

# TERAFLEX

## INSTALLATION GUIDE

### **Installation Guide for the TJ LCG PRO Suspension System (Low Center of Gravity) Available 4" or 5"**



4" Pro	Part #001249474
4" Pro - Unlimited	Part #001249484
5" Pro	Part #001249575
5" Pro - Unlimited	Part #001249585

*Take every precaution to make this installation a safe procedure. Make safety the number one priority with any suspension or lift installation.*

Please make sure your kit includes the following items before starting installation:

Belly Up Skid Plate	Adjustable front track bar
Shock kit	Rear truss and hardware
4" or 5" spring kit with bumpstops	4" or 5" spring kit with bumpstops
Front & rear upper arms w/hardware	Frame brackets
Front & rear lower arms w/hardware	Hardware pack
Front & rear upper brackets	Shock relocation brackets
Long Arm Kit	Front exhaust pipe insert

The 5" PRO-LCG has a new style track bar and mounting bracket and includes a brake line kit and transfer case lowering kit.

*This kit is designed for the Jeep® TJ Wrangler, including Unlimited and Rubicon editions. It replaces the standard length control arms with new, longer lower control arms and 4-link upper control arms. Rear track bar is eliminated.*

*A trained and experienced suspension mechanic must install this kit. Modifications to the vehicle frame include removing factory brackets and welding on new mounting brackets. Also the muffler must be replaced with a smaller diameter muffler, and the tailpipe will have to be re-routed to clear the rear upper control arms. Safe operation of the vehicle requires that the installation be done correctly with careful attention to detail. Once the kit is installed, you will enjoy the comfort and flexibility that TeraFlex is known for. The kit will allow you to run much larger tires than stock while maintaining a low center of gravity.*

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## Preparation

1. Support the vehicle under the frame with the vehicle high enough that the axles can be fully drooped (for removal of factory coil springs and installation of the new TeraFlex coil springs).
2. Remove tires, shocks, sway bar links, coil springs and upper & lower control arms. (Figure 1).

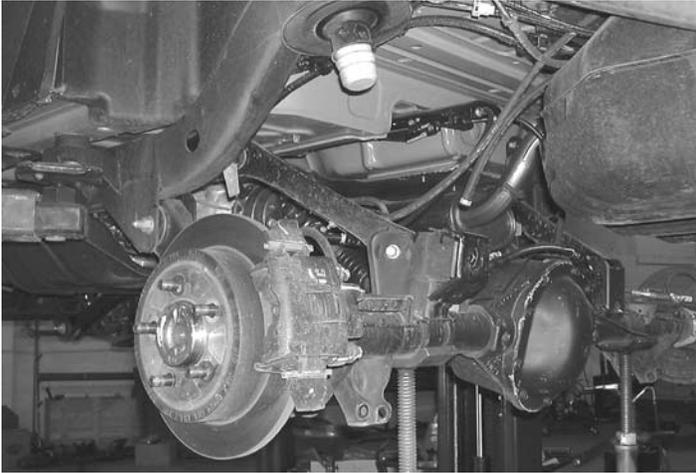


Figure 1

3. Support the transmission and remove the transfer case skid plate.
4. Hold up the exhaust patch that comes with the kit and mark the exhaust header pipe as shown. This exhaust patch is needed to provide clearance for the new longer front upper control arms and replaces the factory bend where the exhaust comes in front of the oil pan and heads back toward the catalytic converter.



Cut the exhaust at your mark near the front corner of the oil pan, and remove the rest of the exhaust system including the catalytic converter, muffler and tailpipe. Be very careful to avoid damage to the oxygen sensor and wiring. Make the second cut on the exhaust where you made the mark a few inches in front of the catalytic converter and reinstall the exhaust at step 26. When you have the new muffler and tailpipe built

and installed, have the exhaust shop weld in the front exhaust patch.



5. Carefully remove the front upper & lower and rear lower control arm mounts from the frame with a cutoff tool or torch. Be careful not to cut into the frame. (Figure 2)

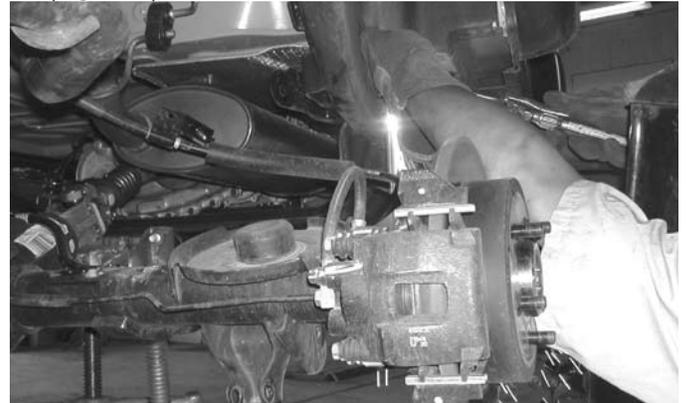


Figure 2

## Installation

6. A new one-piece bracket that includes mounting points for both front and rear lower control arms is included in the kit (old part #250L, 250R, new part #008002501, 008002502). The bracket slides up over the frame from the bottom and is located on the main frame rails by the factory skid plate mounting bolts. Once the brackets are installed, the factory skid plate mounting bolts (6 bolts) can be installed to hold the bracket .
7. Tack weld the bracket to the frame in 4 places laying about 1 to 1 1/2 inches of weld bead to secure the bracket to the frame. After welding, paint the weld area to prevent rust. This welding ensures the bracket will not move or work loose and allows removal of the skid plate for service without having to disassemble the suspension.

**Note:** Modifications to the factory skid plate will be required for rear control arm clearance if the TeraFlex Belly-Up skid plate is not installed. (Old Part #BUT-03, new Part #004648403)

### **Belly Up Skid Plate**

8. Attach your new Belly Up skid plate to the frame by aligning the transmission bolts with the holes in the skid plate and then bolting the skid plate to the frame using the six factory skid plate mounting bolts.
9. Bolt the transmission mount to the skid plate using the factory nuts and the mounting holes in the center of the plate.
10. Figure 3 shows the main bracket installed with the arms and the TeraFlex Belly Up Skid Plate.



Figure 3

**Note:** To reduce rear driveshaft angle, install the 6 drop spacers and use longer bolts to install the skid plate. Check fan blade clearance after installing skid plate.

### **Rear Installation**

11. The rear upper control arms attach to the rear axle using an axle truss. The truss must be professionally welded to the axle tubes. Set the truss in place on the axle housing and mark where the truss contacts the axle tubes. Take the truss back off and clean any dirt, grease and paint off the tube to ensure a good weld. Set the truss back in place, route the breather hose through the hole in the truss, & bolt on the two angle brackets (Fig. 4 & 5). Leave the bolts on the angle brackets loose until the truss is located, then tack weld the truss to the axle housing tubes. Tighten the cover bolts and bracket bolts and final weld the truss to the axle tubes. Paint the welds to prevent rust.

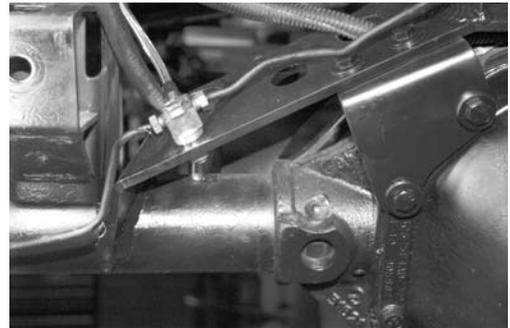


Figure 4



Figure 5

**Note:** to avoid diff.

Cover leaks we recommend removing and resealing the cover with silicone as part of the truss installation.

12. Using a 5/16" drill bit, locate the center of the lower spring pad. The divot in the center works well as a guide. Drill a hole through the guide in the pad. (Fig. 6)



Figure 6

13. Using the aluminum spacer as a guide, screw one of the self-tapping bolts (3/8" x 2") into each hole to cut the threads into the spring pad and then remove the bolt and set aside.
14. Install the rear upper control arm frame brackets near the rear body mount. The back of the frame bracket should be at least 1 inch in front of the body mount. (Figure 7A &B).



Figure 7A

Figure 7B

15. Install the rear upper and lower control arms. Final length adjustment must be done with the vehicle on the ground. This will be done at a later point. Install the upper control arm in the 2nd hole down from the top for neutral anti-squat. After completing installation of the kit you may want to try other settings to tune the rear suspension geometry to your vehicle and type of driving
16. Install the rear TeraFlex LCG springs. Set the aluminum bump stop spacer inside the TeraFlex spring as you put it up into place.
17. Once the spring is in place, install the bump stops using the supplied 3/8" x 2" self-tapping bolts to secure the bump stop to the spring pad.

**Note:** The rear lower bumpstops are the same as are shown in the center of this photo. They measure 2 1/2" x 1 3/4" tall and have a spring retainer. The rear upper bumpstops are the same as are shown to the far left in this photo. They measure 2" x 2 1/4" tall.

18. Install rear shock adapter brackets supplied with the LCG kit and install the rear shocks. (Figure 8).



19.  Install the extended brake line hose Figure 8 and the extended sway bar links. Mount the extended brake line tee on top of the truss and reconnect the hard lines. Rear installation is complete.
20. Temporarily install the exhaust header pipe and the catalytic converter. Be very careful to avoid damage to the oxygen sensors and wiring as these are needed for proper operation of the fuel injection system. Final exhaust installation comes later.

### Front Installation

21. Install the new front upper PRO brackets on the inside of the frame rail with the locating ears going up over the frame and down on the outside to index with the body mount. Mark around the new bracket, then remove it and grind away the paint where the weld will be.



22. Weld the bracket to the frame and paint the weld area to prevent rust.



- 23v. Install the upper control arms to the stock axle brackets and then to the new upper frame brackets after setting the length to approximately 24-1/2 inches.
23. Install the new lower control arms.

24. On the 4 inch Pro system install the front adjustable track bar in the stock brackets. On the 5 inch Pro system install the new track bar bracket. Hold it up in place and mark the frame where it will be welded around the edge. Clean the paint off the frame, and then bolt the tab on the new track bar bracket to the stock frame end track bar bracket. Use a large c-clamp to hold the bracket in place and tighten the bolt through the factory bracket, then weld the new bracket as shown in the next photos. Paint the weld areas.



25. Install the new track bar that comes with the 5 inch Pro system and move on to final assembly.  
 26. Using 5/16" drill bit, locate the center of the front, lower spring pad. The divot in the center works well as a guide. Drill a hole through the guide in the pad.

**Note:** Some 2003 and newer models have a plate welded on the center of the front axle spring pad. This metal plate must be drilled and tapped using a conventional thread tap 3/8-16. The self tapping bolt won't cut threads in the thicker plate. The plate can be removed if you prefer by cutting the welds with a die grinder, then proceed as described in step above. (Figure 9 & 10).



Figure 9

Figure 10

27. Using the aluminum spacer as a guide, screw one of the self-tapping bolts (3/8" x 2") into each hole to cut the threads and then remove the bolt and set aside.  
 28. Install the front TeraFlex LCG springs. Set the aluminum bump stop spacer inside the TeraFlex spring as you put it up into place.  
 29. Once the spring is in place, install the front bump stops. Use the supplied 3/8" x 2" self-tap bolts to secure the bump stop

to the spring pad.

**Note:** The Front Lower bumpstops are the same as are shown at the far right of this photo. They measure 3" x 4" tall.



30. Install the front shocks and the extended brake line hoses and extended sway bar links if needed.  
 31. Bleed the brake system. Bleed the brakes starting with the passenger rear, driver rear, passenger front and finally driver front.

### Final Assembly

32. Install the tires and lower the vehicle to the ground.  
 33. A temporary adjustment of the control arms can be made to locate the axles, then a four wheel alignment should be performed by a shop familiar with alignment procedures on lifted Jeep® vehicles.  
 34. The procedure for locating the axles is as follows:
 

- Center the rear axle under the vehicle by adjusting the length of the upper triangulated control arms
- Then make sure the axles are at right angles to the frame by adjusting one or the other lower control arm.
- Finally set rear pinion angle and front caster angle by adjusting both lower arms an equal amount in or out as needed.
- Measure the wheelbase and be sure it is 94 inches before driving the vehicle to avoid bottoming out the front or rear drive shaft. Slight wheelbase adjustment is possible by adjusting all 4 front or rear arms. Then repeat steps a – c.

 35. After final alignment, tighten all the jam nuts on all the control arms to ensure that arm lengths do not change.  
 36. Grease all control arms and other greasable components prior to operating the vehicle. Proper maintenance is essential to keep the joints free from dirt, water and other contaminants that will shorten the life and durability of the kit.

37. Have a competent exhaust shop weld in the exhaust patch, and install a suitable muffler and tailpipe that will clear the upper control arms through their full range of movement. See Figure 11A & 11B for suggested exhaust routing



Figure 11A



Figure 11B

After the first 100 miles of driving, re-torque lug nuts, recheck all LCG system fasteners, welds and jam nuts to make sure they are all still tight and secure.

v

### Torque Table for the LCG PRO & LCG MAX

Bolt	Torque Specification
Front Upper Control Arms, 7/16"	40 ft. lbs.
Front Lower Control Arms, 9/16"	85 ft. lbs.
Rear Upper Control Arms, 9/16"	85 ft. lbs.
Rear Lower Control Arms, 9/16"	85 ft. lbs.

## LCG Instructions – Addendum – Rear Upper Shock Mount SARLCG January 18, 2005

The design of the SARLCG rear shock upper bracket allows the shock eyelet to extend through the frame allowing use of a longer rear shock.

Assemble the SARLCG bracket to the top shock eye using the special pan head bolt and thin nut provided with the kit.

Next install the shock as shown in the photo to the right with the new mount bracket extending up through the hole in the frame.

*Note: This part of the frame is stamped out of two flat pieces of metal. Manufacturing tolerances may cause a slight interference where the two metal pieces overlap. If so, clear the opening in the frame with a file or die grinder to allow the shock to fit all the way up through the frame hole.*

Mount the SARLCG to the frame using the original factory bolts at the top and assemble to the axle bracket with stock hardware or new hardware if provided in the shock kit.





# PRODUCT INFORMATION

## **MAINTENANCE INFORMATION:**

It is the buyer's responsibility to have all suspension, drivetrain, steering, and other components checked for proper tightness and torque after the first 100 miles and every 3000 miles after that.

## **NOTICE TO INSTALLER:**

The enclosed "Warning to Driver" sticker must be installed in the vehicle in driver's view. This sticker is to act as a constant safety reminder when operating the vehicle. It is your responsibility as the equipment installer to install the provided sticker and to forward the product instructions to the vehicle's owner for review. If a "Warning to Driver" sticker or product installation guide were not included in the kit, FREE replacement stickers and instructions are available by request. It is the installer's duty to ensure a safe and controllable vehicle after the modifications have been performed.

## **WARNING:**

Neither the seller nor the manufacturer will be liable for any loss, damage, or injury directly or indirectly arising from the use of or inability to determine the use of these products. Before using, the user shall determine the suitability of the products for its intended use, and the user shall assume all responsibility and risk in connection therewith.

## **WARNING TO DRIVER:**

This vehicle has been modified to enhance off road performance and has unique handling characteristics. Use in harsh environments can cause extreme stress on the components. Vehicle should be inspected after being off road to make sure that all the components are in working order and safe to travel on the highway. All fasteners should be checked so that they are at the correct torque specifications as the vibration and stresses from off roading may cause critical fasteners to work loose. Extra care should be taken to inspect the critical components, steering, and brake systems. During each oil change components such as arms, tie rod ends, etc should be greased and checked for excessive wear. Any worn components should be replaced. When returning to the pavement always set or restore tire air pressure to the factory recommendation and connect or engage any disabled sway bar mechanisms. Because of the higher center of gravity and larger tires, this vehicle handles and reacts differently than many passenger cars, both on and off road. You must drive it safely! Extreme care should be taken to prevent vehicle rollover or loss of control, which can result in serious injury or death. Avoid sudden sharp turns or abrupt maneuvers. Generally, braking performance and capabilities are decreased when significantly larger/heavier tires are used, especially when used in combination with transfer case low-range reduction kits. Take this into consideration while driving. Do not add, alter or fabricate any factory or aftermarket parts to increase vehicle height over the intended height of the TeraFlex product purchased. Mixing component brand is not recommended. TeraFlex Inc. will not be responsible for any altered product or any improper installation or use of our products. We will be happy to answer any questions concerning the design, function, and correct use of our products. It is ultimately the buyer's responsibility to have all bolts/nuts checked for tightness after the first 100 miles and then every 3000 miles. Wheel alignment, steering system, suspension and drive line systems must be inspected by a qualified professional mechanic at least every 3000 miles.

## **TERAFLEX PRODUCT WARRANTY:**

Tera Manufacturing warrants TeraFlex Suspension products to the original retail purchaser to be free of defects in material and workmanship for as long as the original purchaser owns the vehicle on which products were originally installed.

Failure to complete regular maintenance (grease every 3000 miles) on TeraFlex FlexArms will void this warranty. All other conditions of the standard TeraFlex product warranty apply.

All TeraLow products are covered by TeraFlex's two (2) year warranty to be free of defects in material and workmanship for two years from date purchased.

Tera axles are covered by a 12-month warranty to be free of defects in materials and workmanship.

This warranty does not cover or include product finish, improperly installed or applied products, improperly maintained products, products or components used for racing or competition or damage due to abuse or neglect, products that fail due to the use of larger tire and wheel combinations.

All returns must be accompanied by an original invoice. It is the customer's responsibility to remove the product from the vehicle. Shipping charges are the responsibility of the customer. Tera Manufacturing will pay the return freight if the product meets the terms of warranty.

This warranty is for the replacement or repair of defective TeraFlex products only and does not include freight charges, labor charges for removal of or installation of TeraFlex or related products or components, costs incurred due to down time of the vehicle, or lost profits due to vehicle down time.

A returned goods authorization number (RGA#) must accompany any returned products. For more information please contact a TeraFlex customer service representative.

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