



Rancho Suspension System — RS6564B

4-In. Torsion Bar Drop System

Fits 2019 - 2011 Chevy Silverado / GMC Sierra 2500HD 4WD

This suspension system was developed using 35 X 12.5R18 tires on 18 x 9 +25 (6" backspacing) wheels. Before installing any other size tire, consult your local tire and wheel specialist. Fits OE wheels with OE tires ONLY. See page 4.



Pictured with:
BFGoodrich Mud-Terrain T/A KM2 35 X 12.5R18 tires
Vision Wheels : 18 x 9 w/ 6" BS wheels

WARNING

Carefully read, understand and follow the instructions provided in this manual, and keep it in a safe place for future reference. If you have any doubt whatsoever regarding the installation or maintenance of your Rancho suspension system, please see your retailer for assistance or advice. Failure to follow the warnings and instructions provided herein can result in the failure of the suspension system, or can cause you to lose control of your vehicle, resulting in an accident, severe personal injury or death.

These instructions should remain in the vehicle glove box for future reference.

⚠ WARNING: READ ALL INSTRUCTIONS THOROUGHLY FROM START TO FINISH BEFORE BEGINNING INSTALLATION. Failure to follow the warnings and instructions provided herein can result in an accident, severe personal injury or death.

PRELIMINARY

This manual presumes that all persons installing this suspension system have a high level of mechanical training and experience, and have available to them all necessary tools and safety equipment. This manual is not and should not be construed as an exhaustive list of all required safety measures. Personnel should rely primarily on their training and experience, as well as on their own common sense.

This Manual is to be read as a supplement to, and must not be construed as a substitute for, the owner's manual and/or shop manual that originally accompanied the vehicle. Refer to such use, operation, maintenance and safety manuals as necessary, and especially after installation is complete, to insure proper vehicle operation.

The following terminology has been used in this Manual:

ACCIDENT: Any event which could cause personal injury or death to anyone installing or using the suspension system, as well as to passengers and bystanders, or otherwise may result in property damage.

PRE-INSTALLATION WARNINGS and INSTRUCTIONS

⚠ WARNING: Only the following wheel / tire size may be used with this suspension system: 35x12.5 R18 tire, 18 x 9 +25 wheel with 6.0 inches of wheel backspacing.

Use of any other rim/tire combination increases the risk of a roll-over and/or accident, resulting in severe personal injury or death.

⚠ WARNING: This suspension system will enhance the off-road performance of your vehicle. It will handle differently; both on and off-road, from a factory equipped passenger car or truck. Failure to drive this vehicle safely may result in serious injury or death to the driver and passengers. ALWAYS WEAR your seat belts, REDUCE your speed, and AVOID sharp turns and other abrupt maneuvers.

1) Service and repair tasks require specialized knowledge, training, tools, and experience. General mechanical aptitude may not be sufficient to properly install this suspension system. If you have any doubt whatsoever regarding your ability to properly install the suspension system, please consult a qualified mechanic.

2) Your brake lines and fuel lines should remain undisturbed during and after installation. If you think you need to modify these components in any way, you are mistaken. You are installing the lift improperly and will be creating a significant risk of an accident. In case of any doubt, consult a qualified mechanic.

3) If any component does not fit properly, something is wrong. You are installing the lift kit improperly and will be creating a significant risk of an accident. Never modify any component of the vehicle or suspension system, except as instructed herein. Do not continue with installation until you have identified the problem.

4) Several of the procedures described herein require at least two (2) persons to safely complete the task. If you have any doubt about your ability to complete any operation by yourself, always ask for help from a qualified assistant.

5) Before starting any operation, confirm that all personal safety devices and safety equipment are in proper condition and position.

6) Give your work undivided attention. Looking around, carrying on a conversation and "horse-play" are careless acts that can result in an error in installation and/or serious injury.

7) Install only tires approved by the United States Department of Transportation ("DOT approved"). Make sure the rim and tire size are properly matched.

8) If any components of the vehicle or suspension system are damaged in any way during installation, immediately replace the component.

9) During installation, carefully inspect all parts of the vehicle and replace anything that is worn or damaged.

10) Nip points present the risk of the catching, lacerating, crushing and/or amputating fingers, hands, limbs and other body parts during operations. Always keep clear. Wear protective gloves.

11) Oil and hydraulic fluids are poisonous, dangerous to health and are known to the State of California to cause cancer, birth defects or other reproductive harm. Do not inhale vapors or swallow. Do not allow contact with the eyes or skin. Should any oil or fluids be swallowed or inhaled or come into contact with the eyes, immediately follow the safety precautions on the label or call a poison control center immediately. Should any of the oil or fluids contact your skin, immediately wash thoroughly.

12) Never install the suspension system if you are under the effects of alcohol, medications and/or drugs. If you are taking prescription or over the counter medication, you must consult a medical professional regarding any side effects of the medication that could hinder your ability to work safely.

AFTER INSTALLATION WARNINGS AND INSTRUCTIONS

13) After installation is complete, drive the vehicle slowly in an area free from heavy traffic for at least three (3) miles. Likewise, before traveling on any highways or at a high rate of speed, drive the vehicle for ten (10) miles on side roads at moderate speed. If you hear any strange noise or feel unusual vibration, if a component of the suspension system is not operating properly, or if any warning lights illuminate or buzzers sound, stop the vehicle immediately. Identify the cause and take any necessary remedial action.

14) Confirm that all components of the vehicle, including all lights (headlights, turn signals, brake lights, etc.), linkages (accelerator, etc.), electrical switches and controls (windshield wipers and defoggers, etc.), and other warning devices (low tire pressure monitoring systems) are fully operational.

15) Your headlights will need to be readjusted before the vehicle is used on the roads. Consult the vehicle owners' manual.

16) The speedometer and odometer will need to be recalibrated after installation. See your dealer.

17) Confirm proper rear view and side view while seated in the driver seat. Install supplemental mirrors as necessary.

18) Your original low tire pressure monitoring system may be re-installed in your new wheels. However, if you choose to purchase a new system, see your dealer to have them properly calibrated. Proper tire pressure is critical to safe operation of the vehicle.

OPERATION

19) Because it has been modified, the vehicle will not handle, turn, accelerate or stop in the same manner as an unmodified vehicle. In addition, the crash protection systems designed in the vehicle may operate differently from an unmodified vehicle. For example, turning and evasive maneuvers must be executed at a slower rate of speed. Further, there is a greater risk that the vehicle could roll over. These differences could result in an increased possibility of an accident, personal injury or death. Learn the vehicle's operations and handling characterizes and drive accordingly.

IMPORTANT NOTES

- A. Before installing this system, have the vehicle's alignment and frame checked by a certified technician. The alignment must be within factory specifications and the frame of the vehicle must be sound (no cracks, damage or corrosion). Have all suspension, steering and driveline components inspected and replaced if worn or damaged
- B. The components of Rancho's suspension system are designed as a single integrated system. To avoid compromises in terms of safety, performance, durability or function, do not install a body lift kit with Rancho's suspension system or interchange parts from this system with components from another manufacturer. Use of other components will result in the forfeiture of any type of warranty on the vehicle/suspension system.
- C. Some components required for the installation of this kit may need to be purchased separately. See "SPECIFICATIONS & REQUIREMENTS" on next page of this manual.
- D. Compare the contents of this system with the parts list in these instructions. If any parts are missing, contact the Rancho Technical Department at 1-734-384-7804.
- E. Do not powder-coat or plate any of the components in this system. To change the appearance of components, automotive paint can be applied over the original coating.
- F. Each hardware kit in this system contains fasteners of high strength and specific size. Do not mix hardware kits or substitute a fastener of lesser strength. See bolt identification table at end of instruction.
- G. Install all nuts and bolts with a flat washer. When both SAE (small OD) and USS (large OD) washers are used in a fastener assembly, place the USS washer against the slotted hole and the SAE washer against the round hole.
- H. Apply a drop of thread locking compound to all bolts during installation. ⚠ CAUTION: Thread locking compound may irritate sensitive skin. Read warning label on container before use.
- I. Unless otherwise specified, tighten all nuts and bolts to the standard torque specifications shown in the table at end of instruction. USE A TORQUE WRENCH for accurate measurements.
- J. Do not weld anything to these components, and do not weld any of these components to the vehicle unless specifically stated in the instructions. Welding on a vehicle creates an electrical charge throughout the body and frame. Disconnect the vehicle's battery prior to any welding. Place welding ground clamps as near as possible to the weld. Never use a vehicle suspension component as a welding ground point.
- K. It is extremely important to replace coil springs, axle flanges, and drive shaft/pinion relationships as original. Be sure to mark left/right, front/rear, and indexing of mating parts before disassembly. A paint marker or light colored nail polish is handy for this.
- L. Suspension components that use rubber or urethane bushings should be tightened with the vehicle at normal ride height unless otherwise specified. This will prevent premature failure of the bushing and maintain ride comfort.
- M. Some of the service procedures require the use of special tools designed for specific procedures. If you do not know how to safely use any of these tools, or do not have them, stop the project and consult a qualified mechanic. See "Tools and Supplies" on next page of this manual
- N. The required installation time for this system is approximately 6 to 7 hours for two people. 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. 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.
- P. The lifespan of Rancho products depends on many factors. Improper use, abuse or harsh use in general may compromise the integrity of the suspension system and significantly reduce its lifespan. The suspension system is also subject to wear over time. Have the suspension system regularly inspected and maintained by qualified mechanics. If the inspection reveals any damage or excessive wear, no matter how slight, immediately replace or repair the component. The suspension system must be regularly maintained in order to optimize its safe and efficient use. The more severe the conditions under which the suspension system is operated, the more often it must be inspected and maintained.
- Q. If any component breaks or bends, contact your local Rancho dealer or Rancho for replacement parts or, contact the Rancho Technical Department at 1-734-384-7804.

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 IS NOT RESPONSIBLE FOR DAMAGE OR FAILURE RESULTING FROM AN IMPROPER INSTALLATION

The driver of this suspension system recognizes and agrees that there are risks inherent in driving a vehicle with a lifted suspension system, including but not limited to the risk that you could be involved in an accident that would not occur in an unmodified vehicle. By his/her purchase and use of this suspension system, the user expressly, voluntarily and knowingly accepts and assumes these risks, and agrees to hold Tenneco, Inc. and its related companies harmless to the fullest extent permitted by law against any resulting damages.

SPECIFICATIONS & REQUIREMENTS

Shock Absorbers

New Rancho shock absorbers must be used and are not included with this kit.

Do not reuse OE shock absorbers

⚠️WARNING Use of the wrong shock absorbers can cause damage to vehicle without the damage being visible to you, resulting in loss of vehicle control and an accident

Required Rancho shock absorbers

Front	Rear
RS5380	RS5381
RS55380	RS55381
RS7380	RS7381
RS999380	RS999381

Wheels and Tires

This suspension system was developed using the following tire & wheel combination:

Tire: BFGoodrich Mud-Terrain T/A KM2 35 X 12.5R18 tires

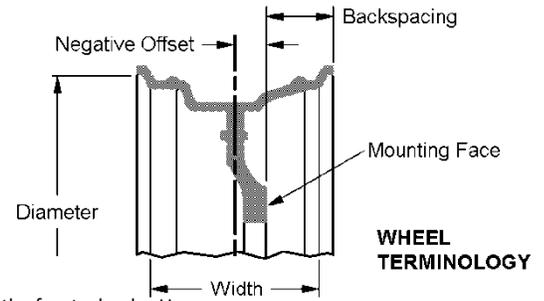
Wheel: : 18 x 9 +25 w/ 6" Back Spacing

Maximum total backspacing is 6.8". Before installing any other combination, consult your local tire and wheel specialist.

Compatible With OE Wheels	Development Tire Size (Actual)	Wheel Size (Backspacing)
Yes	35 X 12.5R18	18x9
OE TIRE ONLY ¹	(34.7"x12.7")	(6")

¹ OE wheels compatible with stock size tires only.

IMPORTANT: If the OEM 17" wheel is reused, the OEM wheel weight will need to be removed from the front wheels. Use sticky wheel weights that attach to the inside diameter of the wheel



Tools and Supplies (BECAUSE OF VEHICLE VARIATIONS, THIS MAY NOT BE A COMPLETE LIST)

Chevrolet / GMC Service Manual	3/8" and 1/2" Drive Ratchet and Socket Sets	Assorted Drills: 1/8" through 1"
Replacement OE Nuts (outer tie rod end stud & front axle)	Combination Wrenches	Wire Brush (to clean mounting surfaces)
Torsion Bar Unloading Tool CH48809	Center punch	Body Clip Removal Tool
Universal Steering Linkage Puller J24319	File	Hammer
Ball Joint Separator J43631	Large "C" Clamps	Pliers
Hydraulic Floor Jack	Reciprocating Saw (to modify frame and differential)	File
Heavy Duty Jack stands	Welder	Red LoTite
Wheel Chocks (Wooden Blocks)	Die Grinder	Penetrating Lube (to aid removal of corroded and frozen hardware)
Torque Wrench (250 FT-LB capacity)	Drill motor	Safety Glasses-- Wear safety glasses at all times

Parts List

#	P/N	DESCRIPTION	QTY
	RS6564B-1	Box 1 Of 4	1
1	RS176613	Box Plate, Weld In	1
2	RS176614	Diff Drop Bracket - Left	1
3	RS176615	Diff Drop Bracket - Right	1
	RS860688	Sub Assy-Diff Drop	1
	RS770108	HHCS, M12-1.75X40MM	5
	RS7911	Nut, 12Mm-1.75 Top Lock	5
	RS7915	Washer, M12	12
	RS7719	Washer, 1/2 USS	4
4	RS176616	Front Bump Stop Bracket	2
	RS860687	Sub Assy- Front Bump Stop Bracket	1
	RS770056	HHTS, 3/8-16X1.00	4
5	RS176621	Skid Plate	1
	RS860699	Sub, Assy Skid Plate	1
	RS770080	HHCS, M10-1.50X30MM	4
	RS7657	Nut, 10MM-1.50 Nylock	4
	RS770064	Washer, M10	8
	RS860686	Sub Assy-Front Brake Hose Bracket	1
6	RS176617	Front Brake Hose Bracket	2
	RS770127	HHCS, M8-1.25X20MM	2
	RS603112	Nut, M8-1.25 Nylock	2
	RS770128	Washer, M8	4
	RS96315	1/2" Split Loom	2
	RS860180	Sub Assy, End Link	1
7	RS770078	HHCS, 3/8-16X14.0	2
	RS7604	Nut, 3/8-16 Nylock	2
8	RS420044	Sleeve, .75 X .438 X 9.50	2
	117300007	Retainer	8
	RS860869	Sub Assy-Sub Frame	1
	RS770237	HHCS, M18-2.50X120MM	2
	RS770238	HHCS, M18-2.50X150MM	2
	RS770118	Nut, M18-2.5 Nylock	4
	RS770123	Washer, M18 SAE	8
9	RS176619	T-Bar Drop Bracket - Left	1
10	RS176627	T-Bar Drop Bracket - Right	1
	RS860690	Sub Assy, T-Bar Drop Bracket	1
	RS770043	HHCS, M14-2.00X10MM	2
	RS7877	Nut, 14Mm-2.00 Top Lock	2
	RS770109	Washer, M14	4
	RS603605	HHCS, 1/2-13 X 1.0	2
11	RS176620	Rear Bump Stop Spacer	2

#	P/N	DESCRIPTION	QTY
	RS860691	Sub Assy, Rear Bump Stop Spacer	1
	RS770239	HHTS, 5/16-18X0.75	2
	RS7642	Washer, 5/16 SAE	2
	RS860696	Sub Assy, Rear Brake	1
12	RS176624	E-Brake Relocation	1
13	RS176625	Rear Brakeline Bracket	1
	RS770241	HHCS, M8-1.25X25MM	1
	RS603112	Nut, 8MM-1.25 Nylock	1
	RS770128	Washer, M8	2
	RS770240	HHCS, M8-1.25X20MM	2
	RS603112	Nut, 8MM-1.25 Nylock	2
	RS770128	Washer, M8	4
	RS860694	Sub Assy, Spacer Block	1
14	RS15108	Spacer Block	2
	RS860695	Sub Assy, Spacer Block Pin	1
	RS10481	Spacer Block Pin	2
15	RS740031	U-Bolts, 3/4X3.86X14.5	4
	RS860698	Sub Assy, U-Bolt	1
	RS770242	Nut, 3/4-10 Nylock	8
	RS770243	Washer, 3/4 SAE Thick	8
16	RS176138	Aft Brace Bracket -2 Hole	2
	RS860474	Sub Assy, Aft Brace	1
	RS420072	Sleeve, .750 X .570 X 2.74	4
	RS520041	Bushing	8
	RS603616	HHCS, 1/2-13 X 4.0	4
	RS603605	HHCS, 1/2-13 X 1.0	2
	RS78361	Nut 1/2-13 Top Lock	4
	RS7723	Washer, 1/2 SAE	10
	RS176137	Nut Bracket	2
	RS42702	.5 cc Thread Lok	1
	RS88564	Instruction	1
	RS94180	Information Pack	1
	RS94177	Rollover Warning	1
	RS94119	Consumer/Warranty Information	1
	RS780281	Rancho Decal	1
	R-RM0082-1112	Warranty Tag	1
	RS6564B-2	Box 2 Of 4	1
17	RS176610	Knuckle, Driver Side (Left)	1
	RS6564B-3	Box 3 Of 4	1
18	RS176611	Knuckle, Passenger Side (Right)	1
	RS6564B-4	Box 4 Of 4	1
19	RS176612B	Subframe	1
20	RS176618B	Aft Brace - 31.25"	2



FRONT SUSPENSION

VEHICLE PREPARATION & TORSION 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.

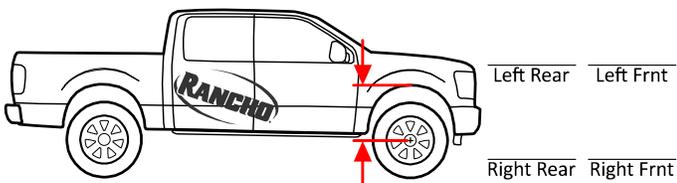


Illustration 1

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

3) Mark the torsion bars left and right. Make alignment marks on the torsion bars, the lower control arms, and the adjustment arms. See Illustration 2.

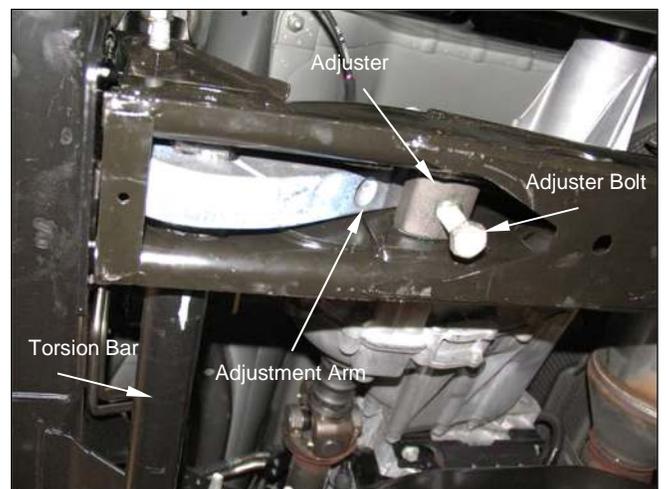


Illustration 2

4) Install the GM torsion bar unloading tool (CH48809) and increase the tension on the torsion bar. Remove the adjuster and adjuster bolt. Relieve the tension on the torsion bar and remove the tool.

5) Slide the torsion bar forward and remove the adjustment arm. **CAUTION!!!**: Do not nick the CV boot with the torsion bar. See Illustration 2.

6) Repeat steps 4 and 5 for the other side.

7) Remove the torsion bar crossmember by removing the two OE bolts securing it. Make sure to disconnect the O₂ sensor wire that is connected to the crossmember.

8) Remove the torsion bars from the lower control arms.

WHEEL DRIVE SHAFT (HALF-SHAFT) REMOVAL

1) Remove the front shock absorbers. Remove the front bump stops.

2) Remove the sway bar end links. See Illustration 3.

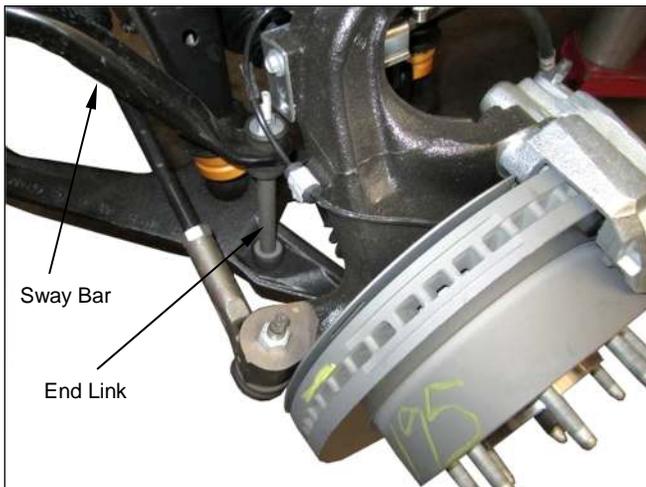


Illustration 3

3) (4wd only) Mark the differential output flange and the axle flange for installation reference.

4) (4wd only) Remove the cap, nut and washer from the hub. Remove the eight bolts from the inboard flange. See Illustration 4.

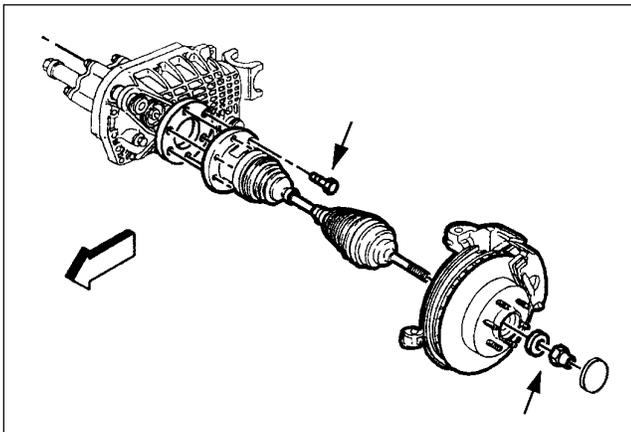


Illustration 4

5) (4wd only) Pull the half-shaft out of the hub and through the lower control arm opening. **IMPORTANT!!!** Be careful not to damage the drive shaft boots.

6) (4wd only) Repeat steps 3 through 5 for the other side.

STEERING KNUCKLE & LOWER CONTROL ARM REMOVAL

1) Loosen the brake hose bracket on the brake hose (top of steering knuckle) by prying the bracket open with vice grips or pliers. Remove the brake hose from the bracket. Remove the bolt and brake hose bracket from the steering knuckle.

2) Disconnect the brake hose bracket on the frame. Save bolt for reuse later. See Illustration 5.



Illustration 5

3) Remove the brake caliper assembly by loosening the 2 mounting bolts. Hang the caliper assembly with wire or a tie wrap. The brake caliper is very heavy, so be sure to properly support it.

4) Label the brake rotor left or right. Remove the brake rotor by removing the one OE bolt fastening it to the hub.

5) Remove the prevailing torque nut from the outer tie rod stud. Disconnect the tie rod end from the steering knuckle with a universal puller.

6) If applicable, disconnect the ABS connectors and separate the cable from the upper control arm and the steering knuckle.

7) Remove the nuts at the upper and lower ball joints. Disconnect the ball joints from the steering knuckle using separating tool J43631. Remove the steering knuckle and hub assembly.

8) Remove the hub and bearing assembly mounting bolts. See Illustration 6. Remove the hub and bearing assembly. Remove the dust shield and carefully remove the o-ring.

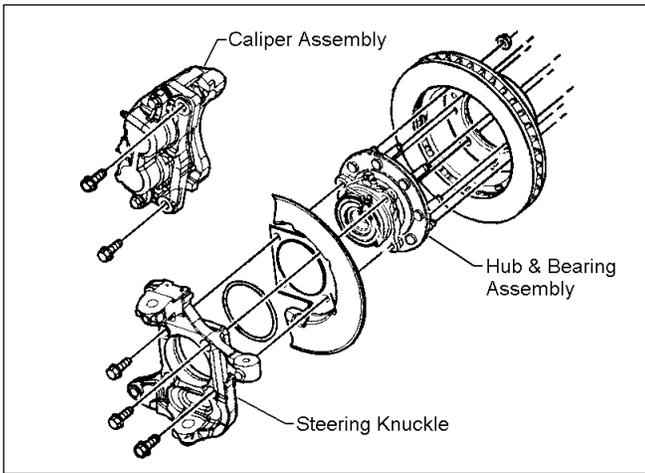


Illustration 6

- 9) Remove the lower control arm pivot bolts. Save for reuse. Remove the lower control arm.
- 10) Repeat steps 1 through 9 for the other side.

FRONT DIFFERENTIAL REMOVAL (4WD ONLY)

- 1) If applicable, remove the front differential skid plate and rear support bracket.
- 2) Remove the vehicle crossmember that is directly below the differential. Save the OE mounting hardware for reuse later.
- 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.
- 4) Disconnect the electrical connector and the vent hose from the differential assembly.
- 5) Support the front differential assembly with a floor jack.
- 6) Remove the right (qty 2) and left (qty 3) side differential mounting nuts and bolts. See Illustration 7.

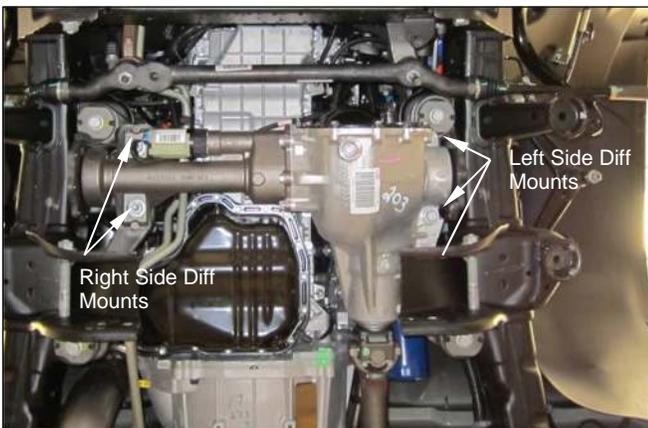


Illustration 7

- 7) Getting assistance from another person or two, remove the differential assembly from the vehicle.
- 8) Trim the crossmember mount / driver side aft lower control arm pocket. Measure 1.00" inboard from the control arm mounting hole and mark a vertical line. Continue this line all of the way around the pocket. See Illustration 8.

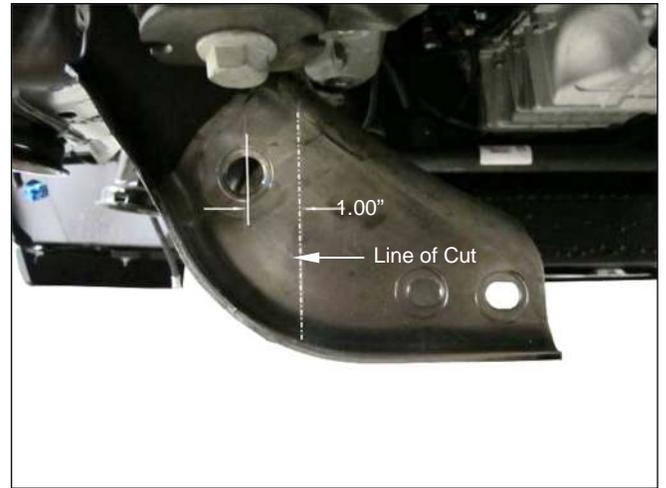


Illustration 8

- 9) Thoroughly clean the remaining portion of the mount and prep for welding. Weld box plate RS176613 to the outside of the pocket. See Illustration 9. **IMPORTANT!!!** Only weld on the outside of the pocket. Welding on the inside will cause interference issues with the subframe. Make sure that all batteries are disconnected before welding.



Illustration 9

NOTE: Box plate RS176613 does not have a protective coating and may develop surface rust. Remove rust before welding plate to lower control arm frame bracket. After installation, coat the plate and bracket with enamel paint or undercoating.

FRONT BUMPSTOP DROP INSTALLATION

- 1) Remove the both front bumpstops.

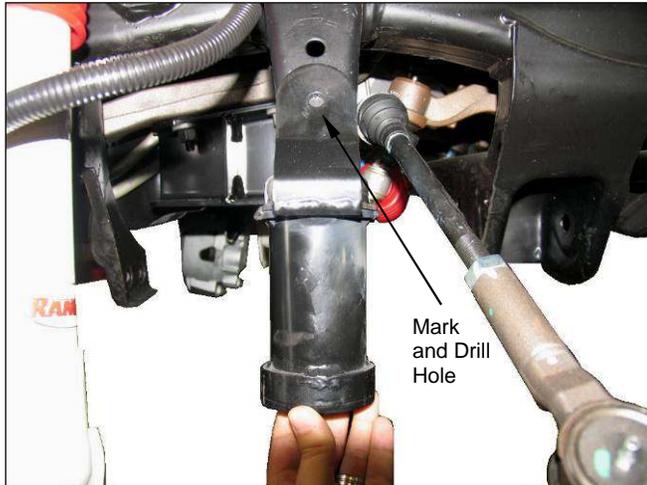


Illustration 10

- 2) Using front bumpstop spacer RS176616 as a template, fit to OE bumpstop perch and mark left and right holes. See Illustration 10.
- 3) Drill a 5/16" hole at the two marked locations.
- 4) Attach bumpstop spacer to the perch with two 3/8"-16 self tapping bolts from hardware kit RS860687.
- 5) Repeat steps 1-5 for the other side.

FRONT DIFFERENTIAL INSTALLATION

- 1) (4wd only) To clear the box plate RS176613, the left side aft mount on the differential needs to be trimmed. Attach left differential drop mount RS176614 to the differential. Using the bracket as a guide, trace the outside of the bracket on the aft mount.
- 2) (4wd only) Remove drop bracket and trim aft mount along the traced line. See Illustration 11.

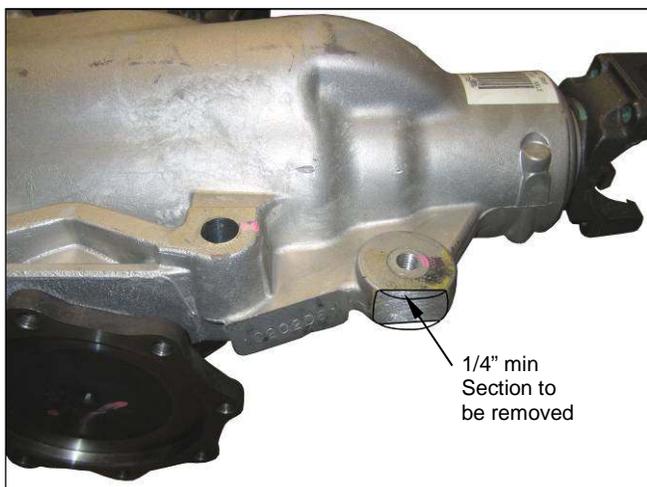


Illustration 11

3) (4wd only) Reattach left differential drop bracket RS176613 to the differential. Reuse OE bolt in the front and middle mount with provided M12-1.75 nut and 1/2" USS washers from hardware kit RS860688. Use the M12-1.75 x 40mm bolt, M12 nut and two M12 washers from kit RS860688 for the aft mount. Apply Loctite to OE hardware. Only snug the hardware at this time.

4) (4wd only) Attach right differential drop bracket RS176614 to the vehicle mount using the OE mounting hardware. Apply Loctite to the hardware. Only snug the hardware at this time.

5) (4wd only) Using assistance and stands, lift the differential into place. Use two M12-1.75 x 40mm bolts and two M12 washers from kit RS860688 for the front and middle vehicle mounts on left differential drop bracket RS176614. Reuse the OE nut and a M12 washer on the aft mounting hole. Attach right differential drop bracket RS176615 to the differential using two M12-1.75 x 40mm bolts and two M12 washers. Apply Loctite to OE hardware. Torque all hardware 65 ft-lbs. See Illustration 12.

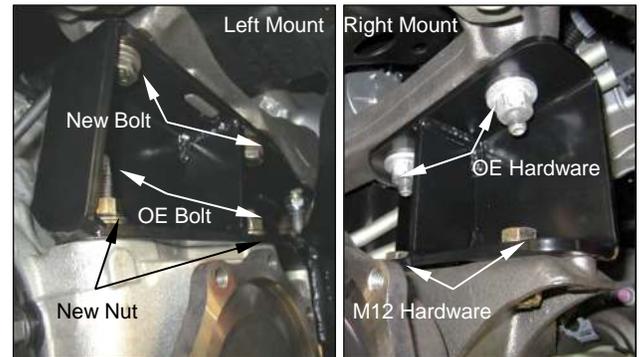


Illustration 12

6) (4wd only) Gently pull on vacuum hose to stretch. Reattach to the differential along with the electrical connector.

TRIM TIE RODS

- 1) Mark the location of the left tie rod end on the tie rod. Remove tie rod end. Back the jam nut 1-1/4" inboard.
- 2) Trim 1/2" from the end of the tie rod. See Illustration 13 for details.
- 3) Reinstall tie rod end with taper end facing down. Secure jam nut against tie rod end.
- 4) Repeat steps 1-3 for the right side.

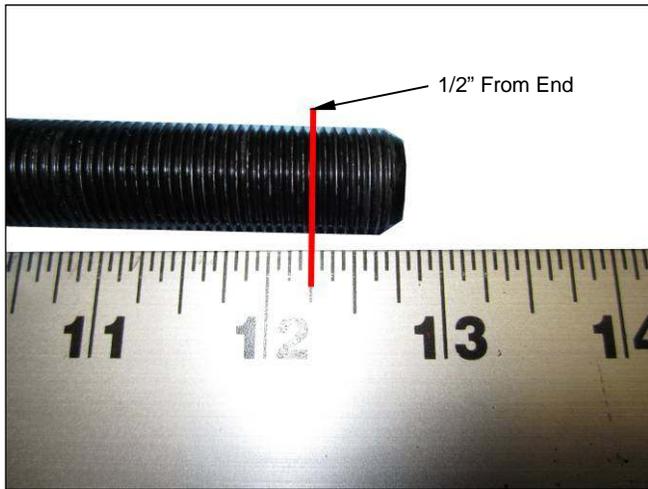


Illustration 13

SUBFRAME INSTALLATION

- 1) Getting assistance, lift subframe RS176612 into the OE control arm pockets. Reuse OE mounting hardware to fasten the subframe to the vehicle. **NOTE:** Install the forward mounting bolts from the front. Insert the aft mounting bolts from the rear. Apply Loctite to OE hardware. Torque to 250 ft-lbs.
- 2) Reusing two of the OE crossmember nuts and bolts, attach the subframe through the right side, aft pocket. Insert bolts from the rear. See Illustration 14. Torque to 45 ft-lbs.

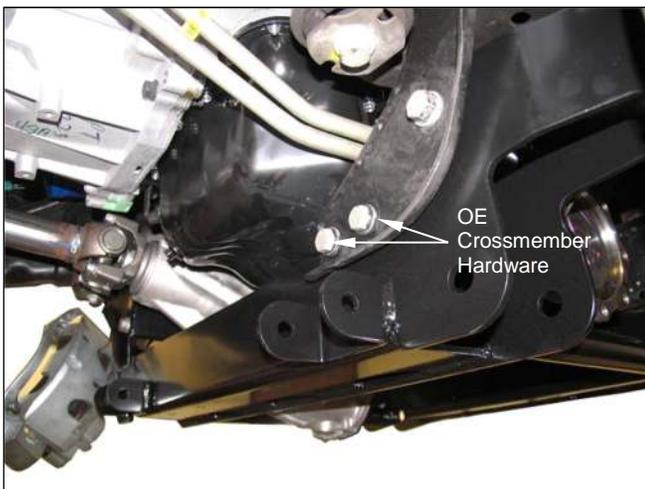


Illustration 14

CONTROL ARM AND SKID PLATE INSTALLATION

- 1) Install new front Rancho shock absorber RS5380, RS7380 or RS999380. Only attach upper mount. Torque to 48 ft-lbs.
- 2) Reinstall OE bumpstops into bumpstop spacer RS176616 and subframe. Twist bumpstop while pushing up.

- 3) Attach left control arm to the subframe using one M18-2.5 x 120mm, two M18 washers and one M18 Nylock nut for the front mount (install from the front) and one M18-2.5 x 150mm, two M18 washers and one M18 Nylock for the rear mount (install from the rear) from hardware kit RS860869. Only snugly tighten the hardware at this point.
- 4) Attach the lower mount of the shock to the lower control arm using the OE hardware. Only snugly tighten the hardware at this time.
- 5) Repeat for right side.
- 6) Install skid plate RS176621. The bent flange attaches to the forward crossmember of the subframe. Using the four M10-1.5 x 30mm bolts, four M10 Nylock nut and eight M10 washers from hardware kit RS860699, attach the skid plate to the subframe. Torque to 45 ft-lbs. See Illustration 15.



Illustration 15

DRIVE SHAFT AND KNUCKLE INSTALLATION

- 1) (4wd only) Reinstall left half shaft using the eight OE mounting bolts. **CAUTION!!!:** Be careful not to nick the CV boots during installation as it will decrease the life of the CV joint. Torque to 40 ft-lbs in cross type pattern.
- 2) Insert the O-ring from the inner bearing surface of the OE knuckle into left knuckle RS176610. Install new knuckle reusing OE nuts. Make sure the tie rod end installs with stem end pointing down. See Illustration 16. Torque upper ball joint to 37 ft-lbs, lower ball joint to 37 ft-lbs plus an additional 95° and tie rod end to 33 ft-lbs.



Illustration 16

3) Reinstall dust shield and hub assembly using the OE hardware. Properly align half shaft to the hub. Torque hub mounting bolts to 133 ft-lbs.

4) (4wd only) Secure half shaft to hub using OE washer and center bolt. Place a drift or large screwdriver through the wheel mounting bolts to prevent the drive axle from turning. Torque to 155 ft-lbs.

5) (4wd only) Install hub dust cap.

6) Reattach ABS line to hub reusing OE hardware. Tie wrap the ABS line to the neck of the knuckle. See **Error! Reference source not found.** for details.

NOTE: Do not lubricate the wheel drive shaft splines or the knuckle hub with grease.

7) Install the brake rotor. Fasten rotor to hub with the OE bolt. Reattach the front caliper with the original mounting bolts. Be sure to clean the bolt threads and apply thread lock. Tighten the caliper mounting bolts to 125 ft-lbs.

8) Attach brake line drop bracket RS176617 to the OE brake line bracket using one M8-1.25 x 20mm bolt, one M8-1.25 Nylock nut and two M8 washers. All components are located in hardware kit RS860686. Torque to 23 ft-lbs.

9) Connect full brake line bracket assembly to the frame reusing the OE hardware. See Illustration 17 for details.

10) Place the protective sheathing from kit RS860686 over the brake line.

11) Repeat steps 1 through 10 for right side.

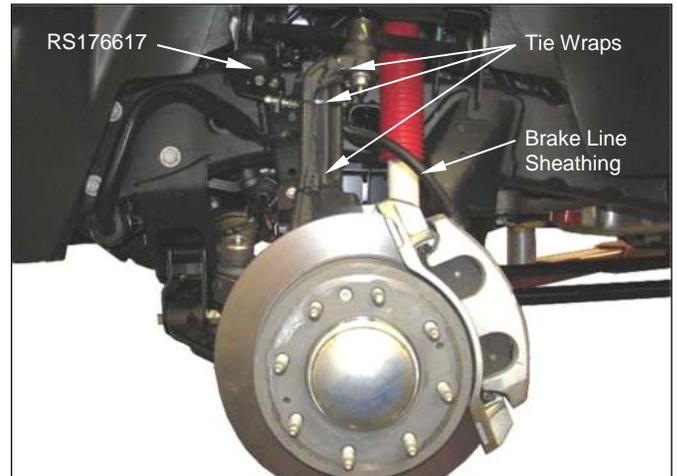


Illustration 17

12) Install new sway bar end links from kit RS860180. Reuse the four OE end link bushings, which need to be separated from the OE retainers. The end link should be installed from top to bottom, with retainers on the backside of each bushing and the spacer sleeve in the middle. See Illustration 18.

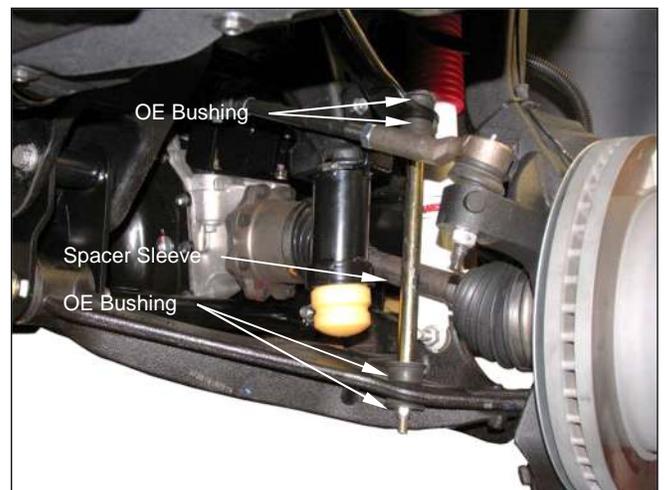


Illustration 18

13) Repeat step 12 for the right side.

TORSION BAR CROSSMEMBER DROP AND TORSION BAR INSTALLATION

- 1) Slide torsion bar into the control arm. Make sure that the correct bar is being installed on the corresponding side. Slide the bar through the relocater a little. **CAUTION!!!**: Do not nick the CV boot with the torsion bar.
- 2) Prepare torsion bar crossmember drop bracket for installation by threading one of the 1/2-13 x 1.0" bolts into the bracket (the bolt head should be between the mounting brackets). This bolt is used to center the crossmember.
- 3) Install right torsion bar crossmember drop bracket RS176627. Use one M14-2.0 x 100mm bolt, one M12 toplock nut and two M14 washers from hardware kit RS860690 to attach the drop bracket to the OE crossmember mount. Do not torque the hardware at this point. See Illustration 19.

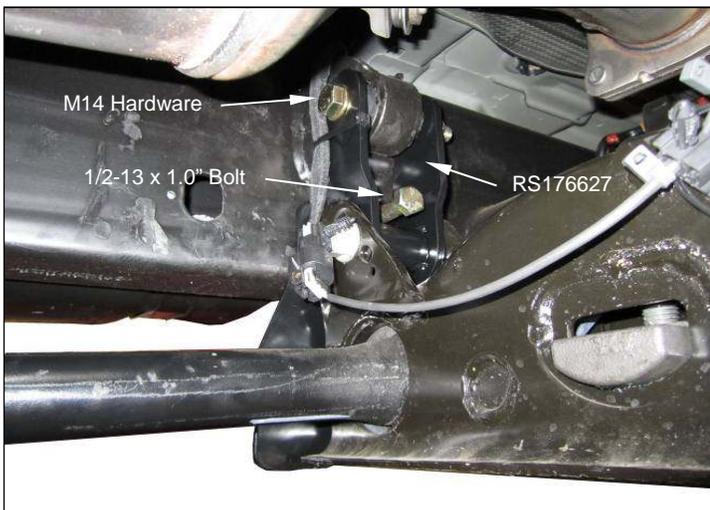


Illustration 19

- 4) Repeat steps 1 through 3 for the left side.
- 5) Reinstall torsion bar crossmember, attaching it to the drop brackets using the OE bolts. Do not torque the bolts at this point.
- 6) Center the torsion bar crossmember using the 1/2" alignment bolts on the crossmember drop brackets. Once the crossmember is centered, only an extra 1/2 turn of the bolt is need to secure it.
- 7) Tie wrap the O₂ sensor wire to the crossmember to keep it away from the exhaust.
- 8) Slide torsion bar through the pocket on the crossmember and into the torsion bar key. Verify that the reference mark on the adjustment arm matches the mark on the end of the torsion bar.

- 9) Install the torsion key adjuster and adjuster bolt using GM torsion bar tool CH48809. Adjust the bolt to the original setting. Make sure that the correct adjuster is installed on the corresponding side. See Illustration 20.
- 10) Torque the hardware attaching the torsion bar drop bracket to the OE mount and the hardware attaching the torsion bar crossmember to the drop brackets to 92 ft-lbs.

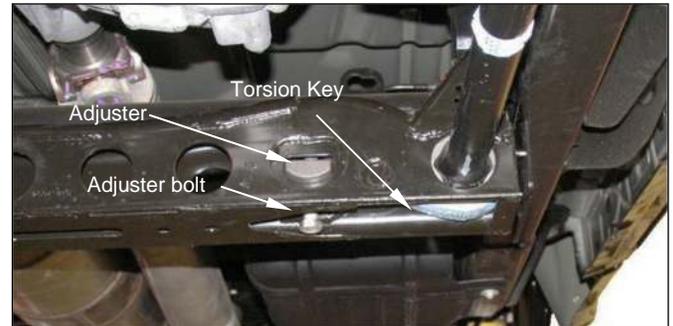


Illustration 20

AFT BRACE ASSEMBLY & INSTALLATION

- 1) Lubricate two bushings RS520041 and one sleeve RS420042, from kit RS860434, with a silicon spray. Press the bushings and sleeve into aft brace RS176618 as shown in Illustration 21.
- 2) Repeat step 1 to install the rest of the bushings and sleeves.
- 3) Using the hardware from kit RS860434, loosely attach the end of the aft brace to the rear of the subframe RS176626 using one 1/2-13 x 4.0" bolt, one 1/2-13 stover nut and two 1/2" SAE washers. The aft braces must angel out toward the frame in the rear.
- 4) Loosely attach aft brace bracket RS176138 to aft brace using one 1/2-13 x 4.0" bolt, one 1/2-13 stover nut and two 1/2" SAE washers. See Illustration 21.
- 5) Rotate aft brace assembly up and secure the bracket to the transmission crossmember with a c-clamp. Mark the rear mounting hole location on the bottom of the crossmember.
- 6) Unclamp the bracket and rotate the aft brace forward. Drill a 17/32" hole into the crossmember.
- 7) Slide nut bracket RS176137 into the side opening of the crossmember. Locate the nut over the drilled hole. Rotate the aft brace so the bracket is over the mounting hole. Attach the aft brace bracket to the nut plate using one 1/2-13 x 1.0" bolt and one 1/2" SAE washer.
- 8) Repeat steps 3 through 7 for the other side.

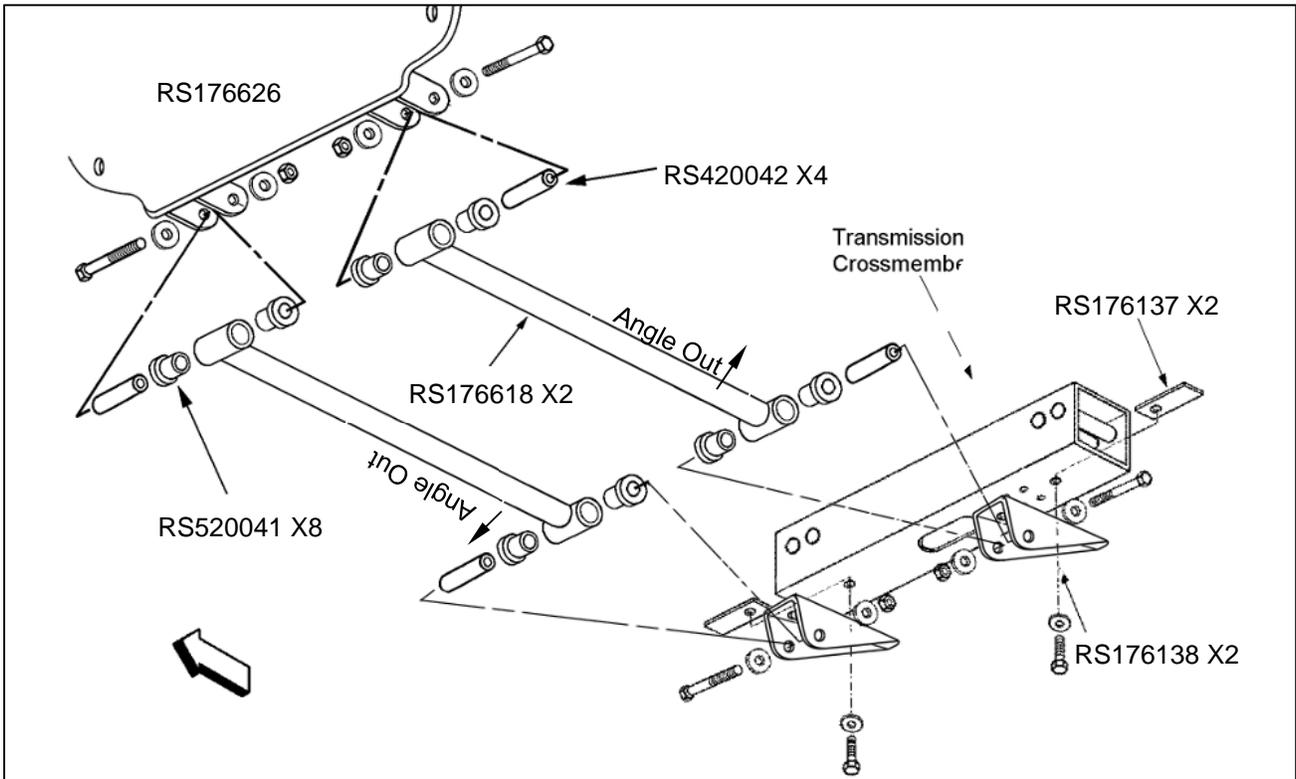


Illustration 21

- 9) Torque all 1/2" mounting hardware to 90 ft-lbs.
- 10) Repeat the previous two steps for the other side.
- 11) Tighten the aft brace and bracket mounting bolts to 65 ft-lbs.

LOWER VEHICLE

- 1) Turn the front wheels completely left then right. Verify adequate tire, wheel, brake hose and ABS wire 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) Install front wheels and lower vehicle to ground. Tighten the lug nuts to 140 ft-lbs.

IMPORTANT: If the OEM 17" wheel is reused, the OEM wheel weight will need to be removed from the front wheels. Use sticky wheel weights that attach to the inside diameter of the wheel.

- 4) Confirm that the tire does not rub on any components or wires.
- 5) Tighten the lower control arm pivot bolts to 250 ft-lbs.
- 6) Tighten the lower shock mounts to 120 ft-lbs.



REAR SUSPENSION

- 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. Use a floor stand on the front of the differential to keep it from rotating freely. Remove both rear shock absorbers. Do not reuse OEM shock absorbers.
- 3) Disconnect the OE brake line bracket from the differential cover by removing the two OE nuts securing it. Save for reuse. It is also necessary to pull the brake line out of the clip securing it to the differential cover.
- 4) Disconnect emergency brake line wire hanger from left side wheel well. Save OE bolt for reuse.
- 5) With the axle still being supported, remove left side anchor plate, U-bolts, and spacer. See Illustration 22.
- 6) Carefully lower the left side of the rear axle. It may be necessary to loosen the right side U-bolt to get enough clearance to install the new block. Do not allow the axle to hang by any hoses or cables.

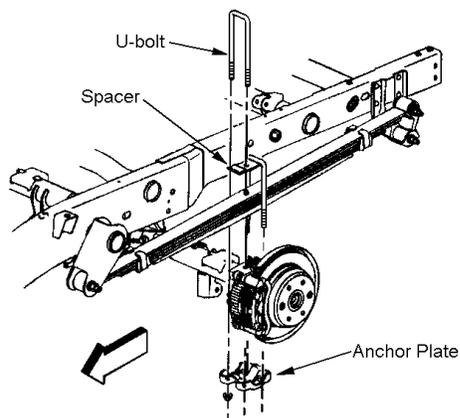


Illustration 22

- 7) Insert a block pin from kit RS860694 into the hole in the axle pad. Place new riser block RS15108 on the axle pad. See Illustration 23.

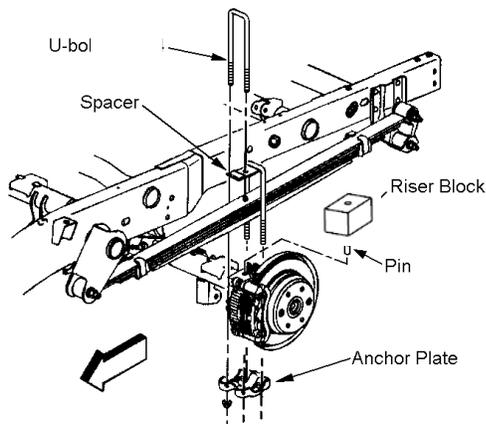


Illustration 23

- 8) 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.

- 9) Reinstall the U-bolt spacer on top of the leaf spring. Attach the spring to the axle with the NEW U-bolts RS740031, original anchor plate, and hardware from kit RS860694. Snug the nuts down but do not tighten. See Illustration 24.



Illustration 24

- 10) Repeat steps 3 through 7 for the right side.
- 11) Cross tighten the U-bolt nuts evenly to 74 ft-lbs plus an additional 180 degrees.
- 12) Install new Rancho shock absorbers RS999381 or RS5381.

BUMP STOP SPACER INSTALLATION

- 1) Disconnect the brake line bracket from the bump stop saddle. Keep self tapping bolt for reuse later.
- 2) Place bump stop spacer RS176620 on the OE bump stop saddle. Using the OE bolt on the aft, attach the OE brake line bracket and spacer bracket. Use the 5/16-18 x .75 self tapping bolt and 5/16 SAE washer from hardware kit RS860691 to attach the bracket in front. See Illustration 25.

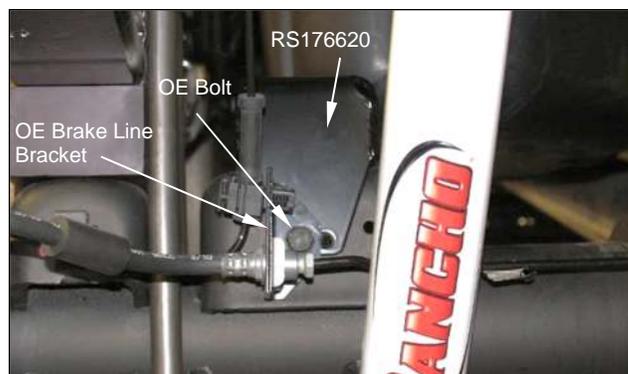


Illustration 25

3) Attach drop bracket RS176624 to the OE emergency brake line hanger using one M8-1.25 x 25 mm bolt, one M8-1.25 Nylock nut and two M8 washers from hardware kit RS860696. Torque to 23 ft-lbs.

4) Connect the drop bracket to the frame reusing the OE bolt. See Illustration 26.

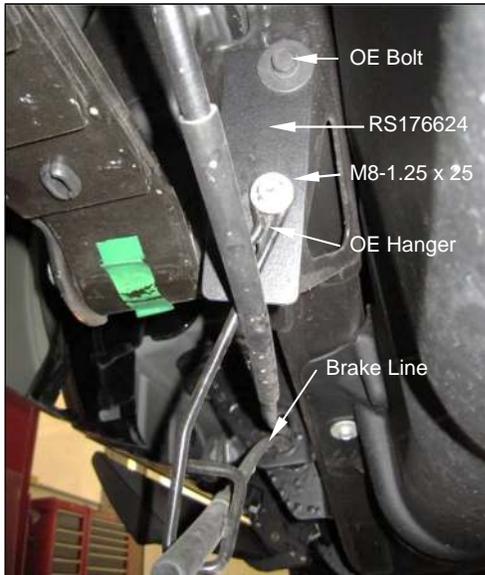


Illustration 26

5) Attach brake line relocation bracket RS176625 to the OE mounting on the differential cover. Use the OE nuts to secure.

6) Attach OE brake line bracket to bracket RS176625 using two M8-1.25 x 20 mm bolts, two Nylock nuts and four M8 washers from RS860696. See Illustration 27. Torque to 23 ft-lbs.



Illustration 27

LOWER VEHICLE

1) 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.

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

FINAL CHECKS & ADJUSTMENTS

1) Jounce suspension and move the vehicle to normalize ride height. Verify that the front spindle to fender height is 29 to 29.5" and that both sides are equal. If necessary, reinstall GM tool CH48809 and adjust the tension on the torsion bars to correct the height.

2) Turn the front wheels completely left then right. Verify adequate tire, wheel, brake hose and ABS wire clearance. Inspect steering and suspension for tightness and proper operation.

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.

5) Have vehicle aligned to manufacturer's specifications.

Recommended Alignment Specifications

Caster (degrees): 3.1° – 3.6° ± 0.1° left to right

Camber (degrees): 0.3° ± 0.6°

Sum Toe (inches): 0.10 ± .20

6) Park the vehicle on a level surface. Measure and record the distance from the center of each wheel to the top of the fender opening. See Illustration 28.

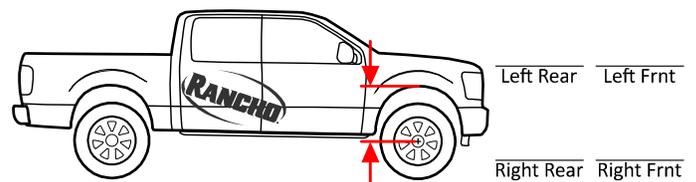


Illustration 28

Torque Specs

Front Components

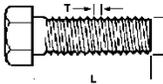
Upper Control Arm	80 lb-ft
Lower Control Arm	190 lb-ft
Brake Line Bracket to Lower Control Arm	15 lb-ft
Control Arm Adjuster Jam Nut	150 lb-ft
Front Bump Stop Spacer	20 lb-ft
Shock Absorber Upper Mount	80 lb-ft
Shock Absorber Lower Mount	75 lb-ft
Front Drive Shaft to Pinion Flange	81 lb-ft
Sway Bar End Link	60 lb-ft
Track Bar	110 lb-ft
Drag Link Adjustment Sleeve Clamp	26 lb-ft
Wheels (Lug Nuts)	130 lb-ft.

Rear Components

Upper Control Arm to Axle	95 lb-ft
Upper Control Arm to Frame	120 lb-ft
Lower Control Arm (all)	90 lb-ft
Rear Bump Stop Spacer	20 lb-ft
Shock Absorber Upper Mount	80 lb-ft
Shock Absorber Lower Mount	75 lb-ft
Track Bar	90 lb-ft
Sway Bar End Link	60 lb-ft
Wheels (Lug Nuts)	130 lb-ft

STANDARD BOLT TORQUE & IDENTIFICATION

INCH SYSTEM			METRIC SYSTEM			
Bolt Size	Grade 5	Grade 8	Bolt Size	Class 8.8	Class 10.9	Class 12.9
5/16	15 LB-FT	20 LB-FT	M6	5 LB-FT	9 LB-FT	12 LB-FT
3/8	30 LB-FT	35 LB-FT	M8	18 LB-FT	23 LB-FT	27 LB-FT
7/16	45 LB-FT	60 LB-FT	M10	32 LB-FT	45 LB-FT	50 LB-FT
1/2	65 LB-FT	90 LB-FT	M12	55 LB-FT	75 LB-FT	90 LB-FT
9/16	95 LB-FT	130 LB-FT	M14	85 LB-FT	120 LB-FT	145 LB-FT
5/8	135 LB-FT	175 LB-FT	M16	130 LB-FT	165 LB-FT	210 LB-FT
3/4	185 LB-FT	280 LB-FT	M18	170 LB-FT	240 LB-FT	290 LB-FT

<p>1/2-13x1.75 HHCS</p> <p style="text-align: center;">D T L X</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  Grade 5 </div> <div style="text-align: center;">  Grade 8 </div> </div>  <p>G = Grade Marking (bolt strength) L = Length (inches) D = Nominal Diameter (inches) X = Description (hex head cap screw) T = Thread Pitch (threads per inch)</p>	<p>M12-1.25x50 HHCS</p> <p style="text-align: center;">D T L X</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  -10.9 </div> </div>  <p>P = Property Class (bolt strength) L = Length (millimeters) D = Nominal Diameter (millimeters) X = Description (hex head cap screw) T = Thread Pitch (thread width, mm)</p>
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