

INSTALLATION INSTRUCTION



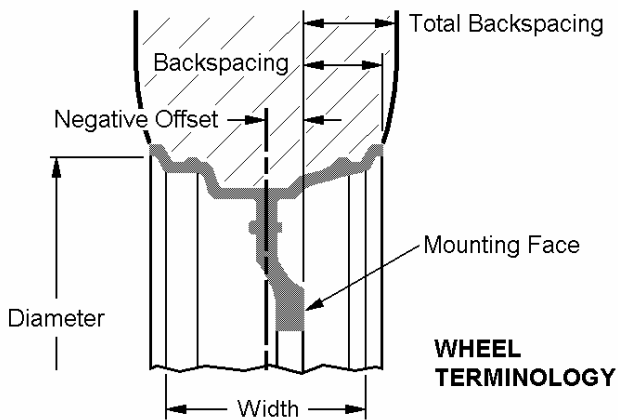
Suspension System **RS6583B**



Chevrolet Silverado/GMC Sierra

N. The required installation time for this system is approximately 8 hours. Check off the box () at the beginning of each step when you finish it. Then when you stop during the installation, it will be easier to find where you need to continue from.

O. This suspension system was developed using the following tire & wheel combination: BFG All Terrain™ 315/70 R17 tire, 17 x 8 wheel with 5.5 inches of wheel backspacing. Total backspacing is 6.5 inches. **Trimming the bottom corners of the front bumper is required.** 20" OE wheels with 275/65 R20 tires will fit this system. Before installing any other combination, consult your local tire and wheel specialist.



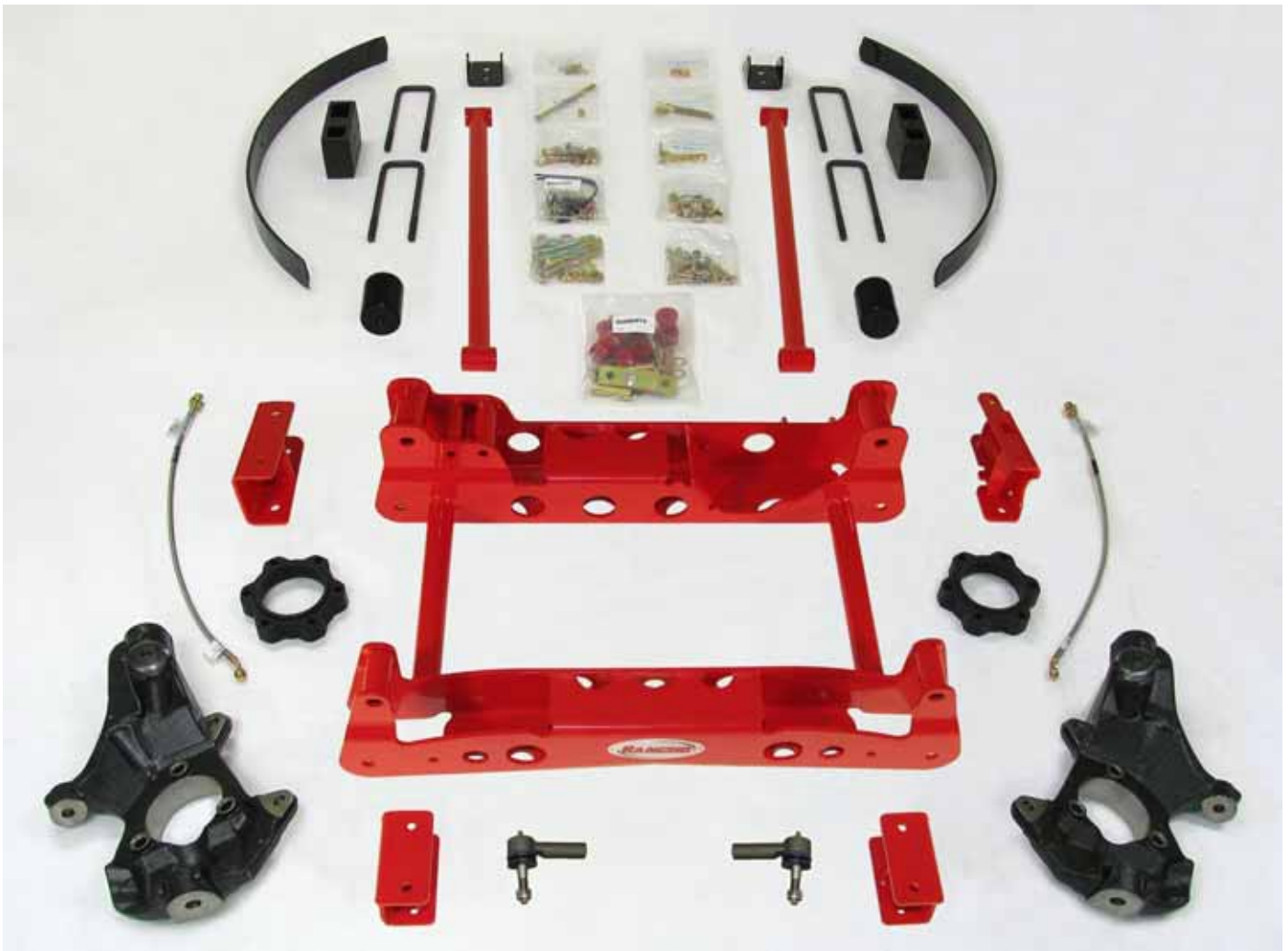
P. Rear axle offset may be noticed on some vehicles. The offset will vary somewhat with vehicle loading. Another factor is how centered the axle was under the body from the factory. For reference, it is recommended that you measure your vehicle's rear axle offset before installation of this kit.

Q. This suspension system will fit both 2WD and 4WD vehicles. If you are installing this system on a 2WD vehicle, omit steps pertaining to the front axle assembly. Also, follow the specific 2WD steps for aft brace installation.

R. Important information for the end user is contained in the consumer/installer information pack. If you are installing this system for someone else, place the information pack on the driver's seat. Please include the installation instructions when you finish.

S. Thank you for purchasing the best suspension system available. For the best-installed system, follow these instructions. If you do not have the tools or are unsure of your abilities, have this system installed by a certified technician. **RANCHO SUSPENSION IS NOT RESPONSIBLE FOR DAMAGE OR FAILURE RESULTING FROM AN IMPROPER OR MODIFIED INSTALLATION...**

| STANDARD BOLT TORQUE & IDENTIFICATION | | | | | | |
|---|-----------|-----------|--|-----------|------------|------------|
| INCH SYSTEM | | | METRIC SYSTEM | | | |
| Bolt Size | Grade 5 | Grade 8 | Bolt Size | Class 9.8 | Class 10.9 | Class 12.9 |
| 5/16 | 15 FT-LB | 20 FT-LB | M6 | 5 FT-LB | 9 FT-LB | 12 FT-LB |
| 3/8 | 30 FT-LB | 35 FT-LB | M8 | 18 FT-LB | 23 FT-LB | 27 FT-LB |
| 7/16 | 45 FT-LB | 60 FT-LB | M10 | 32 FT-LB | 45 FT-LB | 50 FT-LB |
| 1/2 | 65 FT-LB | 90 FT-LB | M12 | 55 FT-LB | 75 FT-LB | 90 FT-LB |
| 9/16 | 95 FT-LB | 130 FT-LB | M14 | 85 FT-LB | 120 FT-LB | 145 FT-LB |
| 5/8 | 135 FT-LB | 175 FT-LB | M16 | 130 FT-LB | 165 FT-LB | 210 FT-LB |
| 3/4 | 185 FT-LB | 280 FT-LB | M18 | 170 FT-LB | 240 FT-LB | 290 FT-LB |
| <p>1/2-13x1.75 HHCS</p> <p>D T L X</p> <p>G = Grade Marking (bolt strength) L = Length (inches)</p> <p>D = Nominal Diameter (inches) X = Description (hex head cap screw)</p> <p>T = Thread Pitch (threads per inch)</p> | | | <p>M12-1.25x50 HHCS</p> <p>D T L X</p> <p>P = Property Class (bolt strength) L = Length (millimeters)</p> <p>D = Nominal Diameter (millimeters) X = Description (hex head cap screw)</p> <p>T = Thread Pitch (thread width, mm)</p> | | | |



RS6583B Suspension System

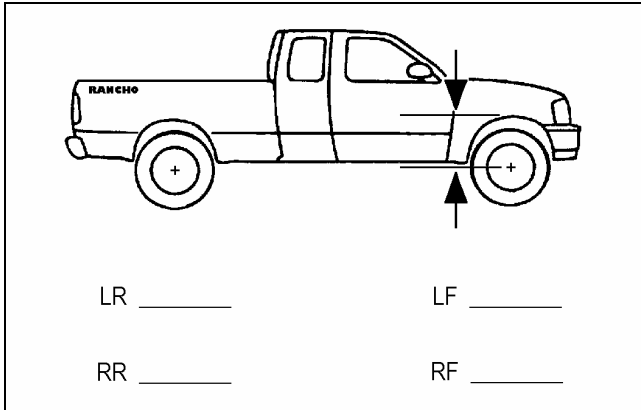
PARTS LIST

| <u>P/N</u> | <u>DESCRIPTION</u> | <u>QTY.</u> | <u>P/N</u> | <u>DESCRIPTION</u> | <u>QTY.</u> |
|------------|------------------------------|-------------|------------|---------------------------------|-------------|
| | Box 1 of 4 | | | | |
| 176132B | Aft Brace | 2 | | M10-1.50 x 60 HHCS | 4 |
| 176385B | Subframe | 1 | | M10-1.50 x Nyloc Nut | 4 |
| | Box 2 of 4 | | | M10 Washer | 12 |
| 331 | Add-A-Leaf | 2 | | Loop Strap | 2 |
| 176138 | Aft Brace Bracket | 1 | 860550 | Thread Lock | 2 |
| 176235 | Axle Spacer | 2 | | Tie Wrap | 4 |
| 602617 | Tie Rod End | 2 | | Front Differential Hardware Kit | 1 |
| 7495 | 9/16-18 x 2.57 x 11.0 U-bolt | 4 | | M12-1.75 x 50 HHCS | 4 |
| 8051 | Riser Block Pin Kit | 1 | | M12-1.75 Stover Nut | 4 |
| | .625 x .875 Pin | 2 | 860569 | M12 Washer | 8 |
| 8102 | U-bolt Hardware Kit | 1 | 170014 | 1/2 USS Washer | 2 |
| | 9/16-18 Nyloc Nut | 8 | | Brake Line Bracket Kit | 1 |
| | 9/16 SAE Washer | 8 | | Brake Line Bracket | 1 |
| 860176 | Axle Spacer Hardware Kit | 1 | | 5/16-18x1.25 HHCS | 1 |
| | M10-1.50x60 HHCS | 12 | | 5/16-18 Top lock Nut | 1 |
| | SAE Washer | 12 | | 5/16 SAE Washer | 2 |
| 860185 | Spring Installation Kit | 1 | 860582 | M8-1.25 x 20 HHCS | 1 |
| | 3/8-24 x 7.5 HHCS | 1 | | M8 Washer | 1 |
| | 3/8-24 Hi-Nut | 1 | | Bump Stop Hardware Kit | 1 |
| 860410 | Center bolt Hardware Kit | 1 | | M10-1.50 x 110 SHCS | 2 |
| | 3/8-24 x 5.0 C-bolt | 2 | | M8-1.25 x 10 HHCS | 1 |
| | 3/8-24 Hi-Nut | 2 | 94180 | SAE Washer | 2 |
| 860474 | Aft Brace Hardware Kit | 1 | | 10mm Lock Washer | 2 |
| 176137 | Nut Bracket | 2 | 780281 | Information Pack | 1 |
| 420042 | .75x.095x2.73 Sleeve | 4 | 88563 | Rancho Decal | 1 |
| 520041 | Bushing | 8 | 94119 | Instructions | 1 |
| | 1/2-13x1.00 HHCS | 2 | 94177 | Consumer Information | 1 |
| | 1/2-13x4.00 HHCS | 4 | | Warning Sticker | 1 |
| | 1/2-13 Stover Nut | 4 | | Box 3 of 4 | |
| | 1/2 SAE Washer | 10 | 176475 | Knuckle, Left | 1 |
| | Thread Lock | 1 | 176476 | Knuckle, Right | 1 |
| 860546 | Subframe Hardware Kit | 1 | | Box 4 of 4 | |
| | M16-2.0 x 140 HHCS | 2 | 15080 | Riser Block | 2 |
| | M16-2.0 x 120 HHCS | 2 | 170106 | Brake Hose | 2 |
| | M16-2.0 Stover Nut | 4 | 176386 | Differential Bracket, Right | 1 |
| | M16 Washer | 8 | 176387 | Differential Bracket, Left | 1 |
| 860547 | Sway Bar Hardware Kit | 1 | 176388 | Sway Bar Bracket | 2 |
| | M10-1.50 x 30 HHCS | 4 | 176477 | Rear Bump Stop Spacer | 2 |

FRONT SUSPENSION

VEHICLE PREPARATION & SWAY BAR REMOVAL

1) Park the vehicle on a level surface. Set the parking brake and chock rear wheels. Measure and record the distance from the center of each wheel to the top of the fender opening. See illustration #1.



Illus. 1

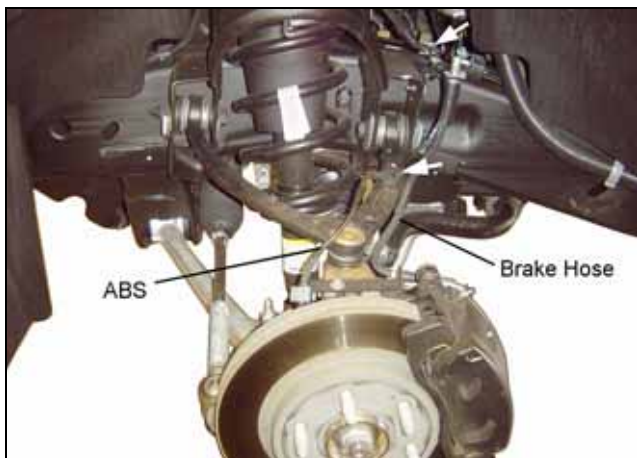
2) Raise the front of the vehicle and support the frame with jackstands. Remove the front wheels and set them aside.

3) Disconnect the sway bar from the lower control arms. Save end links for reuse.

4) Remove the sway bar frame bracket bolts. Remove the sway bar.

STEERING KNUCKLE, SHOCK ABSORBER, HALF SHAFT (4WD ONLY), & LOWER CONTROL ARM REMOVAL

1) Remove the brake hose and ABS sensor wire from the upper control arm. Disconnect the ABS sensor wire at the frame rail. See illustration 2.



Illus. 2

2) Remove the brake caliper anchor bolts. Remove the brake caliper and its mounting bracket as an assembly. Hang the caliper assembly with wire or a tie wrap.

CAUTION: Do not allow the caliper to hang by the brake hose.

3) Label the brake rotor left or right. Remove the brake rotor. Remove the half shaft axle nut.

4) Remove the nut from the outer tie rod stud. Lightly tap the steering knuckle and disconnect the tie rod end from the knuckle.

5) Loosen the nuts at the upper and lower ball joints. Lightly tap the steering knuckle to disconnect the ball joints.

6) Remove the upper and lower ball joint nuts. Carefully remove the steering knuckle.

7) Index mark the half shaft and front differential flange for installation reference. See illustration 3.



Illus. 3

8) Remove the half shaft flange bolts. Remove the half shaft.

9) Index-mark the shock absorber upper mount, coil spring, and lower mount.

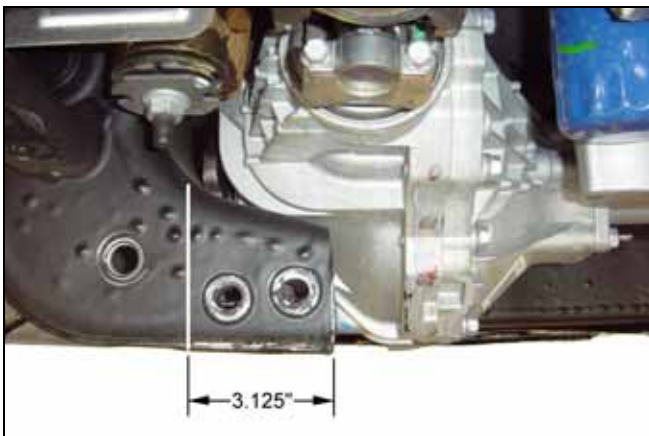
10) Remove the shock absorber lower bolts. Remove the three shock absorber upper mount to frame nuts. Remove the shock absorber and spring assembly.

11) Remove the lower control arm pivot bolts. Remove the lower control arm.

12) Repeat steps 1 through 11 for the other side.

FRONT DIFFERENTIAL REMOVAL (4WD ONLY)

- 1) Remove the four bolts that attach the crossmember to the lower control arm rear pockets. Remove the crossmember.
- 2) Using a reciprocating saw, cut off the driver side crossmember bracket. See illustration 4. File sharp edges and paint exposed metal.
- 3) Reference mark the front drive shaft U-joint to the differential yoke. Remove the bolts and retainers from the yoke and slide the shaft rearward to disengage. Tape the bearing cap assemblies and secure the shaft out of the way.



Illus. 4

- 4) Disconnect the electrical connector and the vent hose from the differential assembly.
- 5) Support the front differential assembly with adjustable jack stands.
- 6) Remove the upper mounting bolts. Carefully lower and remove the front differential.

FRONT DIFFERENTIAL DROP BRACKET INSTALLATION (4WD ONLY)

NOTE: When attaching differential drop brackets, face the open side of the bracket toward the passenger side and the larger end toward the front.

- 1) Attach right drop bracket 176386 to the passenger side differential mount with the original hardware. See illustration 5.



Illus. 5

- 2) Attach left drop bracket 176387 to the driver side differential mount with the original hardware. See illustration 6.



Illus. 6

- 3) With the help of an assistant, loosely attach the front differential to the installed drop brackets with the hardware from kit 860550. Refer to illustration 6. Install the larger USS washers on the passenger side.
- 4) Push the differential assembly toward the passenger side. Tighten the nuts and bolts to 65 ft. lbs.

NOTE: Verify that the front differential does not contact the driver side rear frame bracket of the lower control arm. **FAILURE TO PROVIDE CLEARANCE COULD CAUSE DAMAGE TO THE FRONT DIFFERENTIAL ASSEMBLY.**

- 5) Reattach the electrical connector and vent hose.
- 6) Align reference marks and reattach the front drive shaft U-joint to the differential yoke. Tighten bolts to 22 ft. lbs.

SUBFRAME INSTALLATION

- 1) Using a round file, enlarge the inside corners of both lower control arm front brackets. See illustration 7.



Illus. 7

- 2) With the help of an assistant, raise the subframe up into the lower control arm frame brackets. Attach the subframe to the brackets with the original hardware. See illustration 8. Tighten the subframe to bracket bolts to 107 ft. lbs.
- 3) Loosely attach the lower control arms to the subframe with the hardware from kit 860546.



Illus. 8

COIL SPRING & SHOCK ABSORBER INSTALLATION

NOTE: New shock absorbers are not included with this kit and must be purchased separately. See Important Note C.

- 1) Using a quality spring compressor, compress the coil spring until the tension is released from the shock absorber.
- 2) Remove the upper mounting nut. Slide the shock absorber out of the spring assembly.
- 3) Transfer index mark, lower insulator, and jounce bumper to new Rancho shock absorber.
- 4) Insert new shock absorber into spring assembly. Align the index marks and install the original mounting nut. Tighten the nut to 22 ft. lbs. Remove spring compressor.



Illus. 9

- 5) Insert shock absorber assembly into the upper mounting holes. Attach assembly to upper mount with the original nuts. Tighten nuts to 33 ft. lbs.
- 6) Attach the Shock absorber lower mount to the lower control arm with original hardware. Tighten nuts and bolts to 45 ft. lbs.

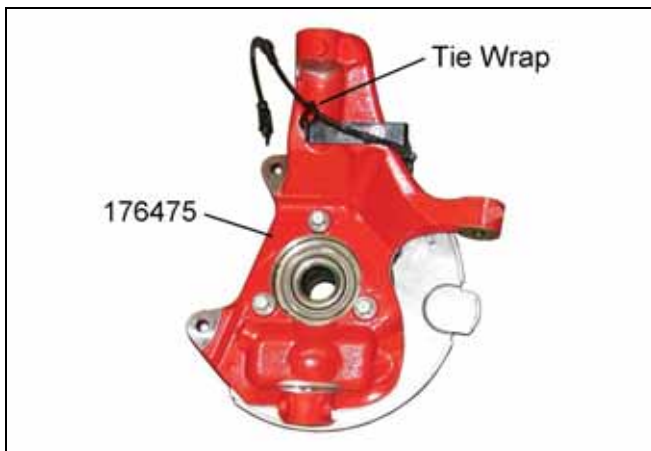
HALF SHAFT (4WD Only) & STEERING KNUCKLE INSTALLATION

- 1) Place axle spacer 176235 against the driver side differential flange. Align flange marks and place the half shaft flange against the spacer. Apply thread lock to bolts and attach the half shaft to the differential with the hardware from kit 860176. See illustration 10. Tighten the flange bolts to 58 ft. lbs.



Illus. 10

2) Remove the hub, splash guard and ABS bracket from the driver side steering knuckle. Transfer parts to left steering knuckle 176475 as shown in illustration 11.



Illus. 11

3) Apply thread lock to bolts. Attach the hub and ABS bracket to left steering knuckle 176475 with the original hardware. Tighten the hub mounting bolts to 133 ft. lbs. Attach ABS wire to bracket with the tie wrap from kit 860547.

4) Insert the half shaft into the hub. Attach left steering knuckle 176475 to the lower and upper ball joints with the original hardware. See illustration 12. Tighten the nut on the lower ball joint stud to 74 ft. lbs., and the nut on the upper ball joint stud to 37 ft. lbs.

5) Install the half shaft washer and nut. Tighten nut to 165 ft. lbs.

6) Note the number of exposed threads on the inner tie rod and remove outer tie rod end. Install new tie rod end 602617 to the same location.

7) Attach tie rod end 602617 to steering knuckle 176475 with the supplied nut. Tighten ball stud nut to 33 ft. lbs. Tighten jam nut to 22 ft. lbs.

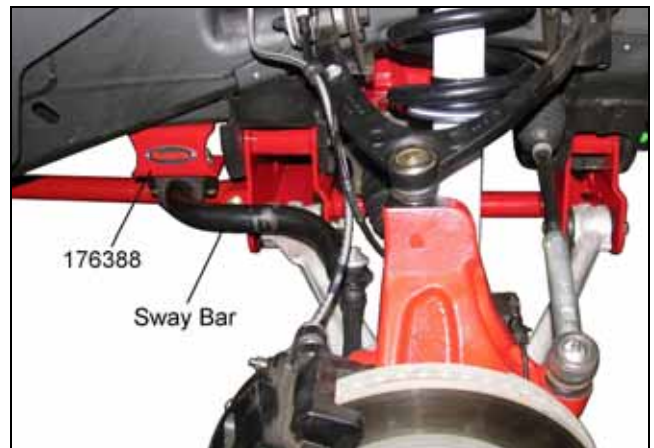


Illus. 12

8) Repeat steps 1 through 7 to install the half shaft, outer tie rod end and right steering knuckle 176476 on the passenger side.

SWAY BAR DROP BRACKET INSTALLATION

1) Using the washers and shorter bolts from hardware kit 860547, attach the sway bar drop brackets (176388) to the frame rails at the original sway bar location. Face open side of bracket inward.



Illus. 13

2) Using the washers and longer bolts from hardware kit 860547, attach the sway bar to drop brackets 176388. Tighten mounting bolts to 45 ft. lbs.

3) Loosely attach the sway bar to the lower control arms with the original end link assemblies.

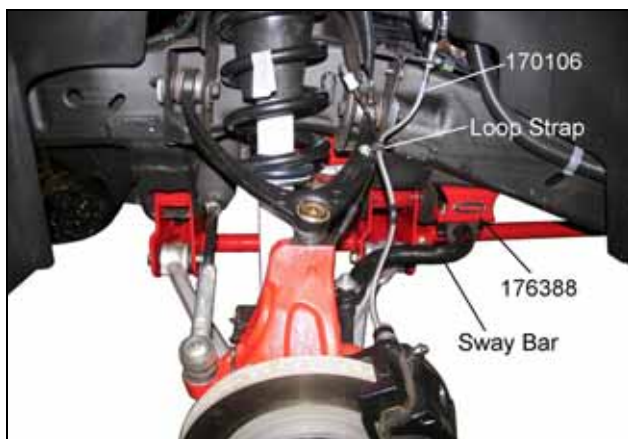
BRAKE HOSE INSTALLATION

- 1) Install the brake rotor. Apply thread lock and attach the caliper to the knuckle with the original mounting bolts. Tighten the caliper mounting bolts to 129 ft. lbs.
- 2) Disconnect the brake tube from the hose at the frame rail. Plug tube to prevent brake fluid seepage.
- 3) Remove the retainer clip and disconnect the brake hose from the caliper. Discard copper washers. If necessary, cut-off washer from bolt.
- 4) Attach new brake hose 170106 to the caliper with the original bolt and new washers. Tighten bolt to 38 ft. lbs. See illustration 14.



Illus. 14

- 5) Attach hose to tube at frame bracket. Install retainer clip. Tighten fitting to 18 ft. lbs.
- 6) Attach the brake hose and ABS wire to the upper control arm with the original bolt and loop strap from kit 860547. See illustration 15. Reconnect ABS wire.



Illus. 15

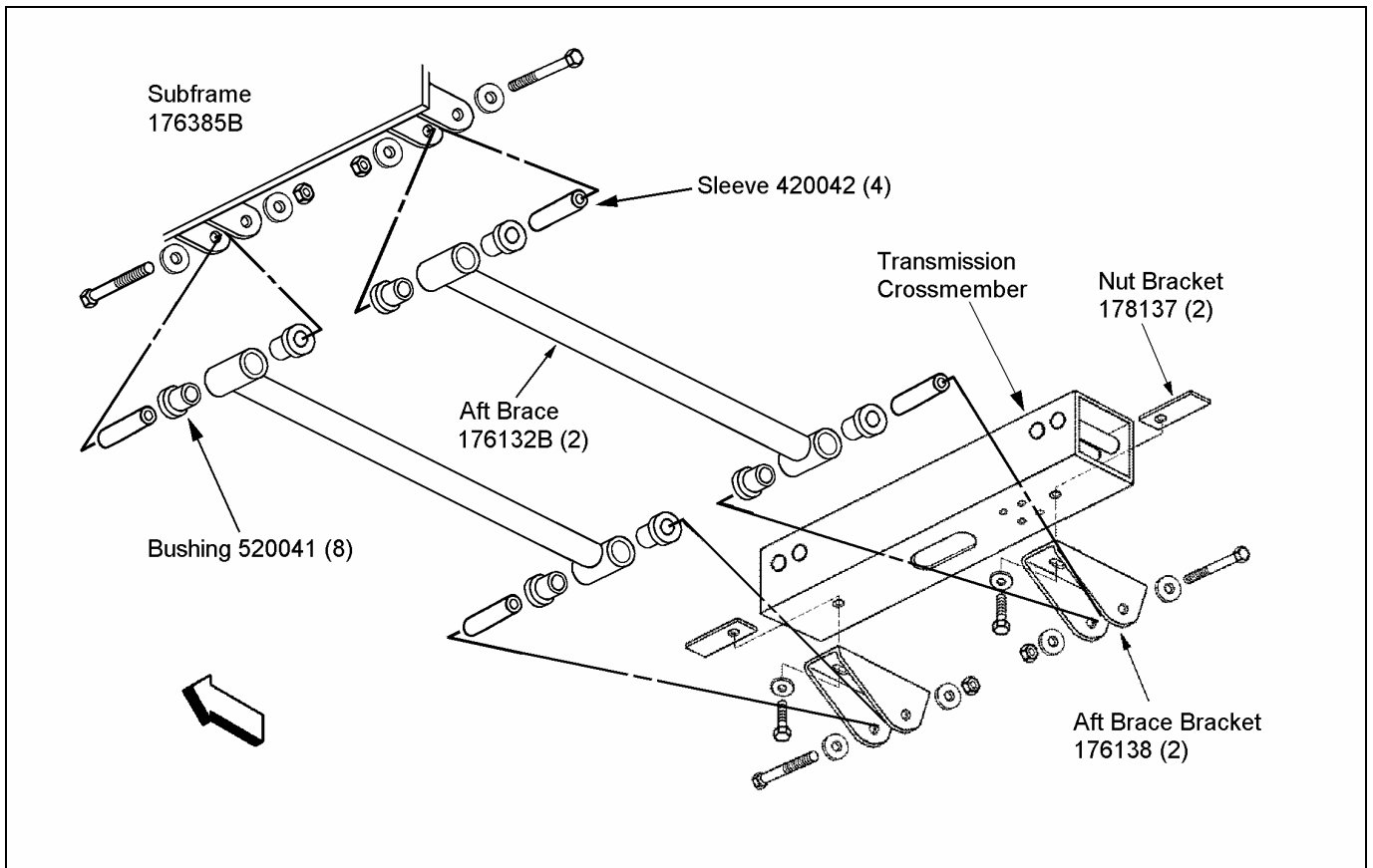
- 7) Repeat steps 1 through 6 for the other side.
- 8) Bleed front brakes.

AFT BRACE INSTALLATION

- 1) Using a silicon spray, lubricate two bushings (520041) and one sleeve (420042) from kit 860474. Press the bushings and sleeve into aft brace 176132B as shown in illustration 16.
- 2) Repeat step 1 to install the rest of the bushings and sleeves.
- 3) Loosely attach the aft braces to subframe 176385B with the hardware from kit 860474. See illustration 16.

NOTE: Both aft braces should angle slightly outward from front to rear.

- 4) If applicable, remove the transfer case skid plate.
- 5) For 2WD vehicles, temporarily attach aft brace bracket 176138 to the aft brace as shown in illustration 16. Using the slotted hole in the bracket as a template mark the mounting hole location on the transmission crossmember. Drill a 1/2" hole at the marked location. Remove bracket. Repeat for other side.
- 6) Insert nut brackets (176137) inside the crossmember as shown in illustration 16. Align nut brackets over the drilled holes for 2WD vehicles and over the existing holes for 4WD vehicles.
- 7) Apply thread lock and insert a 1.00" bolt with washer (from kit 860474) through the slotted hole in bracket 176138. Loosely attach bracket to crossmember by threading the bolt into the nut bracket. Repeat for other side.
- 8) Attach the aft braces to the installed brackets with the hardware from kit 860474. See illustration 16.
- 9) Tighten the aft brace mounting bolts to 80 FT-LBS then the bracket to crossmember bolts to 65 FT-LBS.
- 10) If applicable, cut the corner of the skid plate to avoid contact with the aft brace bracket. Reinstall the transfer case skid plate.



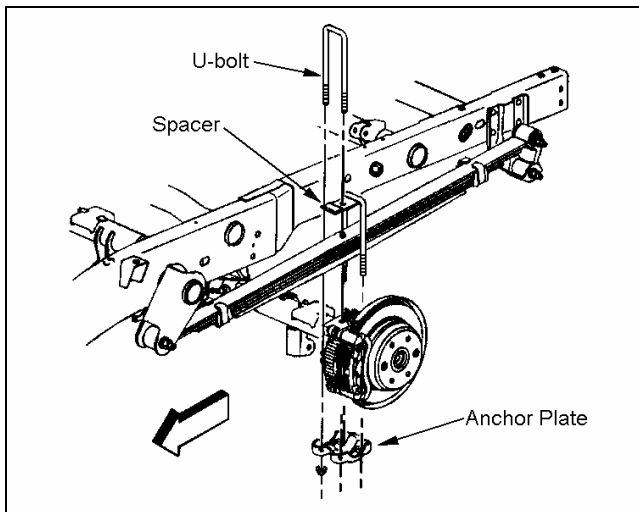
Illus. 16

- 11) Install front wheels and lower vehicle to ground. Tighten the lug nuts to 140 ft. lbs.
- 12) Tighten the lower control arm pivot bolts to 107 ft. lbs. Tighten the sway bar end link bolts to 22 ft. lbs.

REAR SUSPENSION

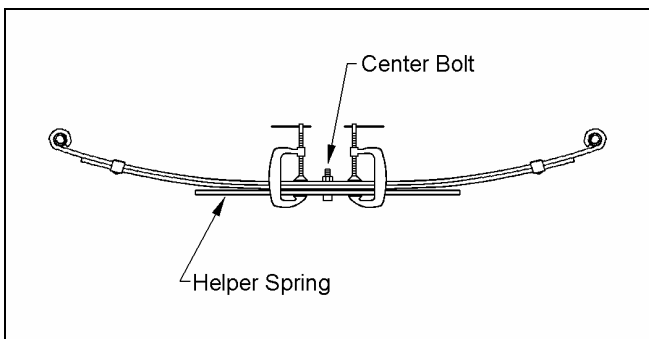
ADD-A-LEAF & RISER BLOCK INSTALLATION

- 1) Chock front wheels. Raise the rear of the vehicle and support the frame with jack stands. Remove the rear wheels.
- 2) Support the rear axle assembly with a floor jack. Remove both rear shock absorbers. Do not reuse OEM shock absorbers.
- 3) With the axle still being supported, remove the anchor plate, U-bolts, and spacer. See illustration 17.
- 4) Carefully lower the rear axle and remove the original riser block. Do not allow the axle to hang by any hoses or cables.



Illus. 17

- 5) Clamp the spring assembly securely together with two C-clamps as shown in illustration 18.



Illus. 18

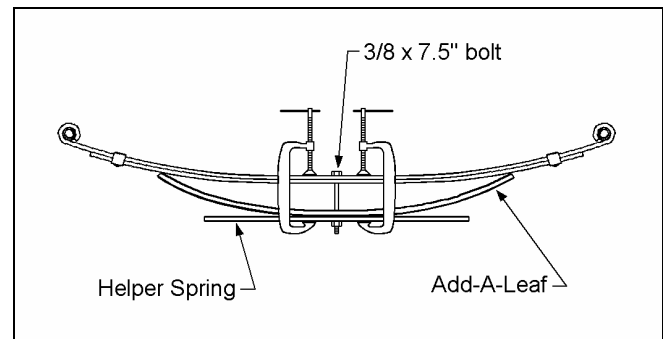
- 6) Loosen the nut and remove the center bolt. If necessary, hold the head of the center bolt with locking pliers. Do not remove the spring clips.

- 7) Carefully remove the C-clamps and set the helper spring aside.

- 8) Apply a small amount of grease to the top ends of Rancho Add-A-Leaf RS331.

- 9) Place the Add-A-Leaf under the spring pack and reinstall the helper spring. Temporarily, secure the assembly together with a 3/8" x 7.5" bolt and nut from kit RS860185. Install a C-clamp on each side of the bolt. See illustration 19.

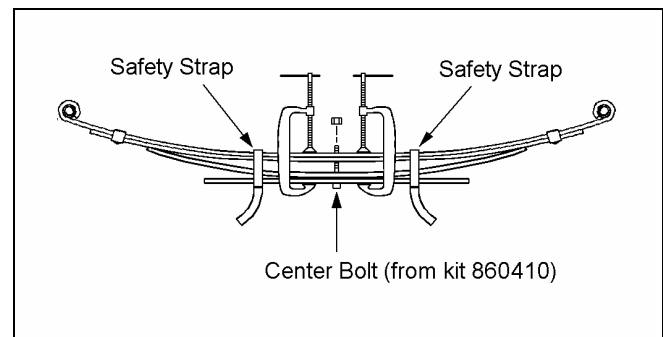
NOTE: The 3/8" bolt will keep the center holes aligned as the spring pack is compressed.



Illus. 19

- 10) Alternating between C-clamps, compress the spring pack to within 4 inches. Install nylon safety straps as shown in illustration 20.

- 11) Carefully, without disturbing the C-clamps, remove the 3/8" bolt. Install the center bolt and nut from kit 860410. See illustration 20. Do not compress the spring with the center bolt.

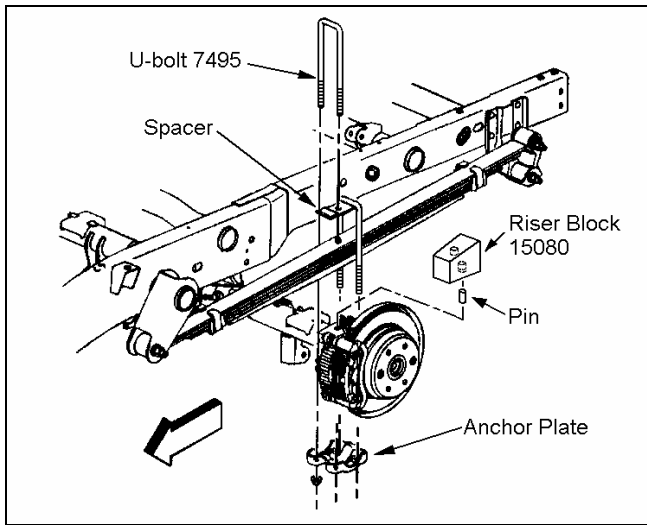


Illus. 20

- 12) Tighten the C-clamps to fully compress the spring assembly. Once compressed, tighten the center bolt to 25 ft. lbs. If necessary, hold the head of the center bolt with locking pliers.

- 13) Remove the C-clamps and straps.

14) Insert a block pin from kit 8051 into the hole in the axle pad. Place the new riser block (15080) on the axle pad with the taller end of the block in the rear and the top hole offset to the front. See illustration 21.



Illus. 21

NOTE: Ignore the “up” stamped on the riser block for this application. All block imprinting faces downward.

15) Raise the axle assembly until the riser block contacts the helper spring. Be sure to align the hole in the block with the head of the center bolt.

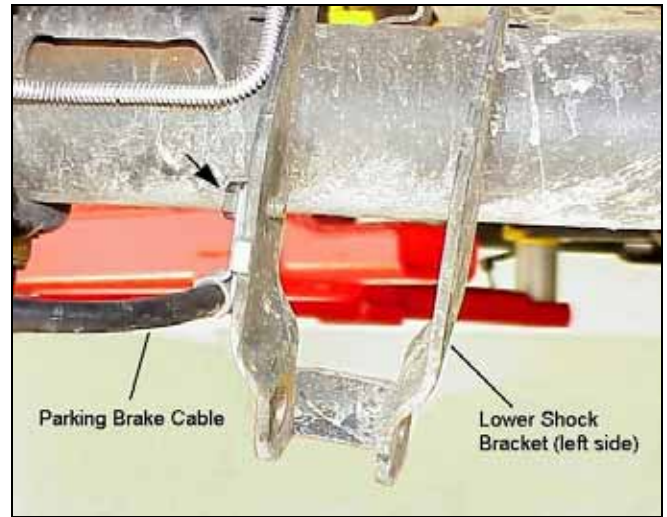
16) Reinstall the U-bolt spacer on top of the leaf spring. Attach the spring to the axle with the NEW U-bolts (7495), original anchor plate, and hardware from kit 8102. Snug the nuts down but do not tighten.

17) Repeat steps 3 through 16 for the other side.

18) Cross tighten the U-bolt nuts evenly to 89 ft. lbs. Recheck the torque on the center bolt.

19) Replace the bolt holding the brake cable to the lower shock bracket with a shorter bolt from kit 860582. See illustration 22.

20) Install new Rancho shock absorbers.



Illus. 22

BUMP STOP SPACER INSTALLATION

1) Remove the bolt holding the bump stop to the frame bracket. Remove the bump stop.

2) Place bump stop spacer 176477 against frame bracket. Attach original bump stop to spacer with the 10mm hardware from kit 860582.



Illus. 23

3) Repeat steps 1 and 2 for the other side.

4) Install rear wheels and lower vehicle to ground. Tighten lug nuts to 140 ft. lbs.

BRAKE LINE BRACKET INSTALLATION

- 1) Attach the new brake line bracket 170014 to the rear differential with the 8mm hardware from kit 860569. See illustration 24.
- 2) Carefully reshape the brake line and attach the junction block to the top of bracket 170014. Use the 5/16" hardware from kit 860569.
- 3) Reattach the brake line to the rear axle with the two original bolts.



Illus. 24

FINAL CHECKS & ADJUSTMENTS

- 1) Turn the front wheels completely left then right. Verify adequate tire, wheel, and brake hose clearance. Inspect steering and suspension for tightness and proper operation.
- 2) With the suspension at maximum extension (full droop), inspect and rotate all axles and drive shafts. Check for binding and proper slip yoke insertion. The slip yoke should be inserted a minimum of one inch into the transfer case and/or transmission.
- 3) Ensure that the vehicle brake system operates correctly. If new brake hoses were installed, verify that each hose allows for full suspension movement.
- 4) Readjust headlamps. Have vehicle Aligned at a certified alignment facility.

Recommended Alignment Specifications

Caster (degrees): $4.5^{\circ} \pm 1.0^{\circ}$

Camber (degrees): $0^{\circ} - .3^{\circ}$

Sum Toe In (degrees): $.1^{\circ} \pm .2^{\circ}$

**Please retain this publication for future reference.
See Important Note Q.**
