

TERAFLEX

INSTALLATION GUIDE

Installation Guide for the XJ four-inch Suspension Kit (S4X, S4XL)

Think safety first when installing your new suspension system.

Use these instructions to install the TeraFlex 4-inch lift kits. Information regarding the installation of the TeraFlex "System" Components are included after the lift installation instructions. The TeraFlex 4-inch Suspension System you are about to install was designed specifically for the Jeep XJ Cherokee.

Attention:

To eliminate drive line vibration on the 4-inch kit, a slip yoke eliminator (short shaft kit - part # 231SS-X) may be necessary.

Spring Spacer Warning:

The combination of spring spacers larger than the SSTX75 with any TeraFlex spring will void any applicable warranties. Spring spacers may also adversely affect vehicle handling and performance.



Four-Inch System



Four-Inch Long Arm System

Tera Manufacturing, Inc.
5251 South Commerce Dr.
Murray, Utah 84107
Phone/801.288.2585
Fax/801.713.2313
www.teraflex.biz

Components for the 4 inch Cherokee Lift Kit

Description	Quantity
Springs, four-inch front XJ	2
Front lower Flex Arms (Standard Length or Long Arm)	1
Quick Disconnects for XJ	1
Bump stops	2
Rear add-a-leaf	2
Spring Clamp	4
Lifted Shackles	2

Rear Installation

1. Place the vehicle on a clean, level working area. Set the emergency brake and block tires on the side of the vehicle opposite of the side you will be installing the shackle. Be sure the vehicle will not roll.
Note: Do not use power impact or air ratchets to tighten nuts. Lock nuts with nylon inserts (aircraft style) should only be tightened by hand with a wrench.
2. Using a floor jack, lift the rear of the vehicle until the wheels clear the ground by at least three inches. Place jack stands under frame rail. Lower the vehicle onto jack stands, but keep the axle supported with the floor jack. Remove the rear wheels.
3. While the axle is being supported by the floor jack, remove the shock absorbers, the stock shackles and hardware. Carefully release the pressure on the floor jack allowing the springs to drop about three to four inches.
4. Examine the upper spring perches (also referred to as frame spring shackle mounts) on both sides of vehicle for any damage. If any damage is noted, it must be repaired to "new" factory original condition before this spring shackle kit can be installed.
5. Install spring shackle lift and hardware to upper frame mount. DO NOT FULLY TIGHTEN at this time.
6. Using the floor jack, raise the axle until the leaf spring and bushing fit inside the new shackle unit. Insert the bolt with washer through shackle and spring bushing. Install washer and nylock nut.
Note: If the bolt seems to "hang up" and will not go through both sides of shackle, adjust hole alignment by lifting or lowering axle and spring with floor jack or reinsert bolt and washer from the opposite side. DO NOT POUND bolt through the holes. This could result in damage to the bolt, shackle, and/or bushing.
7. Check your factory repair manual for proper torque specifications. Be sure the torque specifications are for the proper year, make, and model of your vehicle. Tighten to proper factory specifications. Be careful to not overtighten bolts. Damage to shackle or vehicle can result.
8. For installation of the additional leaf follow these instructions. The leaf springs will be left on the vehicle for installation. Tighten C-Clamps on the springs on either side of the center pin.
9. Cut off the stock spring clamps on the leaf springs. Unbolt the U-bolts connecting the leaf springs to the axle. Lower the jack so that there is space in between the axle housing tube and the springs.
10. Remove the center pin from the leaf pack. If it is rusted in, it may be necessary to drive it out with a hammer and punch. Carefully release pressure on the c-clamps, to allow the individual leaves to separate from the pack.
11. Install add-a-leaf underneath the bottom leaf. C-clamp the spring pack back together, and install new center pin.
12. Trim the new center pin to the proper length, and install the u-bolts and tighten leaf pack down to the axle. Remove c-clamps.
13. Install new longer travel shock absorbers (not included).
14. After all steps have been completed on both sides of the vehicle, re-install tires on vehicle and lower it to the ground. Bounce the vehicle to help settle the springs.
15. Install the new leaf clamps. Apply light pressure to the clamps to avoid bending the tabs sharply.
Note: The leaf clamps are not meant to hold the leafs together, but aid in keeping them from 'fanning' out.
16. On some applications the rear exhaust will come in contact with the shackle bolt (see photo). It will be necessary to have the exhaust re-aligned or adjusted to clear the shackle bolt.



17. Check all bolts for proper Torque. Rear installation is complete.

Front Installation (Standard Tera FlexArms)

Note: If you are installing the four-inch Long-Arm suspension system follow the front instructions located on the backside of this page. For Standard Tera FlexArms follow instructions below, and skip the Long-arm instructions.

1. Jack up the front of the Jeep by the frame and set stands in place.
2. Mark a line over the front lower control arm mounting bolt. Place the offset end of the FlexArm forward in the axle brackets. Install the front lower mounting bolts in the same position you marked and tighten. Remove the front shocks. Remember to save those lower bolts.

Note: Make sure the FlexArms are the same length as the old arms to make sure your alignment is properly maintained.

3. Remove the front shocks. Remember to save those lower bolts.
4. Disconnect the lower end of the front sway bar link to allow the front axle to drop.
5. Remove the spring clamp and bolt and set aside.
6. Remove the front springs. Passenger side first.

7. Remove the bump stop cushions. You will be putting these back after the new springs are in place.
8. Using an electric hand drill and a 5/16" drill bit, locate the center of the front, lower spring pad. The impression in the center works well as a guide. Drill a hole through the guide in the pad as shown in Figure 2.
9. 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.
10. Install the front TeraFlex springs. Right side first. Set the aluminum spacer (3"OD) inside the TeraFlex spring as you put it up into place. Once the spring is in place, rotate the spring so the bottom end of the spring butts up against the stop in the axle pad support.
11. Replace the spring clamp and bolt taken out in Step 5.
12. With the aluminum spacer resting on the lower spring pad, center the spacer and secure with the self-tapping bolt used to cut threads in Step 9.
13. Replace the upper bump stop cup, bolt and cushion removed in Step 7.
14. Install the front shocks.



Figure 2

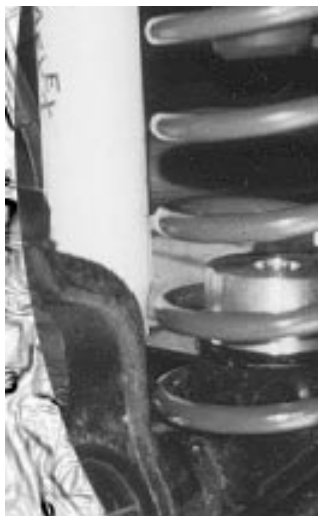


Figure 3

Transfer Case Lowering Kit Installation Guide

1. Install the 4 spacers between the frame and the cross member with the flat end of the spacer up against the frame. The 1/2" lock washer goes onto the 1/2" x 3" bolt first followed by the tapered washer with the flat end of the tapered washer against the lockwasher.
2. Put the tires and wheels back on and lower the Jeep to the ground.

Front Installation (Long Tera FlexArms)

Before installation make sure that your kit includes the following:

- 1- Long Control Arm Brackets Left (00886)
- 1- Long Control Arm Brackets Right (00887)
- 2- Long Control Arms (TF233X)
- 2- Unibody Bracket Spacers (0083)
- 2- Bolts 3/8" x 2" self tap (0033)
- 6- Bolts 10mmx30mm (00126)
- 4- Bolts 3/8" x 1" (0080)
- 2- Flat Washers 5/16" (0038)
- 2- Lock Nuts 3/8" (0083)



overtighten these bolts. The threads can strip out in the unibody if overtightened.



- 8. Locate the holes on the side of the new long-arm bracket, and drill the two holes with a 5/16" drill bit. Use the self-tap bolts provided to secure the side of the bracket to the vehicle. Tighten bolts to 8-10 ft. lbs.



- 9. Use the bolt holes on the new bracket as a pattern to drill into the unibody for the spacer. Use a 3/8" drill bit. Repeat for the other side of the vehicle.



FlexArm Bracket Installation

- 1. Set the park brake on the vehicle, if the installation is to be performed on the ground.
- 2. Support the rear output shaft of the transfer case with a jack stand.
- 3. Remove the four transmission mount bolts to remove the cross member.
- 4. Remove the 2 studs and 2 bolts from the cross member in the unibody. There are 4 holes in the unibody for the cross member (on most XJs). Use a 10mm x 1.5 tap to clean up, or make threads.



- 5. Place the new long arm brackets on the unibody.
- 6. Bolt the new bolts finger tight through the new long arm bracket.
- 7. Hand tighten the three bolts on the bottom of the new bracket and then torque them to 8-10 ft lbs. Do not

Note: Due to slight variations in the unibody widths, it may be necessary to enlarge the slots in the control arm brackets to secure the bracket to the unibody.

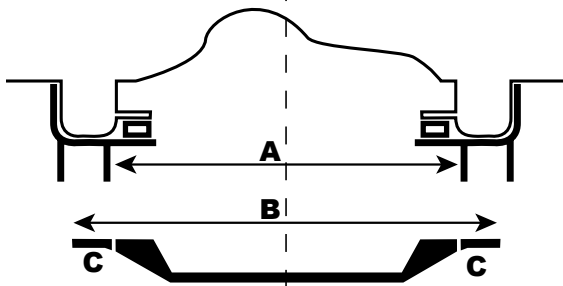
- Place the long arm spacers between the brackets and the unibody on the inside of the frame rail. Align the spacer with the position of the original cross member.



Cross Member Modification

Inaccurate measurements can cause extra complications when completing this next series of steps. When it is finished, you will have modified your cross member in ways that are difficult to reverse. Please use extra attention when making these modifications to your cross member.

Follow the diagram below to calculate the amount to be trimmed from the cross member.

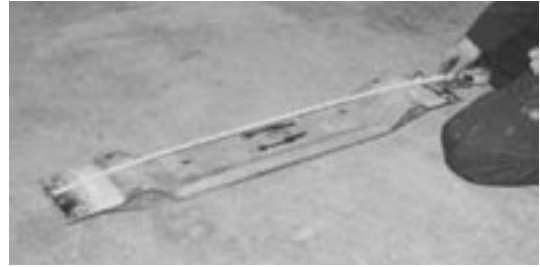


Measurement A is the distance between the inside edge of the new long-arm brackets. Measurement B is the overall width of the stock cross member. Subtract A from B. Divide that total by two to find the amount (in inches) that should be removed from each end of the cross member.

- Measure the distance between two long arm brackets.



- Measure the width of the stock cross member.



- Mark your cross member where it should be cut off. Double check your measurements and make sure that your marks are correct.
- Cut each end of the cross member off on the mark.



- Place the cross member back into position using the new long arm bracket as a guide. Mark on the cross member where the new holes for mounting will be.



- Double check the measurements and be sure that the holes will line up and that the cross member will attach to the transmission and unibody correctly.
- Drill the new holes for the cross member.



18. Install the cross member using the supplied bolts and washers.

Note: *The cross member should be located in its original position as well as being lined up with the cross member spacer installed earlier.*

Long Arm Installation

Complete the following instructions one side at a time. This will maintain the current pinion angle by preventing the axle from rotating and changing the control arm lengths.

19. Measure the distance between the center of the lower control arm bolt on the axle to the center of the control arm mount bolt hole on the new long-arm bracket.
20. Set the length of your new long arm for that side to the length of the measurement taken in step 19.
21. Remove the standard-length lower control arm.
22. Cut off the control arm bracket from the unibody using a die grinder or a cut-off saw. Paint the exposed metal surface to inhibit rust.
23. Install the new long arm.
24. Repeat steps 19 to 23 for the opposite side of the vehicle.
25. Be sure to have the vehicle aligned after installation for proper caster and correct driving characteristics.

Transfer Case Lowering Kit Installation Guide

1. Install the 4 spacers between the frame and the cross member with the flat end of the spacer up against the frame. The 1/2" lock washer goes onto the 1/2" x 3" bolt first followed by the tapered washer with the flat end of the tapered washer against the lockwasher.
2. Put the tires and wheels back on and lower the Jeep to the ground.

Adjustments

The easiest way to correct front axle location is to use the adjustable front track bar (part # TBAF). This procedure will also do the job without the need for additional parts.

Our goal is to find the neutral location for the front axle. Make sure the Jeep is on flat, level ground.

1. Remove the passenger side (right side) of the front track bar.
2. With the Jeep on the ground and the steering wheel locked in its center position bounce the Jeep up and down. Use the front bumper to do this. After you have done this the front suspension and steering should be in a neutral position.
3. Without moving any other components raise the lower end of the track bar up into its mounting bracket. Using the track bar center hole as a guide mark the bracket.
4. If you have room in the bracket so the hole does not overlap the edges go ahead and drill the hole out (typically 9/16" see photo below). Make sure you are drilling at a right angle to the bracket when drilling through to the rear half of the bracket. Use a 13/32"



drill bit. If you drilled the hole in the correct location you should be able to just lift the bar up and insert the new 10mm x 70 mm bolt. Torque the bolt to 40 foot pounds.

Fine tuning the steering

Adjust the sleeve on the front drag link by loosening the clamps and twisting the sleeve in a direction that causes drag link to become shorter. Find a place you can drive that is flat and straight. Adjust the sleeve and test drive the vehicle until your steering wheel is centered to your satisfaction and tighten the adjuster sleeve clamps.



Driveline vibration

Acceleration vibration

The vibration is caused by the pinion angle being too high in relation to the transfer case output shaft.

Deceleration vibration

This vibration is caused by the pinion angle being too low in relation to the transfer case output shaft.

If you have constant vibration when accelerating or decelerating, see which of these actions causes the vibration to decrease in severity. If you accelerate and the vibration diminishes you need to bring the yoke down.

Because the axle is mounted in rubber, the axle will rotate in the rubber under torque. TeraFlex has tapered spring wedges to adjust pinion angle.

Front Wheel Shimmy

First, inspect steering components for worn tie rods and/or steering box.

Second, move pinion up by rotating the axle. Use the lower control arm mounting bolts to adjust caster or shorten lower front FlexArms if you have them.

Alignment notes

The factory alignment specifications:

ADJUSTMENT	PREFERRED	RANGE
Caster	7.5	+/- 1.0
Camber (fixed angle)	-2.5	+/- 0.63
Wheel Toe-In	.15	+/- 0.15
Thrust Angle	0	+/- 0.15

After installation of the TeraFlex suspension kit, it is imperative that the front end alignment angles be checked. It is recommended that your vehicle be taken to a reputable alignment shop that understands 4WD vehicles and has experience with their alignment parameters. If there is a change made on the alignment, we strongly suggest that, when possible, an adjustment be made equal on both wheels.

There are three basic alignment angles: camber, caster, and toe-in. Camber is pre-set by the manufacturer and cannot be adjusted. If the camber angle is off, this could indicate that something is bent.

Caster might be changed with the installation of our suspension kit. It is recommended that the factory specifications be maintained. If this cannot be obtained with the caster adjustment eccentrics found on the lower control arms, you may choose to use our FlexArms (flexible lower control arms) which allow for additional adjustment. Drive shaft angle has priority over caster.

Toe-in is also important for tire wear and might be changed by the lift. It has been recommended that the toe-in be set to minimum factory specifications if you go to the larger tire and wheel set up.

Installation Guide for the XJ Quick Disconnects

Quick Disconnects (QDFXZ)

The new generation TeraFlex Sway Bar Quick Disconnects for XJs and ZJs include the components picture to the right. DO NOT use these quick disconnects with only one side connected. Doing so will void any warranty claims.



Part One

Prior to starting the installation, please remove stock sway bar links.

Step 1

After removing the sway bar links, identify the left and right quick disconnect. One way to tell is that the bolt head will point away from the vehicle in its final position.

Place the round spacer ring on the threaded bracket bolt.

Once the assembly has been inserted into place, make sure that the grease zerk points downward away from the vehicle. Add the flat washer and nut and secure.



Step 2

Attach the sway bar connecting stud to the lower mount bracket by inserting the stainless steel stud in the hole vacated by the sway bar arm and securing with lock washer and nut. Be sure that the threaded portion of the stud points away from the vehicle.



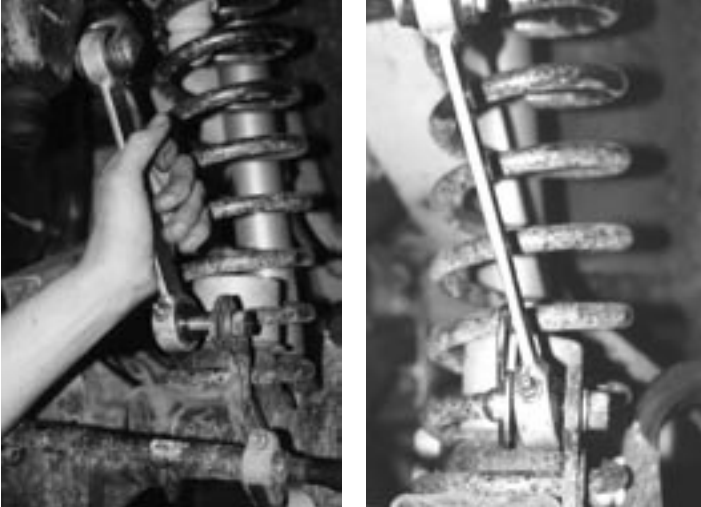
Step 3

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



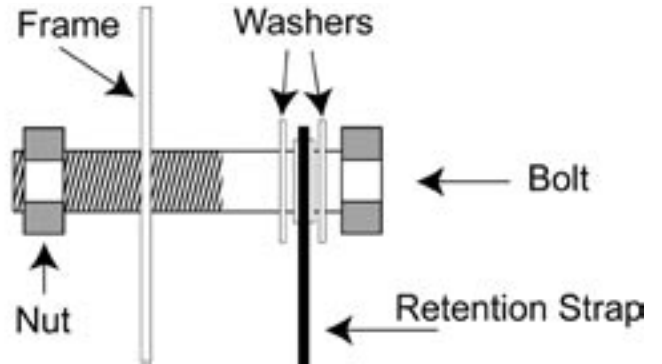
Step 4

Attach the sway bar arm by sliding the polyurethane bushing onto the lower stainless steel stud. The use of lubricant such as WD-40 will make this much easier.



Step 2

Place one washer on each side of the grommet located on the upper end of the retention strap and insert the bolt. Please refer to the diagram.



Step 3

Tighten the bolt to secure the retention strap.



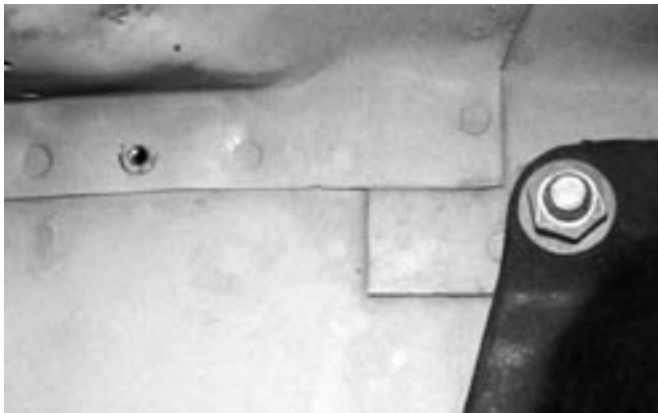
Step 5

Secure the quick disconnect by placing the washer on the side opposite the bolt and insert pin into the stud.

Part Two

Step 1

The next step involves installation of the retention strap used to secure the sway bar when disconnected. Drill the hole where the retention strap will be attached. The photograph shows one possible location.



Step 4

Now, locate and mark the proper position for the retention strap hook. Be sure to allow enough freedom in the strap to remove the strap from the hook.



Step 5

Drill the hole marked in Step 4.



Step 6

Attach the retention strap hook to the vehicle using the included metal screws.



Notes on securing your disconnected sway bars

There are two methods of securing the disconnected sway bars. One method should be stronger but the other is quicker.

Stronger method



Quicker method



Brake Line Extensions

1. Remove Torx bolt holding the brake line to frame.
2. Line up bracket with holes in frame so the bracket extends down.
3. With the bracket in place, use the Torx bolt to secure the bracket to frame.
4. Pull brake line assembly down until it lines up with lower holes in the new bracket.
5. Using the 1.4" bolt and nut supplied, secure the brake line to the bracket.

Note:

We recommend greasing your quick disconnects at least every 3,000 miles. It is also a good idea to grease after going through water and when the quick disconnects become difficult to move. Lubricants like WD-40 on the stainless studs will make moving the quick disconnect arms much easier.