WJ Long Arm Kit

1999-2004 Jeep Grand Cherokee

Part number: WJ4L, Revision 5/01/18

Thank you for purchasing the Trail Forged WJ Long Arm Kit. We hope you will be as pleased with this product as we are. Tag us in a review on Facebook and we'll hook you up with 10% off your next order. We love seeing pictures of our products in action too; send photos to info@trailforged.com or tag us on FB or IG for a chance to be our feature rig.

Installation should only be performed by an experienced mechanic, if you do not have all the necessary tools, experience, or confidence to undertake this project, please seek help before beginning.

Notes before beginning the installation:

- This suspension system does require welding to the "frame" of the jeep's unibody, which we strongly advise be completed by an experienced welder.
- The front and rear lower control arm mounts on the body must also be cut off to make room for the new arms, so a grinder and/or sawzall will be necessary to complete the installation as well.
- Low lift applications (3-4") with a lot of uptravel may require some minor frame rail modification to clear the passenger front upper control arm at full compression.
- The exhaust system needs modification including rotating the catalytic converter and installing a compact muffler.
- Another note, the complete subframe assembly can be installed on the jeep (minus the new control arms themselves) without removing any of the factory suspension. So the project can be broken into phases if it needs to be driven to a shop for welding and exhaust, then driven home to complete the installation.

Factory Hardware Sizes :

Note: Use as a general guideline, some variances may occur depending on your Jeep's build

Front and Rear Lower Control Arms:

-21mm Bolt Head
-21mm Nut

Front upper control arms:

Body End

-13mm Bolt head

New Hardware Sizes:

Front and Rear Lower Control Arms

-9/16" bolt, torque to 130 lb-ft
-13/16" Bolt Head
-7/8" Nut

Front Upper Control Arms:

Body End

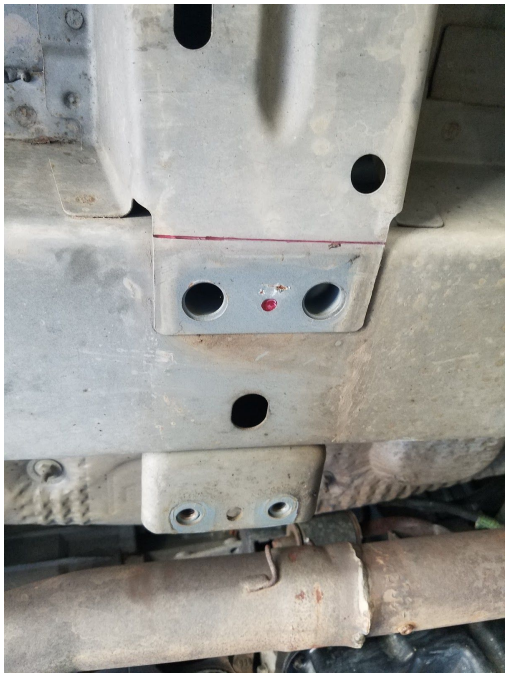
- 1/2" bolt, torque to 130 lb-ft
- 3/4" Bolt head
- 3/4" Nut

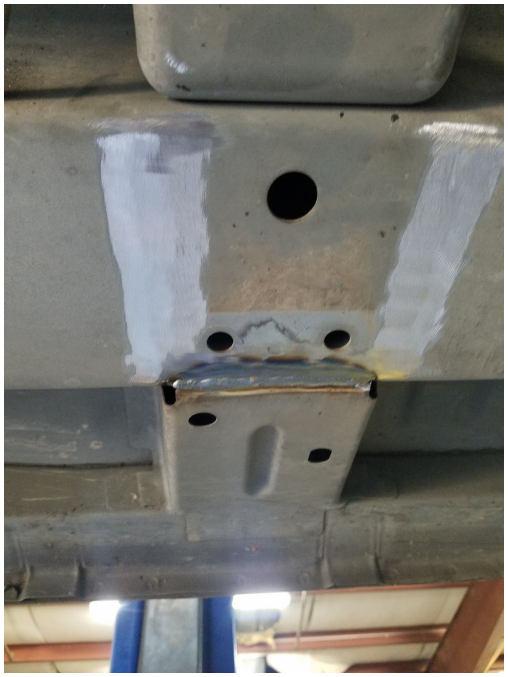
-15mm Nut Axle End -T50 Torx Bolt Head -15mm Nut <u>Rear Upper A Arm:</u> Body End -15mm Bolt Head -Captured Nut A Arm to Ball Joint -21mm Nut Ball Joint to Differential Bolts -21mm Bolt Heads <u>Factory Crossmember:</u> Crossmember to Body Bolts -15mm Bolt Head Crossmember to Transmission Mount -18mm Bolt Head -18mm Nut	Axle End (Factory Diameter) - <u>10mm bolt, torque to 75 lb-ft</u> - 17mm Bolt head - 17mm Nut - *(Unless using our front UCA bushing upgrade with 1/2" bolts, in which case:)* - <u>1/2" bolt, torque to 90 lb-ft</u> - 3/4" Bolt Head - 3/4" Nut <u>Rear Upper Control Arms:</u> - <u>9/16" bolt, torque to 90 lb-ft</u> - 13/16" Bolt Head - 7/8" Nut <u>Front Crossmember:</u> Crossmember to Body Bolts - <u>10mm bolt, torque to 40 lb-ft (this is a permanent installation, we use red loctite on these bolts)</u> - 17mm Bolt Head <u>Transmission Mount to Crossmember:</u> - <u>12mm bolt, torque to 75 lb-ft</u> - 18mm Bolt Head - 18mm Nut Crossmember to Crossmember 4-bolt Flange Hardware: - <u>3/8" bolt, torque to 37 lb-ft</u> - 9/16" Bolt Head - 9/16" Nut <u>Rear Crossmember:</u> Crossmember to Crossmember 4-bolt Flange Hardware: - <u>3/8" bolt, torque to 37 lb-ft</u> - 9/16" Bolt Head - 9/16" Nut <u>Rear Axle Upper Bracket:</u> - <u>14mm bolt, torque to 100 lb-ft</u> - 22mm hex or 12mm allen Bolt Head <u>Skid Plate Hardware:</u> - <u>3/8" bolt, torque to 23 lb-ft</u> 9/16" Bolt Head 3/8" Clip Nuts

	Optional Exhaust Flanges: - 3/8” bolt, torque to 37 lb-ft - 9/16” Bolt Head - 9/16” Nut

Installation:

1. Front Crossmember
    a. Remove factory transfer case skid plate (if equipped).
    b. Next, use a jack to support the transmission or transfer case, taking weight off the crossmember.
    c. Unbolt the transmission mount to crossmember bolt, which has an 18mm bolt heat, and 18mm nut. Set this bolt aside as it will be reused with the new kit.
    d. Once the transmission mount is disconnected from the crossmember, the 4 bolts per side that hold the crossmember to the body can be removed. These have a 15mm head, and will not be reused. The crossmember will be ready to drop as the last bolt is removed, so be prepared.
    e. We do recommend removing the thin lip from the outer rocker reinforcement that extends under the frame rail where the front crossmember bolts in. Drill or grind one spot weld, and a cut few inches of sheet metal.If you do remove this lip, we suggest rewelding the remaining rocker reinforcement back to the frame rail. See photos below:





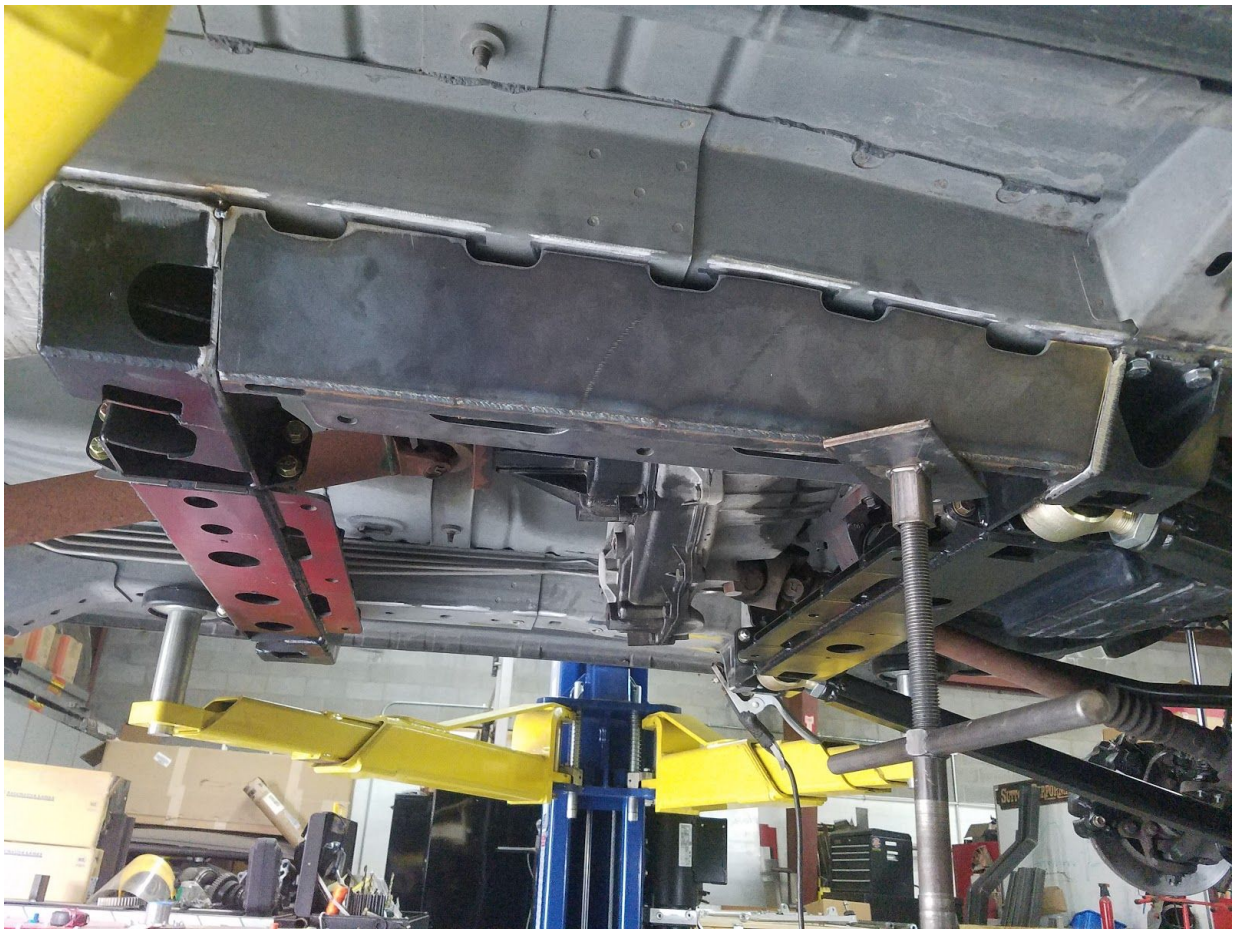
(With rear only) While the crossmember is removed, it is a great time to separate (or cut) the exhaust and set aside while completing the subframe installation. We like to install exhaust flanges for convenience, with this being a great opportunity to locate one directly behind the transmission exhaust hanger welded to the exhaust tubing.

2. Install Front Crossmember using supplied 3/8” fine thread hardware (9/16” bolt head and nut)
    a. Bolt the outer wings of the crossmember to the center section via the 4 bolt flanges.
    b. The factory hard metal lines that run inside the driver frame rail may need to be loosened and moved to clear new crossmember.

c. Once bolted together solid, hold complete crossmember up to the frame as if you were going to bolt it in for good. Trace the perimeter with a marker so the paint can be removed for final welding to follow. Clean weld areas to bare metal.
d. Once weld surfaces are prepped, hold the crossmember up again and start the body to crossmember bolts using supplied metric hardware (leaving them slightly loose for now). The outer bolts are long (90mm), and the inner bolts are relatively short (30mm).
e. Use the jack to raise and lower the transmission as necessary to install the original transmission mount bolt through the new crossmember and mount, and start the nut.
f. Once all hardware is started, use a tape measure to align the crossmember left to right and front to rear before tightening, locking it in place.
g. When satisfied with the alignment, the outer wings can be permanently welded on. The center crossmember can still be unbolted for convenient transmission/transfer case servicing in the future.
h. We recommend putting a temporary spacer in between the center section and one side of the crossmember to create a very small gap before welding, this makes removing the crossmember in the future much easier. Once welded in place, remove spacer (thin piece of sheet metal, cardboard, etc approx. 1/16" thick.

<u>Skip to step 5 for front long arms only</u>

3. Install Rear Crossmember
    a. Bolt the outer wings to the center section via the 2 4-bolt flanges and supplied 3/8" fine thread hardware (9/16" bolt head and nut).
    b. Once assembled, use a jack to raise it up to the frame rail and hold it in position. The front to rear rail reinforcements that run between front and rear crossmembers use a tab and slot to self-locate, put those up in place as well and mark all contact points against the unibody rail with a marker to have paint removed for welding.
    c. Drop the rail reinforcements and rear crossmember, remove paint from all weld locations, and put the new components back in place.
    d. Square the rear crossmember side to side and verify front to rear alignment with a tape measure, and tack weld in place.
    e. Tack the rail reinforcements in place as well, confirm all measurements are symmetrical side to side, and begin finish welding the rest of the subframe. It is recommended to disperse heat across the unibody, so we advise moving from one location to another between each weld to avoid concentrated heat input.
    f. As with the front crossmember, we recommend putting a temporary spacer in between the center section and one side of the crossmember to create a very small gap before welding.



Once the welding is done, the biggest part of the installation is complete. The crossmembers and rail reinforcements can now be prepped and painted while other work goes on. This is a good time to complete the modification of your exhaust system.

4. The first step here is separating your catalytic converter from the old muffler.
    a. We recommend cutting everything off 1-2 inches behind the catalytic converter and installing an exhaust flange there for convenience.
    b. Dealing with this center section that just includes the catalytic converter and tube coming off both ends, you'll notice an S bend in front of the cat that helps drop it down away from the floor. You will be installing this section including the cat upside down so that S bend pushes the cat up closer to the floorboard for more ground clearance.
    c. When reinstalling, make sure the catalytic converter has at least 3/8” clearance from the floorboards to avoid vibration and excessive heat transfer.
    d. Behind the catalytic converter, we have found a Flowmaster 10 series muffler with centered input and offset output packages nicely in front of the rear crossmember, though you can choose from the many muffler options that exist.
    e. Then a simple extension out of the muffler and turndown behind rear crossmember are the simple solution, though routing a full exhaust out the rear may be an option on higher lift jeeps.

With the subframe installed and exhaust modification complete, you're just left with the necessary modification to remove the old suspension components, and make room for the new ones. You can choose to proceed with either the front or the rear first, the order here is less important.

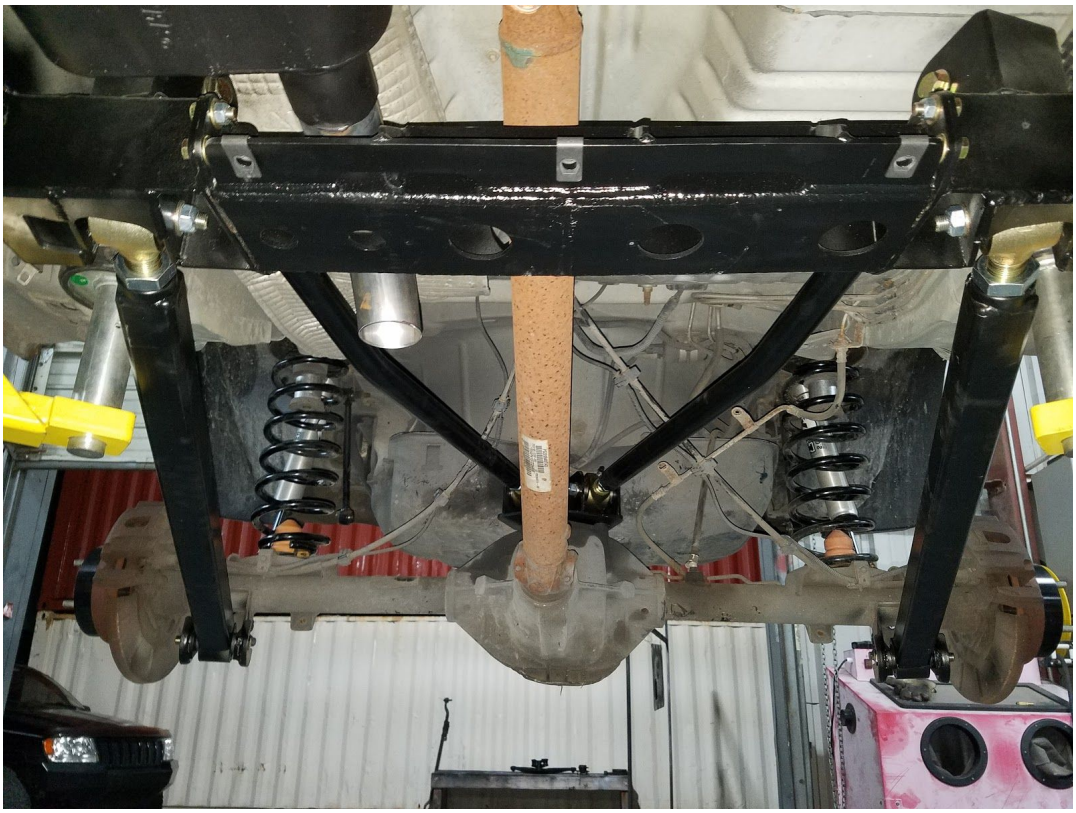
Front Arm Installation:

5. Jack the body up so most of the weight is off the front axle, and place jack stands under the body.
    a. Jack the axle up so the tires can be removed for easier access, and set the axle down on jack stands.
    b. Unbolt control arms (Might be a good practice to do one side at a time) and remove.
    c. Cut body side lower control arm mount off with a sawzall or grinder with cutoff wheel, and spray paint any bare metal to avoid future rust.
    d. Install upper control arm with supplied 1/2” bolts (with 3/4” bolt head and nut) for the body side johnny joints with the grease zerk facing downward, and either 10mm or 1/2” bolts for the axle end (depending on which bushing option you're using). Note on the drivers side: Check frame side bolt clearance protruding through the bracket, it is close to the fuel/evap lines, and you may need to pop one of the lines out of it's clip and shift it out of the way just so it doesn't rest against the end of the bolt.
    e. Once the uppers are in, you're ready to install the lowers. The WJ used an odd bushing width at the axle end of the lower control arms, so we've included 2x 1/4” thick bolt spacers to be used per bracket (4 total).We like to weld these to the inside of the control arm bracket to act as a reinforcement, but that weld is not absolutely necessary. So while installing the axle end of your new control arms, make sure there is a spacer on each side of the arm (welded or not).
    f. Then raise the body side of the control arm into the new lower control arm mount with the grease zerk facing upwards (so it's protected from rocks).
    g. Adjust upper and lower control arm lengths to achieve the desired amount of stretch, pinion angle, and caster.
    h. Tighten the jam nuts, torque all control arm bolts, and installation is complete. Mirror the procedure for the other side, the tires can be reinstalled and jeep can be set back down on it's own weight.

Rear Arm Installation:

6. This is pretty straightforward as well, so let's get started. Jack the rear of the jeep up and place jack stands under the body.
    a. Support the rear axle, take tires off for access, and set the rear end on jack stands. It's nice if the rear axle is drooped a bit to relieve most pressure of the springs, making the axle more stable and easier to work around.
    b. The jack can be used to support the pinion of the rear axle just to help protect against unexpected rotation while control arms are disconnected.
    c. Unbolt the lower control arms, cut the factory body side lower control arm mount off (similar to the front), and paint any bare metal.
    d. Install new rear lower control arms into factory axle side mount including 2x 1/4” thick bolt spacers per mount (4 total) as installed in the front axle's mounts.
    e. Raise lower control arms into new rear long arm mounts, and insert bolts.
    f. When preparing for the rear upper A arm removal, the first step is to unbolt any brake line and emergency brake cable brackets from the arm (these bolts should have a 10mm head).
    g. The objective on the axle end is to remove the 3 vertical bolts that hold the factory ball joint bracket into the differential housing (which have a 21mm head), though it may be easier to remove the single 21mm ball joint nut and pop the A arm off the bracket for access.
    h. The body side of the A arm uses 10mm bolts with a 15mm head and captured nut. Remove these bolts, and remove the A arm from the vehicle.
    i. Paint and install new axle side upper control arm bracket with supplied 14mm bolt and specialty Nord Lock washers. Note: ensure the lock washer has 2 halves, with the serrations facing outwards and angled ramps inwards touching each other. They come lightly glued together but do seperate after first use.

j. Bolt the bushing end of the rear upper control arms into their new body side subframe brackets, then proceed to install the Johnny Joint end of the control arms in the axle bracket.
k. Adjust control arm lengths for ideal stretch and pinion angle (varying by lift height and tire size, so every vehicle is different).
l. Tighten jam nuts, and tighten all new suspension hardware for the final time, reinstall tires, and set the jeep back down on it's own weight.



Once the front and rear suspension are installed, every recently installed nut and bolt have been torqued and everything looks satisfactory, you can install the nut clips on the subframe's skid plate mounting tabs, lift the skid into position and install with the coarse thread 3/8”-16 1.5” long flange bolts. These bolts have some extra length to make sure it's easy to grab the threads of the clip nut and pull the skid up into place with no hassle.

Notes on brake lines:

-The rear brake lines are long enough to avoid pulling tight up to full extension of an 11” travel shock once unbolted from the factory A arm. At this point though, the ebrake cables themselves get close to max extension (depending on how much you've stretched the axle back).

-The front brake lines on WJ's are pretty long in factory form. The bracket that holds the hard line to the frame rail is close to where the new upper control arms will be travelling, so we advise relocating it. It can be unbolted from the rail, the hard lines rebent and bracket relocated with a self tapping screw. The goal is to give it more control arm clearance, and to provide even more extension if longer shocks will be used. Brake lines should NEVER be pulled tight under any circumstances.

Once you've completed the small finishing details, your complete subframe and long arm installation process is complete. Congratulations on your installation of our extremely durable and capable suspension system! After a couple hundred miles it is advisable to check torque on all suspension related bolts, just to make sure everything is still tight after the initial “break in” period.

Notes: These instructions are meant to be a general guideline and not a factory certified service procedure. We are not responsible for any failures or issues that may arise in others' installs. This product is intended **for offroad use only**, vehicle owner assumes all responsibility by purchasing and/or installing this product.

Returns: All returns must be complete within 30 days of purchasing, in original packaging, unmodified, and as shipped in uninstalled condition. Buyer must contact Trail Forged to receive a return authorization before returning product. Returns are subject to inspection, and a 15% restocking fee.

Warranty: This product is backed by a limited lifetime warranty against bending or breaking of rods and links only. This warranty is non-transferrable and covers original purchaser only. Warranty is void if modified in any way, installed improperly, or not used in it's intended application. Purchaser must contact us for all warranty claims, and pay return shipping of damaged product back to us as well as shipping of replacement part.

Not Covered: Worn bushings, heims, rod ends, jam nuts, etc. Damage to threads or inserts due to improper thread engagement, tightening, or contaminants. Damage from corrosion, either on items sold bare or coated as damage can occur in shipping, installation, and use. Products or components which have been subjected to abuse, accident, alteration, modification, improper installation, tampering, negligence, misuse, or products installed on a vehicle used in sanctioned racing events. A race is defined as any contest between two or more vehicles, or any contest of one or more vehicles against the clock, whether or not such contest is for a prize.