TRAIL FORTRESS

BUILT FOR THE TRAIL. CHECKED FOR YOUR TRUCK.

# Rough Country 502059 Installation Instructions

3-Inch M1 Loaded Struts for 2014-2025 Ford F-150 4WD

Part number: 502059

trailfortress.com/rough-country-m1-loaded-strut-pair-502059

Scan for fitment, price and install help

ROUGH COUNTRY SUSPENSION SYSTEMS®

# 2004-18 Ford F150 Loaded Strut Instructions

**Thank you for choosing Rough Country for all your suspension needs.**

Rough Country recommends a certified technician install this system. In addition to these instructions, professional knowledge of disassembly/reassembly procedures as well as post installation checks must be known. Attempts to install this system without this knowledge and expertise may jeopardize the integrity and/or operating safety of the vehicle.

**⚠NOTICE** Please read instructions before beginning installation. Check the kit hardware against the parts list on the next page. Be sure you have all needed parts and know where they go. Also, please review tools needed list and make sure you have the needed tools.

## PRODUCT USE INFORMATION

**⚠WARNING** As a general rule, the taller a vehicle is, the easier it will roll. Seat belts and shoulder harnesses should be worn at all times. Avoid situations where a side rollover may occur.
Generally, braking performance and capability are decreased when larger/heavier tires and wheels are used. Take this into consideration while driving. Do not add, alter, or fabricate any factory or after-market parts to increase vehicle height over the intended height of the Rough Country product purchased. Mixing component brands is not recommended.
Rough Country makes no claims regarding lifting devices and excludes any and all implied claims. We will not be responsible for any product that is altered. If questions exist we will be happy to answer any questions concerning the design, function, and correct use of our products.

**⚠WARNING This vehicle will require the EPAS (Electronic Power Assist Steering) plugs to be disconnected prior to beginning installation of this kit. See installation instructions. Failure to disconnect these plugs may result in damage to the EPAS module resulting in an error message being displayed, which will require replacement of the EPAS module.**

## DEALER AND VEHICLE OWNER

**⚠NOTICE** Any vehicle equipped with any Rough Country product should have a “Warning to Driver” decal installed on the inside of the windshield or on the vehicle’s dash. The decal should act as a constant reminder for whoever is operating the vehicle of its unique handling characteristics.

INSTALLING DEALER - it is your responsibility to install the warning decal and forward these installation instructions on to the vehicle owner for review. These instructions should be kept in the vehicle for its service life.

**⚠NOTICE** Note to installer : Before installation begins we recommend that a test drive be performed. While driving check for uncommon sounds and/or vibrations . What you feel and hear during the test drive will only magnify once lift kit is installed. Advise you to discuss possible issues identified from drive with customer before proceeding to install this kit.

**Tools Needed**

5mm Allen
8mm Wrench/Socket
10mm Wrench/Socket
15mm Wrench/Socket
18mm Wrench/Socket
21mm Wrench/Socket
27mm Wrench/Socket
30mm Wrench/Socket
Hand Vacuum Pump
Torque Wrench
Hammer
Floor Jack
Jack Stands

**Torque Specs:**

| Size | Grade 5 | Grade 8 |
|---|---|---|
| 5/16” | 15 ft/lbs | 20 ft/lbs |
| 3/8” | 30 ft/lbs | 35 ft/lbs |
| 7/16” | 45 ft/lbs | 60 ft/lbs |
| 1/2” | 65 ft/lbs | 90 ft/lbs |
| 9/16” | 95 ft/lbs | 130 ft/lbs |
| 5/8” | 135 ft/lbs | 175 ft/lbs |
| 3/4” | 185 ft/lbs | 280 ft/lbs |
| | Class 8.8 | Class 10.9 |
| 12MM | 55ft/lbs | 75ft/lbs |
| 14MM | 85ft/lbs | 120ft/lbs |
| 16MM | 130ft/lbs | 165ft/lbs |
| 18MM | 170ft/lbs | 240ft/lbs |

## INSTALLATION INSTRUCTIONS

1. Jack up the front of the vehicle and support the vehicle with jack stands, so that the front wheels are off the ground. Next, remove the front tires/wheels, using a 21mm deep well socket.
2. Using a 15mm socket remove the front skid, if the truck is equipped with a full front skid.
3. Disconnect the EPAS (Electronic Power Assist Steering) Plugs as shown located on the steering assembly by the front differential. **See Photo 1 & 2.** **<u>This must be done BEFORE installation is started.</u>**

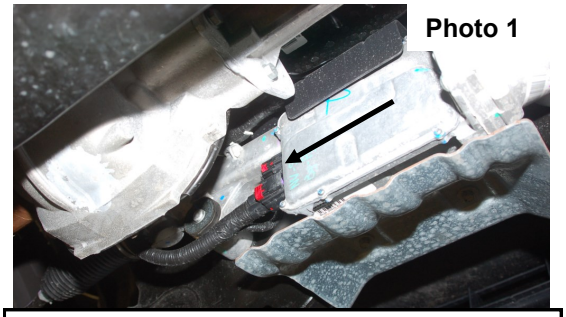


**Photo 1**

**Locate the EPAS plug.**

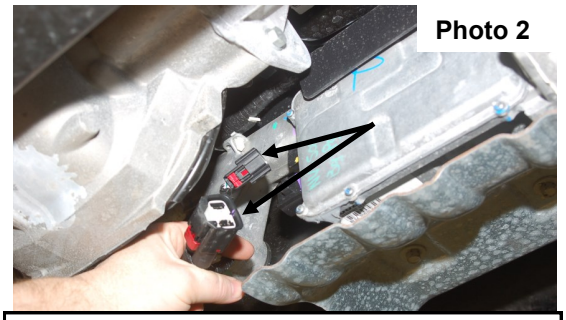


**Photo 2**

**Unplug the EPAS.**

4. Using a 21mm wrench remove the nut from the tie rod on the knuckle. Using a tie rod/ball joint puller, remove the tie rod from the knuckle. Push linkage forward to make room for installation. Retain factory hardware. **See Photo 3**.
5. Using a 8mm socket remove the ABS bracket from the knuckle and also remove the brake line bracket with a 10mm socket. **See Photo 4.**

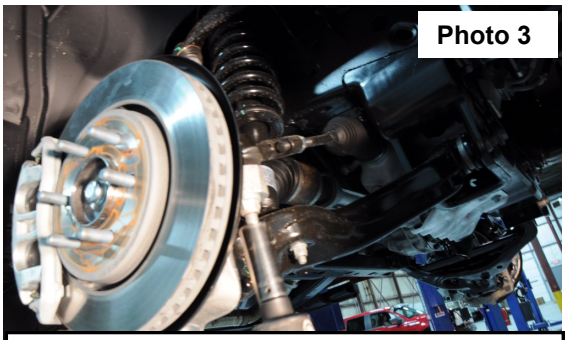


**Photo 3**

**Remove the tie rod end from the knuckle.**

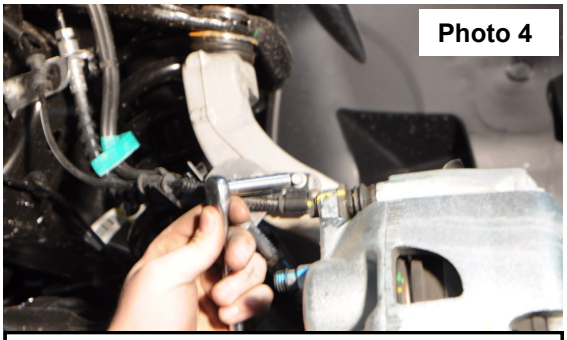


**Photo 4**

**Remove the ABS bracket from the knuckle.**

6. Next remove the caliper bolts with a 18mm socket as shown in **Photo 5** and the dust shield bolts with a 8mm socket. Remove the ABS wire from the knuckle with a 5mm Allen wrench.
7. Use a pair of pliers to pull off the axle dust cap and remove the axle nut with a 15mm socket. **See Photo 6.**

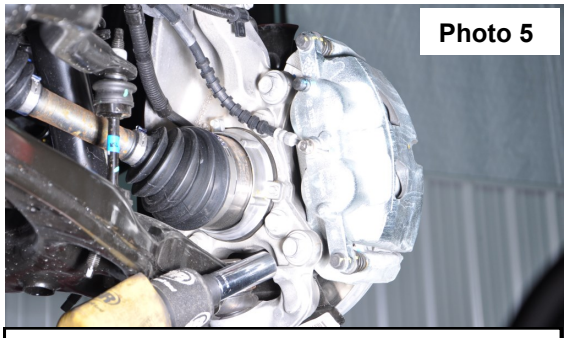


**Photo 5**

**Remove the brake caliper.**

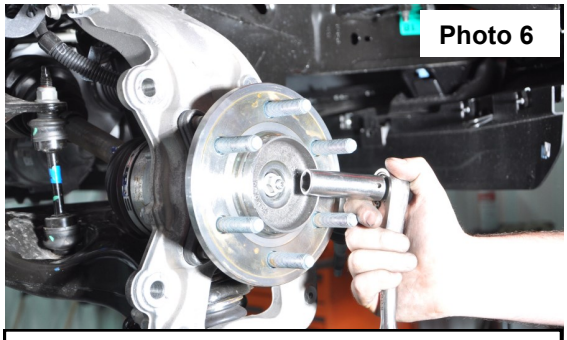
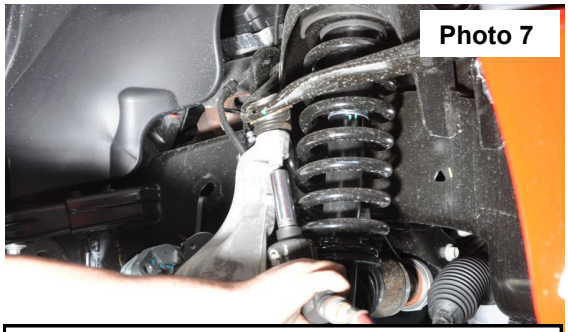


**Photo 6**

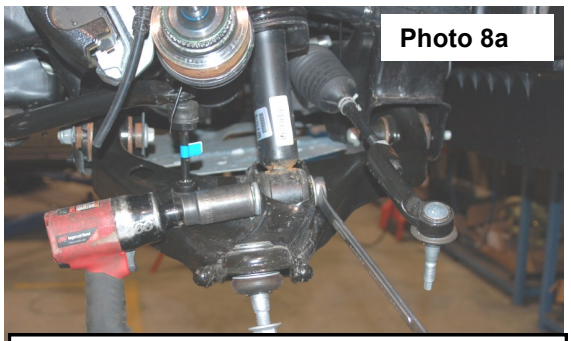
**Remove the axle nut.**

8. Remove the sway bar nut using a 18mm wrench. Retain factory hardware.
9. Using a 21mm wrench and a 1 1/16” socket loosen the lower control arm bolts. Do not remove the bolts just loosen them so you can later swing the lower control arm down.

10. Place jack stand under the knuckle for support. Remove upper control arm nut, using a 18mm wrench. Using the appropriate tool remove the ball joint to separate from the upper control arm. Do not allow the knuckle to pull out far enough that it pulls the shaft out of the differential. **See Photo 7.**
11. Remove the lower strut bolt using a 30mm socket and 27mm wrench for 04-13 models and 18mm socket for 14-18 models. **See Photos 8a&b.** Retain hardware for reuse.

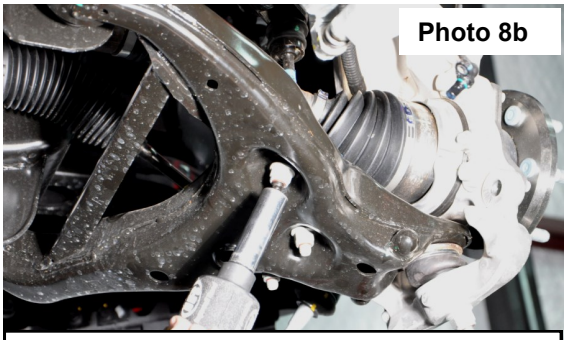


Remove the upper control arm nut.



Remove the lower strut bolt. 04-13 Models

12. Using a 18mm wrench, remove the nuts on the upper strut tower that holds the assembly in place. **See Photo 9.**
13. Lower the jack to let the lower control arm and knuckle swing down so the strut can be removed.
14. Remove the upper control arm.



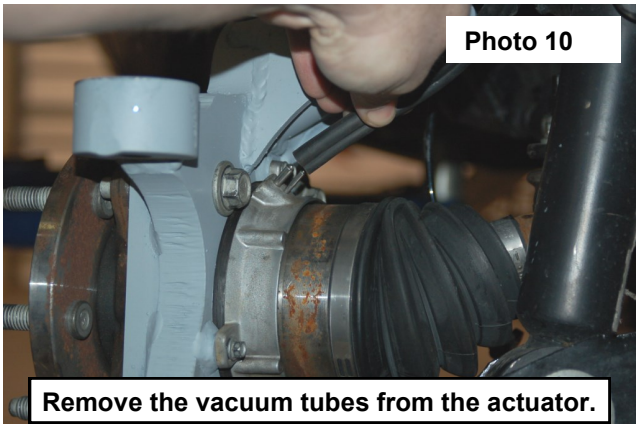
Remove the lower strut bolts. 14-18 Models



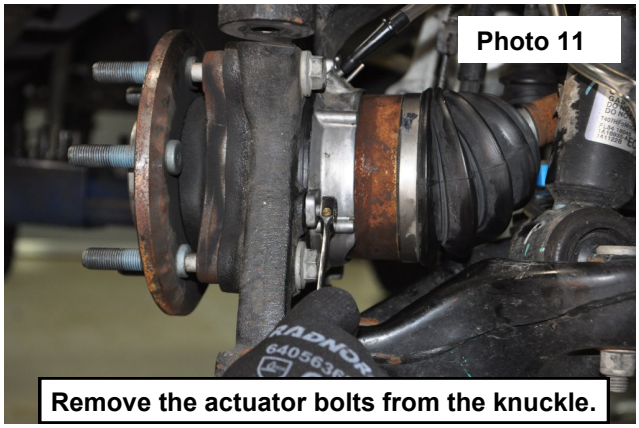
Remove the upper strut nuts.

**⚠ NOTICE** **We recommend using OE instructions for disassembly and assembly of IWE actuator, the following instructions are for reference only.**

15. Disconnect vacuum tubes from the actuator. **See Photo 10.**
16. Using a 8mm wrench, remove the (3) bolts securing the actuator to the knuckle. **See Photo 11.**
17. Push CV axle inward allowing the knuckle to pivot outward to allow for more clearance to remove the strut.

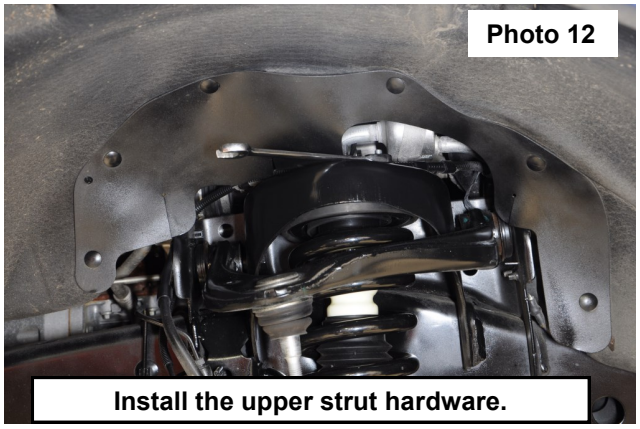


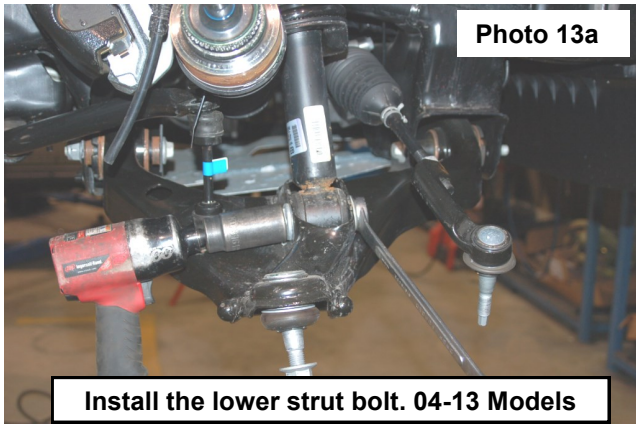
Remove the vacuum tubes from the actuator.



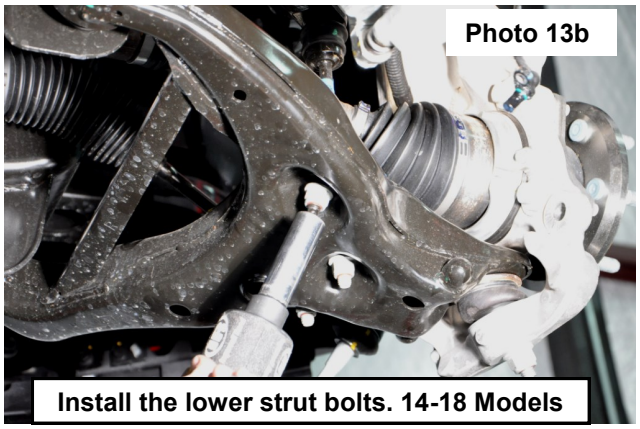
Remove the actuator bolts from the knuckle.

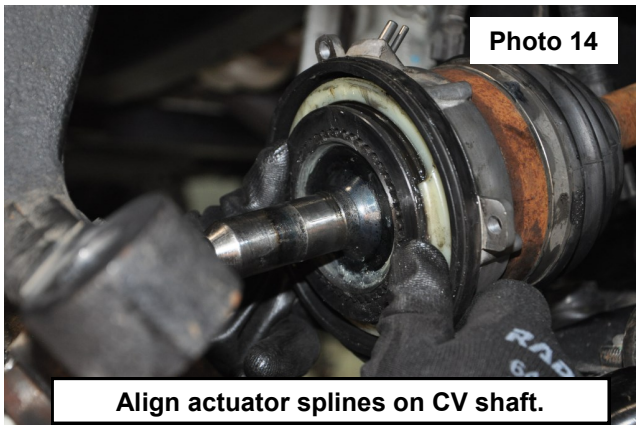
18. Install the supplied strut in the upper mount using the factory hardware. Tighten using an 18mm wrench. **See Photo 12.**
19. Install the lower strut bolt using a 30mm socket and 27mm wrench for 04-13 models and 18mm socket for 14-18 models. **See Photos 13a&b.** Retain hardware for reuse.



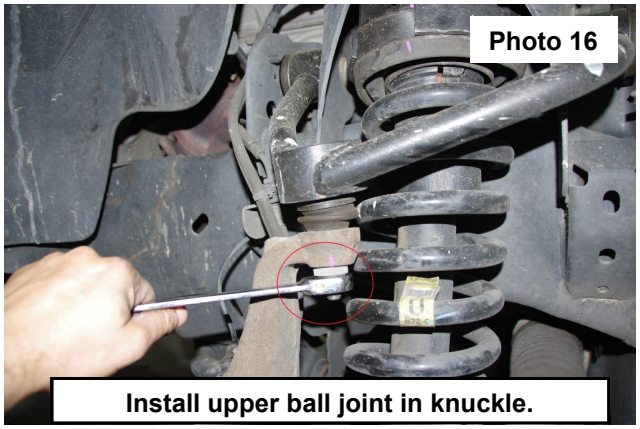

20. **We recommend using OE instructions for disassembly and assembly of IWE actuator, the following instructions are for reference only.**
21. **NOTICE** **Make sure the actuator splines line up to the splines on the CV shaft. See photo 14.**



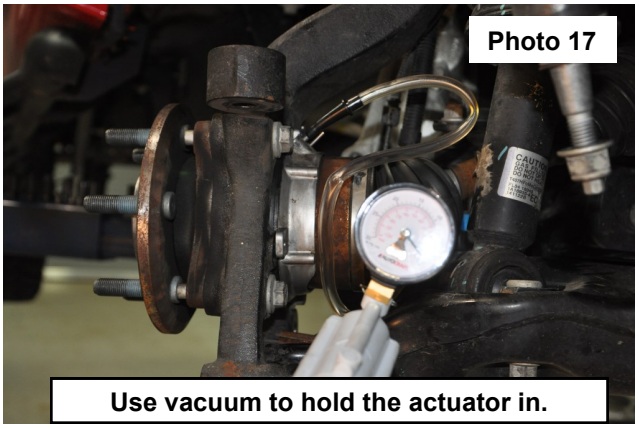




22. Install CV shaft into the knuckle assembly. **See Photo 15.**
23. Using a floor jack, raise the lower control arm and connect the upper ball joint on the upper control arm to the spindle. Tighten using an 18mm wrench. **See Photo 16.**

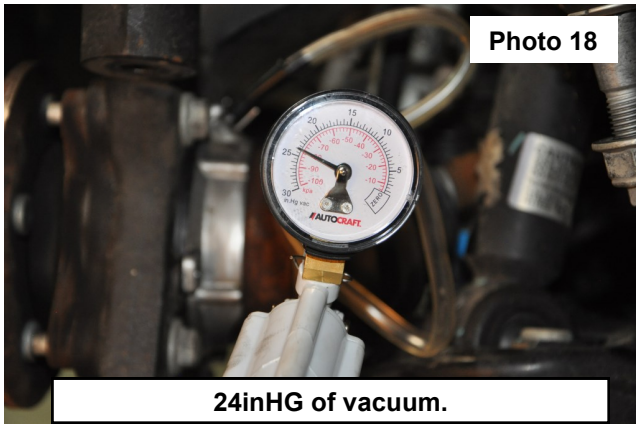


24. Reinstall the steering linkage nut using a 21mm wrench. Using a hand vacuum pump, apply and hold 24inHG of vacuum to the actuator through the large port. **See Photos 17 and 18.**



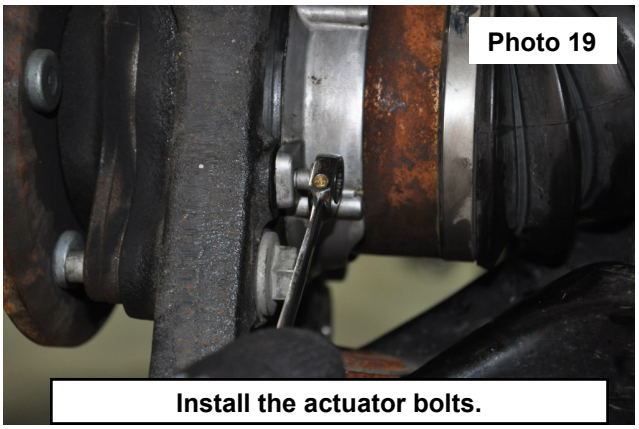
Use vacuum to hold the actuator in.



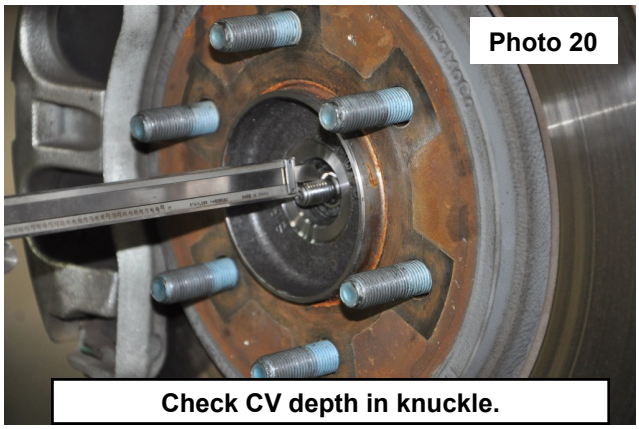
24inHG of vacuum.

25. Install the (3) bolts securing the actuator to the knuckle and tighten using an 8mm wrench. **See Photo 24.**

26. **⚠ NOTICE** With vacuum still applied to actuator. Measure the depth of the CV shaft threads protruding through the hub bearing. If **minimum 15.5mm or .61"** is not achieved, rotate the hub to eliminate binding of the splines**. See Photo 25.**

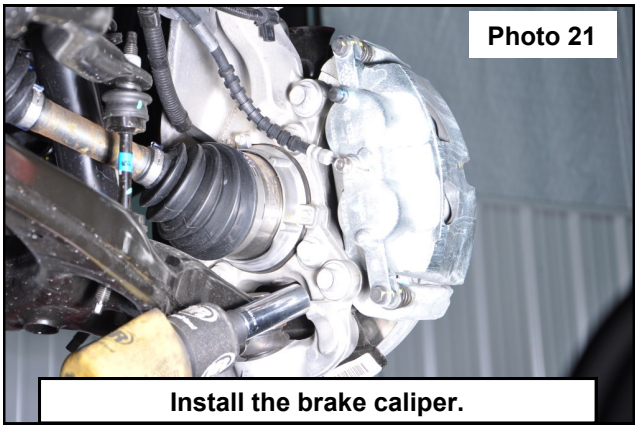


Install the actuator bolts.

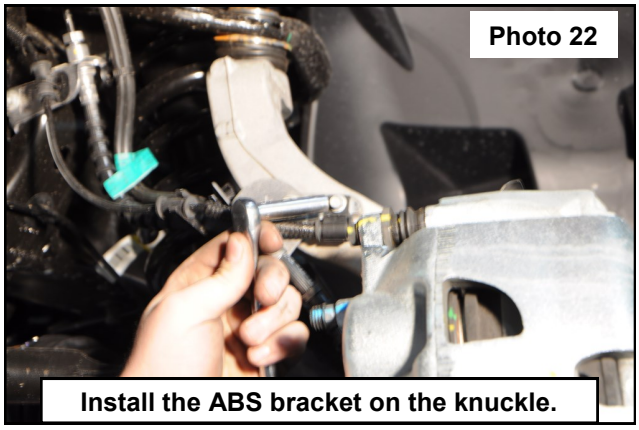


Check CV depth in knuckle.

27. Install axle nut and tighten to 30 lb.ft. **⚠ NOTICE** **Do Not Use an impact**, caution must be taken or damage to shaft may occur.
28. Verify free rotation of the hub with **NO** CV shaft rotation. No clicking or grinding noise should be present
29. Release the vacuum from the actuator and rotate the hub to engage the actuator. You may hear/feel the actuator engage.
30. Verify that the hub and CV rotate together. Reconnect the vacuum lines to the actuator.
31. Next slide on the brake rotor and install the brake caliper with the factory hardware. Torque to factory specs using an 18mm socket. **See Photo 21.**
32. Install the ABS line and brake line onto the knuckle using the factory hardware. Torque to factory specs using an 8mm socket and a 10mm socket. **See Photo 22.**

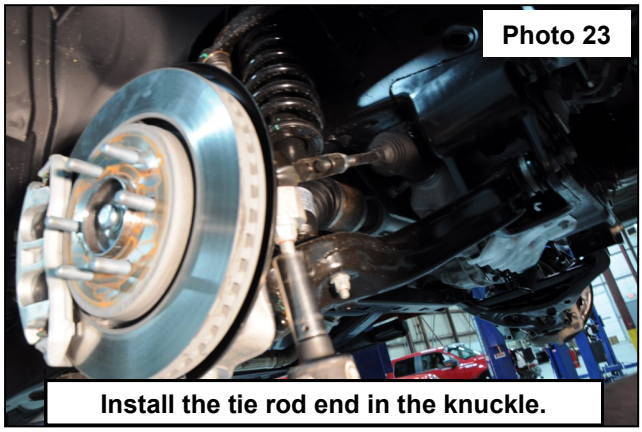


Install the brake caliper.

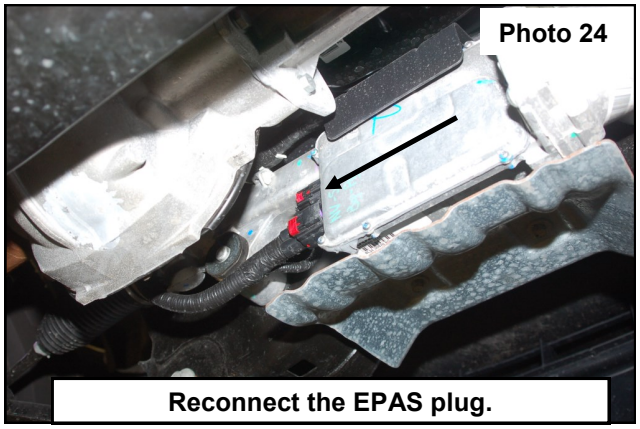


Install the ABS bracket on the knuckle.

33. Install the tie rod end on the knuckle using the factory hardware. Tighten using a 21mm wrench. **See Photo 23.**
34. Repeat steps 4-33 on opposite side of vehicle.
35. Using a 18mm wrench, reinstall sway bar using factory hardware. Torque to factory specs.
36. Install the wheels / tires, using a 21mm deep well socket.
37. Reconnect the EPAS plugs. **See photo 24.**
38. Jack up the vehicle and remove the jack stands. Lower the vehicle to the floor and torque all bolts to factory specifications.
39. Vehicle will have to have a front-end alignment.



**Install the tie rod end in the knuckle.**



**Reconnect the EPAS plug.**

**Thank you for choosing Rough Country for all your suspension needs.**

By purchasing any item sold by Rough Country, LLC, the buyer expressly warrants that he/she is in compliance with all applicable , State, and Local laws and regulations regarding the purchase, ownership, and use of the item. It shall be the buyers responsibility to comply with all Federal, State and Local laws governing the sales of any items listed, illustrated or sold. The buyer expressly agrees to indemnify and hold harmless Rough Country, LLC for all claims resulting directly or indirectly from the purchase, ownership, or use of the items.