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Rock-Tek Long Arm Suspension Upgrade
Jeep Wrangler – TJ (97 – 06)

Installation Instructions

Congratulations for purchasing a TNT’s Rock-Tek Long Arm Upgrade suspension for your 97 – 06 Jeep Wrangler. Begin by unpacking your kit and comparing the contents to the packing list provided as attachment “A” to this manual. Please read the entire manual and become familiar with the instructions given before beginning any of the installation.

Please observe proper shop safety procedures when performing this install. Use proper eye and hearing protection as required and use safe jack stands/supports placed appropriately for supporting the vehicle while you work on it.

The 4-Link rear suspension kit is designed to be as much of a bolt-on kit as possible; however, cutting and minor welding are required for the installation of this kit. TNT suggests that these operations be performed only by a qualified shop or individual. Accurate measurements are also required for a successful installation; please use caution when performing these measurements. Exhaust modifications are also required for a complete installation. The exhaust system of your Jeep will need to be replaced from behind the catalytic converter. TNT also suggests installing an aftermarket catalytic converter at the time of installation to allow for better clearance with the XD Belly Pan. If you retain the factory converter, which is acceptable, the exhaust hanger forward of the factory converter mounted to the transmission mount may need to be moved and/or reshaped slightly to allow adequate clearance of the converter and modular belly pan system. The exhaust forward of the catalytic converter will also need to be modified to clear the upper control arm mount of the passenger’s side lower control arm. Where the tubing makes a 90* turn to go under the oil pan, cut the exhaust tubing directly under the oil pan and remove 1.50” of tube and weld it back together. T&T Customs, Inc. suggests all exhaust system work be performed by a qualified exhaust system specialist only.

This suspension should only be installed on a Jeep that has a SYE and CV style rear driveshaft installed.

PHASE I Preliminary Measurements and Assumptions

Before beginning the install of your new suspension components, you must measure and record your rear pinion angle setting. It is assumed you have a properly installed rear CV style driveshaft that does not give vibration. Recording the rear pinion angle is crucial to a successful install if you are installing a TRI-4 rear suspension where a truss assy. will be installed on the rear axle housing.

PHASE II Modular Belly Pan and XD Crossmember install

STEP 1:

Begin by removing the factory or aftermarket transmission crossmember. Jack the transmission up until it is firmly against the body to give yourself the most room possible during the install of the Modular Belly Pan system, support the transmission with an appropriate support. Inspect the transmission isolator (mount) and replace if needed.

STEP 2:

Carefully remove the fuel and brake line plastic support/mount clips along the inside of the driver's side frame rail. Gently pull the lines away from the body and tuck them up along the floorboard. Secure them to the transfer case linkage with a nylon zip tie to temporarily hold them out of the way during the install of the Modular Belly Pan and internal bracing.

STEP 3: Position XD Belly Pan

Place the XD front control arm mounts in position under the vehicle and temporarily secure them to the frame with the 6 – ½” X 1” bolts and washers (97'-02' models). 03'-06' models will use 4 – 12mm bolts and washers. Tighten fasteners to properly position the front control arm mounts.



STEP 4 – Crush Sleeve install:

Using an appropriate marking device, mark the 3/4” holes on the outside of the frame through the holes on the front control arm mounts, repeat procedure for the opposite frame rail.

TIP: You may use the mounts as a drill guide. Use a 3/4” hole saw with the pilot bit removed from the arbor.

Using an appropriate marking device, mark the 1/2” holes on the inside of the frame through the holes on the front control arm mounts, repeat procedure for the opposite frame rail. Once satisfied you have the 1/2” holes marked on the inside of the frame, remove the front control arm mounts and drill the 1/2” holes on the inside of the frame.

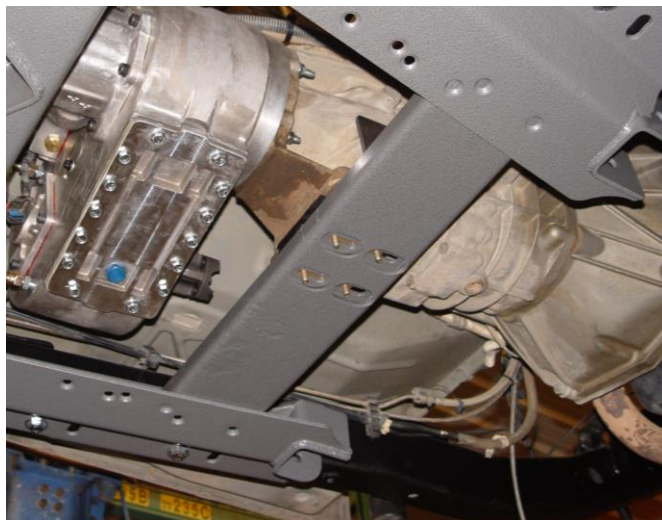
Re-install the front control arm mounts and fasten with the 6 bolts and flat washers up into the bottom of the frame. Select a 7/16” X 4” bolt and flat washer, insert bolt into crush sleeve and insert assembly through control arm mount, secure with 7/16” flat washer and toplock nut. Repeat for all remaining crush sleeve positions.

NOTE: Crush sleeves may need to be trimmed to length. Crush sleeve should be flush with outer plate.

Tighten crush sleeves hardware to 65 ft-lbs. Tighten lower bolts in the frame to 35 ft-lbs.

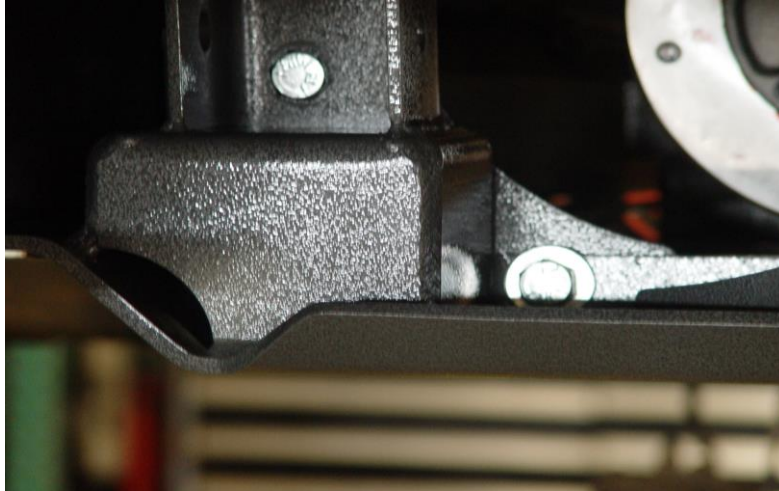
STEP 5: Transmission Crossmember install:

Position transmission crossmember onto transmission mount, slowly lower transmission and crossmember down onto front suspension side mounts. Insert 3/8” X 1” counter sync bolt through side mounts through the transmission crossmember. Secure with flat washer and nylock nut. Lower transmission fully and secure isolator with factory nuts.



STEP 6: Rear Suspension Crossmember install

Take the rear suspension XD Xmbr and bolt it to the back of the front suspension side mounts loosely.



NOTE: *Do not tighten fasters at this time, you will need to position the Xmbr side to side to center it under the Jeep's frame. The XD Xmbr may angle down from the back of the XD Belly Pan slightly. This is normal and is part of the overall design.*

Center the XD Xmbr on the frame, once satisfied with the positioning of the XD Xmbr left to right tighten the XD Belly Pan to the frame hand tight. Using a suitable marking device, mark the four frame mounting holes in the XD Xmbr onto the frame. Transfer punch the center of the mounting holes. Remove the XD Xmbr and set aside. Using an 1/8" drill bit, drill the transfer punches to create a pilot hole in the frame. Drill the four holes to 3/4". We suggest using a hole saw for this operation. Check fitment of the weld in bungs supplied in the hardware kit, the shoulder of the bung should sit flush against the bottom of the frame.

CAUTION: *Do not over weld the bungs and distort the threads. We suggest installing a 1/2" bolt into the bung to protect the threads from weld splatter.*



Once satisfied with the fitment of the bungs weld the bungs to the frame. Remove any bolts installed and allow welded area to thoroughly cool before proceeding.

Re-install the XD Xnbr. Select the 4 – ½” X 1 ¼” bolts and flat washers, when satisfied with the positioning of the XD Xnbr, tighten the 4 – ½” X 1 ¼” bolts securely. Tighten bolts to 65 ft-lbs. Reinstall the 2 – ½” X 1 ¼” bolts, washers and top lock nuts. Tighten to 65 ft-lbs.



STEP 7: Install XD Belly Pan

Position XD Belly Pan under front suspension side mounts. The mating flange on the XD Belly Pan will bolt to the mating flange on the XD Xnbr. Select 3 – 3/8” X 1 ¼” bolts, 6 flat washers and 3 – 3/8” toplock nuts, bolt mating flanges together loosely. Position XD Belly Pan up tight against front suspension side mounts and hold tightly in place with a floor jack or other means. Using the XD Belly pan as a drill guide drill 3/8” holes in the front suspension side mounts at all places the pan has holes. Select and insert 8 – 3/8” X 1 ¼” bolts, 16 flat washers and 8 3/8” nylock nuts. Tighten to 35 ft-lbs.

CAUTION: *This portion of the installation involves cutting and grinding. Please observe proper shop safety procedures when performing this portion of the install. Use proper eye and hearing protection as required and use safe jack stands/supports placed appropriately for supporting the vehicle while you work on it. Ensure proper clearance around fuel and brake lines on the drivers side before cutting/grinding.*

PHASE III

STEP 1 - Prep:

Begin by properly supporting your Jeep to facilitate the removal of the factory or aftermarket control arms and associated suspension components. It is highly recommended that you install one end of the suspension at a time. TNT Rock-TekY-Link™ Long Arm Suspensions will restore the correct wheel base dimensions to your Jeep; to make this as easy as possible you should disconnect the axle from the chassis as if you are going to remove it from the vehicle. Having the axle completely disconnected will allow you to position the axle easily to get your new control arms connected with the minimum amount of effort.

STEP 2: Factory Lower Control Arm mount removal

You must remove the factory lower control arm pivot hangers from the frame at all locations. Use caution as to not damage the underlying frame. These brackets must be removed to provide adequate clearance for the **Y-Link™** arms in the front. The rear mounts are removed to provide increased ground clearance.

STEP 3:

Clean frame and prep for paint in all affected areas. Paint as required.

PHASE IV Front Suspension Install

STEP 1: Y-Link™ Lower Control arm installation:

Select the appropriate lower control arm for the side of the vehicle you are working on. From the hardware kit select a 9/16" X 4" bolt, 2 flat washers and a 9/16" top lock nut. Install the flex joint end of the Y-Link™ Lower Control arm into the mount of the XD front control arm side mount. Insert the 9/16" bolt with flat washer into the control arm mount and through the flex joint, secure with flat washer and top lock nut; tighten the bolt to 150 ft-lbs. Repeat the process for the opposite side of the vehicle.

Swing the axle end of the of the Y-Link™ Lower Control arm up into the lower control arm mount on the axle assembly. Axle repositioning may be required to get the bushing to insert squarely into its mount. Select a 9/16" X 4" bolt, 2 flat washers and a top lock nut from the hardware kit. Insert bolt and flat washer assembly into the mount and bushing, secure it with a flat washer and top lock nut. Do not over tighten; tighten this fastener only until the slack in the threads of the bolt is taken up. Proper tightening of this fastener is reached when the head of the bolt can still be rotated with minimal effort. Over tightening of this bolt will deflect the lower control arm mount and bind the bushing assembly decreasing performance of the suspension. Repeat process for opposite side of vehicle.

Y-Link™ Lower Control arms are capable of a proper length dimension for most lift heights in the 2.5" to 8" range; however, if you choose you may alter your wheelbase with the adjustment mechanism provided. TNT provides for 2.50" of adjustment. You may collapse the Y-Link™ Lower Control arm up to ½" or extend them 2.00". Once the installation is complete and the vehicle is placed back on the ground a simple wheelbase measurement is needed to confirm that your Y-Link™ Lower Control arms are adjusted correctly.



STEP 2: Y-Link™ Upper Control arm installation:

Begin by selecting a M10-1.5 X 80MM socket head bolt, 2 M10 flat washers and a M10 nylock nut; also select a 9/16" X 3 ½" bolt, 2 9/16" flat washers and a 9/16" top lock nut from the hardware kit. Assemble the upper control arm, first we suggest using anti-seize compound on the adjustment threads and installing the jam nut all the way to the end of the threads closest the bushing end. Thread the threaded joint into the opposite half of the upper control arm to make a complete assembly. Before installing the upper control arm, set the length of the upper control arm to approximately 14.50" center of bolt hole to center of bolt hole. This adjustment will give you an approximate caster angle; final adjustment will be made when the vehicle is back on the ground with full weight on the suspension.

Install the axle end of the Upper Control arm first by positioning the mount over the bushing in the axle mount. Install the M10-1.5 X 80mm socket head bolt and flat washer through the control arm and mount, secure with a flat washer and M10 nylock nut. Do not over tighten the fastener, when properly tightened the bolt should still spin. Finish the install by rotating the lower control arm end of the upper control arm into the mount on the lower control arm. Slight repositioning of the front axle may be necessary to get the 9/16" X 3" bolt to go through the mount and control arm bushing, install the bolt so that the head of the bolt is facing the inside of the vehicle and the ground. Secure the 9/16" X 3 ½" bolt with a 9/16" flat washer and 9/16" top lock nut. Do not over tighten the fastener, when properly tightened the bolt should still spin. Repeat process for the remaining side of the vehicle.

STEP 3: Reinstall all suspension components, i.e. springs, shocks, bump stops, brake lines, steering and track bar.

PHASE V Rear Suspension Install

STEP 1: TRI-4 preparations

Begin your rear suspension installation by removing the rear axle assy. completely from the vehicle. It is much easier to perform the following operations in an unobstructed environment. You must remove the upper control arm mounts, track bar mount and lower control arm mounts from your axle housing. Use caution to not damage the axle tube. Grind smooth as needed. Grind the entire length of the axle tube between the cast iron differential housing and coil spring mount. This surface must be clean to weld on your truss assy.

CAUTION: *Welding operations should be performed by a qualified technician. T&T Customs, Inc. highly recommends that the truss assy. be stitch welded in place. You should only weld in 1" increments and the truss/axle tube should be cool to the touch before welding again.*

Position the axle assy. on jack stands, rotate the pinion up to the pinion angle measurement you recorded before you began this install.

NOTE: *If you are installing this suspension as a system at a new lift height or are lifting a stock vehicle please refer to the following chart as a suggestion to set proper pinion angle*

LIFT HEIGHT	Approx Pinion angle setting*
3" – 5"	15*
5"+	18*

**Pinion angle setting are based on standard rotation ring and pinion equipped axles only*

Once proper pinion angle is achieved, support the pinion with a third jack stand to hold your measurement.



STEP 1a: Test Fit Rear suspension truss

Place the supplied truss assy. over the axle housing. Your truss has been shipped to fit your axle differential housing; however, minor trimming and fitting may be required to get the truss to fit your particular axle properly. A properly fitted truss assy. should only touch the axle tubes, not the cast iron differential housing. It should also just fit between the coil buckets.

Once you are satisfied with the fit rotate the truss forward so that the top flat portion of the truss is level front to rear. The truss must be level on top to achieve the best results.



CAUTION: *Welding operations should be performed by a qualified technician. TNT highly recommends that the truss assy. be stitch welded in place. You should only weld in 1" increments and the truss/axle tube should be cool to the touch before welding again.*

Begin welding the truss to the axle tubes. Care should be taken as to NOT warp the axle housing. Over welding and welding too quickly will result in a warped housing. Once the truss is completely welded to the axle tubes, you will place the supplied TRI-4 upper control arm mount assy. on the truss. This mount **MUST** be centered on the axle assy. to achieve proper suspension geometry. Measure, locate and mark the center of the axle on top of the truss. Position and locate the TRI-4 upper control arm mount on the top of the truss and weld in place. **DO NOT** weld where the upper control arm bushing will reside in the mount. Welding in this area will prevent you from properly installing the upper control arms.

STEP 1b: Position Rear Axle

Re-position the rear axle assy. under the Jeep so that the upper and lower coil buckets are in vertical alignment.

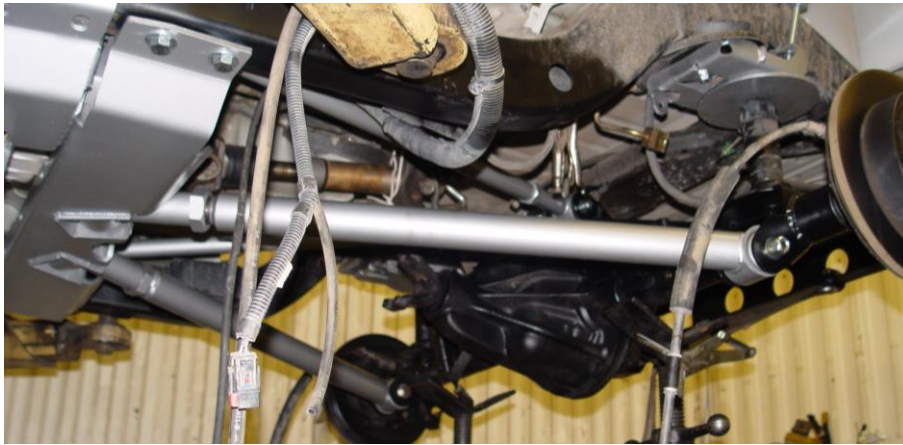
STEP 2: Upper Control Arm Install

Set both upper control arms to the same length. Select 1 – 10mm X 80mm socket head bolt, 2 flat washers and 10mm nylock nut. Install the axle end of the upper control arms into the upper control arm mounts on the axle assy. Secure with 10mm hardware, do not tighten at this time.

NOTE: *Upper control arms have an offset notch at the bushing end. They will only install correctly one way. If you have the bushing offset 180* out of phase the chassis end of the upper control arm will not go into the mount on the XD Xmbr.*

Rotate the pinion up so that the upper control arm chassis end will slide into its mount on the XD Xmbr. Secure with a 9/16" X 4" bolt, flat washers and toplock nut; do not tighten at this time. Repeat for opposite side of vehicle.

NOTE: *You may have to position the axle assy. side to side slightly to get the second upper control arm into its mount where the bolt can be inserted.*



STEP 3: Lower Control Arm Install

Set both lower control arms to the same length. Select 2 – 9/16" X 4" bolts, 4 flat washers and 2 – 9/16" nylock nuts. Install the chassis end of the lower control arms into the mount on the XD Xmbr. Secure with 9/16" hardware, do not tighten at this time.

NOTE: *Lower control arms have an offset notch at the bushing end. They will only install correctly one way. If you have the bushing offset 180* out of phase the chassis end of the upper control arm will not go into the mount on the XD Xmbr.*

Secure the axle end of the lower control arm with a 9/16" X 4" bolt, flat washers and toplock nut; do not tighten at this time. Repeat for opposite side of vehicle.

NOTE: *You may have to position the axle assy. side to side slightly to get the second lower control arm into its mount where the bolt can be inserted.*

STEP 4: Reinstall Suspension Components

Reinstall all suspension components, i.e. springs, shocks, bump stops, brake lines.

PHASE VI Final Adjustments

STEP 1: Rear Suspension setup

With Jeep on wheels and tires sitting on a level surface check placement of the rear axle assy. and wheel/tire combination in the wheel well. Also check vertical alignment of the upper and lower coil spring mounts. The mounts should be centered vertically over each other to achieve the proper placement of the rear axle assy. front to back on the vehicle. Next, check for pinion angle. With a SYE and CV style driveshaft installed the pinion to driveshaft angle should be pinion 3-4 degrees down on the pinion. Adjust control arms to achieve desired axle placement and pinion angle.

NOTE: *One full revolution of our control arms nets ~ .083 of length change. 6 turns = .500"*

CAUTION: *Always maintain 1.00" of thread engagement minimum when adjusting length.*

STEP 2: Front Suspension setup

With Jeep on wheels and tires sitting on a level surface check placement of the front axle assy. and wheel/tire combination in the wheel well. Also check vertical alignment of the upper and lower coil spring mounts. The mounts should be centered vertically over each other to achieve the proper placement of the front axle assy. front to back on the vehicle. Adjust lower control arms to achieve desired axle placement. Adjust track bar to position body centered over the front axle; adjust steering linkage to center the steering wheel.

NOTE: *Re-adjustment of the track bar and steering linkage may necessary after the vehicle is road tested*

STEP 3: Set Caster/Pinion angle:

T&T Customs suggests setting the caster angle to approximately 6 degrees. Using the following formula, you can find the caster angle:

- HP Dana 30 (9 - differential cover angle) = caster angle.
- LP Dana 30 (12 - differential cover angle) = caster angle.

Measure the differential cover angle using an angle finder placed on the side of the cover in a vertical position. The length of the upper control arms may need to be adjusted to get the caster angle to the final dimension.

To get the caster angle to the suggested 6 degrees, remove the axle end of the upper control arms, loosen the jam nut and adjust as needed. One full revolution of the upper control arm will give approximately 1 degree change in caster angle. Ensure both upper control arms are set to the same length. When satisfied with the adjustment lock the jam nut down against the tube of the upper control arm securely.

STEP 4: Hardware Check

Ensure all fasteners supplied with this kit are installed and tightened to their specified values. After 500 miles of operation, please recheck all fasteners, tighten as needed.

PHASE VII Road Test

Once satisfied with the installation, pull the vehicle out into a safe environment and begin driving your Jeep in a safe manner. A lifted and modified Jeep will handle differently than stock. Use caution until you become familiar with the new feel of your Jeep. Once comfortable with the Jeep – GO GET IT DIRTY!

Appendix A

Parts List:

- 1- XD Belly Pan
- 1- Front control arm mounts L&R
- 1 – Transmission crossmember
- 1 – Rear suspension crossmember
- 2 - **Y-Link**TM lower control arms – L&R
- 2 – Front upper control arms
- 2 – Rear lower control arms
- 2 – Rear upper control arms
- 1 – Rear axle truss assy. (only with dual triangulated kit)
- 1 – Hardware kits
- 1 – Install manual

Modular Belly pan system Hardware kit:

- 12 – ½” X 1 ¼” bolts and flat washers, 2 top locks
- 2 – ½ x 2 ½” bolts, 4 wash, 2 top locks
- 6 – 12mm X 30mm bolts (factory belly pan attached with metric bolts only)
- 6 – 7/16” X 3-1/2” bolts
- 12 – 7/16” Flat washers
- 6 – 7/16” toplock nuts

- 6 – 2.5” – ¾” X .120” through frame crush sleeves
- 4 – 3/8” X 1” counter sync bolts, 4 flats, 4 nylock nuts
- 11 – 3/8” X 1 ¼” bolts, 22 flats, 11 nylock nuts
- 4 – 13 threaded inserts (only 2 are used '03 and newer)
- 2 – 1” x .800 spacers

Y-LinkTM front control arm hardware:

- 2 – M10 X 1.5 X 80mm bolts, 4 – flat washers and 2 – M10 toplock nuts
- 2 – 12MM X 3 ¼” bolts, 4 – flat washers and 2 – 1/12” toplock nuts
- 4 – 9/16” X 4” bolts, 8 – flat washers and 4 – 9/16” toplock nuts

TRI-4tm rear control arm hardware:

- 6 – 9/16” X 4” bolts, 12 – flat washers and 6 – 9/16” toplock nuts
- 2 – M12 X 1.75 X 80mm bolts, 4 – flat washers and 2 – M12 toplock nuts