



## #F2622 Installation Instructions 1997-2003 Ford F-150 4WD 6" 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](http://www.zoneoffroad.com).

[www.zoneoffroad.com](http://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](mailto: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: 6-8 hours

#### Special Tools Required

#### Tire/Wheel Fitment

Tire: 35 x 12.50

Wheel: 16 x 8, 4.5" BS

\*Important\* Verify you have all of the kit components before beginning installation.

## Kit Contents

Qty	Part	Qty	Part
1	Steering Knuckle (Drv)	2	Torsion Bar Drop Bracket
1	Steering Knuckle (Pass)	1	Bolt Pack 536- Torsion Bar Drop
1	Front Crossmember	4	7/16"-14 prevailing torque nut
1	Rear Crossmember	4	7/16"-14 x 1-1/4" bolt grade 8c
1	534 Bolt Pack - Lower Control Armss	8	7/16" SAE flat washer
4	5/8"-11 x 5-1/2" bolt grade 8	2	1/2"-13 x 1-1/4" bolt grade 8
4	5/8"-11 prevailing torque nut	2	1/2"-13 prevailing torque nut
8	5/8" SAE flat washer	4	1/2" SAE flat washer
1	535 Bolt Pack -Main Hardware Pack	4	Stem Washer
3	12mm-1.75 x 100mm bolt grade 10.9	4	Stem Bushing
3	12mm-1.75 prevailing torque nut	2	Sway Bar Link
12	12mm-1.75 x 45mm bolt grade 10.9	2	Sway Bar Link Bracket
18	12mm flat washer	2	Sway Bar Link Bushing
5	1/2"-13 x 1-1/4" bolt grade 8	2	0.750 x 0.090 x 1.575 Sleeve
1	1/2"-13 prevailing torque nut	1	Bolt Pack 569 - Sway Bar Links
1	1/2" USS flat washer	2	3/8"-16 nylock nut
5	1/2" SAE flat washer	2	7/16"-14 nylock nutc
2	1/4"-20 x 3/4" bolt grade 5	2	9/16"-12 x 2-3/4" bolt grade 5c
2	1/4" SAE flat washer	4	9/16" SAE washer
2	1/4" split lock washe	2	9/16"-12 prevailing torque nut
2	wire clip	2	5/8"-11 x 1-3/4" bolt grade 5
2	Bump Stop	4	5/8" SAE washer
1	Bolt Pack 580 - Bump Stops	2	5/8"-11 nylock nut
2	7/16"-14 x 1-1/4" bolt grade 5	1	Rear Brake Line Drop Bracket
2	7/16"-14 prevailing torque nut	1	Bolt Pack Rear Brake Line Drop
4	3/8" USS flat washer	1	3/8 x 1 Bolt
2	3/8"-16 x 1-1/4" self tapping bolt	2	3/8 USS washer
2	Brake Line Drop Bracket	1	3/8 Nu
1	Bolt Pack 704 - Brake Line Drop	2	3" Rear Block
2	1/4"-20 prevailing torque nut	2	Add-a-leaf
2	1/4" SAE flat washer	4	9/16" x 3-1/4" x 14" Round U-bolt
2	CV Spacer	8	9/16" High Nut
1	Differential Drop Bracket	8	9/16" SAE Washer
1	Diff Skid Plate	2	3/8" x 4.5" Center pin w/ nut
		4	Spring Clamps



## INSTALLATION INSTRUCTIONS

### » 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 at each frame rail behind the lower control arms.
3. Remove the front wheels.
4. Measure the length of the torsion bar adjuster bolts (top of the adjuster bolt head to adjuster)
5. Remove the adjuster bolts, keep driver's and pass side bolts separate.
6. Mark the torsion bars for location and position.
7. Use the torsion bar removal tool to remove the threaded adjuster assembly. Release the pressure from torsion bar with the unloading tool. **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.**
8. Slide the torsion bars forward to allow the keys to be removed. It may be necessary to use an air hammer to get the bars to break free.
9. Remove the six bolts (3 per side) mounting the torsion bar crossmember to the frame. **Figure 1** Remove the crossmember from the vehicle. Save crossmember and hardware.



Figure 1

### 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 \_\_\_\_\_

10. Pull the torsion bars rearward from the lower control arms and out of the vehicle.
11. Remove the sway bar links from the sway bar and control arm. These will not be reused. **Figure 2**

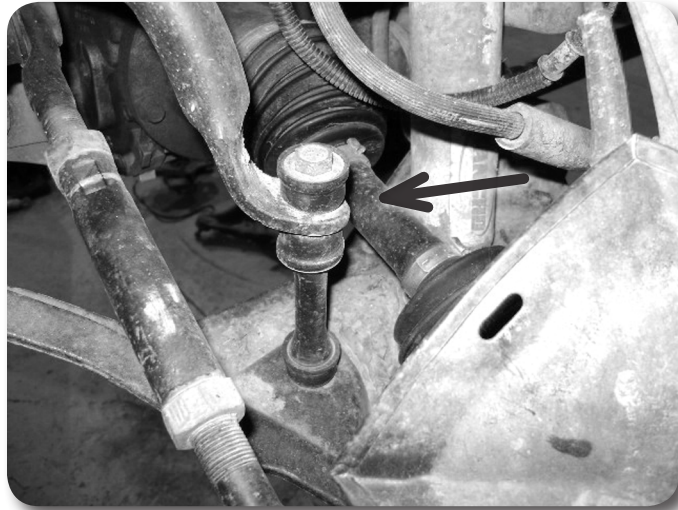


Figure 2

12. Disconnect the factory shocks from the frame and lower control arms. Save the lower hardware and discard the upper hardware and shocks.
13. Disconnect the tie rod end from the steering knuckle. **Figure 3** Remove the nut. Strike the steering knuckle with a hammer near the tie rod end to release the taper. Remove the tie rod end and save the nut.

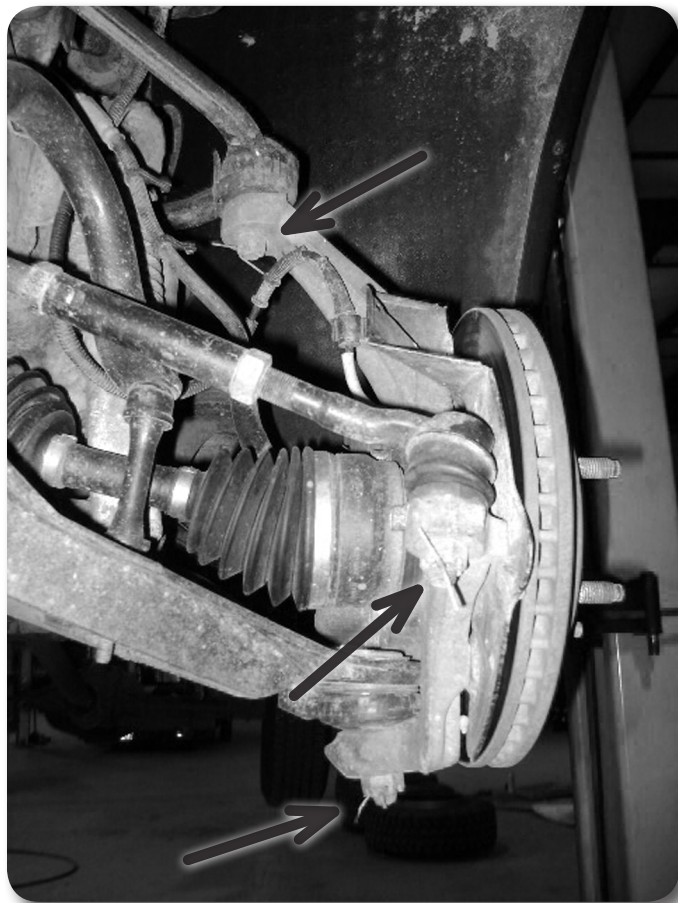


Figure 3

14. Locate the ABS wire connector at the inner fender and disconnect. **Figure 4** Disconnect the ABS wire from the frame and control arm.



Figure 4

15. Remove the front brake line bracket from the steering knuckle and frame **Figure 5**. Save hardware.

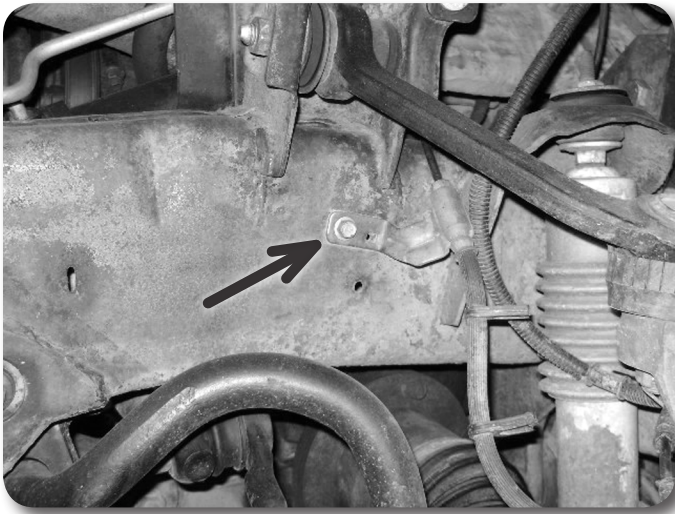


Figure 5

16. Remove the brake caliper anchor bracket bolts and remove the caliper from the knuckle **Figure 6**. Hang the caliper out of the way. Do not let the caliper hang by the brake hoses.

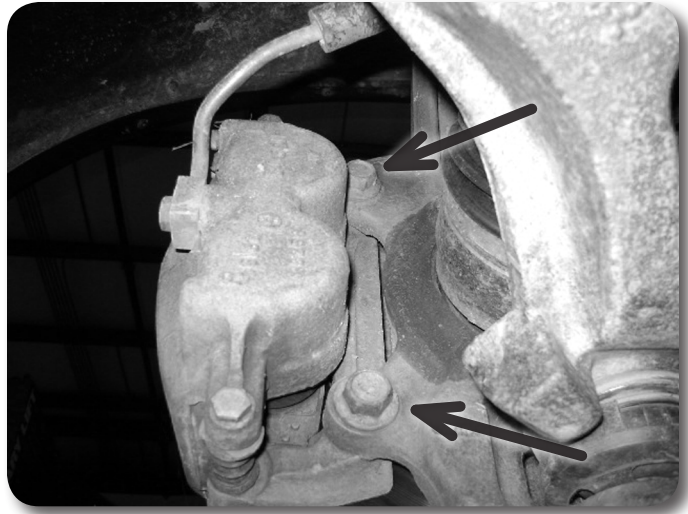


Figure 6

17. Remove the brake rotors and save. Remove the brake dust shield.
18. Remove the front axle shaft cotter pin, axle nut retainer and axle nut. **Figure 7** Save hardware. Strike the end of the axle shaft with a rubber mallet to break it free from the hub.

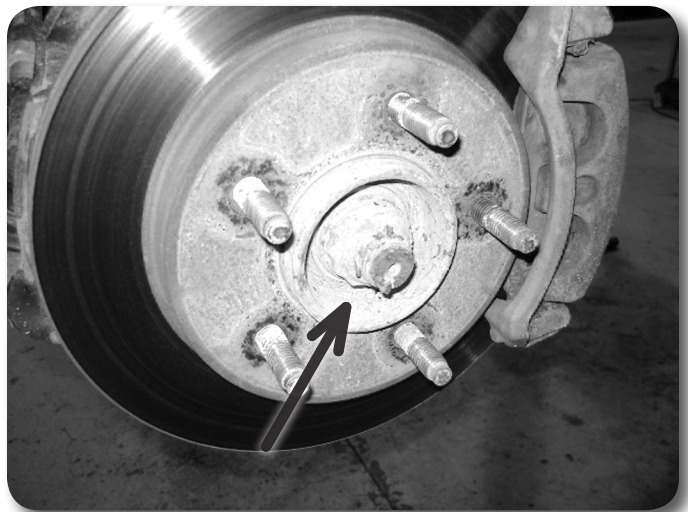


Figure 7

19. Loosen but do not remove the four (2 per arm) lower control arm bolts.
20. Remove the upper and lower ball joint cotter pins and nuts **Figure 3** and reinstall a few turns. Strike the knuckle near the upper and lower ball joints to dislodge the joints from the knuckle.
21. Remove the upper ball joint nut. Swing the knuckle/lower control arm down to remove the CV shaft from the hub. Retain ball joint nut and strut bolt.
22. Remove the lower ball joint nut and remove the knuckle from the vehicle. Save hardware.
23. Remove the lower control arm mounting bolts and remove the lower control arm from the vehicle. Save hardware.
24. Remove the six bolt mounting the CV axle to the differential. **Figure 8** Remove axle.

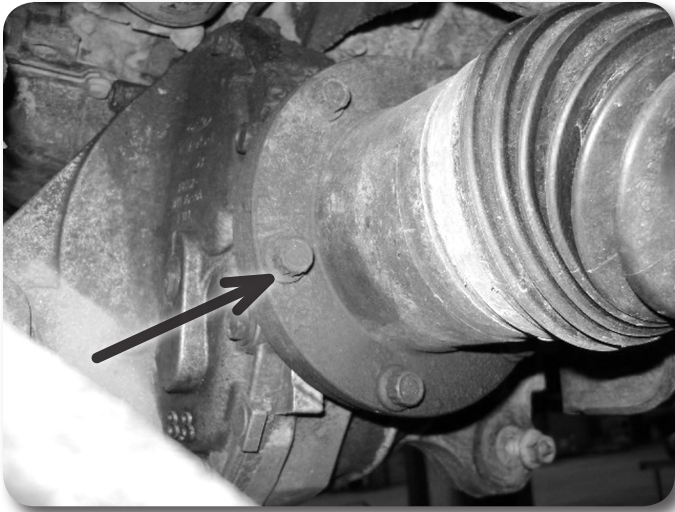


Figure 8

25. Loosen but do not remove the two driver's side Figure 9A,B and one passenger's side Figure 9C differential mounting bolts.

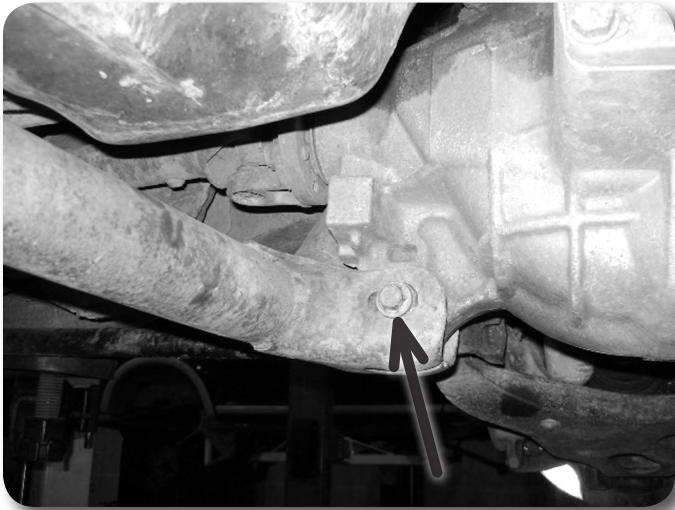


Figure 9A



Figure 9B



Figure 9C

26. Locate and install the new rear crossmember into the stock rear lower control arm pockets. Loosely fasten with the factory lower control arm bolts and nuts. Run bolts from front to rear. **Figure 10**



Figure 10

### Step 27 Note

Bump Stop hardware is located in Bolt Pack #580

27. Locate the two new bump stop extensions (they are identical). Attach the bump stop to the back side of the mounting tab coming off the rear crossmember. When installed properly, the holes in the bump stop ends should be toward the rear of the vehicle. **Figure 11A** Fasten the bump stop to the crossmember with a 7/16" x 1-1/4" bolt, nut and washers. Snug hardware so the bump stop tab is flush against the crossmember tab but can still move for final adjustment.





Figure 11A

28. Swing the bump stop extension up so it is flush against the original bump stop on the frame. Mark the hole to be drilled. Drill a 5/16" hole at the mark and fasten the bump stop with a 3/8" x 1-1/4" self-tapping bolt. **Figure 11B** Torque the 3/8" bolt to 20 ft-lbs and 7/16" hardware to 45 ft-lbs.



Figure 11B

29. Locate and install the new front crossmember into the stock front lower control arm pockets. Loosely fasten with the factory lower control arm bolts, nuts and washers.
30. Remove the four bolts mounting the factory rear differential crossmember to the frame rails. **Figure 10** Remove the driver's side rear differential bolt and remove the crossmember from the vehicle.
31. With the help of an assistant, remove remaining two differential bolts and lower the differential into the new front and rear crossmembers. Loosely fasten the differential to the crossmembers with 12mm x 100mm bolts, nuts and washers.
32. Locate the new passenger's side differential bracket and install in the factory frame mount with the original hardware. **Figure 12** Leave loose. When installed the "wing" of the bracket will point toward the rear of the vehicle.

### Step 31 Note

Differential hardware is located in Bolt Pack #535



Figure 12

### Step 34 Note

Differential bracket hardware is located in Bolt Pack #535

### Step 36 Note

Lower control arm hardware is located in Bolt Pack #534

### Step 37 Note

Differential skid plate hardware is located in Bolt Pack #535

33. Attach the passenger's side of the differential to the new bracket with a 12mm x 100mm bolt, nut and washers. Leave loose.
34. Attach the "wing" of the passenger's side differential bracket to the back of the control arm pocket. There is an existing hole in the pocket that will line up with the mount hole in the "wing". Fasten with 1/2" x 1-1/4" bolt, nut, 1/2" SAE (small) washer and 1/2" USS (large) washer. **Figure 12** Use the large USS washer on the outside surface of the control arm pocket.
35. With all of the differential hardware installed, go back and torque the 3 differential mount bolts and the 1/2" passenger's side bracket bolt to 70 ft-lbs.
36. Install the lower control arms in the new crossmembers and fasten with the provided 5/8" x 5-1/2" bolts, nuts and washers.. Run the front bolts from front to rear and leave loose.
37. Install the provided differential skid plate to the front and rear crossmembers with 1/2" x 1-1/4" bolts and 1/2" SAE washers into the threaded holes in the crossmembers **Figure 13**. Leave hardware loose.

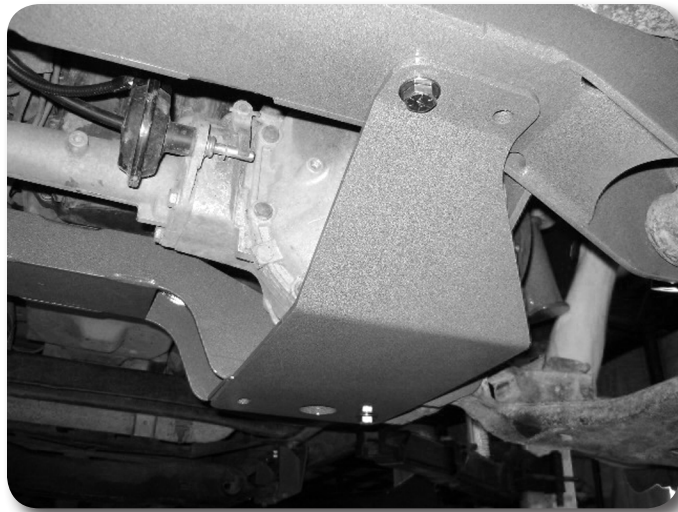


Figure 13

38. Torque the four factory control arm pocket bolts to 125 ft-lbs. Torque the 1/2" differential skid plate bolts to 65 ft-lbs.
39. Locate the new provided steering knuckles and the corresponding factory knuckle assemblies. Remove the three bolts mounting the hub bearing assembly

to the factory knuckle and install on the appropriate Zone knuckle. Use Loctite on the factory bolts and torque to 80 ft-lbs. Be sure the ABS line is running out the top of the hub into the recess in the knuckle. **Figure 14**



Figure 14

40. Remove the factory hub seal from the back of the factory steering knuckle. Inspect the seal. If it is good condition it can be reused in the new knuckle assembly. If a replacement seal is needed they can be purchased at a Ford dealership.
41. Install the new knuckle assembly on the lower control arm ball joint and loosely fasten with the original nut. Install the CV shaft in the hub, swing the whole assembly up and attach the knuckle to the upper ball joint with the original nut. Leave all hardware loose.
42. With the knuckle installed, torque the upper ball joint nut to 65 ft-lbs and the lower ball joint nut to 95 ft-lbs. Install the cotter pins. Do not loose the nuts to align the cotter pin holes, only tighten.
43. Ensure the CV shaft is seated properly in the hub, install the CV shaft nut and torque to 190 ft-lbs. Install the CV shaft nut retainer and cotter pin.
44. Locate and install the provided CV shaft spacers between the factory CV axle shaft and the differential output flanges. Fasten the CV shaft and spacers to the differential with 12mm x 45mm bolts and 12mm flat washers. **Figure 15** Use Loctite on the bolt threads and torque to 60 ft-lbs in a crossing pattern.



Figure 15

### Step 44 Note

CV spacer hardware is located in Bolt Pack #535

### Step 45 Note

ABS wire hardware is located in Bolt Pack #535

### Step 48 Note

Brake line bracket hardware is located in Bolt Pack #704

45. Route the ABS wire up the front side of the knuckle, through the control arm and up to the connector at the inner fender. Reconnect the ABS wire connector. Secure the ABS wire to the back of the knuckle with the provided wire clip, 1/4" x 3/4" bolt, lock washer and flat washer. Tighten bolt to 8-10 ft-lbs. Use supplied zip ties to secure the remaining portion of the ABS wire as needed.
46. Install the brake rotor on the hub. Install the brake caliper on the steering knuckle with the factory anchor bolts. Use Loctite on the bolts and torque to 125 ft-lbs.
47. Attach the provided brake line relocation bracket to the original brake line mounting hole on the frame. Loosely fasten with the factory bolts.
48. Carefully reform the brake hard lines to allow from the brake line to attach to the relocation bracket. It may be necessary to reform the hard line at the caliper slightly as well as the factory bracket. Fasten to the relocation bracket with a 1/4" nut and washer. **Figure 16** Tighten all hardware securely.

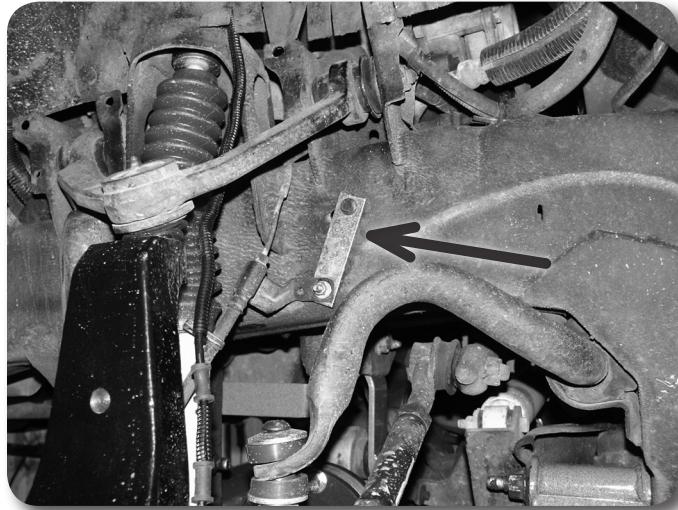


Figure 16

49. Break loose and remove the outer tie rod ends from the adjusting sleeves. **Figure 17** Thread the jam nut up the tie rod end about 1". Mark and cut 3/8" off of the tie rod end threads (end that mates with the adjusting sleeve). Thread the jam nut off to clean the threads.

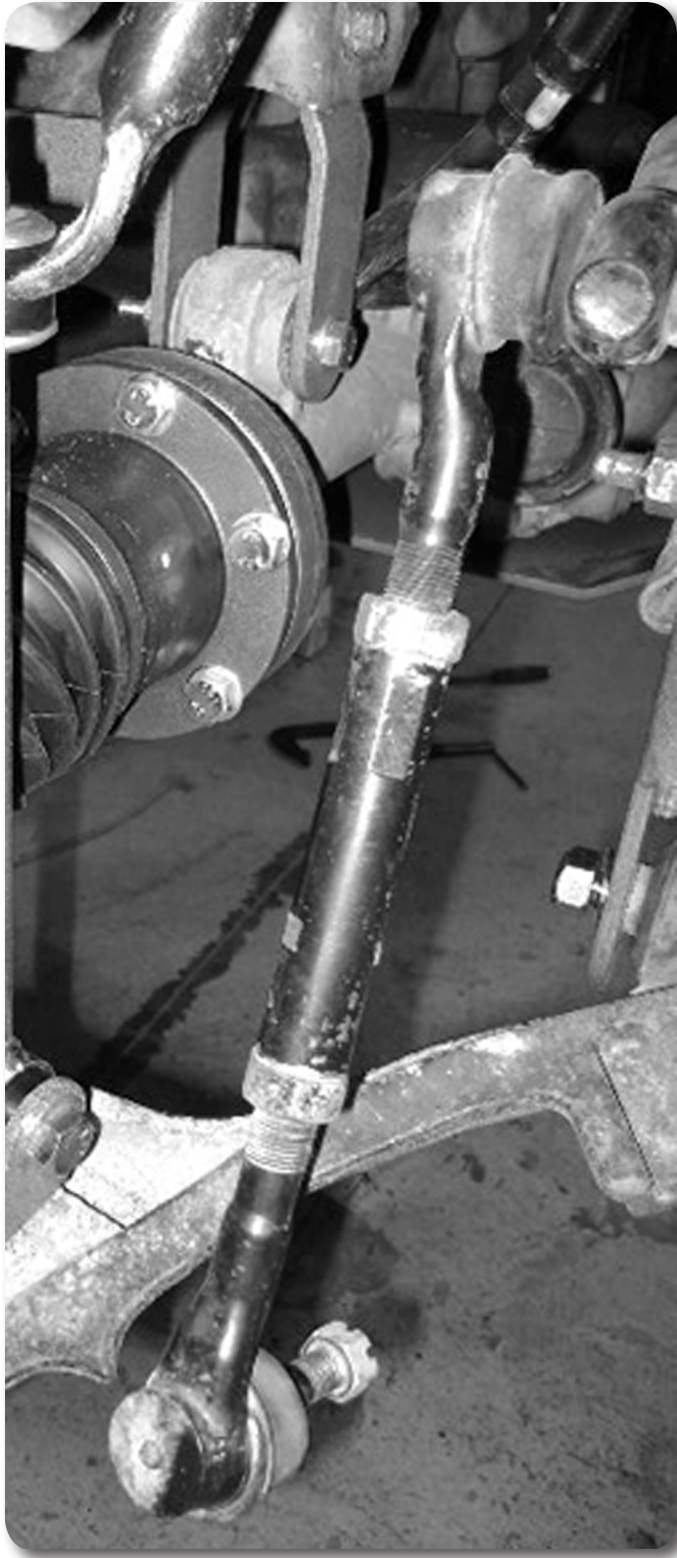


Figure 17

50. Mark and cut  $\frac{3}{8}$ " off of the outer end of the tie rod end adjusting sleeve. This will match the amount removed from the tie rod end. Reassemble the tie rod end, jam nut and adjusting sleeve. Leave loose for adjustment later.
51. Attach the tie rod end to the new steering knuckle using the factory hardware. Torque the tie rod nut to 60 ft-lbs and install the cotter pin. Do not loose the nut to align the cotter pin hole, only tighten.

### Step 53-55 Note

Sway bar link hardware is located in hardware pack 569.

52. Install the new provided shocks with the included bushings, sleeves and upper hardware. Use the factory lower hardware. Torque lower bolt to 60 ft-lbs. Tighten upper hardware until the bushings begin to swell.
53. Locate the provided sway bar link brackets. Mount the brackets to the original sway bar link hole in the lower control arm with the provided 5/8" hardware. Position the bracket so the clevis tabs offset toward the center of the vehicle and the mounting holes are parallel to the lower control arm mounting bolts. Torque hardware to 100 ft-lbs.
54. Lightly lubricate and install the new bushings and steel sleeves into the eye of the new sway bar links. Install the links in the new bracket at the lower control arm and fasten with the provided 9/16" x 2-3/4" bolts, nut and washers. Torque hardware to 90 ft-lbs.
55. Install a provided stem washer then a stem bushing on the top ends of the sway bar links. Align the links with the sway bar holes and slide the sway bar onto both the links. Install a second stem bushing and then a washer on the sway bar link ends. Fasten the assemblies with the provided 7/16" nylock nuts. Tighten nuts just until the bushings begin to swell. **Figure 18**

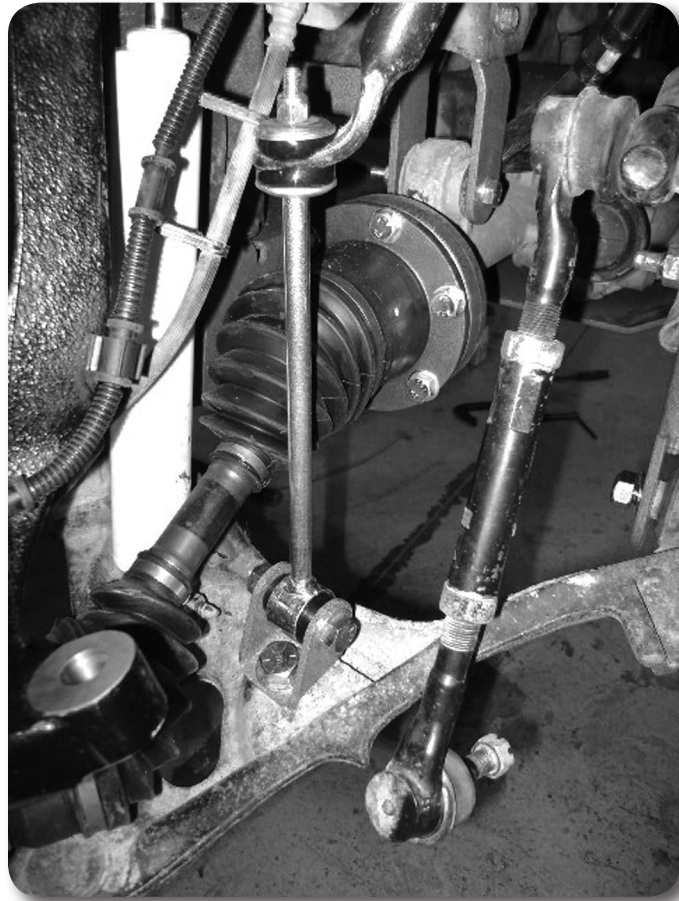


Figure 18

56. Install the torsion bars into the appropriate lower control arms. Slide them forward approximately 12".
57. Locate the two torsion bar drop brackets. Loosely install to the frame rails in the original torsion bar crossmember holes. Fasten with 7/16" x 1-1/4" bolts, nuts and washers in the outer holes and 1/2" x 1-1/4" bolts, nuts and washer in the center holes. **Figure 19A**

### Step 57 Note

Torsion bar drop hardware is located in hardware pack 536.

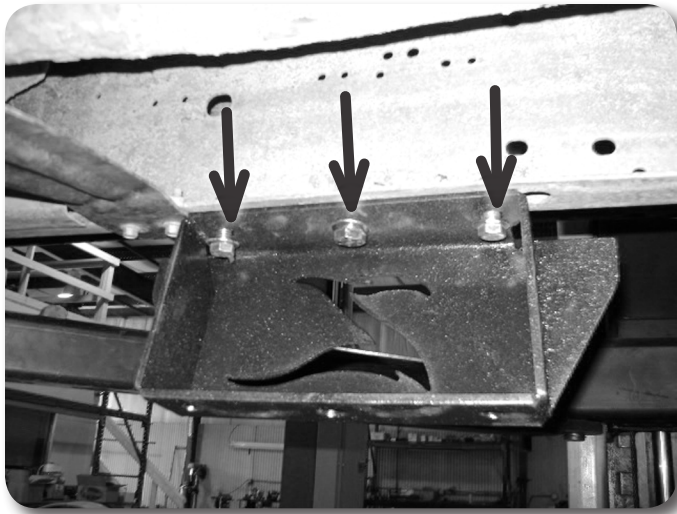


Figure 19A



Figure 19B

### Figure 19B Note

Standard cab short box models have an additional bracket that mounts the crossmember to the frame. In this case, mount the zone drop brackets to the factory crossmember bracket.

58. Position the torsion bar crossmember in the two new drop brackets and fasten with the factory hardware. Be sure the crossmember is oriented properly. With all the hardware installed, torque all hardware to 50 ft-lbs (12 bolts total). **Figure 19B**
59. Reinstall the torsion bar in the reverse of removal. Set the torsion bar adjuster bolt height as noted at the beginning of the installation.
60. Install the wheels and lower the vehicle to the ground. Torque lug nuts to 100 ft-lbs for 12mm nuts or 150 ft-lbs for 14mm nuts.
61. Bounce the front of the vehicle to settle the suspension.. Torque the lower control arm bolts to 125 ft-lbs.
62. Check all hardware for proper torque.
63. A full front end alignment is required. If the vehicle is not equipped with upper control arm eccentric bolts they are available separately - Zone #F8001.

## » REAR INSTALLATION

1. Block the front wheels and raise the rear of the vehicle. Place jack stands under the frame rails ahead of the spring hangers.

2. Remove the wheels.
3. Remove the brake line retaining clip from the brake line mount on the driver's side frame rail. **Figure 20**

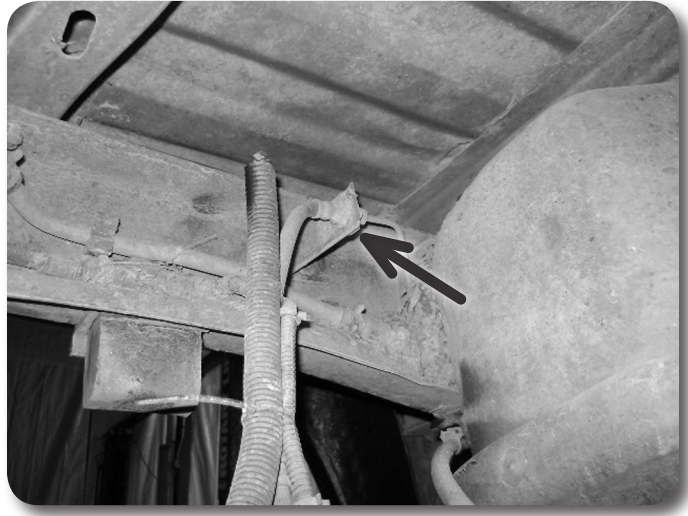


Figure 20

4. Pull the line back out of the bracket so that the hard line is in the hole. Cut a slot in the eyelet of the bracket and bend it open enough to remove the brake line. Bend the bracket back shut.
5. Support the axle under the differential with a hydraulic jack and remove the factory shocks.
6. Remove the passenger's side spring U-bolts. **Figure 21**

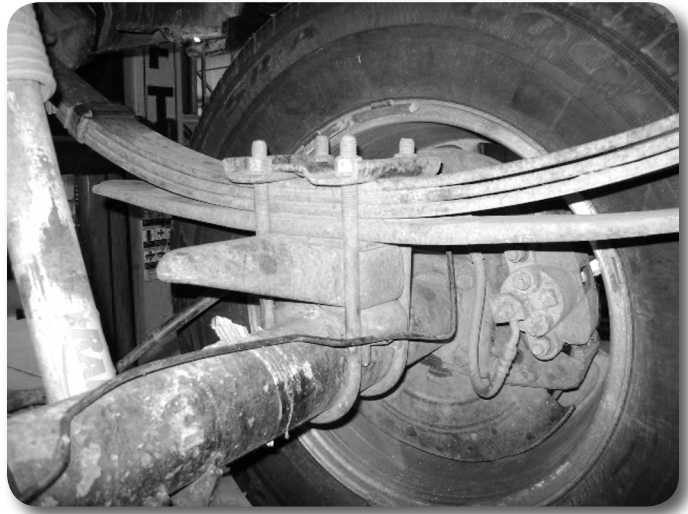


Figure 21

7. Lower the axle and remove the factory lift block. Take care not to over-extend the brake lines.
8. Remove the factory leaf alignment clamps. **Figure 22**



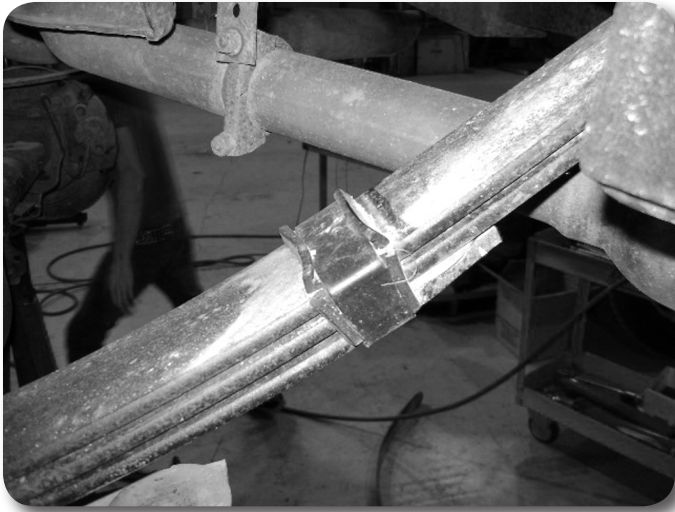


Figure 22

9. Use C-clamps on either side of the center pin to hold the rear spring firmly together. Remove the center pin and release the C-clamps to allow the leaf pack to spread open.
10. Install the provided add-a-leaf in the leaf pack so that the leaf above is longer and the leaf below is shorter.
11. Use the C-clamps to compress the leaf pack in the same manner as before and install the provided center pin. **Figure 23** Do not draw the leaf pack together with the center pin. Torque the center pin to 25 ft-lbs. Cut off any excess center pin.

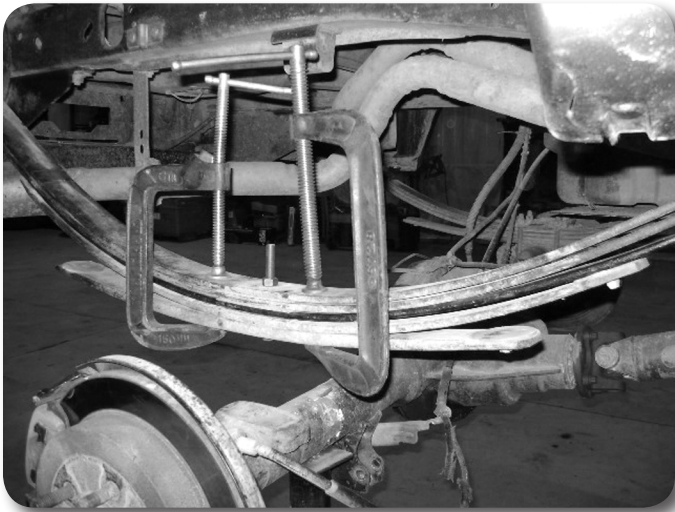


Figure 23

12. Install the new tapered lift block on the axle spring perch so that the short end is toward the front. Install the factory block on top of the new lift block. **Figure 24**

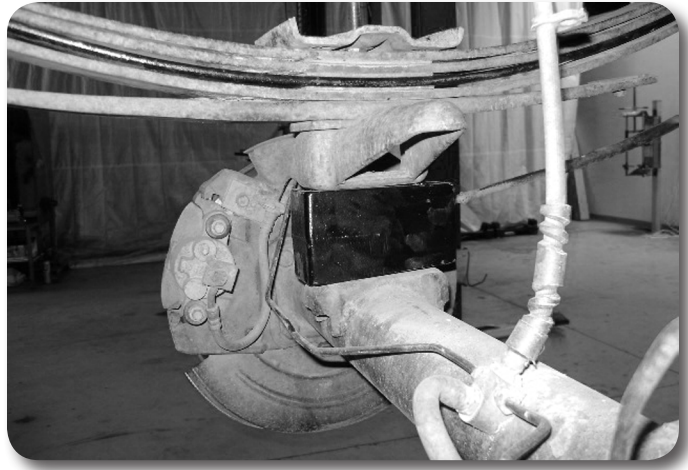


Figure 24

13. Lift the axle up to the spring and align the center pin in the block hole. Fasten the assembly with the new U-bolts, nuts and washers. Snug but do not completely torque the U-bolts.
14. Repeat the procedure on the driver's side of the vehicle.
15. With both sides complete, install the new shocks with the factory mounting hardware. Check for clearance between the shock and axle. It may be necessary to reindex the lower mount for adequate clearance.
16. Install the provided Hendricks (factory style) clamps on the springs. Install two per spring (one in front of axle, one behind). Slip the mating parts together and bend the tabs over to secure the clamps.
17. Install the new brake line relocation bracket in the factory bracket with the large slotted hole pointing down. Fasten with a 3/8" x 1" bolt, nut, and washers and tighten securely. Figure 25

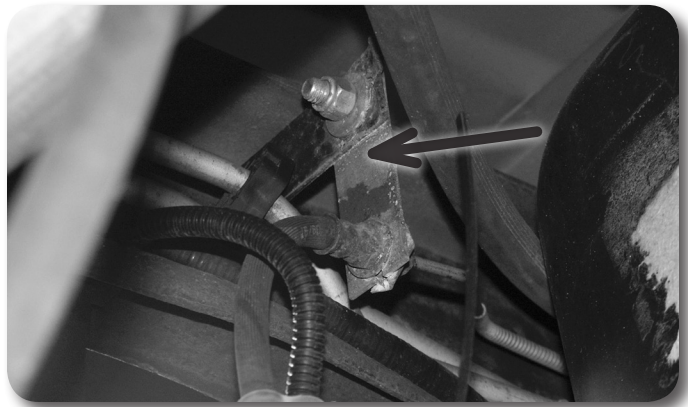


Figure 25

18. Install the brake line in the slotted hole and fasten with the factory retaining clip.
19. Install the wheels and lower the vehicle to the ground. Torque lug nuts to 100 ft-lbs for 12mm nuts or 150 ft-lbs for 14mm nuts.

20. Bounce the rear of the vehicle to settle the suspension.
21. Torque the u-bolts to 100-120 ft-lbs.
22. Check all hardware for proper torque
23. Check hardware after 500 miles.
24. A complete front end alignment is necessary.
25. Adjust headlights

### **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.