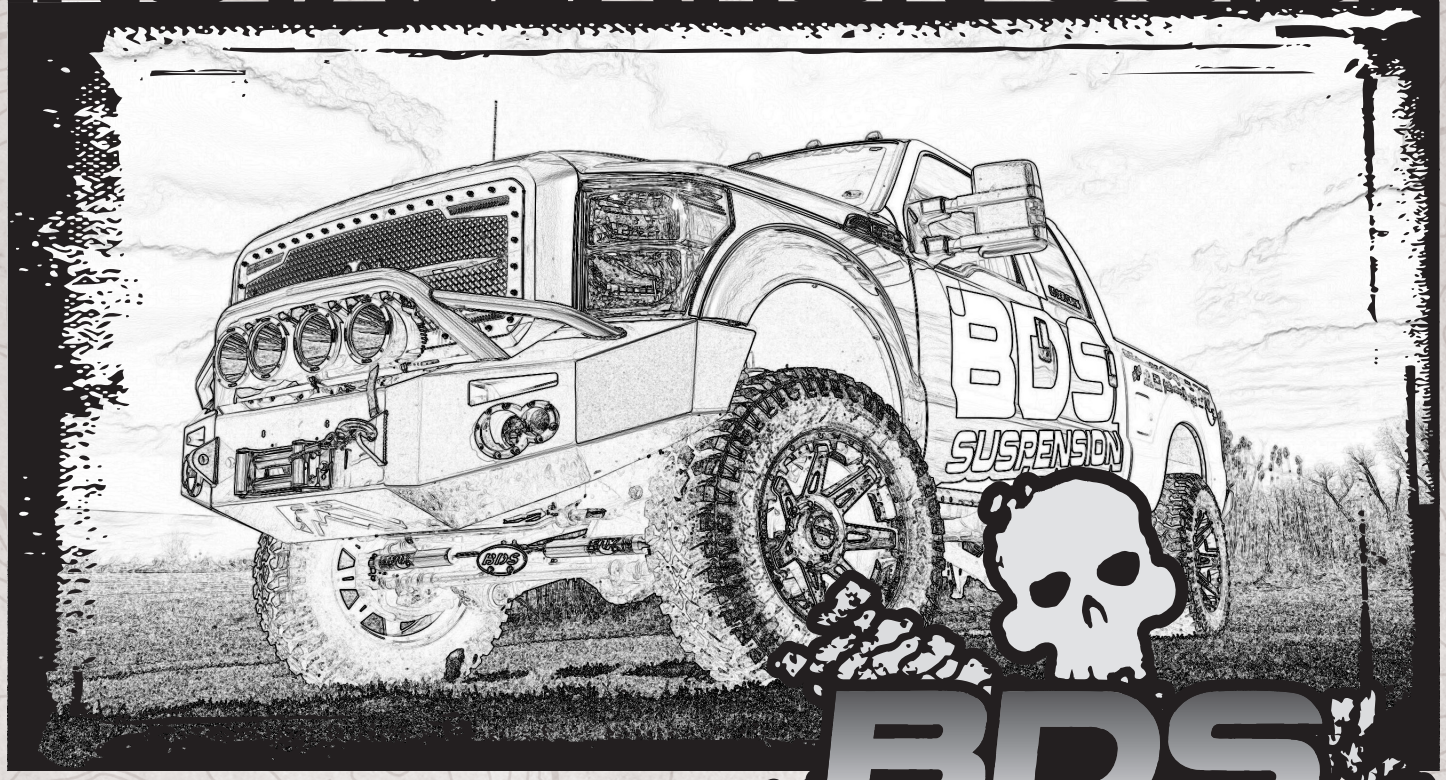
INSTALLATION GUIDE



Part#: 013424, 013614

BDS SUSPENSION

HARDCORE LIMITED LIFETIME WARRANTY

4" & 6" Radius Arm Suspension System

Ford Super Duty 4WD | 2011-2016

Rev. 050120

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

Web: www.bds-suspension.com • E-mail: tech-bds@ridefox.com

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

THANK YOU

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

BEFORE YOU START

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

FOR YOUR SAFETY

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

BEFORE INSTALLATION

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

FACTORY PROTECTION PLUS

Visit 560plus.com for more information.

TIRES AND WHEELS

4" Lift
35 x 12.50 on 17x9 with 4.5" backspacing
35 x 12.50 on 17x9 with 4.5" backspacing
35 x 12.50 on 17x9 with 4.5" backspacing
6" Lift
37 x 12.50 on 17x9 with 4.5" backspacing
37 x 12.50 on 17x9 with 4.5" backspacing
37 x 12.50 on 17x9 with 4.5" backspacing

BEFORE YOU DRIVE

Check all fasteners for proper torque. Check to ensure for adequate clearance between all rotating, mobile, fixed, and heated members. Verify clearance between exhaust and brake lines, fuel lines, fuel tank, floor boards and wiring harness. Check steering gear for clearance. Test and inspect brake system.

Perform steering sweep to ensure front brake hoses have adequate slack and do not contact any rotating, mobile or heated members. Inspect rear brake hoses at full extension for adequate slack. Failure to perform hose check/ replacement may result in component failure. Longer replacement hoses, if needed can be purchased from a local parts supplier.

Perform head light check and adjustment.

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

CONTENTS OF YOUR KIT

4" (013424) /6" (013614) Front Lift Box Kit		
Part #	Qty	Description
01001	2	Bump Stop Spacer
01253B	1	Sway Bar Drop Bracket - Driver (013424 Only)
01254B	1	Sway Bar Drop Bracket - Passenger (013424 Only)
01044B	1	Sway Bar Drop Bracket - Driver (013614 Only)
01045B	1	Sway Bar Drop Bracket - Passenger (013614 Only)
01555	1	Steering Stabilizer Bracket
02033	1	Track Bar Bracket
02927	1	Rear Brake Line Bracket (013424 Only)
083404R	1	Pitman Arm
02418	1	Track Bar Bracket Spacer
02019	2	Cam Washer
02416B	1	Front Brakeline Bracket - Driver (013614 Only)
02417B	1	Front Brakeline Bracket - Passenger (013614 Only)
YJTC5	1	Steel Stabilizer Spacer
657	1	Bolt Pack - Stabilizer
	2	1/2"-13 x 1-1/4" bolt
	2	1/2"-13 prevailing torque nut
	6	1/2" SAE flat washer
	1	12mm-1.75 x 80mm bolt
	1	12mm-1.75 prevailing torque nut
656	1	Bolt Pack
	1	1/8" x 1" cotter pin
	2	1/4"-20 x 3/4" self-tapping bolt
	2	Wire Clip
422	1	Bolt Pack
	4	3/8"-16 x 1-1/4" bolt
	4	3/8"-16 prev. torque nut
	8	3/8" USS flat washer
606	1	Bolt Pack
	2	5/16"-18 x 1-1/4" Bolt, Grade 5, Clear Zinc
	2	5/16-18 Prevailing Torque Nut, Clear Zinc
	4	5/16" SAE, Clear Zinc
099000	2	Zip Tie
099002	2	Mountable Zip Tie

6" (013609) Leaf Spring Rear Box Kit (3-1/2" Factory Rear Block)		
Part #	Qty	Description
N34FLG-B	8	3/4"-10 Serrated Flange Nut
02415	2	Upper Spring Plate
02927	1	Rear Brake Line Bracket
343581500RB	4	3/4-10 x 3-5/8 x 15 Round U-Bolt

6" (013608) Leaf Spring Rear Box Kit (2" Factory Rear Block)		
Part #	Qty	Description
N58FHB	8	5/8" Fine High Nut
W96USS-B	8	9/16" USS Flat Washer
02415	2	Upper Spring Plate
02927	1	Rear Brake Line Bracket
583581200RB	4	5/8 x 3-5/8 x 12 Round U-Bolt

4" or 6" Leaf Spring		
Part #	Qty	Description
BDS003629	2	Rear Leaf Spring

4" (013409) Leaf Spring Rear Box Kit		
Part #	Qty	Description
N58FHB	8	5/8" Fine High Nut
W96USS-B	8	9/16" USS Flat Washer
02415	2	Upper Spring Plate
02927	1	Rear Brake Line Bracket (013424 Only)
583581000RB	4	5/8 x 3-5/8 x 10 Round U-Bolt

4" (013519) Rear Block Box Kit		
Part #	Qty	Description
N34FLG-B	8	3/4"-10 Serrated Flange Nut
02414	2	5" Lift Block w/Single Pin & Wing
02415	2	Upper Spring Plate
343581500RB	4	3/4-10 x 3-5/8 x 15 Round U-Bolt

TROUBLESHOOTING INFORMATION FOR YOUR VEHICLE

TECH TIPS

1. Front exhaust modification may be required to clear the front driveshaft
2. If equipped with a 2-piece driveshaft, the carrier bearing drop kit is required.
3. Although extremely rare, front driveline vibration may occur.
4. If equipped with a rear sway bar, part # 123009 is required.
5. U-bolts will not work on a dually.
6. BDS leaf springs are not intended for use beyond the truck's maximum payload capacity. Trucks equipped with overload springs will only have the capacity of a non-overload equipped truck. If heavy payload use is desired, supplemental rear air bags are recommended.

INSTALLATION INSTRUCTIONS

INSTALLATION INSTRUCTIONS

SPECIAL TOOLS

Pitman Arm Puller

FRONT INSTALLATION

1. Park the vehicle on a clean, flat surface and block the rear wheels for safety.
2. Disconnect the front track bar from the frame mount. Retain hardware.
3. Raise the front of the vehicle and support under the frame rails with jack stands.

   Note: As a result of the location of the long radius arm suspension, support locations are limited. Use your best judgment while supporting the vehicle with sufficient strength stands at appropriate locations. The radius arms will need to move freely during this installation.
4. Remove the front wheels.
5. Support the front axle with a hydraulic jack.
6. Disconnect the front brake line brackets from the axle (Fig 1). Retain hardware.

FIGURE 1

7. Remove the clips holding the front brake lines to the brackets on the frame. (Fig 2A) Using a proper line wrench, break loose the hard line at the junction block and rotate it 180 degrees. (Fig 2B) This will put the rubber line to the bottom. Tighten the hard line securely. Leave the brake line loose and save the retaining clip.

FIGURE 2A

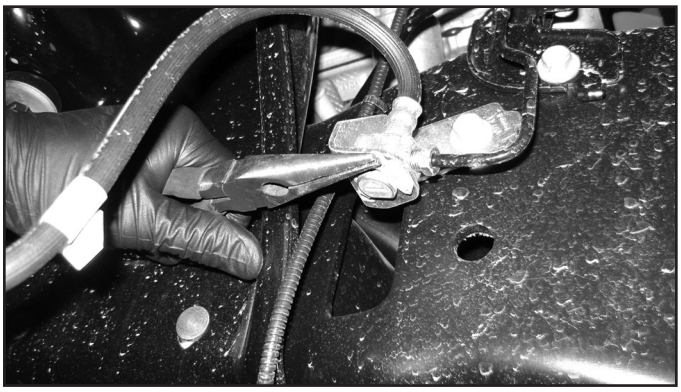
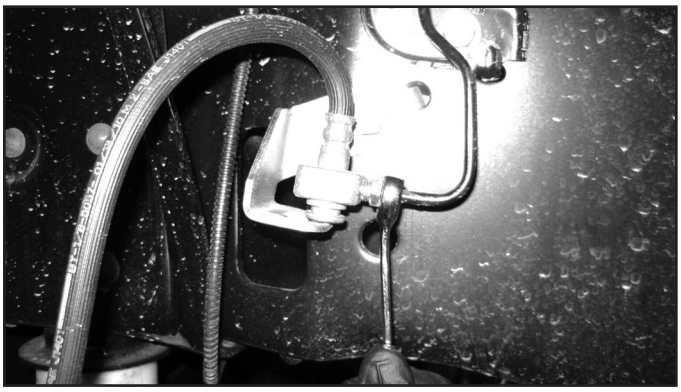


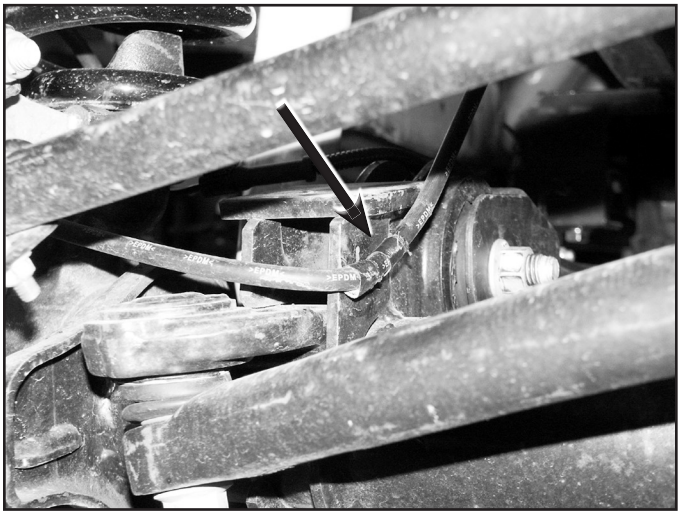
FIGURE 2B



8. Free the hub vacuum lines from the axle (Fig 3, 4).

FIGURE 3

FIGURE 4



9. Disconnect the sway bar end links from the sway bar. Retain hardware.
10. Remove the ABS line from the retaining tab on the radius arm (Fig 5A). Carefully pull the plastic retaining clip free from the radius arm (Fig 5B).

FIGURE 5A

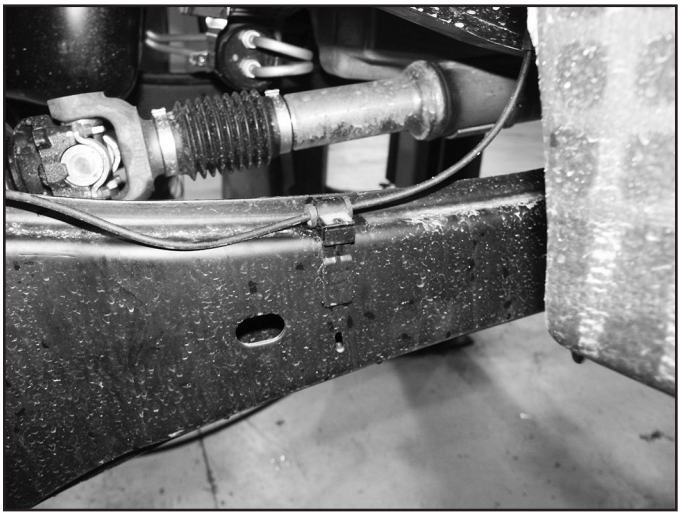
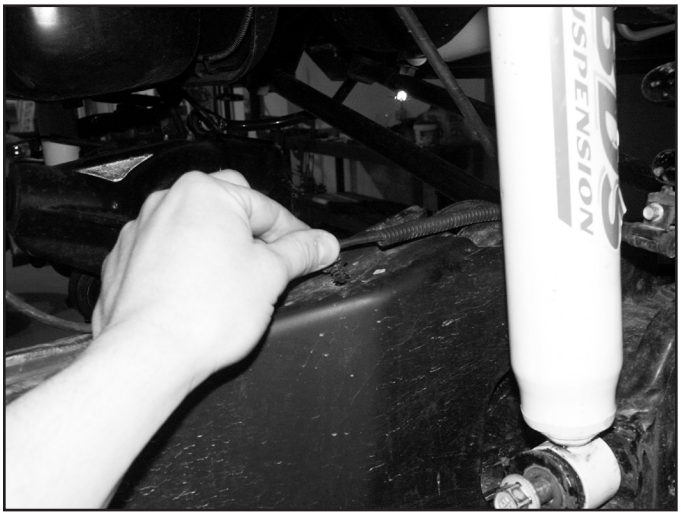


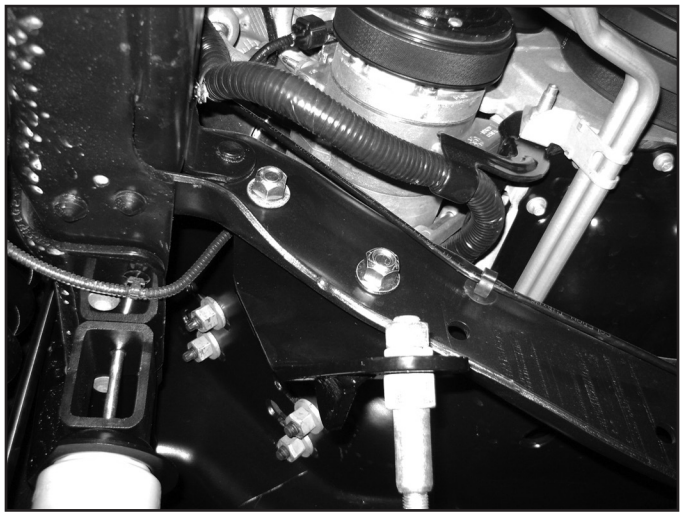
FIGURE 5B



11. Disconnect the OE steering stabilizer from the frame mount.

12. Install the new steering stabilizer bracket (01555) to the passenger's side of the engine crossmember using existing holes and new 1/2" x 1-1/4" bolts, nuts and washers (Bolt Pack 657) (Fig 6). Mount the stabilizer bracket to the back side of the crossmember. Torque hardware to 55 ft-lbs.

FIGURE 6



13. Position the stabilizer under the new bracket and install with the provided 12mm hardware (Bolt Pack 657) and 3/4" steel spacer (YJTC5). (Fig 7) Torque to 50 ft-lbs.

FIGURE 7

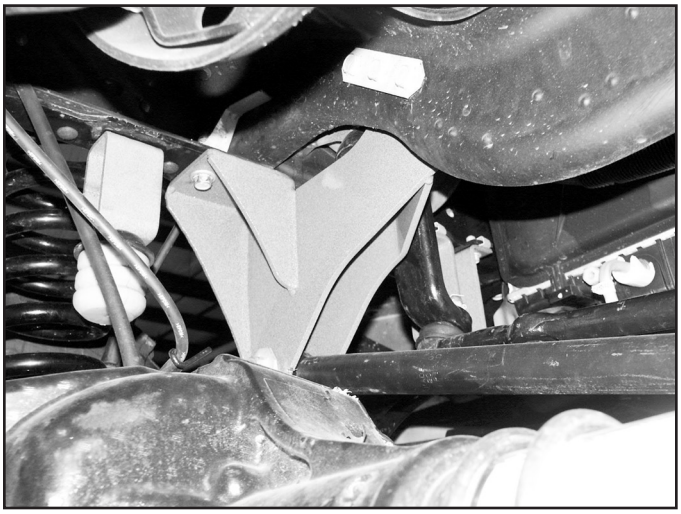
14. Disconnect the (5) bolts mounting the OE track bar bracket to the frame. Remove bracket and retain hardware.
15. Disconnect the drag link from the pitman arm. Retain hardware. Free the drag link from the pitman arm with a pickle fork.
16. Remove the pitman arm nut. Note the indexing of the pitman arm in relation to the steering sector shaft and remove the pitman arm from the steering box using the appropriate puller.
17. Remove all of the dri-lock compound on the threads of the OE nut and steering sector shafts. This is important to ensure that the new thread lock compound will adhere properly.
18. Apply a bead of the supplied thread lock all the way around the threads of the OE nut.
19. Install the new pitman arm (indexed the same as the OE) and fasten with the OE nut. Torque the nut to 350 ft-lbs.
20. Remove the OE shocks. Retain lower mounting hardware.
21. Lower the axle until the OE coil springs are free and remove the springs from the vehicle. Retain the upper spring isolator for use with the new springs.

    Note: Do not over extend the brake lines.

22. Install the new track bar bracket (02033) using the stock mounting hardware as it was removed (Fig 8A,B). Place the provided 3-hole spacer plate (02418) between the new bracket and the frame crossmember. Torque all (5) mounting bolts to 129 ft-lbs.

FIGURE 8A (FRONT)

FIGURE 8B (REAR)



23. Pull the OE front bump stops free from the bump stop cups and remove the bolt mounting the cup to the frame (Fig 9).

FIGURE 9

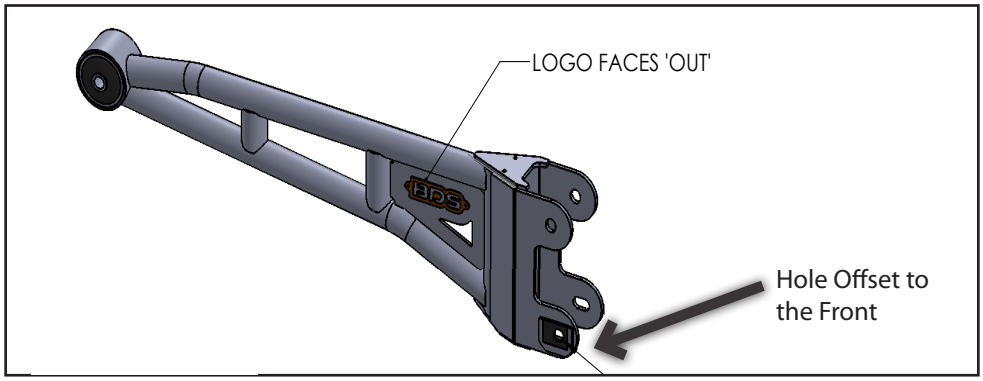
24. Position the cup on the provided bump stop extension. (01001) The alignment tab on the bump stop cup will fit in the second hole in the extension.
25. Install the OE bump stop cup to the bump stop extension with a provided 5/16" bolt, 5/16" SAE washers, and 5/16" nut from bolt pack 606. Attach to the frame in the original hole with the OE bolt. Use thread locker on the threads and torque to 20 ft-lbs (Fig 10).

FIGURE 10

26. Loosen the four radius arm-to-axle mounting bolts but do not remove. Once again, ensure that the front axle is well supported.
27. Starting with the passenger's side, remove the upper radius arm-to-axle mounting bolt. Remove the radius arm-to-frame bolt as well. This will allow the radius arm to swing down away from the frame.
28. Remove the stock radius arm and replace with the new one. Install cams into the lower slots with new 18mm hardware, and use one of the old lower 18mm nuts on the driver's side upper mount at the axle with factory hardware. Note: The upper bolt at the axle can be removed with the stock shock in place, however, certain aftermaker shocks may need to be disconnected to allow removal of the upper bolt. (Fig 3)

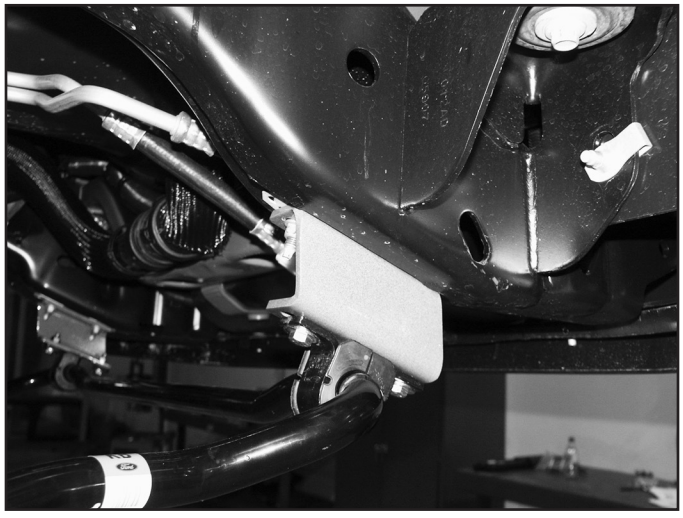
    Note: 4" and 6" kits, offset the cam forward as shown in Figure 11.

FIGURE 11



29. Tighten the front hardware at the axle to 222 ft-lbs. Do not tighten the frame pivot hardware at this time.
30. The badge can now be riveted on to the outside faces of the radius arms using the provided 1/8" rivets. Any residue on the badge can be cleaned up using alcohol or brake cleaner before install. With the badge not installed it can be painted to what ever color you desire, or left raw as a stainless steel badge.
31. Repeat this procedure on the driver's side of the vehicle.
32. Install the new coil springs in conjunction with the OE top isolator. Rotate the springs so that they seat in the bottom coil perch properly.
33. Install the new shocks using the original lower mounting hardware and the provided upper mounting hardware. Torque the lower bolt to 100 ft-lbs and the upper until the bushings begin to swell.
34. Note the orientation of the front sway bar (top verses bottom). Disconnect the sway bar from the frame and remove from the vehicle. Retain hardware.
35. Install the provided sway bar drop bracket to the original sway bar frame mounting locations with the original hardware. Mount the drop bracket with the open face toward the inside of the vehicle and the bracket offset toward the front. Torque hardware to 30 ft-lbs.
36. Attach the sway bar to the new drop brackets in the correct orientation with the 3/8" hardware from bolt pack #422. Torque hardware to 30 ft-lbs (Fig 12).

FIGURE 12



37. Install the sway bar link ends to the sway bar and secure with the OE hardware. Torque to 90 ft-lbs.

38. The ABS lines need to be rerouted along the frame. Make a mark on the frame approximate 1-1/2" behind the coil bucket and 1-1/2" from the bottom of the frame. Drill a 7/32" hole at the mark. a second 7/32" hole in the inner fender liner, straight back from the first hole location. (Fig 13A)

FIGURE 13A

39. Locate the provided wire clamps, 1/4" self tapping bolts (Bolt Pack 656) and mountable zip ties (tree on the end). With the suspension at full extension (hanging from shocks) ensure that the ABS line still has some slack from the new mounting point on the frame to the axle. Fasten the line to the frame with the wire clamp and 1/4" self-tapping bolt. (Fig 13B) Attach the loose end inside the inner fender with the mountable zip tie. Note: The rubber collar on the ABS line can be slid on the line using a little silicone spray.

FIGURE 13B

40. If needed, attach ABS wires to the radius arm with the included zip ties and push pin zip tie where the upper mount at the axle is located. Allow axle to droop out to check for adequate slack.

41. 4" Lift Only (013424): Remove the factory front brake line brackets from the frame. The brackets have a squared edge in the brake line mounting hole. (Fig 14A) Using a file or rotary grinder, remove the square edge to form a complete round hole. (Fig 14B) Reattach the brackets to the frame tighten securely with the factory hardware. Install the brake line junction in the bracket from the bottom and fasten with the factory retaining clip. (Fig 14C)

FIGURE 14A

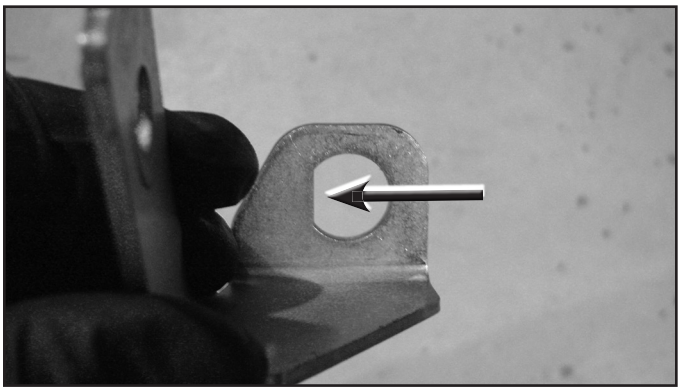


FIGURE 14B

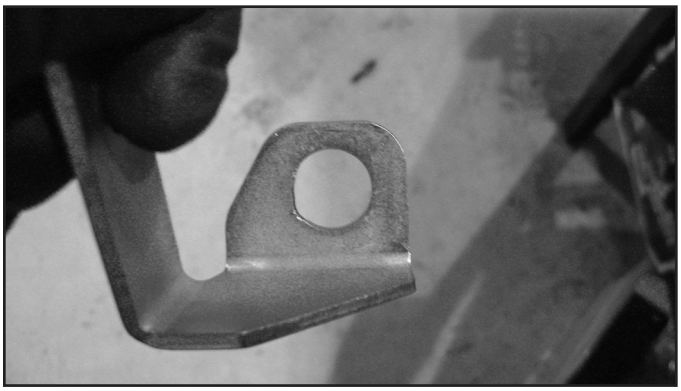
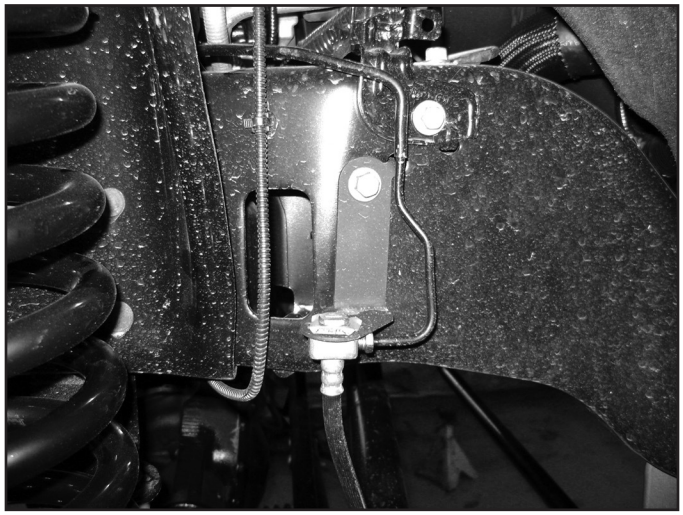


FIGURE 14C

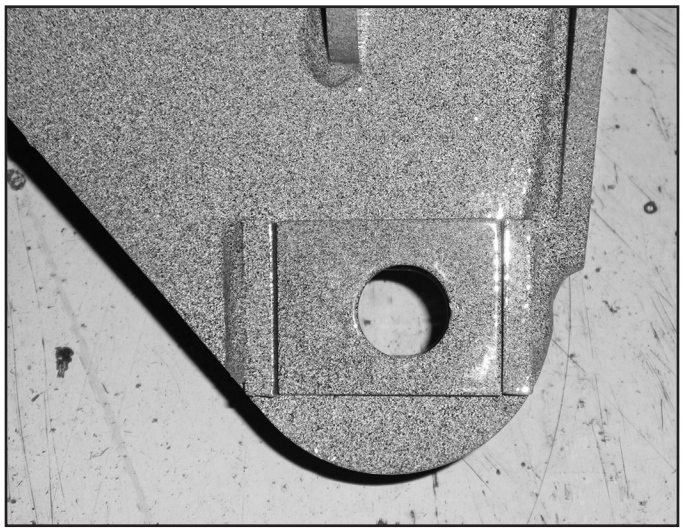
42. 6" Lift Only (013614): Remove the factory brake line brackets from the frame. Install the new provided brake line brackets and secure with the factory hardware. Carefully reform the brake hard line and install the junction block through the bottom of the new bracket. (Fig 15) Fasten with the original brake line clip.

FIGURE 15



43. Properly bleed the brake system of air and top off the brake fluid reservoir with the proper type of fluid (see owners manual).
44. Install the wheels and lower the vehicle to the ground.
45. Attach the track bar to the new bracket with the OE hardware. Turn the steering wheels to aid in aligning the track bar in the bracket. Install the provided cam washers between the alignment tabs on the bracket. Position the cam washers so that the hole is closer to the driver's side (Fig 16) for 4" kits. The hole should be closer to the passenger's side for 6" kits. Torque hardware to 406 ft-lbs.
46. Torque all six radius arm bolts to 222 ft-lbs.

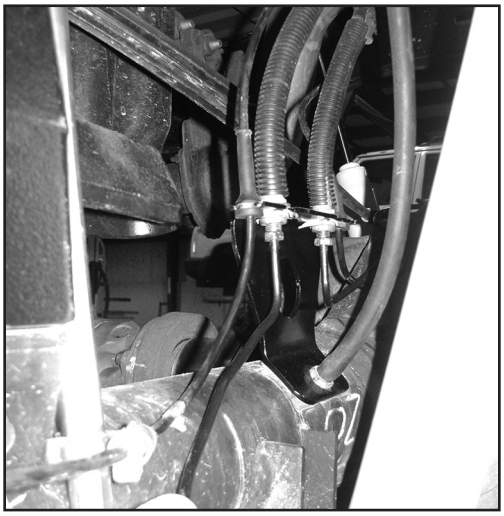
FIGURE 16



REAR INSTALLATION

47. Raise the rear of the vehicle and support with jack stands under the frame rails just ahead of the spring hangers.
48. Remove the wheels.
49. Support the axle with a hydraulic jack.
50. Remove the ABS wires from the axle bracket. Remove brakeline retaining clips holding brakeline hardlines in place. Pull the brakelines through the mounting bracket and trim a slot to remove them from the bracket. Use extra caution to not damage the brakelines. (Fig 17).

FIGURE 17



51. Disconnect the brakeline bracket from the rear axle by removing the breather tube stud. Discard the bracket, retain the breather tube stud.
52. Remove the OE shocks. Retain all mounting hardware.

BLOCK KIT ONLY (5" BLOCK)

53. Disconnect the passenger's side spring u-bolts. Using two C-Clamps, clamp the leaf spring on each side of the top u-bolt plate. (Fig 18) Remove the center pin nut and remove the u-bolt plate. Reinstall the center pin nut and torque to 40 ft-lbs. The u-bolts, top plate and bottom plate will not be reused.

FIGURE 18

54. Remove the factory lift block. It will not be reused.
55. Lower the axle enough to place the provided 5" lift block between the axle and the leaf spring. Position the block so the bump stop wing faces inward. Make note that there are two center pin holes in the new blocks. The center pin will need to be aligned to the rear hole. This will ensure the axle moves slightly forward and the wheels are aligned properly in the wheel well.
56. Raise the axle to engage the block spring alignment pins. Be certain the leaf center pin aligns with the REAR hole in the new lift block. Position the new u-bolt plate on the top of the spring over the center pin nut. Position the plate so the bolt pattern is shifted forward on the spring. (Fig 19) Fasten the entire assembly with the provided u-bolts and flanged nuts. Snug but do not torque the u-bolts at this time.

FIGURE 19

57. Repeat block installation of the driver's side. Take care not to over extend the brake lines.

    Note: The parking brake cable bracket will need to be removed from the spring center pin. (Fig 20)

LEAF SPRING KIT ONLY

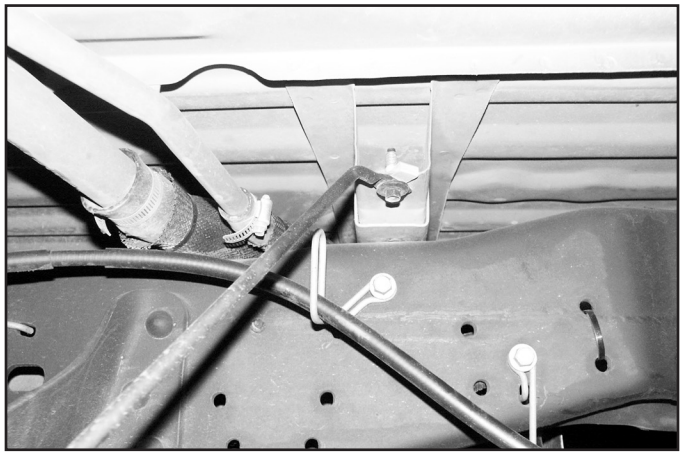
58. Disconnect the passenger's side u-bolts and lower the axle from the spring.
    4" Kit: Remove the OE block, it will not be reused.
    6" Kit: Retain OE block to be installed with new spring.
59. Loosen and remove the front spring-to-frame and rear shackle-to-frame bolts and remove the spring from the vehicle.
60. Remove the shackle from the OE spring and loosely install it on the new rear spring. Be sure that the shackle is oriented on the new spring identical to the old. The shackles mount of the longer end of the spring (opposite of the end marked with "FRT").
61. Install the new spring in the vehicle with the OE bolts. Leave hardware loose. All of the spring pivot bolts will be torqued with the weight of the vehicle on the springs.

62. Remove all dirt and corrosion from the axle spring pad and raise the axle to the spring while aligning the center pin with the center pin hole. Fasten the spring with the provided u-bolts and new top u-bolt plate. Position the u-bolt plate so the bolt pattern is centered on the center pin.. Snug but do not torque u-bolts at this time.
63. Repeat the procedure on the driver's side. Disconnect the parking brake cable bracket from the center pin (Fig 20). Take care not to over extend the brake lines.

FIGURE 20

64. If more parking brake cable slack is needed, remove the cable from the rear-most retaining bracket on the frame. (Fig 21)

FIGURE 21



BLOCK AND LEAF SPRINGS KITS

65. Install the new shocks with the original mounting hardware.
66. Install new brakeline relocation bracket on the axle with stock breather tube stud. Install brakelines with original clips into the new bracket. Attach ABS wires into the new bracket. Attach diff breater line to the axle breather stud. (Fig 22)
67. Install wheels and lower the vehicle to the ground.
68. With the weight of the vehicle on the axle, torque the u-bolts to 130-150 ft-lbs.
69. Check all hardware for proper torque.
70. Adjust steering wheel.
71. Adjust headlights
72. Check hardware after 500 miles.

WE WANT TO SEE YOUR RIDE!

Grab photos of your BDS-equipped truck in action and send them in for a chance to be featured. Send it in to our Bad Ass Rides customer gallery at bds-suspension.com/bar and post them on the BDS Fan Page on Facebook at facebook.com/BDSSuspensions. Don't forget about your BDS swag! BDS offers t-shirts, hoodies, decals and more available on the BDS website or through your local BDS distributor.

TIME TO HAVE SOME FUN

Thank you for choosing BDS Suspension.

For questions, technical support and warranty issues relating to this BDS Suspension product, please contact your distributor/installer before contacting BDS Suspension directly.