

## Cognito SM Series Uniball Upper Control Arms for 2021 Ford F-150 4WD

**INSTALL INSTRUCTIONS:**

Cognito SM Series Uniball Upper Control Arms for 2021 Ford F-150  
4WD  
SKU: 120-91057

**PARTS LIST FOR SKU: 120-91057**

QUANTITY	PART #	DESCRIPTION
1	<b>80022</b>	Uni-Ball Upper Control Arm, Driver
1	<b>80023</b>	Uni-Ball Upper Control Arm, Passenger
1	2980	Ride Height Sensor Bracket


**PARTS LIST FOR SKU: 80022**

QUANTITY	PART #	DESCRIPTION
1	8802	UCA Weldment, Driver
1	6446	UCA Cap
2	6748	Crush Sleeve
1	<b>91075</b>	Uniball Pin Kit
2	HARDWARE-GREASE-ZERK-45-1	1/4"-28 45-Degree Zerk Grease Fitting
4	POLY-BUSHING-2757	Black Polyurethane Bushing

**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.

**PARTS LIST FOR SKU: 80023**

QUANTITY	PART #	DESCRIPTION
1	8803	UCA Weldment, Passenger
1	6446	UCA Cap
2	6748	Crush Sleeve
1	<b>91075</b>	Uniball Pin Kit
2	HARDWARE-GREASE-ZERK-45-1	1/4"-28 45-Degree Zerk Grease Fitting
4	POLY-BUSHING-2757	Black Polyurethane Bushing

**PARTS LIST FOR SKU: 91075**

QTY	PART #	DESCRIPTION
1	6445	Uniball Hat
1	6747	Uniball Pin
1	UNI-BALL-COMH20T	Uniball Bearing
1	HARDWARE-0161379	1/2"-20 x 1.00" 12-point Screw
1	HARDWARE-33626	1/2" Flat Washer
1	HARDWARE-M12X1.5-CASTLENUT	M12-1.5 Castle Nut
1	HARDWARE-M12-FLATWASHER	M12 Flat washer
1	HARDWARE-COTTERPIN-1	Cotter Pin



## 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 eliminates 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

- Installation requires a qualified mechanic.
- Always wear safety glasses when using power tools.
- Proper vehicle lifting equipment is required.
- Read instructions carefully and study the pictures before attempting installation.
- This leveling kit may only be installed on a truck that has not already been leveled. You cannot stack leveling kits or shock spacers.
- Shocks or spacers offered by Cognito only are supported for application with this product.

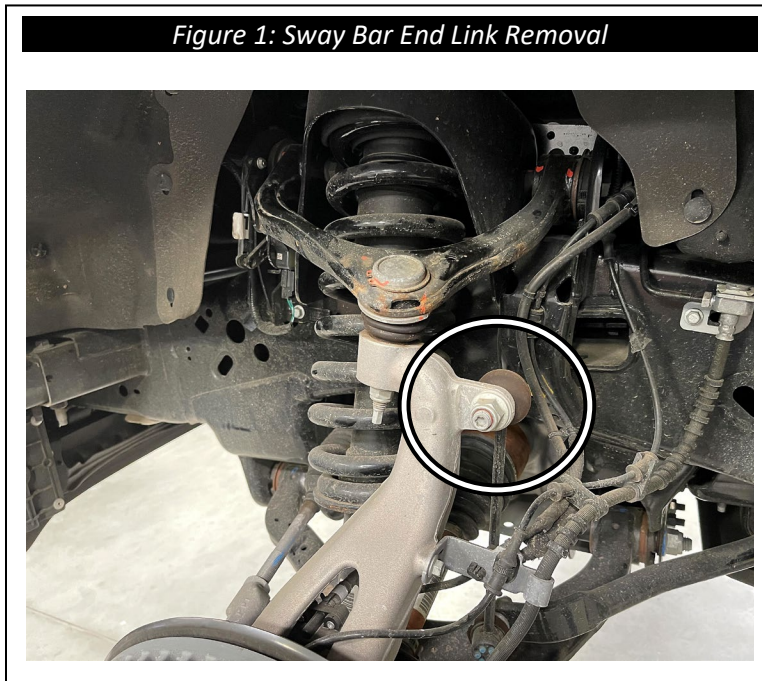
## TECH NOTES

- Check the parts and hardware packages against the parts list to assure that your kit is complete.
- Work through these instructions on both sides of vehicle at the same time to completion. The order of the steps is important.
- The stock wheel and tire will rub and are therefore not compatible.
- Trimming of inner fender well and bottom rear of steel fender may be required.
- CAM Brackets can be purchased separately through vendors such as Specialty Products Company (SPC) that will allow for live camber and caster adjustments.

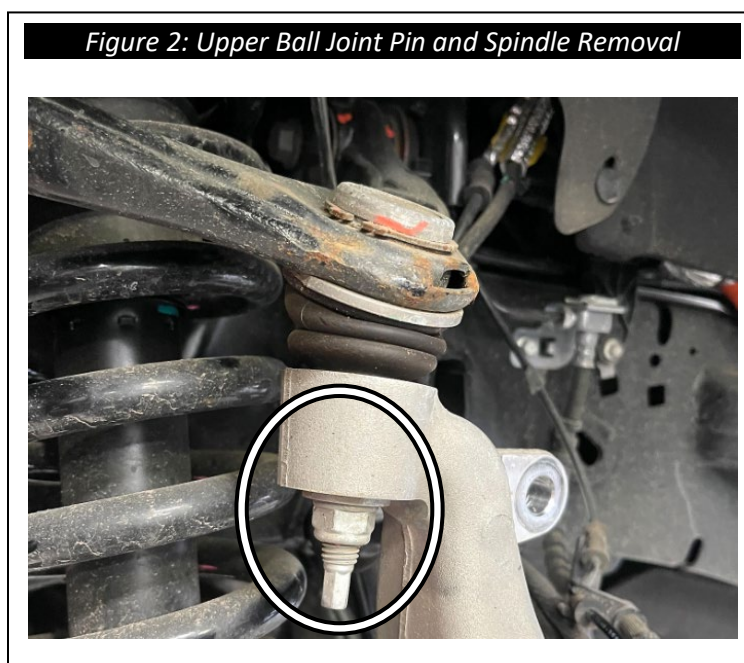
## TOOLS YOU WILL NEED

- Impact Driver
- Ratchet
- Ratchet Socket Extensions
- Torque Wrench (ft-lbs.)
- Hammer
- Paint Pen
- Bench Vice
- Sockets/Wrenches:
  - 8-mm
  - 11-mm
  - 18-mm
  - 19-mm
  - 21-mm
  - 13/16"
  - 1/2" - (12-Point Socket)
  - 1-1/16"
- Torx Bit
  - T45

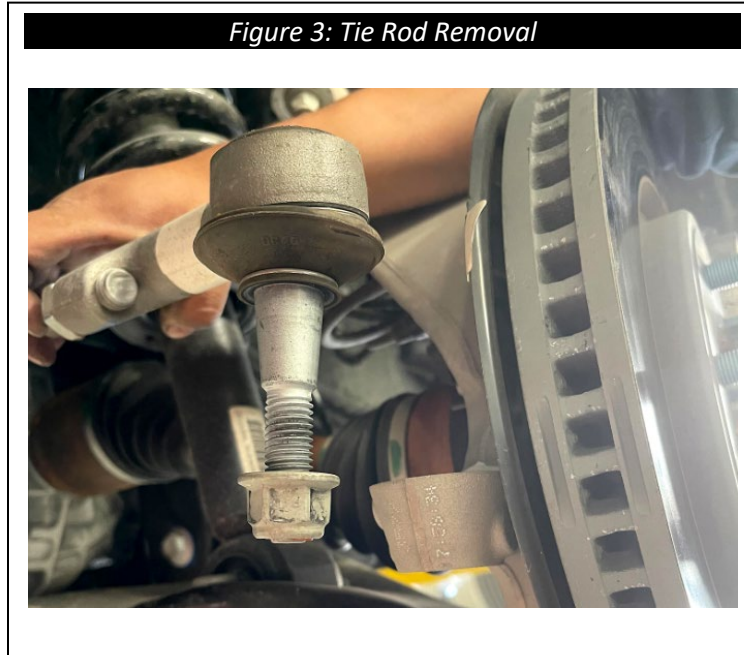
1. Support the vehicle on a lift or on jack-stands and remove the front wheels and tires. NEVER WORK ON AN UNSUPPORTED VEHICLE.
2. Using an impact and a 13/16" socket or a 13/16" wrench and T45 Torx, remove the sway bar end link from the spindle, see Figure 1. Place the hardware safely aside, these will be reused later.



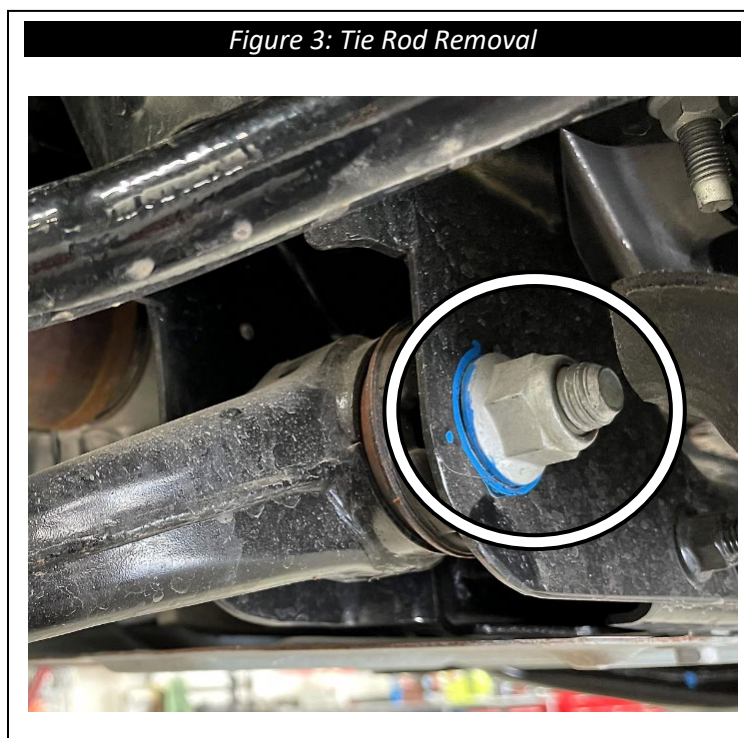
3. Using an 18-mm and an 8-mm wrench, loosen the upper ball joint nut, but leave the nut engaged on the ball joint by a few threads, see Figure 2. Using a hammer, dislodge the ball joint pin from the spindle.



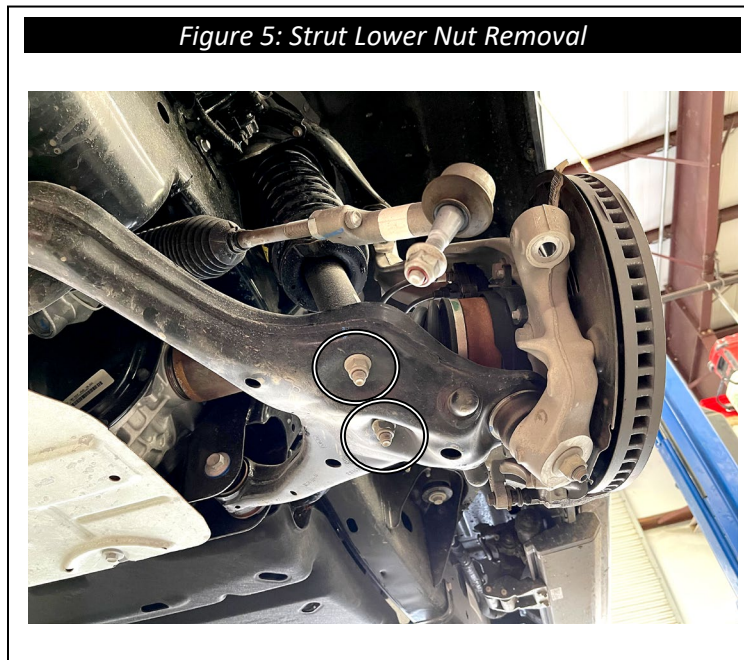
- Using a ratchet and a 13/16" socket, loosen the tie rod end nut, but leave the nut engaged on the ball joint by a few threads. Using a hammer, dislodge the tie rod from the spindle and remove the tie rod from the spindle, see Figure 3. Place the hardware safely aside, these will be reused later.



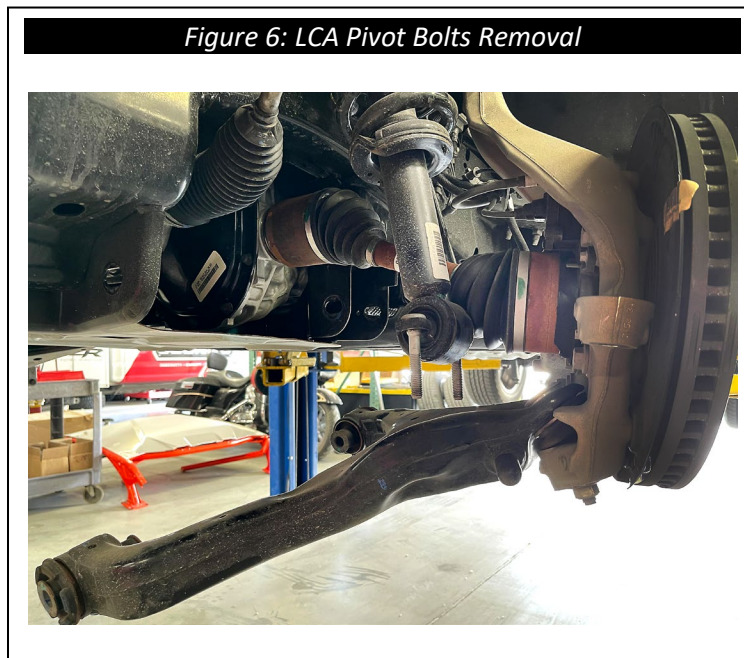
- Using a scribe or paint pen, mark the alignment of the lower control arm (LCA) pivot bolts on both the bolt head and nut side of the frame, see Figure 4.



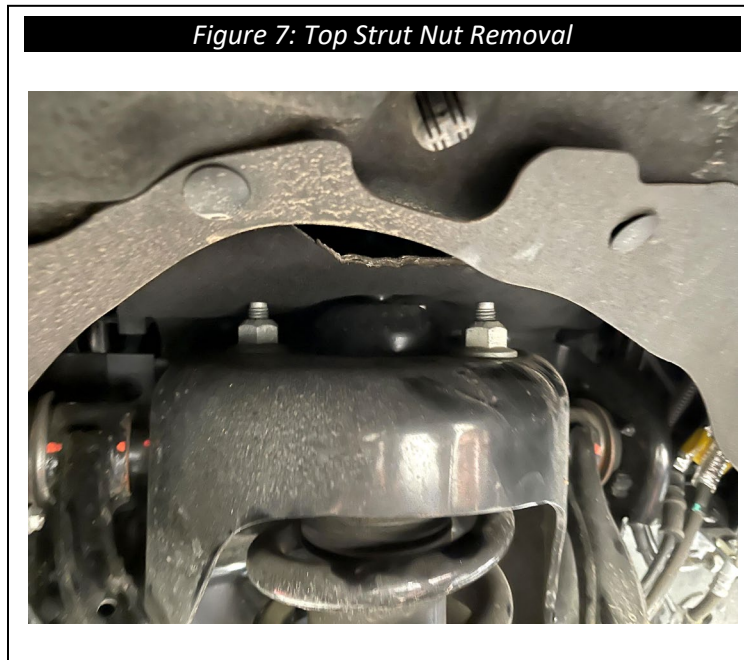
- Using a ratchet and an 18-mm socket, remove the two strut's lower nuts underneath the LCA, see Figure 5. Place the hardware safely aside, these will be reused later.



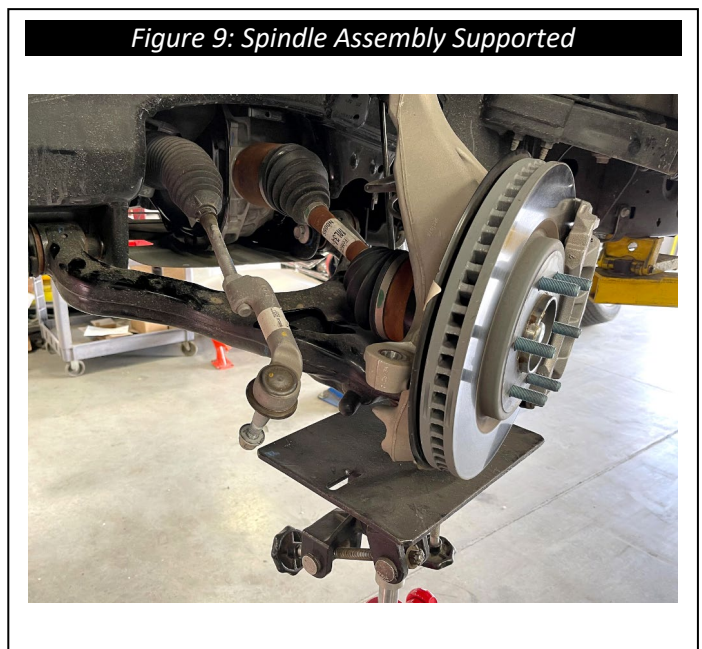
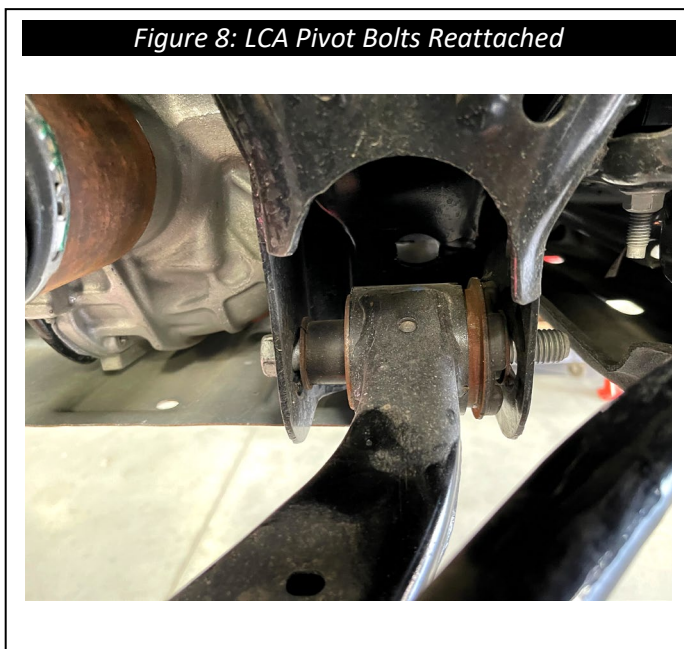
- Using a ratchet, a 13/16" socket, and a 1 1/16" wrench, remove the LCA pivot bolts and swing the LCA downward and free of the strut, see Figure 6. Place the hardware safely aside, these will be reused later.



- Using an 18-mm wrench, remove the nuts on top of the strut, freeing the strut from the frame, see Figure 7. If only installing the Cognito upper control arms (UCA), place the hardware safely aside, these will be reused later.



- Reattach the LCA to the frame using the pivot bolts that were removed in step 7, see Figure 8. Place a jack under the spindle for support before proceeding to the next step, see Figure 9. This will be critical in supporting the spindle assembly when the CUA is removed and there is no shock holding the spindle assembly.



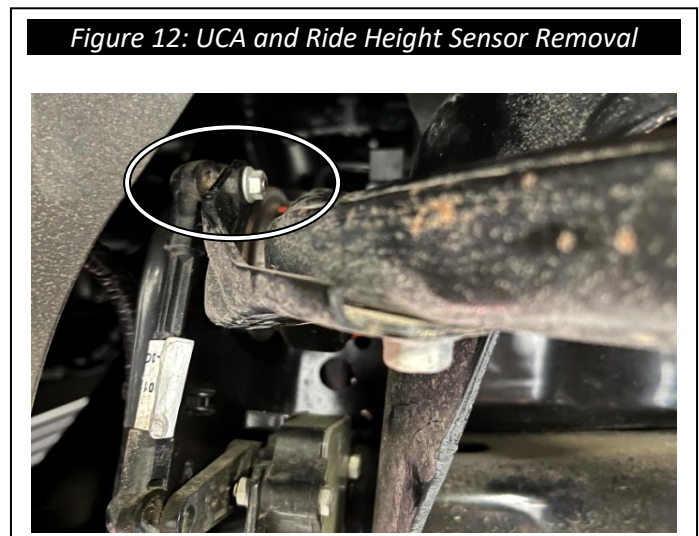
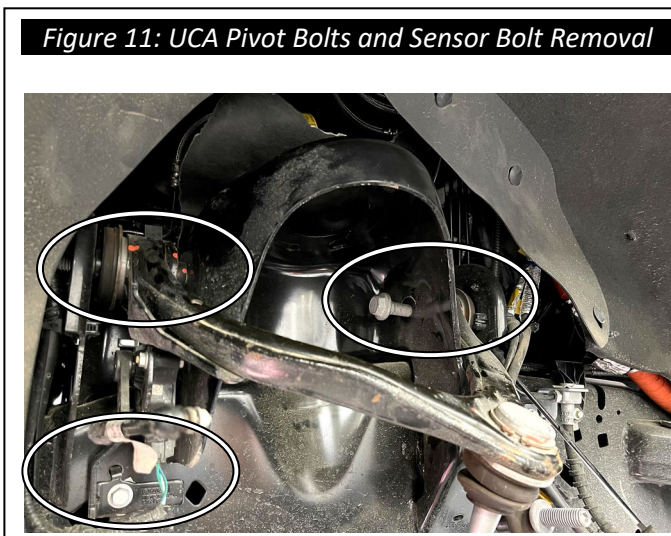
- With the spindle assembly supported, remove the nut holding the UCA to the spindle, and free the Uca from the spindle. Ensure that the spindle does not fall over or put tension on the ABS sensor wire and the brake lines, see Figure 10.



- Using a ratchet, a 21-mm socket, and an 18-mm wrench, remove the UCA pivot bolts and free the UCA from the frame, see Figure 11.

**Note:**

If your vehicle is equipped with a ride height sensor on the driver side of the vehicle, remove the sensor before removing the CUA. To do this, unplug the sensor and remove the nut and screw holding the sensor to the UCA, see Figure 12. Next, remove the bolt holding the sensor bracket to the frame of the vehicle using an 11-mm wrench or ratchet and socket, see Figure 11. Place the sensor and hardware safely aside, these will be reused later.



12. Install the Cognito SM Series UCA to the frame using the factory hardware, see Figure 13.

**Note:**

The Cognito badge will go closest to the front of the vehicle.

Driver side UCA will be stamped **8802**, and the passenger side will be stamped **8803**.

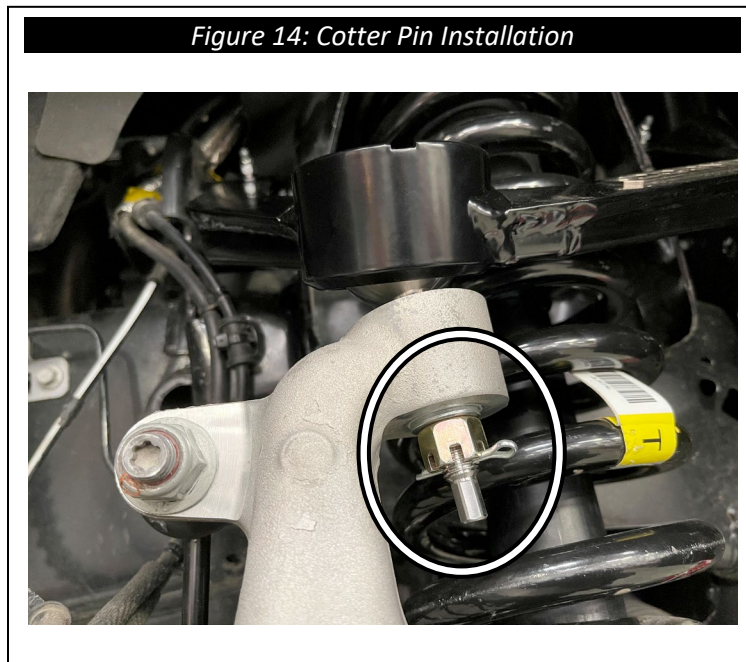
13. If you have also purchased a set of Cognito strut spacers or shocks, install them now referring to the instruction sheet included in that kit. Otherwise, reinstall the factory strut using the factory hardware in the same orientation it was removed, see Figure 13. Torque the factory hardware to factory specifications.

*Figure 13: Cognito SM Series UCA Installation*





14. Install the uniball pin into the spindle using the M12 washer and castle nut provided. Torque the castle nut to 60 ft-lbs. Install the cotter pin while ensuring that the cotter pin hole and castle nut notch line up. Bend the ends of the cotter pin around the nut to secure the installation, see Figure 14.
  - If the castellations in the castle nut and the hole in the uniball pin do not align once torqued to 60 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!**



15. With the UCA securely installed into the spindle, torque the UCA pivot bolts to 100 ft-lbs. using a torque wrench with a 21-mm socket, and an 18-mm wrench, see Figure 15.



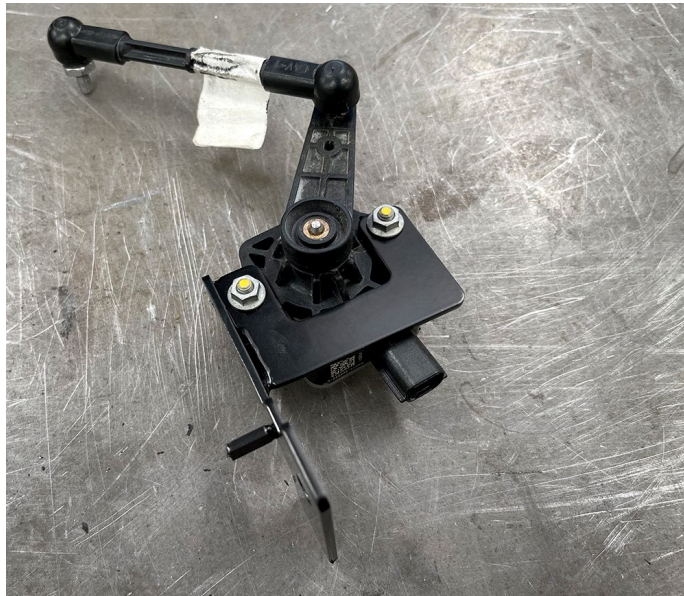
- 16. Driver Side Only:** Locate the factory ride height sensor and sensor bracket, and the **2980** Cognito ride height sensor bracket. Remove the sensor from the factory bracket, see Figure 16.

*Figure 16: Ride Height Sensor and Cognito Bracket*

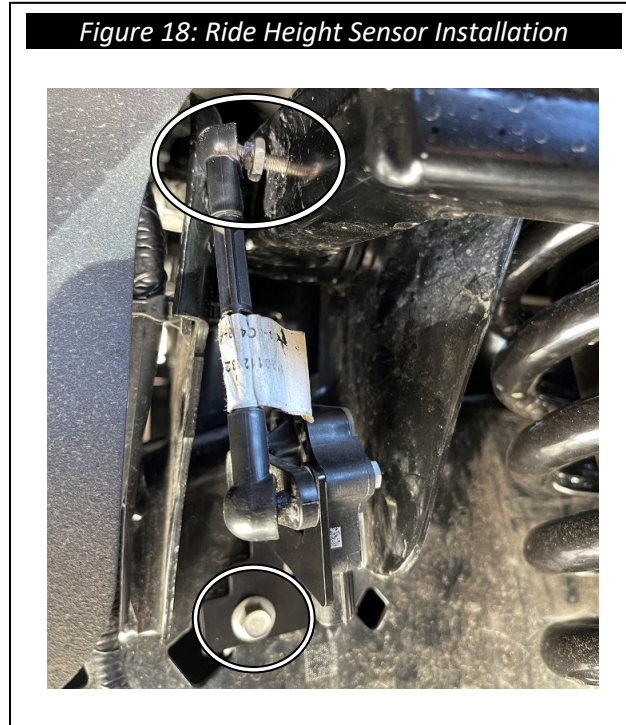


- 17. Driver Side Only:** Attach the sensor to the Cognito ride height sensor bracket using the factory hardware, see Figure 17. The arm on the sensor will be facing towards the front of the vehicle.

*Figure 17: Ride Height Sensor and Cognito Bracket Installation*



- 18. Driver Side Only:** Install the ride height sensor back into the factory location using the factory hardware and thread the ride height sensor linkage into the threaded hole located on the side of the Cognito UCA, see Figure 18.



- 19.** Repeat the steps above to install the Cognito UCA onto the opposite side of the vehicle.

**Note:**

The passenger side will not have a ride height sensor.

- 20.** 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.
- 21.** Install aftermarket front wheels and tires. Torque lug nuts to the factory manufacturer's specifications.
- 22.** 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 19. Record this measurement as (A) in Table 1. Subtract 3 inches from (A) and record this number as (B).

23. Set the truck on the ground and drive forward and back 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.

Suspension Travel	Record	Measurement (Inches)
Full Droop	A	
Max Ride Height	$B = A - 3 \text{ in}$	
Ride Height	C	

**Table 1.** Suspension Travel Measurements



24. Once the ride height has been set, adjust headlights per owner’s manual

**Note:**

If your vehicle is equipped with a ride height sensor, the headlights will adjust automatically.

25. Have the vehicle professionally aligned.

**Note:**

Some Cognito UCAs have added caster built into them to increase drivability performance, therefore it is important to be sure the correct control arm is installed on the correct side of the vehicle. It is 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 is 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 cannot align the truck, that typically means they cannot 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.