TRAIL FORTRESS

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Rough Country 51270 Installation Instructions

6-Inch Radius Arm Lift Kit, V2 Shocks: Super Duty 4WD (2017-2022)

Part number: 51270

trailfortress.com/rough-country-6-inch-lift-kit-51270

Scan for fitment, price and install help

921512000

ROUGH COUNTRY SUSPENSION SYSTEMS®

2017-22 F250/F350 SRW 6” Radius Arm Lift Kit

Thank you for choosing Rough Country for your suspension needs.

Rough Country recommends a certified technician installs this system. In addition to these instructions, professional knowledge of disassemble/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.

Please read all the instructions before beginning the installation. Check the kit hardware against the parts list. Be sure you have all the needed parts and understand where they go. Also please review the tools needed list and make sure you have needed tools.

PRODUCT USE INFORMATION

⚠WARNING As a general rule, the taller a vehicle is the easier it will roll. We strongly recommend seat belts and shoulder harnesses should be worn at all times. Avoid situations where a side rollover may occur.

Braking performance and capabilities are decreased when significantly larger/heaver tires and wheels are used. Take this into consideration while driving. Also, speedometer recalibration is necessary when larger tires are installed.

Do no add, alter, or fabricate any factory or after-market parts which increase vehicle height over the intended height of the Rough Country product purchased. Mixing component brands, lifts, and/or combining body lift with suspension lifts voids all warranties. 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.

This kit is packaged as a leveling kit. If you desire a different look or if the vehicle has a tool box or added weight in the rear, please consult with your sales representative about block / u-bolt options.

This 6” kit was developed for a **37x12.50x20** tire on an after market wheel w/ 4.5” back spacing.

⚠NOTICE **NOTICE TO DEALER AND VECHICLE OWNER**

Any vehicle equipped with any Rough country product must have the “Warning to Driver” decal installed on the sun visor or dash. The decal is to 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 to forward these installation instructions on too the vehicle owner for review and to be kept in the vehicle for its service life.

Tools Needed:

10mm Socket / Wrench
15mm Socket / Wrench
18mm Socket / Wrench
19mm Socket / Wrench
21mm Socket / Wrench
24mm Socket /Wrench
30mm Socket
34 Socket
5/8” Socket / Wrench
1 1/8” Wrench
Jack Stands
Jack
Pliers
Pitman Arm Tool
Torque Wrench

Torque Specs:

Size	Grade 5	Grade 8	Size	Class 8.8	Class 10.9
5/16”	15 ft/lbs	20ft/lbs	6MM	5ft/lbs	9ft/lbs
3/8”	30 ft/lbs	35ft/lbs	8MM	18ft/lbs	23ft/lbs
7/16”	45 ft/lbs	60ft/lbs	10MM	32ft/lbs	45ft/lbs
1/2”	65 ft/lbs	90ft/lbs	12MM	55ft/lbs	75ft/lbs
9/16”	95 ft/lbs	130ft/lbs	14MM	85ft/lbs	120ft/lbs
5/8”	135ft/lbs	175ft/lbs	16MM	130ft/lbs	165ft/lbs
3/4”	185ft/lbs	280ft/lbs	18MM	170ft/lbs	240ft/lbs

RC ROUGH COUNTRY

trailfortress.com/rough-country-6-inch-lift-kit-51270

Kit Boxes

w/ Overload Springs– 3.5” Rear Axle Tube

51230 (Kit w/ N3 Shocks):

9296
1536BOX1 x 2
1550BOX2
512BOX1
155030
55000

51250 (Kit w/ Vertex Shocks):

9296
1536BOX1 x 2
1550BOX2
512BOX1
55000
690004 x 2
690005 x 2

51270 (6” Kit w/ V2 Shocks):

9296
1536BOX1
1550BOX2
512BOX1
55000
760754
760805

w/ Overload Springs– 4” Rear Axle Tube

55430 (6” Kit w/ N3 Shocks):

9296
1536BOX1 x 2
1550BOX2
512BOX1
155030
7675
55000

55450 (6” Kit w/ Vertex Shocks):

9296
1536BOX1 x 2
1550BOX2
512BOX1
7675
55000
690004 x 2
690005 x 2

55470 (6” Kit w/ V2 Shocks):

9296
1536BOX1
1550BOX2
512BOX1
7675
55000
760754
760805

Kit Boxes

No Overload Springs– 3.5” Rear Axle Tube

55630 (Kit w/ N3 Shocks):

9296
1536BOX1 x 2
1563BOX4
512BOX1
155030
55000

55650 (Kit w/ Vertex Shocks):

9296
1536BOX1 x 2
1563BOX4
512BOX1
55000
690004 x 2
690005 x 2

55670 (6” Kit w/ V2 Shocks):

9296
1536BOX1
1563BOX4
512BOX1
55000
760754
760805

No Overload Springs– 4” Rear Axle Tube

55830 (6” Kit w/ N3 Shocks):

9296
1536BOX1 x 2
1563BOX4
512BOX1
155030
7673
55000

55850 (6” Kit w/ Vertex Shocks):

9296
1536BOX1 x 2
1563BOX4
512BOX1
7673
55000
690004 x 2
690005 x 2

55870 (6” Kit w/ V2 Shocks):

9296
1536BOX1
1563BOX4
512BOX1
7673
55000
760754
760805

Kit Box & Bag Contents

Box Kit

9296
- Coil Springs-2

1536BOX1 x 2
- Radius Arm-1
- 1536BAG3

1550BOX2
- 1481BAG1
- 3/4BAG
- 3/4 x 3-9/16 x 18 Ubolts-4
- Rear Blocks-2
- U-Bolt Inversion Plates-2

1563BOX4
- 1481BAG1
- 3/4BAG
- 3/4 x 3-9/16 x 15 Ubolts-4
- Rear Blocks-2
- U-Bolt Inversion Plates-2

512BOX1
- 1550BAG2
- 512INSTBAG
- 512BAG1
- Pitman Arm-1
- Dr Sway Bar Shim-1
- Sway Links-2
- Stabilizer Frame Mount-1
- Stabilizer Bar Mount-1
- Sway Bar Brackets-4
- Pass Brake Line Bracket-1
- Dr Brake Line Bracket-1
- Track Bar Bracket-1
- Rear Brake Bracket-1
- Bump Stop Extensions-2

155030
- 660754 Frt Shocks-2
- 660805 Rr Shocks-2

55000
- 55000BAG1
- 55000BAG2
- TC Clocking Ring-1
- Trans Crossmember-1
- TC Mount Relocation Bracket-1
- Trans Skid Drop Bracket-1
- Wire Loom Bracket-1

7675
- 3/4BAG
- 3/4 x 4-1/16 x 18-1/2 Ubolts-4
- Rear Blocks-2
- U-Bolt Inversion Plates-2

7673
- 3/4BAG
- 3/4 x 4-1/16 x 15-1/2 Ubolts-4
- Rear Blocks-2
- U-Bolt Inversion Plates-2

760754-Frt V2 Shock Pair

760805-Rear V2 Shock Pair

690004-Frt Vertex Shock

690005-Rear Vertex Shock

Kit Bags

512INSTBAG
- Instruction Sheet-1
- Warning to Driver Sticker-1

55000BAG2-*Clocking Ring Instructions*
- Instruction Sheet-1

1536BAG3-*Radius Arm Bag*
- Cam Plates-2
- 18mm x 130mm Bolt-1
- 18mm Nylock Nut-1

1550BAG2-*Kit Bag*

For Sway Bar Drop Brackets:
- 1/2" x 1.5" Bolts-4
- 1/2"Flat Washers-4
- 1/2" Nylock Nuts-4
- 12mm x 65mm Bolts-4
- 12mm Flange Lock Nuts-4

For Frt Brake Lines:
- 5/16" x 3/4" Bolts-2
- 5/16" Flat Washers-2
- 5/16" Flange Lock Nuts-2

For Stabilizer Bracket:
- 1/2" x 1.75" Bolt-1
- 1/2" Flat Washser-1
- 1/2" Nylock Nut-1
- 5/16" Flange Lock Nuts-2
- 5/16" x 1-1/4" x 2" U-Bolt-1
- 12mm x 55mm Bolt-1
- 12mm Flange Lock Nut-1

512BAG1-*Kit Bag*

For Bump Stop Extension:
- 8mm x 95mm Bolts-2
- 8mm Flat Washers-2

For Rear Brake Brackets:
- 7/16" x 1" Bolt-1
- 7/16" x 1.25" Bolts-4
- 7/16" Top Lock Nuts-5
- 7/16" Flat Washers-10

Kit Bags

3/4BAG-*U-bolt Bag*
- 3/4" Washers-8
- 3/4" Nuts-8

1481BAG1-*Anti Wrap U-bolt Bag*
- 7/16" x 3 1/8" x 3 1/4" Square U-bolt-4
- 7/16" x 3 1/8" x 4 1/4" Square U-bolt-4
- 7/16" Washer-8
- 7/16 Nylock-8

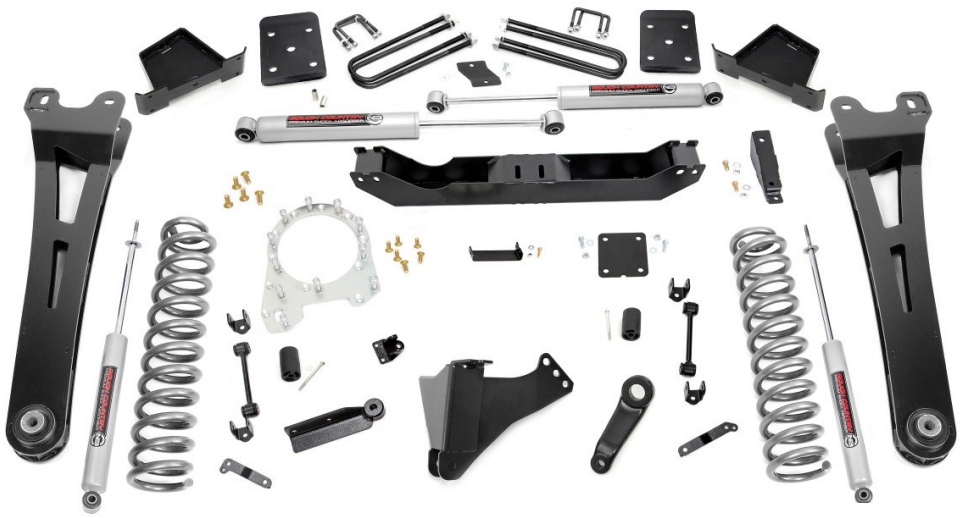
55000BAG1-*Transfer Case Clocking Ring*

For Clocking Ring:
- 9/16" Nut-1
- 7/16"-20 Hex Nut-12
- 7/16"-20 x 1.5" Studs-11
- 7/16"- Lock Washers-11
- 7/16" Flat Washers-3
- 10mm Flat Head Bolts-11

For Wire Loom Bracket:
- 1/4" x 1" Bolt-1
- 1/4" Flat Washer-1
- 1/4" Nylock Nut-1

For Correction Mount:
- 7/16" x 1" Bolts-2
- 7/16" Flat Washers-2
- 7/16"Top Lock Nuts-2

For Transmission Skid:
- 3/8" x 1" Bolts-2
- 3/8" Flat Washers-2
- 3/8" Flange Lock Nuts-2



N3 Shocks



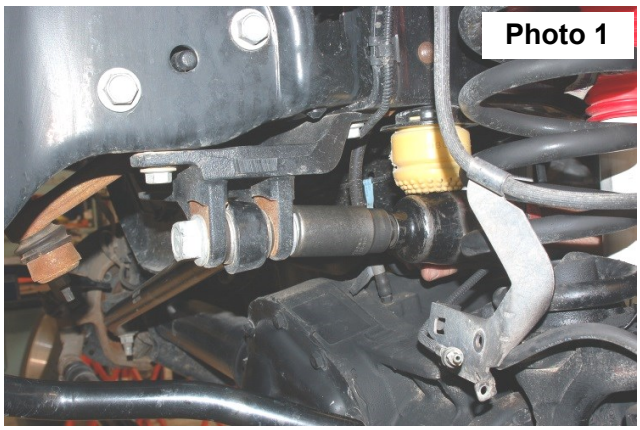
V2 Shocks

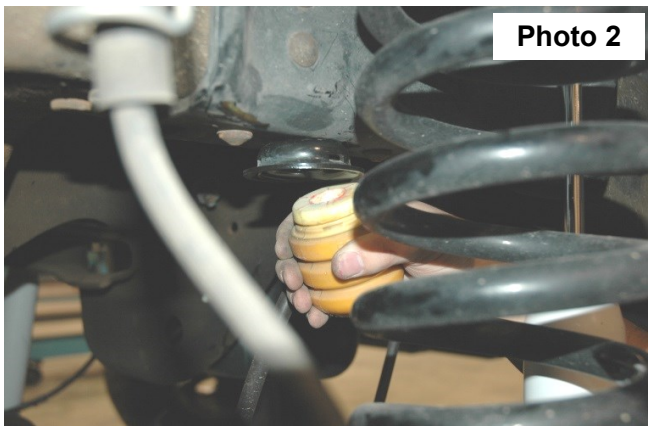


VertexShocks

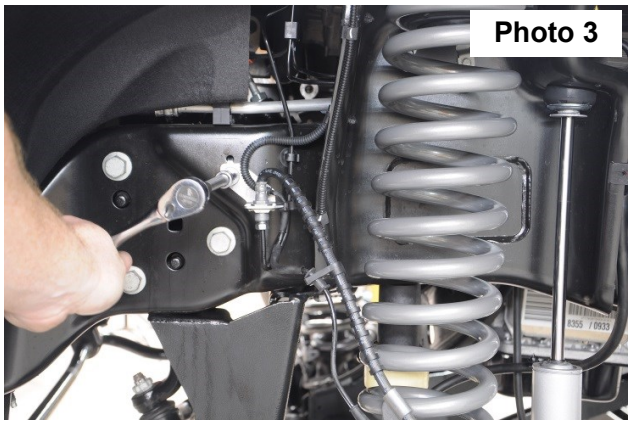
FRONT INSTALLTION INSTRUCTIONS

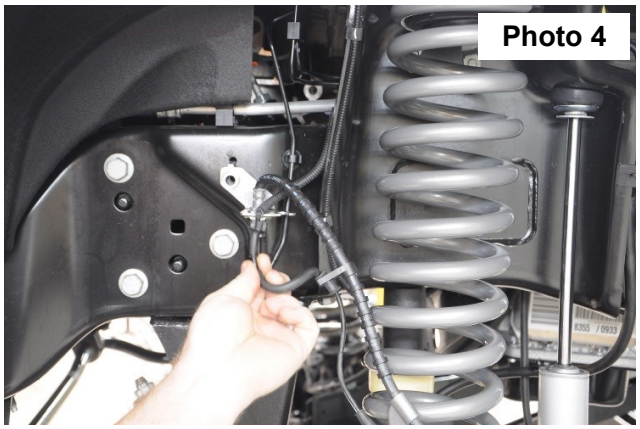
1. Block the rear wheels of the vehicle. Raise the front of the vehicle and support the frame with jack stands. Remove the front wheels and tires and set aside. Position a hydraulic jack under the front axle and raise the jack until the front suspension begins to compress.
2. Disconnect the track bar from the driver side frame bracket, using a 30mm wrench. **See Photo 1.**
3. Remove the bump stop from the cup shaped bracket. Remove the bracket from the frame rail. **See Photo 2**.



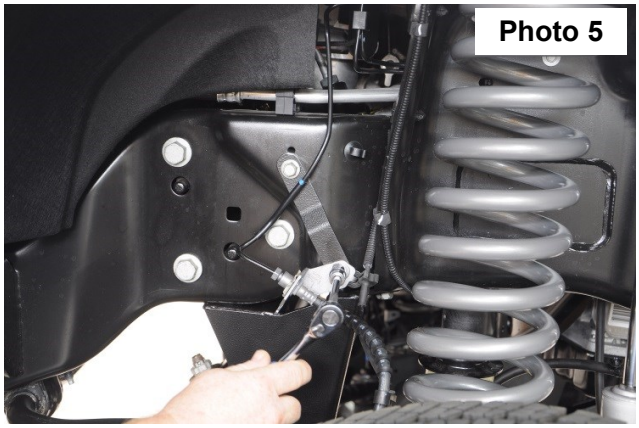


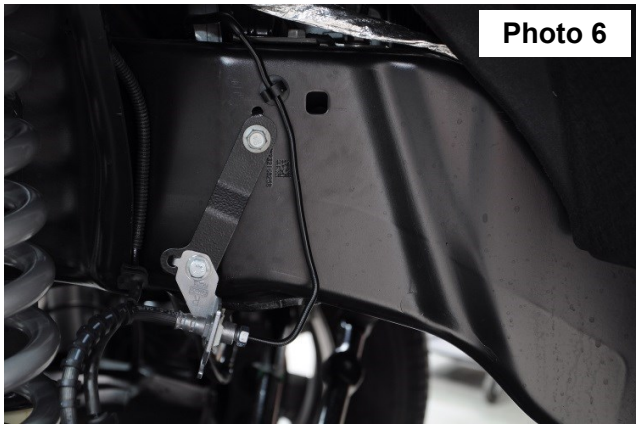
4. Using a 13mm socket, remove the brake line bracket from the frame. **See Photo 3.**
5. Remove the ABS wire from the brake line bracket. **See Photo 4.**





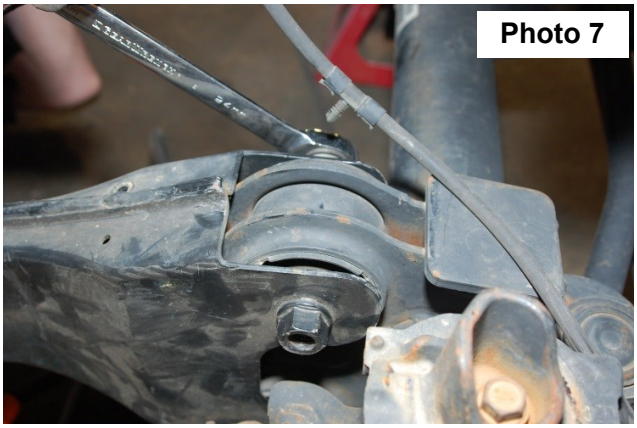
6. Carefully bend the brake line towards the coil. Install the new driver side brake line bracket on the frame using the factory hardware. Torque to 15 ft-lbs. Attach the brake line to the extended bracket using the supplied 5/16 bolt, washer and nut. Torque to 15 ft-lbs. **See Photo 5**.
7. Repeat the process on the passenger side brake line. **See Photo 6.**
8. Using an 18mm wrench remove the sway bar links from the truck.
9. Using 18mm and 19mm wrenches, remove the front shocks.

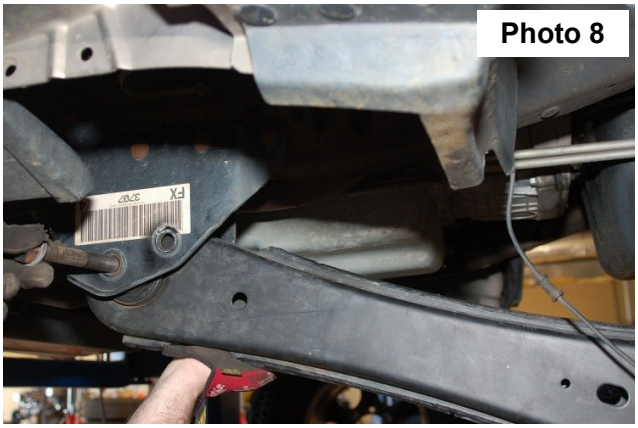




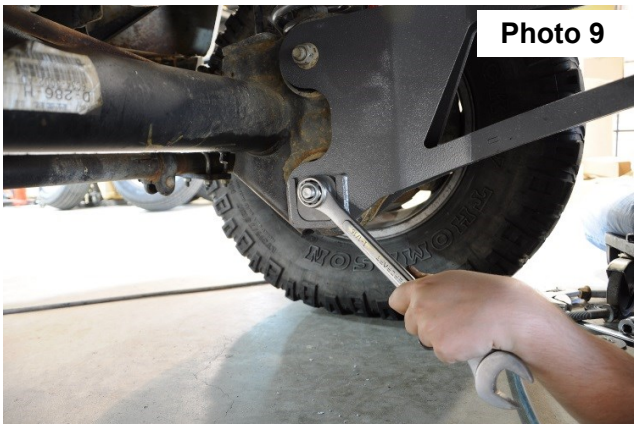
10. Using 18mm and 15mm wrenches, remove the factory steering stabilizer from the truck.
11. Carefully lower the jack until the coil springs are free. Remove the coil springs from the vehicle. **Note:** Use of a coil spring compressor may be required for spring removal.

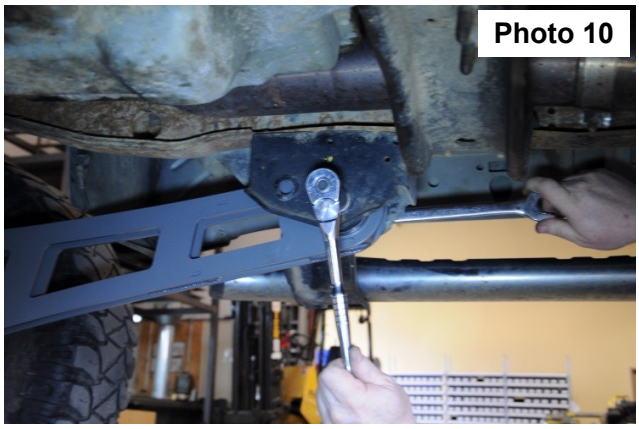
12. Support both radius arms with jack stands. Using a 24mm wrench, and socket remove the bolt holding the upper control arm to the axle. Retain stock hardware for reuse. **See Photo 7.**
13. Using a 1 1/8” wrench, and socket remove the bolt holding the upper control arm to the frame. **See Photo 8.**



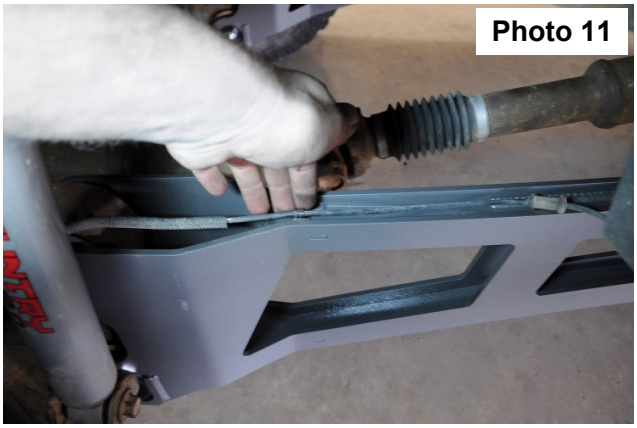


14. Insert the new supplied radius arm into the stock axle location. Use the stock bolt for the upper mount and the supplied 18mm x 130mm bolt, nut, and cam plates for the lower mount. **See Photo 9**.
15. Install the radius arm in the factory frame bracket with stock hardware. **See Photo 10.** Do not tighten at this time.



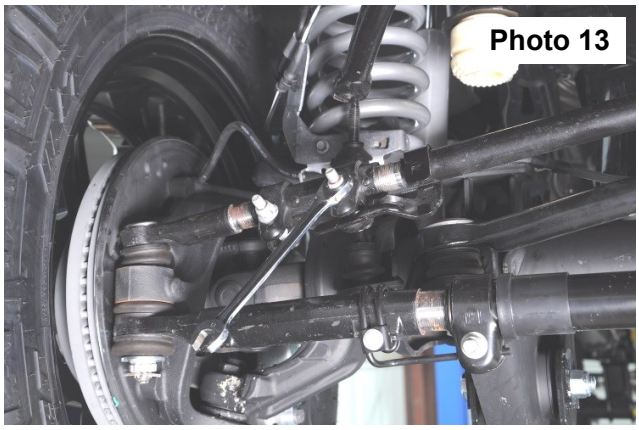


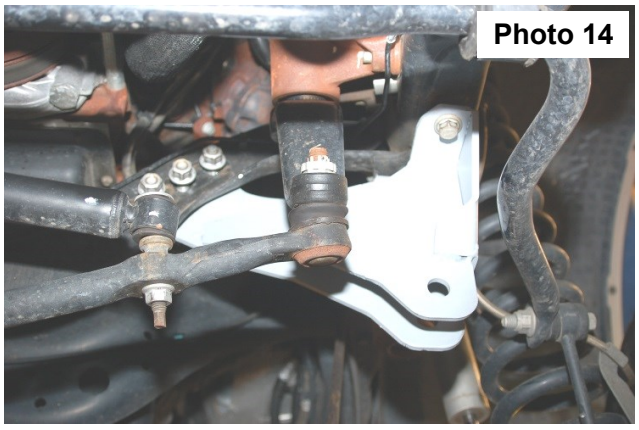
16. Install the ABS wire to the radius arm. **See Photo 11.**
17. Repeat steps on the opposite side.
18. Using a 21mm wrench and 19mm socket remove the factory track bar bracket from the frame. Retain stock hardware for re-use.
19. Using the nylon bump stop extension provided, place the extension between the frame and the bump stop cup. Bolt back into the original location using the 8mmx95mm bolt supplied. Torque to 15 ft-lbs. Reinstall the factory bump stop in the bump stop cup. **See Photo 12.**

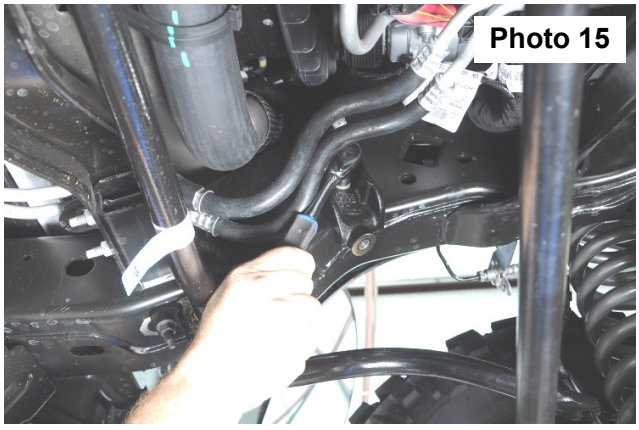


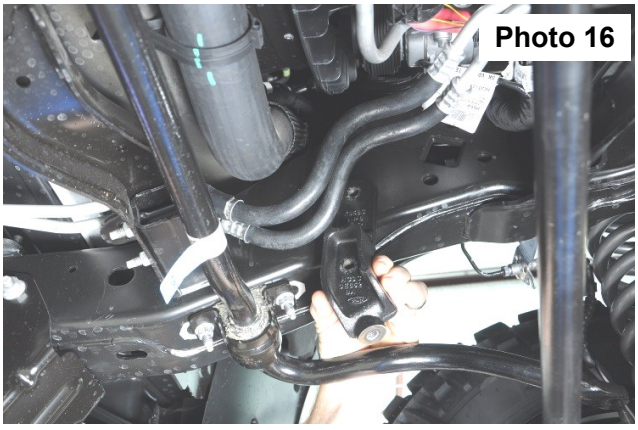


21. Lower the front axle enough to install the new coil springs. Position the coil springs in the lower coil buckets on the axle and rotate as necessary to be sure that the pigtail of the coil in indexed properly in the bucket. Position the factory rubber isolator on top of each coil, then raise the axle enough to seat the coil springs in the upper spring buckets.
22. Compress the front springs enough to install the front shocks, 660818. Bolt the lower end of the shock to the axle using the stock hardware. Torque to 88 ft-lbs. using a 18mm wrench. Attach the upper end of the shock with the stock hardware, using a 19mm wrench. **Torque to 15 ft-lbs. Or only enough to bulge the bushing.**
23. Remove the cotter pin and nut using a 21mm wrench, from the drag link end where it attaches to the pitman arm.
24. Dislodge link with a tie rod end puller. **Note:** replace the link if any stud looseness is detected, (excessive play) or (excessive wear) is found in the tie rod end.
25. Remove the collar lock bracket from the drag link on the truck using a 13mm wrench.
26. Using 15mm and 13mm wrenches, loosen the drag link adjustment collar. **See Photo 13.**
27. Spin the drag link over so the tie rod end is pointing up, torque the adjustment collar to 32 ft-lbs.
28. Using a 34mm socket, remove the nut from the steering sector and remove the pitman arm with a puller tool. Inspect the splines on the shaft for excessive wear, repair if needed.
29. Install new pitman arm, lock washer, and nut. Torque to 350 ft-lbs. Using a 34mm socket, tighten nut.
30. Attach the drag link stud to the pitman arm. Torque nut to 88 ft-lbs, and install cotter pin. Check for adequate linkage clearances while turning steering wheel full lock in both positions.
31. Position the Rough Country track bar bracket on the frame in the same position as the original and secure using the factory hardware. Torque to 120 ft-lbs. **See Photo 14.**
32. Using a13mm socket, remove the stabilizer mount from the frame. **See Photos 15 & 16**.

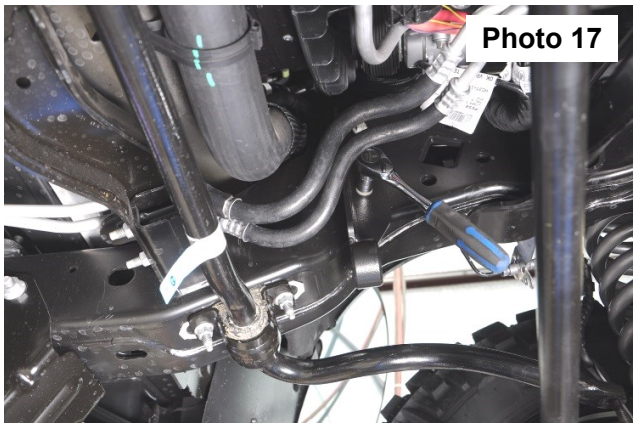

Photo 13

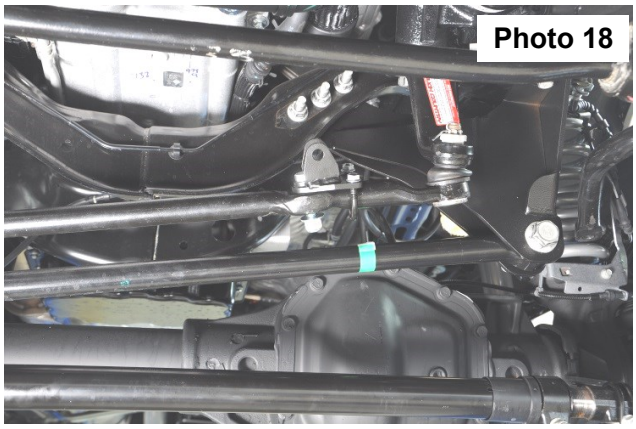

Photo 14


Photo 15


Photo 16

34. Install the new stabilizer bracket on the frame using the factory bolts, Torque to 45 ft-lbs. with a 13mm socket. **See Photo 17.**
35. Install the stabilizer bracket on the drag link using the supplied 1/2” x 1.75” bolt, washer and nut also using the supplied 5/16 ubolt and nuts. **See Photo 18.** Torque the 1/2 inch bolt to 65 ft-lbs. Torque the 5/16 u-bolt to 15 ft-lbs.


Photo 17


Photo 18

36. Install the stabilizer on the drag link mount using the supplied 12mm x 55mm bolt and nut. Torque to 55 ft-lbs. using 18mm and 19mm sockets and wrenches. **See Photo 19.**
37. Install the stabilizer on the frame mount using the factory hardware. Torque to 55 ft-lbs. using 18mm an socket. **See Photo 20.**

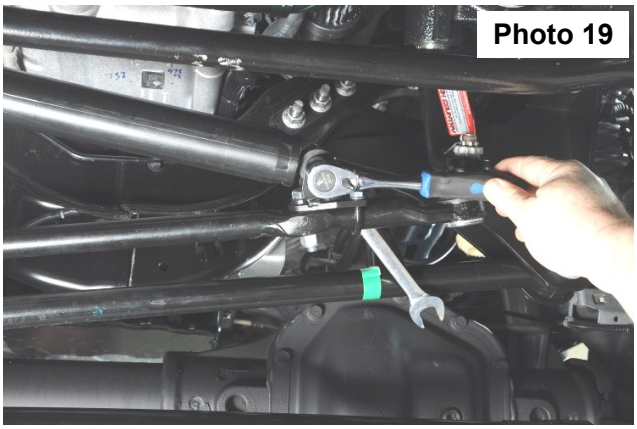
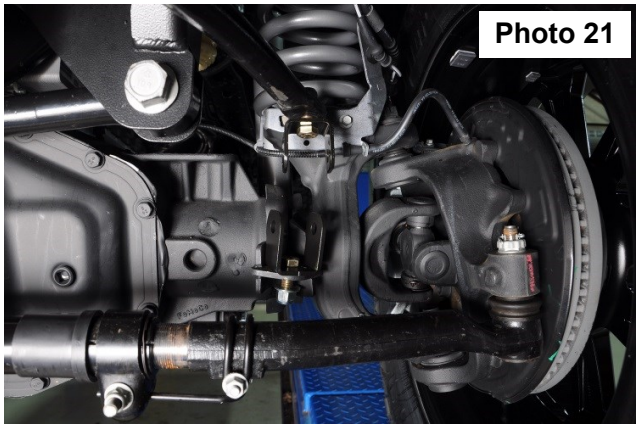
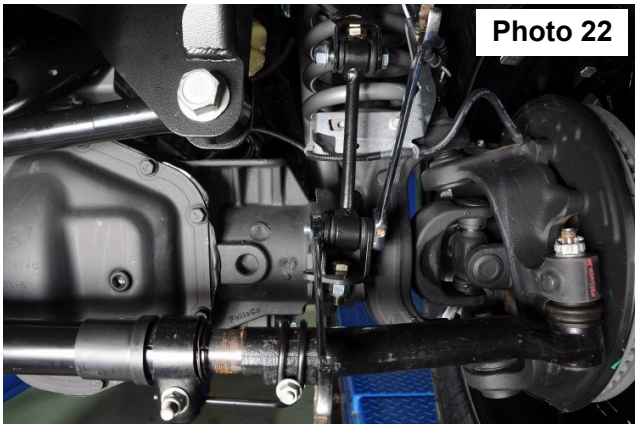

Photo 19


Photo 20

38. Install the supplied upper and lower sway bar link mounts using the supplied 1/2” x 1.5” bolts washers and nuts. Tighten using 3/4” wrenches. **See Photo 21.** Torque to 70 ft-lbs.
39. Install the sway bar links into the brackets using the supplied 12mm x 65mm bolts, washers, and nuts. Tighten using 18mm and 19mm wrenches. **See Photo 22.** Torque to 55 ft-lbs.

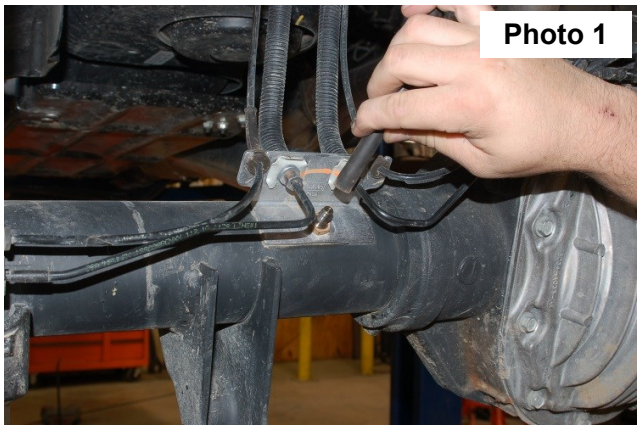

Photo 21

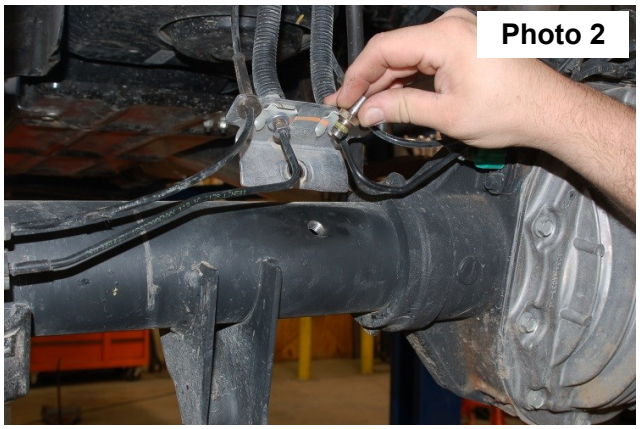

Photo 22

40. Install tires and wheels and lower the vehicle to the ground.
41. Line up the track bar with the hole in the new track bar bracket. You may have to start the truck and turn the wheels in the direction the track bar needs to go to help align the track bar with the hole. Install using the stock track bar bolt. Tighten bolt. Torque to 270 ft-lbs.
42. Torque the radius arm bolts to 270 ft-lbs.
43. Torque the radius arm brackets to 339 ft-lbs.

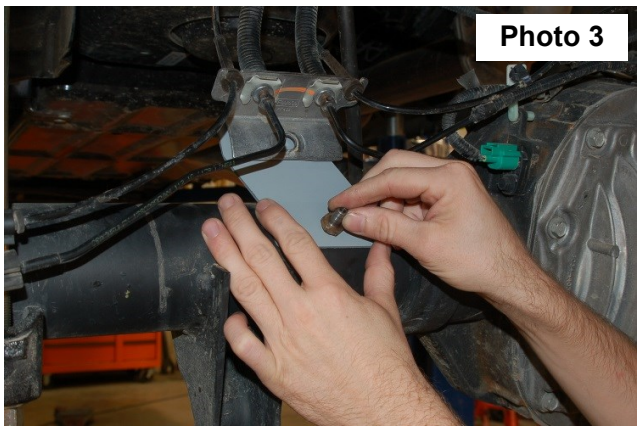
REAR INSTALLATION

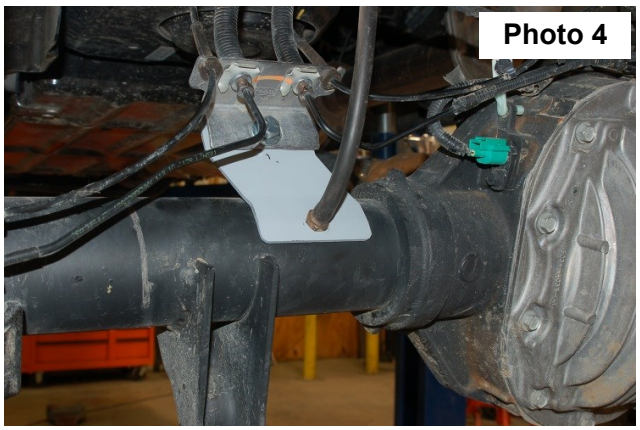
1. Chock front wheels and jack up the rear of the vehicle. Secure with jack stands on the frame rail.
2. Place a floor jack under the rear differential on the rear axle. Using a 18mm wrench for the upper, and 19mm and 15mm wrench for the lower, remove the stock shock absorbers, retain the stock hardware for reuse.
3. Remove the diff vent hose from the differential. **See Photo 1.**
4. Remove the diff vent tube using a 5/8” wrench. Retain the vent tube for reuse. **See Photo 2.**



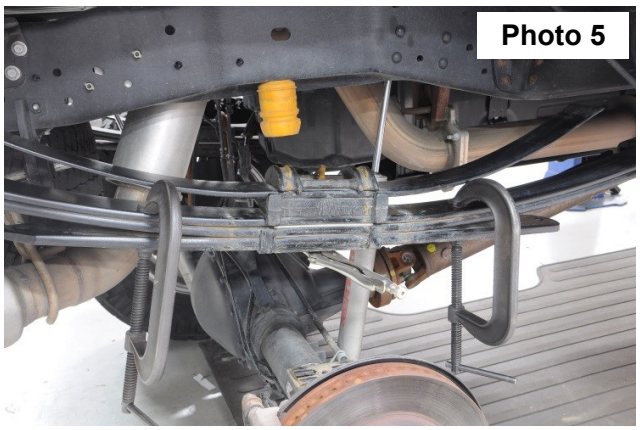


5. Install the supplied bracket in the stock location using the stock hardware. Torque to 28 ft-lbs. using a 5/8” socket. **See Photo 3.**
6. Install the stock brake line bracket to the new bracket with the supplied 7/16” x 1” Bolts, washers and lock nuts and Torque to 45 ft-lbs. using 5/8” wrench. Reinstall the diff vent hose as shown. **See Photo 4.**

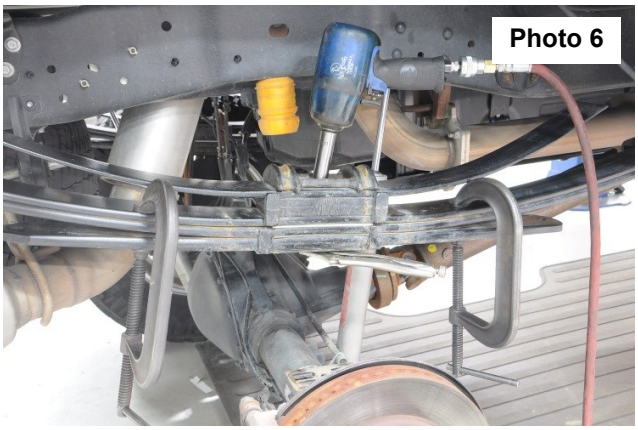


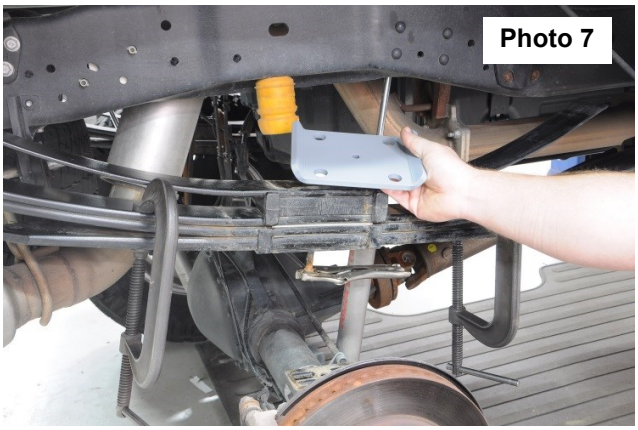


7. Using a 24mm socket, remove the stock u-bolts. Use the floor jack to lower the axle assembly to allow for lifted block installation.
8. Using C-clamps, clamp the spring pack on each side of the center pin.
9. Using locking pliers, lock onto the bottom of the center pin. **See Photo 5.**

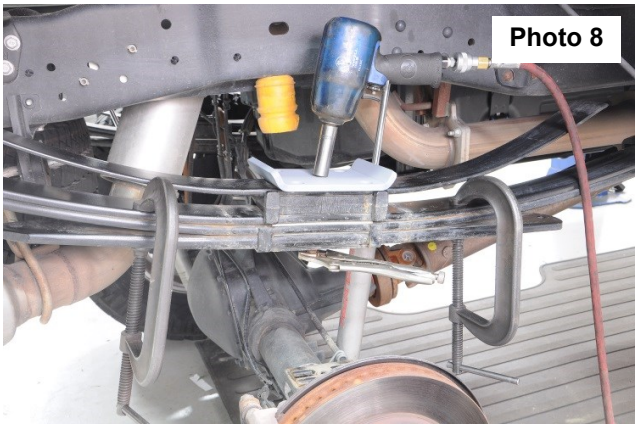


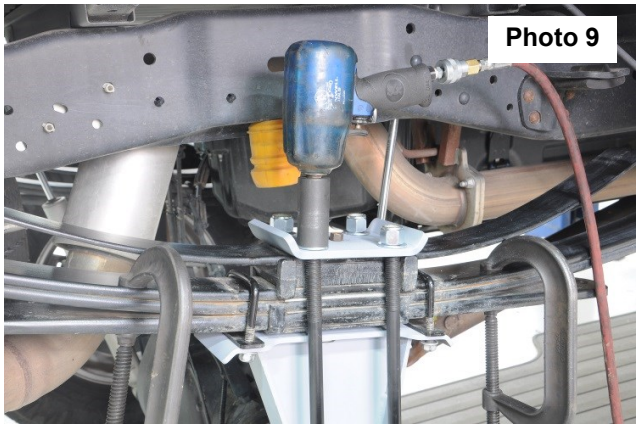
10. Using a 9/16” socket, remove the nut from the center pin. **See Photo 6.**
11. Remove the factory u-bolt plate. **See Photo 7.**





12. Using the stock hardware, attach the supplied ubolt plate and the center pin. Torque to 31 ft-lbs. using a 9/16” socket. **See Photo 8.**
13. Install the supplied shim plates between the block and the leaf spring. Install the supplied 7/16” square u-bolts and hardware. Torque to 35 ft-lbs. using a 5/8” socket.
14. Install the new supplied 3/4” u-bolts from the bottom. Use the supplied 3/4” hardware. Torque to 150 ft-lbs. using a 1-1/8” socket. **See Photo 9.**





15. Locate shock part number 660805. Using a 18mm wrench, for the upper, and a 19mm and 15mm wrench for the lower. Install using factory hardware on upper and lower shock mount. Torque to 60 ft-lbs.
16. Install the tires and wheels.
17. Jack up the rear of the vehicle and remove the jack stands. Lower the vehicle to the floor.
18. With the weight of the vehicle on the axle, torque the u-bolts to 150 ft-lbs.
19. Check all hardware for proper torque.

POST INSTALLTION INSTRUCTIONS

1. Adjust steering wheel to re-center prior to driving.
2. Check all fasteners for proper torque. Check to ensure for adequate clearance between all rotating, mobile, fixed, and heated members. Verify clearance between exhaust and brake lines, fuel lines, fuel tank, floor boards and wiring harness. Check steering gear for clearance. Test and inspect brake system.
3. Perform steering sweep to ensure front brake hoses have adequate slack and do not contact any rotating, mobile or heated members. Inspect rear brake hoses at full extension for adequate slack. Failure to perform hose check/ replacement may result in component failure. Longer replacement hoses, if needed can be purchased from a local parts supplier.
4. Have a qualified alignment center realign front end to
   Caster min– 4.0 degree
   Camber –0.6—.09 degree
   Toe –.10– .15 degree
5. Install Warning to Driver decal on sun visor.
6. Re-torque all nuts, bolts, and especially u-bolts after the first 100 miles, again after another 100 miles and then check periodically thereafter.
7. All components must be retightened after 500 miles, and every three thousand miles after installation
8. Adjust headlights to proper settings.

Thank you for choosing Rough Country for your suspension needs.

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