITY	PART #	DESCRIPTION	
2	TORSION-	2011 8-Lug Torsion Bar Adjuster	
	KEYWAY-	Кеу	
	2011		

PARTS LIST FOR SKU: 110-90771			
QUANTITY	PART #	DESCRIPTION	
2	TORSION-	2020 8-Lug Torsion Bar Adjuster	
	KEYWAY-	Кеу	
2020			



## 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 instillation.
- 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.



#### 🖊 Install Sheet 7037



#### **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:
     Susper

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.









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- 4. Start replacing the torsion keys by first noting the orientation of the OEM key.
  - Figure 4: OEM Torsion 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 <u>off</u> 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 <u>will</u> cause the adjuster bolt excess stress and <u>will</u> 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.
- 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 overextension, 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.



#### INGENUITY · QUALITY · PERFORMANCE

Suspension	Record	Measurement (Inches)		
Travel		Driver	Passenger	
Full Droop	Α			
Max Ride Height	<b>B</b> = A – 3 in			
Ride Height	С			

 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.

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#### **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

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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**

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#### 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 suspension components and tires.

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SKU: 110-90805

Cognito SM Series Uni-ball Upper Control Arm Kit for 2020 GM 2500HD/3500HD 2WD/4WD

#### **INSTALL INSTRUCTIONS:**

Cognito SM Series Uni-ball Upper Control Arm Kit for 2020 GM 2500HD/3500HD 2WD/4WD SKU: 110-90805

PARTS LIST FOR SKU: 110-90805		
QUANTITY	PART #	DESCRIPTION
1	80006	Uni-ball Upper Control Arm
		Assembly, Driver
1	80007	Uni-ball Upper Control Arm
		Assembly, Passenger

PARTS LIST FOR SKU: 80006			
QUANTITY	PART #	DESCRIPTION	
1	8689	Uni-ball UCA Weldment, Driver	
1	6446	UCA Cap	
2	6879	Pivot Bushing Assembly	
1	91072	Uni-Ball Pin Assembly	
1	HARDWARE-	2.375" Spirolox Internal	
	SPIROLOX-2.375	Retaining Ring	

PARTS LIST FOR SKU: 80007			
QUANTITY	PART #	DESCRIPTION	
1	8690	Uni-ball UCA Weldment,	
		Passenger	
1	6446	UCA Cap	
2	6879	Pivot Bushing Assembly	
1	91072	Uni-Ball Pin Assembly	
1	HARDWARE-	2.375" Spirolox Internal	
	SPIROLOX-2.375	Retaining Ring	



## 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.

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.

PARTS LIST FOR SKU: 91072 (PRE-INSTALLED)			
QUANTITY	PART #	DESCRIPTION	
1	UNI-BALL COMH20T	Uni-ball COMH20T	
1	HP9335	Replacement Uniball Pin Hardware Pack	



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PARTS LIST FOR SKU: HP9335 (PRE-INSTALLED)				
ITEM NO.	QUANTITY	PART #	DESCRIPTION	
1	1	6974	Uniball Pin	
2	1	6945	Uniball Hat	
3	1	HARDWARE-33626	1/2" Lock Washer	
4	1	6952	12-point Castle Nut ½-20	
5	1	HARDWARE-M14-F/W	M14 Flat Washer	
6	1	HARDWARE-CASTLNT-M14-1.5	M14-1.5 Castle Nut	
7	2	HARDWARE-COTTERPIN-1	Cotter Pin	

## ASSEMBLY OF UNIBALL PIN AND HARDWARE







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## INTRODUCTION

The Cognito Uni-Ball SM Series Upper Control Arm Kit is a direct replacement for the factory upper control arms (UCAs). The Cognito UCA kit will add performance due to a modified ball joint angle that extends travel limitations of the ball joint in leveled or lifted applications. The allowable droop travel is also improved with the design of these arms. 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.
- 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 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 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.
- If the arm is equipped with grease fittings, service should be performed every 3,000 5,000 miles.

## TOOLS YOU WILL NEED

- Impact Driver
- Rachet
- Rachet Socket Extensions
- Torque Wrench (ft-lbs.)
- Hammer
- Metal Cutting Tools
  - Cutoff wheel
- Metal Sanding Tools
  - Sanding Disk

- Sockets/Wrenches:
  - 10-mm
  - 13-mm
  - 18-mm
  - 22-mm
  - 24-mm







SKU: 110-90805

## INSTALLATION

- 1. Support the vehicle on a lift or on jack-stands and remove the front wheels and tires. **NEVER WORK ON AN** UNSUPORTED VEHICLE.
- 2. It is critical that the correct length shock is used, using a shock that is too long will cause the upper ball joint to bind and break. For this kit, when used in a stock-height or leveling application, the maximum shock length that can be used is 19.7" from the center of the lower eyelet to the mounting face at the top of the strut hat. Any spacers added to the shock must be included in this measurement (Figure 1). If this UCA kit is used with any other parts then specified, warranty will be void on this arm kit, and damage may occur to arms, ball joints, tie rods, cv axles and possibly more. Do not remove or unbolt the shock while the torsion bars are loaded.



3. Remove the factory upper control arms. With an 18mm socket, 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. While prying the control arm away from the spindle, hit the side of the spindle with a hammer to dislodge the taper seat. 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.





#### Install Sheet 7233

**4.** Remove the factory bolts and eccentric washers that connect the control arm to the frame with a 24mm wrench and place them safely aside.

**Note:** Pay attention to the orientation in which they were removed. These bolts need to be re-installed in the same orientation and location.

5. Remove the wheel speed sensor and brake line bracket that are attached to the spindle.



6. Etch or make a line using the upper brake line bracket as a template guide, and then remove the 13-mm screw holding the upper brake line bracket to the service perch, see Figure 4.





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**7.** Mark the service perch. Tie all lines and wires out of the way and clear of the cutting area, and then cut the service perch using a cutting tool, see Figure 5.



8. After cutting the service perch, sand down all the edges and paint or coat them to prevent corrosion.



9. Reinstall the upper brake line bracket. The cut line should be flush with the bracket, see Figure 6.

**10.** Reinstall the lower brake line bracket and wheel speed sensor that were removed in the steps above.

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Install Sheet 7233

#### INGENUITY · QUALITY · PERFORMANCE

11. Locate the driver side <u>80006</u> Cognito UCA and mount the arm to the frame using the factory bolts, nuts, and eccentric washers. Ensure that the bolts are in the middle of the adjustment swing. Torque to **90 ft-lbs.** Professional front-end alignment is required immediately upon installation. It is not recommended to drive long-term on this alignment.

**Note:** The driver and passenger control arms are not identical. Ensure the Cognito logo on the UCA is closer to the front of the vehicle.



- Mount the uniball joint to the spindle with supplied hardware. Use the M14 washer and castle nut and torque to 80 ft-lbs. Insert the cotter pin and bend ends around the nut to secure. Never loosen the castle nut to align the cotter pin hole.
- **13.** Repeat the steps above to install the Cognito UCA on the opposite side of the vehicle.
- **14.** 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.
- **15.** Install front wheels and tires and torque lug nuts to factory manufacturer's specifications.





📕 Install Sheet 7233 🖌

**16.** 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, see Figure 8. Record this measurement as (A) in Table 1. Subtract 3 inches from A and record this number.

**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.

17. 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. 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 to limit the vehicles front suspension may cause over-extension, which 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)
Full Droop	Α	
Max Ride Height	<b>B</b> = A – 3 in	
Ride Height	С	



Table 1. Suspension Travel Measurements



- 18. Adjust headlights per owner's manual.
- **19.** 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**

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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.

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#### Product Safety Advisory

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# COGNITO

INGENUITY • QUALITY • PERFORMANCE Cognito Rear Lift Block and U-Bolt Kit

#### **INSTALL INSTRUCTIONS:**

Cognito Rear Lift Block and U-Bolt Kit

PARTS LIST		
QUANTITY	PART #	DESCRIPTION
2	Axle Block	Rear lift blocks
4	U-Bolt	Extended length U-bolts w/ washers and nuts



## 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.

## \*\*\*WARNING: GM VEHICLES WITH SUPER CRUISE SYSTEM\*\*\*

If your vehicle came equipped with the Super Cruise, hands free driving system, the vehicle <u>should not be modified</u>. The Super Cruise system relies on many sensors that must be calibrated by the manufacturer to ensure proper function and safety. If the vehicle is modified by changing the height or rake of the vehicle these sensors are no longer calibrated. At that point the system will no longer work properly and safety or function of the system cannot be guaranteed.

## \*\*\*WARNING: FORD VEHICLES WITH BLUE CRUISE SYSTEM\*\*\*

If your vehicle came equipped with the Blue Cruise, hand free driving, system, the vehicle <u>should not be modified</u>. The Blue Cruise system relies on many sensors that must be calibrated by the manufacturer to ensure proper function and safety. If the vehicle is modified by changing the height or rake of the vehicle these sensors are no longer calibrated. At that point the system will no longer work properly and safety or function of the system cannot be guaranteed.

## REQUIREMENTS

- Exhaust modification may be necessary.
- Drive line modification may be necessary.
- 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.
- Foot-pound readings are listed on the Torque Specification Chart at the end of the instructions.





## INSTALLATION

1. Park vehicle on level ground. Mark the slip yoke on the drive shaft where it comes out of the tail housing and measure how far it is from the tail housing (Figure 1). This mark will be needed later to determine how long to lengthen the drive shaft if needed. Record measurement here: \_\_\_\_\_\_.



- **2.** Rack the vehicle and lift it off the ground, or if no hoist is available then jack rear of truck off the ground and support properly with jack stands. Remove the rear tires and set them as side.
  - <u>NEVER WORK ON AN UNSUPPORTED VEHICLE.</u>
- **3.** If using OEM brake lines, check to make sure they will not be overextended when the suspension reaches full droop. Modifications to the OEM brake line brackets might be necessary. If aftermarket extended brake lines were purchased, install them now. Make sure to bleed the brakes, purging any air from the system and checking for leaks.
  - NOTE:
    - If brake line length is needed, remove any clamps or brackets holding the OEM brake lines in place.
- 4. Remove the lower shock mount bolts holding the shocks to the axle on both sides of the vehicle.

5. Support one side of the rear axle and remove the U-bolt nuts from that side of the vehicle. Remove the factory U-bolts and discard them with the nuts (Figure 2).



6. Lower the support under the axle until there is enough room to install the lift block (Figure 3).



- 7. New U-bolts may be larger in diameter than the factory ones depending on the vehicle. Make sure the new U-bolts fit through the U-bolt plate. Drill the 4 holes in the U-bolt plate out to the proper size if needed (Figure 4)
  - NOTE:

Always use safety glasses when using power tools.



**8.** The centering pin on the block should fit snugly into the hole on the spring perch which is welded to the rear axle housing. Be sure that the pin is not too long and touching the axle housing tube. If necessary, trim the length of the pin to prevent this (Figure 5).



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**9.** If the block is tapered, the tall end needs to be towards the <u>rear</u> of the vehicle. This will pitch the pinion angle up toward the transmission. If the block is straight, the hole on the top of the block may be offset from the centering pin on the bottom. If this is the case, orient the block so that the pin is offset <u>forward</u> of the pin in the leaf pack. The centering pin on the leaf pack should fit snugly into the hole in the top of the block (Figure 6).



**10.** Use the extended length U-bolts and re-assemble the U-bolt system with the U-bolt plate on top of the spring pack and the U-bolt lower plate under the rear axle just as they were before disassembly. Apply anti-seize to the threads of the U-bolts before installing the nuts (Figure 7).



**11.** Repeat the steps above for the opposite side of the vehicle.





- 12. Some kits may have U-bolts that are long and will extend too far past the nut after installation and will need to be trimmed to get a socket on them to torque or to maintain max ground clearance. If this is the case, cut the bottom of the U-bolt leaving approximately 1" of threads extending past the nut (Figure 8). Make sure the nut is threaded on past the cut line if the bolt is removed from the install position to cut it. This will help straighten out the threads on the cut edge and make reinstalling the nut easier. Use a grinder/sander to add a 45° chamfer to the cut edge before removing the nut (Figure 8).
  - NOTE:

Always use safety glasses when cutting or grinding.



- **13.** Torque the U-bolt nuts to the specified torque spec in the chart at the end of these instructions (Table 1). Be sure to tighten the nuts evenly and in a star pattern on all the U-bolts so that the amount of thread protruding is about the same.
- 14. Install rear shocks, torque OEM hardware to OEM specs.
- **15.** Ensure that all bolts are properly torqued. Ensure there are no rubbing or loose cables anywhere after the Cognito lift block installation. Use cable ties to restrain any cables from interfering with any other parts. Check that all lines are free of stress or interference while the vehicle is in full droop and full bump.
- **16.** If the lift block is tapered, add **1** extra quart of gear oil to properly oil the pinion gear.
- **17.** Re-install rear wheels and set the vehicle back on the ground.
- **18.** Retake the measurement from step **1** and record it here: \_\_\_\_\_\_. Subtract the first measurement from this one. If the difference is more than **1.5**", it will be required to have the driveline lengthened by that amount.

## TORQUE SPECIFICATION

Table 1			
Bolt Size	Torque (ft-lb)		
9/16"	90		
5/8"	120		
3/4"	150		

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