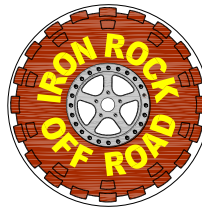


Over the Knuckle Heavy Duty Tie Rod Installation: Jeep WJ Grand Cherokee 1999-2004



Iron Rock Off Road, Inc.

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Shipping Checklist:

Box 1

- Instructions
- Invoice
- Iron Rock Off Road logo decal (1)
- Tie Rod (1)
- Rod end QA1 XMR8-10 (2)

Hardware Kit 43 (WJ OTK tie rod)

- 5/8-18 jam nut (2)
- 1/2-20 x 3" hex bolt, fine thread, gr8 (2)
- WJ OTK tie rod washer (custom made thin washer) (4)
- 1/2" Flat washer (2)
- 1/2" I.D. tapered sleeve (2)
- 1/2-20 hex nut, fine thread, gr8 (2)
- 1/2-20 nylock nut, fine thread, gr8 (2)
- Clamp type steering stabilizer mount (steering clamp) (1)

Removal of existing tie rod:

1. Raise the front end of the vehicle slightly off the ground and secure on jack stands.
2. Remove tires.
3. Measure from center of stud to center of stud and record that length here _____
*You will need this measurement later when adjusting the new tie rod.
4. Remove the factory tie rod, including tie rod ends and steering stabilizer.

Tie rod installation:

5. Install steering stabilizer clamp onto tie rod.
6. Recommended, but not required: Apply anti-seize compound to the threads of both heim joints.
7. Using the measurement you took in step 3 above, adjust the new tie rod to the same length, taking care to adjust both heims equally out of tie rod and that your measurement is from center of bolt hole to center of bolt hole. Do not tighten jam nuts yet.
8. Install the passenger side (the end with material removed for drag link clearance) of the new tie rod using the following procedure:
 - a. Insert tapered adapter sleeve into knuckle
 - b. Locate (1) 1/2 x 3" bolt, (1) flat washer, (2) custom thin washers, (1) 1/2" nut and (1) 1/2" nylock nut
 - c. Onto bolt, add first one flat washer, then one thin washer.
 - d. Place bolt through the top side of the of the heim joint
 - e. Add another thin washer to the bolt (thin washers should "sandwich" the heim)
 - f. Insert bolt into the knuckle from the top with the tapered adapter installed
 - g. Apply high strength threadlocker to bolt, then on the bottom side of the knuckle, install 1/2" nut.
 - h. Torque to 95 ft./lbs.
 - i. Install 1/2" nylock nut to prevent loosening of your steering system. Torque to 95 ft./lbs.
9. Repeat step 8 for the driver's side.
10. Install wheels and torque to spec.

Steering stabilizer installation:

11. Use the existing bolt, nut, and washers through the new clamp. Adjust length of stabilizer to be centered with the tires pointed straight ahead. Cycle steering both directions to ensure stabilizer does not contact any other parts or bottom out or extend too far.

Alignment Procedure:

12. A professional alignment is recommended and will result in the safest handling and minimized tire wear. As a temporary solution, with careful measurements you can set your toe-in fairly accurately using a tape measure.
13. Make sure the vehicle is on a level surface and the front tires are raised slightly off the ground with jack stands under the axle and the vehicles weight on the suspension.
14. Make a mark anywhere on the tread area of each front tire. The marks do not have to be in the same spot on each tire. This method insures that your measurements are accurate regardless of rim and tire runout, even bent rims or untrue tires will not affect the measurement.
15. Measure from one mark to the other making sure your measurement is parallel to the axle housing and your marks are facing exactly forward. This is your front measurement.
16. Rotate tires so the marks are facing exactly backward. Measure from one mark to the other making sure your measurement is parallel to the front axle housing. This is your rear measurement.
 - For 29-32" tire diameter** (measured): adjust your tie rod until the front measurement is 1/16" less than your rear measurement.
 - For 33-36" tire diameter** (measured): adjust your tie rod until the front measurement is 1/8" less than your rear measurement.
17. Tighten both jam nuts, very tight.
18. Re-check your measurements.
19. Lower your vehicle from the jack stands.
20. Double check to ensure that all threads are tight.
21. Re-torque jam nuts and all fasteners frequently.