



INSTALLATION GUIDE

Installation Guide for the High Steer System Kit

Part #001813000 (HSK)

Part #001849000 (HSK-LCG)



NOTICE: This is **NOT** an all-inclusive kit. Prior to installation please have prepared solutions to possible modifications not included in the TeraFlex High Steer System. These modifications may include but are not limited to the front sway bar links/mounting points and the front track bar mount. Included at the end of these instructions are possible solutions to these issues.

Take every precaution to make this installation a safe procedure. Make safety the number one priority with any suspension or lift installation. **This kit was designed for the Dana 30 front axle, models 1992 and newer; and the 2003 + Rubicon front 44.**

NOTE: The High Steer Kit (HSK) was designed to work with a 1992 and newer brake caliper mounting design so on older Dana 30 axles (84-91) it will be necessary to update the caliper, the rotor and possibly the unbearing to the later design. **Factory offset wheels will not clear the HSK arm** without using wheel spacers. A better choice is aftermarket wheels with 3.5 inches or less of backspacing.

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Before Installing the Kit:

1. Raise and support the front axle so that the front tires are off of the ground. Remove wheels.
2. Measure the tie rod from center of mounting point to center of mounting point on each knuckle. Write this measurement down, you will use this to help approximate the new toe-in on reassembly.
3. Remove steering components from the vehicle; tie rod and drag link.



PASSENGER SIDE DISASSEMBLY:

Note: For additional detail on these procedures, refer to the factory Jeep Service Manual.

4. Remove the 2 brake caliper bolts, then the caliper and brake rotor.
5. Remove the 3 wheel bearing bolts, and pull the unbearing/axle shaft assembly from the vehicle.

Note: If the axle housing starts to leak, stuff a rag inside the tube to prevent axle fluid from leaking.

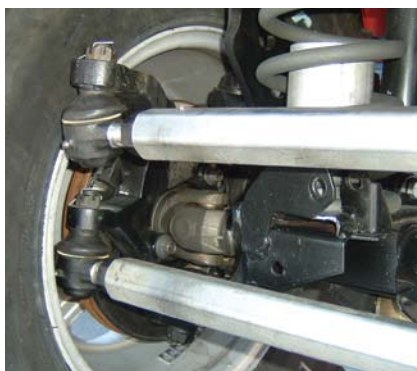
6. Remove the top and bottom ball joint nuts on the knuckle, and remove the knuckle from the vehicle.

REASSEMBLY:

7. Reinstall the new TeraFlex High Steer Knuckle. Torque ball joint nuts as specified in the Jeep Service Manual.
8. Install the hub assembly, axle shaft, and rotor.
9. Install caliper and brake pads.
10. Install the new tie rod and set the length to the measurement taken in step 2 above.



11. Install the drag link from knuckle to pitman arm. Refer to the attached drawing and be sure to use a 9/16 flat washer under the castle nut.



12. Check all bolts and nuts for proper torque specifications, and use cotter pins where required.
13. Reinstall wheels and lower vehicle to the ground.
14. After installation of the TeraFlex High Steer System, the front end alignment angles must be checked. Take your Jeep to an alignment shop that understands 4WD vehicles and has experience with their alignment parameters.

NOTE: DO NOT drive the vehicle until the alignment has been performed!!

15. After 500 miles check all bolts and jam nuts, and re torque if necessary.

Note: Additional Modifications that will be necessary are listed and detailed next, but are not included in the HSKT or HSKY.

FRONT SWAY BAR MODIFICATIONS:

The sway bar mounts on the axle will have to be relocated to clear the height increase of the drag link. TeraFlex has developed sway bar brackets that can accomplish this modification. (SBM-L, SBM-R). When the sway bar bracket is relocated a shorter sway bar link (QD132-4) must be used.

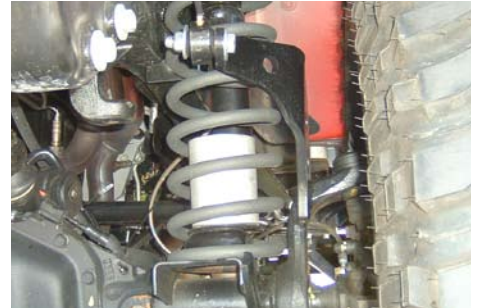
1. Cut off the stock sway bar mount at the point where it attaches to the spring pad bracket.
2. Grind the area smooth to avoid cutting yourself on the sharp edge, and paint to prevent rusting.



3. Place the new sway bar mount on the inner knuckle so that it is vertical (see last photo), and tack weld it in place. Double check to make sure that the mount is in the right location and then final weld.
4. Secure the sway bar links to the

sway bar mount.

5. After 500 miles check all bolts and re torque if necessary.



wFRONT TRACKBAR MODIFICATIONS:

Using the HSK on a vehicle that still runs a track bar brings up some issues that must be resolved:

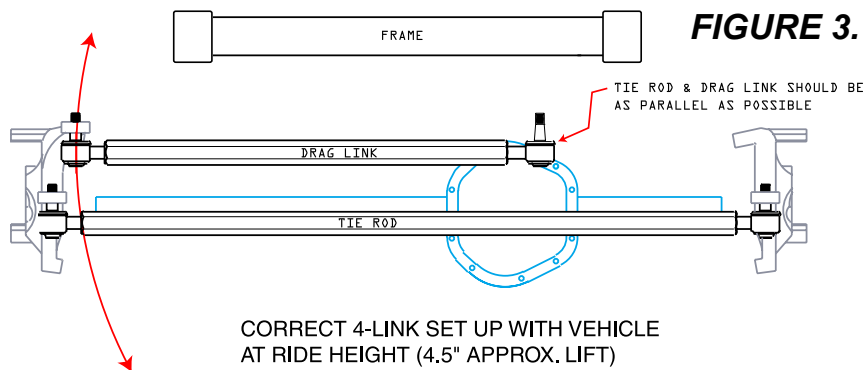
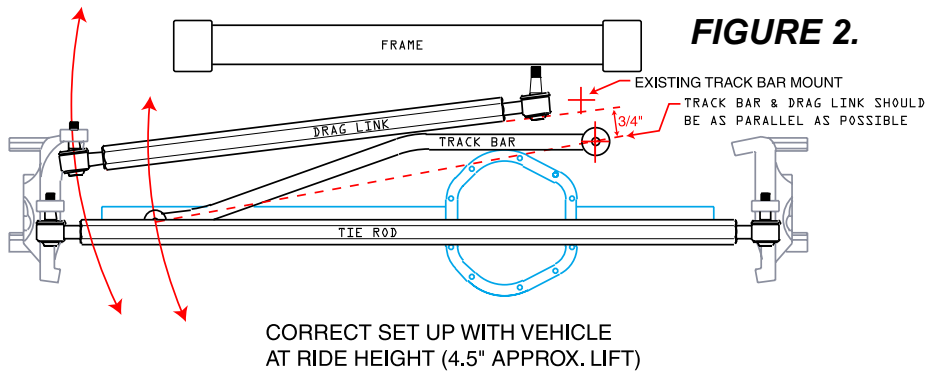
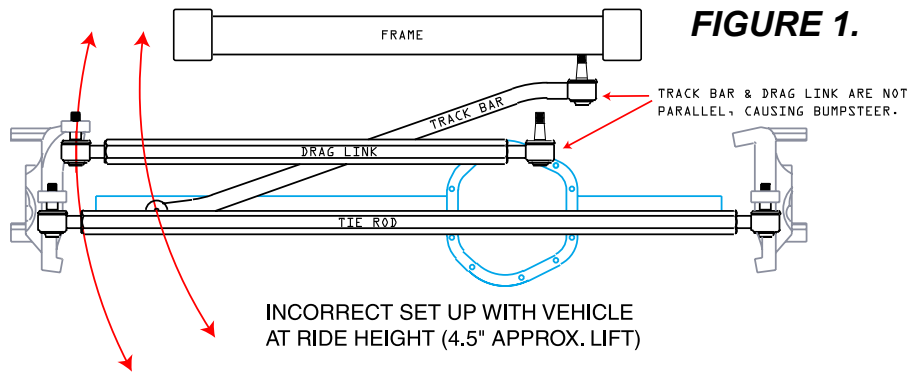
A drop pitman arm is no longer needed. Moving the knuckle end of the drag link up higher with the HSK eliminates the need to drop down the steering box end of the drag link. Using a drop pitman arm in this configuration will result in bump steer (Refer to figure 1).

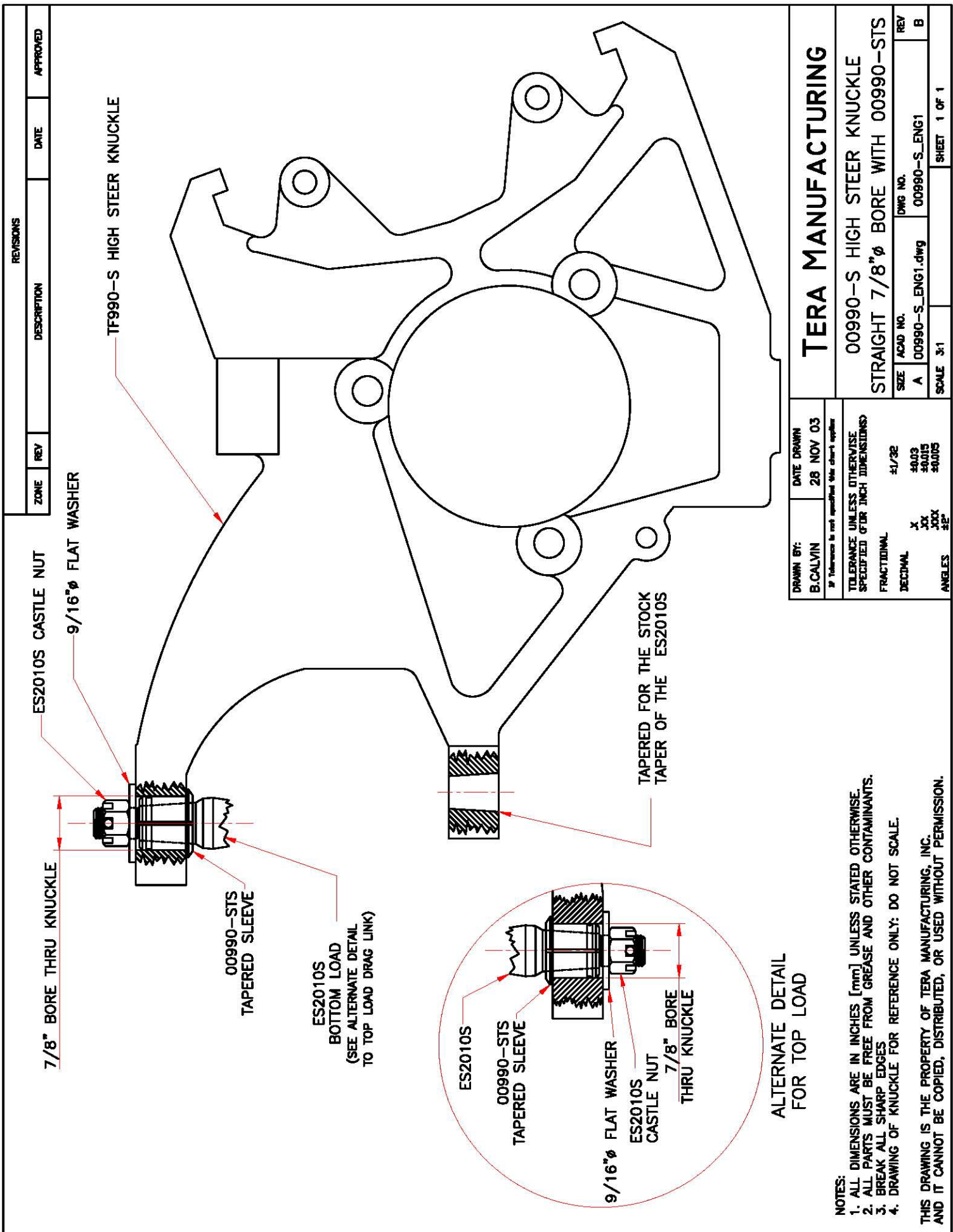
The shape of the high steering arm interferes with the factory sway bar links and link mounts so a new way to mount the sway bar links on the axles was developed. These new Sway Bar Mounts (TeraFlex part number TF990-SBM L&R) require the use of shorter sway bar links.

In some cases it might also be necessary to relocate the axle end of the track bar to minimize the side-to-side movement of the axle during suspension cycling.

Guideline 1: If a track bar is used in the front suspension, the track bar and drag link must be parallel (Refer to figure 2).

Guideline 2: With leaf springs or a triangulated 3 or 4 link front suspension the tie rod and drag link must be parallel (Refer to figure 3)





DRAWN BY: B.CALVIN		DATE DRAWN 28 NOV 03
2D Tolerance is not specified. Use chart 1 applies		
TOLERANCE UNLESS OTHERWISE SPECIFIED (FOR INCH DIMENSIONS)		
FRACTIONAL		
±1/32		
DECIMAL		
.003 .0015 .0005		
ANGLES		
X XX XXX ±2°		

Tera Manufacturing		
00990-S HIGH STEER KNUCKLE		
STRAIGHT 7/8"Ø BORE WITH 00990-ST5		
SIZE A	ACAD NO. 00990-S_Eng1.dwg	DWG NO. 00990-S_Eng1
REV B		
SCALE 3:1	SHEET 1 OF 1	

990 Knuckle update 18 April 2005

The 990 High Steer Knuckle from TeraFlex is going through some changes. The original purpose of this knuckle was to allow a flat drag link when installing a TeraFlex LCG suspension system. Since we introduced the knuckle many of you have found additional applications for this TeraFlex product. The original design (figure 1) included a much longer steering arm, raised above the stock location. The length of the arm was intended to allow use of stock locations for the sway bar links. The longer steering arm required the use of a much longer pitman arm to allow full lock-to-lock steering.



Figure 1

What we found out is virtually all installations require some modification of the sway bar mounting point, particularly if a 975 S/T sway bar is installed. In the latest production run of the 990 knuckle, which will be shipping starting the first of April, the steering arm length has been reduced to allow use of a stock length pitman arm. When installing the LCG system a regular TJ drop pitman arm will give the correct drag link angle (parallel to the tie rod) and when using the High Steer 990 knuckle in tall lifted vehicles a stock pitman arm will be used (drag link parallel to the track bar).



Figure 2

The new 990 knuckle (figure 2) will ship without a pitman arm. It will include the tapered split sleeves as in the past to allow placing the drag link end either in from the top or in from the bottom of the steering arm, depending on the application. When buying a 990 knuckle be sure to have the correct pitman arm on hand for your application. TeraFlex will be happy to sell you a drop pitman arm if needed, and we have a limited supply of factory pitman arms that we can sell. Remember that a pitman arm will no longer be automatically supplied with the knuckle only. Some suspension systems may include a pitman arm as they have in the past. HSK-LCG includes a drop pitman arm.

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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