# INSTALLATION GUIDE




**Part#: 028702**

BDS SUSPENSION

HARDCORE LIMITED LIFETIME WARRANTY

# 4.5″and 7″ Suspension System

## Toyota Tundra | 2007-2014

Rev. 011915

491 W. Garfield Ave., Coldwater, MI 49036 • Phone: 517-279-2135

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# 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.

## 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.

FACTORY PROTECTION PLUS

**Visit 560plus.com for more information.**

## TRACTION CONTROL

In an effort to reduce the risk of rollover crashes the National Highway Traffic Safety Administration (NHTSA) established the Federal Motor Vehicle Safety Standard (FMVSS) No. 126 requiring all new passenger vehicles under 10,000 lbs GVWR include an electronic stability control (ESC) system as standard equipment. Effective August 2012 this law requires aftermarket products to be compliant with these same standards.

FMVSS No.126 COMPLIANT

## TIRES AND WHEELS

### FITMENT GUIDE

***All 4.5" Lifts:***

18x9 w/ 5-1/2" BS - 35x12.50

20x9 w/ 5-1/2"-6-1/4" BS - 35x12.50

***All 7" Lifts:***

18x9 w/ 5-1/2" BS - 35x12.50

20x9 w/ 5-1/2" BS - 35x12.50

20x9 w/ 6-1/4" BS - 37x12.50



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




| Box Kit 028700 | | |
|---|---|---|
| *Part #* | *Qty* | *Description* |
| 02200 | 1 | Steering Knuckle - Drv |
| 02201 | 1 | Steering Knuckle - Pass |
| 70110 | 2 | Tie Rod End |
| 02219 | 2 | Steering Stop |

| Box Kit 018319 / 018409 | | |
|---|---|---|
| *Part #* | *Qty* | *Description* |
| 3KB-W58 | 2 | 3" Lift Block - 5/8" Pin (018319 only) |
| 962121000QB | 4 | 9/16 x 2-1/2 x 10 Square U-bolt (018319 only) |
| 4KB-WF58 | 2 | 4" Lift Block - 5/8" Pin (018409 only) |
| 962961138QB | 4 | 9/16 x 2-9/16 x 11-3/8 Square U-bolt (018409 only) |
| W96S-B | 8 | 9/16" SAE Flat Washer |
| N96FH-B | 8 | 9/16" Fine High Nut |
| 01661 | 1 | Brake Line Relocation Bracket |
| SBLA | 1 | ABS Line Relocation Bracket |
| | | |
| 651 | 1 | Bolt Pack |
| | *2* | *5/16"-18 x 3/4" bolt* |
| | *2* | *5/16"-18 prevailing torque nut* |
| | *4* | *5/16" SAE flat washer* |
| | *1* | *1/4"-20 x 1" bolt* |
| | *1* | *1/4"-20 prevailing torque nut* |
| | *2* | *1/4" USS flat washer* |
| | *1* | *Wire Clamp* |

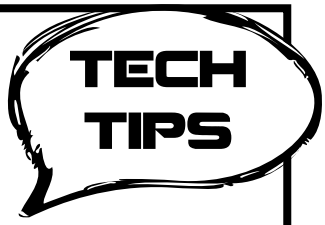
| Box Kit 028702 | | |
|---|---|---|
| *Part #* | *Qty* | *Description* |
| 02205 | 1 | Weld In Plate - Pass |
| 02206 | 1 | Weld In Plate - Drv |
| 400403 | 1 | 1/4in Vent Hose |
| 400409 | 1 | 1/4in Vacuum Hose |
| 574 | 1 | Bolt Pack |
| 649 | 1 | Bolt Pack |
| 02218 | 2 | Sway Bar Link |
| MTF-12 | 2 | Spherical Rod End |
| 01962 | 4 | Heim Joint Spacer |
| 36266 | 2 | 3/4" Jam Nut |
| SB34BK | 2 | 3/4 ID Hourglass Bushing |
| 44 | 2 | .750 x 1.520 DOM Sleeve |
| 02211 | 4 | Front Cam Washer |
| 01655 | 2 | Strap w/Stud Offset |
| 342701 | 2 | Loctite |
| B18X160G8 | 2 | M18 x 160 Bolt |
| M20500-BK-01 | 2 | Bump Stop Bushing |
| 01264 | 4 | Square Washer |
| | | |
| 650 | 1 | Bolt Pack |
| | *2* | *7/8"-9 x 5-1/2" bolt* |
| | *2* | *7/8"-9 nylock nut* |
| | *2* | *18mm-2.50 prevailing torque nut* |
| | *2* | *3/4" SAE flat washer* |

| Box Kit 028454/ 028704 | | |
|---|---|---|
| *Part #* | *Qty* | *Description* |
| A165B | 2 | Lower Strut Mount (028454 only) |
| A164B | 2 | Low Strut Mount (028704 only) |
| 02207 | 2 | Strut Preload Ring- Bilstein (028704 only) |
| 02208 | 2 | Strut Preload Ring- Standard (028704 only) |
| 111 | 4 | 5/8" x .560" Sleeve |
| 648 | 1 | Bolt Pack |
| | *4* | *3/8"-16 x 1-3/4" bolt grade 8 yellow zinc* |
| | *4* | *3/8"-16 prevailing torque nut yellow zinc* |
| | *16* | *3/8" SAE flat washer yellow zinc* |
| | *2* | *5/8"-11 x 3" bolt grade 8 yellow zinc* |
| | *2* | *5/8"-11 prevailing torque nut yellow zinc* |
| | *4* | *5/8" SAE flat washer yellow zinc* |

| Box Kit 028703 | | |
|---|---|---|
| *Part #* | *Qty* | *Description* |
| 01695 | 1 | Skid Plate Spacer |
| 02209B | 1 | Skid Plate |
| | | |
| 647 | 1 | Bolt Pack |
| | *4* | *9/16"-12 x 3-1/2" bolt* |
| | *1* | *9/16"-12 x 2-1/2" bolt* |
| | *5* | *9/16"-12 prevailing torque nut* |
| | *10* | *9/16" SAE flat washer thru-hardened* |
| | *5* | *1/2"-13 x 1-1/4" bolt* |
| | *1* | *1/2"-13 x 4" bolt* |
| | *6* | *1/2" SAE flat washer* |
| | *2* | *5/8" USS flat washer thru-hardened* |

| Box Kit 028701 | | |
|---|---|---|
| *Part #* | *Qty* | *Description* |
| 02202B | 1 | Front Crossmember |
| 02203B | 1 | Rear Crossmember |
| 02216B | 1 | Bump Stop - Drv |
| 02217B | 1 | Bump Stop - Pass |

## TROUBLESHOOTING INFORMATION FOR YOUR VEHICLE




1. Requires frame bracket modification and welding.
2. Stock 17", 18" and 20" wheels cannot be reinstalled
3. Models with a two piece rear driveline will require rear driveline modification.
4. Will not fit 2014 models equipped with Bilstein struts.

# INSTALLATION INSTRUCTIONS

## INSTALLATION INSTRUCTIONS

### SPECIAL TOOLS

High quality strut compressor

Welder

Reciprocating saw or equivalent

### PRE-INSTALLATION NOTES

1. *Steering Disassembly/Assembly*: According to the Toyota factory service manual, the factory steering rack should not be turned to full extension (full lock) while the tie rod ends are disconnected from the steering knuckles. Fully extending the steering rack may damage the internal oil seals and cause leakage and/or failure of the steering rack. We highly recommend locking the steering wheel in the center position before beginning the installation.
2. Park the vehicle on a flat, clean surface and block the rear wheels for safety.
3. Disconnect the positive and negative battery cables - minor welding is required during the installation.

# FRONT INSTALLATION

1. Raise the front of the vehicle and support with jack stands under the frame rails.
2. Remove the wheels.
3. Remove the factory plastic mud flaps from the front and rear portions of the front wheel well. These will not be reused.
4. Locate and remove the front factory skid plate (Fig 1). The skid plate and hardware will not be reused.

**FIGURE 1**



5. Loosen the tie rod end jam nuts (Fig 2). The tie rod ends will be removed later in the installation.

**FIGURE 2**



6. Remove the tie rod end cotter pin. Remove the nut from the tie rod end and thread back on a couple of turns. Strike the steering knuckle near the tie rod end to dislodge the taper (Fig 3). Remove the nut and the tie rod end from the knuckle. Save the nut and discard the cotter pin.

**Tip** *Be sure the steering is centered before removing the tie rod ends. See Pre-Installation Note 1.*

## FIGURE 3



7. Disconnect the sway bar links from the lower control arms and sway bar (Fig 4). Remove the links from the vehicle. Save the lower mount bolts and discard the rest.

## FIGURE 4



8. Disconnect the brake line brackets (Fig 5A, B) from the steering knuckles (2 per knuckle). Save hardware.

## FIGURE 5A

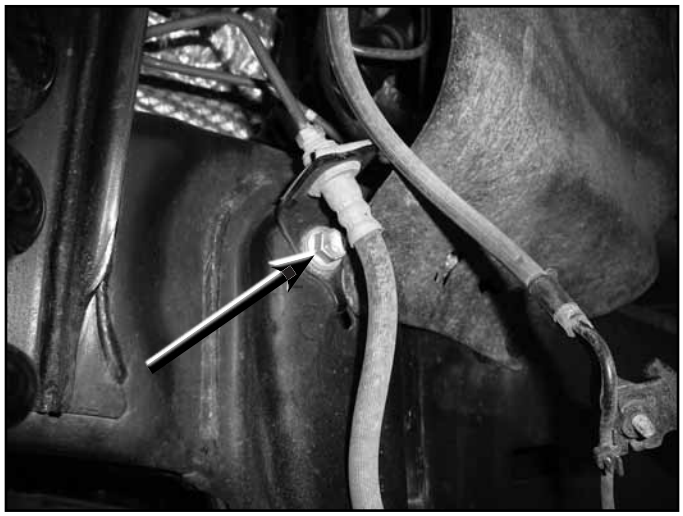


## FIGURE 5B



9. Disconnect the brake line bracket from the frame (Fig 6). Save bolt. Remove the ABS line from the retaining bracket on the upper control arm.

**FIGURE 6**



10. Remove the ABS sensor bolt (Fig 7A) from the knuckle (requires a 5mm hex socket). Carefully remove the sensor from the knuckle (Fig 7B). It is held in place by an o-ring. Take extra care not to damage the sensor. Save mounting bolt.
11. Remove the bolts mounting the brake caliper to the steering knuckle (Fig 8). Hang the caliper and the brake/ABS lines out of the way. Save caliper hardware.

**FIGURE 7A**

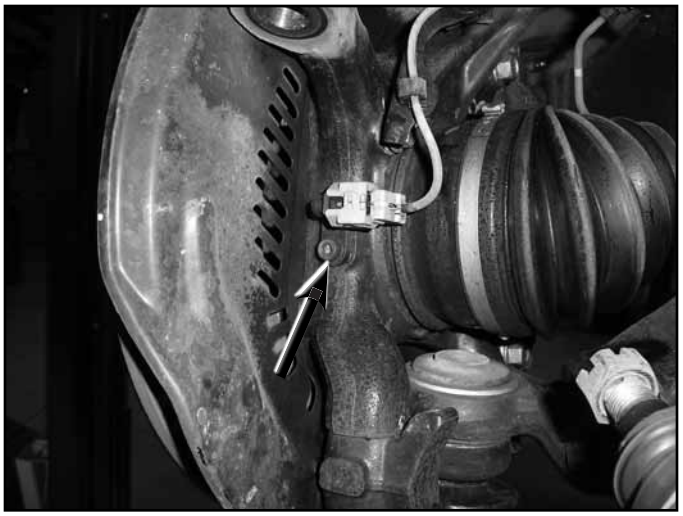


**FIGURE 7B**



## FIGURE 8



12. Remove the brake rotor from the hub.
13. Remove the hub dust cap from the hub by carefully working around the lip with a small chisel and hammer (Fig 9). Take care not to overly deform the mounting lip so it can be reinstalled later.

## FIGURE 9



14. Remove the cotter pin and castellated nut cap from the end of the axle shaft. Remove the axle nut from the axle. Save the axle nut and cap (Fig 10). Discard the cotter pin (new one provided).

## FIGURE 10



15. Unseat the axle shaft from the knuckle. Use an air hammer with blunt nose punch (recommended) or a hammer and punch, unseat the axle from the hub (Fig 11). A large rubber mallet can be used also, but make sure to thread the axle nut on flush with the end of the axle to protect the threads.

**FIGURE 11**



16. Disconnect the hub bolts from the steering knuckle. (Fig 12A) The bolts are captive in the hub assembly. Remove the hub, brake dust shield and hub o-ring from the steering knuckle and set aside (Fig 12B).
17. Remove the upper ball joint cotter pin and save. Remove the upper ball joint nut and thread back on a couple of turns by hand. Strike the knuckle near the upper ball joint to dislodge the ball joint taper (Fig 13). Take care not to strike the ball joint. Pull down on the upper control arm and remove the upper ball joint nut. Save nut.

**FIGURE 12A**

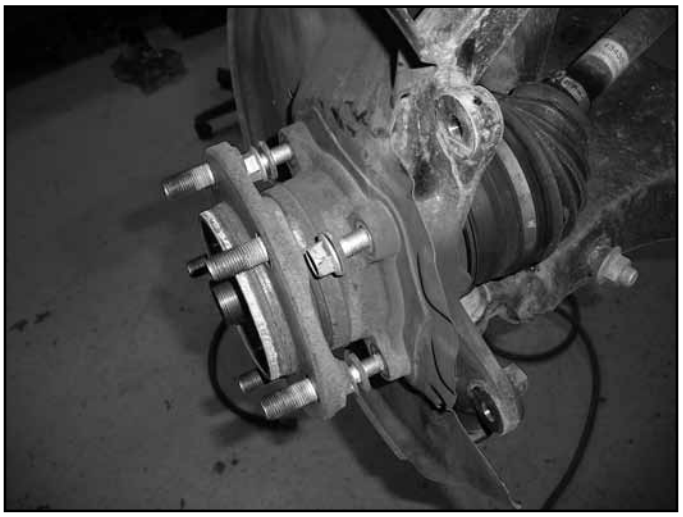


**FIGURE 12B**



## FIGURE 13



18. Disconnect the steering knuckle from the lower ball joint mount. Remove the two bolts (Fig 14) and remove the knuckle from the vehicle. Save bolts and knuckle.

## FIGURE 14



19. Loosen but do not remove the lower control arm cam bolts. On the front, loosen the bolt from the front. On the rear, loosen the nut from the front (Fig 15).

## FIGURE 15



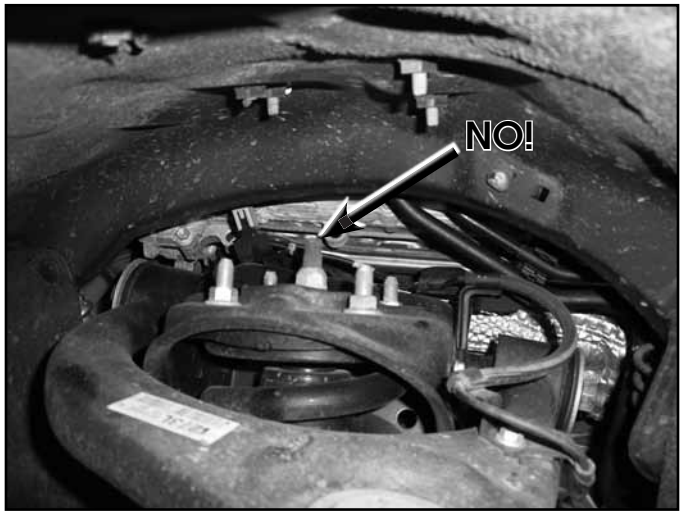
20. Disconnect the lower strut mounting bolt and remove from the lower control arm (Fig 16). Allow the lower control arm to swing down. Save the strut mount hardware.

## FIGURE 16



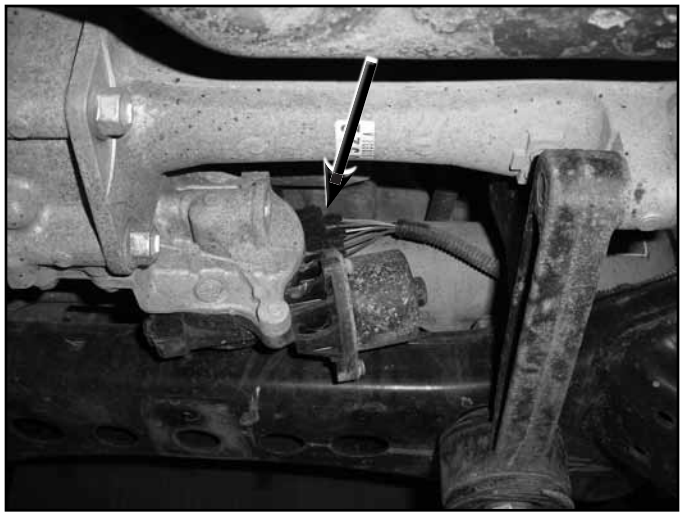
21. Remove the lower control arm cam bolts and remove the control arms from the vehicle. Save arms and hardware.
22. Remove the factory strut assemblies from the frame. Remove the four mounting nuts and save (Fig 17). Do NOT loosen the center strut rod nut, it is under extreme pressure.

## FIGURE 17




23. Steps 23-31 are for 4wd vehicles only, 2wd models skip to step# 32. Locate the front differential actuator wire connector on the front passenger's side of the differential. Push in on the retaining clip and pull the connector free from the actuator (Fig 18).

## FIGURE 18



24. Locate the differential vacuum and breather lines on the upper driver's side of the differential (Fig 19). Disconnect the lines from the hard lines at the frame.

**FIGURE 19**



25. Disconnect the front driveshaft from the front differential by removing the four mounting nuts. Save nuts. Pull the driveshaft free from the differential input flange.

26. With the help of an assistant, support the front differential with a proper jack. Remove the outer bolt and inner nut mounting the rear differential bracket to the frame. Remove the bolt mounting the rear differential bracket to the differential and remove the bracket from the vehicle (Fig 20A). Save bracket and hardware. Remove the two bolts mounting the front differential brackets to the frame (Fig 20B) and remove the differential from the vehicle.

**FIGURE 20A**



**FIGURE 20B**



27. In order to clear the differential in its new lower position the factory rear frame crossmember must be removed. On the driver's side make cut marks up the front and back faces of the crossmember that extend from the bottom inside edge of the control arm pocket (Fig 21A). This line will be approximately 3-13/16" from the front outer control arm pocket edge (Fig 21B) and 3-3/8" from the inside of the frame on the back face (Fig 21C). Connect the top of the two vertical cut lines along the top surface of the crossmember.

**FIGURE 21A**



**FIGURE 21B**



**FIGURE 21C**



28. On the passenger side, measure in and mark 3" from the inside edge of the control arm pocket (Fig 22). Extend the line along the bottom of the crossmember (parallel to the inside edge of the control arm pocket) and up the front and back faces of the crossmember.

**FIGURE 22**




29. Using a reciprocating saw (highly recommended), hack saw or cut-off wheel, cut the rear crossmember out of the vehicle along the driver's and passenger's side cut lines (Fig 23).

## FIGURE 23



30. With the rear crossmember removed, clean any burrs, grease/oil and paint from the cut area. Prep the area properly for welding in the new provided metal plates.
31. Position the provided driver's and passenger's side weld-in plates (02205 - pass, 02206 - drv) up to the cut surfaces by matching up the profiles (Fig 24-pass, Fig 25-drv). On the driver's side make sure the bottom edge of the new plate is even with the bottom-most edge of the cut. Tack weld the plates in place.

## FIGURE 24- PASSENGER'S SIDE



## FIGURE 25 - DRIVER'S SIDE



32. Double check the weld-in plate positions and completely weld into place. Once the weld area has cooled, paint any bare metal to prevent rust.
33. Install the new front crossmember (02202) into the front lower control arm pockets (Fig 26) with the provided 7/8" x 5-1/2" bolts (BP 650) and (2) rectangle cam washers (02211). Run the bolts from front to rear and loosely fasten with remaining (2) rectangle cam washers and 7/8" nylock nuts (BP 650).

## FIGURE 26



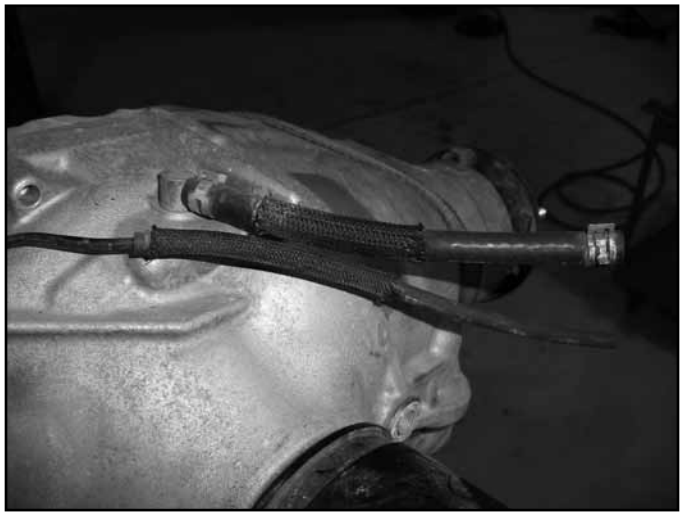
34. 4wd models only, 2wd skip to # 39. Locate the top holes inside the front crossmember that line up with the original differential mount holes in the frame (Fig 27). There will be a gap between the top of the crossmember and the bottom of the frame. Insert a provided 5/8" USS washer (BP 647) between the frame and crossmember at each (2) mount hole. Install provided 9/16" x 3-1/2" bolts, nuts and washers (BP 647) up through the crossmember, spacer washer and frame. Leave hardware loose.

## FIGURE 27



35. Locate and replace the factory vacuum and breather lines on the top of the differential (Fig 28). Transfer the hose clamps from the factory breather hose to the new provided one. The vacuum line does not have clamps and just slides onto the hard line.

## FIGURE 28



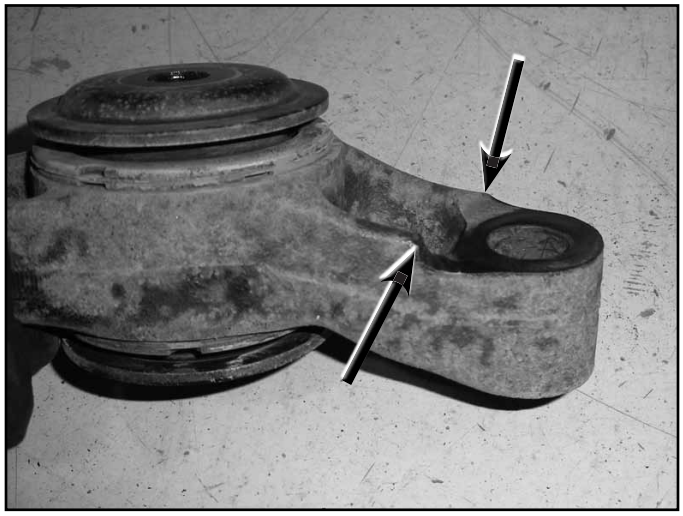
36. With the help of an assistant and an appropriate jack, raise the differential up to the new front crossmember. Align the holes in the factory differential mount brackets with the corresponding holes in the crossmember. Loosely fasten the differential (Fig 29) to the front crossmember with 9/16" x 3-1/2" bolts, nuts and washers along with the large lower factory washer. (BP 647).

**FIGURE 29**



37. Locate the factory rear differential mount that was removed earlier. Locate the bottom outer mount surface and the cast ribs that extend close to the mounting hole. These ribs need to be ground down flush to the mounting surface back into the mount body about 1/4" to provided clearance with the new differential mount (Fig 30). This can easily be done with a standard angle grinder.

**FIGURE 30**



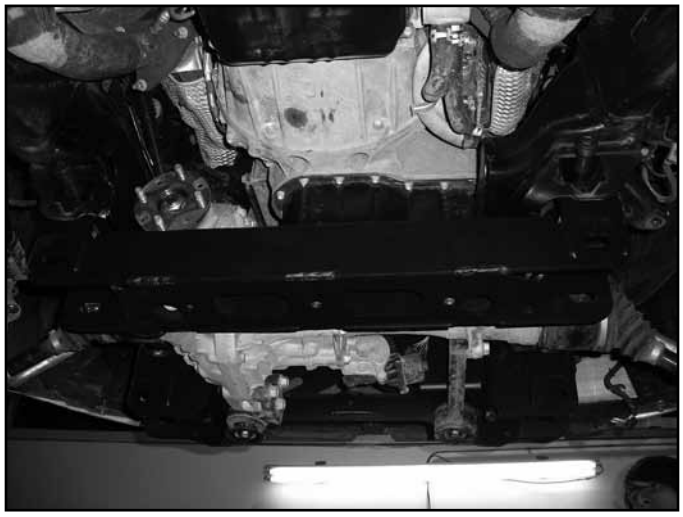
38. Loosely install the modified factory rear differential mount to the differential with the original bolt (Fig 31). The mount should be positioned as it was when removed with the captive stud to the inside and pointing down. Leave the bolt loose so the bracket can move freely.

## FIGURE 31



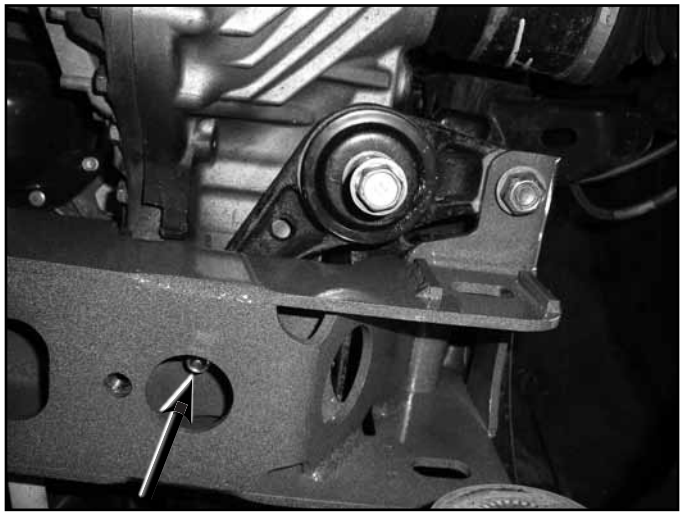
39. Install the new rear crossmember (02203) in the rear lower control arm pockets (Fig 32). When installing the crossmember, align the captive stud on the rear differential bracket with the mounting hole in the crossmember. Fasten the crossmember to the frame with 18mm x 170mm bolts (BP 650) and (2) rectangle cam washers (02212). Run the bolts from rear to front. Install the remaining (2) cam washers on the bolt but do not install the nut.

## FIGURE 32



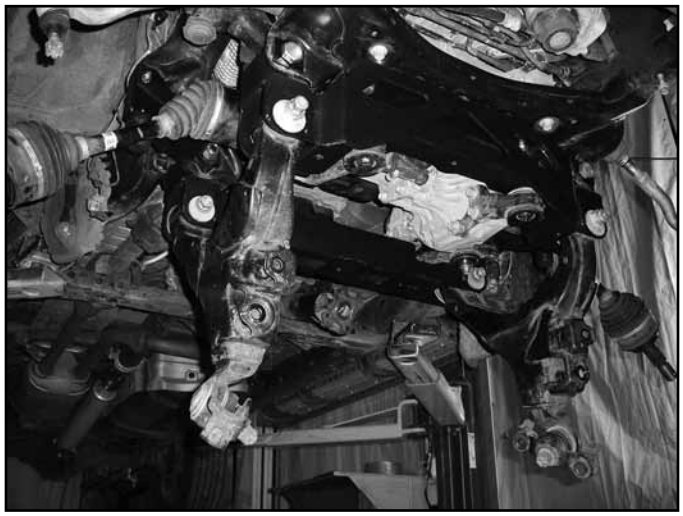
40. With the rear crossmember installed, fasten the factory rear differential mount to the outer crossmember mount with a 9/16" x 2-1/2" bolt, nut and washers (BP 647). Also, install the factory flanged high nut on the captive stud, which is accessed through the bottom of the rear crossmember (Fig 33). Leave hardware loose.

## FIGURE 33



41. After all of the differential hardware is installed, push the differential rearward as far as possible and torque the two front differential mount bolts to 90 ft-lbs. Leave the remaining differential hardware loose at this time.
42. Connect the new differential breather and vacuum lines to the hard lines at the frame on the driver's side. Reconnect the differential wiring connector to the differential actuator.
43. Reconnect the front driveshaft to the differential with the original nuts/washer. Torque nuts to 50 ft-lbs.
44. Locate and install the factory lower control arms into the new front and rear crossmembers (Fig 34). Loosely fasten the control arms with the factory cam bolts. The front cam bolts run from front to rear and the rear cam bolts run from rear to front. Thread the cam bolts just enough to seat the cams between the cam stops on the crossmembers but do not tighten.

## FIGURE 34



45. With the lower control arms installed, go back and torque the (3) rear differential mount bolts to 90 ft-lbs (two at the crossmember, one into the differential).
46. With all the differential mount bolts tight, torque the main 7/8" front crossmember bolts to 150 ft-lbs and the 9/16" upper crossmember bolts to 90 ft-lbs.
47. Locate the provided weld-on steering stop adapters. Position the adapters on the factory steering stops, located on the ball joint mounts toward the front side of the control arm (Fig 35A). The adapters will roughly match the contour and shape of the factory steering stop. Clean the paint from the top and bottom edges of the factory parts and weld the steering stop adapters in place (Fig 35B). After they are cool, paint any bare metal.

**FIGURE 35A**



**FIGURE 35B**



48. Locate and remove the rear factory rubber bump stops from the frame (Fig 36). These are threaded into the frame and can be removed with large channel-lock pliers. Discard bump stops.

**FIGURE 36**



49. Locate the provided bump stop mounts (02216 - drv, 02217 - pass) and new bump stops (M03138BK). The new mounts are side specific. The large tab will mount to the rear crossmember bolt and the small slotted hole mounts to the frame. Install the provided bump stops (Fig 37A) to the new mounts with a 3/8" flanged nut (BP 649). Tighten nut securely (do not overtighten, causing the bump stop to deform).

**FIGURE 37A**



50. Install the bump stop mounts to the original bump stop location on the frame with 10mm x 25mm bolts and 3/8" USS washers (BP 649). Before installing the bolt make sure the rectangle cam washer is in place on the crossmember bolt (Fig 37B - installed earlier) and the bump stop mount is positioned over the cam washer (Fig 37C). Leave 10mm hardware loose and fasten the mount at the crossmember with a 3/4" washer and 18mm nut (BP 650). Torque the 10mm bolt to 20 ft-lbs followed by the 18mm bolt to 140 ft-lbs.

51. Locate the new belly pan (02209). Loosely attach the belly pan to the bottom of the rear crossmember using the provided 1/2" x 1-1/4" bolts and washers (BP 647) into the (3) welded nuts in the crossmember (Fig 38). Use Loctite on belly pan bolts.

**FIGURE 37B**

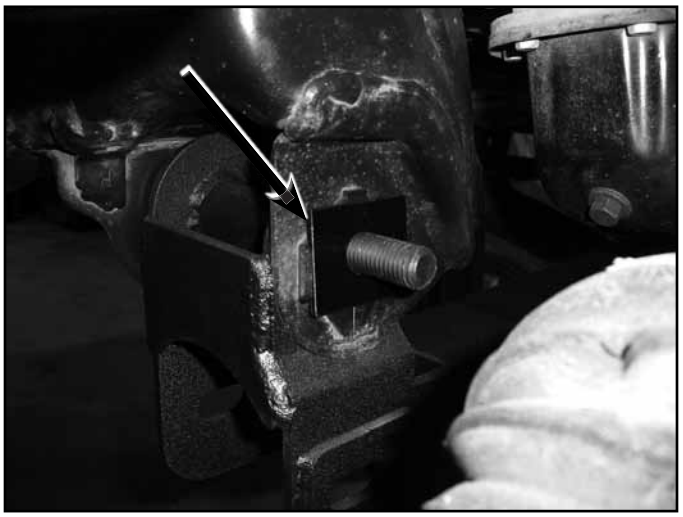


**FIGURE 37C**



**FIGURE 38**




52. Locate the 3" OD belly pan spacer (01695). Position the spacer between the belly pan and the front crossmember (Fig 39). Align the hole in the spacer with the front, center slot in the belly pan. Fasten the belly pan through the spacer and into the welded nut in the front crossmember with a 1/2" x 4" bolt and washer (BP 647). Fasten the belly pan at the remaining (2) outer slots with 1/2" x 1-1/4" bolt and washers (BP 647). Use Loctite on the belly pan bolts and torque all (6) bolts to 55 ft-lbs.

**FIGURE 39**

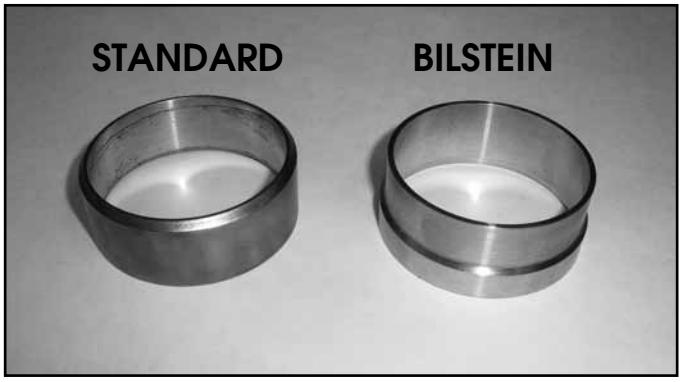


## STRUTS - 7" LIFT ONLY

53. Locate the 2 sets of provided preload spacer rings (02207/02208). Only one set will be used depending on the type of factory strut the vehicle is equipped with (Bilstein - yellow or standard - black). The Bilstein preload rings have a step machined into the outer surface while the standard rings are smooth (Fig 40). Identify the correct preload rings for your application and discard the other set.

*2014 models: Fits only trucks equipped with standard struts - see kit notes*

**FIGURE 40**




54. Locate the factory strut assemblies that were removed earlier. Place indexing marks on the strut body, lower coil seat and upper strut mount for reference when the strut is reassembled (Fig 41).

**! 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.*

**FIGURE 41**



55. Using an appropriate strut compressor, compress the coil spring and remove the upper strut nut. Remove the strut from the coil spring.
56. *Standard Strut Only (Black):* The strut rod boot on the standard struts is not designed to be removable. There are four indented spots

around the top of the boot that hold it in place (Fig 42A). Using a utility knife, carefully cut the top and sides of the (4) indented areas. Pull the (4) tabs out to release the boot from the shock (Fig 42B). Save boot.

**FIGURE 42A**



**FIGURE 42B**



57. *Bilstein Strut Only (Yellow):* Remove the strut rod boot from the strut. The boot is held in place with small o-rings. Take care not to loose the o-rings when removing the boot. Save boot/o-rings.
58. Slide the lower coil seat up off of the strut (Fig 43). In most cases the coil seat will need to be tapped off the middle of the strut body with a rubber mallet. With the seat removed, clean any corrosion/paint build up from the coil seat area on the strut body and in the ID of the coil seat itself. This will ensure the preload rings seat properly.

**FIGURE 43**



59. Install the proper preload ring on the strut. For Bilstein Struts, the preload ring will seat over the strut snap ring and the preload ring OD will step down to fit inside the coil seat (Fig 44A). For Standard Struts, the top edge of the preload ring tapers in to fit inside the coil seat (Fig 44B).

**FIGURE 44A**



**FIGURE 44B**



60. With the preload ring installed, reinstall the coil seat and the strut rod boot. For Bilstein struts, be sure the o-rings are installed with the boot. For Standard struts, reposition the boot on the strut rod washer and push the (4) retaining tabs in to lock it in place.

61. Reinstall the modified strut in the coils springs and upper strut mount with the factory stem bushings and washers. Line up the alignment marks made earlier and reinstall the factory strut rod nut. Torque nut to 18 ft-lbs.

## STRUTS - 4.5" AND 7" LIFTS

62. Loosely install the struts to the factory upper mounts with the original hardware. Leave nuts loose. Note the position indicator on the top strut plate (Fig 45).

**FIGURE 45**




63. Locate the new lower strut extensions (A164 - 7" Lift, A165 - 4.5" Lift). Install the extension on the factory strut so the pinch tabs are toward the inside of the vehicle. Slide the extension over the strut body (Fig 46)

**Tip** *2014 models will require the use of a rubber mallet or dead blow hammer to get the strut mount over the narrow section of the strut body and will not fit bilstein equipped vehicles.*

**FIGURE 46**



64. Align the mount holes with the factory strut bushing and fasten with a 5/8" x 3" bolt, nut and washers (BP 648). Torque bolt to 125 ft-lbs.

**Tip** *2007-13 Models: The extensions may need to be tapped onto Bilstein struts because of the slightly larger body diameter. Use a rubber mallet.*

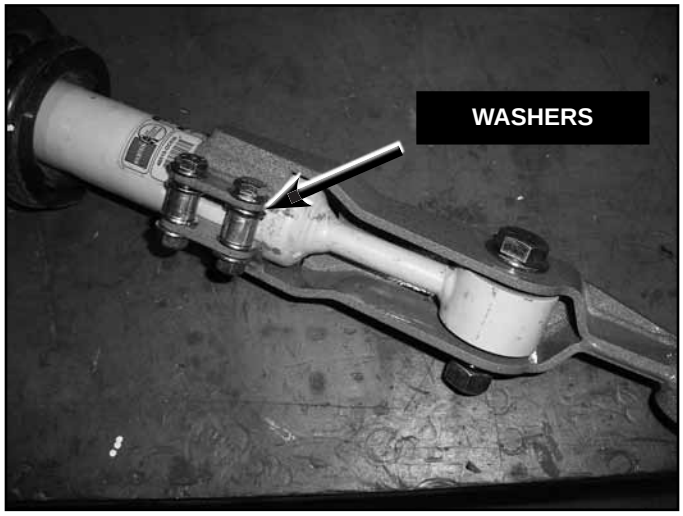
65. Locate the provided 0.625 OD x 0.560 Long crush sleeves (111). Position the sleeves between the pinch tabs on the upper portion of the strut extension (Fig 47A) and fasten with 3/8" x 1-3/4" bolts, nuts and washers (BP 648). Torque bolts to 25 ft-lbs. Double check that the

strut extension is tight on the strut body. 2007-13 Models: For Bilstein Strut equipped vehicles (yellow strut) - place a 3/8" SAE washer (BP 648) on each side of the crush sleeves before installing the pinch bolts (Fig 47B). These are needed to compensate for the slightly larger diameter strut body compared to the standard (black) strut.

**FIGURE 47A**




**FIGURE 47B**




66. With the strut installation complete, swing the lower control arms up to the strut and attach with the original lower strut bolt/nut (Fig 48). Leave lower control arm bolt loose. Torque the upper strut mount nuts at the frame to 33 ft-lbs.

**Tip** *After the upper mount nuts are tight, double check clearance between the front inside edge of the strut extension and the lower control arm. Make sure the two components are not touching. If there is contact, trim the lower control arm to gain the proper clearance.*

**FIGURE 48**



67. Locate the new steering knuckles (02200 - drv, 02201 - pass) and the corresponding factory steering knuckles. The factory hub seal needs to be removed from the original knuckles and placed in the new knuckles. Carefully remove/install the seals without damaging them using a blunt nose punch and hammer (a small block of wood works well to install). Be sure the seal is completely seated in the new knuckle (Fig 49A, B). If the seal needs replaced do so now. Toyota part #90312A0002 (outboard seal) or #90316-A0002 (inboard seal).

**FIGURE 49A**

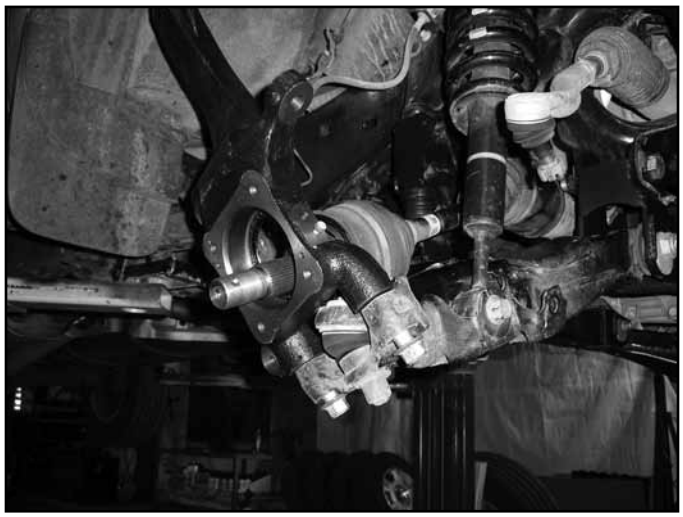


**FIGURE 49B**



68. Install the new steering knuckles on the appropriate side of the vehicle. Run the CV shaft through the knuckle hub bore and fasten the knuckles to the lower ball joint mount with the original mounting bolts (Fig 50). Use Loctite on the bolts and torque to 175 ft-lbs.

**FIGURE 50**



69. Pull down on the upper control arm and attach the upper ball joint to the new steering knuckle with the factory upper ball joint nut. Torque the upper ball joint nut to 80 ft-lbs and install the factory cotter pin. Never loosen the nut to align the cotter pin holes, only tighten.
70. Install the factory wheel hubs onto the factory CV shaft and into the new knuckles along with the factory dust shield and outer hub o-ring. Apply Loctite to the (4) captive hub bolts and torque to 73 ft-lbs. Be sure the dust shield is oriented correctly. In rare cases the dust shield may need reformed slightly to clear the knuckle casting to keep the dust shield from deforming.
71. Install the factory CV axle nut and torque to 250 ft-lbs. Install the factory castellated nut cap and new provided 5/32 x 1-3/4" cotter pin (BP 649). Reinstall the factory hub dust cap and tap into place with a rubber mallet.
72. Install the factory brake rotor on the hub followed by the brake caliper. Attach the caliper to the knuckle with the original mounting bolts. Torque caliper bolts to 73 ft-lbs.
73. Attach the factory brake line bracket to the new steering knuckle with the original bolt. It might be necessary to carefully reform the brake hard line at the caliper in order to attach the bracket. Torque bolt to 8 ft-lbs.
74. Route the ABS sensor wire over the axle shaft to the front of the steering knuckle and install with the original bolt. Be sure to seat the sensor complete into the knuckle before tightening the bolt (Fig 51). Torque bolt to 8 ft-lbs.

## FIGURE 51



75. Attach the ABS wire bracket to the backside of the knuckle in the provided tapped hole with the original bolt (Fig 52). On the driver's side it will be necessary to remove the extra tab on the bracket to mount it properly (Fig 53). The ABS line can be slid in the plastic retainer clips that attach to the metal brackets to adjust the line for proper slack. Lubricate the line with spray lubricant and pull through the plastic clips as necessary. Torque bracket bolt to 8 ft-lbs.

## FIGURE 52



## FIGURE 53



76. Locate the new brake line relocation brackets (01655). Attach the brackets to the original frame mount with the original bolt. The stud on the bracket will point out and the bracket will angle in toward the strut about 20-30 degrees from vertical (Fig 54). Torque bolt to 10 ft-lbs.

## FIGURE 54



77. Carefully reform the brake hard line at the frame and attach the original brake line mount bracket to the stud on the relocation bracket (Fig 55). Fasten with the provided 1/4" nut, flat washer and lock washer (BP 649). Tighten hardware securely.

**FIGURE 55**



78. Cycle the knuckle back and forth to check for proper slack and clearance of the ABS and brake lines. Adjust where necessary.

79. Locate the new sway bar links (02218), link ends (MTF-12), jam nut (36266) and bushings/sleeves (SB34BK/44). Lightly grease and install the bushings in the sway bar links followed by the sleeves. Thread the jam nuts onto the links followed by the link ends. Thread the link ends all the way on (Fig 56). Leave the jam nut loose.

**FIGURE 56**



80. Attach the bushing end of the new sway bar links to the original link mount in the lower control arms. Fasten with the original sway bar link bolt. Leave bolt loose.

81. Insert the provided link end spacers (01962) into the link ends. Fasten sway bar links to the outside of the sway bar (Fig 57) with a 9/16" x 3" bolt ,nut and washers (BP 574). Torque the upper and lower link mount bolts to 90 ft-lbs.

**FIGURE 57**



82. Remove the factory driver's and passenger's side tie rod ends. Locate and install the new provided tie rod ends back on up to the jam nut. Install the rod ends into the new steering knuckles (top down) and fasten with the factory castellated nut. Torque nut to 51 ft-lbs. Insert a new 5/32 x 1-1/4" cotter pin (BP 649). Do not loosen the nut to align the cotter pin hole, only tighten.
83. With the new tie rod ends installed, snug the jam nuts up against the tie rod ends.
84. Install the wheels and lower the vehicle to the ground. Torque lug nuts to 100 ft-lbs for aluminum wheels or 150 ft-lbs for steel wheels.
85. Bounce the front of the vehicle to settle the suspension. Torque the lower control arm cam bolts to 200 ft-lbs. Torque the lower strut mount bolts to 140 ft-lbs.
86. Check all hardware for proper torque.

## Rear Installation

1. Block the front wheels for safety. Raise the rear of the vehicle and support with jack stands under the frame rails.
2. Remove the wheels.
3. Support the rear axle with a floor jack and remove the factory rear shocks. Save the axle mount hardware, discard the upper hardware and shocks
4. Disconnect the parking brake cable brackets from the driver's and passenger's side of the axle (Fig 58). Remove the brackets from the cables.

**FIGURE 58**



5. Disconnect the rear brake lines from the (3) mounting points at the center of the axle (Fig 59). Save hardware and leave the factory clamps on the hard lines. Disconnect the plastic ABS line clip from the top of the differential (Fig 60). Remove the plastic clip from the ABS line, it will not be reused.

**FIGURE 59**

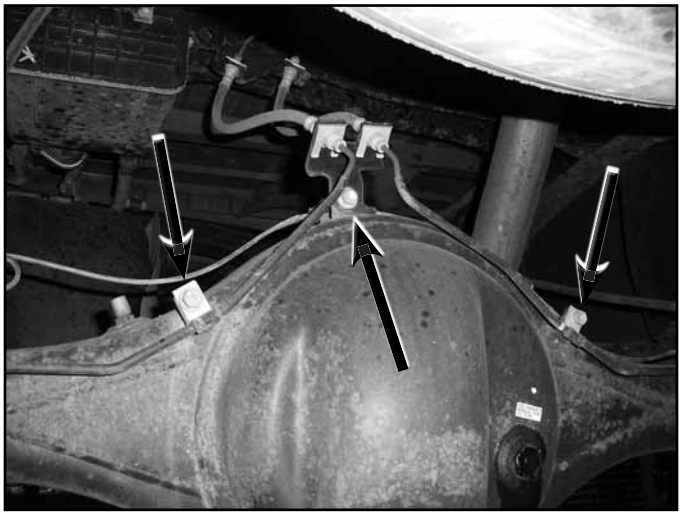


**FIGURE 60**



6. Disconnect the ABS line bracket from the driver's side of the axle (Fig 61). Save hardware. For 7" lifts, carefully bend the factory ABS line bracket down at the charcoal canister located on the frame (Fig 62A, B).

**FIGURE 61**



**FIGURE 62A - BEFORE**



**FIGURE 62B - AFTER**



7. With the axle still well supported, remove the passenger's side u-bolts. Lower the axle enough to place the provided lift block between the axle and leaf pack. Align the pins and pin holes in the block, leaf and axle. Raise the axle to seat all of the components. On 4.5" lifts, the block has a slight taper. Make sure the short end of the block is toward the front of the vehicle. On 7" lifts, the lift block does not have a taper.
8. With the lift block installed, install the new u-bolts, nuts and washers (Fig 63). Snug u-bolts but do not torque at this time. Final torque will be done with the weight of the vehicle on the suspension.
9. Repeat block installation on the driver's side.
10. 7" Lift Only: If installing the optional rear shackle kit, do so now. Follow the instructions provided with the shackle kit (#128109).
11. With both sides complete, install the new shocks with the provided bushings, sleeves and hardware. New upper hardware is supplied and the factory axle hardware will be reused. Torque the upper shock stud nut to 20 ft-lbs. Torque axle mount bolt to 65 ft-lbs.
12. Locate the provided ABS relocation bracket (SBLA - 3" hole-to-hole) and attach to the original axle mount with the factory bolt. Position the bracket vertical and torque bolt to 10 ft-lbs. Attach the factory ABS line bracket to the relocation bracket (Fig 64) with the provided 5/16" x 1" bolt, nut and washers (BP 651). Torque 5/16" hardware to 10 ft-lbs.

**FIGURE 63**

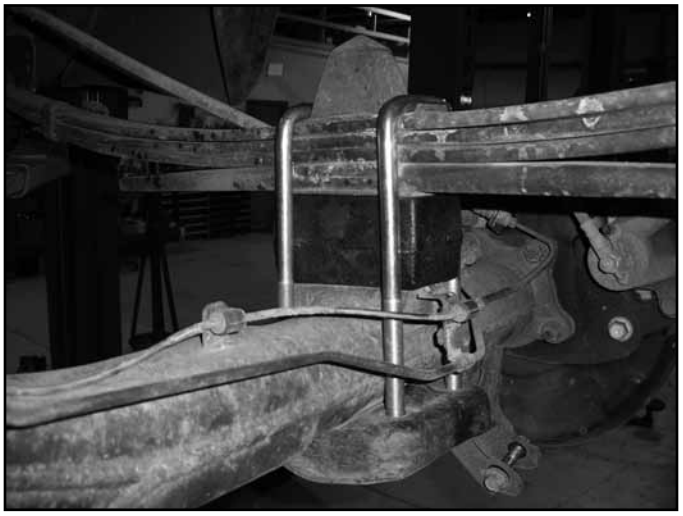
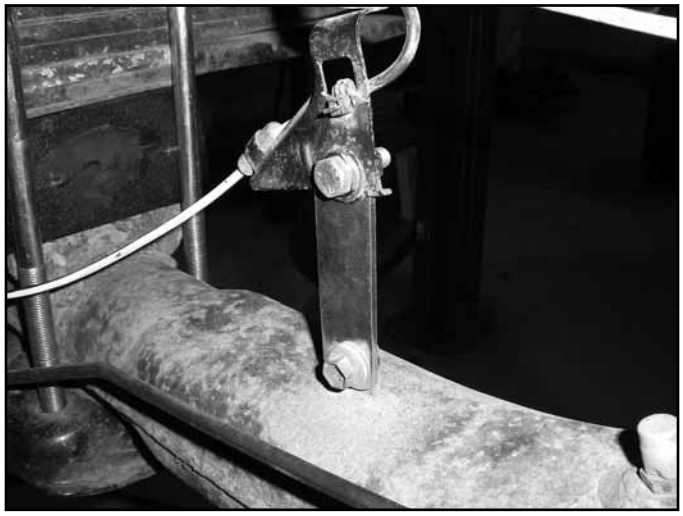


**FIGURE 64**



13. Locate the provided brake line relocation bracket (01661 - 1" hole-to-hole), provided 1/4" hardware and wire clip (BP 651). Install the wire clip on the ABS wire where the factory plastic clip was removed (Fig 65A, B). Remove the 1/4" x 1" bolt w/washer through the clip, into the new relocation bracket and into the front of the original ABS mount tab on the top of the differential. Fasten with a 1/4" nut and washer. Position the relocation bracket vertical and torque bolt to 8-10 ft-lbs.

**FIGURE 65A - LOOKING FROM BACK**



**FIGURE 65B - LOOKING FROM FRONT**



14. Attach the factory brake line bracket to the front of the relocation bracket with the remaining 5/16" hardware (BP 651). Torque bolt to 10 ft-lbs. Note: The hard lines will need to be reformed slightly for the factory bracket to mount to the relocation bracket.
15. Flip the two remaining brake hardware line clips and reattach to the original locations on the back of the axle (Fig 66). The lines will now be running above the mount bolts instead of below. Torque bolts to 10 ft-lbs.

**FIGURE 66**



16. Install the wheels and lower the vehicle to the ground. Torque lug nuts to 100 ft-lbs for aluminum wheels or 150 ft-lbs for steel wheels.
17. Bounce the rear of the vehicle to settle the suspension. Torque the u-bolts to 100-120 ft-lbs.
18. Check all hardware for proper torque.

## Post-Installation

1. Check all hardware (front and rear) for proper torque. Check hardware after 500 miles.
2. Reconnect the battery.
3. Vehicle will need a complete front end alignment.
4. Adjust headlights.



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