

IRON ROCK OFF ROAD

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

**JK OTK Tie Rod
Instructions**

Parts List:

- ☐ Instructions
- ☐ Iron Rock Off Road logo decal 10001 (1)
- ☐ Over the Knuckle Tie Rod 95119 (1)
- ☐ Over the Knuckle Drag Link 95120 (1)
- ☐ Track Bar Relocation Bracket 80030 (1)
- ☐ Sway Bar Link Relocation Bracket 80047 (1)
- ☐ Steering Stabilizer Relocation Bracket 80035 (1)
- ☐ Sway Bar Spacer Plate 80046 (1)
- ☐ Tie Rod Spherical rod end XMR10-12 (2)
- ☐ Drag Link Spherical rod end XMR-12 (2)

#187 – Tie Rod Hardware (1)

- ☐ M6 x 1.0 x 20mm socket head cap screw (4)
- ☐ 5/8-11 x 2.5" Tapered Tie Rod Bolt 80043 (2)
- ☐ 5/8-11 castle nut (2)
- ☐ 9/16" F436 washer (4)
- ☐ 1/8" x 1 1/2" cotter pin (2)

#188 – Drag Link Hardware (1)

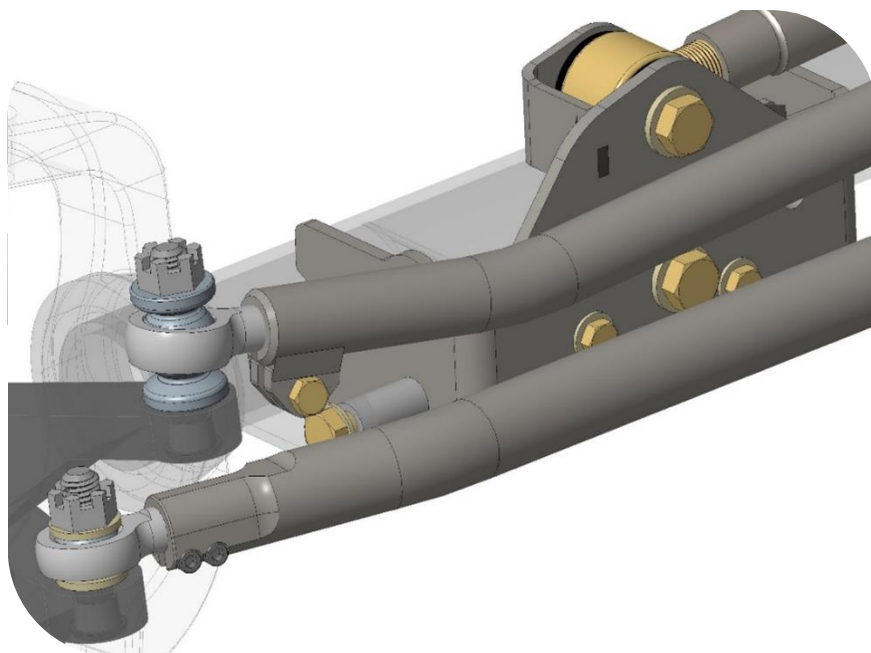
- ☐ 5/8-11 x 3" Tapered Bolt 80042 (1)
- ☐ 5/8-11 castle nut (2)
- ☐ Steering Clamp 95018 (2)
- ☐ M12 x 60mm hex bolt cl 10.9 (2)
- ☐ M12 nylock nut cl 10.9 (2)
- ☐ Double adjuster 95017 (1)
- ☐ High Misalignment washer 95015 (4)
- ☐ Spacer Sleeve 95123 (2)
- ☐ Pitman arm tapered sleeve 80039 (1)
- ☐ 5/8-11 x 4" drilled hex bolt, gr8 80041 (1)
- ☐ 9/16" F436 washer (2)
- ☐ 3/8-16 x 1 1/4" hex bolt, gr8 (1)
- ☐ 3/8-16 nylock nut, gr8 (1)
- ☐ 3/8 Mil spec washer 95229A480 (1)
- ☐ 1/8" x 1 1/2" cotter pin (2)

#189 – JK Track Bar and Sway Bar Link Relocation Hardware (1)

- ☐ 2.5" U-Bolt 80045 (2)
- ☐ 3/8" serrated flange nut (6)
- ☐ M12 Sway Bar Spacer 92038 (2)
- ☐ M14 track bar spacer 80040 (1)
- ☐ M12 x 70mm hex bolt (2)
- ☐ M12 nylock nut (2)
- ☐ 7/16 USS washer (4)
- ☐ 3/8 x 1" hex bolt (2)
- ☐ 3/8 SAE washer (2)
- ☐ M14 x 80mm hex bolt (2)
- ☐ M14 nylock flange nut (2)

#190 – JK Steering Stabilizer Relocation Hardware (1)

- ☐ 2" U-Bolt 80044 (1)
- ☐ 3/8" serrated flange nut (2)
- ☐ M12 x 60mm hex bolt, cl 10.9 (1)
- ☐ M12 x 90mm hex bolt, cl 10.9 (1)
- ☐ M12 nylock hex nut (2)
- ☐ 7/16 F436 washer (4)
- ☐ Drag Link Clamp 95018 (1)
- ☐ 6" Cable Tie (1)



Installation Instructions:

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

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

Before you begin:

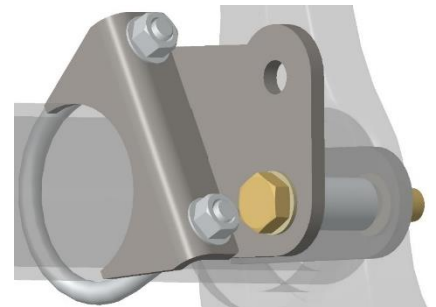
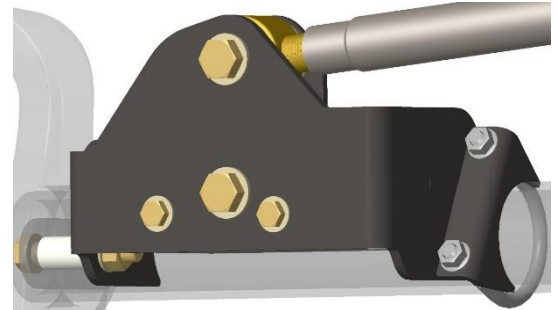
- ☐ Read all safety warnings.
- ☐ Read and understand installation instructions.
- ☐ Contact Iron Rock Off Road with any questions before, during, or after installation.
- ☐ **Ensure that all parts are present and in good condition using the included shipping checklist.**
- ☐ Be sure you have the following tools and supplies:
 - ☐ Floor jack and jack stands.
 - ☐ Basic hand tools (wrenches, sockets, etc.).
 - ☐ Torque wrench (ft-lb and in-lb)
 - ☐ Tape measure
 - ☐ Medium to large size flat file, fine tooth
 - ☐ Hand drill and 3/8" drill bit
 - ☐ Anti-seize compound

Removal of existing parts:

1. Raise the front end of the vehicle and secure on jack stands under the frame.
2. Remove front tires.
3. Measure from center of stud to center of stud on your existing tie rod. Record that length here _____
****NOTE**** 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.
5. Remove the factory drag link.
6. Disconnect the sway bar links from the axle.
7. Disconnect track bar from the axle and position it out of the way.

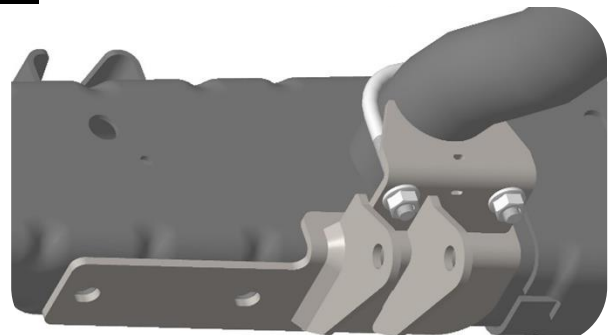
Track Bar and Sway Bar Link Relocation Bracket Installation:

8. Position the Track Bar Relocation Bracket over the factory track bar bracket on the axle. Attach it loosely with the provided larger diameter M14 spacer in place of the factory track bar using the M14 x 80mm bolt and nut from hardware kit #189.
9. Install the 3/8 x 1" bolts, 3/8 SAE washers and 3/8" serrated flange nuts through the front side of the bracket. Do not tighten at this time.
****NOTE**** It is common that the 3/8" holes in the OEM track bar bracket are not round from the factory. It may be necessary to drill them slightly to ensure easy fitment of hardware.
10. Install the 1 3/8" M12 spacer between the Track Bar Relocation Bracket and the sway bar mount on the axle. Use the M12 x 70mm bolt, nylock nut and washer from hardware kit #189. Do not tighten at this time.
11. Install the 2.5" U-Bolt onto the end of the Track Bar Relocation Bracket using the 3/8" serrated flange nuts from hardware kit #189.
12. Tighten the M14 lower track bar bolt to 120 ft-lb, the 3/8" bolts to 35 ft-lb, the U-bolt to 40 ft-lb, and the M12 sway bar bolt to 75 ft-lb.
13. Reinstall the track bar in the upper track bar mounting hole in the bracket. Do not tighten at this time. The track bar will be tightened with the Jeep on the ground at ride height.
14. Position the Sway Bar Link Relocation Bracket on the axle next to the sway bar link tab. Attach it loosely with the provided 1 3/8" M12 spacer, M12 x 70mm bolt, nylock nut and washers from hardware kit #189.
15. Install the 2.5" U-Bolt onto the Sway Bar Link Relocation Bracket using the 3/8" serrated flange nuts from hardware kit #189.
16. Tighten the U-Bolt to 40 ft-lb and the M12 sway bar bolt to 75 ft-lb.
17. Reinstall sway bar links with original hardware onto the holes provided on the new brackets.

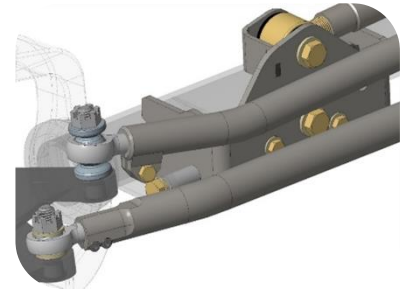


Steering Stabilizer Relocation Bracket Installation:

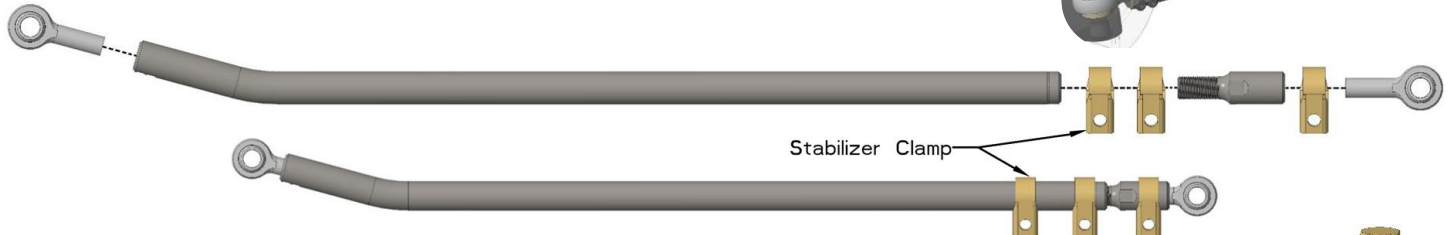
18. Remove the two bolts securing the sway bar to the frame above the track bar bracket.
19. Loosen the two bolts securing the sway bar on the opposite side of the frame. Do not fully remove them at this time.
20. Cut and discard the zip tie holding the electrical harness to the round tubular crossmember on the frame.
21. Install the Steering Stabilizer Relocation Bracket onto the frame. Ensure the electrical harness is positioned outside the bracket. Ensure the U-Shaped portion aligns with the round tubular crossmember on the frame.
****TIP:** Slide a zip tie through the zip tie slots on the U-Shaped bracket before installing the bracket to the frame. Do not tighten at this time.
22. Reinstall the original sway bar mounting bolts through the Steering Stabilizer Relocation Bracket. Do not tighten at this time.



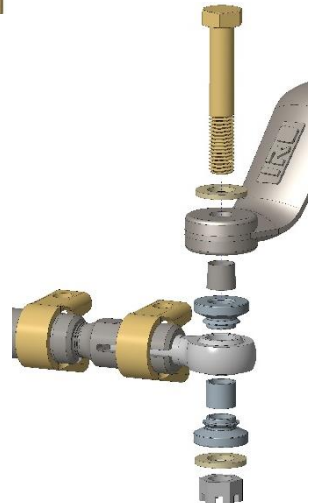
23. Install the 2" U-Bolt over the round tubular crossmember with 3/8" flange nuts from hardware kit #190.
*****CAUTION***** A brake line is located on top of the round tubular crossmember. Ensure the brake line is not clamped under the U-Bolt.
24. With the bracket loosely assembled remove the other sway bar mounting bolts from the opposite side of the frame.
25. Install the Sway Bar Spacer Plate between the sway bar mount and the frame using the original sway bar mounting bolts.
26. Tighten the sway bar mounting bolts to 45 ft-lb and the U-Bolt to 40 ft-lb.
27. Secure the electrical harness to the Steering Stabilizer Relocation Bracket with a zip tie. Zip tie holes are provided on the bracket.



Drag Link Installation:

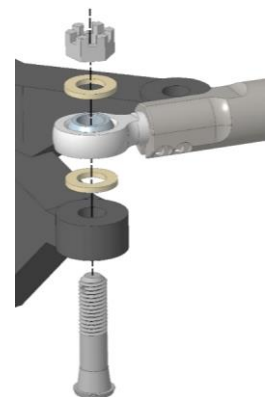


28. Thread one XMR-12 (3/4" hole) heim fully into the end of the drag link closest to the bend until it stops. Thread it back out 2 full turns.
29. Install 3/8-16 clamping bolt from the front side of the drag link. Attach with nylock nut and washer from hardware kit #188. Tighten the clamping bolt until slight drag is required to rotate it.
30. Slide two clamps onto the opposite end of the drag link then thread double adjuster into the end of the drag link.
31. Slide a clamp onto the double adjuster then thread the other XMR-12 (3/4" hole) heim into the double adjuster.
32. Install M12 x 60mm bolts, nylock nuts, and washers into both drag link clamps. Do not tighten at this time. Attach the empty stabilizer clamp firmly on the drag link shaft using the M12 x 60mm bolt, nut and washers from hardware kit #190. The stabilizer will be installed after the steering wheel is centered.
33. Install tapered sleeve into the bottom of the pitman arm then install the drag link to the pitman arm using two high misalignment washers, and 5/8-11 x 4" bolt, nylock nut and washers.
34. Insert the 5/8-11 x 3" Tapered Bolt into knuckle from the bottom side. Install the draglink to the tapered bolt using the high misalignment washers, castle nut and cotter pin.
35. Orient the drag link with the bend forward and both heim joints resting as shown in the picture. The clamping tabs (near the bend) should be pointing straight down when oriented properly. Tighten 5/8" bolts to 105 ft-lb, clamping bolt to 40 ft-lb, adjuster clamps to 55 ft-lb.



Tie Rod Installation:

36. Thread XMR 10-12 (5/8" hole) heim joint into each end of the tie rod.
37. Using the measurement taken in step 3 above, adjust the new tie rod to the same length, taking care to adjust both heims equally out of the tie rod and that your measurement is from center of bolt hole to center of bolt hole.
****TIP:** As a starting point, thread each heim in fully, then turn each one out 3 full turns. Be sure that the heims are parallel.
38. Install M6 x 1.0 x 20mm socket head cap screws and nuts onto tie rod from hardware kit #187. Do not tighten at this time.
39. File top and bottom of the knuckles until they are flat where the tie rod mounts. This important step will help prevent loosening of the bolts.
40. Install the new tie rod using 5/8-11 x 2.5" Tapered Bolt, F436 washers, 5/8" castle nuts and 1/8" cotter pins from hardware kit #187.
41. Insert the Tapered Bolt into knuckle from the bottom side with washers on either side of the heim. Position the clearance flat facing up and parallel to the ground with both heims resting at their forward most angle as shown in the picture.
42. Torque the castle nut to 105 ft-lb and secure with the cotter pin.
43. Tighten M6 socket head clamping bolts to 140 in-lbs.
44. Reinstall wheels/tires and torque lug nuts to 85-115 ft-lb.
45. With the Jeep on the ground at ride height, tighten the track bar to 120 ft-lb.



Alignment Procedure:

46. 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.
47. 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.
48. 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.
49. 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.



50. 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.

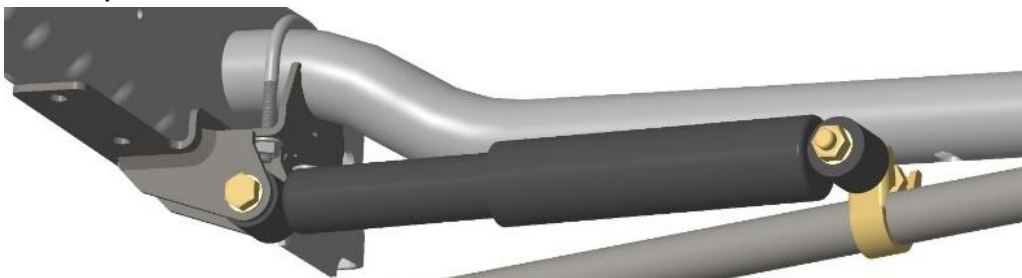
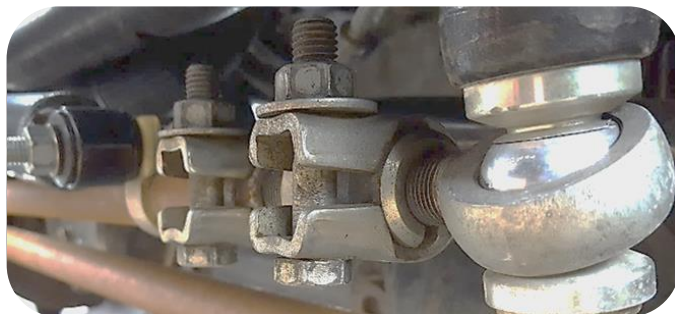
For 29-32" tire diameter (measured): adjust your tie rod until the front measurement is 1/16" less than your rear measurement.

For 33-36" tire diameter (measured): adjust your tie rod until the front measurement is 1/8" less than your rear measurement.

51. Re-check your measurements.
52. Lower your vehicle from the jack stands.
53. Double check to ensure that all fasteners are tight.
54. Re-torque all fasteners frequently.

Steering wheel alignment:

55. Ensure all fasteners are torqued to spec and cotter pins are installed.
56. Go for a short test drive.
57. Note steering wheel angle when driving straight and steady.
58. Drive straight into your working area making sure steering wheel angle matches angle during test drive.
59. Loosen only the double adjuster clamps on drag link.
60. Turn only the double adjuster until steering wheel is straight.
61. Tighten clamps. Ensure the clamping bolts are on the front side of the drag link.
62. Test drive again, recheck steering wheel angle.
63. Repeat steps if necessary.



Steering stabilizer adjustment:

64. With the Toe-in adjusted, the steering wheel centered and the Jeep at ride height, turn the steering wheel to the right until full lock is reached. This should be the point where the steering stabilizer would be fully collapsed: its shortest length.
65. Remove the M12 x 60mm bolt from the unused stabilizer clamp on the drag link.
66. Install your steering stabilizer into the Steering Stabilizer Relocation Bracket on the frame using the M12 x 60mm bolt, nut and washers from the unused clamp on the drag link.
67. Attach the other end of the stabilizer to the clamp on the drag link using the M12 x 90mm bolt, nut and washers from hardware kit #190. The clamp should point up, the stabilizer should mount to the front side of the clamp.
68. Ensure the stabilizer is fully collapsed by compressing it by hand.
69. Note the location of the stabilizer clamp on the drag link with masking tape or a paint marker.
70. Extend the stabilizer slightly (approx. 1/8") on the drag link and tighten the clamp. The clamp should point up, the stabilizer should mount to the front side of the clamp.
71. Torque the stabilizer clamp to 55 ft-lb and 65 ft-lb at the bracket.
72. The stabilizer should now be centered with the tires pointed straight ahead. Double check by cycling the steering both directions to ensure stabilizer does not limit your steering angle.

Final Safety Warning:

* Re-torque all fasteners after 100 miles, and frequently inspect all safety critical steering 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.

