



#D2500 Installation Instructions 2002-2005 Dodge Ram 1500 4WD 5" Suspension System

Read and understand all instructions and warnings prior to installation of product and operation of vehicle.

Zone Offroad Products 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. Minimum tool requirements include the following: Assorted metric and standard wrenches, hammer, hydraulic floor jack and a set of jack stands. See the "Special Tools Required" section for additional tools needed to complete this installation properly and safely.

» PRODUCT SAFETY WARNING

Certain Zone 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. Zone Offroad Products 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.

» TECHNICAL SUPPORT

Live Chat provides instant communication with Zone tech support. Anyone can access live chat through a link on www.zoneoffroad.com.

www.zoneoffroad.com may have additional information about this product including the latest instructions, videos, photos, etc.

Send an e-mail to tech@zoneoffroad.com detailing your issue for a quick response.

888.998.ZONE Call to speak directly with Zone tech support.

» PRE-INSTALLATION NOTES

1. Special literature required: OE Service Manual for model/year of vehicle. Refer to manual for proper disassembly/reassembly procedures of OE and related components.
2. Adhere to recommendations when replacement fasteners, retainers and keepers are called out in the OE manual.
3. 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.
4. 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.
5. Secure and properly block vehicle prior to installation of Zone Offroad Products. Always wear safety glasses when using power tools.
6. If installation is to be performed without a hoist, Zone Offroad Products recommends rear alterations first.
7. 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.

Difficulty Level

easy 1 2 3 **4** 5 difficult

Estimated installation: hours

Special Tools Required

Torsion Bar Unloading Tool

Tire/Wheel Fitment

35 x 12.50 Tire

17 x 9 w/4.5" BS Wheel

Kit Contents

Qty	Part		
		2	Sleeve - 0.63 x 0.08 x 3.50
1	Steering Knuckle (drv)	1	Bolt Pack - Torsion Bar/Bump Stop (#618)
1	Steering Knuckle (pass)	1	Differential Skid Plate
2	Tie Rod Ends (18mm)	2	Sway Bar Link Extension
1	Front Crossmember	1	Bolt Pack - Sway Bar Links (#654)
1	Rear Crossmember	1	Front Driveshaft Spacer
4	Lower Control Arm Bushing	1	Bolt pack - Front Driveshaft/Misc (#779)
2	Lower Control Arm Sleeve	1	Differential Brkt (pass)
2	Lower Control Arm Washer - 0.250" Thk	1	Differential Brkt (drv)
2	Lower Control Arm Washer - 0.125" Thk	1	Differential Brkt (pass)
2	Straight Grease Zerk	1	Differential Brkt
1	Bolt Pack - Crossmembers/Skid Plate (#655)	1	Bolt Pack - Differential Drop (#617)
2	Torsion Bar Drop Bracket	1	Loctite



» PRE-INSTALLATION NOTES

- A special tool is required to load/unload the torsion bars. The Dodge service manual lists tool #8686. This tool differs slightly from the C-clamp style tool used on most other IFS vehicles.
- The factory service manual specifically states that striking the knuckle to loosen the ball joints or tie rod ends is prohibited. Striking the aluminum knuckle can damage it. A special puller tool #8677 (or equivalent ball joint tool) is recommended to be used to separate these components from the knuckle. If the knuckle is struck with a hammer to remove the tie rods/ball joints, discard the knuckle.
- On some vehicles an exhaust modification will be required to clear the front driveshaft in its new, lower position.
- A T-60 impact quality torx socket is necessary for the installation of this kit.

» 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. Measure and record the length of the exposed thread on the torsion bar adjusting bolts for later reference **Figure 1**.



Figure 1

5. Remove the torsion bar adjuster bolt and retainer block.
6. Mark the unloaded torsion bars to indicate passenger's and driver's side. Mark both of the torsion bars to indicate the front versus the rear for later installation. Mark the rear of the bars relative to the adjusting arms to indicate indexing.
7. Pull the torsion bars back out of the lower control arms and remove them from the vehicle.
8. Remove the factory shocks. Save the lower mounting hardware. **Figure 2**
9. Disconnect the sway bar links from the sway bar. Save all bushings and cup washers. **Figure 2**
10. If equipped, remove the factory front skid plate. It will not be reused.

Important—measure before starting!

Measure from the center of the wheel up to the bottom edge of the wheel opening

LF _____ RF _____

LR _____ RR _____

Important—measure before starting!

Measure from the exposed length of the torsion bar adjusters before starting:

Drv _____ Pass _____

Caution: There is an extreme amount of energy stored in the torsion bars. Use extreme care with the proper tools to avoid serious injury or death.

Step 5 Caution

The torsion bars are under extreme pressure. Use the correct unloading tool to remove the pressure on the torsion bars before attempting to remove the assembly. Be sure to follow the OE manual and the torsion bar unloading tool literature as to how to unload the torsion bars properly.

11. Disconnect the tie rod ends from the steering knuckles **Figure 2**. Remove and save the mounting nuts. Use the appropriate puller to separate the tie rod end from the steering knuckle. Take care not to damage the tie rod end.

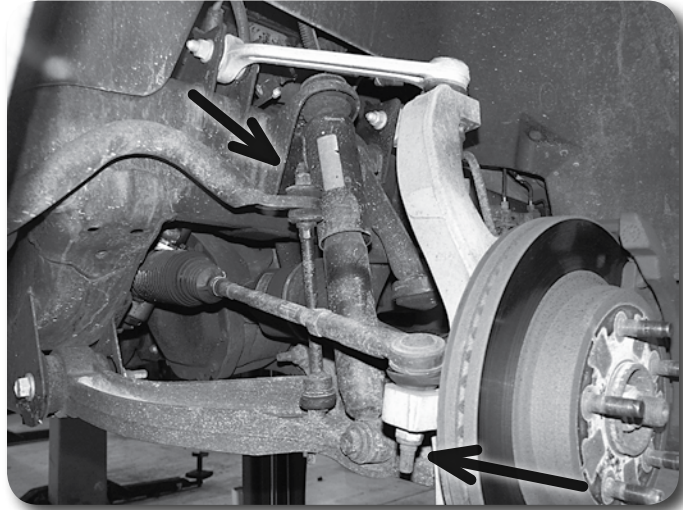


Figure 2

12. If equipped, disconnect the ABS brake line at the frame. **Figure 3** Remove it from any retaining clips.



Figure 3

Step 13 Note

Do not allow the brake caliper to hang from the brake hose.

13. Remove the brake caliper anchor bracket bolts **Figure 4** and pull the caliper free from the steering knuckle and rotor. Hang the caliper securely out of the way. Save caliper mounting hardware. Remove the brake rotor from the hub.

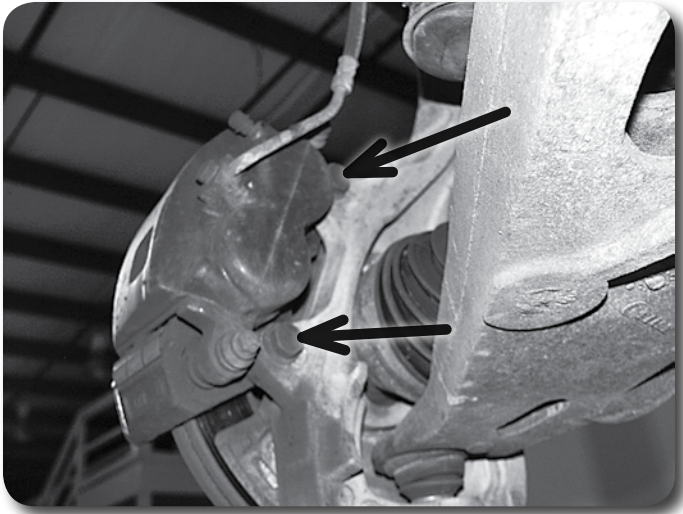


Figure 4

14. Remove the hub axle nut and save. Figure 5

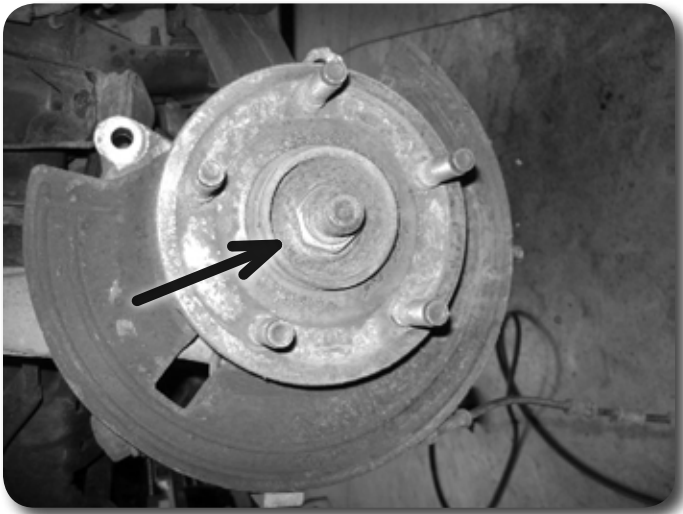


Figure 5

15. Loosen but do not remove the lower control arm bolts.
16. Disconnect the CV axles from the differential by carefully prying CV out at the differential to disengage the internal retaining clip Figure 6. Pry the shaft out just enough to release the clip and leave the axle on the differential at this time.

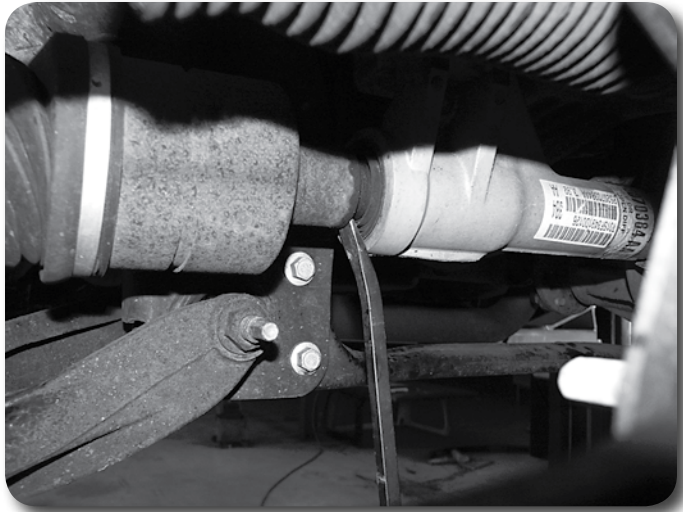


Figure 6

17. 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. **Figure 7** Take care not to damage the ball joint. Remove the upper ball joint nut and allow the knuckle/CV axle and lower control arm to swing down while sliding the CV axle off of the differential. Remove the CV axle from hub.

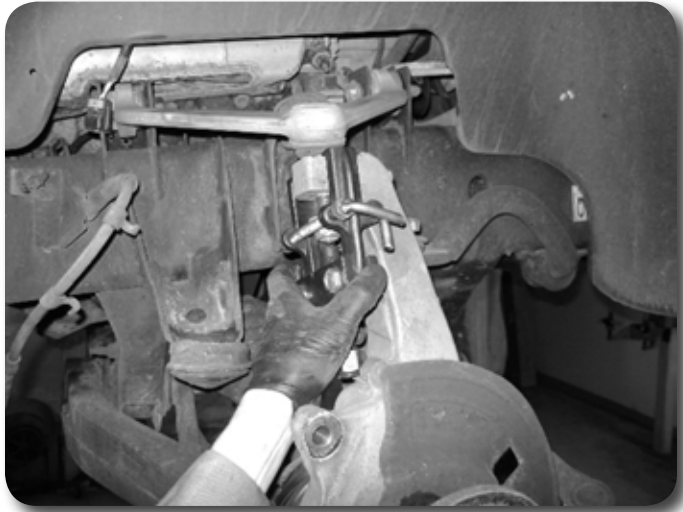


Figure 7

18. Remove the lower ball joint nut and remove the knuckle from the lower control arm. Save all ball joint nuts.
19. Remove the three bolts mounting the hub bearing assembly to the factory steering knuckle. Save the mounting bolts. Remove the hub assembly and dust shield from the knuckle.
20. Install the hubs and factory dust shield on the corresponding new knuckles and fasten with the stock mounting bolts. Index the hub so that the ABS line runs out the front side of the knuckle toward the steering arm. **Figure 8** Use Loctite on the bolt threads and torque to 125 ft-lbs.



Figure 8

21. Remove the lower control arms from the frame. Save hardware.
22. Make indexing marks on the front drive shaft and differential input flange for realignment later **Figure 9**. Remove the four bolts and disconnect the drive shaft from the differential. Mounting bolts will not be reused.

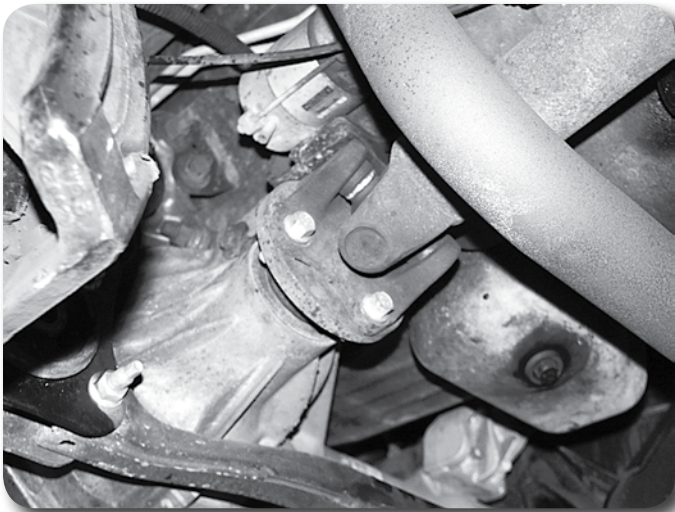


Figure 9

23. Locate the exhaust crossover pipe. If the crossover pipe runs under the front driveshaft it must be modified **Figure 10**. The pipe can either be completely removed or cut to clear the driveshaft at this time. The other option is to wire up the front drive shaft if traveling a very short distance to the exhaust shop. Note: Vehicles equipped with a crossover pipe that runs near the transfer case will not require an exhaust modification. Have the exhaust modifications completed by a quality exhaust shop when the installation of this suspension system is complete.

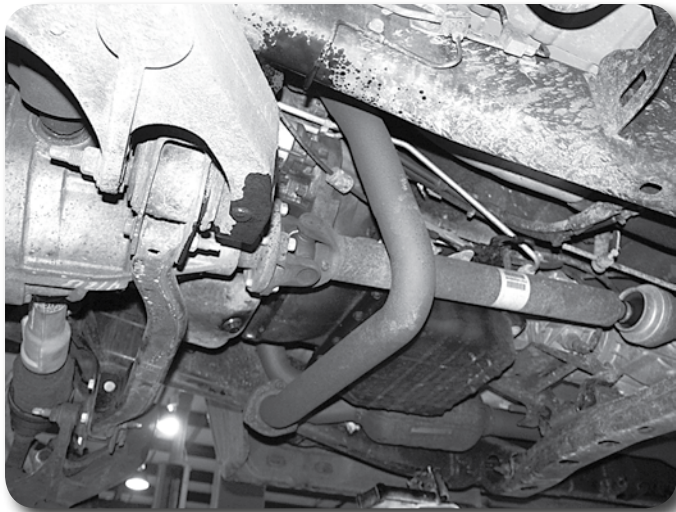


Figure 10

24. Remove the four bolts mounting the factory rear crossmember to the frame rails and remove the crossmember from the vehicle **Figure 11**.

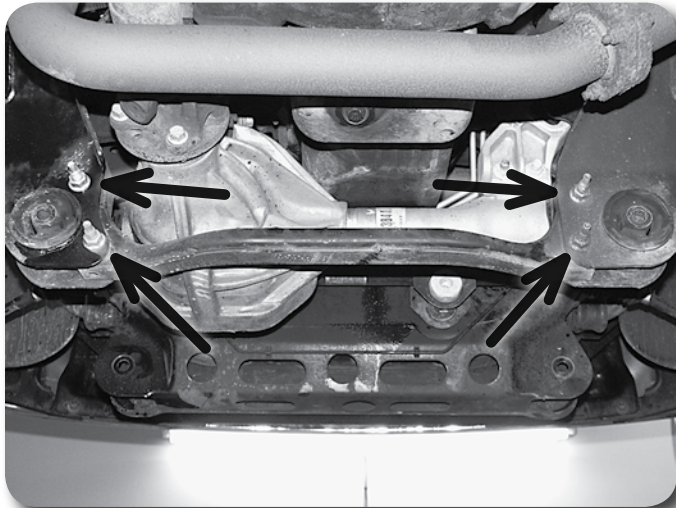


Figure 11

25. Disconnect the vent hose from the differential **Figure 12**.



Figure 12

26. Using a jack, support the differential. Loosen and remove the two forward-most differential mounting bolts on the driver's side **Figure 13**. Loosen but do not remove the three rear driver's side bolts **Figure 14** and the two passenger's side bolts **Figure 15**.

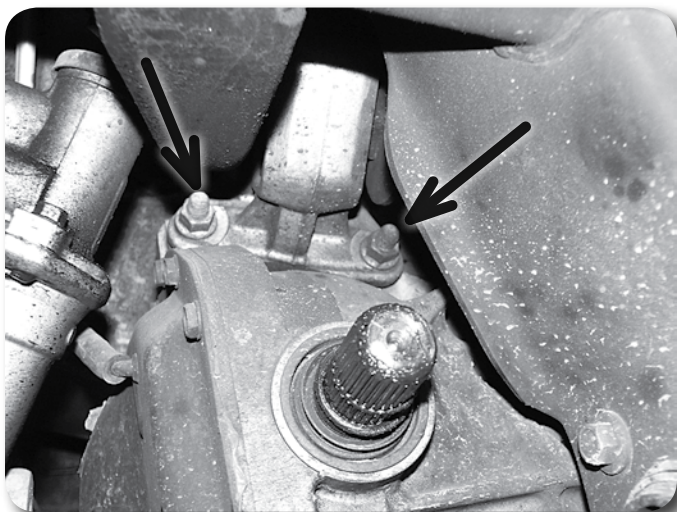


Figure 13

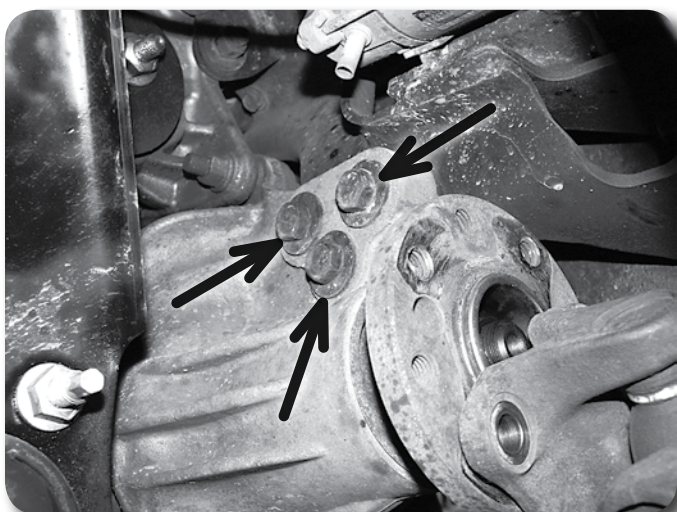


Figure 14

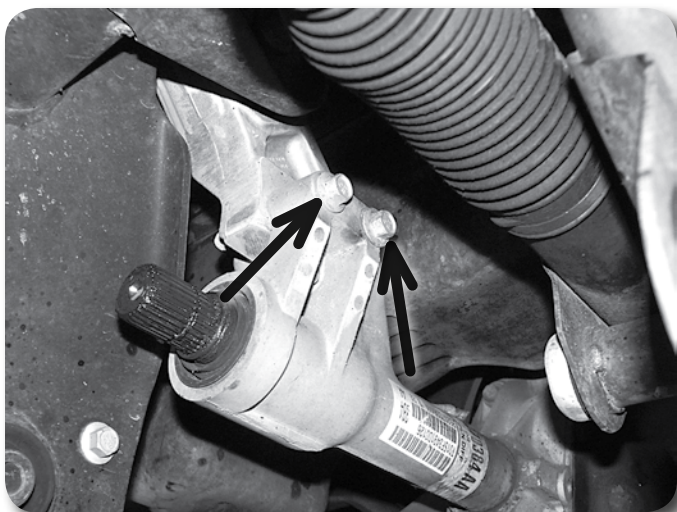


Figure 15

27. With the differential securely supported, remove the remaining bolts and lower the differential from the vehicle.
28. Remove the rubber bump stops from the retaining cups on the frame and save.

Figure 16



Figure 16

29. The lower control arm bump stop cups must be removed from the frame. Using a saw-zall or cutoff wheel, cut the weld beads holding the bump stop cups to the frame **Figures 17 A/B**. Remove the cups and be sure that the surface is ground flush. Paint any bare metal to prevent rust. Take care not to damage the bump stop cups, they will be reused.

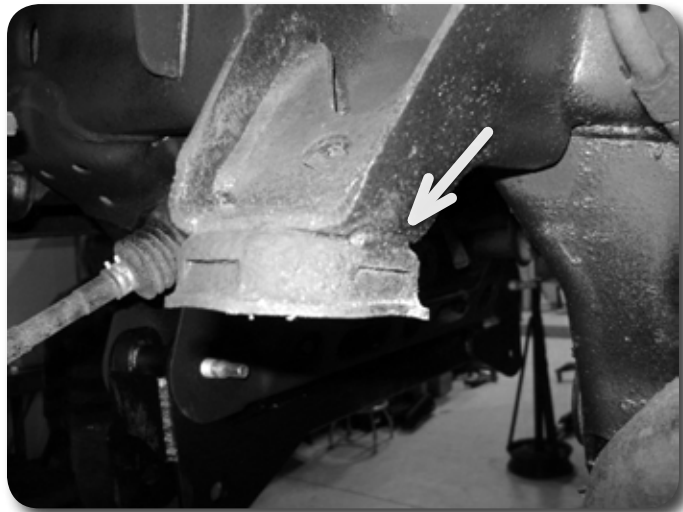


Figure 17A

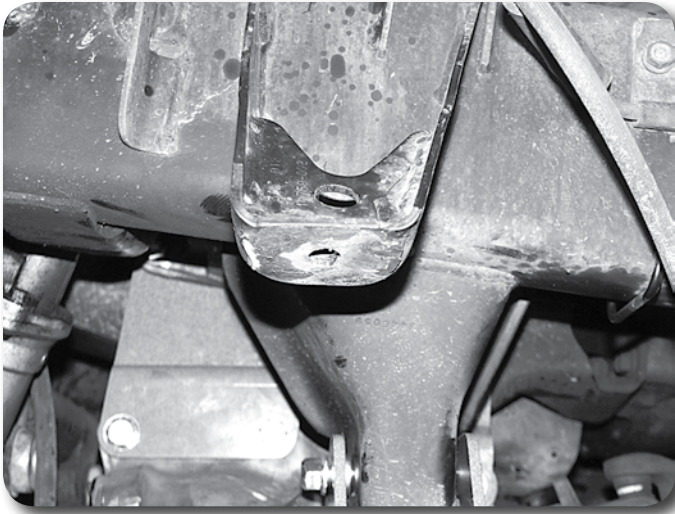


Figure 17B

30. Locate the four 2" bump stop blocks. Two blocks will be used per side to make a 4" tall bump stop. Place two blocks together and insert a provided 0.625 x 3.50 steel sleeve through the center. **Figure 18A**
31. Place a provided 3/8" fender washer on a 3/8" x 5" bolt and install through hole in the factory bump stop cup. **Figure 18B** Now run the bolt through the assembled bump stop extension. Fasten the entire assembly to the original bump stop mount on the frame with a provided 3/8" flange nut. **Figure 18C** Be sure the bump stop cup is center and torque bolt to 30 ft-lbs. **Figure 18D**

Step 31 Note

Bump stop hardware is located in hardware pack #618.



Figure 18A



Figure 18B



Figure 18C



Figure 18D

32. Lightly grease and install the original rubber bump stop into the bump stop cup. Use a rubber mallet to seat it in place.

33. Install the provided passenger's side differential drop bracket to the original frame mount with two 1/2" x 2-3/4" bolts, nuts and 1/2" SAE washers. Leave hardware loose **Figure 19**.

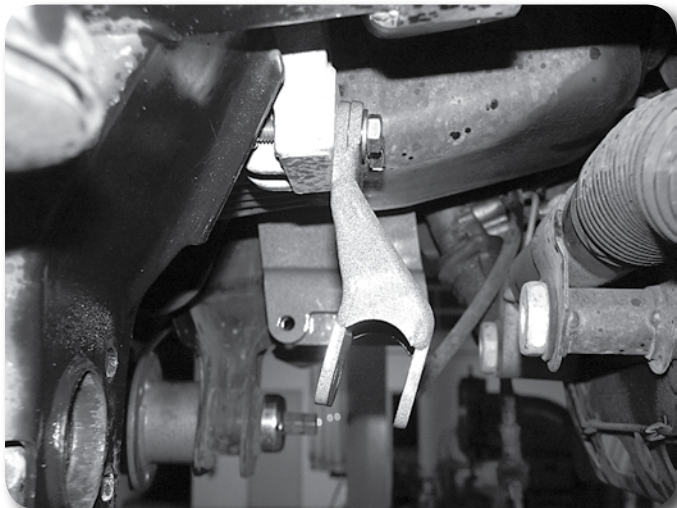


Figure 19

Step 33 Note

All differential mount hardware is located in hardware pack #617.

34. Install the two front driver's side differential drop brackets so that the bracket with the small offset is toward the outside of the vehicle (offsetting out) and the one with the bigger offset is on the inside (offsetting in). The brackets should taper down in height as they go toward the rear of the vehicle. **Figure 20** Fasten the brackets to the frame with two 1/2" x 2-1/2" bolts, nuts and 1/2" SAE washers. Leave hardware loose.

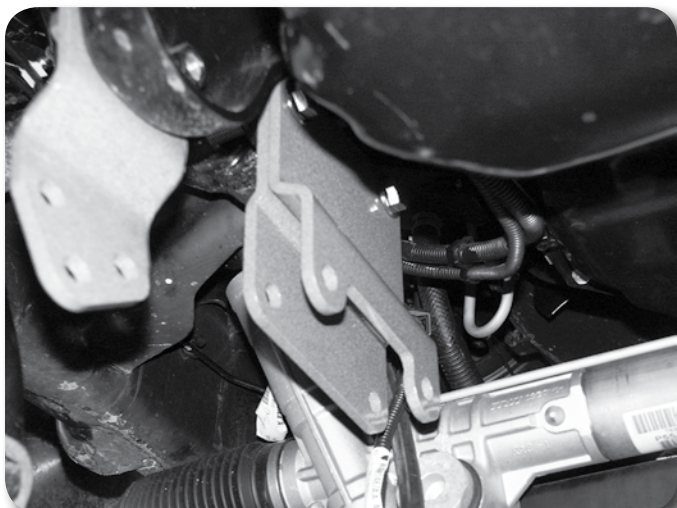


Figure 20

35. Install the driver's side rear differential drop bracket to the frame with three 12mm x 30mm bolts and 1/2" SAE washers into the existing welded nuts on the frame. The bracket will offset toward the outside of the vehicle with the gusset to the front. **Figure 21** Leave hardware loose.

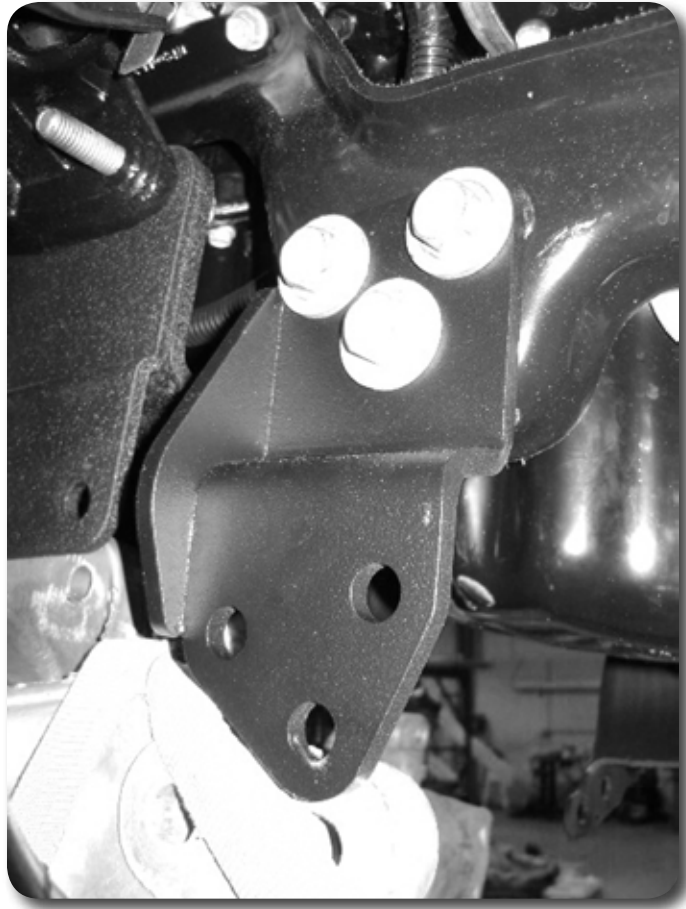


Figure 21

36. Using a jack (and an assistant to aid in balancing) raise the differential up to the new brackets.
37. Attach the differential to the driver's side front and rear brackets **Figure 22A** with $\frac{1}{2}$ " x 2-1/2" bolts, nuts and washers. Attach the passenger's side **Figure 22B** to the differential with $\frac{1}{2}$ " x 2-3/4" bolts, nuts and $\frac{1}{2}$ " SAE washers (BP #617). Leave all differential hardware loose.

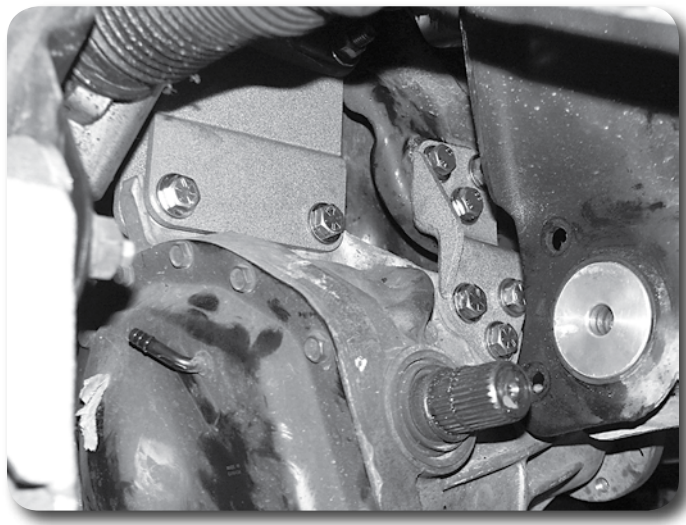


Figure 22A

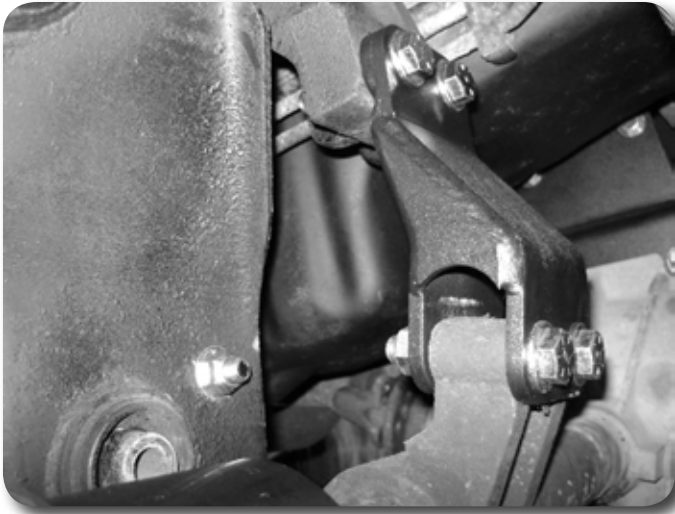


Figure 22B

38. Torque all 14 differential mounting bolts to 65 ft-lbs.
39. Attach the breather hose to the differential.
40. Install the new front crossmember in the factory front lower control arm pockets and loosely fasten with the factory lower control arm hardware. **Figure 23** Run bolts from front to rear.



Figure 23

Step 40 Note

The offset in the crossmember goes to the front, bolts run from front to rear.

41. Grease and install new bushings and sleeve into the new rear crossmember. Install the provided straight grease zerks into the crossmember and tighten securely. **Figure 24** The steel sleeves will extend past the faces of the bushings.



Figure 24

Step 42 Note

Rear crossmember hardware is located in hardware pack #655.

42. Install the new rear crossmember. Attach the crossmember to the original 4 crossmember mounting holes. Fasten with 1/2" x 3" bolts nuts and washers. Run the bolt from back to front. It may be necessary to slightly clearance the holes in the frame for the larger than factory bolts, do not tighten at this time **Figure 25.**

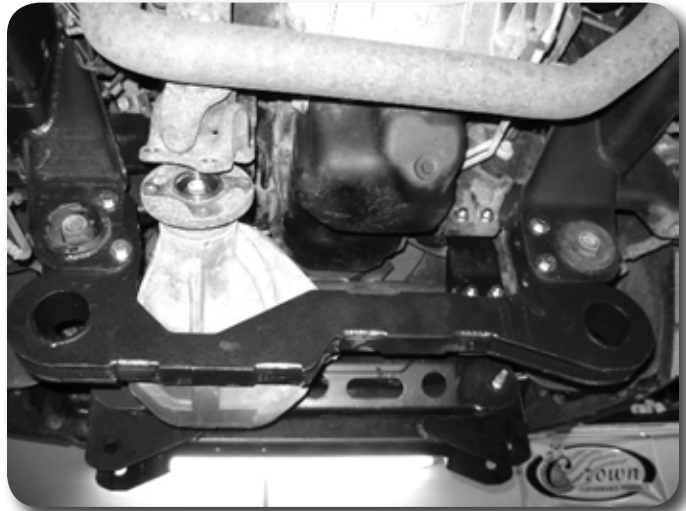


Figure 25

Step 43 Note

Differential skid plate hardware is located in hardware pack #655.

43. Install the new differential skid plate to the crossmembers with 1/2" x 1-1/4" bolts and SAE washers. **Figure 26**



Figure 26

44. Mark the lower control arms as shown. This area must be removed from the control arm for proper CV boot clearance. The area to be removed is wedge shaped. Draw a triangle to connect the points, and remove material with a grinder. Coat with paint after material is removed **Figures 27A, B.**

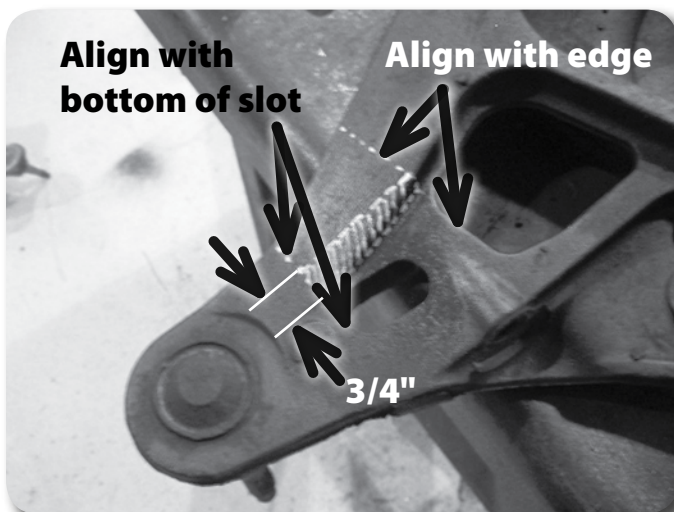


Figure 27A

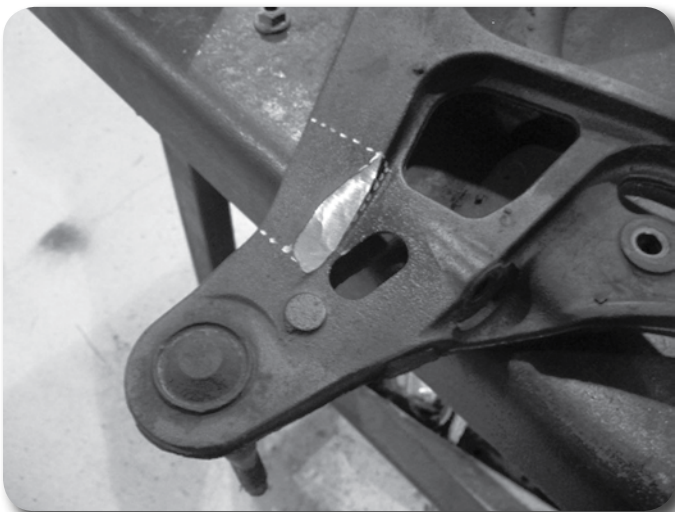


Figure 27B

45. Locate the 4 large spacer washers. Two washers are 1/4" thick and two are 1/8" thick. Place the 1/4" thick washers over the lower control arm sleeve on the back side of the new bushing and the 1/8" washer on the front. **Figure 28**

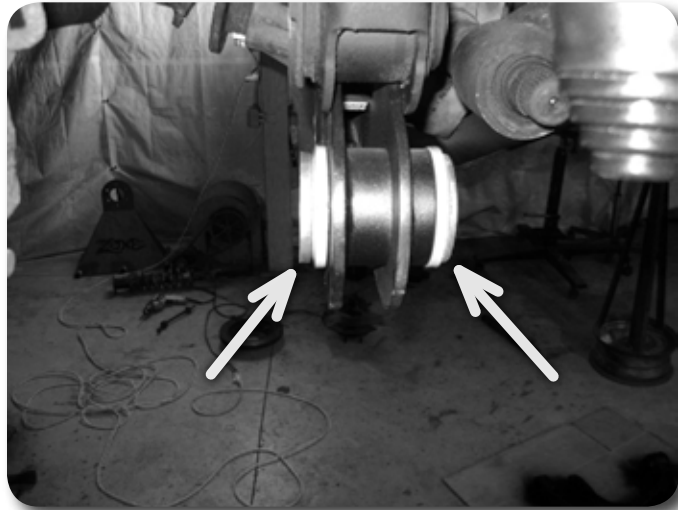


Figure 28

Step 46 Note

Control arm hardware is located in hardware pack #655.

46. Install the lower control arms in the front and rear crossmembers. Attach the control arms to the front crossmember with 5/8" x 5-1/2" bolts, nuts and 5/8" SAE washers. Run bolt from front to back. Fasten the control arm to the rear crossmember with the factory bolt, run back to front. **Figures 29A**. Leave hardware loose. It may be helpful to bevel the edge of the rear control arm "leg" to aid installation over the bushing/washers at the rear crossmember. **Figure 29B**
47. With the lower control arms installed, torque the crossmember hardware as follows: Front crossmember- upper factory bolts 125 ft-lbs; Rear crossmember- 1/2" hardware 65 ft-lbs. Leave control arms loose.
48. Torque the differential skid plate hardware to 65 ft-lbs.
49. Install the provided drive shaft spacer 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. Use loctite on the bolt threads and torque to 55 ft-lbs **Figure 30**.



Figure 29A

Step 49 Note

Drive shaft spacer hardware is located in hardware pack #779.

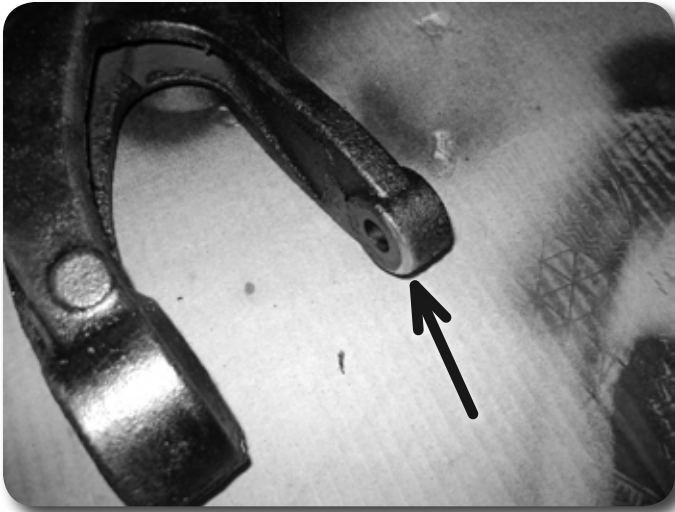


Figure 29B

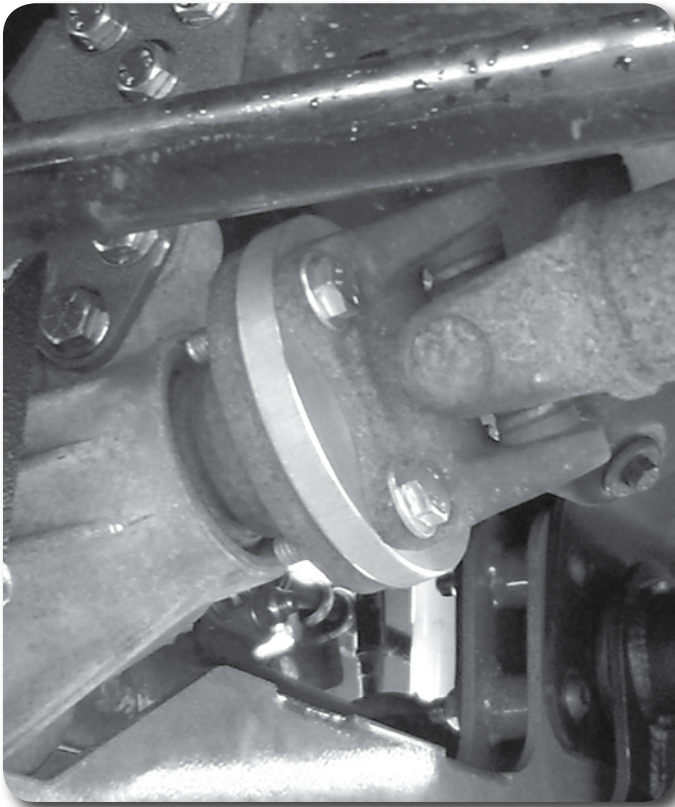


Figure 30

50. 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 knuckle to the upper control arm ball joint with the original nut. Push the CV axle all the way onto the differential output to seat the internal retaining clip.
51. 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.
52. Repeat knuckle/CV installation on passenger's side.

Step 54-55 Note

Brake line hardware is located in hardware pack #779.

53. Install the sway bar link extensions onto the factory sway bar links, tighten securely. Install factory cup washers and rubber bushings onto sway bar links. Attach to sway bar with the factory hardware. Tighten until the bushings begin to swell – Do NOT overtighten.
54. Passenger's side brake line: Remove the bolt retaining the line bracket to the frame **Figure 31A**. Carefully reform the hard line so that the mounting bracket can be lowered approximately 3" (remove the hard line from the retaining clip on the inside of the frame rail). Measure back 1/2" from the lower existing hole in the frame and drill a 17/64" hole **Figure 31B**. Attach the brake line to the new hole with the provided 5/16" x 1-1/4" self-tapping bolt. Ensure that the hard line is properly routed.

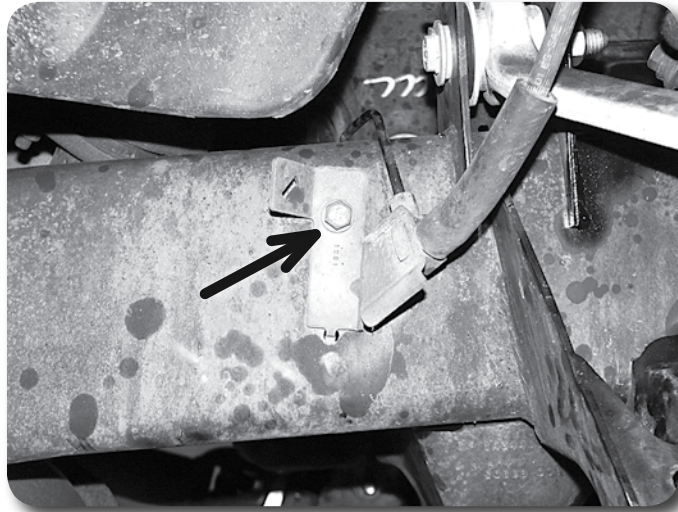


Figure 31A

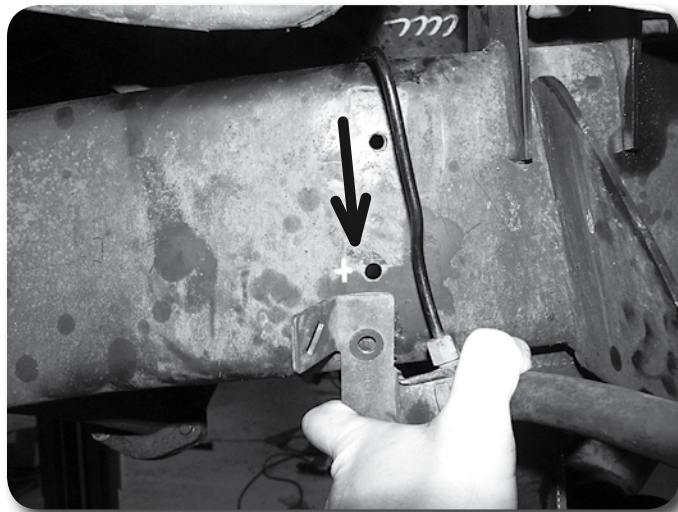


Figure 31B

55. Driver's side brake line: Remove the bolt retaining the line bracket to the frame **Figure 32A**. Support the hard leader with pliers and carefully bend the line down approximately 30° **Figure 32B**. Mark and drill the new mounting location on the frame with a 17/64" drill. Fasten the bracket with the provided 5/16" x 1-1/4" self-tapping bolt.

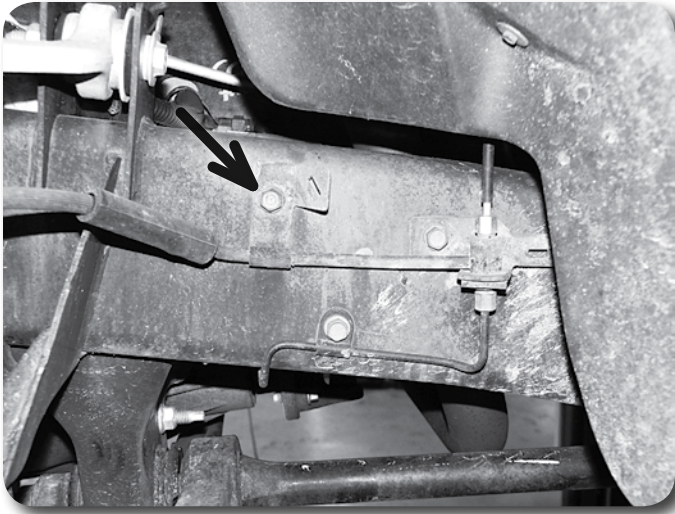


Figure 32A

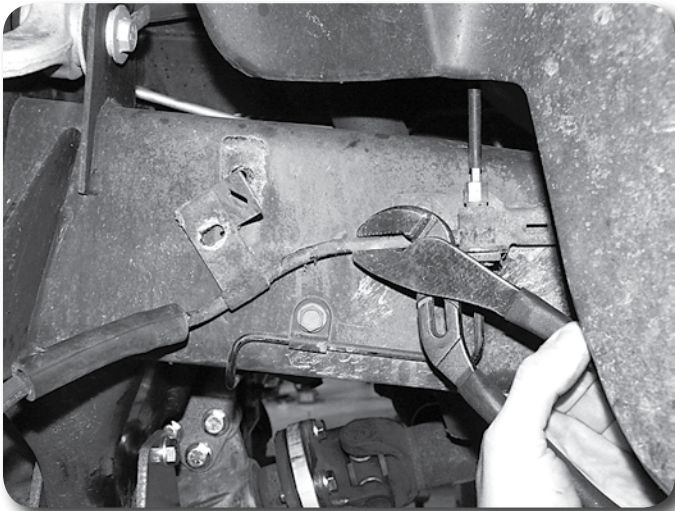


Figure 32B

56. Install the brake rotor and caliper on the knuckle/hub. Torque the factory caliper bolts to 130 ft-lbs.
57. If equipped, connect the ABS wire at the frame.
58. Place a jack under the lower control arm and raise the arm until the distance from the center of the hub to the edge of the fender is 5" more than measured in the pre-installation measurements (typically about 27"). Torque the lower control arm hardware to 125 ft-lbs. Note: Failure to complete this step will result in premature lower control arm bushing wear as well as poor ride quality.
59. Install the new front shocks. Attach the shocks to the lower control arm with the factory hardware and to the frame with the provided new hardware. Torque the lower bolt to 95 ft-lbs and the upper hardware until the bushings begin to swell.
60. Remove the factory tie rod ends. Trim 3/8"-7/16" from the male thread on the tie rod end. To make sure enough has been removed, thread the jam nut flush with the last thread followed by the new tie rod end. There should be no visible threads. Take care not to trim too much off from the male threads.
61. Attach the tie rod ends to the new steering knuckles with the factory nut. Torque to 45 ft-lbs.
62. Locate the new torsion bar drop brackets. Loosely fasten the brackets to the factory torsion bar crossmember mounts with the factory hardware. **Figure 33**



Figure 33

Step 62-63 Note

Torsion bar crossmember drop hardware is located in hardware pack #618.

63. Attach the torsion bar crossmember to the torsion bar drop brackets. Loosely fasten with 12mm x 100mm bolts, nuts and washers.
64. With the torsion bar crossmember in place, use the new brackets to locate the two holes (per side) to be drilled on the bottom of the frame rails. Drill 5/16" holes at each of the 4 locations. Fasten the bracket with the provided 3/8" x 1-1/4" self-tapping bolts. **Figure 34** Torque to 20 ft-lbs.

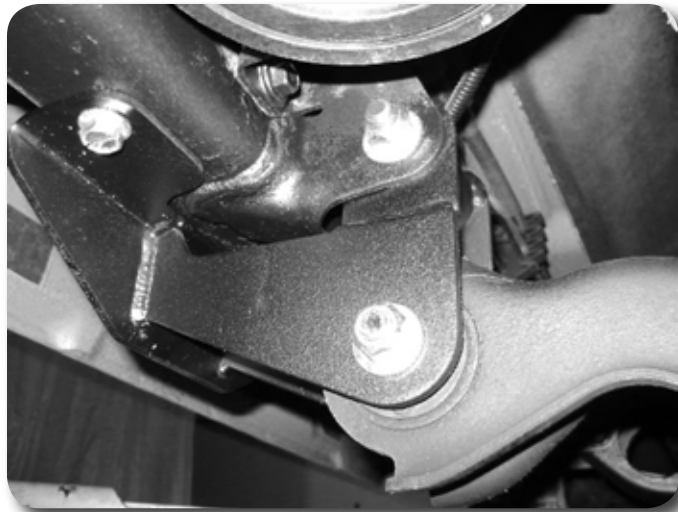


Figure 34

65. Torque the factory and new 12mm torsion bar hardware to 60 ft-lbs.
66. Reinstall and load the torsion bars. Adjust length of adjusting bolts to that recorded at the beginning of the installation.
67. Reinstall front wheels. Torque to factory specifications.
68. Grease rear lower control arm bushings.
69. Lower the vehicle to the ground and bounce the front to settle the suspension.
70. Check all fasteners for proper torque. Recheck all fasteners after 500 miles and at regularly scheduled maintenance intervals.
71. A complete front end alignment is required.
72. Recheck the final lift height and compare to the pre-installation measurements recorded earlier. If necessary, adjust the torsion bars to achieve 5" of lift over the

original measurements. The front height measurement should not exceed 28". If your vehicle is equipped with aftermarket fenderflares, check the 'z' height. Measure and record the distance from the center of the lower control arm bolt to the ground and from the center of the lower shock bolt to the ground. The measurements should be nearly equal, the difference between the two should not exceed 1" (control arm bolt being higher). This will ensure proper front end alignment and good ride quality.

» REAR INSTALLATION

73. Block the front wheels for safety. Raise the rear of the vehicle and support the frame with jack stands.
74. Remove the wheels.
75. Support the axle with a floor jack.
76. Remove the factory shocks. Save the mounting hardware.
77. Remove the parking brake cable retaining ring from the driver's side frame rail
Figure 35. Remove the ring from the cables.

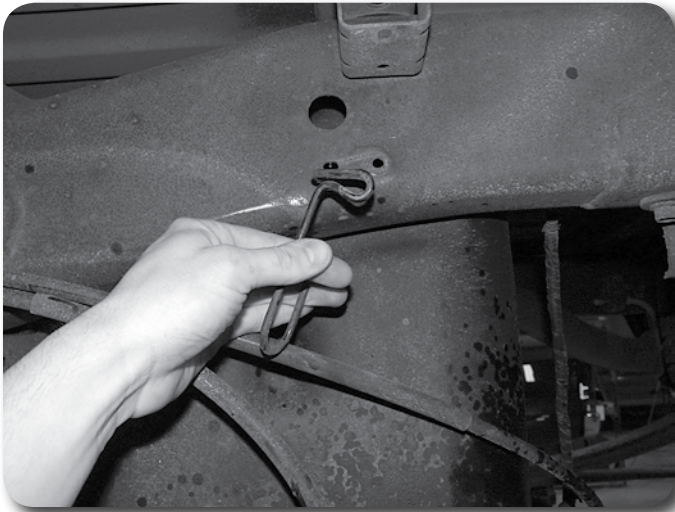


Figure 35

78. Remove the passenger's side u-bolts. Lower the axle from the leaf spring enough to install the provided 3" lift block. Take care not to over-extend any wires or hoses. Make adjustments where necessary.
79. Install the 3" block so that the short end of the block is toward the front of the vehicle. Fasten the spring, block and axle together with the provided u-bolts, high nuts and washers. Snug u-bolts. The final u-bolt torque is performed with the vehicle on the ground.
80. Repeat installation on the driver's side of the vehicle.
81. Install the new shocks with the factory hardware.
82. Install the wheels.
83. Lower the vehicle to the ground and bounce the vehicle to settle the suspension.
84. Torque the u-bolts to 100-120 ft-lbs.
85. Check all hardware for proper torque.
86. Check all hardware after 500 miles.

Post-Installation Warnings

1. 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.
2. 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.
3. Perform head light check and adjustment.
4. Re-torque all fasteners after 500 miles. Always inspect fasteners and components during routine servicing.