



Stiletto

Rear Lower Control Arms

For Jeep Cherokee (KL)

(STL-KL-RLCA)

Installation and Owners Guide

Revision C

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Welcome to the Gleaming Alloy Family!

We'd like to sincerely thank you for purchasing this pair of Stiletto Rear Lower Control Arms for Jeep Cherokee (KL)! It is our debut product and, with your continued support, the first of many such products for the Jeep Cherokee (KL) and other platforms.

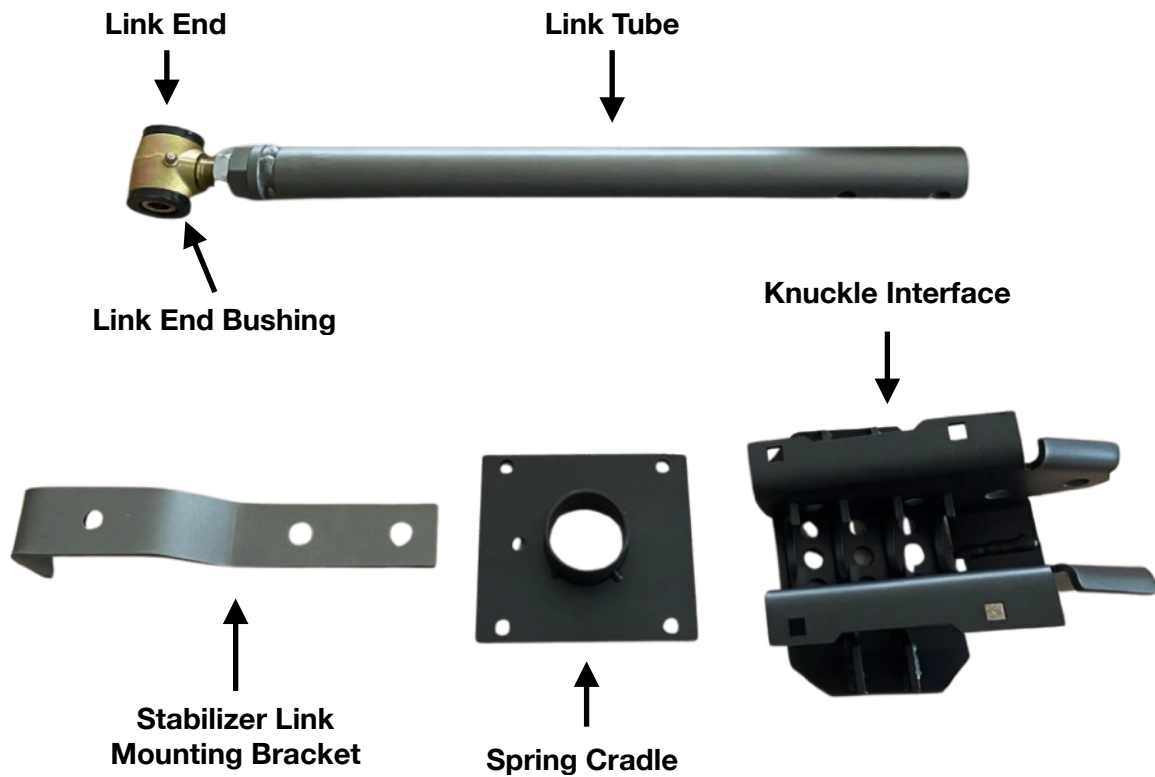
These control arms are the result of several collective years of off-roading the Jeep Cherokee (KL) platform. The Cherokee is a very capable machine but, like all off-road vehicles, it has its weaknesses. The rear lower control arm on the Cherokee is one of those weaknesses that causes many a KL owner much frustration. Hanging as low as they do, they are prone to striking many obstacles that the rest of the vehicle clears with ease. Because of the control arm's specific design, it reacts to such obstacle strikes by twisting. Repeated twisting causes the pressed in bushing at the hinge joint to work its way out of the control arm. Once that happens, extra stress on the aluminum control arm will certainly cause it to break, leaving you with big problems if you're out on the trail.

The Stiletto addresses these weakness in several ways. First, it offers a lower profile than the stock arms, providing more ground clearance to avoid obstacle strikes. Second, it utilizes a traditional polyurethane bushing in a high strength end link that will never "pop out" like the stock bushings do. Lastly, it features all-steel construction that simply will not break in normal and extreme use. The benefits of the Stiletto don't end there, however. An integrated lift kills two birds with one stone, so-to-speak. You can lift your vehicle while improving the control arms at the same time. Furthermore, the integrated lift maintains stock spring geometry, unlike most spacer lifts on the market. This improves both on-road and off-road handling.

We're very confident that these Stiletto's will enhance your off-road experience. We hope you enjoy them as much as we enjoyed developing them and bring them to market!



Get to Know Your Stiletto...



Complete Lower Control Arm Assembly



(Stabilizer link mounting bracket always faces the front of the vehicle)

Installation Instructions

Please read completely through the following guide before attempting the installation. It will give you a good feel for what is involved to install the control arms.

Parts List

- Left & Right Stiletto control arms
- 1 alignment cam bolt
- 2 M12x80mm Class 10.9 bolts (for knuckle bolt replacement)
- 4 1/2" aluminum spacers (for rear wheel centering)

Required Tools

- 5mm Allen wrench or hex head socket
- 16mm socket
- 17mm wrench
- 18mm wrench
- 18mm socket
- 19mm wrench
- 19mm socket or tire iron
- Torque wrench 40-100 ft-lb range (55-135 Nm)
- Floor jack
- Jack stands
- Coil spring compressor
- Assorted pry tools/screwdrivers
- A bolt cutting device (bolt cutter/reciprocating saw/rotary tool/hacksaw/etc)
- Grease gun

This installation guide is targeted at the DIY'er who is installing the control arms at a home workshop, either inside a garage or in the driveway. If you are a professional mechanic and/or have access to a professional facility and tools, you will obviously be able to replace many of the steps with more efficient techniques and equipment.

Special Note About Spring Compressors

This guide suggests the use of coil spring compressors to make removal and re-installation of the rear coil spring much easier. Many individuals are wary of using such devices due to certain risks associated with them. If you feel uncomfortable using spring compressors, you may omit those steps. Removal and re-installation of the coil spring can still be accomplished, albeit with a bit more effort.

Special Note About Single-Use Hardware

Technically speaking, the knuckle bolts/nuts and the alignment cam bolts/nuts are single use hardware and should be omitted after removal and replaced with all new hardware. In our experience, if you have not ever removed such hardware in the past, getting some more use out of them is possible. On the other hand, if you have previously installed lifts and replaced the control arms, you may want to consider replacing the knuckle bolts/nuts and cam bolts/nuts. We have provided a single replacement cam bolt and two M12 x 80mm Class 10.9 bolts with your Stiletto's. The cam bolt is necessary because you will likely have to cut your existing cam bolt in Step 13. The two M12 x 80mm bolts can be used to replace your knuckle bolts in Step 21. Any additional hardware you choose to replace will need to be purchased separately.

Where To Get Help

Should you have any questions about installation, or problems during the installation process, feel free to reach out to us for assistance. You can send email to info@gleaming-alloy.com or use Facebook Messenger to message “Gleaming Alloy” directly. You can also message us on Instagram at @gleaming_alloy. If you have a particular issue, please accompany it with photographs showing the nature of the problem.

The following resources are also available on the internet.
Just scan the QR code to take you there:



[Gleaming Alloy
Owners Group](#)



[Gleaming Alloy
Support Documents](#)



[Gleaming Alloy
YouTube Channel](#)

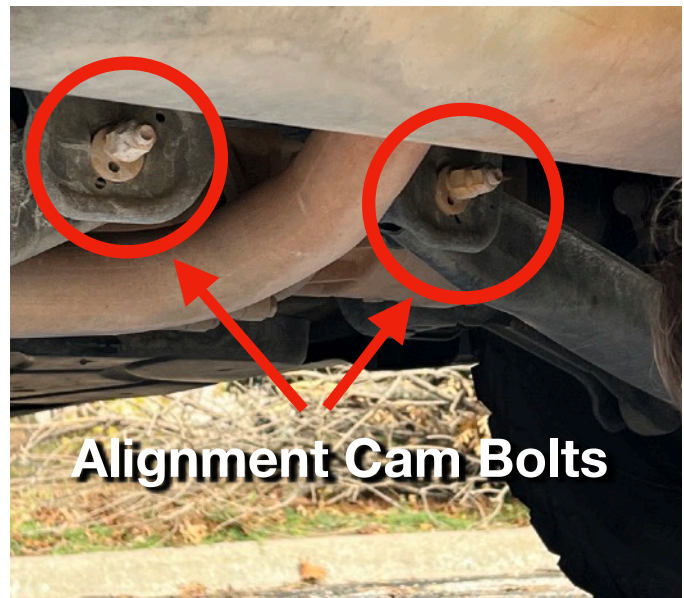
Step 1: Secure the vehicle

Using wheel chocks, blocks of wood or similar devices, secure the front wheels of your Jeep to keep it from rolling. This is critically important since you will be raising the rear wheels off the ground and Jeep Cherokees tend to roll a bit, even when in park.



Step 2: Mark the alignment cam bolts

With the vehicle still on the ground, locate the cam bolts where the upper ends of the existing control arms are hinged to the sub frame. Refer to this picture for their location.



Mark the current position of both cam bolts using a marker. We suggest marking through the hole on the cam lobe as shown in this picture.



Step 3: Remove the stabilizer bar end links

With the vehicle still on the ground (or with both wheels raised evenly, such as on a lift), remove both stabilizer bar (aka sway bar) end links from the stabilizer bar itself. To do this, use a 5mm Allen or hex-head socket wrench to hold the center shaft, while using a 15mm open end/box wrench to loosen the shaft nut. Once removed, thread the nut loosely back on the shaft as pictured.

Note: it's important to do this with both wheels on the ground (or both raised off the ground), or else the stabilizer bar will be torqued, making end link removal difficult.



Step 4: Loosen the lug nuts on the right rear wheel

Step 5: Jack up the vehicle from the pinch weld, just in front of the right-rear wheel

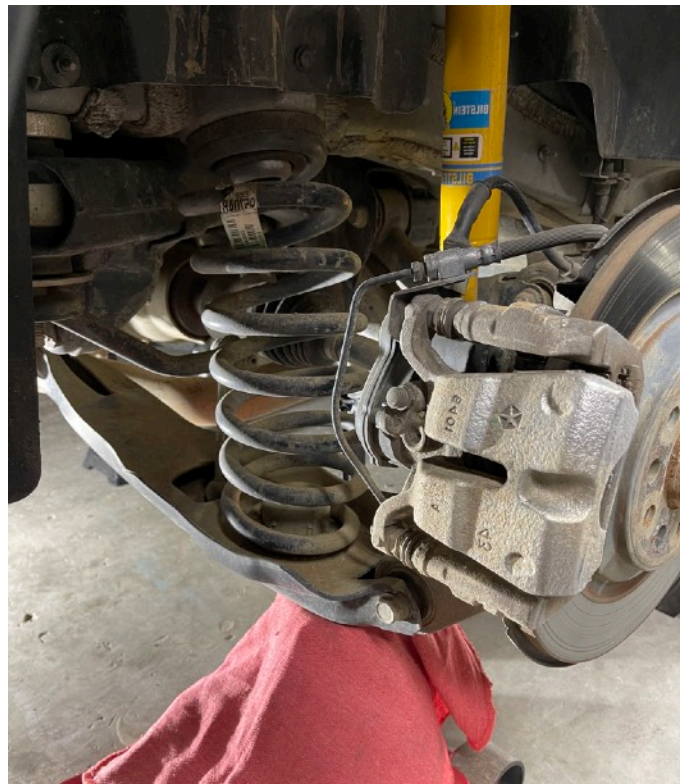
Step 6: Secure the vehicle with at least one jack stand on the pinch weld

Optionally, use a second jack stand under the toe link (aka the small lower control arm) sub-frame mounting location.

Step 7: Remove the right-rear wheel completely

Step 8: Jack up the control arm

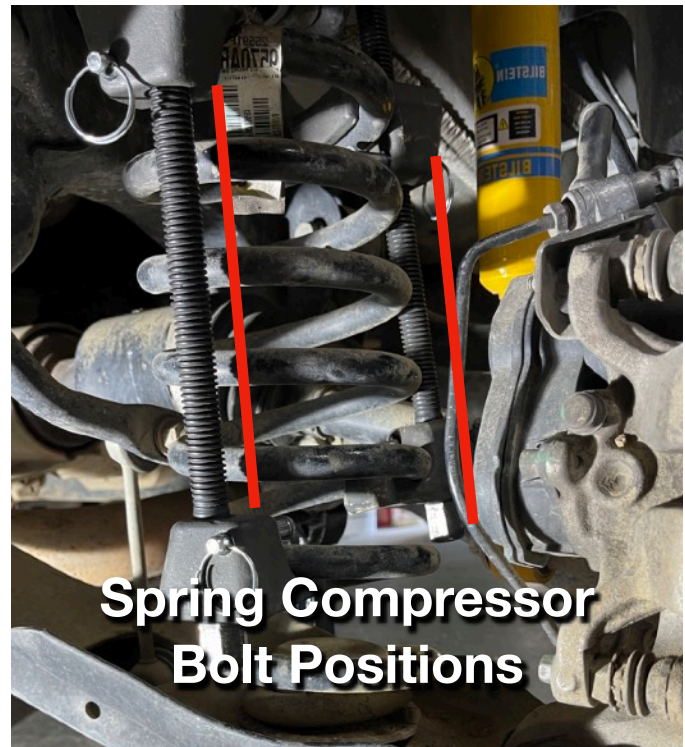
Place a floor jack under the right-rear control arm, beneath the spring, and raise the arm up to the point that the vehicle just barely begins to lift from the jack stands.



Step 9: Place compressors on coil spring

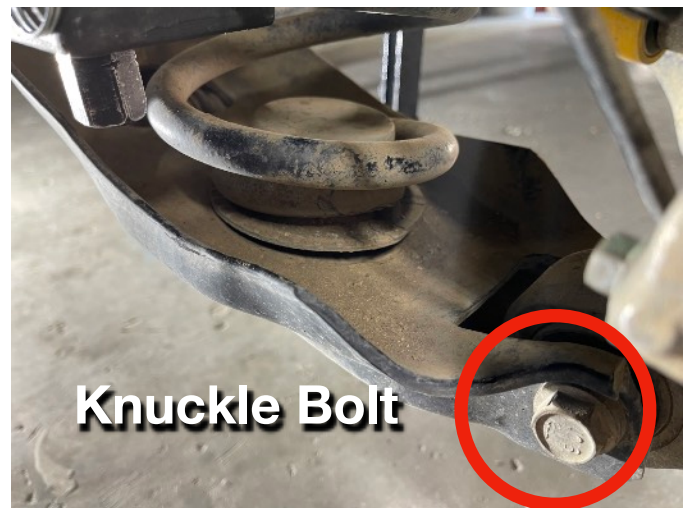
Using spring compressors, clamp the coil spring in its current compressed state. Do not compress the spring any more. Your goal is to simply use the spring compressors to hold it at its current height.

Place one compressor bolt towards the rear of the spring/vehicle and the other at the “5 o’clock” position when looking down on the spring from above. This places it between the knuckle and the drive axle. Take care to leave enough clearance around the drive axle’s CV boot so as to not damage it.

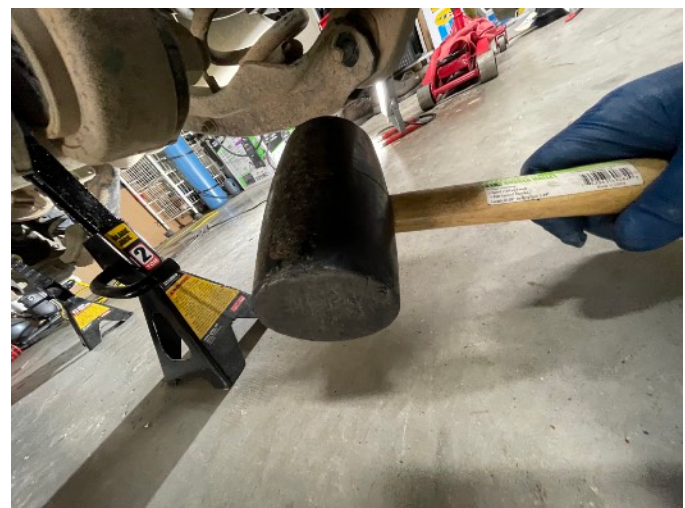


Step 10: Remove the knuckle bolt

Using two 18mm wrenches (one to hold the bolt head, the other to loosen the nut), loosen the knuckle bolt that attaches the control arm to the wheel knuckle.



Use a rubber mallet (or similar tool) to tap the bolt through the hole on the control arm/knuckle assembly, completely removing the bolt.



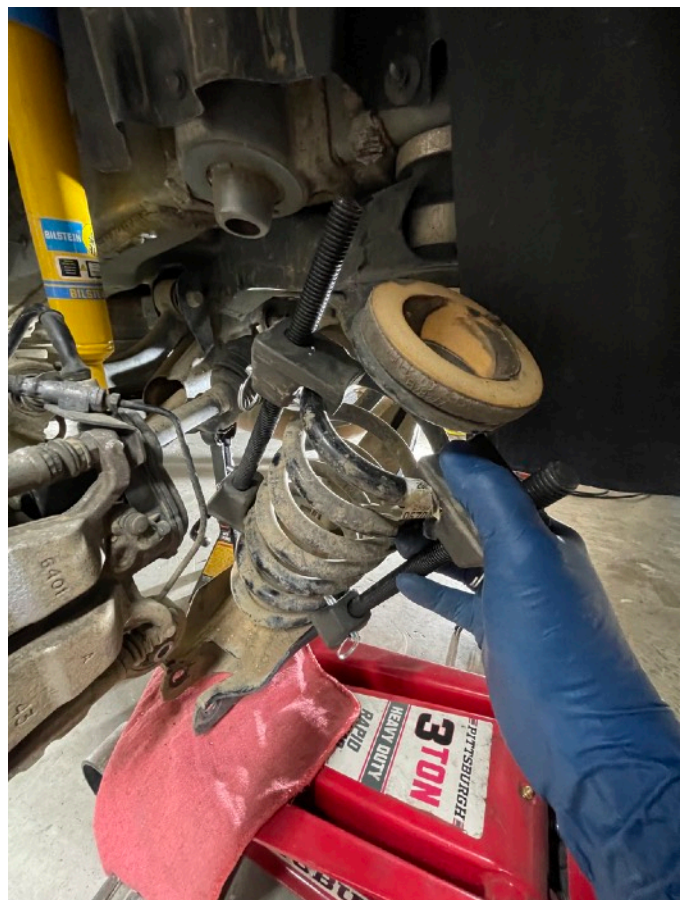
Step 11: Separate the knuckle and control arm

Slowly lower the floor jack so the control arm separates from the knuckle. You may need to use a pry tool to break any friction between the knuckle bushing and the control arm, but once they are free, the control arm should lower away from the knuckle pretty easily.



Continue to *slowly* lower the floor jack while holding the coil spring, preventing it from falling towards the drive axle and CV boots. When the control arm has been lowered enough, the spring will want to fall out, so be ready for it! Always remove the spring towards the rear of the vehicle.

Note: the picture shows left-rear removal, but the concept is the same on the right-rear.



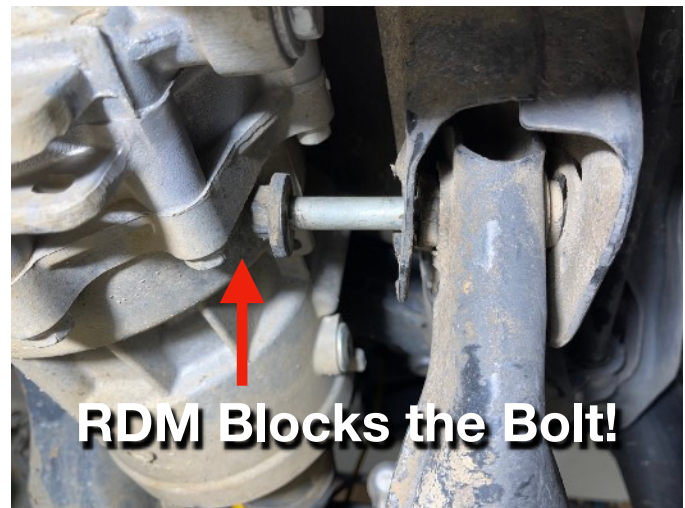
Step 12: Loosen the cam bolt

Use a 19mm or crescent wrench to hold the cam nut in place while loosening the lock nut with a 17mm wrench. Completely remove the lock nut and cam nut.



Step 13: Remove the cam bolt

If you have never replaced the control arm before, you'll notice that the cam bolt itself cannot be removed because it hits the RDM (aka rear differential). The official procedure is to loosen the RDM mounts so you can remove the bolt, but that is a ridiculous amount of work!



Instead, we suggest simply cutting the bolt using a reciprocating saw (aka Sawzall), a rotary tool, bolt cutter or hacksaw.

You will use the new cam bolt provided with your Stiletto as a replacement, inserting it from the rear of the vehicle.

Tip: Pull the bolt out as far as it goes and cut fairly close to the sub-frame (as pictured), or else you'll need to cut the bolt twice to completely remove it. **Be extremely careful not to cut any portion of the sub-frame!**



Step 14: Install rear wheel centering kit

A rear wheel centering kit is critical in reducing awkward angles that place a lot of stress on the link-end bushing. Thus we have included rear wheel centering spacers with your Stiletto. If you already have a rear wheel centering kit installed, you can skip this step and proceed to Step 15.

Begin by locating the two mounting bolts at the front of the trailing arm. They will be located directly in front of the wheel well.

Using an 18mm socket, loosen (**but do not remove**) these two bolts. Unthread them by about 1" (25mm) so that the mounting bracket can hang down from the unibody.



Next, completely remove just one of these bolts, leaving the other bolt to hold the trailing arm in place. Slide one of the 1/2" aluminum spacers behind the mounting bracket, then re-insert the bolt through the spacer. Thread the bolt back to the point where it extends about 1" from the unibody.

Now repeat this step for the other bolt.

With both spacers in place, pull on the trailing arm towards the rear of the vehicle as much as possible and tighten both of the bolts. Once both of them have been hand-tightened, you can stop pulling on the trailing arms and torque the bolts to 80 ft-lbs (108 Nm).



Step 15: Transfer the alignment mark

With the cam nut you just removed (in Step 13) as a reference, transfer the alignment mark you made in Step 2 to the new cam bolt provided with your Stiletto. This is necessary because you will be inserting the cam bolt from the rear of the vehicle and placing the cam nut on the RDM side, so you need a new mark to align against.



Step 16: Remove the stabilizer link

Take the old control arm to a workbench where you can transfer the stabilizer end link to your new Stiletto control arm. Begin by removing the stabilizer link from the control arm using a 5mm Allen or hex-head wrench and a 15mm open end wrench, just like you did in Step 3.

Note: you will likely need to remove the retainer bolt on the opposite side of the control arm in order to remove the stabilizer link. This also requires a 15mm wrench.



Step 17: Transfer the stabilizer link

Using the Stiletto control arm marked 'Right', loosen the two main bolts that connect the tube and knuckle interface together. This requires an 18mm wrench for the nuts and a 16mm wrench to keep the bolts from spinning.

Note: do not completely remove these nuts and bolts. You simply need to loosen them so that the stabilizer link bracket can be pulled away from the tube by about an inch (25mm).



With the bracket loose, guide the stabilizer link through the hole and begin threading the nut onto the shaft. You will know which end of the link is the correct one because you threaded the nut onto the the upper end in Step 3.

Important: Make sure you orient the stabilizer link so it exits the mount upwards, on the same side as the spring cradle.

Now tighten the two main bolts on the knuckle interface using an 18mm wrench for the nuts and a 16mm wrench to keep the bolts from spinning. **Important: if the link tube has any rotational 'play' when the main bolts are loose, rotate the tube as much as possible towards the stabilizer link mount (as viewed from above the top of the control arm) while tightening them. This is important to match the setup from the factory. Failure to do this may result in premature bushing wear.**

Take care to make sure the stabilizer link mount mates flush against the link tube. Using a bench vice (or an assistant) to hold the control arm, torque the main bolts to 92 ft-lbs (125 Nm). **This torque value is extremely important so double check it after tightening.**

With the main bolts now torqued, you can tighten the stabilizer link nut fully using a 5mm Allen or hex head wrench and a 15mm open end/box wrench. Torque to 44 ft-lbs (60 Nm).

Step 18: Install the cam bolt

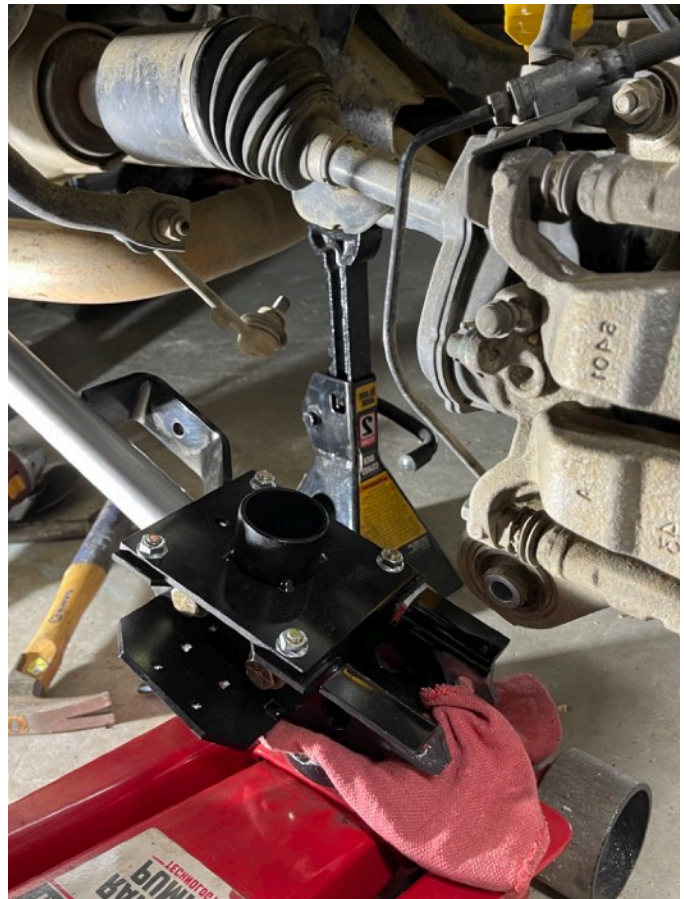
Take the Stiletto control arm back to your vehicle. Insert the link end bushing into the mounting bracket on the subframe and insert the replacement cam bolt. Using a 17mm and 19mm wrench, tighten the cam bolt and lock nut enough so that the cam lobes remain in place, but not so tight that you cannot rotate the cam bolt. The alignment position of the cam bolt is not important at this time.

Note: while the stock cam bolt had the nut facing the rear of the vehicle, you will insert the bolt on the rear and thread the nut towards the front of the vehicle. This is because the RDM (aka rear differential) prevents you from inserting the bolt as was done from the factory.



Step 19: Install the coil spring

Position a floor jack below the knuckle interface of the Stiletto. It helps to use a small piece of plywood or 2x4 between the floor jack and the control arm.



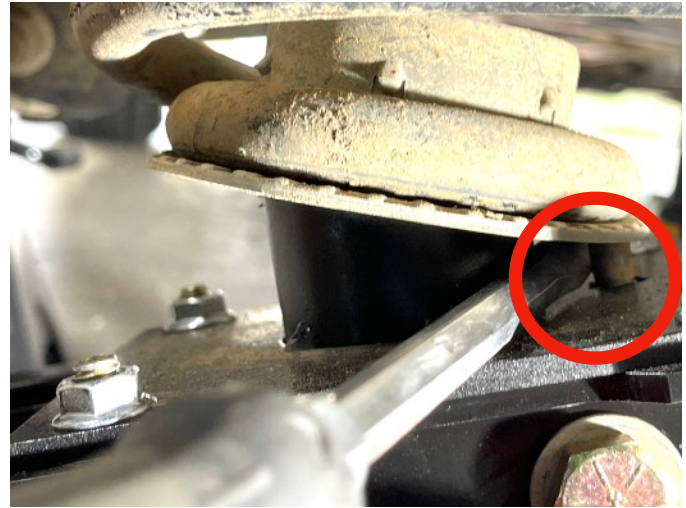
Place the coil spring on the spring cradle of the Stiletto.

Note: The spring will be at an angle leaning towards the hinge joint of the control arm and won't sit flush on the spring cradle. This is due to the extreme angle the control arm is presently in. As you raise the arm, it will slide onto the center boss of the spring cradle.



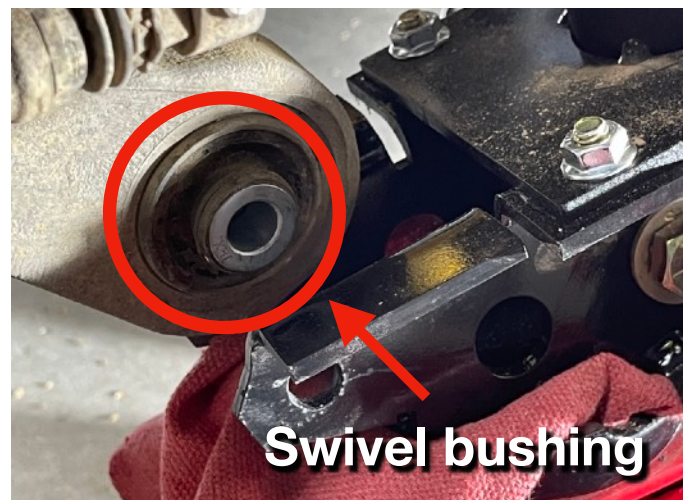
Make sure to align the plastic alignment tab on the bottom of the spring isolator with the hole in the spring cradle. If possible, press the plastic alignment tab into the hole.

Tip: use a flat screwdriver to pry the alignment tab over the hole in the spring cradle.



Step 20: Raise the control arm

Slowly begin to raise the floor jack, which will lift the control arm. Pay attention to two points of contact while raising the control arm: 1) the swivel bushing on the wheel knuckle, and 2) the plastic isolator on the top of the coil spring. You must guide the swivel bushing into the end of the knuckle interface while making sure the spring isolator slides itself on the mounting boss of the vehicle's frame.



Continue to slowly raise the control arm and guide the swivel bushing into place. Your first goal is to get it to slide within the knuckle interface of the Stiletto. You can use your fingers to keep the bushing perpendicular to the ends of the Stiletto as it is being raised.

Tip: The control arm and the wheel knuckle come together better when lifted higher in their relative swing arcs. Pulling up on the wheel knuckle as you are raising the control arm will bring them into better alignment.

Tip: It also helps to push the control arm towards the front of the vehicle as it is being raised. If you don't have a helper to do this, you can employ a ratchet strap wrapped around the Stiletto control arm and the toe link (small control arm) to pull the Stiletto towards the front of the vehicle.



Step 21: Attach the knuckle bolt

Once the swivel bushing has been slid into place, you must align the knuckle interface with the swivel bushing so the knuckle bolt can be inserted. This is often easier said than done and may require a bit of finagling.

Tip: Use the floor jack to adjust the relative height of the bolt hole and swivel bushing. Make sure you're lifting just the control arm and not the wheel knuckle at the same time!

Tip: Rotate the alignment cam bolt to adjust the relative horizontal (left-right) position of the two holes.

Note: we have supplied two M12 x 80mm bolts that you can use to replace your original knuckle bolts, which are supposed to be discarded after they have been removed.

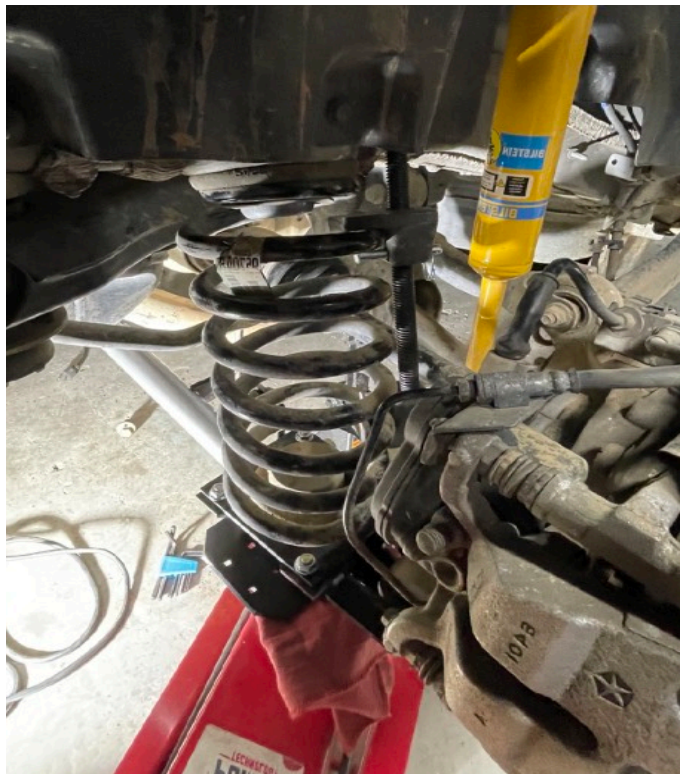
Concentrate on getting one side of the holes to align, at which point you can partially insert the knuckle bolt. Then try to get the other side to align so you can force the bolt all the way through. You may need to use a screwdriver or pry tool to help get the other side to align.

Once the bolt is all the way through, tighten it to 92 ft-lbs/125 Nm.



Step 22: Remove the spring compressors

With the knuckle bolt securely torqued, continue raising the control arm until the vehicle just begins to raise off the jack stands. At this point you should be able to easily loosen and remove the spring compressors, oftentimes without even needing to use a wrench.



Step 23: Restore your alignment

Align the mark on the cam bolts with the one on the sub-frame that you made in Step 2. Using 17mm and 19mm open end/box wrenches, fully tighten the cam bolt so you can no longer rotate it with a wrench (approximately 92 ft-lbs/125 Nm).



Step 24: Mount your wheel

Raise the vehicle off of the jack stands, high enough to re-mount your right-rear wheel. Hand tighten your lug bolts, then remove your jack stands. Lower the vehicle and torque your lug bolts to 100 ft-lbs (135 Nm).

Step 25: Repeat for the other side

Repeat steps 4 through 24 for the left side of the vehicle. Note that you will not have to cut the cam bolt on the left side since it can be removed without interference from the RDM.

Step 26: Lubricate the link end bushings

Use a grease gun to lubricate the link end bushings of the Stiletto. Liberally pump grease into the bushing so it oozes out between the poly bushing and the link-end casting. Clean up any excess grease.

***Tip:** Lubricate once with the wheels off the ground and again after you've completed your test drive (with the wheels grounded).*

Note: We recommend using a high quality, silicon-based or synthetic lubricant such as AMSOIL Synthetic Water Resistant Grease. Avoid lubricants which contain graphite.



Step 27: Reconnect stabilizer bar end links.

With both wheels on the ground (or both wheels evenly raised), reconnect the left and right stabilizer bar end links to the stabilizer bar. Use a 5mm Allen or hex-head wrench to hold the center shaft while tightening the nut with a 15mm open end/box wrench. Torque to 44 ft-lbs (60 Nm).

You have successfully completed installation of your Stiletto rear lower control arms! Go have a beer!

Care and Use

Now that you've installed your Stiletto Rear Lower Control Arms, you're probably anxious to get out and hit the trails with them. Before you do that, read this section. There's a few preliminary steps you should take to ensure they are properly installed.

First Test Drive

After installing the Stilettos, you should take it on a test drive. Before hitting the road, run through a mental checklist of all bolt torquing actions i.e. make sure you've properly torqued all bolts, especially the wheel lug bolts! Only then are you ready take your Stilettos for a spin.

If possible, begin with a low speed route through neighborhoods and secondary roads. Listen for anything out of the ordinary such as creaking or thumps. Try to stress the suspension by taking turns a little faster than normal. If you can find a particularly bumpy road to drive on, all the better!

After low speed testing is complete, it's time to take it on the highway. Begin with speeds in the 45-50 MPH (72-80 KPH) range and then eventually bring it all the way up to 70 MPH (112 KPH). Again, listen for creaks, thumps and vibrations. Try not to wander too far from home in case you need to return to investigate anything.

If your test drive DOES reveal an anomaly, make sure all components are seated properly and re-check all torques. Feel free to contact us if you are perplexed by an issue.

Wheel Alignment

The Stilettos are pre-calibrated at the factory to match the length of the stock control arms. In theory, if you returned your alignment cam bolts to *exactly* the same position as they were prior to install, you should be able to maintain your previous alignment.

Unfortunately, theory doesn't always translate to practice. Despite pre-calibration, the Stilettos may be a millimeter or two off from the stock arm length. Also, returning the cam bolts to exactly the same position isn't as easy as it sounds. Lastly, if you went from stock height to a lifted height when installing the Stilettos and/or you installed the rear wheel centering spacers, your wheel geometry may be off. For these reasons, we highly recommend getting an alignment after installing the Stilettos.

300 Mile Inspection

After you have been driving your Stilettos for 300 miles (or 500 Km), you should inspect your installation to make sure everything is still seated properly and nothing is coming loose. The main action to perform is to **re-torque all the bolts associated with the installation**. Don't overlook that step because it is highly likely they'll need re-torquing, especially the two main bolts on the knuckle interfaces. You should also liberally re-lubricate the link end bushings.

Note: if you take your Jeep off-road within the first 300 miles, you should perform this inspection immediately after you get home from your off-road excursion.

Regular Maintenance

The Stiletto's are relatively maintenance-free except in two areas: 1) link-end bushing lubrication, and 2) protective coating.

The link-end bushings should be re-lubricated at every oil change, or 3000 miles (or 5000 Km), whichever comes first. If you off-road frequently, and/or live in a relative dry and/or dusty environment, that interval should be shortened. If you pressure wash the underside of your Jeep, and you focus the jet of water on the bushing area, a re-lube wouldn't hurt. High pressure water tends to find its way into the bushing and can force some of the grease out.

Note: if at any time you hear squeaking/creaking noises coming from your Stiletto's, the bushings are beginning to run dry. You should lubricate as soon as possible if that happens. You may even want to consider bringing a small grease gun with you in your recovery gear bag because Murphy's Law dictates that this will happen at the least opportune time, such as when you are adventuring in the middle of nowhere



A well-lubricated bushing.

As for the protective coating on the Stiletto's, you should always inspect them after an off-roading adventure to look for new contact abrasions. The finish on the Stiletto's is fairly durable, but nothing will hold up to certain kinds of obstacle strikes. If any metal is exposed from such a scratch, simply clean it off and hit with some automotive spray paint to prevent any kind of corrosion from taking hold.

Spare Parts

Every component of the Stiletto Rear Lower Control Arm for Jeep Cherokee (KL) is available for purchase from Gleaming Alloy. The most likely component you will ever need to purchase are the link-end bushings. Other components, however, can be purchased if you experience extreme damage, or if you want to upgrade your Stiletto's (e.g. go from standard 2" to 3", or switch to the Dobinsons variant).