

# TERAFLEX

## INSTALLATION GUIDE

### ***Installation Guide for the TJ LCG ENDURO Suspension System (Low Center of Gravity)***



3" Enduro	Part #001249372
3" Enduro - Unlimited	Part #001249382
4" Enduro	Part #001249472
4" Enduro - Unlimited	Part #001249482
5" Enduro - Unlimited	Part #001249582

*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	Shocks
Front and Rear lower arms	Frame brackets
3" or 4" lift kit with bumpstops	Hardware pack

The 4" kit also includes:

Rear shock adapter	Upper Modular Rear arms
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*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.*

*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. 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 larger tires than stock while maintaining a low center of gravity.*

## 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 lower control arms. (Figure 1).



Figure 1

3. Support the transmission and remove the transfer case skid plate.
4. Carefully remove the front 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

5. 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.
6. 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

7. 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.
8. Bolt the transmission mount to the skid plate using the factory nuts and the mounting holes in the center of the plate.
9. 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

10. Remove the rear rubber bump stops by grasping the bump stop and pulling down with a side to side motion. (Located at the top of each coil spring.)
11. Use a 15mm socket to remove the bolt inside both bump stop cups.
12. Install rear bumpstop extensions. With a 16mm socket and the new bolt and spacer, remove the bump stop cup, and place the spacer between the bump stop cup and the bump stop pedestal.
13. Remove the plastic dust shield that covers the bolt securing the rear track bar to the rear axle housing. You will no longer need this shield.
14. Remove the size T55, Torx headed bolt and set it aside.

(Note: It is easy to remove and replace the front and rear track bars with the TJ on the ground.) Tie the track bar end up out of the way while you install the track bar extension bracket.

15. Hold the rear track bar bracket extension over the axle bracket positioned as show in Figure 1. Using one of the bolts (1/2" x 3" nc) and the spacer (1.5" x 1"OD x .5"ID) insert them in the hole vacated by the Torx headed bolt. Use the spacer to fill the spot the track bar once occupied. This will keep the bracket from collapsing when the new bolt is tightened.

**Figure 1**



16. With the track bar bracket in place, the two (2) smaller holes in the bracket should line up close to the holes in the axle bracket vacated by the plastic shield removed in Step 13.
17. Using a 5/16" drill bit, drill out the small holes upper and lower to make room for installing the (5/16" x 1") bolts and nuts and washers. Install and tighten the bolts and nuts.
18. Line up the track bar with the upper holes in the new track bar bracket and use the Torx bolt and nut you removed in Step 14 to secure the bar in place.
19. Install the new TeraFlex rear springs (6.50" OD).
20. Install the replacement shocks. When using the Doetsch Tech MV series shocks, mount the shock with the canister up for improved clearance on the axle housing. Do not mount other brands upside down.
21. Install the new longer sway bar links using two rubber bushings on each end of the link. Reuse the bolts you took out of the stock links to install the new longer ones. Push the plastic sleeve over the shank of each bolt. Insert the bolt with sleeve into the bushings in the link ends. Use one of the (1/2" SAE) flat washers between the sway bar and the rubber bushing. This will cause the bushing to compress more. Using the nut you removed, tighten the sway bar links into place.
22. For the 4" and 5" ENDURO-LCG, install the rear shock adapter brackets supplied with the LCG kit and install the rear shocks.

## Front Installation

23. 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. (Figure 11 & 12).



Figure 11



Figure 12

24. 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.
  25. Install the lower control arms. Final length adjustment must be done with the vehicle on the ground. This will be done at a later point.
- Note:** If you have the 4 inch system now is the time to replace the front upper control arms.
26. Support the front axle and remove the factory upper control arms. Measure the length of the stock control arms and set the new flex arms to the same length. Install the new front upper control arms. Final length adjustment will be made during the alignment.
  27. Install the front TeraFlex LCG springs. Set the aluminum bump stop spacer inside the TeraFlex spring as you put it up into place.
  28. 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 in the photo to the right. They measure 2 1/4" x 3" tall.



29. Install the front shocks.

## Brake Line Extension Installation:

30. Remove the driver side lower bumper bolt and the bottom steering box mounting bolt.



31. Hold the steering box skid plate in place, make sure that the holes line up.

32. With the skid plate in position, replace the bumper bolt and steering box mounting bolt.



**Note:** Use flat washers to correct the spacing of skid plate when using stock bumper if necessary.

33. With the skid plate in place, locate the remaining hole in the ear of the skid plate. Using the hole as a guide, use a center punch to mark the location you will be drilling.



34. Use a 5/16" drill bit to drill the frame at the location you just marked.

35. Screw the self-tapping bolt into the hole you just made and tighten.



36. Remove the Torx bolt that secures the brake line to the frame.

37. Using 1/4" bolt and nut supplies, secure brake line to the bracket.



38. Line up bracket with holes in the frame so the bracket extends down.

39. With the bracket in place, use Torx bolt to secure the bracket to frame.



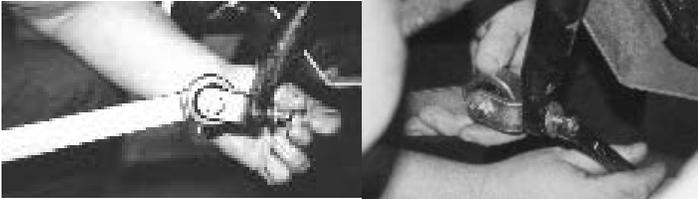
40. Remove the stock sway bar links.

41. Identify the left and right quick disconnects. One way to tell is that the bolt head will point away from the vehicle in its final position. Place the sleeve on the threaded bracket bolt and screw the quick disconnect assembly into the hole vacated by the previous bolt.





42. Once the assembly has been inserted into place, please make sure that the grease zerk points downward away from the vehicle. Add the washer and nut and secure with a 9/16" wrench.



43. Attach the sway bar stud to the lower mount bracket on the axle.



44. Insert the stainless steel stud in the hole vacated by stock sway bar arm so that the threaded end of the stud points away from the vehicle.



45. Use the pin for leverage with tightening the nut with a 3/4" wrench.



46. Now you can attach the sway bar arm to the stud mount.

47. Slide the polyurethane bushing onto the lower stainless steel stud. The use of a lubricant such as WD-40 will make this much easier.

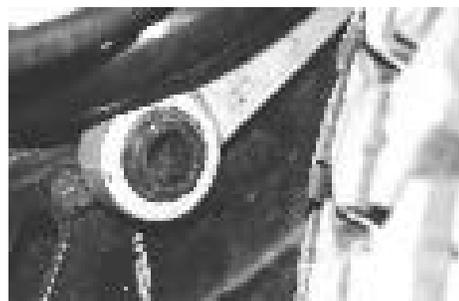


48. Place the washer on the side opposite the bolt.

49. Secure the arm in place using the washer and pin.



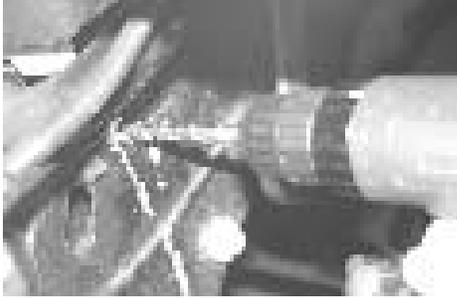
50. Use the connected sway bar arm to determine the proper location for the securing stud. Position the arm out of the way and mark the center of the bushing where it rests against the frame. This is where we will attach the securing stud.



51. In order to install the stainless stud for securing the sway bar and arm when disconnected, you will need a hand drill. We suggest drilling a pilot hole with a

smaller drill bit. Using a 5/16" bit, drill through the pilot hole.

52. Use a tap wrench and a 3/8" tap to thread the hole for the stainless steel securing stud. (The 3/8" self-tapping bolt could also be used to thread the hole.) Extra care should be used to make sure the tap is perpendicular to the frame.



53. With a pin in the stud, twist the securing stud into place.



A drop of Loc-Tite on the stud's threads will help keep it secure.



54. Once the securing stud is ready, you can attach the disconnected sway bar arm out of the way against the frame.
55. Front installation is complete.

### ***Final Assembly***

56. Bleed the brake system. Bleed the brakes starting with the passenger rear, driver rear, passenger front and finally driver front.
57. After final alignment, tighten all the jam nuts on all the control arms to ensure that arm lengths do not change.
58. 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.

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.

# **TERAFLEX** **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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