

6.5" Critical Path Lift Kit Installation Instructions, Jeep WJ Grand Cherokee '99-'04



Iron Rock Off Road, Inc.

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Shipping Checklist:

Box 1 (22x22x6)

- 6.5" Front spring (2)
- 6.5" Rear spring (2)

Box 2 (24x14x6)

- Literature (instructions, steering shimmy checklist, spring warranty sheet)
- Invoice
- Iron Rock Off Road logo decal (2)
- Ironrockoffroad.com decal (1)
- Front sway bar links 11.25" center to center (2)
- Rear sway bar links 14.625" center to center (2)
- WJ 4 hole transfer case drop spacer (2)
- Front control arm mounting bracket (1 left, 1 right)
- A-arm spacer (1)
- Upper coil spring retainer (2)

Hardware kit 1 (Front Track Bar)

- Track bar bushing (4)
- 12mm track bar bushing sleeve (2)

Hardware kit 2 (Rear Sway Bar Links)

- 3/4" hourglass bushing (4)
- 12mm sway bar bolt sleeve (2)
- 10mm sway bar bolt sleeve (2)
- M10 x 60 sway bar link bolt (2)
- M10 X 1.5 hex nut (2)
- 7/16 USS washer (2)

Hardware kit 3 (Shocks)

- 12mm shock bolt sleeve (2)
- 7/16" USS washer (6)
- 5/16 x 1 gr8 bolts (4)
- 5/16-18 gr8 hex nut (4)
- 5/16 USS washer (8)

Hardware kit 4 (Front Sway Bar Links)

- 3/4" hourglass bushing (4)
- 12mm sway bar bolt sleeve (4)

Hardware kit 5 (T-Case Drop)

- M10 x 150mm class 10.9 bolt (4)
- 3/8" USS washer (4)

Hardware kit 6 (Front Brake Line Spacers, Coil Spring Retainers)

- Front brake line spacer (10mm SBL sleeve) (2)
- M6 x 45 front brake line bolt (2)
- 1/4" washer (2)
- 1/2 x 5" socket head cap screw (2)

Hardware kit 7 (Front Control Arm Brackets)

- WJ front control arm bracket nut plate 2.75" center to center (4)
- 7/16 x 1 1/4" gr8 hex bolt (8)
- 7/16" washer (8)

Hardware kit 9 (shocks)

- Front shock barpin BP7 (2)

Hardware kit 19 (A-Arm Spacer)

- M14 x 80 cl10.9 hex bolt (3)
- 1/2" USS washer (3)

Hardware kit 22 (LCA spacers)

- Lower control arm bushing spacer (10)

Box 3 (24x6x6)

Standard shocks (without shock upgrade)

- Front shocks RC 8170 (2)
- Rear shocks RC 8111 (2)

With nitro shock upgrade only

- Front shocks RC 9170 (2)
- Rear shocks RC 9111 (2)

With DT8000 shock upgrade only

- Front shocks DT 8421 (2)
- Rear shocks DT 8403 (2)

Box 4 (36x12x12)

- Front Iron Y
 - Bushing installed
 - Super flex joint assembled, adjusted, and set screw installed
 - Caster adjuster assembled including 5/16 x 1 gr5 carriage bolts, gr8 nuts, and 1/4" USS washers (2)
 - M10x90 cl10.9 hex bolt, 3/8" USS washers (2), and m10 cl10.9 nylock nut
- Front Lower control arm with bushing installed and super flex joint assembled, adjusted, and set screw installed (1)
- Rear lower control arms with bushings installed 18.625 (c to c) (2)
- Track bar 33 9/16" center to center (1)

Installation Instructions:

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

Installing a suspension lift kit raises the center of gravity of the vehicle. This increases the possibility of a rollover accident. Avoid sudden maneuvers at high speed and avoid all situations where a side rollover may occur. In addition larger tires decrease braking performance, please drive accordingly. We recommend a tire and wheel combination that make the vehicle's track width wider (wheels with less backspacing). This will lower the center of gravity and add stability. We also 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 and lug nuts 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 polyurethane bushings should be greased before installation)
 - A coil spring compressor makes installation easier but is not required.
 - Hand drill with good quality 7/16" drill bit
 - 1/2 -20 fine thread hand tap with tap handle and cutting oil.
 - Touch up paint to match the color of your unibody frame.
 - Rubberized undercoating.
 - High strength threadlocker adhesive such as Loctite red.
 - Anti-sieze compound for bolts.

Prepare the parts for installation:

1. Locate hardware kit 3 and the rear shocks.
2. Grease and install the 5/8" I.D. shock bushings included with the shocks (if needed).
3. Grease and install the 12mm shock bolt sleeves from hardware kit 3. The rear shocks use 12mm sleeves at the top and bottom.
4. Leave the rest of the hardware in the bag for future use.
5. Locate hardware kit 9 and the front shocks.
6. Lubricate the bushings and the barpins with multi-purpose grease. Clamp the barpin vertically in a bench vise, push the shock down onto the barpin, rotating the shock as you go. Repeat for other front shock.
7. Locate the front track bar and hardware kit 1.
8. Grease and install the track bar bushings.
9. Grease and install the track bar bolt sleeves.
10. Locate the rear sway bar links (14.625" center to center) and hardware kit 2.
11. Grease and install the hourglass bushings.
12. Grease and install the sway bar link bolt sleeves. Each link gets one 12mm I.D. sleeve and one 10mm I.D. sleeve.
13. Leave the rest of the hardware in the bag for future use.
14. Locate the front sway bar links (11.25" center to center) and hardware kit 4 (If you purchased JKS Sway Bar Disconnect system, refer to JKS instructions).
15. Grease and install the hourglass bushings.
16. Grease and install the sway bar link bolt sleeves. All sleeves are the same (12mm I.D.).

Transfer Case Drop Kit and Lower Control Arm Mounting Brackets:

17. Locate the front lower control arm mounting brackets , 4 hole transfer case drop spacers, hardware kit 5, and hardware kit 7.
18. Lift front of vehicle and support with jack stands under the front axle.
 - **Tip: break lug nuts loose before lifting vehicle.
19. Ensure that vehicle is safely supported.
20. Remove front tires.
21. Place a floor jack under the center of the transmission/transfer case crossmember for support.
22. On one side remove the 4 bolts that hold the crossmember to the unibody.
23. Lower the crossmember away from the unibody enough to install the transfer case drop spacer and the correct left or right side lower control arm mounting bracket. It may be necessary to loosen the bolts on the other side of the crossmember.
24. Install the t-case drop spacer and bracket using the 2 long existing bolts and the 2 new bolts and washers.
25. Align the lower control arm mounting bracket to the vehicle.
26. Tighten bolts
27. Using the bracket as a guide, drill the four 7/16" mounting holes at the front of the bracket.
28. Take the bracket out and remove any burrs from the drilled holes and paint any exposed metal.
29. Insert the nut plates through the hole in the unibody frame and move them into position above the drilled holes. The nuts should face up, and the plate should face down.
30. Spray the area where the control arm mounting bracket meets the unibody frame with rubberized undercoating to seal out any moisture between the bracket and the unibody.
31. While the undercoating is still wet, re-install the mounting bracket and transfer case spacer. Use washers under all bolts.
32. Torque all 8 new 7/16" bolts to 65 foot. pounds.
33. Torque all 8 transfer case crossmember bolts to 35 foot pounds.
34. Repeat for the other side.
35. Re-torque all 16 bolts.

Front Suspension:

36. Lift front of vehicle support with tall jack stands under the unibody frame or transfer case crossmember.
37. Ensure the vehicle is safely supported.
38. Place a floor jack under the front axle for support, do not lift vehicle.
39. Remove the front shocks.
40. Remove the track bar.
41. Remove front sway bar links.
42. Locate hardware kit 6.
43. 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.
44. Remove driver's side upper and lower control arms. Loosen Passenger side upper and lower control arms. Remove nuts but do not remove bolts.
45. With the axle hanging as low as possible, remove coil springs and lower coil spring isolators.

46. Locate Iron Y control arm and 2 control arm bushing spacers (large 1/4" thick washers).
47. Install Iron Y control arm on the drivers side. First install the axle end lower bushing into the axle with 2 spacers on the outboard side, then rotate up to install the arm onto the upper control arm bushing on the axle. Use existing lower control arm bolts, and new m10 x 90 bolt washers, and locknut for the upper control arm. Finally install the back side into the new lower control arm mounting bracket. Do not tighten bolts at this time.
48. Remove passenger side upper and lower control arms.
49. Install passenger side lower control arm using 2 control arm bushing spacers on the outboard side of the axle end. Do not tighten bolts at this time.
50. Locate the coil spring retainers (approx 2" diameter x 5" long aluminum cylinders) and the remainder of hardware kit 6. The coil spring retainers bolt onto the front upper coil spring perch to keep the coil springs from falling out under extreme droop.
51. Using your 1/2-20 fine thread hand tap, tap the existing hole in the center of each front upper coil spring perch.
52. Apply a liberal coating of high strength threadlocker adhesive (such as Loctite red) to the threads of both 1/2" x 5" socket head cap screws. Apply anti-seize compound to the unthreaded shaft of the bolt (not the threads).
53. Position the coil spring retainer onto the upper coil spring pad and install the bolt. Torque to 60 inch lbs. Repeat for opposite side.
54. Snap the coil spring isolator onto the new spring.
55. Install new spring in vehicle being careful to align isolator pin with the hole in the spring bucket.
56. Repeat for other front coil spring.
57. Install new front shocks using provided bolts, washers, and nuts. Tighten upper stud mount nuts just enough to slightly compress the bushings. Overcompressing these bushings will result in damage to the bushings and premature bushing failure.
58. Install new sway bar links. Re-use the existing bolts and nuts. Torque to 78 ft. lbs.
59. Install track bar. Torque to 80 ft. lbs.
 *Note: The bend in the track bar is for clearance of the bracket on the axle. The bent end of the track bar attaches to the axle with the bend on the bottom. The straight end attaches to the unibody. (It should look somewhat like a "J").
60. Any remaining loose bolts will be tightened after the rear suspension installation.

Rear Suspension:

61. Lift rear of vehicle and support with tall jack stands under the unibody frame.
 **Tip: break lug nuts loose before lifting vehicle.
62. Ensure that the vehicle is safely supported.
63. Remove rear tires.
64. Place a floor jack under the center of rear axle for support (do not lift vehicle).
65. Remove rear shocks.
66. Remove Sway bar links.
67. Loosen lower control arm bolts. Remove nuts but do not remove bolts.
68. Allow suspension to droop as much as possible.
69. Remove coil springs.
70. Locate a-arm spacer block and hardware kit 19.
71. Raise rear axle up to a comfortable position to access the 3 a-arm retaining bolts on top of the differential.
72. Place a jack stand under the pinion to keep the axle from rotating.
73. Remove the 3 a-arm bolts on top of the differential.
74. Install the a-arm spacer between the a-arm and the top of the differential using supplied hardware.
75. Torque to 100 ft. lbs.
76. Locate lower control arms and 6 control arm bushing spacers (large 1/4" thick washers).
77. Install new lower control arms with spacers on the inboard side of the bushings, 2 at each axle bushing, 1 at each unibody bushing. Do not tighten bolts at this time.
78. Install new coil springs being careful to align the spring to the isolator.
79. Raise rear axle and install new shocks. Use provided 7/16" washers on the upper shock mounts, place one washer behind the shock bushing, and 2 washers in front of it (toward the outside of the vehicle).
80. Install sway bar links using existing upper bolt and the new lower bolt, washer, and nut. Torque to 78 ft. lbs. (upper bolt) and 50 ft.lbs. (lower bolt).
81. Raise the vehicle and support with jack stands under the front and rear axles.
82. Torque all lower control arm nuts to 120 foot pounds.
83. On the front axle, set the caster adjuster on the Iron Y to the middle of the range as a starting point. Torque upper control arm nut to 60 foot pounds. Torque the four locking nuts to 15 foot pounds.
84. Torque any remaining loose bolts to spec.
85. Install tires and place the vehicle on the ground.
86. Torque lug nuts to spec. (85-115 foot pounds depending on your wheels)

Adjustments and Final Inspection:

87. 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.
88. Re-center steering wheel by adjusting the drag link (longer) until the steering wheel is centered.

* A professional front end alignment is required after installation. We recommend the following alignment settings:

Caster: +3.25 to +6.0 (+4.0 is preferred)

Toe-in: +.20 degrees (+1/16" to +1/8" measured at the tire)

Final Safety Warning:

* Re-torque all fasteners including lug nuts after 100 miles, and frequently inspect all safety critical suspension components. It is the responsibility of the installer to be sure 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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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 (e.g. 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.



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Iron Rock Off Road Coil Spring Warranty

All coil springs manufactured by Iron Rock Off Road are guaranteed to be free from defects in materials and workmanship for as long as you own the spring. Our springs are guaranteed to never lose more than 5% of their free length* as stated below, with the following restrictions:

- This warranty in its entirety applies only to the **original owner** and the **original sales receipt is required**. **There will be no exceptions to this requirement.**
- Damage from mechanical impact, rust, corrosion, heat exposure, or any other type of damage will void this warranty.
- This warranty does not apply to normal wear.
- This warranty does not apply to surface finish.

Description:

Original Free Length*

IR-W3FSP: WJ 3" front spring	18.625"
IR-W3RSP: WJ 3" rear spring	15.75"
IR-W4FSP: WJ 4" front spring (10.75 coils)	18.25"
(14.4 coils)	19.75"
IR-W4RSP: WJ 4" rear spring	16.875"
IR-W5FSP: WJ 5.5" front spring	20.5"
IR-W5RSP: WJ 5.5" rear spring	18.5"
IR-W6FSP: WJ 6.5" front spring	21.75"
IR-W6RSP: WJ 6" rear spring	19.5"

*Free Length is measured parallel to the centerline of the coil spring. The longest measurable free length will be used for warranty consideration.