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Part#: **023624**
Product: **4 & 6" Suspension System**
Application: **2009-2013 Ford F-150 2WD**

READ AND UNDERSTAND ALL INSTRUCTIONS AND WARNINGS PRIOR TO INSTALLATION OF SYSTEM AND OPERATION OF VEHICLE.

SAFETY WARNING 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.

PRODUCT SAFETY WARNING 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.

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 BDS Suspension components. Always wear safety glasses when using power tools.
6. If installation is to be performed without a hoist, BDS Suspension Co. 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.

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. Longer replacement hoses, if needed can be purchased from a local parts supplier.
3. Perform head light check and adjustment.
4. Re-torque all fasteners after 500 miles. Always inspect fasteners and components during routine servicing.

PARTS LIST

Part #	Qty	Description
02065	1	Steering Knuckle (Drv)
02067	1	Steering Knuckle (Pass)
02068	1	Front Crossmember
02083	1	Rear Crossmember
02070	2	Sway Bar Drop
01715	2	Brake Line Drop Bracket
02001	8	Cam Washer
02002	2	Cam Bolt
02074	2	Cam Bolt
N18MPT	4	18mm Cam Bolt Nut
02318	2	Crossmember Support
773	1	Bolt Pack - Main
	2	*18mm-2.50 x 150mm bolt*
	4	*3/4" SAE Washer*
	2	*18mm-2.50 prevailing torque nut*
	2	*6mm x 18mm bolt*
	2	*1/4"-20 prevailing torque nut*
	4	*1/4" USS washer*
	4	*1/2"-13 x 1-1/4" button head bolt*
	4	*1/2" SAE washer*
	4	*3/8" x 1-1/4" bolt*
	8	*3/8" SAE Washer*
	4	*3/8" Prevailing torque nut*
407	1	Bolt Pack - Sway Bar
	4	*7/16"-14 x 1-1/4" bolt*
	4	*7/16"-14 prevailing torque nut*
	8	*3/8" USS flat washer*

Rear 5" Block Kit

01716	1	Offset Brake Line Drop Bracket
02085	2	5" Offset Rear Block
02079	1	E-brake Bracket
963181500Q	4	9/16" x 3-1/8" x 15" Square U-bolt
N96FH	8	9/16" High Nut
W96S	8	9/16" SAE Washer
02086	2	Lower Offset Center Pin Plate
02087	2	Upper U-bolt Retaining Plate
774	1	Bolt Pack - Rear Block Kit
	2	*1/2"-20 x 3-1/2" flat head bolt*
	2	*1/2"-20 nut*
	2	*7/16"-14 x 1-1/4" bolt*
	4	*7/16" SAE washer*
	2	*7/16"-14 prevailing torque nut*
	1	*1/4"-20 prevailing torque nut*
	1	*1/4" USS washer*
120400FCP	2	1/2" x 4" Center pin

Optional Rear 4" Block Kit

01716	1	Offset Brake Line Drop Bracket
02429	1	4" Offset Rear Block - DRV
02430	1	4" Offset Rear Block - Pass
02079	1	E-brake Bracket
605	1	Bolt Pack - E brake Brkt
	2	*7/16"-14 x 1 1/4" bolt*
	2	*7/16"-14 prevailing torque nut*
	4	*7/16" SAE washer*
963181212Q	4	9/16" x 3-1/8" x 12-1/2" Sq U-bolt
N96FH	8	9/16" High Nut
W96S	8	9/16" SAE Washer
768	1	Bolt Pack - Rear Brakeline Brkt
	2	*1/4"-20 x 3/4" bolt*
	2	*1/4"-20 nylock nut*
	4	*1/4" USS washer*
02427	*1*	*Front strut spacer - 4" kit - DRV*
02428	*1*	*Front strut spacer - 4" kit - Pass*
769	*1*	*Bolt pack - strut spacer*
	6	*7/16"-14 Nylock nut*
	6	*3/8" USS Washer*

INSTALLATION INSTRUCTIONS

Front Installation

1. Park the vehicle on a clean, flat surface and block the rear wheels for safety.
2. Measure from the center of the wheel up to the bottom edge of the wheel opening and record below:

   LF_____ RF_____

   LR_____ RR_____
3. Raise the front of the vehicle and support with jack stands at each frame rail behind the lower control arms.
4. Remove the front wheels.
5. Remove the brake caliper anchor bracket bolts and remove the caliper from the knuckle (Fig 1). Hang the caliper out of the way. Do not let the caliper hang by the brake hoses.

Fig 1

6. Remove the brake rotor and set aside.
7. Disconnect the ABS and hub vacuum lines from the retaining clips. Disconnect the brakeline bracket from the frame rail. Disconnect the ABS line from the inner fenderwell, and disconnect the clip(Fig 2a / b).

Fig 2a

Fig 2b

8. Disconnect the tie rod ends from the steering knuckles (Fig 3). Remove and retain the mounting nuts. Strike the steering knuckle near the tie rod end to dislodge the end. Take care not to strike the tie rod end.

Fig 3

9. Remove the upper and lower ball joint nuts and reinstall a few turns.
10. Strike the knuckle near the upper and lower ball joints to dislodge the joints from the knuckle.
11. Remove the upper ball joint and lower ball joint nuts and remove the knuckle from the vehicle. Save ball joint nuts.
12. Disconnect the sway bar links from the sway bar (Fig 4). Retain hardware. The sway bar links do not need to be removed from the lower control arms.

Fig 4

13. Remove the four sway bar mounting nuts and remove the sway bar from the vehicle (Fig 5). Retain hardware
14. Remove the strut-to-lower control arm mounting bolt. Save bolt/nut.

Fig 5

15. Remove the lower control arm mounting bolts (Fig 6) and remove the lower control arms from the vehicle. Save hardware.

Fig 6

16. Mark the struts to distinguish between driver's and passenger's. In addition, mark the relationship between the coil and the lower strut mounting hole and finally the top plate and the rubber coil seat.

17. Remove the three strut assembly mounting nuts at the frame (Fig 7) and remove the struts from the vehicle. Do not loosen the middle strut nut.

Fig 7

18. The factory rear control arm pockets must also be trimmed to clear the new rear crossmember. Measure down 1-3/4" from the center of the factory control arm slot and make a horizontal cut line. The cut will stop where the vertical offset in the factory mount begins. (Fig 8)

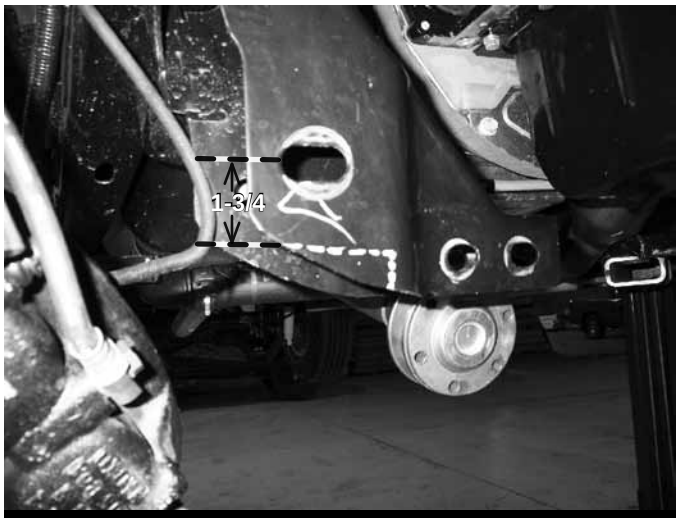

Fig 8

19. Install the new rear crossmember (02083) in the rear lower control arm frame pockets and fasten with new 18mm x 150mm bolts and washers (BP 773). Do not put nuts on at this time. Run bolts from front to rear. Leave hardware loose. (Fig 9). Note: The offset portion of the crossmember ends go toward the front of the vehicle and the factory rear crossmember remains in place.

Fig 9

20. Install the front crossmember in the front lower control arm pockets and fasten with the original lower control arm hardware (Fig 10). Run bolts from front to rear. Leave hardware loose.

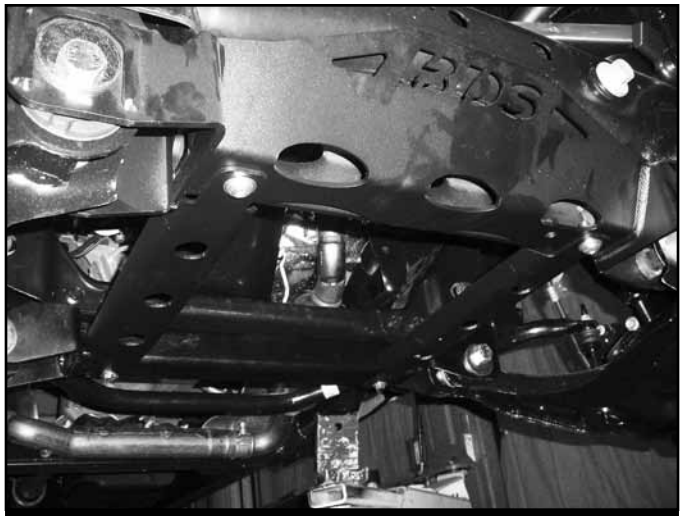

Fig 10

21. Install the lower control arms in the new crossmembers and fasten with the provided 18mm cam bolts, cam washers and 18mm nuts. Run the front bolts from front to rear and leave loose. Run the rear bolts from rear to front. The main body of the cam will be 'up' in the cam slot.

22. Install the provided crossmember supports to the front and rear crossmembers with ½" x 1-1/4" button head bolts and ½" SAE washers (BP 773) into the threaded holes in the crossmembers. Leave hardware loose.

23. Install the sway bar drop brackets with new 3/8" x 1-1/4" bolts, washers and nuts. Run hardware from bottom - up, snug but do not tighten at this time. Attach the crossmember 18mm nut with 3/4" USS washer (BP 773). Note: Use a ratchet extension through the lower slots to access the hardware (Fig 11a, 12b)

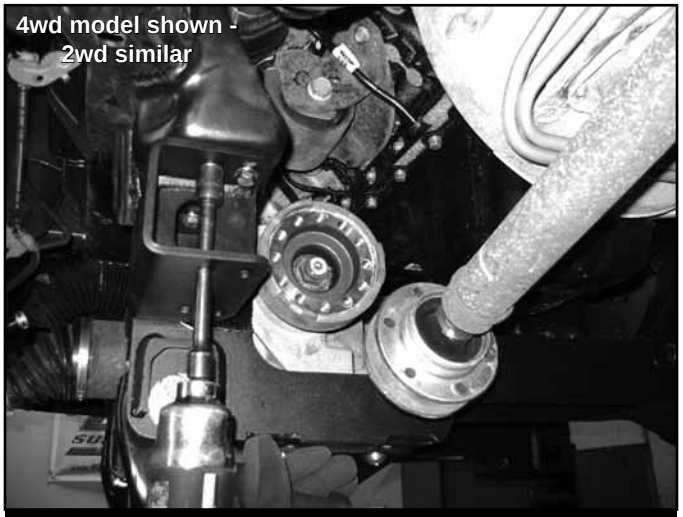

Fig 11a

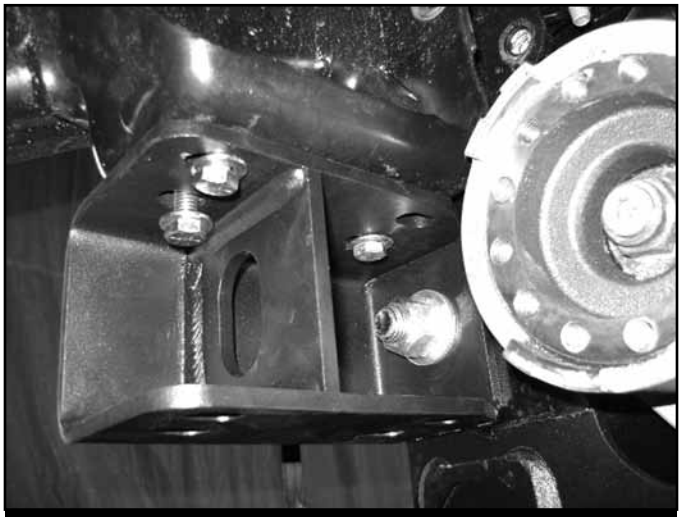

Fig 11b

24. With the lower control arms installed, go back and torque the four crossmember mounting bolts to 222 ft-lbs. Ensure that the front crossmember is centered in the vehicle. Apply Loctite to the threads and torque the crossmember support bolts to 60 ft-lbs. Tighten sway bar drop hardware to 35 ft-lbs.

25. 6" front kit use steps 26-32. 4" front kit use steps 33-34.

26. Place the strut assembly into a high quality spring compressor. Only use a high quality wall mounted spring compressor! (Fig 12)

Fig 12

27. Compress the coil per the spring compressor instructions and remove the strut nut.
28. Remove the strut from the coil and top cap.
29. Locate the new struts. Turn the strut rod counterclockwise to release the rod and allow it to extend. Install the provided coil seat (P01484) on the new struts.
30. Remove the factory bump stop from the original strut rod and install it on the new strut rod (Fig 13). Transfer any alignment marks made on the original strut to the new strut.

Fig 13

31. Align marks on coil to the upper mount and also with the lower mounting hole. Install the new strut in the coils spring and factory top cap. Fasten the strut rod with the new provided 12mm flange nut. Torque strut rod nut to 40 ft-lbs.

32. Install the strut assemblies in the appropriate sides on the vehicle with factory frame hardware, leave hardware loose at this time.

33. Place the top spacer (02427 = Drv side, 02428 = pass side) on the correct side strut. The strut spacers are located in the rear box kit. Attach with the factory hardware and tighten to 40 ft-lbs.

34. Install the strut and spacer assembly into the vehicle. Attach to upper mount with new 7/16" nuts and washers (bolt pack #769). Leave hardware loose at this time. (Fig 13b)

Fig. 13B

35. Raise the lower control arm and loosely fasten to the strut with the original bolt/nut.

36. Remove the four hub bolts from the knuckle and remove the hub from the knuckle (Fig 14). Inspect mounting surface of the hub assembly and clean any dirt or corrosion off as necessary.

Fig 14 - 4wd Shown, 2wd Similar

37. Install the hub into the corresponding new BDS knuckle (drv- 02065, pass- 02067) and fasten with the OE bolts. The ABS wire will be located at the 'top' of the hub. Use Loctite on the bolt threads and torque to 148 ft-lbs.

38. Remove the factory dust shields from the original knuckles and install them on the new knuckles with the factory 6mm bolts. Tighten bolts securely (about 5-7 ft-lbs). Route the ABS cable between the dust shield and the knuckle.

39. Install the new knuckle assembly on the lower control arm ball joint and loosely fasten with the original nut. Leave hardware loose.

40. Attach the upper control arm to the knuckle with the original nut. Torque the upper ball joint to 85 ft-lbs and the lower ball joint to 111 ft-lbs.

41. Torque the upper strut frame mount nuts to 35 ft-lbs. The lower bolt will be tightened later with the weight of the vehicle on the suspension.

42. Install the brake rotor and caliper to the knuckle with OE bolts. Torque to 148 ft-lbs. (Fig 15)

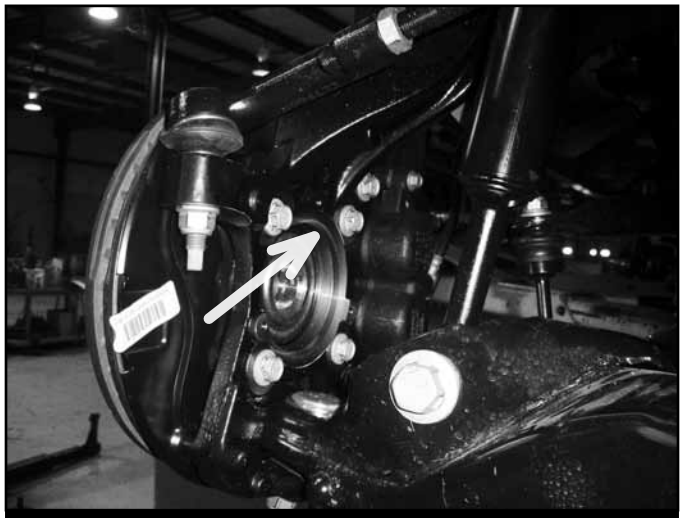

Fig 15

43. Install the brake line relocation brackets at the frame (Fig 16). Attach with OE hardware to frame, attach brakeline retaining clip with 1/4" nut and washer to the relocation bracket. Tighten to 15 ft-lbs.

Fig 16

44. Attach the ABS line to the connector at the inner fender and the vacuum line to the hub. Route the lines similar to the factory setup down to the side of the knuckle. Attach the ABS wire with the factory 6mm bolt to the side of the knuckle. Attach the brakeline with a new 6mm x 18mm bolt with 1/4" washer to the side of the knuckle (BP# 773), the brakeline locating tab will go into the unthreaded hole. (Fig 17).

Fig 17

45. Install the sway bar to the new sway bar drop brackets (Fig 18) with 7/16" x 1-1/4" bolts, nuts and 7/16" SAE washers (BP 407). Attach the sway bar to the sway bar end links with the original hardware. Torque the 7/16" hardware to 45 ft-lbs. Torque sway bar link nut to 45 ft-lbs.

Fig 18

46. Install tie rod ends to the knuckles from top-down. Torque to 111 ft-lbs.
47. Install the wheels and lower the vehicle to the ground.
48. Bounce the front of the vehicle to settle the suspension. Torque the lower strut mount bolt to 350 ft-lbs. Center the lower control arm cams and torque to 150 ft-lbs. Adjust the toe-in before driving it to an alignment shop.
49. Check all hardware for proper torque.

Rear Installation

50. Block the front wheels and raise the rear of the vehicle. Place jack stands under the frame rails ahead of the spring hangers.
51. Remove the wheels.
52. The parking brake cable must be relocated. To disconnect the cable from the frame first pull down on the cable and clamp it off with vise grips near the middle of the frame (Fig 19). This will gain slack to disconnect the driver's side rear cable from the main (passenger's side) cable.
53. Remove the driver's side parking brake cable from the junction bracket (Fig 20).

Fig 19

Fig 20

54. Compress the retaining tabs and remove the driver's side cable from the spring hanger (Fig 21). It will be relocated and reconnected later.

55. Disconnect the rear brake line from the frame. (Fig 22)

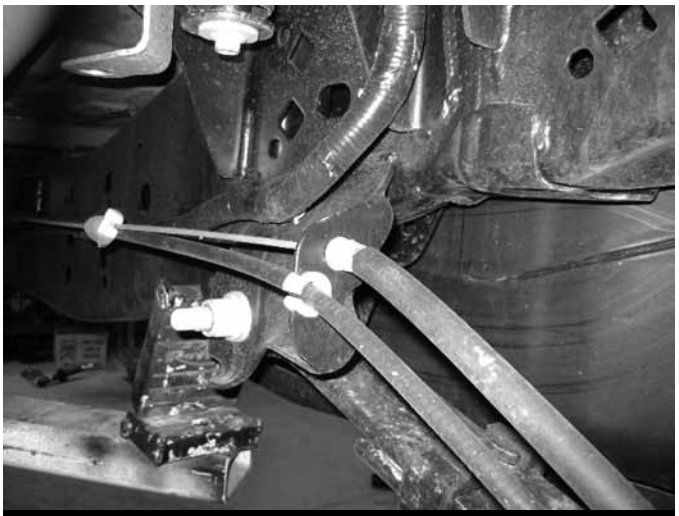

Fig 21

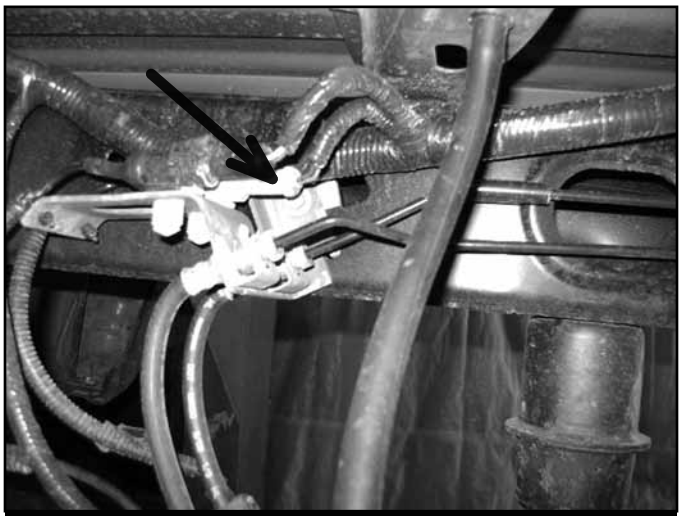

Fig 22

56. Support the rear axle with a hydraulic jack. Remove the OE shocks. Retain mounting hardware.

57. Note: Perform the rear installation on one side at a time.

58. Remove the passenger's side u-bolts.

59. Lower the axle and remove the OE lift block, it will not be reused.

60. 5" rear block kit use steps 61-65. 4" rear block kit use steps 66-67.

61. Using C-clamps, clamp the leaf spring pack together on each side of the center pins. Remove the center pins and discard.

62. Place the plate on the bottom of the leaf pack and secure with new center pin in the 'forward' hole and flat head allen bolt through the 'rear' hole. Install new u-bolt reatining plate on top, it will be offset 'forward'. Tighten to 35 ft-lbs. (Fig 23, Fig 24, Fig 25)

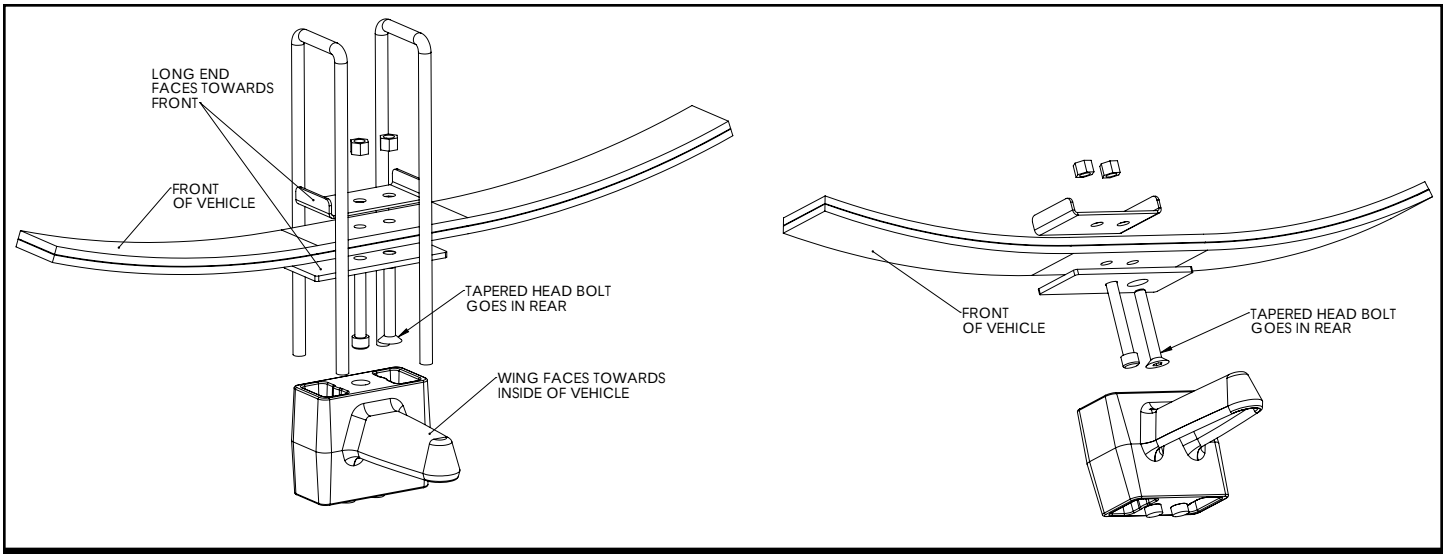

Fig 23

Fig 24

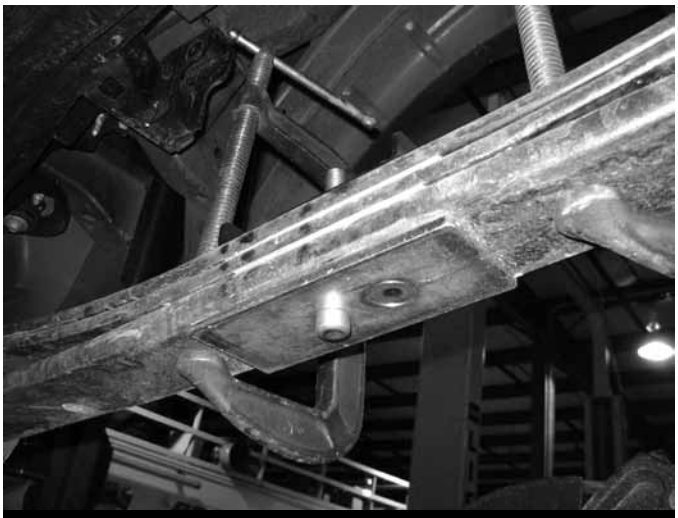

Fig 25

63. Install the new provided lift block so that the bump stop wing goes toward the inside of the vehicle. The block will use the both of the lower center pin holes. The upper only uses 1 hole which will shift the axle slightly forward.

64. Raise the axle/block to the spring while aligning the center pin. Fasten the spring/block assembly with the provided u-bolts, high nuts and washers. Snug u-bolts, they will be torque with the weight of the vehicle on the springs. (Fig 26)

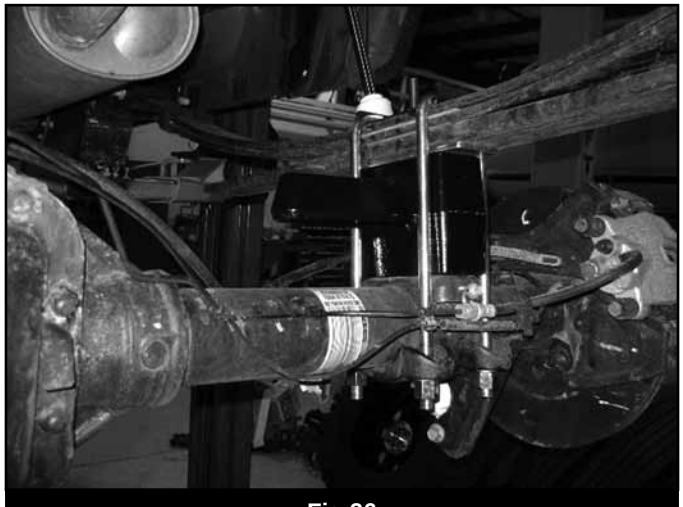

Fig 26

65. Repeat installation procedure on the driver's side of the vehicle. Skip ahead to step # 68.

66. Install rear block (02429 - DRV side, 02430 - Pass side). The block is designed to offset the axle forward slightly. The bump stop wing will be centered under the bump stop on the frame with the vertical gusset facing towards the front of the vehicle. Align the center pins and raise axle. (Fig 26b)

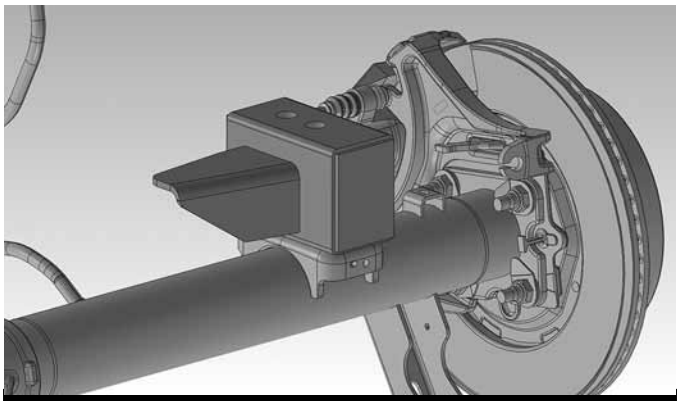

Fig. 26B

67. Attach u-bolts with the factory lower u-bolt plate. Snug u-bolts, they will be torqued to specification when the vehicle is on the ground.

68. Install the provided parking brake relocation bracket to the driver's side front spring hanger using 7/16" bolts, washers, and nuts. (Fig 27)

69. Reconnect the parking brake cable at the junction. When reconnected, remove the clamp to allow the cable to return to its normal tension. Attach the parking brake cable through the relocation bracket through the slot in the bottom (Fig 27)

Fig 27

70. Install the provided brake line relocation bracket to the driver's side frame rail with the OE brake line bracket bolt (Fig 28). Torque to 15 ft-lbs.

Fig 28

71. Attach the brake line to the relocation bracket with a ¼" nut and ¼" USS washer (BP #774). It may be necessary to rotate the OE brakeline clip bracket to have the lines face 'down' for adequate slack. Torque to 15 ft-lbs.
72. Install the provided new BDS shocks with the OE hardware. Torque to 60 ft-lbs.
73. Check all lines/wires for proper slack.
74. Install the wheels and lower the vehicle to the ground.
75. Bounce the rear of the vehicle to settle the suspension.
76. Torque the u-bolts to 100-120 ft-lbs.
77. Check all hardware for proper torque
78. Check hardware after 500 miles.
79. A complete front end alignment is necessary.
80. Adjust headlights.

NOTICE TO DEALER/INSTALLER

These instructions, the warning card, and included decals must be given to the owner of this BDS Suspension product.

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

Sold/Installed by: