Cognito Ball Joint SM Series Upper Control Arm Kit for 2019+ GMC Sierra 1500 and Chevrolet Silverado 1500 2WD/4WD Trucks

INSTALL INSTRUCTIONS:

Cognito Ball Joint SM Series Upper Control Arm Kit for 2019+ GMC Sierra 1500 and Chevrolet Silverado 1500 2WD/4WD Trucks
SKU: 110-90784

PARTS LIST FOR SKU: 110-90784

QUANTITY	PART #	DESCRIPTION
4	6468	2019+ GM 6-Lug UCA Bushing Thrust Washer
1	80004	Ball Joint Upper Control Arm Assembly, Driver
1	80005	Ball Joint Upper Control Arm Assembly, Passenger
8	HARDWARE-63124	6" Black Cable Tie

PARTS LIST FOR SKU: 80004

QUANTITY	PART #	DESCRIPTION
1	8644	2019+ GM 6-Lug Upper Control Arm, Driver
1	6446	UCA Cap
2	6878	Pivot Bushing Assembly
1	90732	Press-In Ball Joint (M12 Thread)
1	HARDWARE-SPIROLOX-2.375	2.375" Spirolox Internal Retaining Ring

PARTS LIST FOR SKU: 80005

QUANTITY	PART #	DESCRIPTION
1	8645	2019+ GM 6-Lug Upper Control Arm, Passenger
1	6446	UCA Cap
2	6878	Pivot Bushing Assembly
1	90732	Press-In Ball Joint (M12 Thread)
1	HARDWARE-SPIROLOX-2.375	2.375" Spirolox Internal Retaining Ring

WARNING

The upper control arm is not designed to function as a droop limiter. Ball joint failure may occur if the control arm is installed with an incompatible shock. The maximum shock length depends on each lift specification, but in all installations, it is critical that the control arm ball joint does not bind or over articulate.

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

The Cognito Ball Joint SM Series Upper Control Arm Kit is a direct replacement for the factory upper control arms (UCAs). The Cognito UCA kit will add performance to your Chevrolet or GMC truck by adding caster and correcting the ball joint angle for lifted and leveled applications. The allowable droop travel is also improved with the design of these arms. The Cognito UCA kit can also be used with a Cognito spindle replacement lift kit. Designed and made in the USA.

This kit is fully compatible with the Adaptive Ride Control (ARC) system standard on GMC Denali and Chevrolet High Country trims. The ARC system uses sensors to read suspension height and dynamically adjust shock valving to improve ride quality. Some steps in this install instruction only pertain to trucks equipped with the ARC system. Installations on trucks without the ARC system may safely ignore those steps.

TECH NOTES

- **The upper control arm is not designed to be the droop limiter, ball joint failure will occur if the upper arm is used as the droop limiter. A shock or limit strap is required to be the limiter. It is required that the proper length shock from Cognito or a limit strap kit from Cognito be installed to prevent failure which could cause an accident and serious injury.**
- Cutting of the OEM frame and suspension components is required.
- Trimming of front bumper trim may be necessary based off tire size.
- Front-end alignment will be required after completion.
- 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.

REQUIREMENTS

- 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.

INSTALLATION

1. **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 23.7" 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** (see 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.

Figure 1: Shock Length Measurement

2. Rack the vehicle and lift it off the ground, or if no hoist is available then jack the front of truck off the ground and support properly with jack stands. Remove the front tires and set them as side.
   - ***NEVER WORK ON AN UNSUPPORTED VEHICLE.***

3. **For ARC equipped models (if not equipped, skip this step):** remove the ARC sensor link and ball stud. See figure 2.
   - Use a pair of screwdrivers or similarly shaped tools to pry against both sides of the upper ball and socket joint to disengage the socket from the ball. Be careful in removing the link, it is plastic and susceptible to damage. Let the ARC link hang free and out of the way.
   - Remove the sensor link ball stud from the stock arms. Retain the ball studs for reuse on Cognito upper arms.

Figure 2: ARC Link

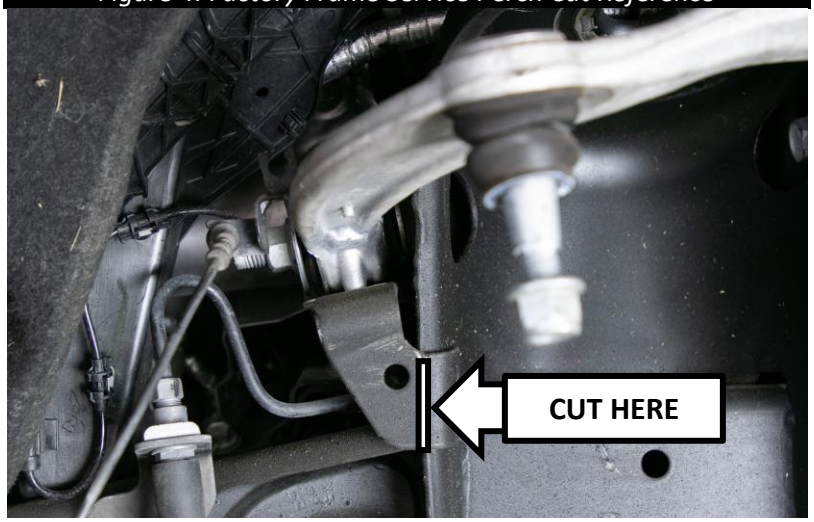
4. Support the lower control arms with a floor jack or stand. Prior to removing the upper control arms (UCAs), remove either sway bar end link to allow the lower control arms to cycle independently. Remove the strut to allow access to the upper arm pivot bolts.

5. Remove the factory upper control arms. 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 3: UCA and Spindle Disassembly

6. Remove the factory bolts 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.
7. Due to the added droop travel when using the Cognito upper control arms, the service perch under the upper control arm which is welded to the frame, must be cut off. Locate a cutting tool (such as a reciprocating saw) and cut both the service perch located on the rear side of the shock tower. The cut will be parallel to the shock tower.
    - **NOTE:**
      Take great care to keep the lines and wires safe during the cut and make sure to shield them from sparks if any kind of grinder is used.
      Wear safety glasses!
      Exposed raw metal should be coated or painted to prevent corrosion sharp edges should be ground down.
      Warranty on Cognito products will be void if damage occurs due to collision with the factory service perch.

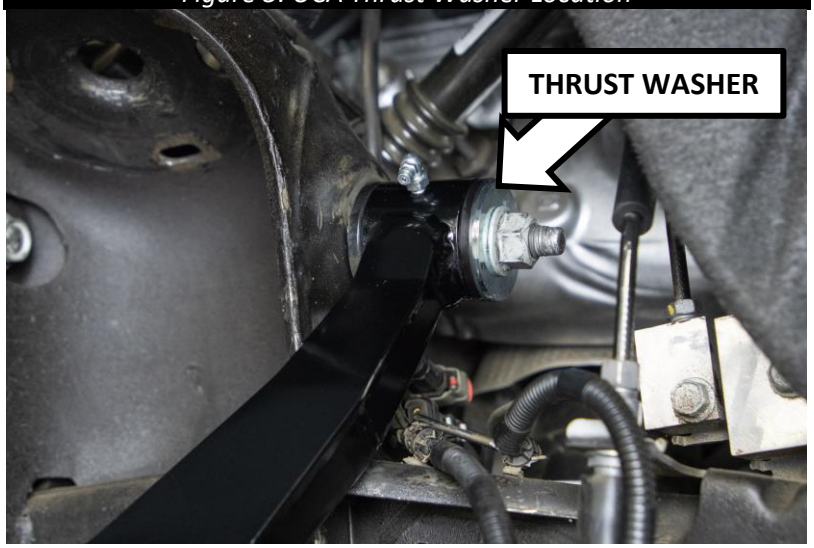
Figure 4: Factory Frame Service Perch Cut Reference



8. **For ARC equipped models (if not equipped, skip this step):** Remove the M6 screw from the side of each Cognito UCA. Locate the stock UCA, remove the ball stud that the ARC link was attached to. Re-install the ARC link ball stud into the Cognito UCA where the M6 screw was removed from. Torque the ARC link to **7.5 ft-lbs**.

9. Locate the **80004** Cognito Ball Joint Upper Control Arm Driver Side Assembly and 2x **6468** UCA Bushing Thrust Washers and mount the Cognito UCA to the frame using the factory nuts and bolts using the thrust washers on the outside, not frame-side, of each bushing. Torque to **90 ft-lbs**. See figure 5.

Figure 5: UCA Thrust Washer Location



10. **For ARC equipped models (if not equipped, skip this step):** Reinstall the ARC sensor link onto the installed ball studs. Be careful not to damage the plastic ARC sensor link.

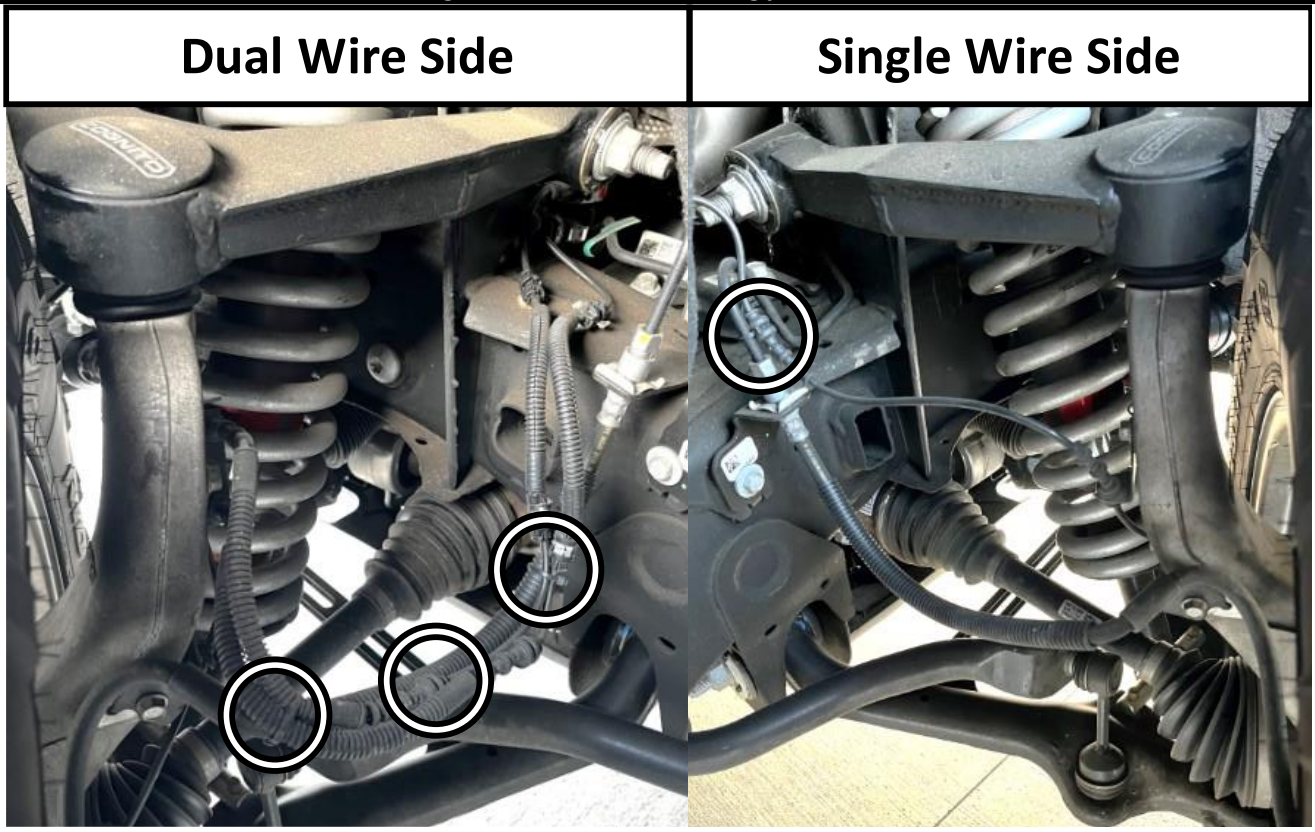
11. Mount the ball joint to the spindle with supplied hardware. Use the flat washers supplied if the castle nut needs to be spaced down for the cotter pin to engage with its castellations, then torque the nut to **60 ft-lbs**. Install cotter pin and bend to lock into place.
    - If the castellations in the castle nut and the hole in the ball joint pin do not align once torqued to 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!***

12. Repeat the steps above with **80005** to install the remaining UCA onto the opposite side of the vehicle.

Note: *The Cognito UCA Kit is designed* ***NOT*** *to make use of the stock brackets used to route the wiring for the speed sensors and brake wear sensor. Locate the* ***HARDWARE-63124*** *6" black cable ties, use the cable ties to route the sensor wiring along the brake lines. For Silverado or Sierra, follow Step 13. For Tahoe, Suburban, or Yukon, skip to Step 14.*

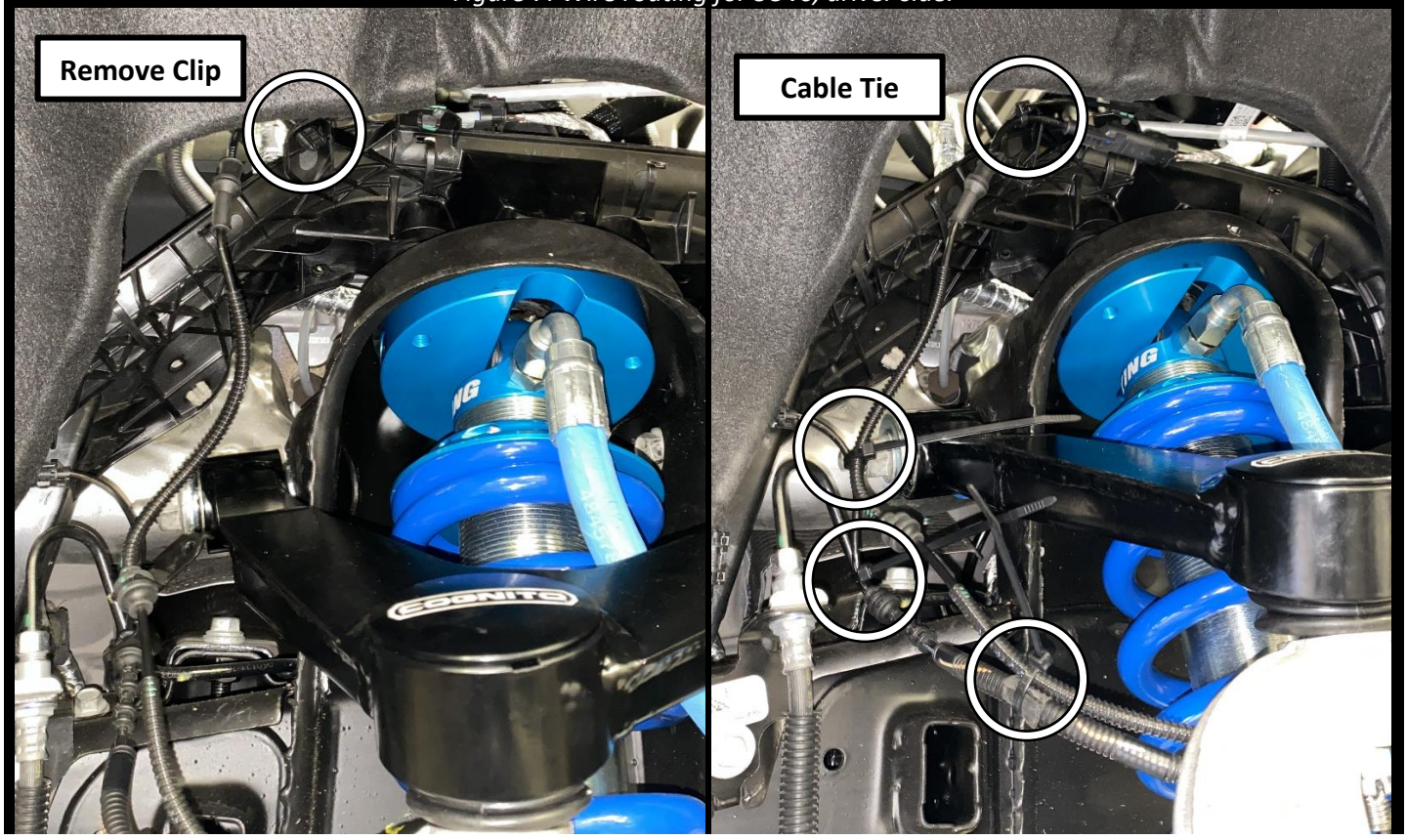
13. **For Trucks:** Use 4x **HARDWARE-63124** 6" black cable ties to route the sensor wires along the brake lines as shown below.

Figure 6: Sensor wire routing for trucks.



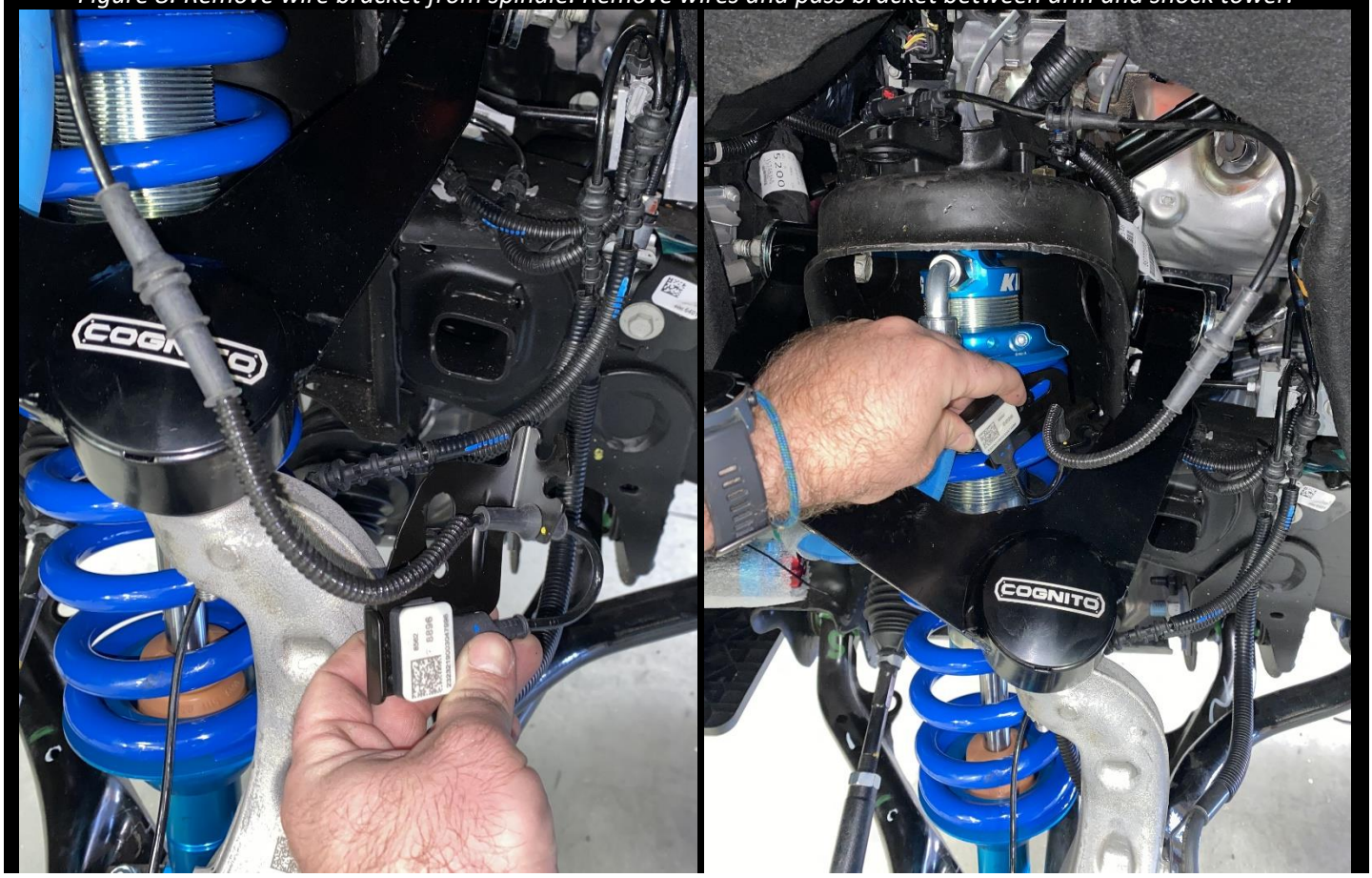
14. **For SUVs:** Beginning on the driver side, unclip the plastic clip constraining the wire above the shock tower. Remove the wires from the UCA wire bracket and discard the bracket. Cable tie the wire through the hole that the clip was removed from. Cable tie the wires out of the way as shown. Ensure that wires are not being stretched through the entire suspension and steering travel.

Figure 7: Wire routing for SUVs, driver side.



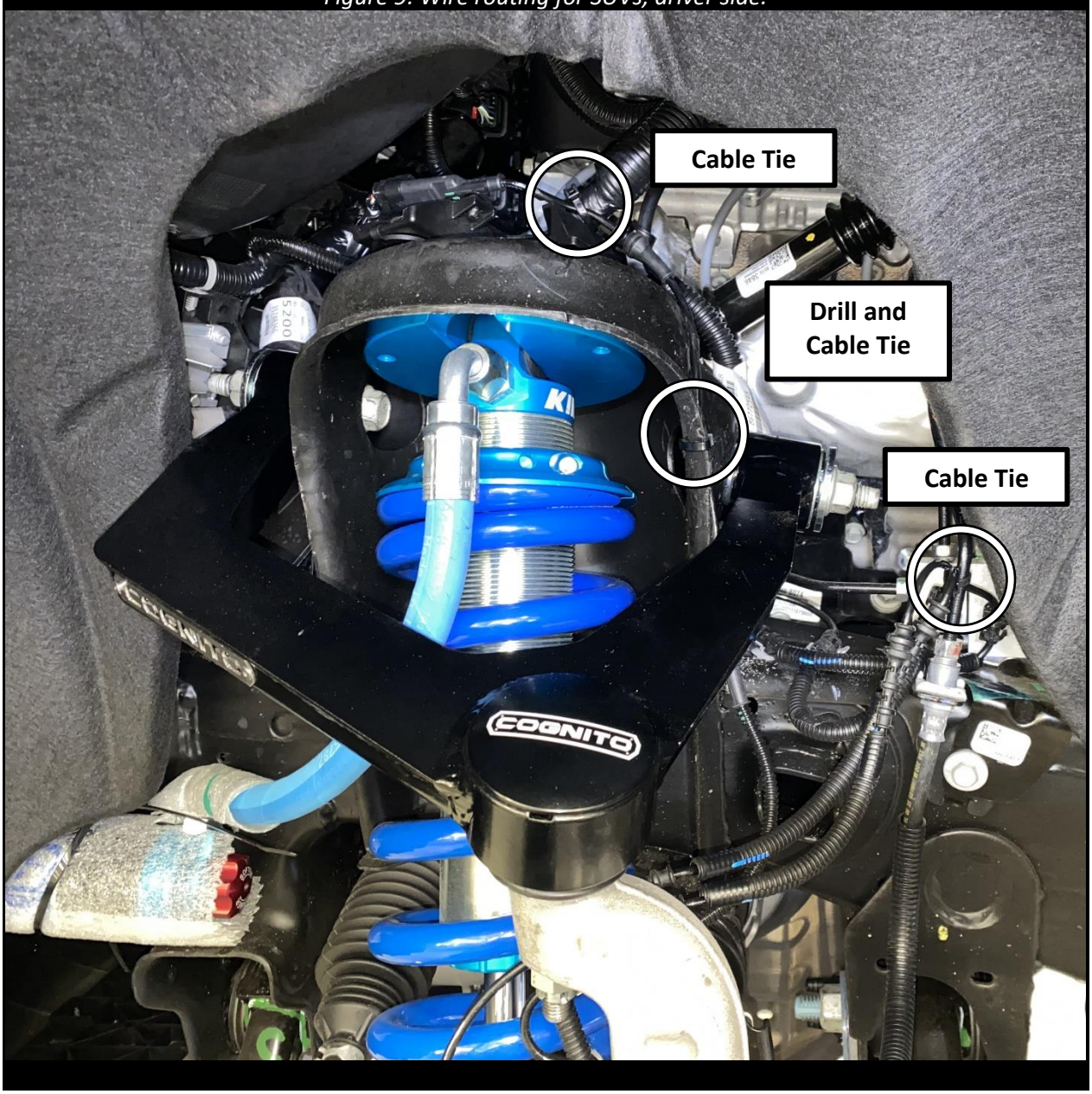
On the passenger side, remove the wires from the UCA wire bracket. Discard the bracket. Remove the 3-wire bracket from the back side of the spindle. Remove two wires shown from the bracket. Pass the bracket between the upper control arm and the spring perch.

Figure 8: Remove wire bracket from spindle. Remove wires and pass bracket between arm and shock tower.



Reattach the wires to the bracket and the bracket to the back side of the spindle. Use a ¼" drill but to drill a hole through the side of the spring perch where shown. Use this hole to cable tie the wire to the spring perch. Cable tie the rest of the wires out of the way. Ensure that wires are not being stretched through the entire suspension and steering travel.

Figure 9: Wire routing for SUVs, driver side.



15. 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.

16. Install aftermarket front wheels and tires and torque lug nuts to factory manufacturer's specifications.

17. 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 10. Record this measurement as (A) in Table 1. Subtract 3 inches from A and record this number as B.

- **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.

18. 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.

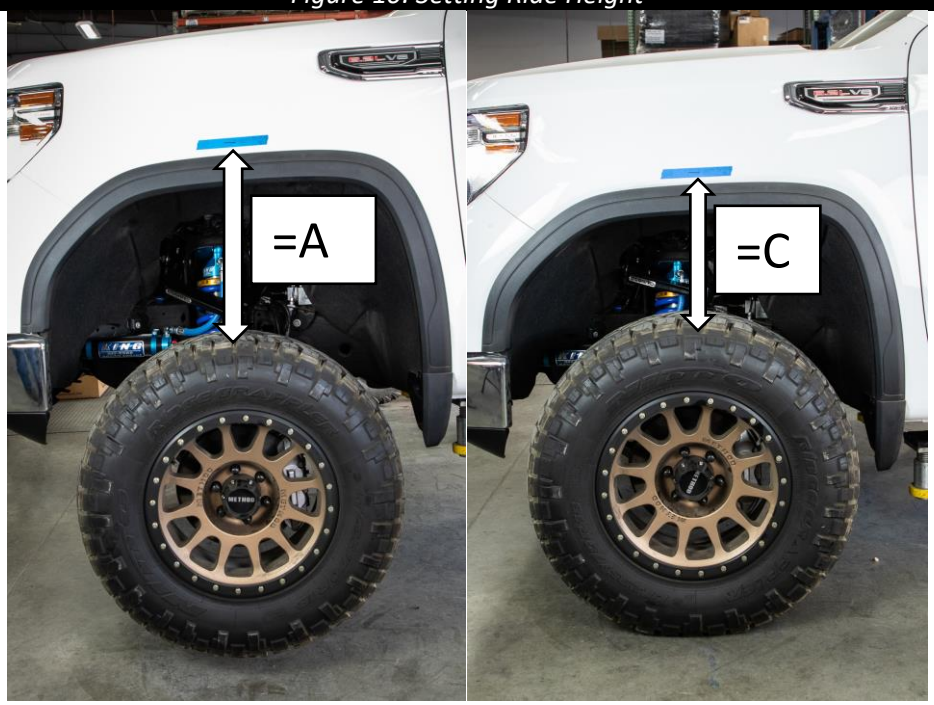
- **Note:**
  If (C) is larger than (B), the ride height is too tall. This can be caused by shocks or shock spacers that are too long, stacked shock spacers, spring preload devices, or any combination of the above.

  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	**A**	
Max Ride Height	**B** = A – 3 in	
Ride Height	**C**	

Table 1. Suspension Travel Measurements

Figure 10: Setting Ride Height



19. Adjust headlights per owner's manual.

20. Have the vehicle professionally aligned.

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

Generally, crew cab short and long bed trucks like .8 degrees of cross caster. For example, the driver side would have 2° while the passenger side would have 2.8° of caster. Dual rear wheel trucks like .9-1.0 degrees of cross caster. Your area might have roads that are crowned more or less than average therefore these numbers may need to change, and your alignment shop should understand this. If your alignment tech is stating they can't align the truck, that typically means they can't get the alignment to OEM spec, and that's fine because your vehicle is no longer OEM. A good tech will understand this and the numbers and let caster run slightly out of OEM spec (Caster should always be above 2 degrees positive) while maintaining cross caster needed for the vehicle and roads so you enjoy your vehicle with aftermarket Cognito parts and your driving experience. Camber should always be from -.1° to +.1° and toe should always be .125" to .250" toe in for best tire wear.

WARRANTY / RETURN POLICY / SAFETY

Cognito Limited Lifetime Warranty

Cognito Motorsports, Inc. hereinafter "Cognito," warrants to the original retail purchaser, that its suspension products are free from workmanship and material defects for as long as the purchaser owns the vehicle on which the product(s) were originally installed. This warranty will be void if any modifications are made to the components, including alterations to the surface finish, i.e.; painting, powder coating, plating, and/or welding, or if they are improperly installed. Cognito truck suspension products are not designed nor intended to be installed on "competition" vehicles used in race applications, stunt or for exhibition purposes that are outside of the intended operating conditions specified by the manufacturer. Racing and competition are defined as any contests between two or more vehicles; or vehicles competing individually on off road circuits in timed events (whether or not such contests are for an award or prize).

This warranty does not include coverage for police, taxi, government or commercial vehicles, and the warranty does not cover Cognito products sold outside of the USA. Cognito's obligations under this warranty are specified and applied at its sole discretion, and warranty coverage is limited to repair or replacement of the defective product(s). Any and all costs of removal, installation or reinstallation; freight charges, incidental or consequential damages associated with the covered products are expressly excluded from this warranty.

The following items are exempt from Cognito limited warranty coverage: bushings, bump stops, tie-rod ends (Heim joints) and limiting straps. These parts are "consumables" and designed to wear as a normal part of their duty cycle, therefore they are not considered defective when worn. The aforementioned products are 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.