IRON ROCK OFF ROAD

WJ Control Arm Set Instructions

1-877-919-JEEP www.ironrockoffroad.com

Parts Checklist:

- ❑ Iron Rock Off Road logo decal (1)
- ❑ Rear adjustable a-arm with bushings installed 92133B (1)
- ❑ WJ a-arm male end 92162 (1)
- ❑ WJ adjustable a-arm axle mount bracket 92163 (1)
- ❑ Adjustable lower control arm, bushing installed 92347 (4)
  - ❑ LCA male end, bushing installed, straight 99070 (4)
- ❑ Adjustable upper control arm, bushing installed 99068 (2)
  - ❑ UCA male end, 99067 (2)
  - ❑ 1”-14 Hex jam nut (2)

#22 – LCA Spacers Hardware (1)

- ❑ Lower control arm bushing spacer 90194 (12)

#65 - Adjustable LCA Clamping Hardware (2)

- ❑ 1/4"-28 x 1-1/8” socket head cap screw (4)
- ❑ 1/4"-28 hex nut, gr8 (4)

#67 - Adjustable A-arm Hardware (1)

- ❑ 1 1/2-12 jam nut (1)
- ❑ M14 x 35 cl10.9 hex bolt (3)
- ❑ M14 x 100 cl10.9 hex bolt (1)
- ❑ M14 cl10.9 hex nut (1)
- ❑ 1/2” USS washer (5)

#127 - 2 5/8” 6 Bolt IRO Flex End Hardware A-Arm (1)

- ❑ Inner race 91118 (2)
- ❑ Thrust washer 91119 (2)
- ❑ Ball 91117 (1)
- ❑ 10-32 x 1-3/4” Socket Head Cap Screw (6)
- ❑ 10-32 Nylock Nut (6)
- ❑ 90 Degree ¼”-28 Grease Zerk Fitting (1)

~Optional~ Flex Joint Upgrade

- ❑ Adjustable lower control arm, bushing installed 92347 (4)
  - ❑ LCA male end, flex joint, straight 92186 (4)

#127 - 2 5/8” 6 Bolt IRO Flex End Hardware (4)

- ❑ Inner race 91118 (2)
- ❑ Thrust washer 91119 (2)
- ❑ Ball 91117 (1)
- ❑ 10-32 x 1-3/4” Socket Head Cap Screw (6)
- ❑ 10-32 Nylock Nut (6)
- ❑ 90 Degree ¼”-28 Grease Zerk Fitting (1)

#176 – WJ A-Arm Chassis Flex Joint Hardware (2)

- ❑ Inner race 91160 (2)
- ❑ Top End Cap 91158 (1)
- ❑ Bottom End Cap 91159 (1)
- ❑ Ball 91161 (1)
- ❑ 10-32 x 1-1/2” Socket Head Cap Screw (6)
- ❑ 90 Degree ¼”-28 Grease Zerk Fitting (1)

Installation Instructions:

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

We recommend that 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:

- ❑ Read all safety warnings.
- ❑ Read and understand installation instructions.
- ❑ 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
    - ❑ Multi-purpose grease (all poly bushings should be greased before installation)
    - ❑ Anti-seize compound
    - ❑ Angle finder
    - ❑ Cable ties
- ❑ With the Jeep on the ground and weight on the suspension, measure and record the rear pinion angle using an angle finder.
  Pinion angle: _____

Prepare the parts for installation:

1. Locate the A-Arm threaded male end and **hardware kit #127**. Assemble flex end using the attached flex end instructions.
2. Thread 1 ½" jam nut all the way onto the male threads. Apply anti-seize compound to the male threads and thread male end all the way into the A-Arm as a starting point.

Control Arm Starting Length (Center to Center)			
	3" Lift	**4" Lift**	**6.5" Lift**
Front UCA (Upper Control Arm)	14-3/4"	15"	
Front LCA (Lower Control Arm)	15-7/8"	15-7/8"	
Rear LCA	17-7/8"	17-7/8"	
Rear LCA w/ A-arm spacer & T-case drop		18-7/16"	18-5/8"
Rear LCA w/ A-arm spacer only		18-5/8"	

**Note: The lower control arms are the same part front and rear. After adjusting their length, be careful to install them in the correct location.
**Front short arms not recommended at 6.5" of lift or more. Rear short arms not recommended above 6.5" lift.

Front suspension:

3. Lift front of vehicle and support with tall jack stands under the unibody frame.
   **Tip: break lug nuts loose before lifting vehicle.
4. Ensure that vehicle is safely supported.
5. Remove front tires.
6. Place a floor jack under the center of the front axle for support (do no lift vehicle).
7. Remove lower control arms.
8. Install lower control arms with adjusting threads at uniframe side.
9. Install new lower control arms with spacers on the outboard side of the bushings, to push the control arms away from the tires. 2 at each axle bushing, 1 at each unibody bushing. Do not tighten bolts at this time.
10. Ensure male ends are parallel with control arm mounts then 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.
11. Remove upper control arms.
12. Install upper control arms with adjusting threads at the axle side. Do not tighten bolts at this time.
    **Upper control arm length may need to be adjusted based on front driveshaft type and desired caster angle. **
13. Any remaining loose bolts will be tightened after installing the rear suspension.

Rear Suspension:

14. Lift rear of vehicle and support with tall jack stands under the unibody frame.
    **Tip: break lug nuts loose before lifting vehicle.
15. Ensure that the vehicle is safely supported.
16. Remove rear tires.
17. Place a floor jack under the center of rear axle for support (do not lift vehicle).
18. Remove lower control arms.
19. Install lower control arms with adjusting threads at uniframe side.
20. Install new lower control arms with spacers on the outboard side of the bushings, to push the control arms away from the tires. 2 at each axle bushing, 1 at each unibody bushing. Do not tighten bolts at this time.
21. Ensure male ends are parallel with control arm mounts then 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.
22. Lower the axle and allow the suspension to droop as much as possible.

23. Disconnect all brake lines and ABS wires from the a-arm.
24. Place a jack stand under the pinion to keep the axle from rotating.
25. Remove the a-arm and a-arm ball joint from the vehicle (no need to separate them)
26. Locate a-arm mounting bracket and **hardware kit #67**. Install the bracket on top of the axle with provided hardware. Use high strength threadlocker and a washer on each bolt. Torque bolts to 100 ft-lbs.
27. Install the a-arm, with the text facing up (legible from top side), into the factory mounts on the unibody side.
28. Torque the two front M12 bolts to 80 ft-lbs., and rear flex end mounting bolt to 120 ft-lbs.
29. Grease flex end grease zerk.
30. Attach brake lines, ABS lines, etc... to new A-Arm using cable ties.

Final Adjustments and Final Torque:

31. Lower vehicle from jack stands.
32. Measure the rear pinion angle and verify it is the same as the number recorded previously.
33. Adjust the length of the a-arm as needed to achieve desired pinion angle. If a shorter A-Arm length is needed, move the jam nut to the opposite side of the female threads (inside A-Arm instead of outside).
34. Tighten the A-Arm jam nut very tight.
35. With the weight of the vehicle on the springs, torque any loose bolts to spec.
36. Torque all front lower control arm nuts to 135 ft-lbs.
37. Torque upper control arm hardware to 60 ft-lbs.
38. Tighten control arm jam nuts very tight.
39. Torque any remaining loose bolts to spec.
40. Install tires and place the vehicle on the ground.
41. Torque lug nuts to spec. (85-115 ft-lbs. depending on your wheels)

Final Inspection:

42. 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.
43. Re-center steering wheel by adjusting the drag link (longer) until the steering wheel is centered.
44. Check if front tires are centered side to side under the vehicle. Adjust the length of the front track bar as needed.

* A professional front end alignment is recommended after installation.

We recommend the following alignment settings:
Caster: +3.75 to +5.75 (+4.5 is preferred if possible)
Toe-in: .20 degrees (1/16" to 1/8" at the tire)

- Re-torque all fasteners after 100 miles, and frequently inspect all safety critical suspension components.

Steering Shimmy Elimination Checklist

Note: Steering Shimmy is also known as "death wobble" or speed wobble. It is a violent shaking of the vehicle caused by the front tires turning side to side repeatedly until you slow down. It usually occurs after hitting a bump or pothole a various speeds above 30MPH. If you experience this steering shimmy just **remain calm, you still have steering and braking control**. Just gently apply the brakes and slow down until the shimmy disappears.

Safety Warning: Some of these adjustments will reduce steering shimmy, but also reduce steering stability and steering responsiveness. Test drive carefully after every modification, if you feel any modification is unsafe do not proceed. Keeping your vehicle safe to drive is the responsibility of the person making the adjustments and the driver. The driver must notice any unsafe actions of the vehicle and correct the problem immediately (wandering or unresponsive steering). Iron Rock Off Road promotes these modifications for low speed off road use only, some of these modifications may not be safe for use on public or private roads, especially at highway speeds. We recommend working with an experienced alignment shop that has the ability, knowledge, and experience to keep your vehicle safe to drive at highway speeds.

- ❑ Check all tie rod ends for wear and replace as needed.
- ❑ Adjust toe-in to exactly zero. Note: a slight toe-in is preferred for stability, toe out will reduce steering shimmy. See safety warning at the top of this sheet.
- ❑ Adjust caster to 3.0 to 5.5 degrees (more caster will improve stability; less caster will reduce steering shimmy). See safety warning at the top of this sheet.
- ❑ Check steering stabilizer including bushings, replace if condition is less than perfect. We have researched extensively and found the best steering stabilizers available with the least amount of free play.
- ❑ Balance tires and put the best-balanced tires in front. The front tires MUST be dynamically balanced, meaning they must have wheel weights on both the inner and outer rim flanges as directed by the balancing machine. If you don't like hammer-on weights on the outer flange either for appearance reasons or because of frequent rock damage, then use stick-on weights for the outer weights – in this case function must precede form…don't balance 'statically' with weights just on the inner rim edge. If a tire/wheel requires more than 6 ounces of total balance weights (inner and outer combined), do not use it on the front axle.
- ❑ Check all suspension bushings for wear and loose fasteners including control arms and track bar. Any rubber bushing with cracks, or where the rubber is separating from the steel should be replaced.
- ❑ Check steering gearbox for wear and adjust or replace as needed.
- ❑ Check wheel bearings for wear.
- ❑ Check ball joints for wear.
- ❑ Install dual steering stabilizer kit.
- ❑ Reduce tire air pressure (try 29psi for OEM size tires, less for larger tires). Note: Reducing air pressure too far can cause tires to overheat and blowout at highway speeds. See safety warning at the top of this page.
- ❑ Check vehicle stance. Hub to fender measurements should be minimum ¼" higher in the rear (like OEM stance) for maximum stability (this transfers weight to the front tires). Measure on a level surface with normal cargo and ½ tank of gas for maximum accuracy.

IRON ROCK OFF ROAD

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

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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.

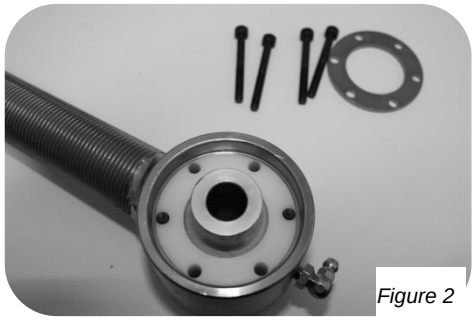

Figure 2

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

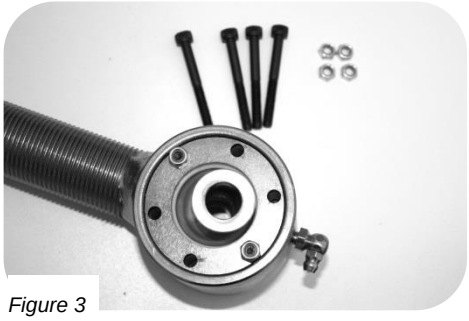

Figure 3

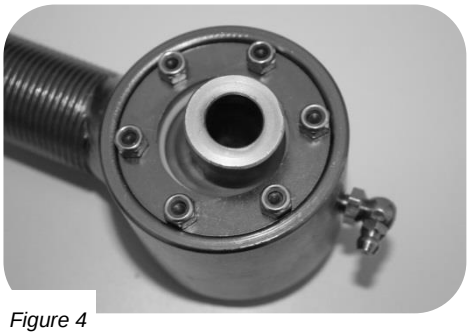

Figure 4