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INSTALLATION INSTRUCTIONS FOR: RE8300 4.5" ZJ EXTREME DUTY LONG ARM SYSTEM

Congratulations on purchasing the ultimate suspension upgrade available for the 1993-1998 Jeep ZJ Grand Cherokee. This kit will transform your ZJ into a formidable trail machine with excellent road manners, much the same way our TJ long arm kit transforms the Wrangler.

Application Notes:

1. Lift heights over 3.5" may require modifications to the front and/or rear drive shaft, especially the full time NP249 transfer case – see slip yoke vibration in Troubleshooting before proceeding.
2. This kit requires modifications to the exhaust system. Generally, after the suspension is installed, plan on a shop installing a system from about the factory crossmember on back with a smaller muffler.

Safety Warning:

Suspension systems or components that enhance the off-road performance of your vehicle may cause it to handle differently, on and off-road, than it did from the factory. Care must be taken to prevent loss of control or vehicle rollover during sudden maneuvers. Failure to drive the vehicle safely may result in serious injury or death to driver and passengers. We recommend you always wear your seat belt, drive safely and avoid quick turns and other sudden maneuvers. Constant maintenance is required to keep your vehicle safe. Thoroughly inspect your vehicle before and after every off-road use.

Installation Warning:

We recommend that certified technicians perform the installations of our products. Attempts to install these products without knowledge or experience may jeopardize the safety of the vehicle. These instructions only cover the installation of our products and may not include factory procedures for disassembly and reassembly of factory components. Read instructions from start to finish and be sure all parts are present before disassembling the vehicle. Included instructions are guidelines only for recommended procedures and in no way are meant to be definitive. Installer is responsible to insure a safe and controllable vehicle after performing modifications. Do not perform test drives on public roads with partially completed installations. Always double and triple check your work before use.

KIT CONTENTS

RE1150 Rear Sway Bar End Links
RE1141 Gen2 Sway Bar Disconnects
RE1345 Front Coil Springs
RE1350 Rear Coil Springs
RE1380 Front 2" Bottom Bump Stop Extensions
RE1390 Rear 2" Bump Stop Extensions
RE1550 Front Brake Lines
RE1604 Rear Track Bar Bracket
RE1650 Rear Adjustable Track Bar
RE1660 Front Extreme Duty Track Bar
RE1665 Front Extreme Duty Track Bar Bracket
RE4000 Front Lower Left Extreme Duty Control Arm
RE4010 Front Lower Right Extreme Duty Control Arm
RE4020 Front Upper Extreme Duty Control Arms
RE4030 Rear Lower Extreme Duty Control Arms
RE4040 Rear Upper Extreme Duty Control Arm
RE9950 Front 3-piece crossmember ('93-'95 tranny mount, cross piece, 2-uniframe plates, 2-side braces, 4-bolting strips, hdwr)
RE9960 Rear 3-piece crossmember (cross piece, 2-uniframe mounts, 2-side braces, 2-bolting strips, 2-nut strips, hdwr)

TYPICAL TOOLS REQUIRED

1-1/8" hole saw for steel, 1/2" drill motor & drill bits, angle grinder,
Basic mechanical hand tools and T-55 Torx head bit along with standard Torx head wrench set,
Floor jack & jack stands (2 Pair),
Welder, Plasma cutter, or reciprocating saw w/metal cutting blades, or cutting wheels for angle grinder

INSTALLATION OVERVIEW

The installation process can be broken down into the following tasks:

1. Removal of factory lower control arm mounts from uniframe.
2. Front 3- piece crossmember.
3. Rear 3- piece crossmember.
4. Control arms.
5. Bump stops and coils.
6. Track bars and sway bar links.
7. Brake lines and shocks.
8. Final detailing and adjustments.

Step 1 - Removal of factory lower control arm mounts on frame.

- A. First, support vehicle by uniframe (preferably on a lift) and work on a stable level surface. Support axles with jack stands and remove the following components; shocks, track bars, sway bar end links, coil springs, control arms, bump stops, front brake hoses and exhaust from crossmember on back. It may be helpful to only disconnect axle end of brake hoses and pinch-off hoses with vise grips to minimize fluid loss until new SS hoses are installed in Step 7. NOTE: Coil springs can be removed without compressors if enough distance is generated between the axle and frame. If a lift is not being used, it may be easier to do this one side at a time on one axle at a time.
CAUTION: If using coil spring compressors, use extreme care as they will be holding a lot of potential energy and can release violently.
- B. Cut off the (4) factory lower control arm mounts from the uniframe. Use extreme care as not to damage the uniframe, or cut into existing brake, fuel, or electrical lines.
- C. Grind rough areas smooth and repaint – refer to Photo 1 and 2 for typical front and rear bracket removal.



Photo 1



Photo 2

Step 2 - Front 3-piece crossmember

- A. First, support transmission/transfer case and remove factory crossmember.
- B. Refer to Photo 3 for exploded view of all pieces of one end of the complete crossmember. Loosely assemble the main 3-piece crossmember with the four supplied 1/2" bolts. The three main pieces consist of the two "9-hole" uniframe plates and the transmission/control arm mount cross piece. For '93-'95 vehicles, loosely install the transmission mount to the crosspiece ('96-'98 bolts directly to cross piece). Loosely bolt assembly up into position with the four factory crossmember bolts – refer to photo 4. Align uniframe plates so their nine holes can be transferred through the pinch welds along the inside of the uniframe rails and tighten the four bolts to hold in position.

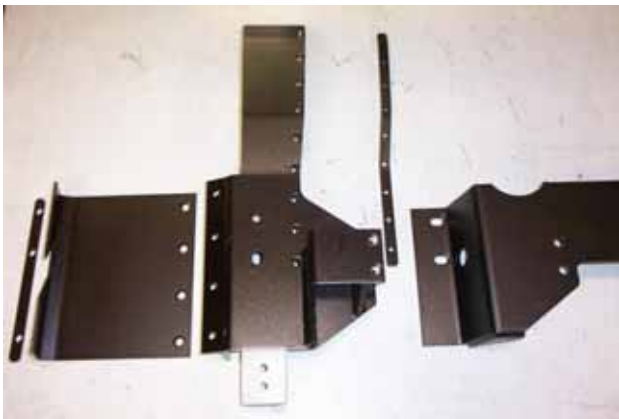


Photo 3



Photo 4

- C. Place 9-hole bolting strips on top of the pinch welds and clamp into position so the holes align with the holes in the uniframe plates. Drill through pinch weld at front holes of uniframe plates and loosely secure up through the bolting strips with supplied 5/16" flat head bolts. Repeat drilling and bolting for remaining uniframe plate holes. Note that there are two holes in the uniframe plates that can't be accessed with cross piece installed, so remove cross piece to drill and bolt these. Reinstall cross piece.
- D. Loosely bolt side braces to uniframe plates with supplied 3/8" flat head bolts so that the notch in the outer leg surrounds the gutter drain - refer to Photo 5. Place 3-hole bolting strips on outside of the pinch welds and clamp into position so the holes align with the holes in the side braces. Drill through pinch weld at front holes of bolting strips and loosely secure through the side braces with supplied 5/16 " hex head bolts. Next, drill and secure back hole, then middle hole – refer to Photo 6. Tighten all crossmember and transmission mount bolts at this time.
- E. Weld the very front edge of the uniframe plates to the uniframe (edge at top of Photo 3). This is the thick area of the uniframe where the factory control arms were removed. Also, plug-weld the 2 holes in the rear tab of the uniframe plate to the uniframe (2-hole tab at bottom of Photo 3). The three sides of this tab can be welded to the uniframe as well. CAUTION - a certified welder that can weld thick metal to thin should do this and care should be taken to protect wiring, fuel lines, brake lines, etc, and to not ignite coatings etc. on fire.
- F. If so equipped, the factory transfer case skid plate may be attached to the new cross piece.



Photo 5



Photo 6

Step 3 - Rear 3-piece frame crossmember

- A. Refer to Photo 7 for exploded view of all the pieces of one end of the complete crossmember. Locate right uniframe mount over uniframe rail with lower control arm mount open toward the rear and angled side brace mounting plate pointing out toward rocker panel. Slide uniframe mount back until it stops against the outer unibody mount. Hold mount tight against frame bottom and center punch frame through all five mounting holes. Remove mount and drill center hole only with a 1-1/8" hole saw, then drill the remaining four with a 3/8" bit. Slide the 5-Pem-nut strip up into the 1-1/8" hole (with nuts on top) and position so nuts align with the five frame holes. It may be helpful to hook a stiff wire or threaded stud up through the center hole and pull down to hold the strip while getting the first few bolts up through the mount. Loosely fasten the mount with supplied 3/8" flat head bolts – refer to Photo 8. Repeat for left frame mount.



Photo 7



Photo 8

- B. Position tubular cross piece up into each frame mount "pocket" (with upper control arm mounts open toward the rear) and fasten with the six supplied 3/8" hex head bolts – refer to Photo 9.
- C. Loosely bolt side braces to frame mounts so that the outer leg is up against the inside of the pinch weld. Place 3-hole bolting strips on outside of the pinch welds and clamp into position so the holes align with the holes in the side braces. Drill through pinch weld at front holes of bolting strips and loosely secure through the side braces with four supplied 5/16 " hex head bolts – refer to Photo 10. Tighten all crossmember bolts.



Photo 9



Photo 10

- D. Weld the three sides of the front and rear tabs of the uniframe mounts to the uniframe. The front tab is clear at the top of Photo 7 and the rear tab is clear in Photo 8. CAUTION - a certified welder that can weld thick metal to thin should do this and care should be taken to protect wiring, fuel lines, brake lines, etc, and to not ignite coatings etc. on fire.

Step 4 – Control Arms

- A. FRONT - Adjust front lower control arms' length to an initial setting of 37-7/8" from bolt center to bolt center. Install adjustable end of arm to front crossmember with supplied hardware (zerk on top). Position the arms so the welded on brackets for the front upper arms are on top and leaning toward each other.
- B. Adjust front upper control arms' length to an initial setting of 15-7/8" from bolt center to bolt center. Install front upper arms' rubber bushing end into the welded on bracket of the lower arms with supplied hardware– refer to Photo 11. The upper arms will be used to adjust final caster and pinion angle.



Photo 11



Photo 12

- C. Attach front lower control arms to axle with factory hardware, and attach upper arms to axle with supplied hardware.
- D. REAR - Adjust rear lower control arms' length to 32-1/2" from bolt center to bolt center. Install adjustable end of arm to rear crossmember lower mounts with supplied hardware (zerk on top).
- E. Adjust rear upper control arms' length to an initial setting of 32-7/8" from bolt center to bolt center. Install adjustable end of arm to rear crossmember upper mounts with supplied hardware (zerk on bottom) – refer to Photo 12. The upper arms will be used to adjust final pinion angle.
- F. Attach rear lower control arms to axle with factory hardware, and attach upper arms to axle with supplied hardware (zerk on top).

Step 5 –Bump stops and coils

- A. REAR BUMP STOPS - Remove the rubber insert from the rear bump stop. Remove the bump stop cup. Place the spacer between the bump stop cup and the frame member of the unibody using the supplied longer metric hardware. Reinstall rubber bump stop - refer to Photo 13.
- B. REAR COILS - Install rear coils.



Photo 13



Photo 14

- C. FRONT BUMP STOPS - Drill 5/16" hole in center of lower spring pads. Use self-tapping bolt through bump stop extension spacer to cut threads in lower spring pad. Remove bolt and spacer, it will be installed with the spring
- D. FRONT COILS - Install the front coils with the bump stop extension inside of the coil – refer to Photo 14. Coil spring compressors may be useful. Once the spring is in place, thread the bolt into the lower spring pad (careful these strip easily). Be sure to rotate the coil to index the spring with lower coil cup. Reinstall spring retainer clips if they were removed for disassembly (not all vehicles came with these).

Step 6 –Track bars and sway bar links

- A. REAR TRAC BAR BRACKET – Remove the plastic dust shield that covers the bolt securing the rear track bar to the mount on the axle housing and discard. Remove the Torx head bolt (T55) and disconnect axle end of track bar. Install track bar bracket using the factory T55 bolt and spacer (the spacer goes in the location vacated by the track bar to prevent the bracket from deforming when the bolt is tightened - see photo 3 for similar installation). With the track bar bracket in place, drill two 5/16" holes in the axle mount where the plastic dust shield was previously located, one on top and one on angled surface. Install the 5/16" hardware in the holes drilled. If required, use supplied horseshoe shim to take up space between bracket and axle mount at top 5/16" bolt.
- B. REAR TRACK BAR - Install the poly-bushing end of the new track bar at the frame. The bar should start out horizontal then turn down toward the axle bracket. Mount the Heim end of the track bar in the track bar bracket using the supplied 1/2" x 2-3/4" bolt– refer to Photo 15. Be sure the reducer bushing and two misalignment spacers are used (small end of spacers go up against Heim). It may be easier to do this later when vehicle is back on its wheels. NOTE: The gas tank skid plate will most likely need to be modified for clearance.



Photo 15



Photo 16

- C. FRONT TRAC BAR BRACKET – Install new bracket using factory hardware– refer to Photo 16 for typical installation. Use thread lock compound where possible.
- D. FRONT TRAC BAR - Attach new track bar to lower mounting bracket (axle side) using factory hardware. This will be the poly-bushing end of bar. Position bar so it starts out parallel with the axle (horizontal), then turns up toward the frame bracket, then almost horizontal again. Before connecting bar to upper mount, center the vehicle over the axle by measuring the distance from front fender flare to tire on both driver and passenger sides of the vehicle, then adjusting vehicle until body is centered over the axle. The easiest way to accomplish this is when the vehicle is back on its wheels, have an assistant turn steering wheel left or right as necessary. Adjust spherical bearing end so that it will fit directly into the upper mount with the body centered. Tighten the jam nut to prevent the spherical bearing end from moving on the threads. Use supplied 10mm bolt to attach bearing to new bracket – refer to Photo 17 for typical installation.



Photo 17



Photo 18

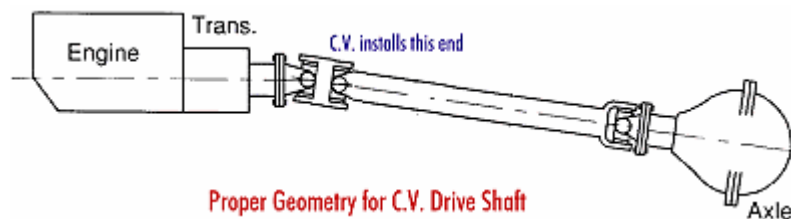
- E. Install rear sway bar links just like the factory ones.
- F. Install front sway bar quick disconnects per instructions supplied with disconnects – refer to Photo 18. The latest adapter bracket should mount down over the top of the sway bar and bolt should go up through sway bar, then through adapter bracket. The carriage bolt head should be toward the frame at top end of disconnects. Use the spacer between the bottom disconnect and mount. Install disconnect tubes and snap pins.

Step 7 – Shocks and brake lines

- A. Install longer front shocks. Some require bar pins to be installed through the bottom shock eyes (use light grease).
- B. Install longer rear shocks.
- C. Fully remove front factory brake hoses and replace with the supplied stainless steel ones. Some require positioning the block and line vertically at the caliper. Watch line routing, and use angle brackets and e-clips at the body end.

Step 8 - Final details and adjustments

- A. Install wheels and lower vehicle.
- B. Adjust the track bars to fit into the mounts with the axles centered.
- C. Thoroughly bleed brake lines per factory manual and check for leaks and a firm pedal.
- D. Torque all bolts to factory specs and double-check your work.
- E. Test drive and note location of steering wheel and any driveline vibrations.
- F. Adjust drag link to center steering wheel and align vehicle as soon as practical. Minimum factory caster and maximum factory toe-in seems to work well with these front ends (see Troubleshooting as well).
- G. Adjust control arms if necessary. **Note:** Due to vehicle variations, installer must verify proper drive line angles and axle placement to avoid tire rubbing or axle coming in contact with gas tank, steering linkage, or exhaust system. Shown below is picture showing proper pinion angle for a CV style drive shaft (see Troubleshooting as well).



- H. Retighten all bolts after 50 miles and again after every off road excursion.

TROUBLESHOOTING

Rear driveline:

Acceleration vibration: Caused by the pinion being too high in relation to the transfer case output shaft. Adjust upper control arm to lower pinion accordingly.

Deceleration vibration: Caused by the pinion being too low in relation to the transfer case output shaft. Adjust upper control arm to raise pinion accordingly.

Slip yoke vibration: Caused by excessive angle on the transfer case slip yoke. This is not uncommon on lifted vehicles with some miles on them. For best performance on NP231 and NP242 transfer cases, install a slip yoke eliminator (SYE) kit and CV drive shaft. For best performance on the NP249 transfer, install new yokes and a standard two U-joint drive shaft in front and install an SYE and CV drive shaft in the rear. Adjust pinion so it is about 2 degrees below parallel with CV drive shaft (see acceleration and deceleration vibration troubleshooting above).

High speed wobble:

It is a condition where front tires will shimmy after hitting a bump. Avoid bias ply tires and wheels with excessive offset. Check for worn or loose parts. In most cases a reduction of positive castor will eliminate this condition.

Bump steer: Caused by improper relationship of drag link and track bar. To correct, center axle again following the instructions supplied with the track bar. Next determine the neutral position of the steering wheel. Adjust the drag link to center the steering wheel.