



2" Economy Leveling Kit for 2011-2019 GM 2500HD / 3500HD 2WD/4WD Trucks

INSTALL INSTRUCTIONS:

2" Economy Leveling Kit for 2011-2019 GM 2500HD / 3500HD
2WD/4WD Trucks
SKU: 110-90277

PARTS LIST FOR SKU: 110-90277

QTY	PART #	DESCRIPTION
2	TORSION-KEYWAY-2011	2011 GM 8-Lug Lift Torsion Keyway
1	HP9333	.5" Front Shock Extender Kit

PARTS LIST FOR SKU: HP9333

QTY	PART #	DESCRIPTION
2	1581	Shock Spacer Front Upper 2011 GM 8-Lug
4	HARDWARE-M12-FLATWASHER	M12 Flat Washer
4	HARDWARE-M12X1.75-LN	M12X1.75 Locknut

**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.

Modification of vehicle suspension can interfere with ride-height sensors, active suspension, lane departure features, semi-autonomous, and autonomous driving features. It is the responsibility of the mechanic to determine feature compatibility prior to installation. Recalibration of sensors may be required in the event of any modification.



INTRODUCTION

This kit consists of torsion bar keys and shock extenders to be used with OE or OE length shocks.

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.

TECH NOTES

- 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. 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:**
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.

Figure 1: Torsion Bar Adjuster Screw.

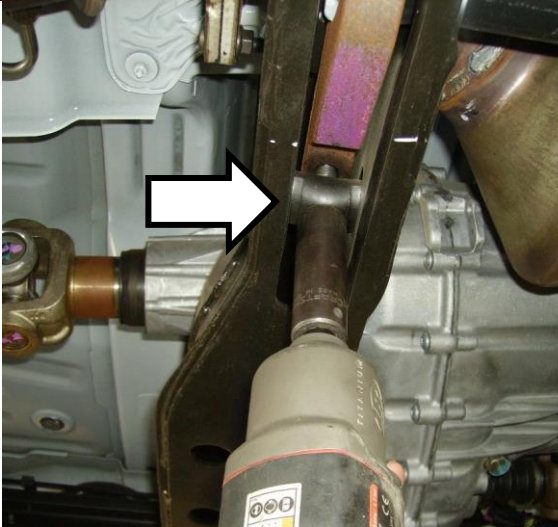


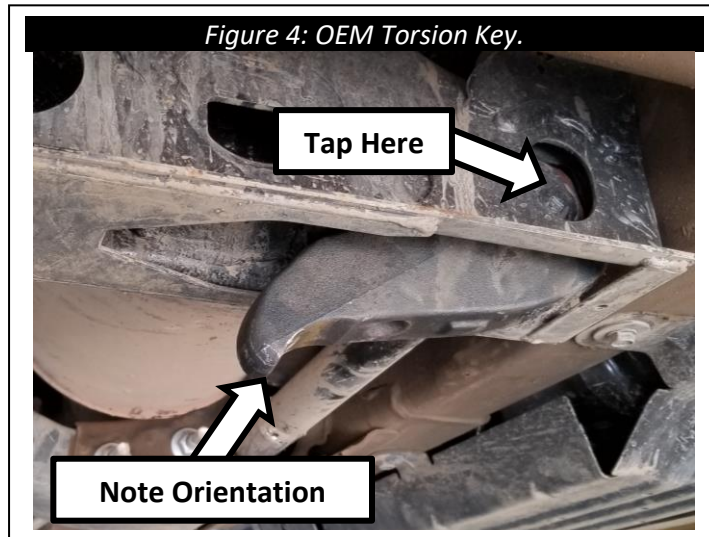
Figure 2: Load Torsion Bar Using Tool.



Figure 3: Remove Adjuster Nut.



4. Start replacing the torsion keys by first noting the orientation of the OEM 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. While the torsion bars are unloaded, locate the Shock Extender Brackets. Unbolt the front shock upper mount from the frame, compress the shock by pulling down on the body. Only use these extenders with the OEM shocks, aftermarket shocks may be longer and cause damage if used along with these spacers.
7. Replace the factory nuts with the supplied M12 lock nuts and washers and torque to **50 ft.lbs.**
8. 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.



9. 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.
10. Tighten the adjuster bolt while the truck is still **off** 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 **will** cause the adjuster bolt excess stress and **will** strip the threads.
11. 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.
12. Subtract 3 inches from A and record this number as (B) for both the driver and passenger side.
13. 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 over-extension, 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)	
		Driver	Passenger
Full Droop	A		
Max Ride Height	B = A – 3 in		
Ride Height	C		

Table 1. Suspension Travel Measurements



14. 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.

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

16. Check wheel and tire clearance through the steering cycle. Make adjustments as needed.

17. Adjust headlights per owner’s manual.

18. 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

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.