INSTALLATION GUIDE

Part#: 022642

HARDCORE LIMITED LIFETIME WARRANTY

4" & 6" High Clearance Suspension System

Dodge Ram 1500 4WD | 2019-2024

Rev. 011124

491 W. Garfield Ave., Coldwater, MI 49036 • Phone: 517-279-2135
E-mail: tech-bds@ridefox.com

Read And Understand All Instructions And Warnings Prior To Installation Of System And Operation Of Vehicle.

THANK YOU

Your truck is about to be fitted with the best suspension system on the market today. That means you will be driving the baddest looking truck in the neighborhood, and you'll have the warranty to ensure that it stays that way for years to come. Thank you for choosing BDS Suspension!

BEFORE YOU START

BDS Suspension Co. recommends this system be installed by a professional technician. In addition to these instructions, professional knowledge of disassembly/ reassembly procedures and post installation checks must be known.

FOR YOUR SAFETY

Certain BDS Suspension products are intended to improve off-road performance. Modifying your vehicle for off-road use may result in the vehicle handling differently than a factory equipped vehicle. Extreme care must be used to prevent loss of control or vehicle rollover. Failure to drive your modified vehicle safely may result in serious injury or death. BDS Suspension Co. does not recommend the combined use of suspension lifts, body lifts, or other lifting devices. You should never operate your modified vehicle under the influence of alcohol or drugs. Always drive your modified vehicle at reduced speeds to ensure your ability to control your vehicle under all driving conditions. Always wear your seat belt.

BEFORE INSTALLATION

- Special literature required: OE Service Manual for model/year of vehicle. Refer to manual for proper disassembly/reassembly procedures of OE and related components.
- Adhere to recommendations when replacement fasteners, retainers and keepers are called out in the OE manual.
- Larger rim and tire combinations may increase leverage on suspension, steering, and related components. When selecting combinations larger than OE, consider the additional stress you could be inducing on the OE and related components.
- Post suspension system vehicles may experience drive line vibrations. Angles may require tuning, slider on shaft may require replacement, shafts may need to be lengthened or trued, and U-joints may need to be replaced.
- Secure and properly block vehicle prior to installation of BDS Suspension components. Always wear safety glasses when using power tools.
- If installation is to be performed without a hoist, BDS Suspension Co. recommends rear alterations first.
- Due to payload options and initial ride height variances, the amount of lift is a base figure. Final ride height dimensions may vary in accordance to original vehicle attitude. Always measure the attitude prior to beginning installation.

FACTORY PROTECTION PLUS

Visit 560plus.com for more information.

TIRES AND WHEELS

6" Lift Wheel and Tire Specs

Tires	*Wheel Size*	*Backspacing*
37"x12.50"	18x9	5"
37"x12.50"	20x9	5"

Stock 18" wheels cannot be re-installed. Stock 20" & 22" can only be re-installed with the factory tire.

4" Lift Wheel and Tire Specs

Tires	*Wheel Size*	*Backspacing*
35"x 12.50"	18 x 9	5"
35"x 12.50"	20 x 9	5"

*Trimming may be required

**IF USING 18IN WHEELS WITH MAXIMUM RECOMMENDED BACKSPACING, TEST FIT WHEELS ON VEHICLE BEFORE MOUNTING TIRES TO ENSURE CLEARANCE

BEFORE YOU DRIVE

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.

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.

Perform head light check and adjustment.

Re-torque all fasteners after 500 miles. Always inspect fasteners and components during routine servicing.

CONTENTS OF YOUR KIT

022642 Box Kit		
Part #	Qty	Description
02242	1	Drive Shaft Spacer
03947	1	Rear Crossmember
01298B	1	Skid Plate
663	1	Drive Shaft Spacer Bolt Pack
	4	12mm-1.75 x 45mm Bolt
	4	12mm Flat Washer
480	1	Differential Bracket Mounting Bolt Pack
	3	12mm-1.75 x 40mm Bolt
	2	12mm-1.75 x 60mm Bolt
	2	12mm-1.75 x 55mm Bolt
	11	12mm Flat Washer
	4	12mm-1.75 Prevailing Torque Nut
	3	1/2"-13 x 1-1/2" Bolt
	4	1/2"-13 x 1-1/4" Bolt
	3	1/2"-13 Prevailing Torque Nut
	10	1/2" SAE Washer
BP1024	1	Bolt Pack
	2	1/4"-20 x 5/8"" Bolt
	2	1/4" Split Lock Washer
	4	1/4" SAE Washer
	4	Wire Clip
	6	10mm-1.5 Prevailing Torque Nut
	6	10mm Flat Washer
	4	3/8" - 16 Prevailing Torque Nut
	8	3/8" SAE Washer
	4	3/8" -16 x 1-1/4" Bolt
02002ZP	4	M18-2.5 x 150 Bolt
N18MPT	4	M18 - 2.5 Prevailing Torque Nut
03982	8	Square Washer
01499	4	1/4" Spacer Washer
342701	1	thread locker - 1ml
22545	2	Front Brake Line
5188	2	Brake Line Clip
CCW-03-050	4	3/8" Brake Line Crush Washer
099000	6	Nylon Cable Tie

022632 & 022633 Knuckle Box Kits		
Part #	Qty	Description
03696	1	Front Steering Knuckle -DRV
03697	1	Front Steering Knuckle -PASS
401-2038	2	Tie Rod End w/Nut
W96S	2	9/16 SAE Washer

022640 & 022641 Knuckle Box Kits - LARGE BORE KIT		
Part #	Qty	Description
03794	1	Front Steering Knuckle LARGE BORE-DRV
03795	1	Front Steering Knuckle LARGE BORE -PASS
401-2038	2	Tie Rod End w/Nut
W96S	2	9/16 SAE Washer

022643 Front Box Kit		
Part #	Qty	Description
03946	1	Front Crossmember
03658	1	Diff Drop Bracket PASS
03656	1	Diff Drop Bracket Inner DRV
03655	1	Diff Drop Bracket Outer DRV
03661	1	Diff Drop Bracket Rear DRV
03931	1	Sway Bar Drop Bracket DRV
03932	1	Sway Bar Drop Bracket PASS
01572	1	BDS Badge
97525A430	2	Rivots

022636 6" Strut Spacer Box Kit		
Part #	Qty	Description
01267B	2	6" Strut Spacer
01278	2	Preload Spacer

022404 4" Strut Spacer Box Kit		
Part #	Qty	Description
02267B	2	4" Strut Spacer

IMPORTANT

It is required that ride height measurements be taken before and after installation. Measure from the **WHEEL AXLE CENTER** up to the **FENDER LIP** of the wheel opening. Do this for all 4 wheels. Record measurements below.**

BEFORE

*Left Front*_____ *Right Front*_____

*Left Rear*_____ *Right Rear*_____

AFTER

*Left Front*_____ *Right Front*_____

*Left Rear*_____ *Right Rear*_____

***These ride heights will be required if you have any ride height concerns after installation. Please be prepared to provide these to Technical Support.*

TROUBLESHOOTING INFORMATION FOR YOUR VEHICLE

1. Will not fit air suspension equipped models.
2. Ensure you have the correct knuckles. Models equipped with factory 22" wheels require large bore knuckles.

TECH TIPS

INSTALLATION INSTRUCTIONS

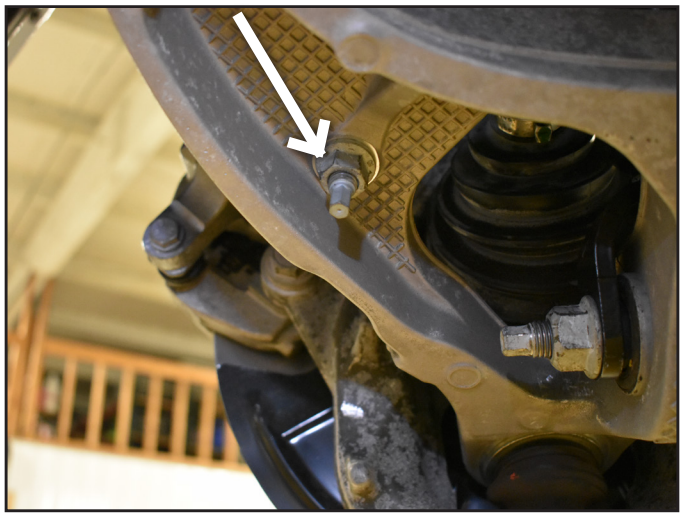
PRE-INSTALLATION MEASUREMENTS

Measure and record ride heights as described on page 4.

FRONT INSTALLATION

1. Park the vehicle on a clean, flat surface and block the rear wheels for safety.
2. Raise the front of the vehicle and support with jack stands under the frame rails.
3. Remove the wheels.
4. Disconnect the sway bar links from the lower control arm. Leave the links attached to the sway bar. (Fig 1).

FIGURE 1



5. Remove and discard the OE front skid plate, if equipped.
6. Disconnect the tie rod ends from the steering knuckles. Remove and retain the mounting nuts. Use the appropriate puller to separate the tie rod end from the steering knuckle.
7. Disconnect the ABS brake line at the frame. Remove it from any retaining clips.
8. Disconnect the driver's side front brake hose from the caliper. Retain the banjo bolt and discard the crush washers.
9. Disconnect the hard line from the brake hose fitting at the frame. Remove the hose fitting retaining bolt and remove the hose from the vehicle. Discard the hose fitting mounting bolt.
10. Route the new stainless steel brake line though the original brake line hole in the frame, attach it to the hard line. Tighten the fitting securely using a 3/4" wrench to hold the replacement line fitting in place directing the line slightly towards the strut (Figure 2A). Fasten the line to the frame with the provided retaining clip. (Figure 2B).

FIGURE 2A

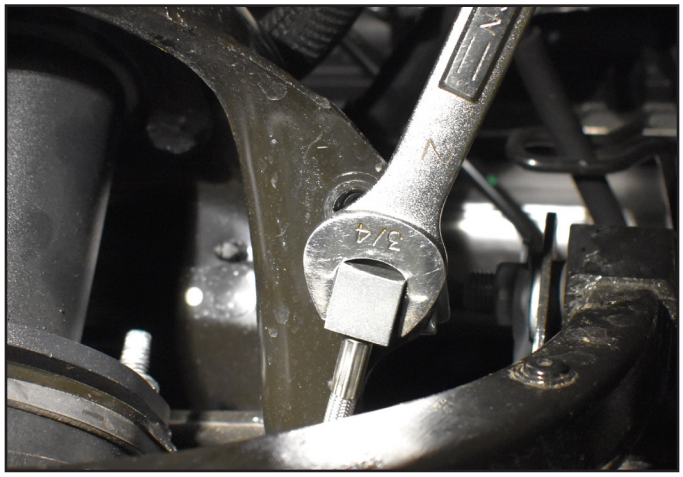
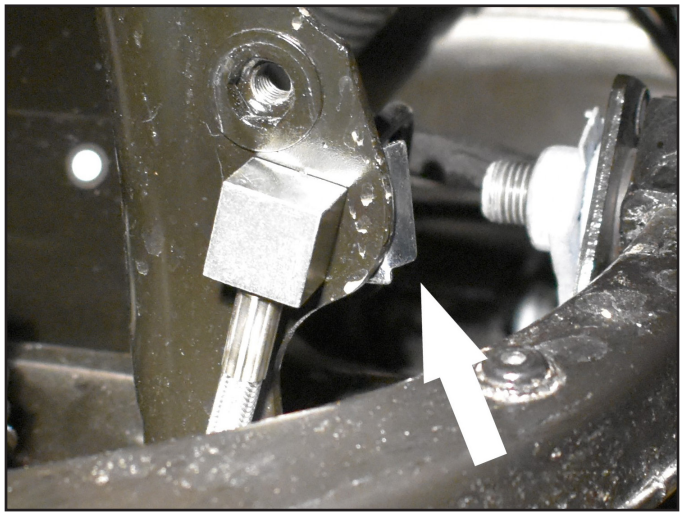
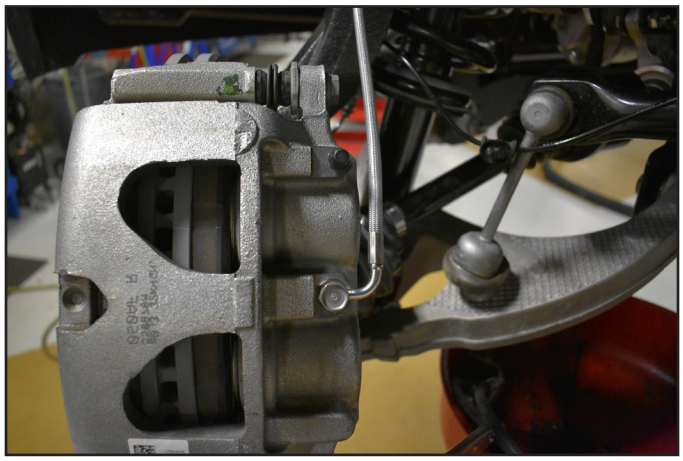


FIGURE 2B



11. Attach the opposite end of the new brake line to the caliper holding the fitting to keep the line parallel with the back of the caliper with the OE banjo bolt and one new crush washer on each side of the fitting. Torque the banjo bolt to 18 ft-lbs. (Figure 3)
12. Repeat brake line installation on the opposite side of the vehicle.

FIGURE 3

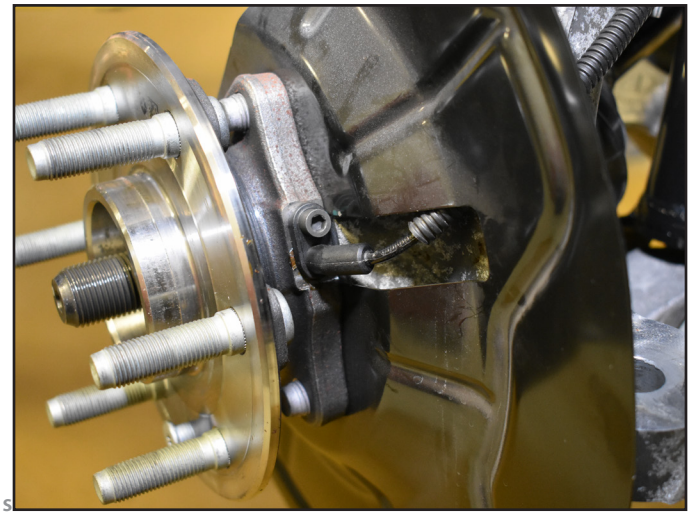


13. Remove the brake caliper anchor bracket bolts and pull the caliper free from the steering knuckle and rotor. Hang the caliper securely out of the way. Retain caliper mounting hardware.

Tip *Do not allow the brake caliper to hang from the brake line.*

14. Remove the brake rotor torx screw from the hub using a T30 Torx bit. Remove brake rotor from the hub.

FIGURE 4



15. Remove ABS sensor from hub (Figure 4). Route the wires and sensor away from the knuckle and tuck out of the way.
16. Remove the hub axle nut using a 35mm socket. Retain nut.
17. Loosen but do not remove the lower control arm bolts.
18. Disconnect the CV axles from the differential by carefully prying CV out at the differential to disengage the internal retaining clip. Pry the shaft out just enough to release the clip and leave the axle on the differential at this time.
19. Support the lower control arm with a hydraulic jack. Remove the three strut-to-frame mounting nuts (Fig 5).

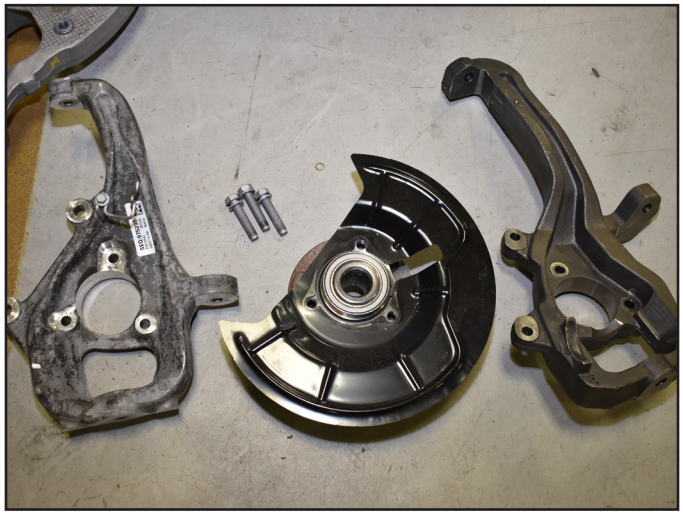
Caution *DO NOT loosen the middle strut nut.*

FIGURE 5

20. Loosen the strut-to-lower control arm hardware. Remove the nut from the bolt and leave the bolt in place to temporarily retain the strut to the lower control arm. Retain the nut.
21. Remove the upper and lower ball joint nuts. Reinstall the nuts a few turns by hand. Separate the upper and lower ball joints from the steering knuckle using the appropriate puller. Take care not to damage the ball joint.

22. Remove the upper ball joint nut. Lower the jack enough to allow removal of the strut. Remove the lower strut bolt and remove the strut from the vehicle. Mark the strut from the appropriate side (driver's or passenger's). Retain mounting bolt and upper ball joint nuts.
23. Continue to lower the jack allowing the knuckle/CV axle and lower control arm to swing down. Slide the CV axle off of the differential. Remove the CV axle from hub.
24. Remove the lower ball joint nut and remove the knuckle from the lower control arm. Retain the lower ball joint nut.
25. Remove the three bolts mounting the hub bearing assembly to the OE steering knuckle. Retain the mounting bolts. Remove the hub assembly and dust shield from the knuckle.
26. Install the hubs in the corresponding new knuckles (03696, 03697, or 03794, 03795 for large bore knuckles) and fasten with the stock mounting bolts (Fig 5). Index the hub so that the ABS line runs out the front side of the knuckle toward the steering arm. Use thread locker on the bolt threads and torque to 125 ft-lbs.

FIGURE 6



27. Remove the lower control arms from the frame. Retain hardware.
28. Make indexing marks on the front drive shaft and differential input flange for realignment later (Figure 7). Remove the four bolts and disconnect the drive shaft from the differential. Support the driveshaft to keep the CV boot from binding. Discard mounting bolts.

Tip *Failure to support the driveshaft can lead to pinching the rubber boot at the CV joint which can damage the seal causing a leak and premature wear on the joint.*

FIGURE 7

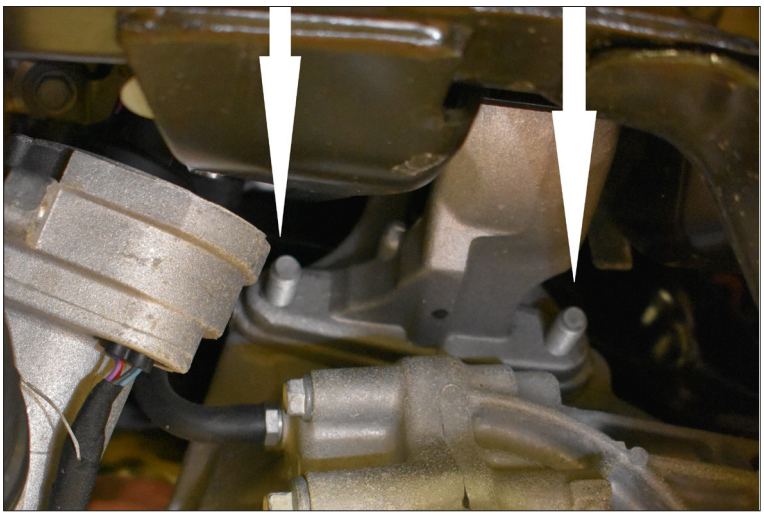
29. Remove sway bar mounts from frame and remove sway bar assembly. Retain Hardware
30. Remove the four bolts mounting the OE rear crossmember (Figure 8) to the frame rails and remove the crossmember from the vehicle. Discard the crossmember and the hardware.

FIGURE 8

31. Using a jack, support the differential. Loosen and remove the two forward-most differential mounting bolts on the driver's side (Figure 9) you may need to manipulate the wiring harness location in order to give enough clearance for these bolts to come loose.

Tip *If using a ratcheting wrench, make sure it is reversible as you may get into a position where it gets stuck on the rib of the differential.*

FIGURE 9



32. Loosen but do not remove the three rear driver's side bolts (Figure 10) and the two passenger's side bolts (Figure 11). On the passenger's side, if equipped, remove the differential actuator cable bracket, It will not be reused. Disconnect the wiring connector from the differential.

FIGURE 10

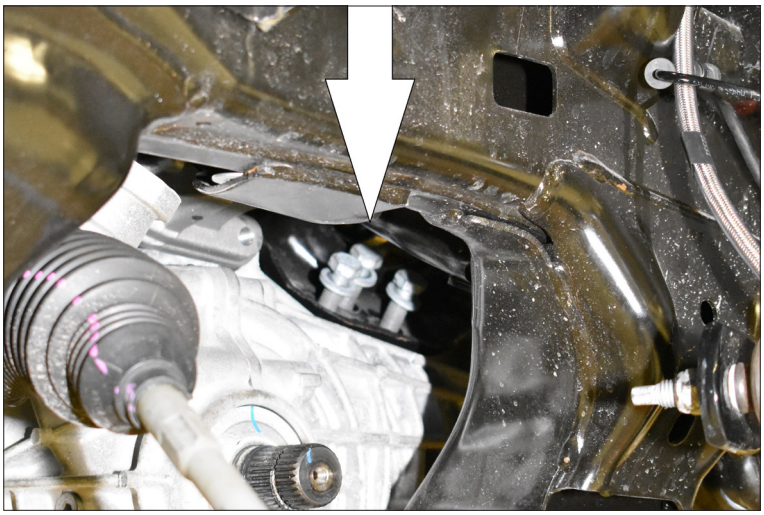
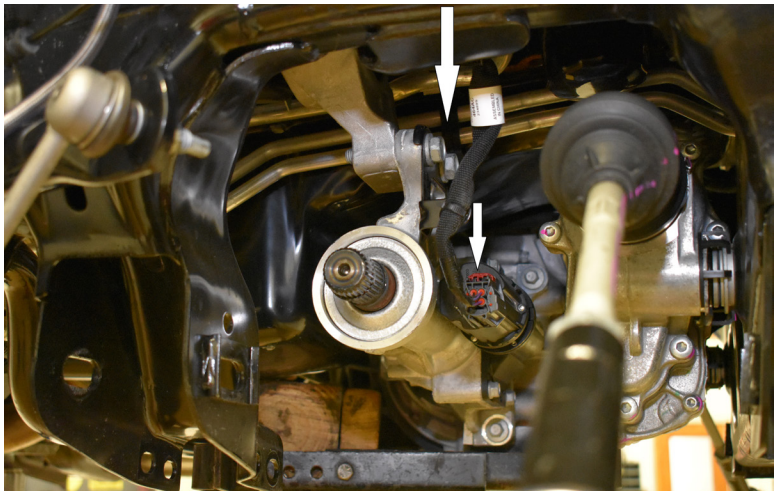
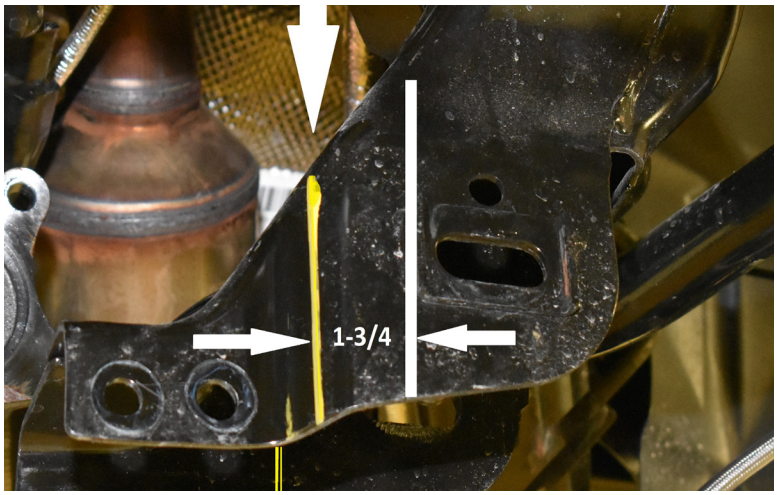


FIGURE 11



33. With the differential securely supported, remove the remaining bolts and lower the differential from the vehicle.
34. The driver's side rear lower control arm pocket must be trimmed to provide clearance for the differential in its lowered position. Measure inward from the inside edge of the alignment cam slot 1-3/4" and mark. Repeat on the opposite side of the pocket. Make a continuous line connecting the two marks over the top edge of the pocket. Trim the pocket on the line with a sawzall or cut off wheel. Paint any exposed metal to prevent corrosion (Figure 13).

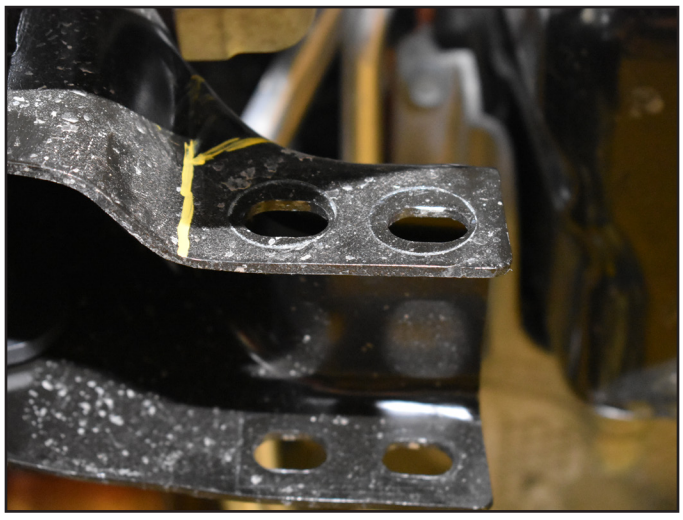
FIGURE 13A



35. Cut the rear passenger side as shown in Figure 13B. Mark 3" from inside edge, cut up to bend in stamped bracket and then cut straight out perpendicular to the angled surface. Cut using a sawsall or equivalent.

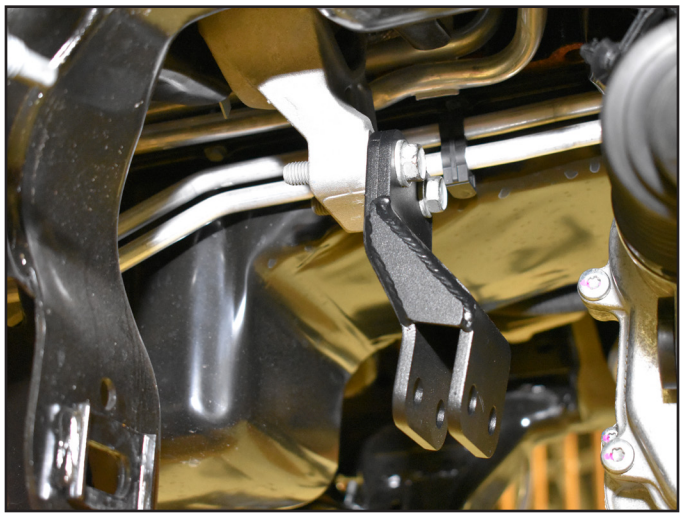
FIGURE 13B

FIGURE 13C



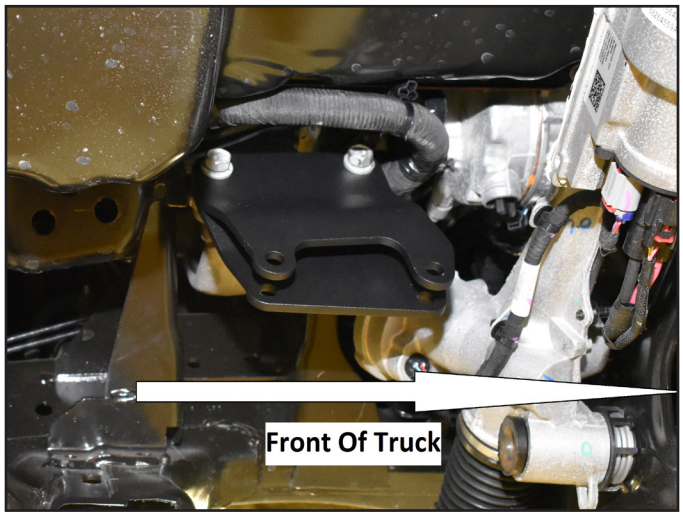
36. Install the provided passenger's side differential drop bracket (03658) to the original frame mount with OE hardware. The brackets should be installed offset forward as shown (Fig 14). Leave hardware loose.

FIGURE 14



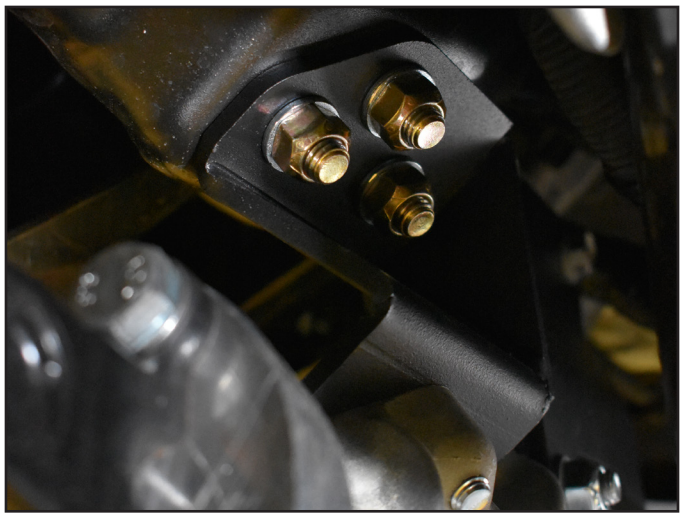
37. Install the two front driver's side front differential drop brackets so that the bracket without the lower cutout (03655) is toward the outside of the vehicle (offsetting out) and the one with the cutout (03656) is on the inside (offsetting in). Fasten the brackets to the frame with OE bolts with thread locker into the factory threaded holes. Leave hardware loose. (Fig. 15)

FIGURE 15



38. Install the driver's side rear differential drop bracket (03661) to the OE mount location with three 1/2" x 1-1/2" bolts and ½" SAE washers (BP #480). (Figure 16) The bracket will have the gusset plate towards the front of the vehicle. Leave hardware loose.

FIGURE 16



39. Using a jack (and an assistant to aid in balancing) raise the differential up to the new brackets.

40. Attach the differential to the driver's side front bracket and passenger's side bracket with 12mm x 60mm bolts, nuts and washers (BP #480). Use the 1/4" washers (01499) on both sides of the differential and between the front diff brackets. (Figure 17 & 18)

FIGURE 17

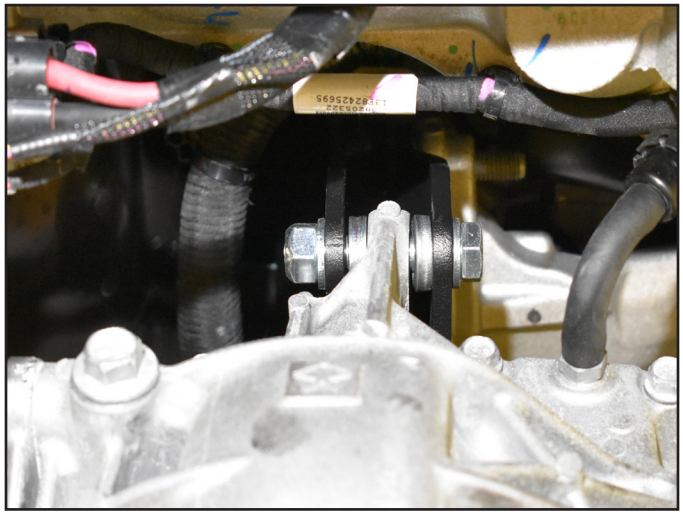
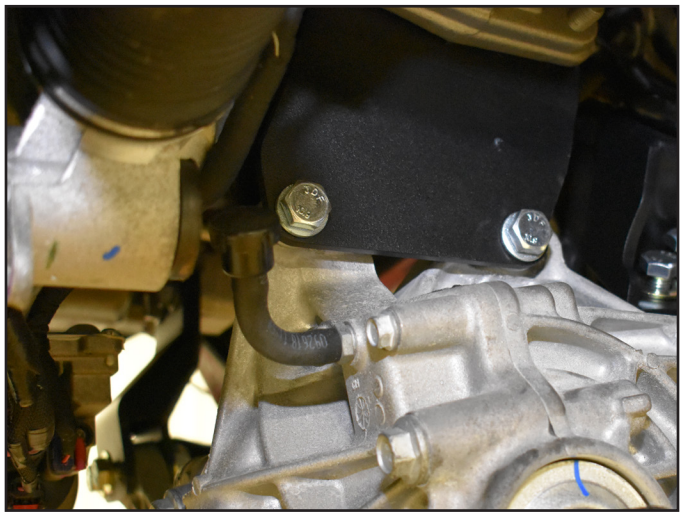
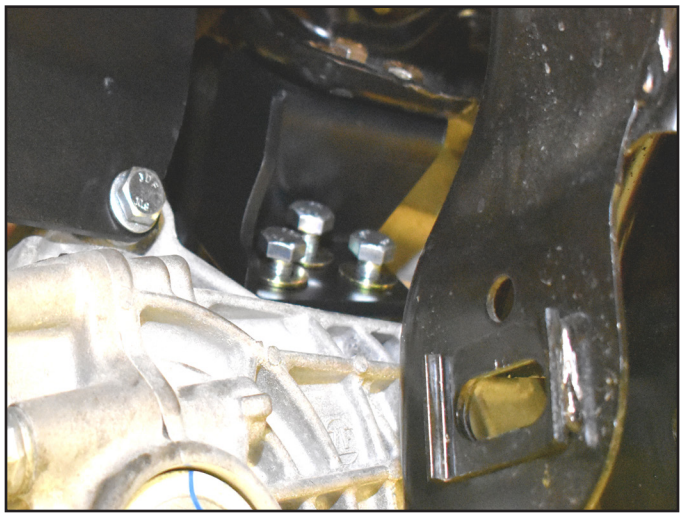


FIGURE 18



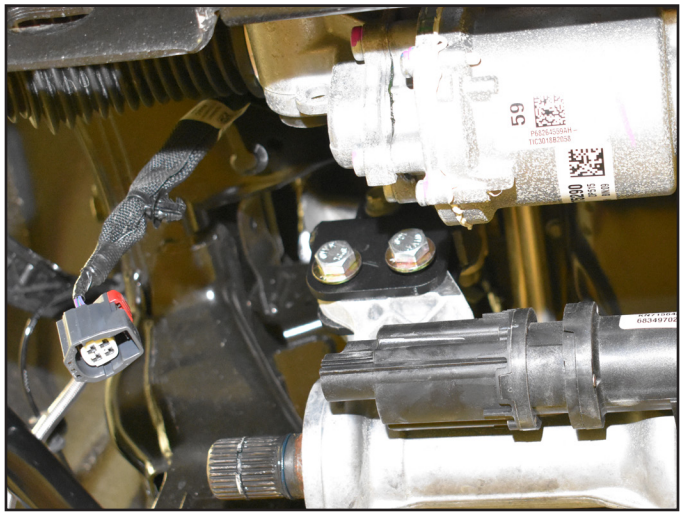
41. Attach the drivers side rear bracket to the differential with 12mm x 40mm bolts and washers (BP #480). Leave all differential hardware loose. (Figure 19).

FIGURE 19



42. Attach the Passenger side differential to the bracket using 12mm x 60mm bolts and washers. (BP 480) (Figure 20)

FIGURE 20



43. Torque all 14 differential mounting bolts, start by tightening the new brackets to the factory mounting positions (upper bolts), then work your way from driver side to passenger tightening the brackets to the differential (lower bolts). Torque the ½" hardware to 65 ft-lbs and the 12mm hardware to 50 ft-lbs.
44. Locate the front differential wiring harness. Remove from factory clips to give enough slack to reach the differential. Reattach to differential and tie up extra slack with provided zip ties.
45. Install the new front crossmember (01295) in the OE front lower control arm pockets (Figure 21B) and loosely fasten with the provided 18mm x 150mm bolts, nuts in conjunction with the cam slot washers (03982). See next step for information on the adjustable cam washers

    Note: The offset in the crossmember goes to the front, bolts run from front to rear.
46. Provided cam washers allow for adjustablity to compensate for frame variances. (Figure 21A). When installing cam washers determine in what position fits best to your frame. Make sure whatever position the cam washer is in that the other side is opposite. For example, if your frame is wide, you would offset your cam washers to the outside of the vehicle on either side.

FIGURE 21A

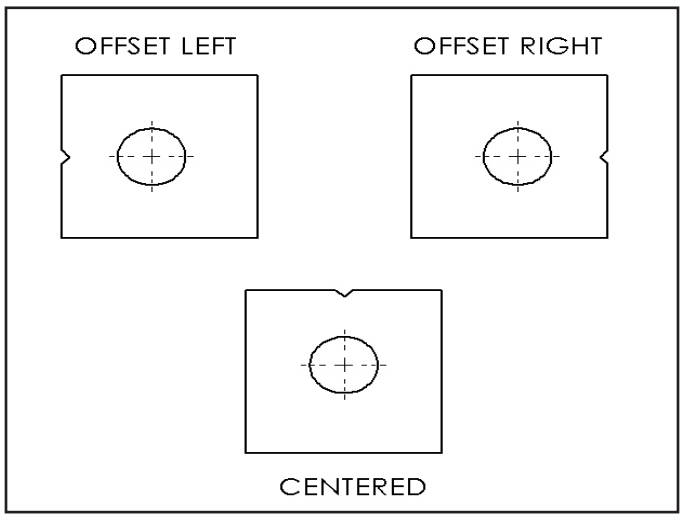
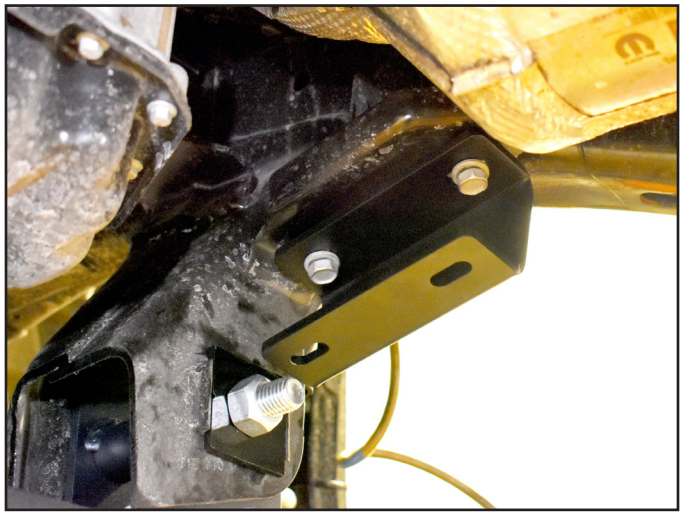


FIGURE 21B

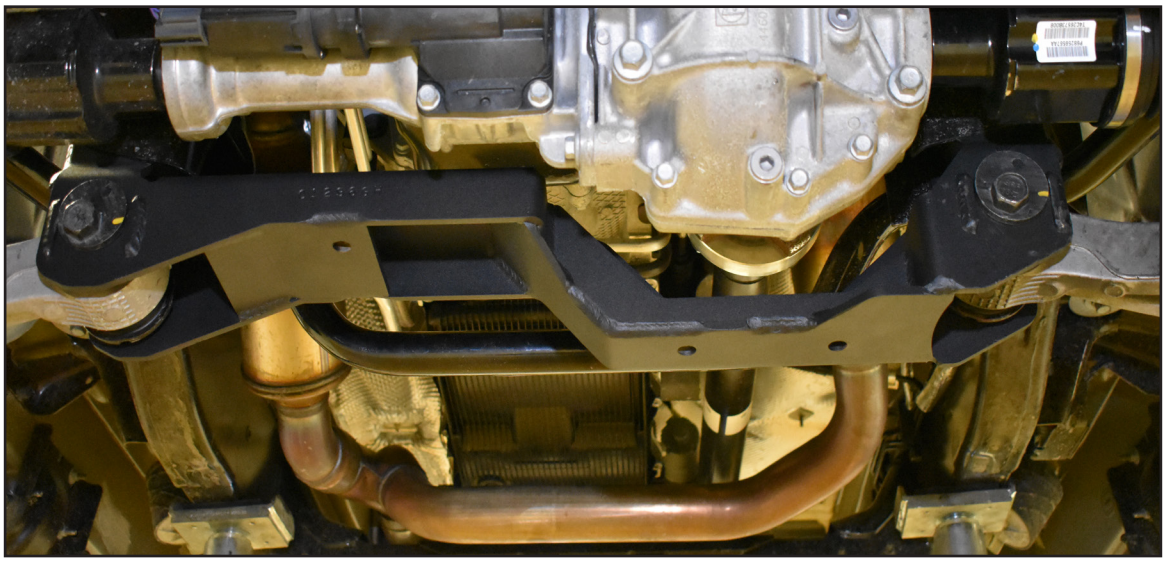
47. Install Sway Bar drop Brackets using OE hardware in the upper sway bar mounts (03931/03932) (Figure 22).

FIGURE 22



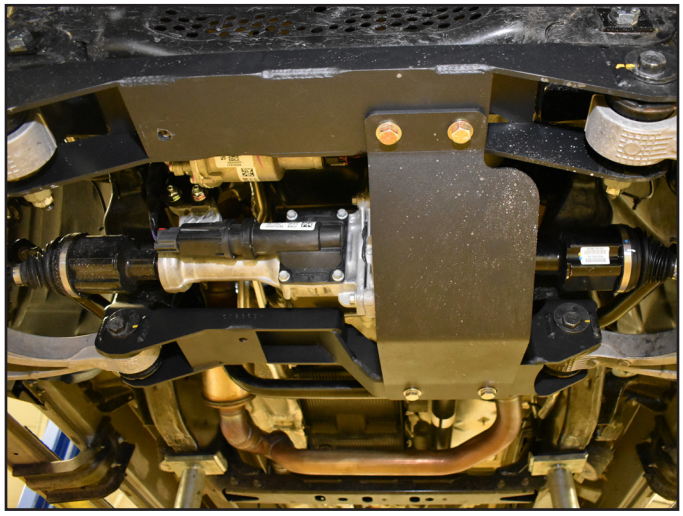
48. Install the new rear crossmember (01296B) in the OE rear lower control arm pockets and loosely fasten with the provided 18mm x 150mm bolts, nuts in conjunction with the provided cam slot washers (03982). Run the bolts from front to rear and leave loose at this time. (Figure 243

FIGURE 23



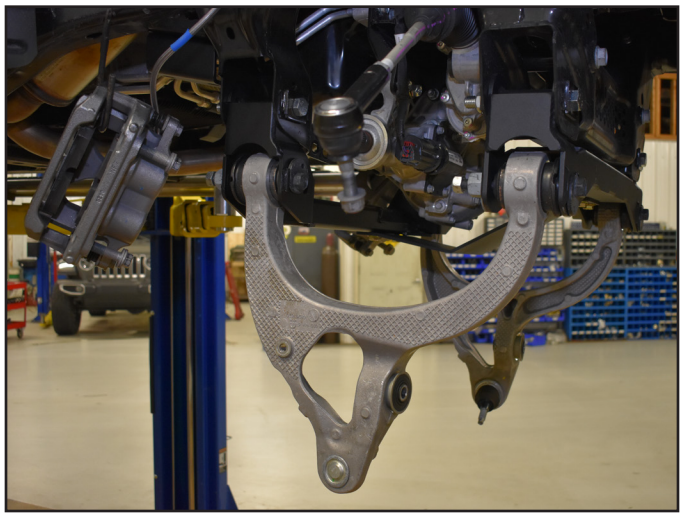
49. Install the new differential skid plate to the front crossmember with ½" x 1-1/4" bolts and ½" SAE washers (BP #480) into the welded nuts in the crossmember. Install the back of the skid plate to the rear crossmember with ½" x 1-1/4" bolts and ½" SAE washers (BP #480) into the welded nuts in the crossmember. Leave hardware loose. (Figure 24)

FIGURE 24



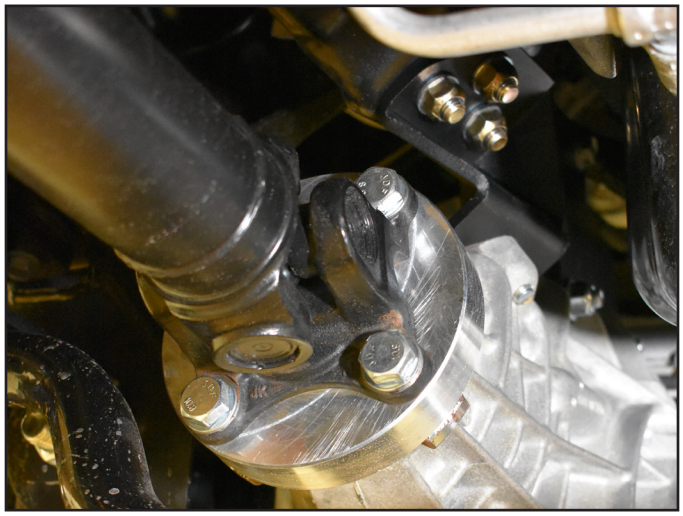
50. Install the lower control arms in the front and rear crossmembers. Attach the control arms to the crossmembers with the OE cam bolts, washers and nuts running from front to rear. Leave hardware loose. (Figure 25)

FIGURE 25



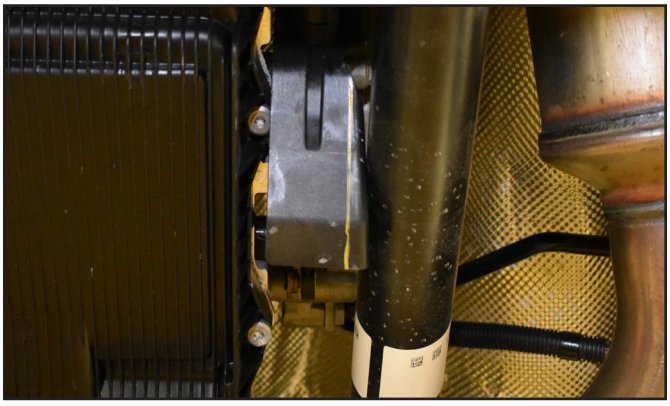
51. With the lower control arms installed, torque the 18mm crossmember mounting bolts to 220 ft-lbs. Torque the ½" differential skid plate hardware to 65 ft-lbs.
52. Install the provided drive shaft spacer (02242) on the differential input flange. Attach the front driveshaft to the differential by aligning the marks made earlier. Fasten the driveshaft and spacer to the differential flange with 12mm x 45mm bolts and 12mm washers (BP #663). Use thread locker on the bolt threads and torque to 55 ft-lbs. (Figure 26)

FIGURE 26



53. On some new vehicles it is necessary to trim a splash guard located on the transmission shift linkage to clear the drive shaft. (Figure 27)
54. Install BDS logo plate on front of the crossmember using provided rivots.

FIGURE 27



55. **Steps 56-59 are for the 6 inch kit only, For 4 inch kits, move to step 60.** In order to give a close to level stance after installation, preload spacers are included in these systems. Install the preload spacers if a more level stance is desired. The preload spacer will reduce the rake by an additional 5/8". Place indexing marks on the strut body, strut cap and upper coil seat (Figure 28 & 29) for realignment of the components when the strut is reassembled.

Note: If installing the 6" kit on a Rebel or truck with an "Off Road Group Package" the truck will sit about ½" front high with the preload spacer installed. If the preload spacer is not installed the truck will sit with about 3/8" of rake.

FIGURE 28

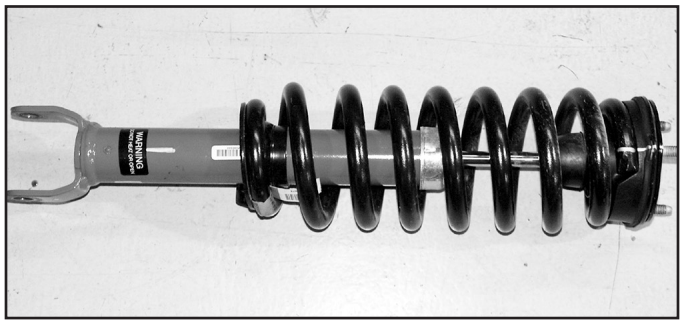
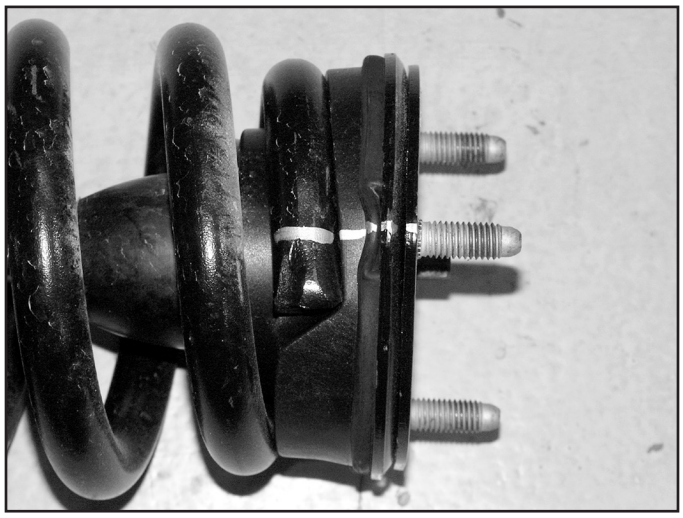


FIGURE 29

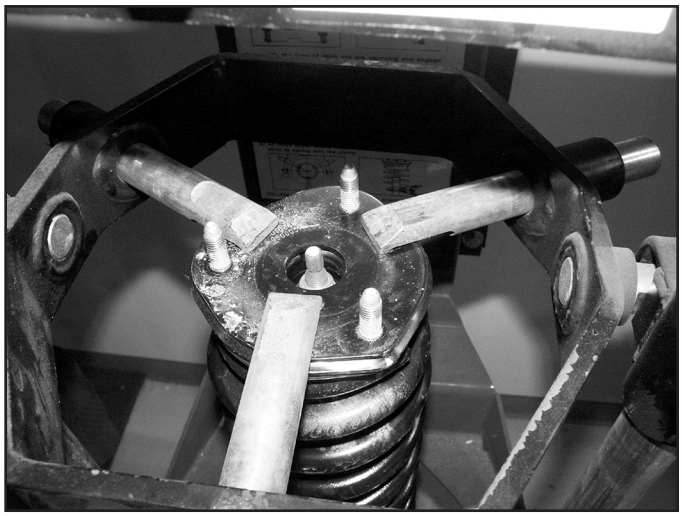


! Caution ***Coil spring is under extreme pressure. Improper removal/installation of coil spring could result in serious injury or death. Use only a high-quality spring compressor and carefully read and follow the manufacturer's instructions.***

56. Using an appropriate strut compressor, compress the coil spring and remove the upper strut nut (Figure 30). Remove the strut, strut cap and upper coil seat from the coil spring.

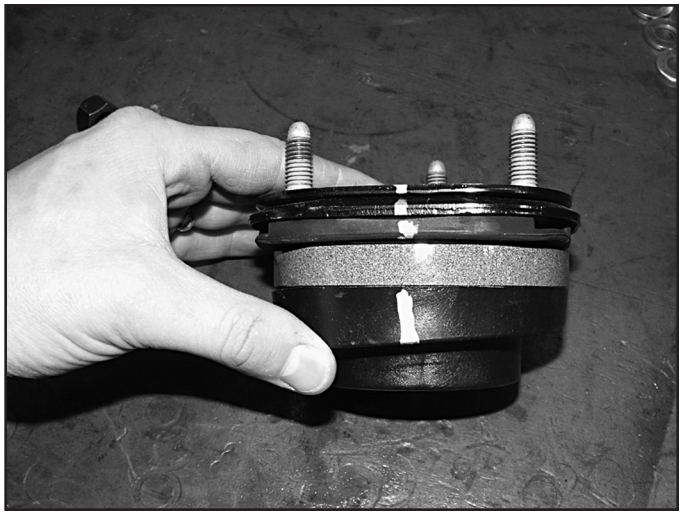
    Note: If equipped, transfer the coil wrap onto the upper coil windings.

FIGURE 30



57. Place the provided preload spacer (01278) between the plastic coil seat and the rubber isolator (Figure 31).

FIGURE 31

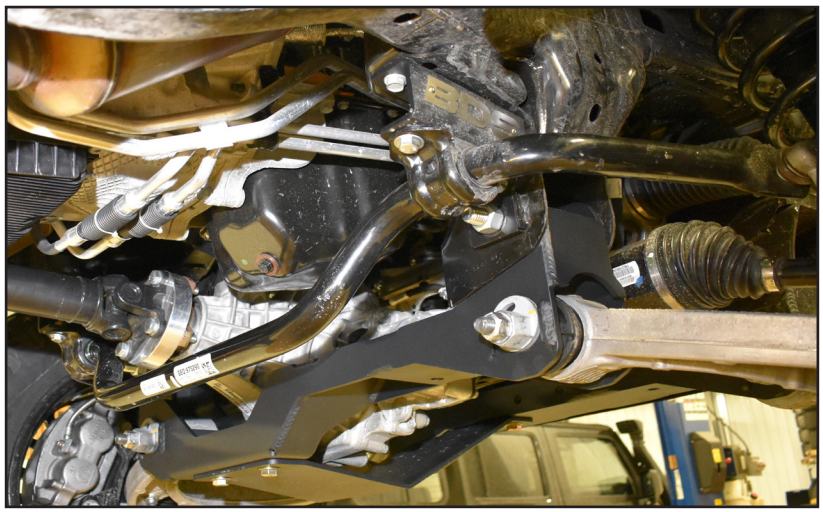


58. Reassemble the strut as it was taken apart by aligning the index marks made earlier. Fasten the assembly with the OE strut nut. Torque nut to 50 ft-lbs.
59. Install the provided strut spacers (01267B for 6" kit, 02267B for 4 inch kit) on the struts with the original strut mounting hardware (Figure 32) Torque nuts to 30 ft-lbs.

FIGURE 32

60. Loosely install the strut assemblies on the appropriate sides of the truck with the provided 10mm nuts and washers (BP #481) on the strut spacer studs.
61. Install the new driver's side steering knuckle to the driver's side lower control arm ball joint and loosely attach with the original nut. Install the driver's side CV axle in the hub and loosely fasten with the original axle nut. Swing the knuckle/CV assembly up while aligning the axle with the differential output shaft. Loosely attach the strut to the lower control arm with the original hardware. Push the CV axle all the way onto the differential output to seat the internal retaining clip.
62. Support the lower control arm with a hydraulic jack and attach the knuckle to the upper ball joint with the OE nut.
63. Torque the upper ball joint nut to 55 ft-lbs and the lower ball joint nut to 60 ft-lbs. Torque the axle nut to 185 ft-lbs. Torque the upper strut-to-frame nuts to 30 ft-lbs.
64. Repeat knuckle/CV installation on passenger's side.
65. Route ABS line on back side of knuckle, through brake dust shield and into hub. Fasten with stock hardware and thread locker.
66. Install the brake rotor and caliper on the knuckle/hub. Torque the OE caliper bolts to 130 ft-lbs. Use thread locker on the caliper bolts.
67. Attach sway bar to sway bar extension mounts using 3/8-16" x 1-1/4" bolts, washers and prevailing torque nuts (BP 481) (Figure 33) insert sway bar link into lower control arms and fasten using OE hardware.

FIGURE 33

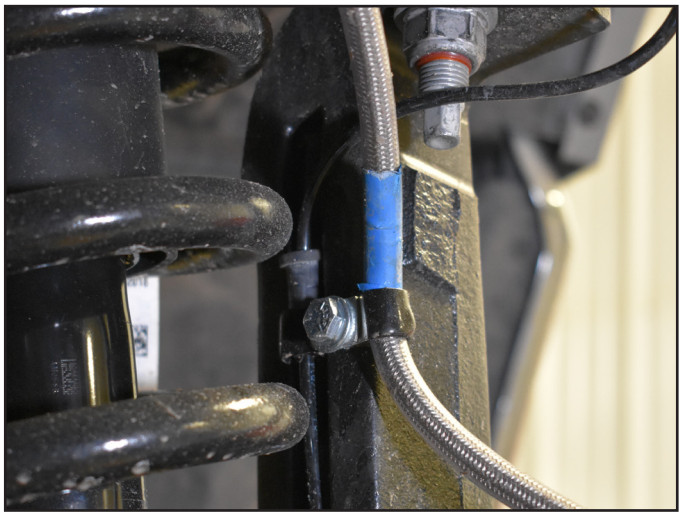


68. Remove stock tie rod ends and replace with provided replacement tie rod ends (401-2038). Attach the tie rod ends to the new steering knuckles with the included washer and nut. Torque to 55 ft-lbs. Securely lock off the jam nut.

Tip When installing the provided tie rod end: 4in kits it is recommended to have approximately 2 threads exposed passed the jam nut, 6in kits it is recommended to keep the jam nut in the stock location for ease of alignment adjustment..

69. Route the brake and ABS lines around the back side of the knuckle. Attach the brake line and ABS wire with 1/4" hardware and clamps bolt pack #481 to the threaded hole in the backside of the steering knuckle. Offset the clamps to the outside and into the inner cavity of the knuckle. Secure the ABS wire with zip ties at other locations to prevent any contact with rotating / moving parts. Ensure there is adequate slack and clearance between the brake line and suspension components. (Figure 34) The Brake line is designed to be tight between the mounting points to ensure there is no interference with the tire during the full cycle of the suspension.

FIGURE 34



70. Reinstall front wheels. Torque to OE specifications, see owner's manual.
71. Lower the vehicle to the ground and bounce the front to settle the suspension.
72. Center the lower cams and torque lower control arm hardware to 125 ft-lbs. Torque the strut-to-lower control arm bolt to 125 ft-lbs.
73. If the front brakelines were disconnected or replaced, the front brakes must be bled before driving vehicle. Also do a final check to ensure the brake lines will not contact the tire or other moving components.
74. Check all fasteners for proper torque. Recheck all fasteners after 500 miles and at regularly scheduled maintenance intervals.
75. A complete front end alignment is required. Do not drive the vehicle with the steering wheel off center. This can cause unsafe driving conditions.

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2019-2020 DODGE RAM 1500 4/6 INCH SUSPENSION SYSTEM

TORQUE SPECIFICATIONS

COMPONENT	TORQUE (FT-LBS)
Hub to Knuckle Mounting Bolts	125
1/2” Diff Mounting Bracket Hardware	65
12mm Diff Mounting Bracket Hardware	50
18mm Crossmember Bolts	220
1/2” Skid Plate Hardware	65
Driveshaft Mounting Bolts	55
Front Strut Top Nut	50
Strut Spacer Hardware	30
Upper Ball Joint	55
Lower Ball Joint	60
CV Axle Nut	185
Upper Strut Spacer to Frame Nuts	30
Caliper Mount Bolts	130
Tie Rod to Knuckle	55
Lower Control Arms	125
Strut Lower Bolt	125