Rough Country 400159 Installation Instructions

4.5-Inch Vertex Coilover Kit for Super Duty, Front & Rear

Part number: 400159

trailfortress.com/4-5-inch-vertex-coilover-kit-super-duty-front-rear-rough-country-400159

Scan for fitment, price and install help

921400130

ROUGH COUNTRY SUSPENSION SYSTEMS®

FORD 2023-25 SUPERDUTY 4.5”- 6” SUSPENSION 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.

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.

The 4.5” kit was developed for a **35x12.50x20** tire on an after market wheel w/ 4.5” back spacing.
The 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
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
8MM	18ft/lbs	23 ft/lbs
10MM	32ft/lbs	45ft/lbs
12MM	55ft/lbs	75ft/lbs
14MM	85ft/lbs	120ft/lbs

trailfortress.com/4-5-inch-vertex-coilover-kit-super-duty-front-rear-rough-country-400159

KIT CONTENTS

4.5” Radius Arm Drop Kits (400130, 400157, 400158, 400159)

9466

4.5” Diesel Coil Springs (Not in Coilover Kit)

400130991

Rear Blocks (2)
5/8” x 3 1/8” x 16” Semi-Round U-Bolts (4)
5/8” x 3 1/8” x 19” Semi-Round U-Bolts (4)
1481BAG1
41930BAG1 (Gas Models Only)
Block Shims (4)
5/8BAG

400130992

400130BAG1 (1)
43700BAG2 (1)
Pitman Arm (1)
Front Sway Link (2)
Stabilizer Frame Mount (1)
Stabilizer Bar Mount (1)
Front Brake Line Bracket (2)
Dr Sway Bar Drop Bracket (1)
Pass Sway Bar Drop Bracket (1)
Track Bar Bracket (1)
Radius Arm Drop Brackets (2)
Rear Brake Line Bracket (1)
Bump stop Extension (2)
Headlight Sensor Bracket (2)

400158991 (Only in Coilover Kits)

Upper Coil Over Mount (2)
Lower Coil Over Mount (2)
50010BAG1 (1)

50420BOX1 - N3 Shock Kits

690004-2 - Fr Vertex Shock Pair

690005-2 - Rr Vertex Shock Pair

760818 - Fr V2 Shock Pair

760805 - Rr V2 Shock Pair

680042L-2 - Dr Frt Coilover

680042R-2 - Pass Frt Coilover

23297 - N3 Frt Shock Pair for Coilover Kit

4.5” Radius Arm Kits (400330, 400357, 400358, 400359)

9466

4.5” Diesel Coil Springs (Not in Coilover Kit)

400130991

Rear Blocks (2)
5/8” x 3 1/8” x 16” Semi-Round U-Bolts (4)
5/8” x 3 1/8” x 19” Semi-Round U-Bolts (4)
1481BAG1
41930BAG1 (Gas Models Only)
Block Shims (4)
5/8BAG

400330991

400130BAG1 (1)
400330BAG1 (1)
Pitman Arm (1)
Front Sway Link (2)
Stabilizer Frame Mount (1)
Stabilizer Bar Mount (1)
Front Brake Line Bracket (2)
Dr Sway Bar Drop Bracket (1)
Pass Sway Bar Drop Bracket (1)
Track Bar Bracket (1)
Rear Brake Line Bracket (1)
Bump stop Extension (2)

400158991 (Only in Coilover Kit)

Upper Coil Over Mount (2)
Lower Coil Over Mount (2)
50010BAG1 (1)

43701991

Pass Radius Arm (1)
43701BAG1 (1)

43701992

Dr Radius Arm (1)
51147 (Headlight Sensor Lockout Kit) (1)

50420BOX1 - N3 Shock Kits

690004-2 - Fr Vertex Shock Pair

690005-2 - Rr Vertex Shock Pair

760818 - Fr V2 Shock Pair

760805 - Rr V2 Shock Pair

680042L-2 - Dr Frt Coilover

680042R-2 - Pass Frt Coilover

23297 - N3 Frt Shock Pair for Coilover Kit

KIT CONTENTS

6” Radius Arm Drop Kits (400258, 400259)

9296

6” Diesel Coil Springs (Not in Coilover Kit)

41200992

Rear Blocks (2)
5/8” x 3 1/8” x 16” Semi-Round U-Bolts (4)
5/8” x 3 1/8” x 19” Semi-Round U-Bolts (4)
1481BAG1
41930BAG1 (Gas Models Only)
Block Shims (4)
5/8BAG

400130992

400130BAG1 (1)
43700BAG2 (1)
Pitman Arm (1)
Front Sway Link (2)
Stabilizer Frame Mount (1)
Stabilizer Bar Mount (1)
Front Brake Line Bracket (2)
Dr Sway Bar Drop Bracket (1)
Pass Sway Bar Drop Bracket (1)
Track Bar Bracket (1)
Radius Arm Drop Brackets (2)
Rear Brake Line Bracket (1)
Bump stop Extension (2)
Headlight Sensor Bracket (2)

400258991 (Only in Coilover Kit)

Upper Coil Over Mount (2)
Lower Coil Over Mount (2)
50010BAG1 (1)

50420BOX1 - N3 Shock Kits

690004 - Fr Vertex Shock Pair

690005 - Rr Vertex Shock Pair

760818 - Fr V2 Shock Pair

760805 - Rr V2 Shock Pair

680042L-2 - Dr Frt Coilover

680042R-2 - Pass Frt Coilover

23297 - N3 Frt Shock Pair for Coilover Kit

6” Radius Arm Kits (400458, 400459)

9296

6” Diesel Coil Springs (Not in Coilover Kit)

41200992

Rear Blocks (2)
5/8” x 3 1/8” x 16” Semi-Round U-Bolts (4)
5/8” x 3 1/8” x 19” Semi-Round U-Bolts (4)
1481BAG1
41930BAG1 (Gas Models Only)
Block Shims (4)
5/8BAG

400330992

400130BAG1 (1)
400330BAG1 (1)
Pitman Arm (1)
Front Sway Link (2)
Stabilizer Frame Mount (1)
Stabilizer Bar Mount (1)
Front Brake Line Bracket (2)
Dr Sway Bar Drop Bracket (1)
Pass Sway Bar Drop Bracket (1)
Track Bar Bracket (1)
Rear Brake Line Bracket (1)
Bump stop Extension (2)

400258991 (Only in Coilover Kit)

Upper Coil Over Mount (2)
Lower Coil Over Mount (2)
50010BAG1 (1)

43701991

Pass Radius Arm (1)
43701BAG1 (1)

43701992

Dr Radius Arm (1)
51147 (Headlight Sensor Lockout Kit) (1)

50420BOX1 - N3 Shock Kits

690004 - Fr Vertex Shock Pair

690005 - Rr Vertex Shock Pair

760818 - Fr V2 Shock Pair

760805 - Rr V2 Shock Pair

680042L-2 - Dr Frt Coilover

680042R-2 - Pass Frt Coilover

23297 - N3 Frt Shock Pair for Coilover Kit

Bag Contents:

1481BAG1

7/16” x 3.25” U-Bolts(4) - Non-overload
7/16” x 4.25” U-bolts (4) - Overload
7/16” Flat Washers (8)
7/16” Top Lock Nuts (8)

400130BAG1

5/16” Flange Lock Nuts (4)
5/16” x 1 1/4” x 2” Round U-Bolt (1)
1/2” Nylock Nut (1)
5/16” x 3/4” Bolts (2)
1/2” x 1 3/4” Bolt (1)
12mm Flange Lock Nut (1)
12mm x 55mm Bolt (1)
5/16” Flat Washers (2)
1/2” Flat Washers (5)
7/16”x 1 1/4” Bolts (4)
7/16” Flat Washers (8)
7/16” Nylock Nuts (4)

43700BAG2

7/16” Flat Washers (14)
5/16” Flange Lock Nut (4)
3/8” Flange Lock Nut (2)
8mm x 95mm Bolts (2)
3/8” x 1.25” Bolt (2)
3/8” Flat Washer (2)
7/16” x 1” Bolt (1)
7/16” Top Lock Nuts (5)
18mm Lock Nut (2)
7/16” x 1.25” Bolts (4)
7/16” X 1.25” Grade 8 Bolt (2)
7/16” Lock Nut (2)
18mm Flat Washer (4)
18mm x 130mm Bolt (2)
#10 x 5/8” Button Head Bolts (2)
#10 Nylock Nuts (2)
Radius Arm Drop Bracket Sleeves (2)
5/16” Flat Washers (6)

40330BAG1

7/16” Flat Washers (10)
8mm x 95mm Bolts (2)
7/16” x 1” Bolt (1)
7/16” Top Lock Nuts (3)
7/16” x 1.25” Bolts (4)
7/16” Lock Nut (2)
#10 x 5/8” Button Head Bolts (2)
#10 Nylock Nuts (2)
5/16” Flat Washers (6)

41930BAG1 (Gas Models Only)

Front Brake Line Bracket (2)
5/16” x 3/4” Bolt (2)
5/16” Lock Nut (2)

5/8BAG

5/8” Lock Nut (8)
5/8” Flat Washer (8)

43700BAG2

3/8-16 x 1.25 Bolt (8)
3/8” Washer (8)
3/8-16 Flange Lock (8)
14mm-2.0 x 40mm (2)
14mm Lock Washer (2)
14mm Flat Washer (10)
14mm-2.0 x 75mm (4)
14mm-2 Nylock Nut (4)
1/4-20 x 1 Hex Head Bolt (6)
1/4-20 Nylock Nut (6)
1/4” Flat Washer (6)
Brake Line Relo Bracket (2)

43701BAG1

Cam Plates (4)
18mm x 130mm Bolts (2)
18mm Nylock Nuts (2)

400130 Kit Pic



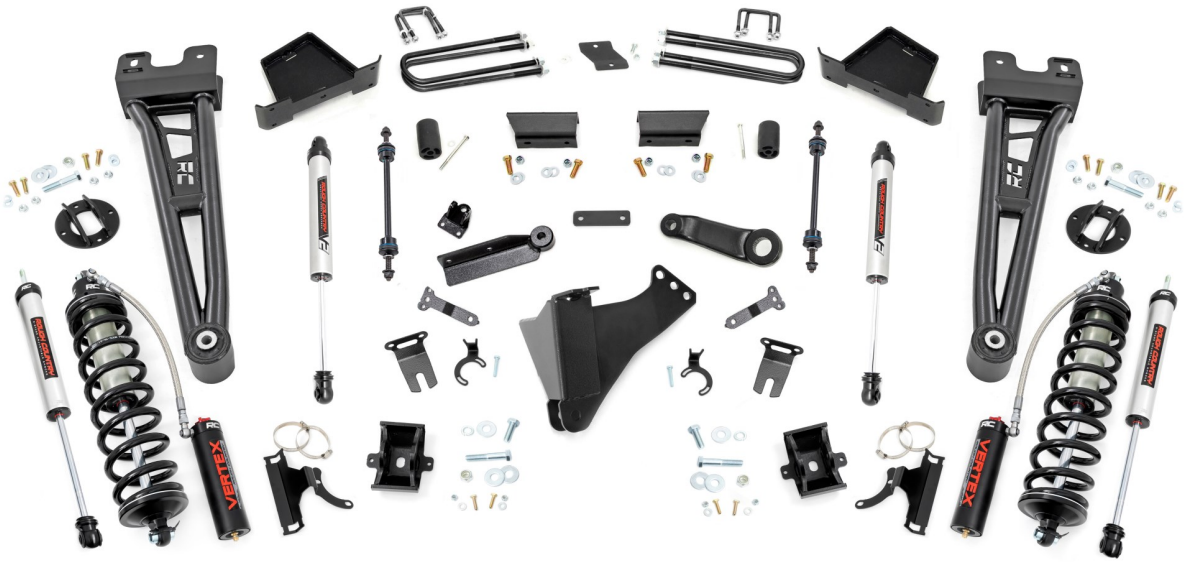
400330 Kit Pic



400158 Kit Pic

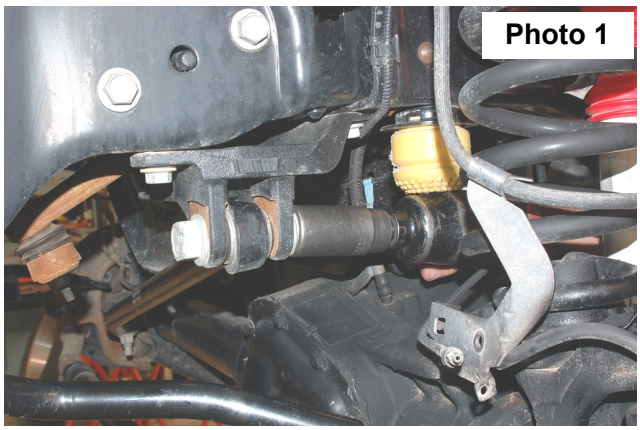


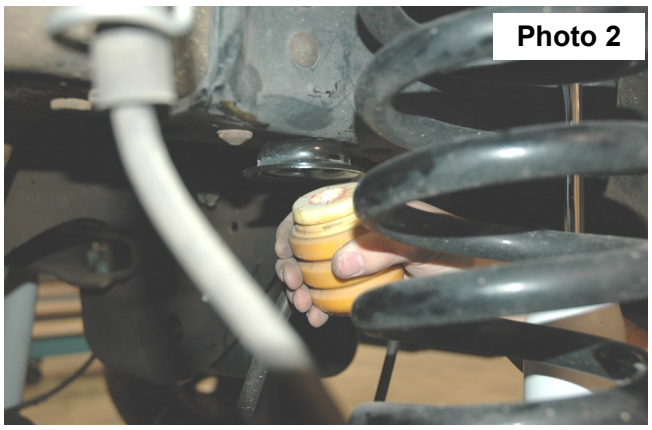
400358 Kit Pic



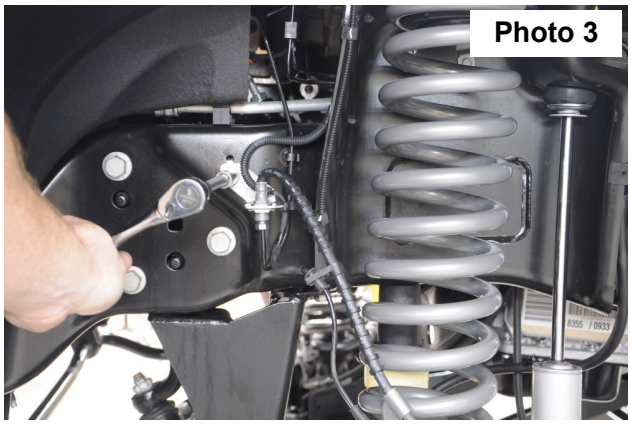
FRONT INSTALLTION INSTRUCTIONS

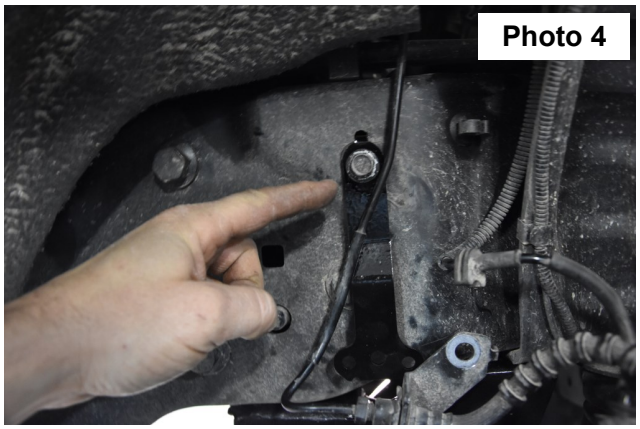
1. Block the rear wheels of the vehicle. Raise the front of the vehicle and support the frame with jack stands. Remove the front wheels and tires and set aside. Position a hydraulic jack under the front axle and raise the jack until the front suspension begins to compress.
2. Disconnect the track bar 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**.



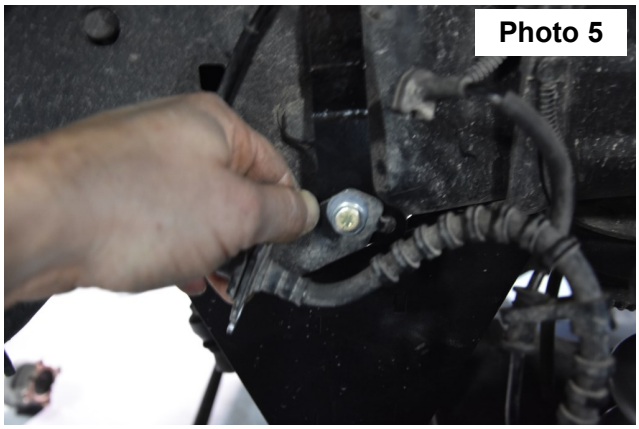


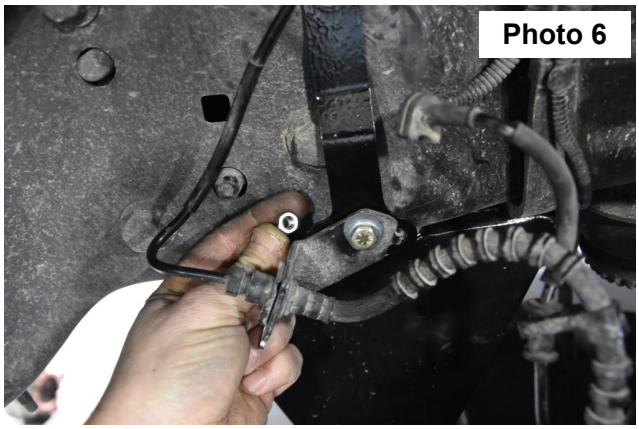
4. Using a 13mm socket, remove the brake line bracket from the frame. **See Photo 3.**
5. Remove the ABS wire from the brake line bracket. **See Photo 4.**





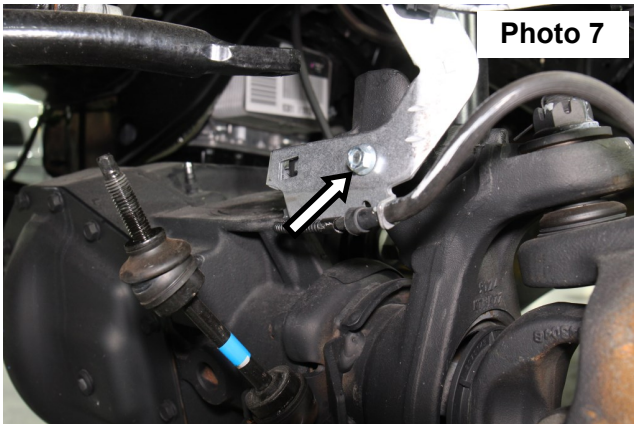
6. DIESEL MODEL ONLY: Carefully bend the brake line towards the coil. Install the new brake line bracket on the frame using the factory hardware. Torque to 15 ft-lbs. Attach the brake line to the extended bracket using the supplied 5/16 bolt, washer and nut. Torque to 15 ft-lbs. **See Photo 5**.
7. Repeat the process on the opposite 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.

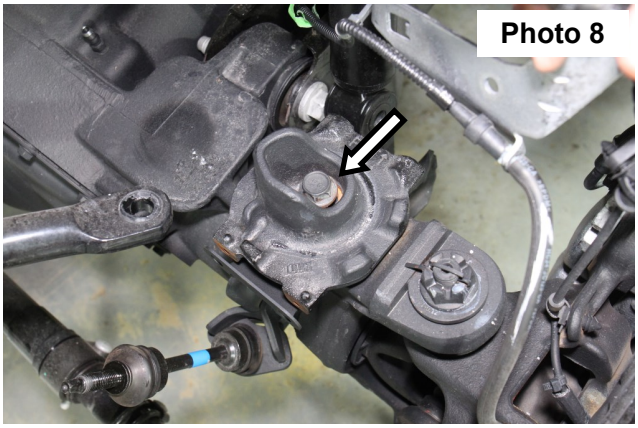




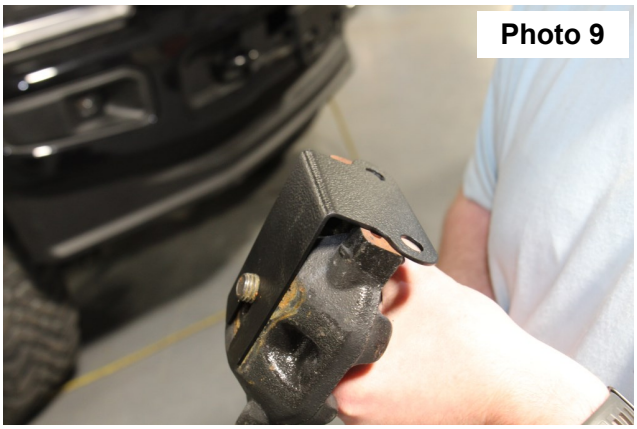
10. Using 18mm and 15mm wrenches, remove the factory steering stabilizer from the truck.
11. Carefully lower the jack until the coil springs are free. Remove the coil springs from the vehicle. **Note:** Use of a coil spring compressor may be required for spring removal.

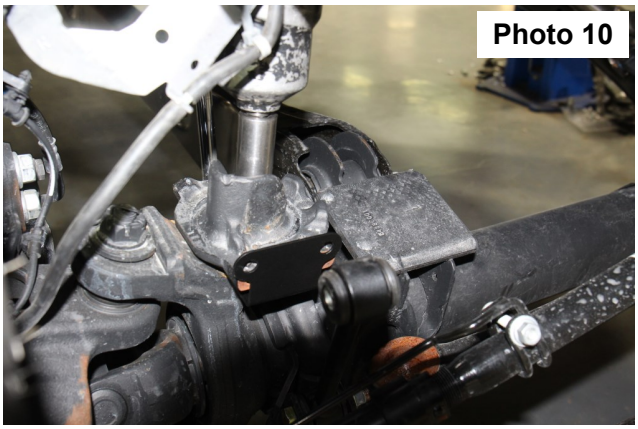
12. GAS MODELS ONLY: Remove the factory brake line bracket bolt with a 10mm wrench. **See Photo 7.**
13. GAS MODELS ONLY: Remove factory spring seat bolt using an 18mm socket. Retain hardware for reuse. **See Photo 8.**



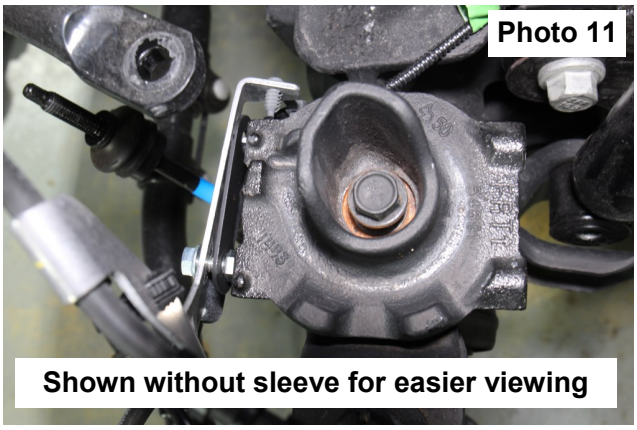


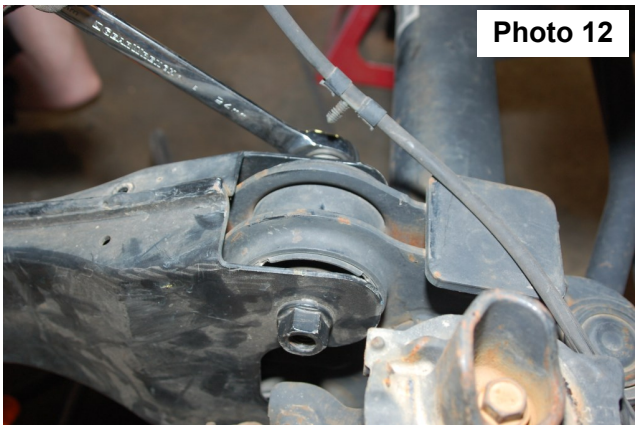
14. GAS MODELS ONLY: Place supplied brake line bracket mount under the factory spring seat and around the factory spring seat bolt. **See Photo 9.**
15. GAS MODELS ONLY: Reinstall spring seat with supplied bracket in the mounting location using factory hardware. Tighten with an 18mm wrench. **See Photo 10.**



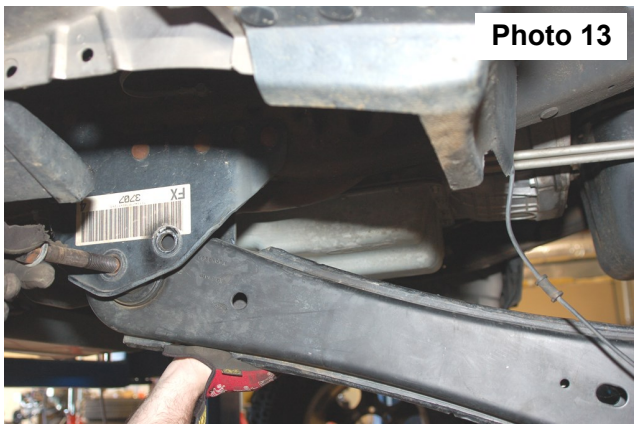


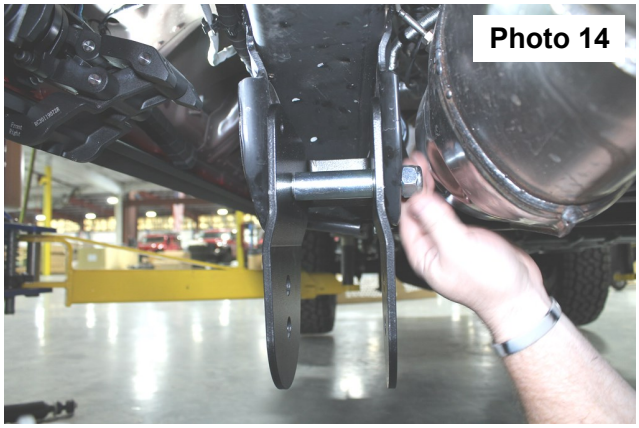
16. GAS MODELS ONLY: Reinstall factory brake line bracket to the previously installed mount using a supplied 5/16” x 3/4” bolt and 5/16” lock nut. Tighten with a 1/2” wrench. **See Photo 11.**
17. Support both radius arms with jack stands. Using a 24mm wrench, and socket remove the bolt holding the upper radius arm to the axle. Retain stock hardware for reuse. **See Photo 12.**



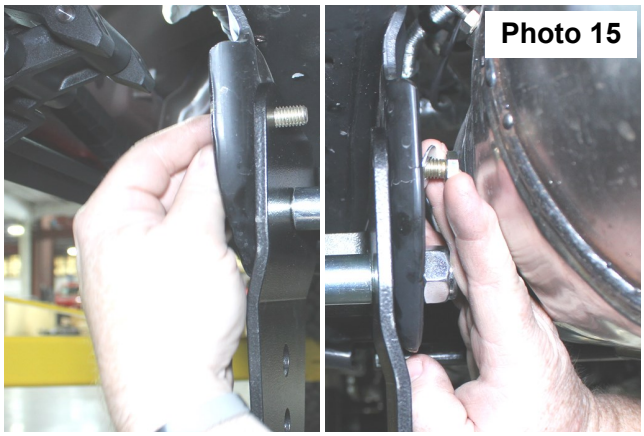


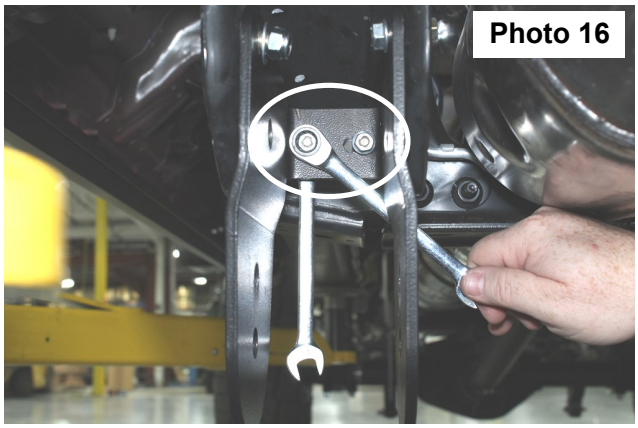
18. **Radius arm kits use radius arm instructions and skip to step 25.** Using a 1 1/8” wrench, and socket remove the bolt holding the radius arm to the frame. **See Photo 13.**
19. Insert the new radius arm drop bracket into the stock location.
20. Install the 18mm x 130mm bolt, two 18mm washers, 18mm lock nut and sleeve from 43700BAG1 into the middle hole of the radius arm drop bracket with a 1 1/16” wrench. Torque to spec. **See Photo 14.**


Photo 13

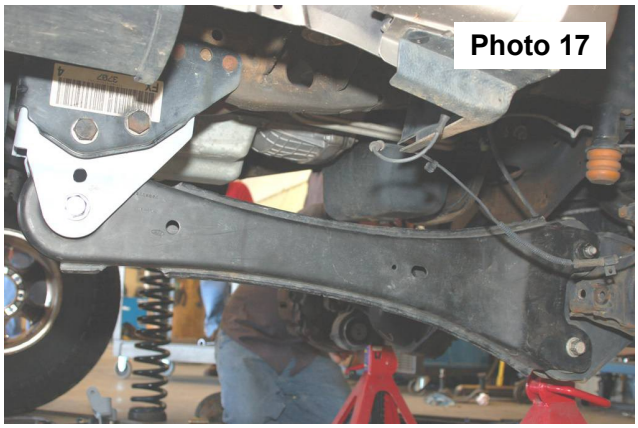

Photo 14

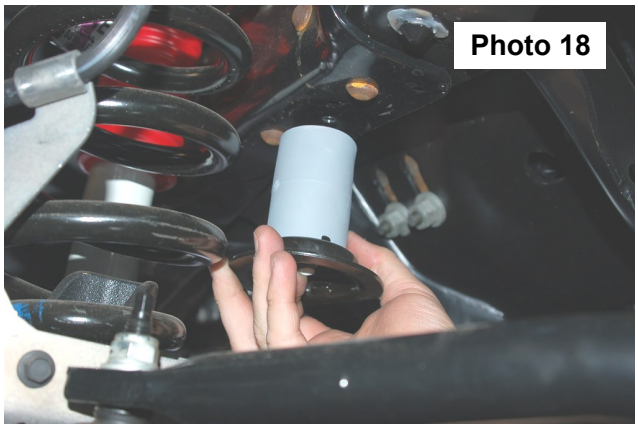
21. Install a 7/16” x 1 1/4” bolt, washers, and lock nut from 43700BAG1 in the top outer hole of the drop bracket with a 5/8” wrench and a 3/8” x 1 1/4” bolt, washers, and lock nut from 43700BAG1 in the top inner hole of the drop bracket with a 9/16” wrench. Torque to spec. **See Photo 15.**
22. Install two sets of 5/16” x 1” bolts, washers, and lock nuts into the rear of the radius arm drip bracket with a 9/16” wrench. Torque to spec. **See Photo 16. NOTE:** Use a clip tool to remove ABS wiring harness to gain access to the rear bolts of the drop bracket. Reinstall harness once 5/16” bolts are installed.


Photo 15

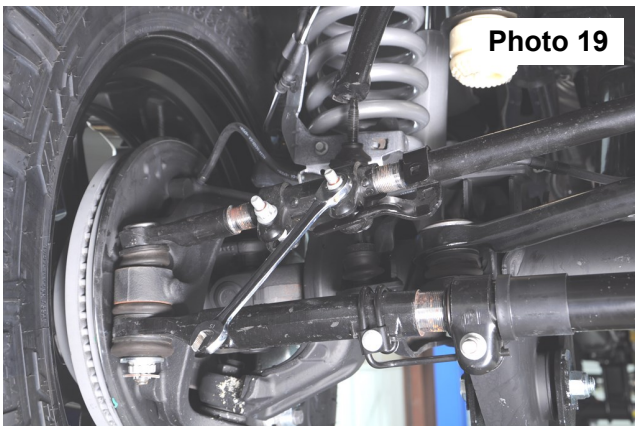

Photo 16

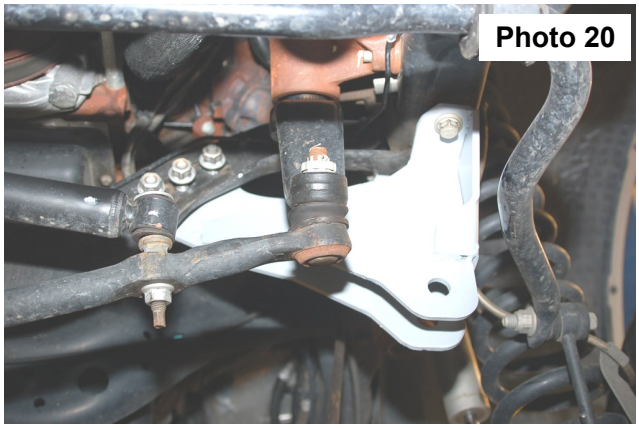
23. Install the radius arms to the new drop bracket with factory hardware in the lower holes. **See Photo 17.**
24. Attach the arm to the axle using the stock hardware. **Note:** it may be necessary to raise or lower the truck to align the holes. Reattach the ABS wire to the radius arm.
25. Using a 21mm wrench and 19mm socket remove the factory track bar bracket from the frame. Retain stock hardware for re-use.
26. 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 18.**


Photo 17

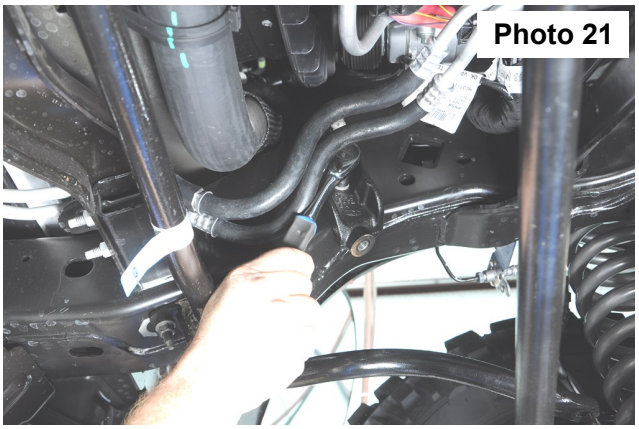

Photo 18

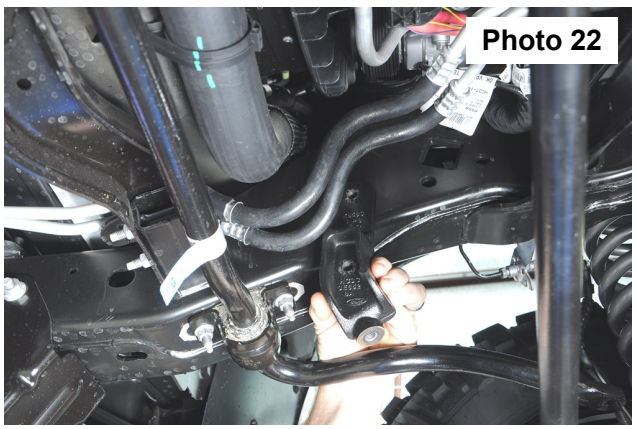
27. **Coilover kits use coilover instructions and skip to step 29.** Lower the front axle enough to install the new coil springs. Position the coil springs in the lower coil buckets on the axle and rotate as necessary to be sure that the pigtail of the coil in indexed properly in the bucket. Position the factory rubber isolator on top of each coil, then raise the axle enough to seat the coil springs in the upper spring buckets.
28. Compress the front springs enough to install the front shocks. 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.**
29. Remove the cotter pin and nut using a 21mm wrench, from the drag link end where it attaches to the pitman arm.
30. 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.
31. Remove the collar lock bracket from the drag link on the truck using a 13mm wrench.
32. Using 15mm and 13mm wrenches, loosen the drag link adjustment collar. **See Photo 19.**
33. Spin the drag link over so the tie rod end is pointing up, torque the adjustment collar to 32 ft-lbs.
34. 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.
35. Install new pitman arm, lock washer, and nut. Torque to 350 ft-lbs. Using a 34mm socket, tighten nut.
36. 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.
37. 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 20.**



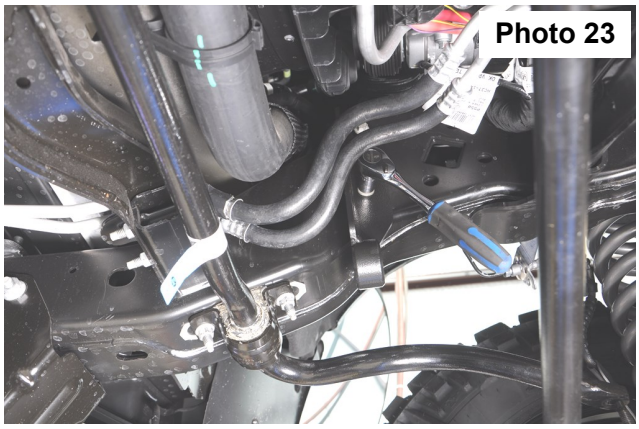


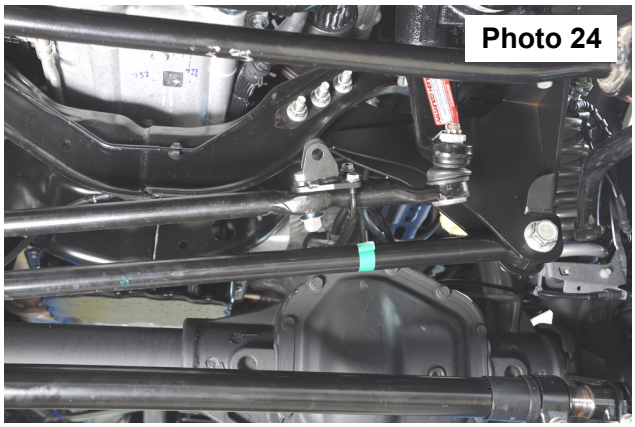
38. Using a 13mm socket, remove the stabilizer mount from the frame. **See Photos 21 & 22**.



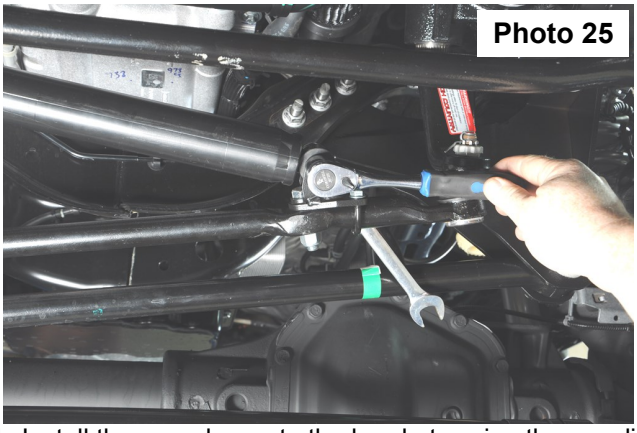


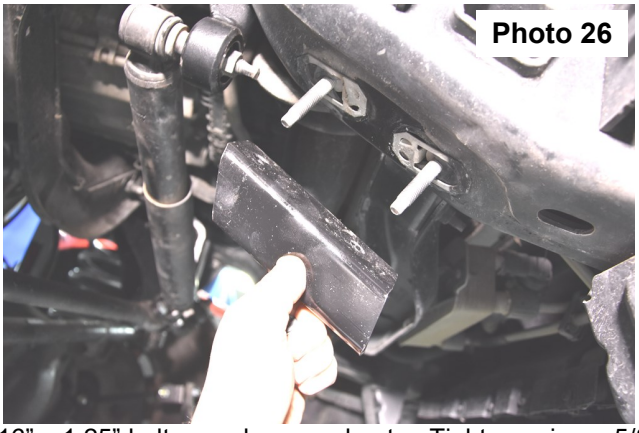
39. Install the new stabilizer bracket on the frame using the factory bolts, Torque to 45 ft-lbs. with a 13mm socket. **See Photo 23.**
40. Install the stabilizer bracket on the drag link using the supplied .5” x 2” bolt, washer and nut also using the supplied 5/16 u-bolt and nuts. **See Photo 24.** Torque the 1/2 inch bolt to 65 ft-lbs. Torque the 5/16 u-bolt to 15 ft-lbs.


Photo 23

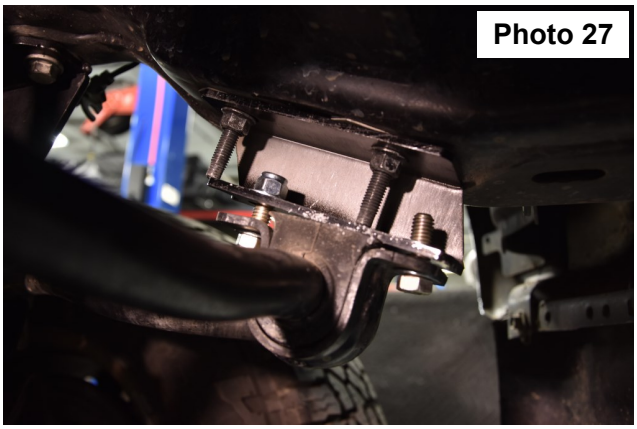

Photo 24

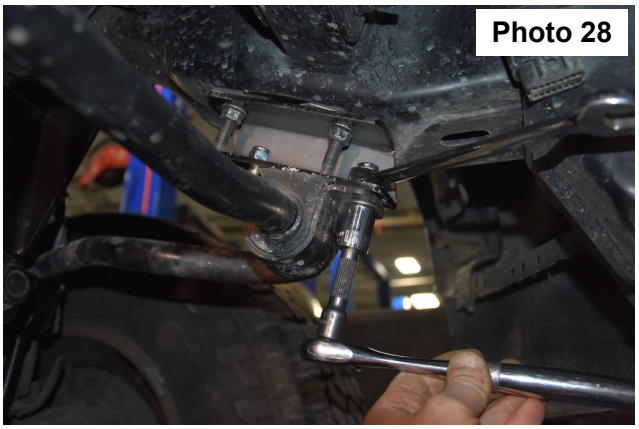
41. Install the stabilizer on the frame mount using the factory hardware. Torque to 55 ft-lbs. using 18mm an socket. **See Photo 25.**
42. Using a 15mm socket, lower the factory sway bar from the frame. Retain the factory hardware.
43. Install the supplied sway brackets to the factory studs using the factory nut. **See Photo 26.** Torque to 32 ft-lbs using a 15mm socket.


Photo 25

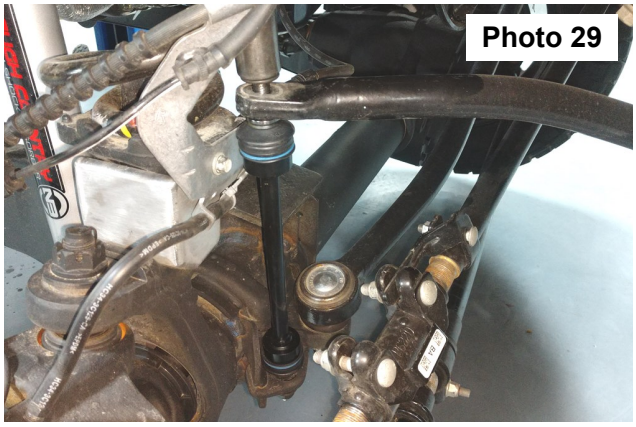

Photo 26

44. Install the sway bar onto the brackets using the supplied 7/16” x 1.25” bolts, washers, and nuts. Tighten using a 5/8” socket and wrench. **See Photos 27 & 28.** Torque to 60 ft-lbs.


Photo 27


Photo 28

45. Install the supplied sway bar links using the supplied hardware. Tighten using an 18mm socket. **See Photo 29.** Torque to 55 ft-lbs.

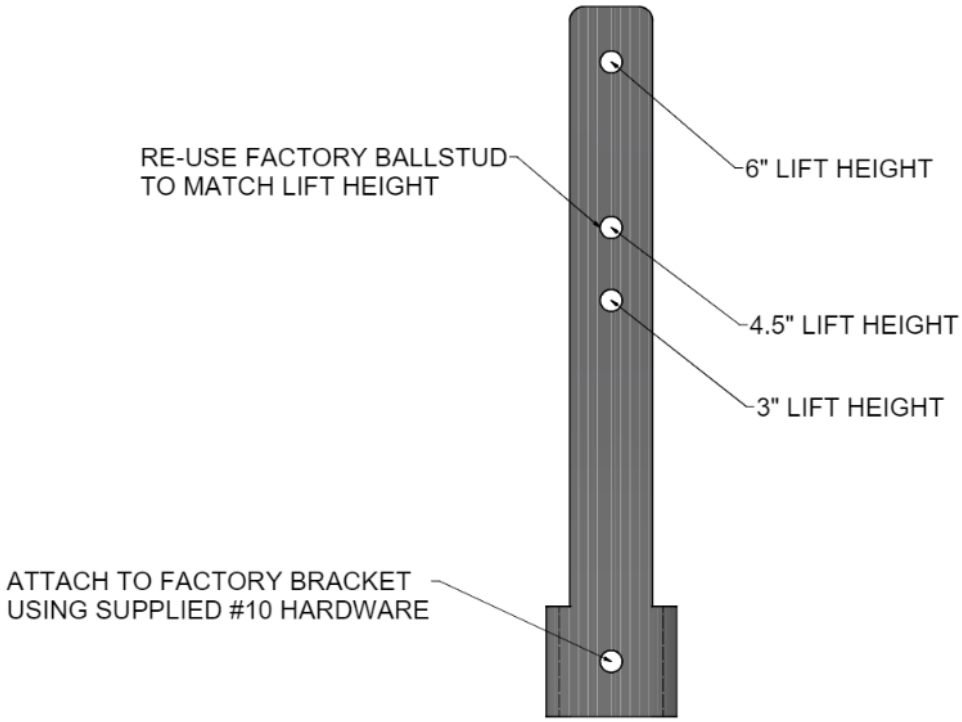


46. Install tires and wheels and lower the vehicle to the ground.
47. Line up the track bar with the hole in the new track bar bracket. You may have to start the truck and turn the wheels in the direction the track bar needs to go to help align the track bar with the hole. Install using the stock track bar bolt. Tighten bolt. Torque to 270 ft-lbs.
48. Torque the radius arm bolts to 270 ft-lbs.
49. Torque the radius arm brackets to 270 ft-lbs.
50. If equipped with auto leveling headlight, install included 51147 kit per instructions included with kit.

HEADLIGHT SENSOR BRACKET

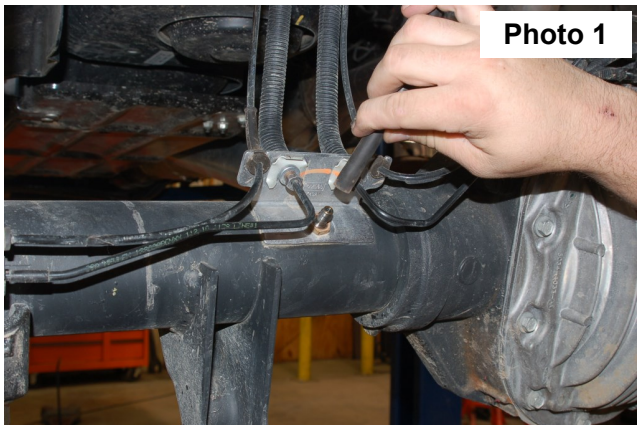
1. Remove factory ride height sensor hardware with a 1/8” Allen wrench.
2. Attach the sensor bracket to the factory bracket using the supplied #10 hardware. Tighten with a 1/8” Allen wrench.
3. Re-use the factory ballstud to match the current lift kit on the vehicle. **See Photo 1.**

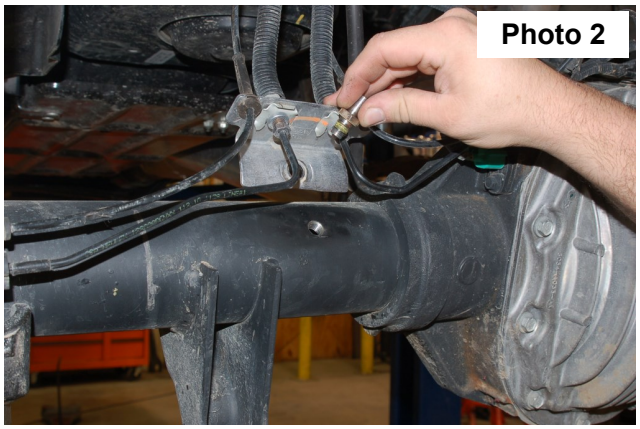
Photo 1



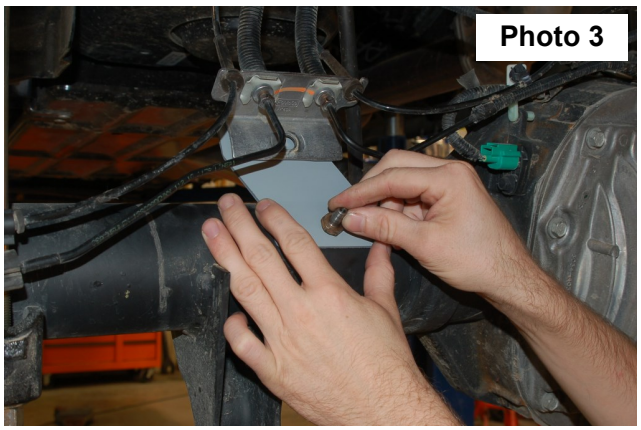
REAR INSTALLATION

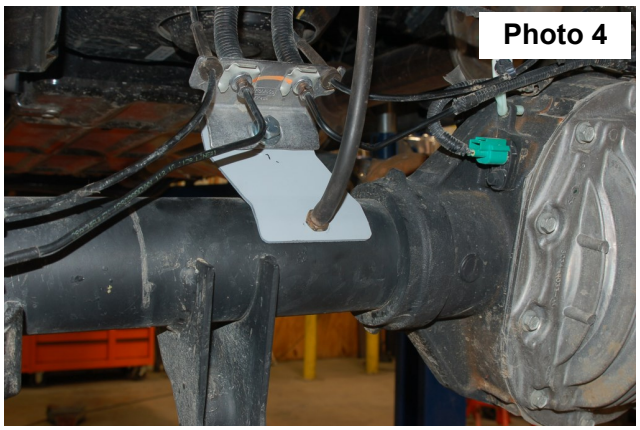
1. Chock front wheels and jack up the rear of the vehicle. Secure with jack stands on the frame rail.
2. Place a floor jack under the rear differential on the rear axle. Using a 18mm wrench for the upper, and 19mm and 15mm wrench for the lower, remove the stock shock absorbers, retain the stock hardware 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.**



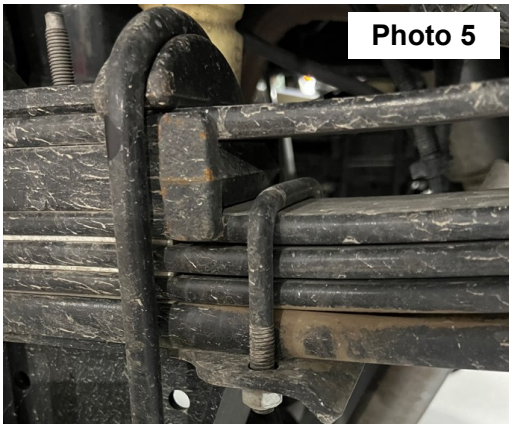


5. Install the supplied bracket in the stock location using the stock hardware. Torque to 28 ft-lbs. using a 5/8” socket. **See Photo 3.**
6. Install the stock brake line bracket to the new bracket with the supplied 7/16” x 1” Bolts, washers and lock nuts and Torque to 45 ft-lbs. using 5/8” wrench. Reinstall 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. Place the rear lift block under the leaf pack. Replace the factory U-bolts with the supplied 5/8” round U-bolts in the factory location using the supplied U-bolt hardware from 5/8BAG. 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. Tighten the 5/8 u-bolts with with a 15/16” socket. **See Photo 5.**



9. Using a 18mm wrench, for the upper, and a 19mm and 15mm wrench for the lower. Install the supplied rear shocks using factory hardware on upper and lower shock mount. Torque to 60 ft-lbs.
10. Install the tires and wheels.
11. Jack up the rear of the vehicle and remove the jack stands. Lower the vehicle to the floor.
12. With the weight of the vehicle on the axle, torque the u-bolts to 150 ft-lbs.
13. 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.



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