

## Rusty's XJ Competition 4-Link Suspension System

RK-CS10-XJ

### INSTALLATION INSTRUCTIONS

Last Revised: 5/24/2017

#### Introduction:

Rusty's recommends that this installation be performed by a certified automotive technician or a person with professional mechanical knowledge. Installing this kit without this expertise may jeopardize the handling and safety of the vehicle.

Read instructions several times before starting. Be sure you have all the needed parts and know where they install. Read each step completely as you go. Exhaust modifications may be necessary. Prior to drilling or cutting, check behind the surface being worked on for any wires, lines, or hoses that could be damaged. After any drilling or cutting, remove burrs and grind smooth any surfaces. An inclinometer or similar tool may be needed to measure driveshaft angles before and after the installation.

#### Warning:

- It is the owners' responsibility to inspect all Rusty's products for proper torque specs to prevent loosening of components.
- Seat belts and shoulder harnesses should be worn at all times.
- Re-check all bolts and nuts after the first 100 miles and after any off-road usage during the first 300 miles.
- Although all of our products are made from the highest quality materials possible, they are not a substitute for Safe and Careful driving. In other words, have good safe on-road / off-road sense. Know the terrain, the speed limitations, and any obstacles that may lie ahead. Please remember to preserve our right to enjoy public land through the proper use of off-road vehicles.

#### Before Starting Installation:

1. Carefully Read all warnings and instructions completely before beginning.
2. Verify all parts have been received in this kit by checking the parts list on page#2 of this document.
3. Only install this kit on the vehicle for which it is specified.
4. Park the vehicle on a clean, dry, flat, level surface and block the tires so the vehicle cannot roll in either direction.
5. Be certain the vehicle is safely secured on jack stands or a vehicle lift prior to working around or under a vehicle. Never rely on a jack alone to support a vehicle's weight; use appropriately rated stands to sup-

**Parts List:**

**Note:** Please be sure that you have all the provided parts listed below before continuing with the installation.

<b><u>Part #</u></b>	<b><u>DESCRIPTION:</u></b>	<b><u>Quantity</u></b>
RK-CS10-XJ-CM	Rusty's XJ Competition 4 Link Cross Member Mounts (Pair)	1
RK-CS10-XJ-BP	Rusty's XJ Competition 4 Link Cross Member Backing Plates (Pair)	1
RK-CS102-XJ	Rusty's XJ Competition 4 Link Lower Control Arms (Pair)	1
RK-CS103-XJ	Rusty's XJ Competition 4 Link Upper Control Arms (Pair)	1
N/A	Rusty's XJ Competition 4 Link Jam Nut Wrench	1
05727151	3/8"-16 x 1-1/2" Length Grade 8 Hex Head Cap Screw	4
N/A	3/8" Weld Nut	4
N/A	Thick 3/8" Washer	8
52593589	3/8" - 16 Grade 8 Hex Lock Nut	10
74454620	3/8"-16 x 1-1/4" Length Grade 8 Hex Head Cap Screw	16
05724620	3/8" SAE Flat Washer	30
67524520	9/16"- 12 x 4-1/2" Length Grade 8 Hex Head Cap Screw	2
67524488	9/16"- 12 x 4" Length Grade 8 Hex Head Cap Screw	2
05724653	9/16" SAE Flat Washer	6
52593613	9/16"-12 Grade 8 Hex Lock Nut	2
67445122	M10 x 1.50mm x 80mm Length Hex Head Cap Screw	2
67486001	M10 x 1.50mm Grade 8 Hex Lock Nut	2
67379362	3/8"-16 x 1" Thread Cutting Screw	10



For Questions or Suggestions, contact our Tech Department (256-442-0607)

## Installation Instructions

Note: Save all factory components and hardware for reuse, unless noted.

**Before Beginning:** Properly secure the vehicle. If the installation is going to be completed on a lift rack, locate the lift pads under the factory lower control arm mounts and step 4 will be completed after the installation is completed. The area between the transmission cross member and the factory lower control arm mounts should be clear.

1. The passenger and driver side unibody frame rails from the front of the transmission cross member forward 10 inches will need to be ground and cleaned of any undercoating or paint. This should be done on the outside and the bottom portion of the frame. Rusty's recommends using a die grinder with 40-80 grit pads or a standard grinder with a 4.5 flap wheel.



2. Lift the vehicle's front axle. Remove the front tires/wheels. Support the frame forward of the coil springs with jack stands. Lower the jack used to support the front axle slightly to unload the front coil springs but leave the front axle supported.
3. Remove the factory upper and lower control arms at the axle and frame mounting points.



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### Installation Instructions (Continued)

4. The lower control arm mounting point at the frame must be removed. Rusty's Off Road recommends using a sawzall, cutting wheel, or plasma cutter. Use what you are comfortable with but ensure that you only cut the welded mounts off. (**Important Note:** Do not cut into the frame!) Once removed, clean the cut area with a grinder to smooth any sharp edges. The exposed area will need to be painted. Use a self-etching primer and quality enamel paint to ensure a clean long-lasting look.



5. Support the transfer case with a jack. Remove the four nuts securing the transmission mount to the center of the cross member and then raise the transmission/transfer case 1 inch. With the transmission and transfer case being supported by the jack, remove the two bolts securing the cross member to each frame rail and remove the cross member. Save all factory hardware for re-use.
6. If the vehicle has carpet, floor mats, etc., remove the plastic kick panel and kick trim on driver and passenger side. Slide both seats rearward and pull the carpet from under the dash rearward to the seats. Pull slowly to avoid any damage to the carpet pad and insulation. The floor boards should remain exposed for the remainder of the installation.



### Installation Instructions (Continued)

7. Position both the Rusty's Driver and passenger side four-link mounts on the each side of the vehicle to avoid any confusion with installation.
8. Place the driver side four-link mount at the frame behind the mounting point of the transmission cross member. Hook the bracket inwards and raise the bracket in place. This will allow the inside frame mounting points to be above the fuel and brake lines. The fuel and brake lines may need to be unclipped from their plastic retainers for clearance during installation. The bracket should be positioned against the frame and the floorboard. The fuel and brake lines should be in the channel of the four-link mount and inside frame rail. Now slide the four-link mount forward of the transmission cross member mounting point. Let the mount hang in place while the passenger side mount is installed.



9. Place the passenger side four-link mount at the frame behind the mounting point of the transmission cross member. Hook the bracket inwards and raise the bracket in place. Now slide the four-link mount forward of the transmission cross member mounting point. Let the mount hang in place.
10. Reinstall the transmission cross member using the factory hardware. Torque the two bolts on each side of the frame rail mounting points to 35 lb.-ft. Check the alignment of the transmission mount and cross member. Once aligned, lower the transmission, install the transmission mount bolts, and torque to 12 lb. - ft.



### Installation Instructions (Continued)

11. With the transmission cross member back in place, place the driver and passenger side four link mounts forward of the cross member about 1-2 inches for the next step.
12. Locate to the front side of the transmission cross member. Mark a scribe line .500" (1/2") from the front edge of the transmission crossmember on the driver and passenger side. Measure twice to ensure accurate placement because this will be point at which you align and position the four-link mounting brackets.

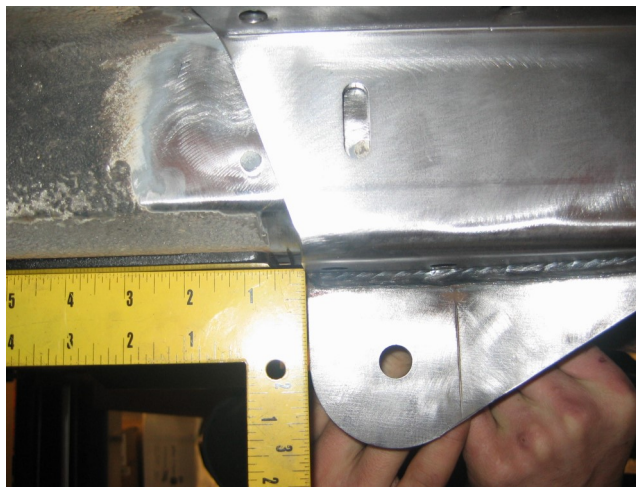


13. **DRIVER SIDE:** Line up the back edge of driver's side four-link mount with the scribed line made in the previous step. Push the mount upward so that it is flush with the floorboard and inward so that it is flush with the outside of the frame rail. Use an assistant to apply the necessary pressure on the bracket, or clamps and a jack. Verify one more time that the back of the bracket is positioned 0.500" (1/2") from the forward edge of the transmission cross member, as this measurement is critical. Once satisfied with the position of the bracket, center punch the location of the top three outboard holes in the bracket to the frame/floorboard pinch weld seam. (**Note:** The use of a transfer punch is recommended.) Drill the center punch locations to 0.375" (3/8").



### Installation Instructions (Continued)

14. **PASSENGER SIDE:** Line the back edge of passenger's side four-link mount with the scribe line made during step 12. Push the mount upward so that it is flush with the floorboard and inward so that it is flush with the outside of the frame rail. Use an assistant to apply the necessary pressure on the bracket, or clamps and a jack. Verify one more time that the back edge of the bracket is positioned 0.500" (1/2") from the forward edge of the transmission cross member, as this measurement is critical. Once satisfied with the position of the bracket, center punch the location of the top three outboard holes in the bracket to the frame/floorboard pinch weld seam. (**Note:** The use of a transfer punch is recommended.) Drill the center punch locations to 0.375" (3/8").



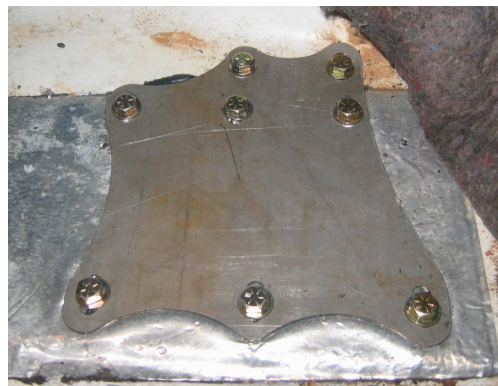
15. On each side, line up the four link mounts with the previously drilled holes. As before, have an assistant push upward so that the mount is flush with the floorboard and inward so that it is flush with the outside of the frame. You can place the supplied 3/8" x 1.25" bolts in the three drilled holes to help locate the bracket properly if desired, but do not start the nuts or tighten the bolts.
16. On each side, locate the two furthest inboard bolt holes that are present in the upper control arm pocket of the four link mounts. For clarification, these are the two most inward bolt holes when looking up at the mount from the bottom. The two holes present in the bottom of the upper control arm pocket provide access to the upper holes and ensure the correct alignment for the drill bit that will go up through the two upper holes and then through the floorboard. Using the bracket as a template, drill the location of the two inward holes using a 0.375" (3/8") drill bit. (**Note:** The 3/8" drill you use during this step needs to be at least 4" in length or longer.) This step should be completed on the driver side and passenger side of the vehicle.
17. You should now have a total of five 3/8" holes drilled in the floorboard on each side of the vehicle. Remove the three outside bolts on each side if they were placed to help align the mount. Release pressure on the four-link mounts and lower them at least 1".

### Installation Instructions (Continued)

18. Align both of the supplied driver and passenger side floor plates with the five 3/8" holes previously drill in the floor on each side of the vehicle. The holes in the floor plate are slotted for a slight adjustment, but be sure to center the slotted holes over the drilled holes as much as possible. With the floor plates slots centered and aligned over the drilled 3/8" holes use the floor plates as a template mark and center punch or transfer punch the location of the three remaining holes present in the middle of the floor plate. With the holes marked, remove the floor plate and verify that the four-link mounts are spaced down off of the frame to prevent hitting with the drill. Drill the marked locations to 0.4375" (7/16").



19. With both the driver and passenger side floorboard mounting points completed. Use a die grinder or a standard grinder with a 4.5" flap wheel to remove any burrs on all drilled holes to ensure a smooth mounting surface.
20. Reposition the four-link mounts back into position by aligning with the drilled hole locations and ensuring that the mounts are flush with the floor board and the outside of the frame rail. Have an assistant apply pressure to the brackets as before so that mounts are completely flush with the mounting surfaces.
21. Position the driver side and passenger side floor plates inside the vehicle and align all the holes. Install the eight supplied 3/8" x 1.25" bolts with 3/8" SAE washers. These bolts will be installed from inside the vehicle, going down through the floor plates. The three center holes will use the supplied weld nuts and should be started first. Then install three 3/8" SAE washers and 3/8" nyloc nuts on the outside frame mounting points. Lastly, install 3/8" SAE washers and 3/8" nyloc nuts on the two inboard bolts in the upper control arm pocket. (**Note:** Do not tighten any hardware until instructed.)





### Installation Instructions (Continued)

22. Locate the upper and lower HD control arms. Place the heim joint ends of the LOWER control arms in the lower mounts of the four-link brackets. Secure them using the 9/16" x 4.5" bolts with SAE washers and nyloc nuts. Start the bolts and nuts, but do not tighten now.
23. Place the heim joint ends of the UPPER control arms in the upper mounts of the four-link brackets. Install the 9/16 x 4" bolts with SAE washers and weld nuts. Start the bolts and nuts, but do not tighten now.
24. With the control arms in place, the eight 3/8" x 1.25" bolts should now be tightened in a side-to-side, back-and-forth pattern to evenly pull the four link mounts into place. Torque to 23 lb.-ft.
25. Leave the upper control arms in place. Remove the lower control arms from the four link mounts.
26. On each side, locate the two slotted bolt holes on the bottom side of the four link brackets, in the pocket of the lower control arm mounting points. These mounting points will secure the four link brackets to the inside frame pinch weld seam. These holes are slotted because the length of the inside pinch weld seams to vary. To ensure the holes are drilled in the correct location, place the supplied 3/8" x 1.5" bolts in the slotted holes and bring the bolts close to the edge of the inside pinch weld seam. Mark the location of the center of the bolt on the four-link mount. This should be done on both the driver and passenger side. Center punch the pinch weld seam at the marks previously made. Drill the marked locations (two per side) with a .375" (3/8") drill bit. **IMPORTANT: THE DRIVER SIDE FRAME RAIL WILL HAVE THE BRAKE LINES AND FUEL LINES ABOVE THE INSIDE FRAME PINCH WELD SEAM. DO NOT ALLOW THE DRILL BIT TO TRAVEL UP FAR ENOUGH THAT IT CONTACTS THESE LINES.**
27. Locate the supplied thick black washers. Due to variations among vehicles, the washers will be used to fill the distance between the four link mounts and the inside frame pinch weld seam. In most applications, the front side will use 2 washers stacked and the rear will use 3 washers stacked. More are supplied than needed. If there is a distance that is smaller than the thickness of a washer, the distance will close as the bolt is tightened. Locate and install the supplied 3/8" x 1.5" bolts with SAE washers in the drilled holes and secure with the supplied 3/8" black bridge nuts. The flat surface of the 3/8" black bridge nut will sit on the top of the inside frame pinch weld seam. The use of these nuts will allow the bolts to be tightened without the nut spinning as it will sit on the inside of the frame. Once all the bolts are started, torque to

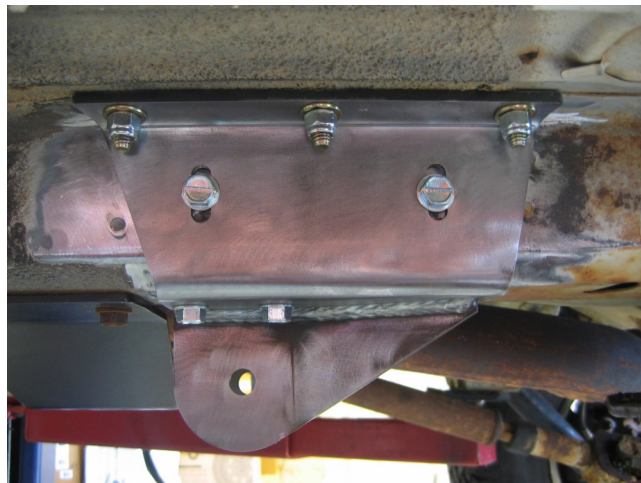


### Installation Instructions (Continued)

28. Reinstall the lower control arms in the four-link mounts. Secure them using the supplied 9/16" x 4.5" bolts with SAE washers and nyloc nuts at the frame mounts. Torque to 85 lb.-ft.
29. Verify that the upper control arms are properly mounted in place using the supplied 9/16" x 4" bolts, SAE washers, and weld nuts, then torque to 70 lb.-ft.
30. **NOTE:** If using this system in a competition or racing application, skip to step 28. Locate the three outside holes present on the outboard side of the four link mounts, and the two holes in the bottom of the mounts near the lower control arm mounting points. Using the mounts as a template, center punch and drill these five mounting holes to 0.312" (5/16"). Ensure the drill bit is at least 4 inches in length to avoid contact with the lower control arm tab.
31. Install the supplied 3/8" x 1" self-tapping bolts in the two bottom holes first, driver and passenger side. Torque to 12 lb.-ft. after the threads have been cut. Do not overtighten.



32. Install the 3/8" x 1" self-tapping bolts in the three outside holes, driver side and passenger side. Torque to 12 lb.-ft. after the threads have been cut. Do not overtighten.



### Installation Instructions (Continued)

33. Preferred race vehicle installation: Disregard steps 30-32. Instead, the five remaining holes in the brackets will be used as weld points. If this step applies to you, we recommend the use of .035" welding wire at a 110-130 AMP range.
34. With the bolt-on procedure completed, move on to the weld points. We recommend removal of the lower control arm to prevent damage to the powder coating, however, welding blankets could be used to cover the lower control arms if desired.
35. The 3-inch section on the vertical sides (front and rear) of the four link mounts on the outside of the frame should be welded. TIG welding this point will ensure controlled heat input as the four-link mounts are three times thicker than the frame. However, MIG welding will work just as well as long as the amp range is properly controlled. We recommend the use of .035" wire and a 110-130 amp range.



36. The 3-inch section on the horizontal bottom sides (front and rear) of the four link mounts should be welded. TIG welding this point will ensure controlled heat input as the four-link mounts are three times thicker than the frame. However, MIG welding will work just as well as long as the amp range is properly controlled. We recommend the use of .035" wire and a 110-130 amp range.
37. Once the welded areas have cooled off, remove the upper and lower control arms at the four link mounts. The four-link mounts and all exposed areas of the frame will need to be cleaned and prepped for painting. We recommend using degreaser and then a self-etching primer, followed by a quality enamel paint, for a long-lasting finish.
38. Allow the recommended drying time before reinstalling the upper and lower control arms. Refer back to step 31 and step 32 for the installation procedure and torque specifications.

**Installation Instructions (Continued)**

33. Assemble the remainder of the suspension as you would with any lift kit installation. Refer to any of our other lift kit instruction manuals for the necessary steps to complete the installation.



**Lower and Upper Control Arm Reference Length Charts**

CONTROL ARM LENGTH (CENTER HOLE-TO-CENTER HOLE)

THE UPPER CONTROL ARM IS MEASURED FROM THE INSIDE; THIS WILL BE THE SHORTER MEASURING DISTANCE OF THE ARM.

Lift Height	Lower Control Arms
4.5"	31-1/4"
6.5"	31-1/2"
8.5"	31-3/4"

Lift Height	Upper Control Arms
4.5"	28-1/2"
6.5"	28-3/4"
8.5"	29"

**WARNING**

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