COGNITO
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INSTALL INSTRUCTIONS:
Cognito 3” Standard Leveling Kit for 2020 GM, 2500/3500 2WD/4WD Trucks
SKU: 110-90777

PARTS LIST FOR SKU: 110-90777

QUANTITY	PART #	DESCRIPTION
1	8713	2020 Driver Tubular Upper Control Arm GM 8-Lug
1	8714	2020 Passenger Tubular Upper Control Arm GM 8-Lug
2	**110-90754**	Ball Joint, bolt In,01-Present GM 8-Lug
1	**HP9114**	Hardware Pack For Ball Joint
1	**HP9271**	3/4" Front Shock Extender Kit
2	TORSION-KEYWAY-2020	2020 GM 8-Lug Lift Torsion Keyway

PARTS LIST FOR SKU: HP9271

QUANTITY	PART #	DESCRIPTION
2	2733	.75 Shock Spacer Front Upper 2020 GM 8-Lug Aluminum
4	HARDWARE-15213	HCS 1/2-13X2.5 YZ 8
8	HARDWARE-33086	1/2 Sae F/W Z
4	HARDWARE-37268	1/2-13 Lock Nut Gr C

PARTS LIST FOR SKU: HP9114 -1

QUANTITY	PART #	DESCRIPTION
16	HARDWARE-33080	33080 5/16 Sae F/W
8	HARDWARE-37262	37262 5/16-18 Top Lock Nut
4	HARDWARE-33088	33088 9/16 Sae F/W
4	HARDWARE-GREASE-ZERK-45-1	1/4-28 45Deg Angle Zerk Grease Fitting
8	HARDWARE-15057	15057 5/16"-18 X 1-1/4" Hex Cap Screw

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: HP9114

QUANTITY	PART #	DESCRIPTION
1	HP9114-1	Ball Joint Hardware Kit
4	5490	Crush Sleeve 1" X .180" X 2.54"
8	POLY-BUSHING-2862.01	Black Polyurethane Spring Bushing

REQUIREMENTS

- Always wear safety glasses when using power tools.
- With taller than stock wheels and tires, trimming will still be required to the back bottom of the fender well area and the plastic valance under the front bumper.
- A minimum amount of droop travel is required for proper ride quality and component life.
- Only ball joints provided in this kit or approved by Cognito can be used with these arms.
- Proper shocks and shock lengths must be used, or damage to control arms, ball joints, and vehicle will occur.
- 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 stock shocks with spacers supplied in this kit or Cognito part 210-90774 shocks can be used with this kit.

TECH NOTES

- Installation requires a qualified mechanic.
- Read instructions carefully and study the pictures before attempting installation.
- 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.

TOOLS YOU WILL NEED

- Jack and stands or vehicle lift
- Torsion key unlading tool
- Measuring tape
- 19mm socket and wrench
- 21mm socket and wrench
- 22mm socket and wrench
- 24mm socket and wrench
- 3/4” socket and wrench
- 1/2“socket and wrench
- Hammer
- Torque wrench ft-lb
- Grease gun

INSTALLATION

1. Rack the vehicle and hoist it off the ground lifting by the frame so that the front wheels are in the full droop position. If no hoist is available, then jack the front of the truck off the ground and support the frame properly with jack stands. NEVER WORK ON AN UNSUPORTED VEHICLE.

2. Remove the torsion bar adjuster screw using a 21mm socket (See Figure 1).

3. Using a torsion bar loading tool, load torsion bar (See Figure 2) and remove adjuster nut (See Figure 3), then unload torsion bar and remove tool. Do this on both sides of the vehicle.

4. Complete steps 2-3 on both sides of the vehicle before continuing to next steps. 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.

Figure 1: Torsion Bar Adjuster Screw

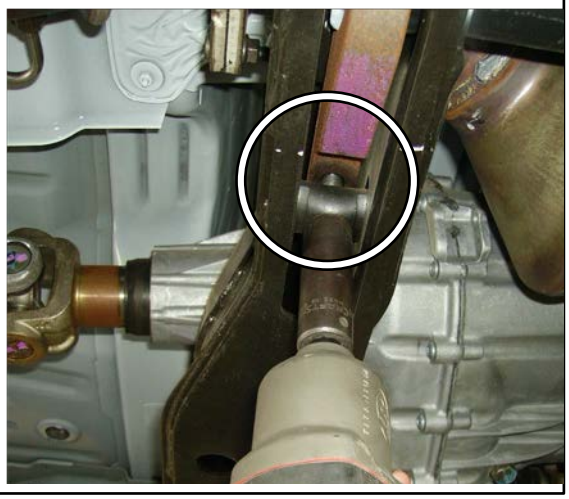
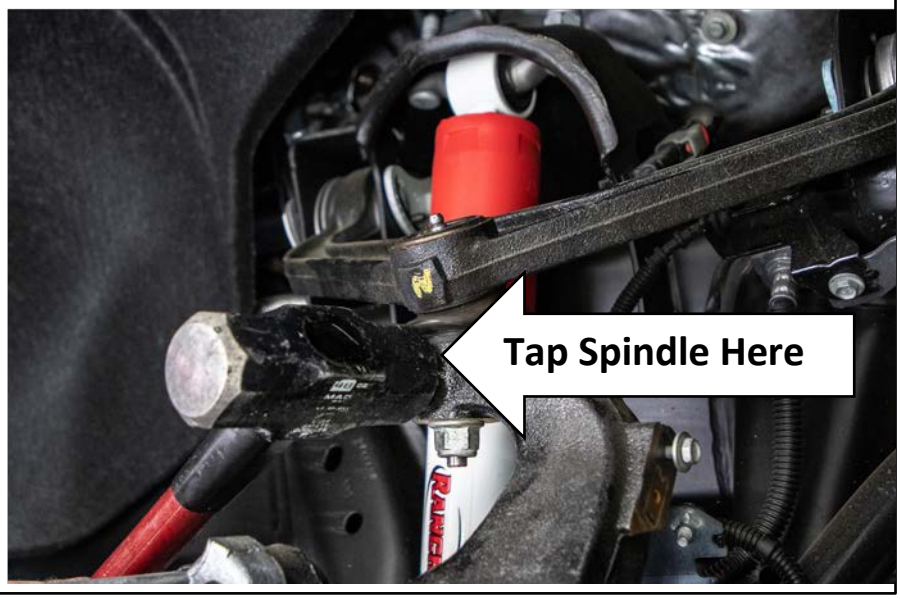


Figure 2: Load Torsion Bar Using Tool

Figure 3: Remove Adjuster Nut

5. Remove the factory upper control arms. Loosen the ball joint nut of the upper control arm using a 19mm wrench 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. (See Figure 4).

Figure 4: Breaking Ball Joint Loose from Spindle



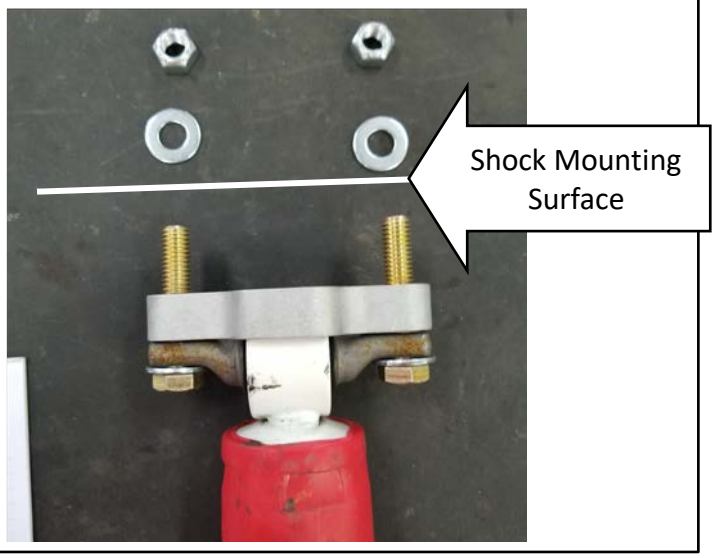
6. Remove the factory bolts and eccentric washers that connect the control arm to the frame with a 24mm wrench, but retain them for future use. Place them aside in order so they can be re-installed in the same place they came off. If still equipped, leave the OEM plastic alignment inserts in the eccentric washers to aide in camber and caster alignment.

7. Make sure the lower control arm is supported because the shock and sway bar are the only things holding it in place now. Unbolt the front shock upper and lower mounts using a 21mm wrench and remove it. You can compress the shock by pulling down on the body or lower the support under the lower control arm to make removal easier.

8. Knock out the studs on the removed shocks using a deep socket to cup the flat side and a hammer to tap them out (See Figure 5). Reinstall the lower shock mounts using OEM hardware and torque spec. Use the ½" hardware in HP9271 to install the upper mount with the ¾" spacer. From the bottom up, the order should be bolt, washer, shock pin, spacer, strut tower frame, washer, and lock nut (See figure 6). Only use these extender spacers with the OEM shocks, aftermarket shocks may be longer and cause damage if used along with these spacers. Torque to 50ft-lb using a ¾" socket and wrench.

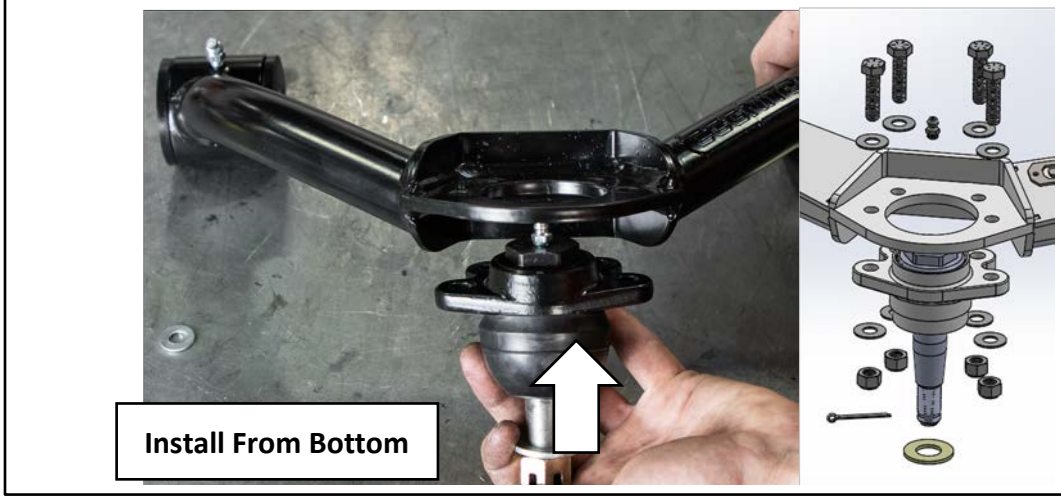
Figure 5: Remove OEM Shock Studs

Figure 6: Install Spacer and Hardware



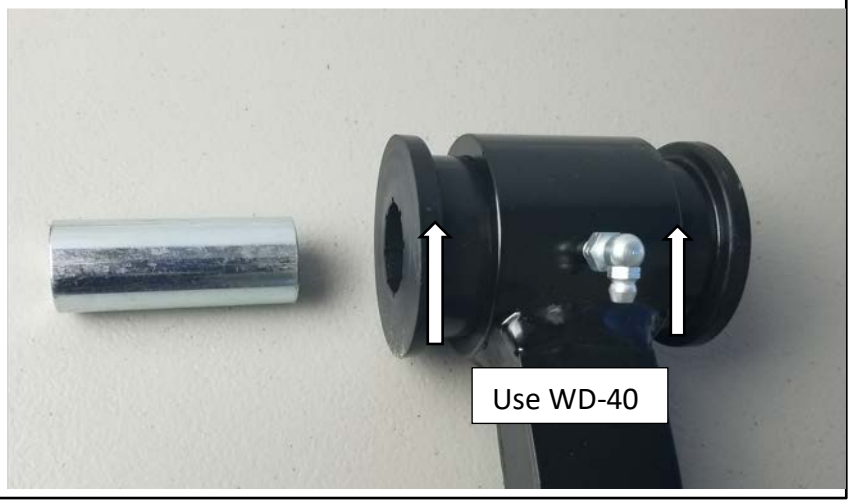
9. Mount the supplied ball joints with the 5/16” bolts, flat washers, and locknuts provided in Hardware Package 9114 to the bottom of the ball joint pocket of the Cognito upper control arms as shown in Figure 7. Use anti-seize lubricant on the threads. Tighten all hardware in this step to 22 ft/lbs of torque using a ½” wrench.

Figure 7: Ball Joint Installation



10. From the hardware package, insert the polyurethane bushings, crush sleeves, and grease fittings into the ends of the upper control arms. If needed, use WD-40 to aid installation of bushings into the UCA pivot tubes, do not use grease. Do not over tighten the grease fittings, tighten until they are snug and pointing outward toward the tire (See figure 8).

Figure 8: bushing and crush sleeve installation



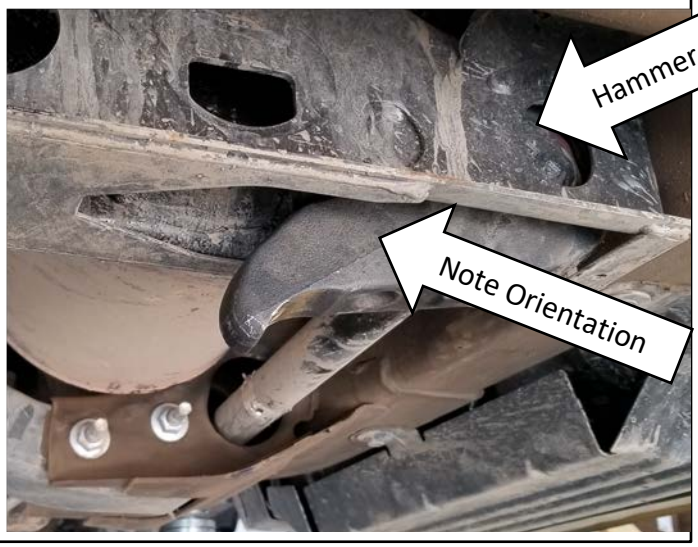
11. THE CONTROL ARMS ARE NOT THE SAME, the ball joint is moved toward the rear of the truck be sure to mount 8713 to the driver side, and 8714 on the passenger side (the Cognito logo will be closest to the front of the truck, and the part numbers are stamped into the bottom of the arm above the ball joint). Mount the Cognito upper control arms to the frame with the factory nuts, bolts, and eccentric washers previously removed. Set the bolts in the middle of the adjustment swing, or in the OEM plastic inserts. This will be close enough to drive to an alignment shop. Torque alignment nuts to 90 ft/lbs.

12. Mount the ball joint to the spindle with supplied hardware and a 22mm wrench. 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. Insert the cotter pin and bend ends around the nut to secure.

13. Grease the ball joint with an extreme pressure grease 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 pivot bushings every 3-5K miles to keep them working well. Failure to grease these items will void warranty.

14. Start replacing the torsion keys by first noting the orientation of the OEM key. Next slide the torsion bar forward into the lower control arm. If bar seems lodged, use a punch and hammer to loosen through the hole in the back of the torsion bar crossmember. This will allow the old key to be removed (See Figure 9).

Figure 9: OEM Torsion Key



15. Reinstall the new adjuster key in roughly the same orientation the OEM one was removed (See Figure 10). 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.

Figure 10: New Cognito Key

16. Shocks must be fully installed and all supports under the lower control arms must be removed before the torsion bars can be loaded.

17. Use the torsion bar loading tool to load the new key. Now you may install the adjuster nut and adjuster screw then remove the loading tool. This is the reverse order of unloading the key in step 2-3 (See Figures 1, 2, and 3 for reference).

18. Tighten the adjuster bolt while the truck is still off the ground.

19. 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 will cause the adjuster bolt excess stress and will most likely strip the threads.

20. Before setting the truck back on the ground, while the tires are still at full droop, measure from top of tire to fender well and write the measurement here: Droop Measurement; Left side_____, Right side_____. These should be within 1/4" of one another just FYI.

21. Set the vehicle on the ground and drive the vehicle backward at least 10 feet, and then forward at least 10 feet to allow the suspension to settle into place at ride height. Measure from top of tire to fender well and write the measurement here: Ride Height Measurement; Left side_____, Right side_____. Subtract the measurement from step 20, and write them here: Droop Travel Measurement; Left side_____, Right side_____.

22. The difference should be 3" minimum for proper amount of droop travel to provide good ride quality and longevity of suspension components. On the ground, you may back out the adjuster bolt to lower the vehicle to the desired ride height and to level the vehicle side to side. If you do, repeat step 21 until you reach proper ride height on both sides of vehicle. If the ride height is too low and you have more than 3" of Droop Travel Measurement, then you may lift the truck back up by the frame and turn in the torsion bar adjuster bolts to preload the torsion bars more, then repeat steps above.

23. Do not set the ride height too high for the given application, adverse effects will occur.

24. Raising the height of the vehicle results in higher tie rod angles which will cause premature wear of the pitman and idler arms, therefore it is recommended to also install the Cognito Motorsports Pitman and Idler Arm Support System.

25. Have a buddy cycle the steering full right and left while you double check that the brake lines and sensor wires are not stretched or pinched and are properly tied out of the way.

26. Re-adjust the headlights per owner's manual (2-3 full turns normally is the range needed), and have the front end professionally aligned to factory specifications.

27. The vehicle will handle differently due to increased ride height, please take time to re-familiarize yourself with the handling characteristics of your modified vehicle.

28. 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 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 ware.

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.