IRON ROCK OFF ROAD

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WJ Front 3-Link Long Arm Upgrade Installation Instructions

99-04 Jeep Grand Cherokee WJ

Parts Checklist:

Subframe Box: 13319 (1)

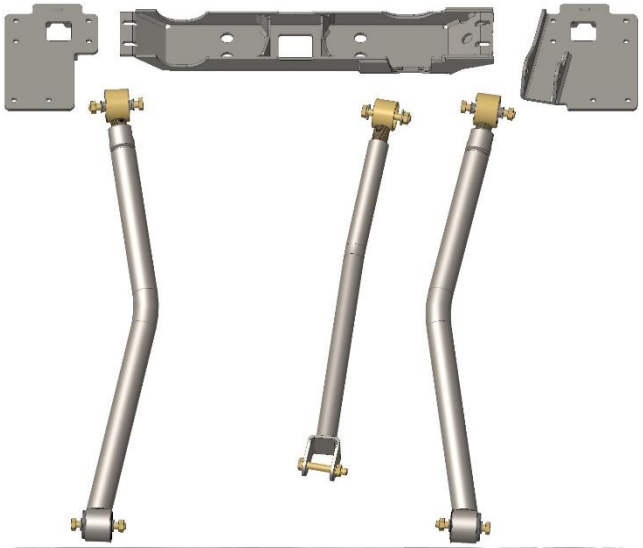
- ❑ Logo decal 10001 (Qty: 1)
- ❑ Rock-Link Decal 13287 (2)
- ❑ Ironrockoffroad.com decal (1)
- ❑ Subframe center 92270 (1)
- ❑ Subframe left outer 92256 (1)
- ❑ Subframe right outer 92275 (1)
- ❑ T-Case drop spacer 88264 (2)
- ❑ **#183 - 3-Link Long Arm Subframe Hardware (1)**
  - ❑ Nut Plate 92097 (2)
  - ❑ M14 x 2.0 x 90 hex bolt class 10.9 (1)
  - ❑ M14 x 2.0 x 110 hex bolt class 10.9 (2)
  - ❑ M14 x 2.0 x 120 hex bolt class 10.9 (2)
  - ❑ 7/16-14 x 1 ¼ hex bolt grade 8 (4)
  - ❑ M10 x 1.5 x 30 hex bolt class 10.9 (4)
  - ❑ M10 x 1.5 x 60 hex bolt class 10.9 (4)
  - ❑ M10 x 1.5 x 80 hex bolt class 10.9 (5)
  - ❑ M14 x 2.0 nylock flange nut class 10.9 (5)
  - ❑ M10 x 1.5 nylock flange nut class 10.9 (1)
  - ❑ 9/16 F436 hardened washer (5)
  - ❑ 7/16 F436 hardened washer (13)
  - ❑ 1/4” Rubber trim edging (3”)

LCA Box: 15783 (1)

- ❑ WJ Long LCA Left 85107 (1)
- ❑ WJ Long LCA Right 85108 (1)
- ❑ Angled Long Arm Male End 91109 (2)

UCA Box: 13490 (1)

- ❑ WJ 3-Link Front UCA 92277 (1)
- ❑ 2 3/8 UCA Male End 91191 (1)
- ❑ **Front Coil Spring Retainer Kit - 80249 (1)**
  - ❑ Front coil spring retainer cone 80061 (2)
  - ❑ M12 x 35 flange bolt class 10.9 (2)
  - ❑ 7/16 SAE flat washer (2)
  - ❑ M12 rivet nut (2)
- ❑ **#6 - Front Brake Line Spacers (1)**
  - ❑ Front brake line spacer 92037 (2)
  - ❑ M6 x 45 Front brake line bolt (2)
  - ❑ 1/4” USS washer (2)
- ❑ **#78 - Control Arm Spacer Hardware (1)**
  - ❑ Control arm spacer 90194 (4)
- ❑ **#127 - 2 5/8” 6 Bolt IRO Flex End Hardware (2)**
  - ❑ Inner race 91118 (2)
  - ❑ Thrust washer 91119 (2)
  - ❑ 2-5/8" Flex End Ball 91117 (1)
  - ❑ 10-32 x 1-3/4” Socket Head Cap Screw (6)
  - ❑ 10-32 Nylock Nut (6)
  - ❑ 1/4”-28 90° Grease zerk Fitting (1)
- ❑ **#168 - 2-3/8” Flex End Hardware (1)**
  - ❑ End cap 91138 (2)
  - ❑ Inner race 91139 (2)
  - ❑ Flex end ball 91140 (1)
  - ❑ 8-32 x 1-1/2” socket head cap screw (8)
  - ❑ 1/4-28 90° grease zerk fitting (1)
  - ❑ 1/4-28 straight grease zerk (1)
- ❑ **#181 - 3-Link Control Arm Clamping Hardware (1)**
- ❑ 1/4"-28 x 1-1/8” socket head cap screw (4)
- ❑ 3/8-16 x 1 1/4” hex bolt grade 8 (1)
- ❑ 1/4"-28 hex nut, grade 8 (4)
- ❑ 3/8-16 nylock flange nut (1)
- ❑ 3/8 Mil spec washer 95229A480 (1)



Installation Instructions:

*Safety Warning: ***Important! Read before installation. ****

We recommend this system be installed by a qualified professional. Knowledge of suspension component function is necessary for safe installation and post installation inspections. Be sure to re-torque all suspension components after the first 100 miles of use, and frequently inspect all safety critical suspension components.

Before you begin:

Install video on YouTube
IronRockOffRoad

- ❑ Read all safety warnings.
- ❑ Read and understand installation instructions.
- ❑ This kit requires a minimum of 3" or higher suspension lift.
- ❑ Check all steering and suspension components for wear and replace as needed.
- ❑ Contact Iron Rock Off Road with any questions before, during, or after installation.
- ❑ **Ensure that all parts are present and in good condition using the included shipping checklist.**
- ❑ Be sure you have the following tools and supplies:
  - ❑ Floor jack and jack stands.
  - ❑ Basic hand tools (wrenches, sockets, etc....).
  - ❑ Multi-purpose grease.
  - ❑ Metal cutting tools such as a 4-1/2" angle grinder with thin metal cutting wheel, and a sandpaper flap wheel for an attractive finish. Possibly a Sawzall with metal cutting blades.
  - ❑ Paint and primer (for uniframe - black or your choice of color).
  - ❑ Anti-seize compound
  - ❑ Hand Drill
  - ❑ 7/16" & 11/16 drill bit
  - ❑ 1/2-20 (fine thread) Hand tap and tap handle
  - ❑ High Strength Thread locker such as Lock-Tite Red
  - ❑ Angle finder
  - ❑ String level or laser level

Lower Control Arms

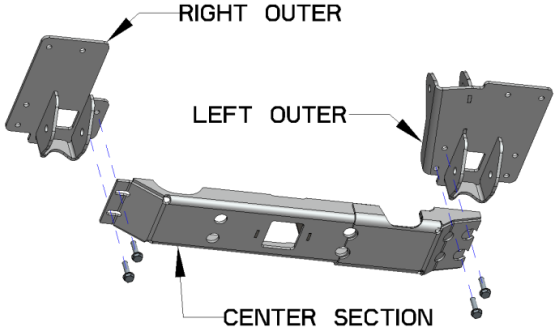
Control Arm Length (Starting Lengths - Center to Center)	
Lower Control Arms	36 ½" (Short Side)
Upper Control Arm	33 3/8"

Prepare the parts for Installation:

1. Locate the lower control arms (larger), male ends (larger, angled), hardware kit 127 and 181.
2. Locate the upper control arm (smaller), male end (smaller, straight), and hardware kit 168.
3. Assemble flex ends into lower control arm male ends. Use hardware kit 127 and attached instructions (2-5/8").
4. Assemble flex end into upper control arm male end. Use hardware kit 168 and attached instructions (2 3/8").
5. Apply a light coat of anti-seize compound to the threads and thread the male ends into control arms.
6. Adjust lower control arm lengths per the chart.
7. Adjust upper control arm length per the chart.
8. Install clamping bolts. Do not tighten at this time.

Control arm mounting subframe:

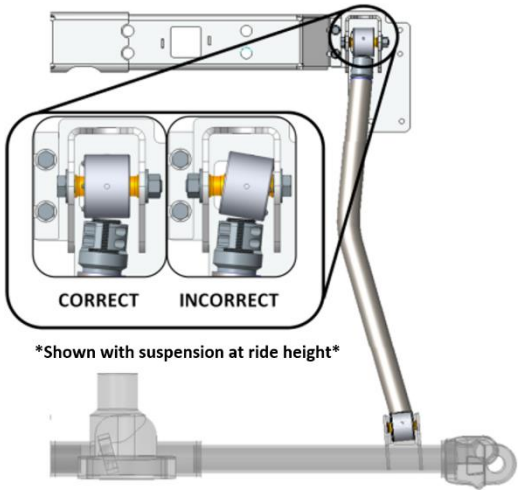
9. Lift front and rear of vehicle and support with jack stands under the uniframe. Leave room to cut off the stock lower control arm mounts.
   ****Tip: break lug nuts loose before lifting vehicle. ****
10. Raise transfer case **very** slightly and support with a jack stand.
11. Remove the transmission mount bolt and nut from the transmission crossmember.
12. Remove the factory transmission mounting crossmember.
13. Locate the left and right subframe outers and hardware kit #183.
14. Add rubber edging to left subframe outer as shown in the picture to the right.
15. Remove two plastic clips from the fuel lines on the left side of the frame. (arrows)
16. Install the new subframe left and right outers using provided M10 x 30 flange and M10 x 80 bolts in the same holes that held the factory crossmember. Be sure that the control arm mounting pockets are facing forward.
17. Tighten bolts firmly (bolts will be removed after drilling.)
18. Drill the additional 7/16" mounting holes, 2 per side at the front of each bracket.
19. Remove subframe outers. Remove any burrs and sharp edges around the holes. Clean, prime and paint any exposed metal.
20. Install nut plates into uniframe and position them over the drilled holes.
21. Install subframe outers using 7/16 x 1 ¼ bolts, M10 x 80 bolts and washers. Leave inside holes open to mount the subframe center section.
22. Install subframe center section using M10 x 30 flange bolts. If using the T-Case drop, align the spacers with the center section mounting holes and use M10 x 60 hex bolts. The notch in the spacer matches the notch in the center section.
23. Torque 7/16 bolts to 65-foot pounds. Torque M10 bolts to 34-foot pounds.
24. Lower the transfer case on to subframe.
25. Install the factory transmission mounting bolt and nut and torque to 78-foot pounds.



Front Suspension:

26. Remove upper and lower factory control arms.
27. Disconnect the driveshaft on the axle side and tape the u-joint so the caps do not fall off. Tie the driveshaft out of the way (use tape, zip tie, mechanic's wire, etc.) for easier access to the lower control arm mount.
28. Cut off factory lower control arm mounts from the uniframe on the driver's and passenger's side.
    *****Tip: Our favorite tool for this is a 4-1/2" angle grinder with a thin cutting wheel. Remove in pieces for ease of access. *****

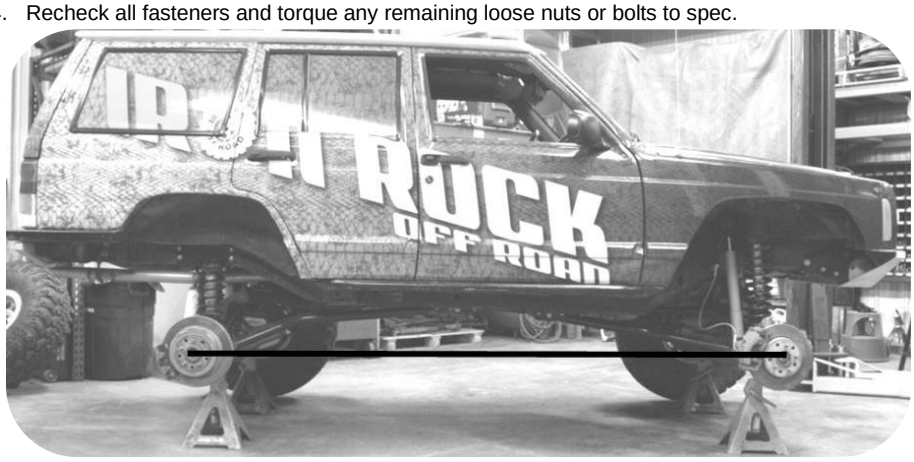
29. Clean up any burrs or sharp edges and grind smooth for an attractive appearance.
30. Clean, prime, and paint any exposed metal.
31. Locate Hardware Kit #6.
32. Install front brake line spacers between front brake line and axle where the brake line meets the shock mount. Use new M6 bolts and washers.
33. Locate the coil spring retainers (black cones) and **HK #297**. The coil spring retainers bolt onto the front upper coil spring perch to keep the coil springs from falling out under extreme droop and hold the upper isolator in place.
34. Drill the existing hole in the center of each front upper coil spring perch with a 11/16" drill bit.
35. Using **HK #297** install the M12 rivet nut into the upper coil spring perch.
36. Apply medium strength thread locker (such as Loctite blue) to the threads of both M12 bolts.
37. Position the upper coil spring isolator on the upper spring perch then install the retainer cone. The retainer cone will hold the isolator in place.
38. Install the upper control arm into the left subframe outer using M14 x 90 hex bolt, 9/16" washer, and M14 flange nut.
    **Tip: Place M14 nut into an open-end wrench then slide it onto the back side of the subframe outer. Thread the M14 bolt into the nut.
39. Install upper control arm with the threaded male end at subframe with the bend hanging down to clear the floor of the Jeep.
40. Torque upper control arm bolt on the chassis side to 135-foot pounds.
41. Connect the upper control arm to the axle using M10 x 80 bolt with washer and nylock flange nut. Do not tighten at this time.
42. Install Lower control arms with threaded adjusting end at the uniframe, and bends facing inward to clear the tires, thread clamping bolts facing down. Use provided M14 x 110 bolts at frame, M14 x 120 at axle, 9/16" washers, and nylock nuts. At the axle, use 2 control arm spacers per side, outboard of control arms.
43. Torque Lower control arm bolts at the chassis to 135-foot pounds. Do not tighten the lower control arms at the axle at this time.
44. Raise vehicle and reposition jack stands under the front and rear axles.
45. Temporarily install tire on one side.
46. Verify that the axle is centered as desired front to rear. Check caster before adjusting.
47. Check caster angle. Using a laser level or string level, set the front axle level to the rear axle (left side and right). Bounce the Jeep up and down to ensure the suspension is in resting position (at exact ride height). Place the angle finder under the axle "C" (or on top of the upper ball joint). Ensure the angle finder is parallel to the Jeep front to rear. This is your caster angle. See chart for desired setting.



48. Adjust control arms to the desired position.
    - To adjust axle front to rear, adjust upper and lower control arms by the same amount. 12 turns equal one inch.
    - To adjust only caster, adjust only the upper control arm (3 turns equals roughly 2 degrees).
    - To adjust both, adjust both at the same time.

    *****Caster angle may need to be adjusted after a test drive to eliminate driveline vibrations. *****
49. Check axle position left to right. Adjust track bar length as needed.
50. Torque Lower control arm bolts at the axle to 135-foot pounds.
51. Torque Upper control arm nut at the axle to 60-foot pounds.
52. Torque lower control arm clamping bolts to 140 in-lb. Be sure to go back and forth between both bolts several times to ensure even clamping.
53. Install tires and wheels. Torque lug nuts (Typical specification is 85-115 ft-lbs., depending on your wheels)
54. Recheck all fasteners and torque any remaining loose nuts or bolts to spec.

Caster Angle (Starting point)	
Lift Height	Caster
3.0"	6.5 degrees
4.0"	5.5 degrees
5.5"	4.5 degrees
6.5"	3.5 degrees



Adjustments and Final Inspection:

55. Check all components for clearance for suspension to fully cycle up and down and wheels to turn lock to lock. Pay special attention to brake lines, axle vent hoses, and ABS wires. Reposition as needed by bending the brackets, relocating, or extending hoses and wiring.

*** A professional front end alignment is required after installation. *** Recommended alignment settings:

Caster: +3.5 to +6.5 See chart above.

Toe-in: +1/16" to +1/8"

Final Safety Warning:

* Re-torque all fasteners after 100 miles, and frequently inspect all safety critical suspension components. It is the responsibility of the installer to ensure all fasteners are properly tightened after installation and to ensure the owner knows his/her ongoing responsibility. It is the responsibility of the owner of the vehicle to be sure all safety critical components are inspected frequently, especially after off road or other demanding use.

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2-5/8" IRO Flex End (6 bolt) Assembly Instructions

Fits All Iron Rock Off Road Long Arm Systems, WJ A-Arms, and Build Your Own Flex End Assemblies.

Before you begin:

- Read and understand installation instructions.
- Contact Iron Rock Off Road with any questions before, during, or after installation.
- ***Ensure that all parts are present and in good condition per attached shipping checklist!***
- Have these tools handy:
  - 5/32" allen head socket
  - 3/8" open end wrench
  - Inch-lb. torque wrench
  - Multipurpose grease/grease gun

Parts Checklist:

- ❑ Outer housing, weld on (may already be attached to your existing control arm)

#127 - 2-5/8" IRO Flex End (6 bolt)

- ❑ 2-5/8" flex end race 91118 (2)
- ❑ Thrust washer 91119 (2)
- ❑ 2-5/8" flex end ball 91117 (1)
- ❑ #10-32 nylock nut (7)
- ❑ #10-32 x 1-3/4" socket head cap screw (6)
- ❑ 90° ¼"-28 grease zerk fitting (1)

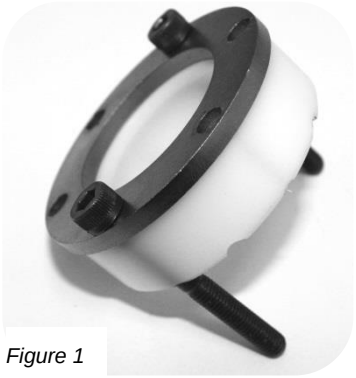


Figure 1

Assembly:

1. Insert two #10-32 socket head cap screws into one thrust washer and one plastic race. Spherical bore of race facing away from thrust washer. (Figure 1)
2. Install this small assembly into the flex end housing. The races are a light press fit, use a wide punch and hammer to assist you if needed.
3. Apply a thin coating of multi-purpose grease to the mating surfaces of the ball and both races.
4. Place the ball in the race (inside the flex end). The ball should perfectly fit the contour of the race. (Figure 2)
5. Insert the other race onto the ball so that the spherical bore is contacting the ball. Once again, the races are a light press fit, use a hammer and wide punch if needed. (The two screws should be through one washer and both races at this point)
6. Insert the second thrust washer on top of the flex end housing, sliding the bolts through the holes. (Figure 3)
7. Start nylock nuts on the two bolts that are in the flex end assembly. Hold the nut and turn the bolt.
8. Insert the remaining four cap screws through the remaining holes and install nuts. (Figure 4)
9. Snug up all of the bolts fairly tight.
10. Torque bolts evenly, starting at one bolt and continuing using a crisscross pattern. Torque all six bolts to 70 in-lbs., then to 85 in-lbs.
11. Install 90°grease zerk fitting so that it is easily accessed in the vehicle.
12. Grease flex end until grease comes out of the races around the ball.
13. Re-torque bolts to 85 in-lbs. after 5 minutes.

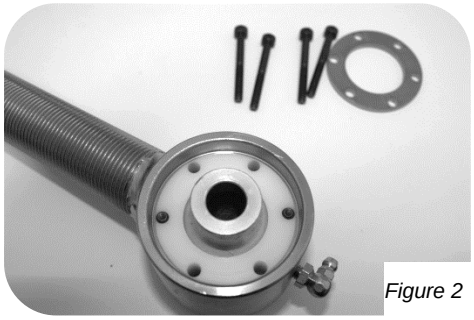


Figure 2

**Reference Only* Complete joint shown fully assembled without housing*

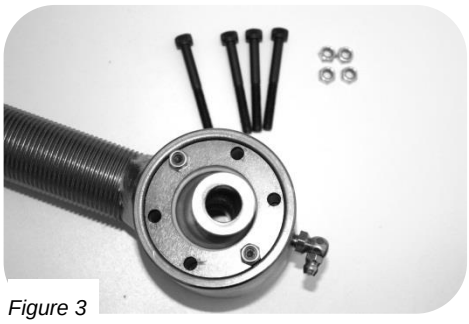


Figure 3

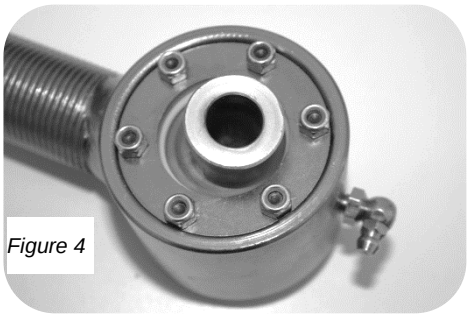


Figure 4

Before you begin:

- Read and understand installation instructions.
- Contact Iron Rock Off Road with any questions before, during, or after installation.
- ***Ensure that all parts are present and in good condition per attached shipping checklist!***
- Have these tools handy:
  - 9/64" Allen head socket
  - 3/8" open end wrench
  - Inch-lb. torque wrench
  - Multipurpose grease/grease gun

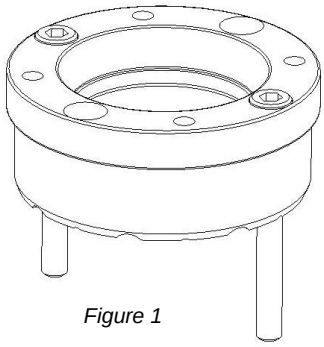


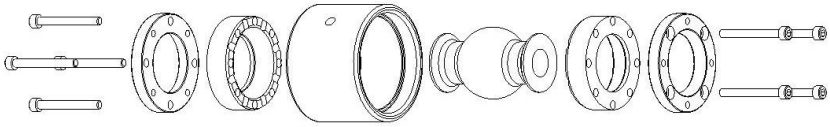
Figure 1

Parts Checklist:

- ❑ Outer housing, weld on (may already be attached to your existing control arm)

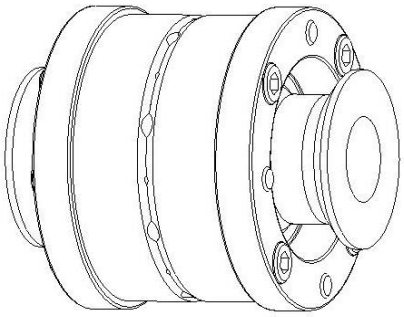
#168 - 2-3/8" IRO Flex End (8 bolt)

- ❑ Inner race 91139 (2)
- ❑ Thrust washer 91138 (2)
- ❑ Ball 91140 (1)
- ❑ #8-32 x 1-1/2" socket head cap screw (8)
- ❑ ¼"-28 90° grease zerk fitting (1)
- ❑ ¼-28 straight grease zerk fitting (1)



Assembly:

1. Insert two #8-32 socket head cap screws into one thrust washer and one plastic race. Spherical bore of race facing away from thrust washer. (Figure 1)
2. Install this small assembly into the flex end housing. The races are a light press fit, use a wide punch and hammer to assist you if needed.
3. Apply a thin coating of multi-purpose grease to the mating surfaces of the ball and both races.
4. Place the ball in the race (inside the flex end). The ball should perfectly fit the contour of the race.
5. Insert the other race onto the ball so that the spherical bore is contacting the ball. Once again, the races are a light press fit, use a hammer and wide punch if needed. (The two screws should be through one washer and both races at this point)
6. Insert the second thrust washer on top of the flex end housing, aligning the bolts with the threaded holes.
7. Start threading the two bolts into the threaded holes of the thrust washer. Do not fully tighten at this time.
8. Insert the remaining cap screws through the remaining holes and get them started in the threaded washer.
9. Snug up all of the bolts fairly tight. Go back and forth, rechecking each bolt several times to ensure even clamping
10. Torque bolts evenly starting at one bolt using a crisscross pattern, like torquing lug nuts. Torque all eight bolts to 50 in-lbs., then to 55 in-lbs.
11. Install 90°grease zerk fitting so that it is easily accessed in the vehicle.
12. Use a grease gun to grease the flex end through the zerk fitting. This will be difficult due to the tight tolerances in the flex joint assembly.
13. Re-torque bolts to 55 in-lbs.



**Reference Only* Complete joint shown fully assembled without housing*