

INSTALLATION INSTRUCTIONS

88025

REV. A

FOR 6469 CHEVROLET K-2500 & 3500 4x4 8-LUG SUSPENSION SYSTEM

DO NOT USE A BODY LIFT KIT WITH THIS SUSPENSION SYSTEM

READ ALL INSTRUCTIONS THOROUGHLY FROM START TO FINISH BEFORE BEGINNING INSTALLATION

PARTS LIST

P/N	Description	Qty.			
140250	8-Lug Subframe	1	860061	Control arm bushing kit	1
140210	L.R. Control Arm Mount	1		Bushing, self lube	8
140215	R.R. Control Arm Mnt	1		Sleeve, 0.875 X 0.563 X 3.0	8
140220	Left Fwd. Control Arm Mnt	1	860066	Left Diff drop hardware kit	1
140225	Right Fwd. Control Arm Mnt	1		1/2-13x1.25 gr.8 HHCS	1
140245	Right Diff. Drop Brkt.	1		9/16-12x4.00 F911 HHCS	1
140240	Left Diff. Drop Brkt.	1		1/2-13 Stover Nut	1
140270	Relay Rod	1		9/16-12 Stover Nut	1
170011	Rear bumpstop spacer	2		1/2" SAE washer	1
140260	Rear. Pocket Spacer	2		1/2" USS washer	1
140039	Right Subframe Connector	2		9/16" SAE washer	1
140029	Left Subframe Connector	2	860067	Right Diff drop hardware kit	1
1417	Rear bumpstop	2		3/8-16x2.50 gr.8 HHCS	1
1509	2.5" Riser Block	2		9/16-12x1.50 F911 HHCS	2
140280	Sway Bar Adaptor	2		3/8-16 Stover Nut	1
140230	Left Control Arm	1		9/16-12 Stover Nut	2
140235	Right Control Arm	1		3/8" SAE washer	2
140255	Torsion bar bracket	2		9/16" SAE washer	2
7489	13" sq U-bolts	4		9/16" USS washer	2
88025	Instructions, 6469 kit	1		5/8 x 3/8 x 1 3/8 slit sleeve	1
860062	Rear UCA Mount hardware	2	860068	Relay rod hardware kit	1
	1/2-13x1.25 gr.8 HHCS	4		3/8-16x2.50 gr.8 HHCS	1
	9/16-12x4.00 F911 HHCS	1		1/2-13x3.00 gr.8 HHCS	1
	9/16-12x5.00 F911 D-BOLT	1		3/8-16 Stover Nut	1
	1/2-13 Stover Nut	4		1/2-13 Stover Nut	1
	9/16-12 Stover Nut	2		3/8" SAE washer	2
	1/2" SAE washer	8		1/2" SAE washer	2
	9/16" USS washer	2		5/8-18 Nylock	1
	9/16" Lockwasher	1		5/8" SAE washer	1
	D-Washer	2		Idler link	1
860063	Fwd UCA Mount hardware	2		3/4" OD x 1.6" sleeve	1
	1/2-13x1.25 gr.8 HHCS	2		bushing	1
	9/16-12x3.50 F911 HHCS	1		Spherical rod end	1
	9/16-12x5.00 F911 D-BOLT	1		5/8-18x3.00 gr.8 SHCS	1
	3/8-24x1.2 gr.5 Steer. Stop	1		5/8" Jam Nut	1
	1/2-13 Stover Nut	2	860064	Sway bar adaptor hardware kit	1
	9/16-12 Stover Nut	2		9/16-12x1.25 gr.8 HHCS	2
	3/8-24 Nut	2		9/16-12 Stover Nut	2
	1/2" SAE washer	4		9/16" SAE washer	4
	9/16" SAE washer	1			
	9/16" USS washer	1			
	9/16" Lockwasher	1			
	D-Washer	2			
	3/8" SAE washer	2			
P/N	Description	Qty.			

<u>P/N</u>	<u>Description</u>	<u>Qty.</u>	<u>P/N</u>	<u>Description</u>	<u>Qty.</u>
860065	Subframe hardware kit	1	8061	Ball joint hardware kit	1
	9/16-12x1.25 gr.8 HHCS	10		Tube of Thread Lock	2
	9/16-12x1.50 F911 HHCS	2		5/16-18 Toplock Nut	8
	1/2-13x1.25 gr.8 HHCS	4		1/8" X 1.75" Cotter Pin	3
	M16x2x130 gr.10.9 HHCS	2	8062	Ball joint hardware kit	1
	M16x2x150 gr.10.9 HHCS	2		11" Black Tie Wrap	4
	9/16-12 Stover Nut	12		5/16" SAE Washer	16
	1/2-13 Stover Nut	4		5/16-18 X 1.25" Bolt	8
	M16x2 class10 lock nut	4	8063	CV joint hardware kit	1
	9/16" SAE washer	16		3/8" AN Washer	12
	9/16" USS washer	8		10 mm X 1.5" Bolt	12
	1/2" SAE washer	8			
	1" Plug	1			
8514	Right 3rd drop, Sub Assy	1	140119	Front Shock hardware kit	1
	Bushing	4		1/2-13 X 2.75" Bolt	2
	sleeve	2		1/2" SAE Washer	16
8102	U-bolt nut kit	1		1/2-13 Locking Nut	4
	9/16-18 Nylock Nut	8		1/2-13 X 3.5" Bolt	2
	9/16" SAE Washer	8	140118	Skid plate hardware kit	1
860053	Rear bumpstop hardware kit	1		3/8-16 X 1.0" Bolt	2
	Brake line bracket	1		3/8-16 Self Tapping Screws	2
	7/16-20 Stover nut	4		3/8" USS Washer	6
	7/16-20 X 1.25 HHCS	4		3/8-16 Locking Nut	2
	5/16 SAE Washer	6		3/8 Lockwasher	2
	5/16-18 X 1.25 HHCS	1	140053	Torsion Bar X-Member Hardware	1
	7/16 USS Washer	4		3/8" SAE Washer	16
	5/16-18 Nylock	1		7/16" SAE Washer	8
8574	Riser Block pin kit	1		7/16-14 X 1.25" Bolt	4
	5/8" x 1.25" Pin	2		3/8-16 X 1.25" Bolt	8
P 975	RS 9000 P-Pack	2		7/16-14 X 1.25" Locking Nut	4
	RS9000 Front Shock Hardware			3/8-16 X 1.25" Locking Nut	8

Illustration (1)

NOTES

Before Beginning Installation, Read and/or Perform the Following:

- A) This kit is intended to provide better ride and more control off-road. This may permit the user to travel faster than a "stock" vehicle over the same terrain. The user assumes all liability for this increased speed. Remember that simply installing this kit does not magically reinforce the stock frame, nor does it improve the rollover protection built into the passenger compartment by the manufacturer. The energy available to damage components increases as with the square of the speed. In other words, there is over twice the kinetic energy available to damage your vehicle (and you) at 30mph than there is at 20 mph. Enjoy your Rancho suspension system, but also operate your vehicle responsibly.
- B) Have the alignment of the vehicle checked to insure that it falls within factory specifications. If the vehicle's alignment can not be brought to within factory specifications, DO NOT install this kit. The installation of this kit will not change the alignment of the vehicle more than +/- 1/2° from factory specifications.
- C) Check the frame of the vehicle for any damage or severe corrosion. If there is any question as to the straightness or soundness of the chassis, have the vehicle checked by a state approved alignment specialist. If there is any structural damage, do not install this kit.
- D) Compare the contents of this kit with the hardware list in these instructions. If any hardware is missing, contact the Rancho Suspension Technical Department at (310) 630-0700. NOTE: The hardware supplied is high quality, high grade material, and must not be replaced by lower grade material or failure may result. Rancho is not responsible for damage, failure, or injury due to improper installation or parts substitution.
- E) Do not interchange parts from this kit with components from another manufacturer. This kit must be used with the following Rancho shock absorbers:
- | | |
|--------------|--------------|
| FRONT SHOCKS | 5001 or 9001 |
| REAR SHOCKS | 5227 or 9227 |
- F) Included in the hardware kit are several tubes of THREAD LOCKING COMPOUND, to be used on ALL BOLTS during installation. ONE drop on the exposed threads of each bolt before installing the nut is sufficient to provide an adequate bond.
- G) When both SAE (small O.D.) and USS (large O.D.) washers are included for a given fastener assembly, always place the USS washer against the slotted hole and the SAE against the round hole.

- H) Unless otherwise specified, all bolts in the kit will be installed with a flat washer at each end (one under the head and one under the nut), plus thread locking compound, and then torqued to the following values:

3/8"	Bolts	28--32	FT-LBS
7/16"	Bolts	30--35	FT-LBS
1/2"	Bolts	65--80	FT-LBS
9/16"	Bolts	75--90	FT-LBS
5/8"	Bolts	90-100	FT-LBS

DO NOT USE AN IMPACT WRENCH TO TIGHTEN ANY OF THESE BOLTS! They tend to overtighten smaller bolts and undertighten larger bolts.

USE A TORQUE WRENCH!

CAUTION:

Thread locking compound may irritate sensitive skin. Wash skin after contact. Do not swallow. Avoid contact with eyes. Keep away from children. Read warning label on container before use.

- I) Do not plate (i.e. chrome, cadmium, zinc, etc.) any of the components in this kit, or alter their original finish in any way. This may weaken these components. Rancho parts come with a protective coating. However, you may add a layer of Enamel paint over the original coating.
- J) This kit is supplied as a bolt on assembly. Do not weld anything to these components, and do not weld any of these components to the vehicle. If any of these components break or bend, contact your local Rancho dealer or Rancho, for replacement parts. Replace components with Rancho Suspension parts only.
- K) The installation of this kit will require approximately 8-14 hours. It may take you more or less time depending upon your tools and mechanical aptitude. Proper use of appropriate power tools and a shop hoist can greatly reduce the time required.
- L) Steam cleaning or pressure washing the undercarriage of the vehicle will make the installation cleaner and more trouble free.
- M) Park the vehicle on a level surface and set the parking brake before beginning the installation.
- N) When pictures are included to illustrate an operation that is common to both sides of the vehicle, the picture will always illustrate the driver's (left) side. In these illustrations, the front of the vehicle will always be towards the left.
- O) The following tools and supplies will be required for proper installation of this kit.
- Torque Wrench
 - 1/2" Drive Ratchet and Sockets
 - Assorted Combination Wrenches
 - Assorted Hex-Key (Allen) Wrenches
 - 1/2" Hex Socket (Allen)

Heavy Duty Jackstands
Hydraulic Floor Jack
Center Punch
Drill and Bits
Hack Saw
File

Hammers
Water Pump Pliers

Bearing Puller
Wire Brush

C-Clamps
Lacquer Thinner or Rubbing Alcohol

Safety Glasses --Always wear safety glasses when working underneath the vehicle, when using a hammer, or when using any power equipment.

- P) Required Wheel Size: 16" diameter with factory backspacing. Wheels with greater backspacing will reduce turn angle. If wheels with less backspacing are used, tire to fender clearance must be examined throughout the travel/turning envelope. (We suggest that this test be done without the torsion bars in place and with the bump stop removed. Follow the GM Service Manual, steps 12-22, or the Rancho 640 kit instructions for torsion bar removal.)

Maximum Tire Size: 285/75 16 (32.5" Diameter).

- Q) Rancho recommends that new upper ball joints be installed with this kit. This is especially recommended for older vehicles. It is also a time saving recommendation that eliminates removing 8 rivets that retain the existing ball joints. Local auto parts store or dealership should have the proper ball joints for your vehicle.

- R) There are numerous different hardware poly bags included with this kit. Do not open any bag until the instructions call for it. Mixing contents of 2 or more bags can cause difficulty in assembly and may result in the wrong parts being used in critical installations.

- S) It is extremely important to replace the CV flanges, torsion bars, & front 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.

- T) New prevailing torque nuts must be used when reassembling the inner tie rod ends, pitman arm, and idler arm to the relay rod. These nuts may be purchased from your local dealer.

- U) Certain GM tools are highly recommended for installation of this kit. These tools listed below:
- | | |
|------------|-----------------------------|
| J 23742 | Ball Joint Separator |
| J 24319-01 | Center Link Separator |
| J 36202 | Adjustment Arm Removal Tool |
| J 38794 | Knockout Removal Tool |
| J 39117 | Combination Valve (Brakes) |
| J 6627-A | Tie Rod Separator |
| TK 00000 | Tech-1 Scan Tool (brakes) |

- V) Please read the following step-by-step instructions carefully and completely before beginning the installation. These instructions have been written with concern for your safety and ease of installation. If you have any questions or problems, please contact Rancho so that we may assist you.

- W) Note: The exhaust crossover WILL have to be modified. Most muffler shops should be able to perform the modification. Before proceeding with this installation be sure that this modification complies with all applicable local, state and federal laws.

Again, Rancho Industries is not responsible for damage or failure resulting from improper installation of this kit.

GENERAL DISASSEMBLY

- 1) Park vehicle on level ground and raise the vehicle. (Refer to factory owner's manual). Place jackstands under frame rails, allowing wheels to hang. Remove front wheels.
- 2) Remove brake caliper. Use included heavy tie wrap to secure it in a position that is out of the way.
- 3) Remove front shock absorber. **Do not reuse OEM shock absorbers.**
- 4) Loosen bolts on adjustment sleeve of tie rod, but do not remove.
- 5) Remove tie rod ends from stock relay rod only, using Chevrolet tool #J 6627-A or equivalent. Do not reuse original torque nuts. Allow tie rod to remain attached to each steering knuckle.

Caution:

Using a pickle fork can damage the lubrication boot.

- 6) Repeat steps 2-5 for other side of vehicle.
- 7) Disconnect original equipment steering stabilizer from the frame, if so equipped. Remove stock relay rod from idler & pitman arms using Chevrolet tool #J 24319-01 or equivalent.

Caution:

Using a pickle fork can damage the lubrication boot.

- 8) Remove sway bar end link attachment hardware.
- 9) Remove the front skid plate (if so equipped) from between the front bumper and the front crossmember. Be sure to save the bolts for reinstallation.
- 10) Remove the differential skid plate & save.
- 11) Mark the front driveshaft/pinion relationship. Remove the 4 bolts that secure the U-joint retainers. Separate the U-joint & save the parts for reuse. Tape U-joint caps to prevent accidental disassembly & support free end of driveshaft.

TORSION BAR REMOVAL

Note:

Torsion bars store a lot of energy. Be careful when loosening or tightening them.

- 12) Mark torsion bars as either driver side or passenger side. Mark torsion bars front and rear ends. Mark the relationship between each torsion bar and the control arm so that it can be reassembled with the same indexing. Likewise, Mark the relationship between each torsion bar and its adjustment arm. Mark the adjustment bolt for its position relative to the threaded retaining plate. This may be done by placing a common mark on the bolt threads and retaining plate. These marks are required for proper re-assembly!
- 13) Increase tension on the adjustment arm using Chevrolet tool # J 36202 or a 2 arm gear puller.
- 14) Be sure the position of the adjustment bolt has been properly marked.

Caution:

The torsion bar adjusting bolt retaining plate must be removed by pulling it out through the crossmember. DO NOT push it through the crossmember.

- 15) Remove the adjustment bolt and its retaining plate. Then loosen and remove tool.
- 16) Be sure the indexing of the adjustment arm to the end of the torsion bar has been properly marked.
- 17) Slide torsion bar forward & remove adjustment arm. Adjusting arm will fall out when torsion bar is slid forward.
- 18) Repeat steps #13-17 for the opposite side of the vehicle.
- 19) Remove the 3 bolts that connect each end of the torsion bar crossmember to each frame rail. Be sure to save these bolts for reinstallation in step #130.
- 20) Remove crossmember. If equipped with a parking brake cable bracket, allow it to hang until reinstallation in step #139.
- 21) Slide torsion bars rearward, out of the lower control arms & remove from vehicle

UPPER CONTROL ARM - REMOVAL

- 22) Disconnect Anti-Lock brake wires from both the frame and the upper ball joint.
- 23) Support lower control arm with a jack or jack stand. Disconnect upper ball joint from steering knuckle using GM tool #J-23742 or equivalent.

Caution:

Using a Pickle fork can damage the lubrication boot.

- 24) Remove stock pivot bolts, nuts, and washers from both upper control arm pivot mounts.
- 25) Remove upper control arm from vehicle. Do not remove the jack or jack stand at this time.
- 26) Rancho recommends that new upper ball joints be installed with this kit. This can save time compared to removing the old ball joints. Also, replacing the ball joints now can be timely if they are worn or have a significant number of miles on them.
However, if you plan to re-use the old ball joint, the fastening rivets may be removed by.
 - a) centerpunch the rivet head
 - b) Drill a 1/8" pilot hole 1/4" deep
 - c) Drill away the head using a 1/2" drill

- d) Then use a pin punch to remove each rivet.
Remove the ball joint & save for re-assembly in the Rancho upper control arm.

- 27) Repeat steps 22-26 on the opposite side of vehicle.

LOWER CONTROL ARM - REMOVAL

- 28) Be sure to mark the orientation of the CV joint flanges so they can be re-installed in their original position. This may be done by marking a line across the edge of both flanges of the CV joint.
- 29) Remove CV bolts from the differential flange. Do not remove the CV boot or disassemble the CV.
- 30) Support lower control arm with a jack. Remove bolts from both lower control arm pivot mounts. Save washers.
- 31) Gently lower the lower control arm/steering knuckle/CV assembly.
- 32) Repeat steps 28-31 on the opposite side of vehicle.

DIFFERENTIAL - REMOVAL

- 33) Disconnect differential wires, labeling ends with tape.
- 34) Disconnect vent hose on left side of differential.
- 35) Remove stock lower left differential mount by grinding away the vertical factory weld. (Save the mount in case you ever want to return the vehicle to stock.) See Illustration (2). Note that the picture highlights the mount with white stripes.

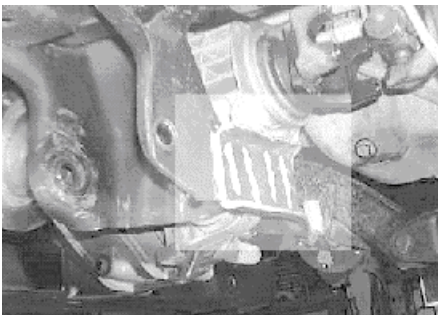


Illustration (2)

- 36) Remove bolt & save for later re-assembly.
- Note:** Support differential with a jack while performing steps 37-39
- 37) Remove bolt from left upper differential mount & save for later re-assembly.

- 38) Remove the 2 bolts that connect the right side of differential to the right differential mount.

- 39) Gently lower differential to the ground.

Note:

Edge of cast ribs on left side of differential case will require grinding to provide clearance for the OE frame brackets. Be sure to check for adequate clearance during re-assembly.

- 40) Now remove right differential mount, saving bolts & nuts for later re-assembly.
- 41) Remove right & left bump stops. Save all components.

INVERT SWAY BAR

- 42) Unbolt brackets that retain the sway bar to the frame. Note that the stock OE sway bar position is offset such that the arms are higher than the brackets. See Illustration (3).

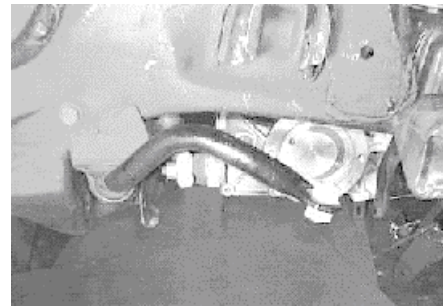


Illustration (3)

- 43) Remove the sway bar and brackets.
- 44) Relocate the sway bar "end-for-end" so that the arms are now offset lower than the brackets. See Illustration (4).

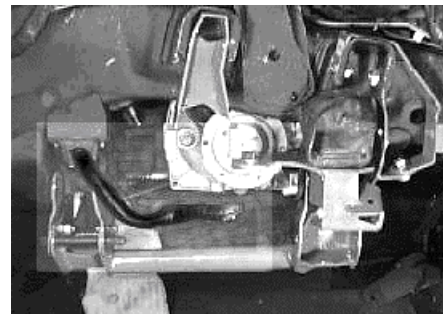


Illustration (4)

- 45) Rotate the brackets around the bar 180° and reattach them to the frame using the stock bolts. Do not tighten bolts at this time. A small amount of lubrication may help re-assembly.
- 46) If your truck is equipped with a factory steering stabilizer or if it has provisions for a stabilizer cut off frame mount tabs flush with the crossmember.

See illustration 5.

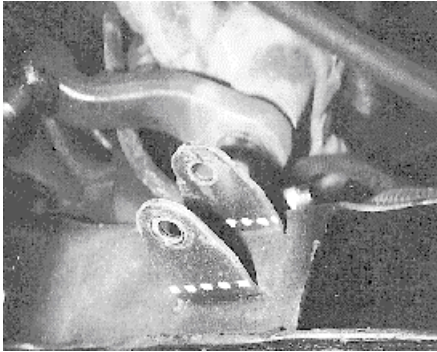


illustration 5

FRONT DIFFERENTIAL - INSTALLATION

- 47) Install bushings & then sleeves from hardware kit #8514 in Right Differential Drop Bracket #140245.
- 48) Attach #140245 bracket to the stock frame mounts. The two tabs are for the steering stabilizer and go towards the front of the vehicle. Reuse stock hardware from step #39, tightening bolts to 30 ft-lbs. See Illustration (6).

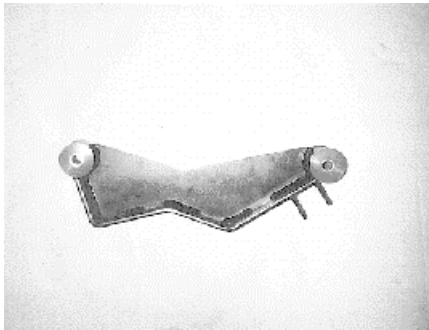


Illustration (6)

- 49) Place #140240 Left Differential Drop Bracket up into stock mount pocket & slide original bolt through the horizontal holes. Mark the location of a new top hole, using the new bracket as a template.
- 50) Remove the bracket, center punch, & drill a 3/16" pilot hole. Then increase drill sizes up to a 17/32" hole.
- 51) Reinstall bracket using the short bolt from hardware kit #860066 through the new top hole. The OE long bolt & nut go back into the frame. See Illustration (7) DO NOT TIGHTEN BOLTS.

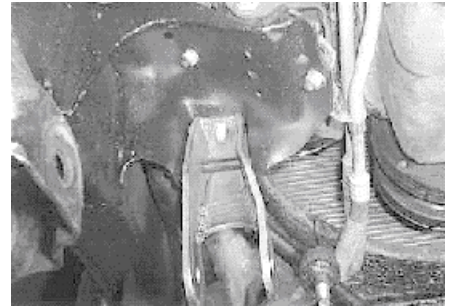


Illustration (7)

Note:

It will be necessary to grind the left side differential ribs to clear the OE lower A-arm pocket. See illustration (8)

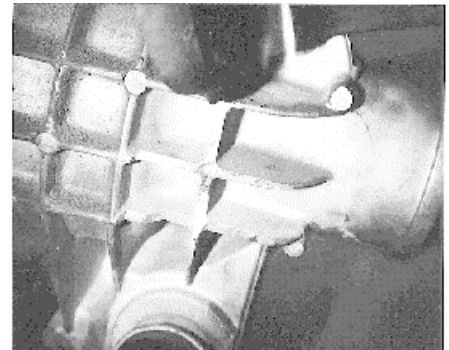


Illustration (8)

- 52) Using a jack, slowly raise differential until the mounting ears line up with holes in the Rancho differential drop brackets. It may take more than one try to provide enough clearance between differential and OE lower control arm pocket.
- 53) Fasten the right differential mount to the #140245 differential drop bracket using two 9/16" x 1.5" bolts, washers and nuts from bag 860067. Snug them but not tightening at this time. Be sure the differential mounting ears are properly located in the "vee" mounting surface in the bracket.

WARNING:

Do not try to use the mounting bolt to "bring one side down". The mounting ears should sit evenly on both surfaces of the #140245 bracket. Unnecessary force may crack the ears, resulting in expensive parts replacement.

- 54) Fasten the differential left upper mount to the #140240 drop bracket using remaining hardware from kit #860066. DO NOT TIGHTEN BOLTS. Now check the left side differential ribs for clearance to the OE lower control arm pocket.
- 55) Reconnect the wires and vent hose (from step #33 & #34).

SUBFRAME - INSTALLATION

- 56) Assemble one #140029 Connector from box 860058 & one #140039 Connector from box

860057 to one front corner of the #140250 Subframe, such that the connectors reduce the distance between them at their top. See Illustration (9).

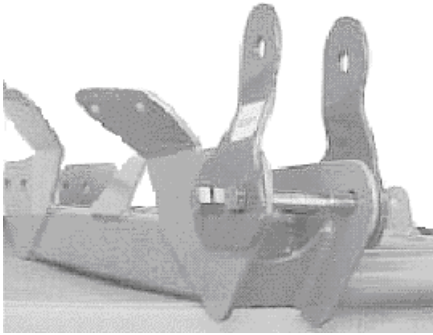


Illustration (9)

- 57) Use one 9/16"x1-1/4" bolt in each inboard hole from hardware kit #860065. **DO NOT TIGHTEN BOLTS.** Temporarily reinstall the stock lower control arm front pivot bolt through the outboard holes.

Notes:

- a) The flat surface with 2 holes fastens to the outside of each flange of the subframe.
- b) Be sure the offset ears are above and inline with the outboard holes.
- c) Distance between ears should be about 3", **NOT 4 1/2"**.

- 58) Repeat procedure in step 55 for the opposite front corner of the subframe.
- 59) Gently jack subframe into position so that the upper bolt holes of the connectors line up with the inside of the **STOCK LOWER CONTROL ARM MOUNT POCKETS**. See Illustration (10).

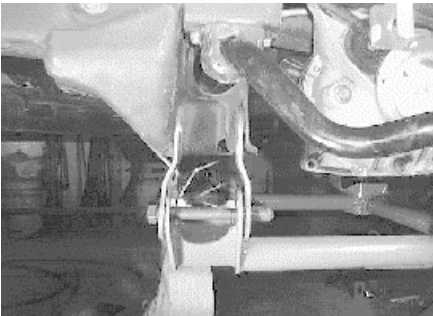


Illustration (10)

- 60) Bolt front of subframe assembly to stock lower control arm forward mount pockets using four 9/16"x1-1/4" bolts from hardware kit #860065. **DO NOT TIGHTEN BOLTS.**
- 61) Temporarily install a 9/16"x1-1/4" bolt washers and nut from hardware pack 860065 through the rear of the subframe to stock lower control arm

rear mount pocket. Do not tighten at this time. Repeat for passengers side.

- 62) Install stock bolt & nut for left lower differential mount on subframe. **DO NOT TIGHTEN BOLT.**
- 63) At this time it is important to vertically align the new lower control arm holes in the subframe with the OE lower control arm holes. Once the subframe is aligned it will be necessary to snug the bolts to prevent movement.
- 64) Tighten the four 9/16" subframe to front connector bolts from steps #56 & 57. Refer to note F for proper torque specs.
- 65) Tighten front subframe connector to lower control arm front mount pocket from step #58. Refer to note F for proper torque specs.
- 66) Tighten bolts for right and left differential brackets. Tighten passengers side first, then the drivers side bracket to the frame and finally tighten both the top and rear left differential bolts. Torque left and top OE bolts to 80 ft lbs. Refer to note F for proper torque specs.
- 67) Drill 1/2" holes into the stock front crossmember using the 4 holes in the subframe front tabs as a pattern. See Illustration (11).

- 68)

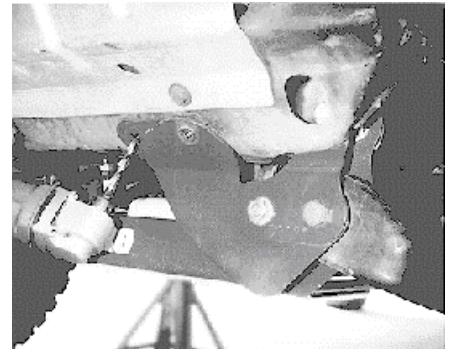


Illustration (11)

- 69) Install 1/2" bolts, washers & nuts from hardware kit #860065 into these four holes from the front. The nuts can be reached through the openings at the rear of the stock crossmember. Tighten bolts per note F.
- 70) Enlarge the 2 holes in the stock bumpstop mount flange to 17/32" diameter. See Illustration (12).

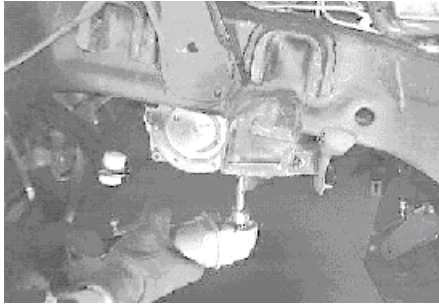


Illustration (12)

- 71) Enlarge only the outboard hole on the top of the front OE control arm mount pocket with a 17/32" drill. Repeat for passenger side. See Illustration (13).

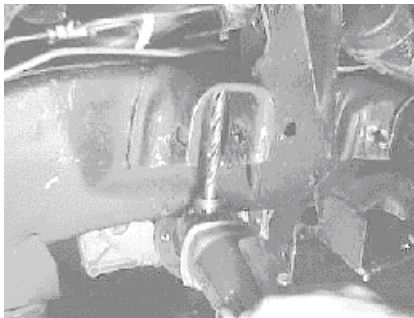


illustration (13)

- 72) Complete the slot in the stock upper control arm pivot pockets by using Chevrolet tool #J 38794 to remove the factory perforated "knock-outs" if they are still in place. See Illustration (14). Be sure to smooth & debur the slots as required.

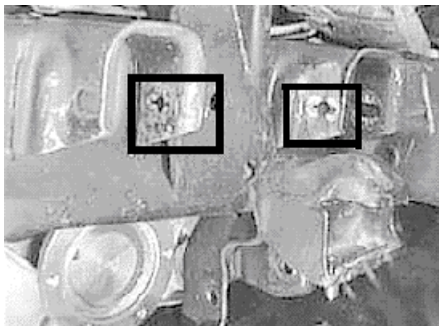


Illustration (14)

RELAY ROD - INSTALLATION

- 73) Orient the #140270 Relay Rod so that the long bent tube is on the bottom, short tube is on the top, and the central tabs are facing rearward. The tabs on the short tube should be on the top and on the driver side.
- 74) Slide #140270 into position, connecting the idler arm and pitman arm to the tapered holes at each end of the short (upper) tube.
- 75) Tighten new prevailing torque nuts to 52 ft-lbs. If the idler arm is equipped with a cotter pin, tighten the stock castle nut to 84 ft-lbs., and install a new

cotter pin from hardware kit #8061. If necessary, tighten the castle nut no more than an extra 1/6 turn in order to slip the cotter pin through the hole in the stud.

IDLER LINK - INSTALLATION

- 76) Make sure steering box / pitman arm is centered.
- 77) Press urethane bushing from hardware kit #860068 into ring of #140170 Idler Link.
- 78) Press the sleeve from hardware kit #860068 through bushing. See illustration #15

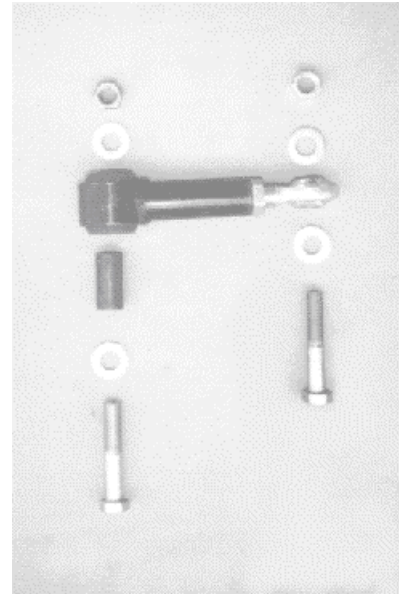


Illustration (15)

- 79) Install jam nut, from hardware kit #860068, onto the spherical rod end from hardware kit #860068. Now install this assembly into the #140170 Idler Link. See Illustration (15)
- 80) Adjust rod end & jam nut until the center-to-center length of the assembly is 5.00" - 5.25". Tighten at this time.
- 81) Place the #140170 idler link assembly through the opening in the center of the #140270 Relay Rod. The bushing end will be attached between the tabs on the 140270 Relay rod and the spherical rod end will be attached to the boss on the subframe. See Illustration (16)

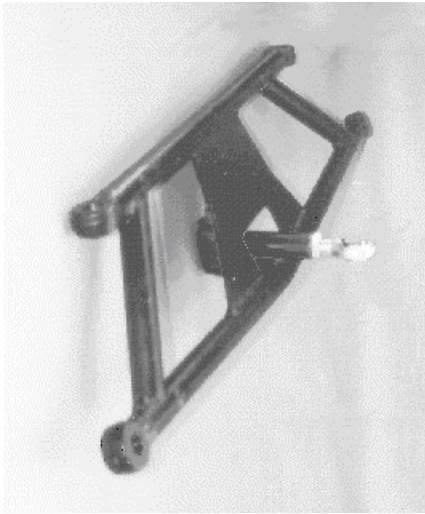


Illustration (16)

- 82) Insert the 1/2"x3" bolt from hardware kit 860068 through the 140270 relay rod and the 140170 idler link assembly. Now install the 5/8"x3" hex socket head bolt from hardware kit 860068 through the bottom of the subframe and then through the rod end. Install the washer and nut from hardware kit 860068. Tighten bolts per note F. Once tightened, install plug from hardware kit 860065.

STEERING STABILIZER INSTALLATION

- 83) Install 5401 Rancho steering stabilizer with the can end attached to the 140270 relay rod and the rod end attached to the 140245 right differential bracket. Use 3/8"x2-1/2" bolts, washers and nuts from 860067 & 860068 hardware kits

UPPER CONTROL ARM - PREPARATION

Note:

The Rancho installed grease fittings are on the top of the pivot tubes. If they are not visible, the control arm is upside down, and it must be flipped over.

- 84) Install ball joint into #140230 Left Control Arm using hardware kits #8061 and #8062. Be sure the ball joint flange is on the bottom of the control arm ball joint plate and that the bolt heads are also on the bottom. Tighten bolts to 20t-lbs. See Illustration (17).

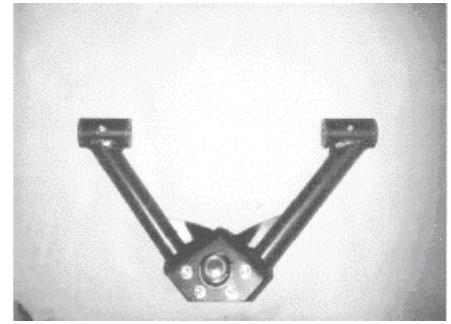


Illustration (17)

- 85) Install the urethane bushings from hardware kit #860061 into front & rear pivot tubes of #140230 Control Arm. (Note that sleeves and bushings are the same for all four pivots.) A C-clamp or vise can be used to press both bushings into their pivot tube. If you experience difficulty with starting the bushings into the tube, sand a slight chamfer on the leading edge. See Illustration (18).

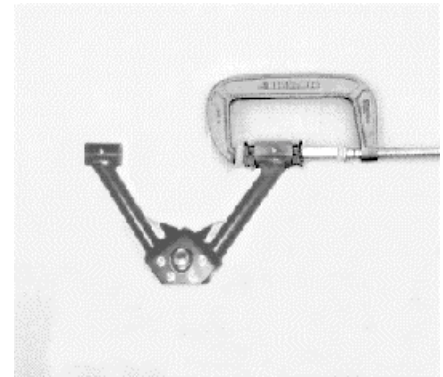


Illustration (18)

Note:

Lubrication is not necessary, but RTV or a mild soap & water solution can ease the installation.

- 86) Insert the sleeve into the 2 bushings at each pivot. If difficulty is experienced installing the sleeve, grease (not RTV or soap) can be used as a lubricant. Again, a C-clamp or vise may be used. Do not use a hammer.

WARNING:

The bushings must be installed before the sleeves. Never try to install the second bushing over a sleeve that has already been installed in the first bushing. Damage may result.

- 87) Repeat steps 81-82 for the #140235 Right Control Arm.

UPPER CONTROL ARM MOUNTS - INSTALLATION

- 88) Locate the following parts and hardware kits:
a) 140210 Left Rear Control Arm Mount
b) 140230 Left Control Arm

- c) 140220 Left Forward Control Arm Mount
- d) 860062 Rear Control Arm Mount Hardware
- e) 860063 Forward Control Arm Mount Hardware
- f) 140260 Rear OE Pocket Spacer

Note:

The OE brake line bracket in front of the upper control arms must be bent forward to allow for the Rancho brackets. See illustration 21

- 89) Now hold the 140230 Left Control Arm by the ball joint end. The grease fittings should be on top. Position the rear (right) leg into the 140210 Left Rear Control Arm Mount. The leg of 140210 rear control arm mount with the large single slot should be pointing away from the A-arm and the leg with the two smaller slots should be pointing toward the forward control arm pivot. See illustration (19)



illustration (19)

- 90) Install a 9/16"x5" D-bolt (half bolt) with D-washer against head into 140210 left rear control arm mount and through the 140230 control arm. This bolt **must** be inserted from front to rear. Place another D-washer on the bolt with a lockwasher and locknut.
- 91) Again, hold the 140230 Left Control Arm by the ball joint end. The grease fittings should be on top. Position the forward (left) leg of the control arm into the 140220 Left Front Control Arm Mount. The long leg of 140220 control arm mount with the two small slots should be positioned under the 140210 Rear control arm mount leg. See illustration (20)

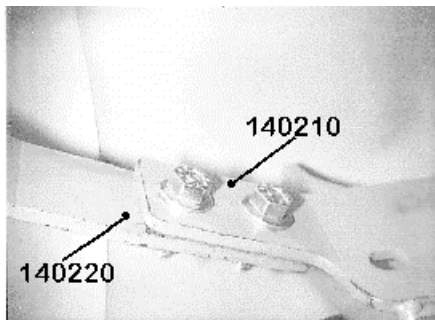


illustration (20)

- 92) Install a 9/16"x5" D-bolt (half bolt) with D-washer against head into 140220 left forward control arm mount and through the 140230 control arm. This

bolt should be inserted from front to rear. Place another D-washer on the bolt with a lockwasher and locknut. Do not tighten at this time.

- 93) Locate two 1/2"x1-1/4" bolts, washers and nuts from hardware kit 860063. Install bolts, washers and nuts, from the top down, through the 140210 and the 140220 left control arm mounts which were just attached to the control arm. Do not snug these bolts at this time. See illustration (20)
- 94) Repeat steps 85 - 89 for the passenger side of the truck using parts 140215, 140235, 140225.
- 95) Install the 140260 rear pocket spacer into the left rear upper control arm pocket using a 9/16"x4" bolt from hardware kit 860063. Install bolt with the head facing forward.
- 96) Position the left side control arm assembly against the frame. The 140210 rear control arm mount should be positioned on the rear side of the OE upper control arm mount, while the leg of the 140210 with the large slot should be positioned inside the OE lower control arm mount pocket between the two subframe ears using the remaining hole.

Note:

The leg does not go between the frame and subframe.

- 97) Now push the 140220 left forward control arm mount into the OE forward control arm pocket.
- 98) Install the 1/2"x1-1/4" bolt, washers and nut from hardware kit 860063 through the previously drilled hole in the OE forward upper control arm pocket. This hole is on top. Next, install the 9/16"x3-1/2" bolt from hardware kit 860062 into the OE forward control arm pocket from front to rear (replacing the original bolt) going through the 140220 Rancho bracket. See illustration 21.

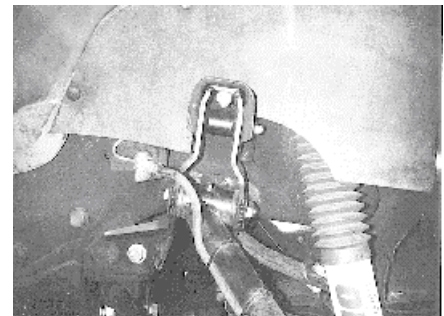


Illustration (21)

- 99) Install a 9/16"x1-1/2" bolt nut and washers from hardware kit 860065 into the left rear OE lower control arm mount pocket then through subframe and finally through the 140210 leg with long slot. This bolt **must** be installed from front to rear. Snug but do not tighten.

- 100) Find two 1/2"x1-1/4" bolts nuts and washers in hardware kit 860062 and install them through the two previously drilled holes in the OE bump stop mount and then through the two remaining holes in the 140210 left rear control arm mount. Snug bolts but do not torque. See illustration 22.

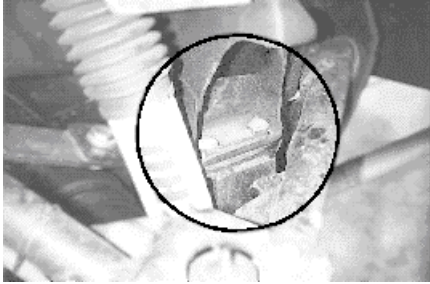


Illustration (22)

- 101) Once all the bolts are snug, clamp the 140220 forward leg to the frame and drill hole through frame to 17/32". Install the 1/2"x1-1/4" bolt washers and nut from hardware kit 860063. Snug at this time.

Note:

Be sure the 140220 left front control arm mount is as close to the frame as possible. The bracket may need to be tapped into the OE pocket.

- 102) Once all bolts are in place, rotate the 140230 control arm up and down several times to help align the brackets. After the brackets are aligned and the A-arm moves up and down freely, tighten all bolts and then torque to the specified value in note F.
- 103) Reinstall the OE bumpstop removed in step 40. The bumpstop goes on the bottom of 140210 with the threaded stud in the forward hole and the tab in the rear hole. Reuse the original nut. Torque to 23 ft-lbs.
- 104) Locate the following parts and then repeat steps 91-99 using the appropriate components and hardware.
- a) 140235 Right Control Arm
 - b) 140225 Right Forward Control Arm Mount
 - c) 860062 Rear Control Arm Mount Hardware
 - d) 860063 Forward Control Arm Mount Hardware
 - e) 140215 Right Rear Control Arm Mount
 - f) 140260 Rear OE Pocket Spacers

**LOWER CONTROL ARM/STEERING
KNUCKLE/CV JOINT ASSEMBLY -
INSTALLATION**

- 105) Rotate the differential CV flange to be sure there is no interference.

- 106) Jack up the lower control arm/steering knuckle/CV assembly (from step #31) into the subframe mount pockets.
- 107) Use a M16x2x130 bolt and nut from 860065 in the front leg of the OE lower control arm, and use a M16x2x150 (longer) bolt and nut from hardware kit 860065 in the rear leg being sure the bolt heads are in front with the threaded ends pointing rearward. Be sure to use the stock centering washers. DO NOT TIGHTEN BOLTS.
- 108) At this time it is necessary to attach the brake caliper to the steering knuckle reusing the caliper bolts. Torque to 38 ft-lbs.
- 109) Slip upper ball joint stud through hole in steering knuckle.
- 110) Re-install stock castle nut, tighten nut to 84 ft-lbs., and install a new cotter pin from hardware kit #8061. If necessary, tighten the castle nut no more than an extra 1/6 turn in order to slip the cotter pin through the hole in the stud.
- 111) Align the marks & reconnect CV joint to differential flange using socket head bolts & washers from hardware kit #8063 and thread-lok from hardware kit #8061. Place one drop of thread locking compound on each bolt as it is installed.
- 112) Snug all bolts by hand before tightening to 59 ft-lbs. Be sure to tighten the bolts by following a "star" pattern.
- 113) Repeat steps 101-108 for opposite side of vehicle.

**DROOP STOP INSTALLATION AND
ADJUSTMENT**

- 114) Install nut and washer onto Droop Stop Bolt (with odd shaped head) from hardware kit #860063.
- 115) Install droop stops into 140210 & 140215 rear control arm mounts using washers and nuts from hardware kit 860063. See illustration 23



Illustration (23)

- 116) Adjust bolts so that "spindle-to-fender" dimension measures about 27.5"-28" at full droop.

Caution:

Do not exceed 28" or severe damage could result to the brake hose, CV joints, or other suspension components.

- 117) Rotate the wheel hub to check for the CV binding. If they bind, adjust the droop stop bolt to reduce the "spindle-to-fender" dimension in 1/4" increments until the binding is eliminated. Once any binding has been eliminated, adjust the bolt an additional 1/4".
- 118) Finally, tighten the jam nuts per note F.

GENERAL RE-ASSEMBLY & ADJUSTMENTS

- 119) Fasten the inner tie rod ends to the Relay Rod, tightening new prevailing torque nuts to 40 ft-lbs. Do not tighten the adjustment sleeve clamps at this point.

Note:

for adequate sway bar clearance, the tie rod adjustment sleeves must be clocked with the clamps down.

- 120) Install both front shock absorbers, using hardware kit #140119. Fit washers between the mount & the rear of the shock absorber eyes. Be sure to check clearance between the shock and stock bumpstop mount by raising & lowering the lower control arm through limits of travel. NOTE: If installing RS9000 shocks, Discard #140119 and use hardware kit # P-975.

PRELIMINARY CAMBER ADJUSTMENTS

- 121) Jack up the left and right lower control arms near the steering knuckles so that the "spindle-to-fender" dimension measures about 25.5".
- 122) Rotate alignment bolts in the upper control arm pivots so they are each in the middle of their adjustment range. (centered)
- 123) Using a carpenter's level, check to be sure the wheel hub face is vertical (0° camber). If camber is negative (leans in at the top), then adjust the upper control arm D-bolts (alignment eccentrics) out until 0° is reached. Tighten the front D-Bolt first and then the rear to 90 ft-lbs
- 124) Now locate 140280 sway bar adapter from box 860059 and the nuts, bolts and washers from hardware kit 860064. Find an OE sway bar end link bolt and Place an OE sway bar end link washer against the head and then a bushing. Install the bolt into the 140280 sway bar adapter on the non angled side. Install a bushing, washer, sleeve and then another washer and bushing. Place the end link into the lower control arm from the top and place the remaining bushing, washer

and nut on the end link. Tighten at this time. See illustration 24

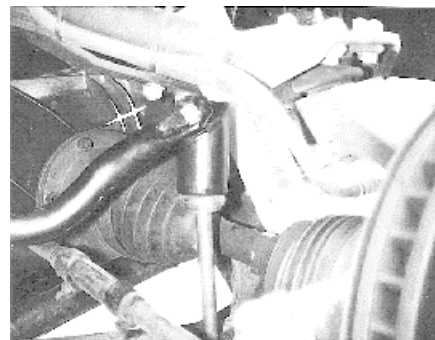


Illustration (24)

- 125) Rotate the 140280 sway bar adapter so it is lined up with the sway bar at the proper angle. Install the 9/16"x1-1/4" bolt, washers and nut through the sway bar and then through the 140280 sway bar adapter. Torque to specified value in note F. See illustration 24.
- 126) Repeat steps 120-121 on the right side of the vehicle.
- 127) Lower jack & remove.
- 128) While the suspension remains at full droop, check the brake hose for adequate length. Be sure they are not being stretched when the steering wheel is turned full left and right
- 129) HOSE POSITION IS IMPORTANT!! Make certain there is enough slack for full right & left turns. Excessive length may cause rubbing on the tire or rim. Insufficient length may cause the hose to collapse, kink or stretch. Tiewraps from hardware kit #8062 may be used to "fine tune" the routing of the hose so it does not rub.
- 130) Install stock differential skid plate. Attach the rear bolts & nuts using hardware kit #140118. Do not tighten. Line up the front of the plate parallel with the front subframe tube. Mark the center position of the slots and drill two 21/64" holes. Use the self tapping bolts from hardware kit #140118 for these front attachment slots. Be sure the lockwasher is between the flat washer & the bolt head. Tighten front & rear bolts.
- 131) If equipped with a front skid plate, trim it as necessary to clear the Rancho subframe attachment ears.
- 132) Once the exhaust has been modified to clear the drive shaft. Clean U-joint mating surfaces & align marks between the front driveshaft with the pinion yoke. Using a torque wrench, tighten retainer bolts to 15 ft-lbs. Rotate the driveshaft, checking for clearance with the exhaust crossover.

TORSION BAR CROSSMEMBER MOUNT - INSTALLATION

- 133) Align the marks on the front of each torsion bar with the marks on the hex of each control arm. Be sure they are reinstalled on the proper side. If you have purchased Rancho Torsion Bar kit #640, it may be installed now.

- 134) Slide the torsion bars through the hex opening in the lower control arms. Temporarily push them forward of the normal position to provide clearance for reinstallation of the crossmember.

- 135) With the torsion bar crossmember removed from the vehicle, create a subassembly by fastening a #140255 Torsion Bar Crossmember Mount to each end. Reuse stock hardware, but do not tighten.

Note:

The crossmember will be mounted in the same orientation as originally installed on the vehicle.

- 136) If your vehicle is an extended cab and equipped with an exhaust hanger immediately behind the catalytic converter, perform this step: Remove & save the 2 lower bolts that fasten the exhaust hanger to the right frame rail. (The bracket will still be supported by the remaining bolts)

- 137) Using a jack, gently raise the crossmember subassembly until the horizontal face of both #140255s just contact the frame rails.

- 138) Line up the holes of the #140255 with the stock holes in the frame. Using hardware kit #140053, fasten each #140255 to the frame with a 3/8" bolt in the center hole and 7/16" bolts on the outboard holes.

- 139) Using the 3 holes near the top of the #140255 as a template, drill three 3/8" holes through the frame rail. See Illustration (25).

Caution:

Do not attempt to use any pre-existing holes in this area.

- 140) BEFORE DRILLING HOLES BE SURE THERE ARE NO TUBES/WIRES/ETC. IN THE WAY ON THE INSIDE OR OUTSIDE OF THE FRAME. IT WILL BE NECESSARY TO MOVE OR RELOCATE ANY OBSTRUCTION PRIOR TO DRILLING ANY HOLES.

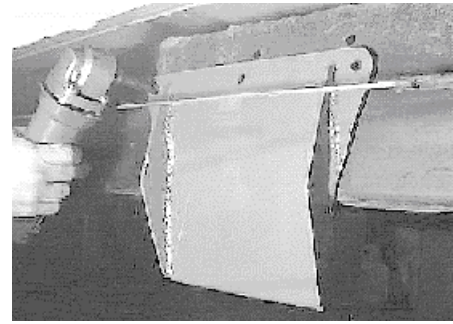


Illustration (25)

- 141) Using the exhaust hanger as a template, drill out only the front lower bolt hole of the exhaust hanger through the #140255. Reuse the stock bolt.

- 142) Place 3/8" bolts from hardware kit #140053 into each of the 6 new holes on the side of the frame. Tighten all bolts from hardware kit #140053 per note F. For the stock bolts that reattach the stock crossmember, tighten the stock 4 short outboard bolts to 46 ft-lbs. and both long center bolts to 18 ft-lbs.

- 143) If equipped with a parking brake cable bracket, reinstall it using the middle bolt on the upper side of #140255.

TORSION BAR - INSTALLATION

- 144) Slide a torsion bar rearward through the crossmember while holding the adjustment arm in proper position. Be sure the alignment mark on the adjustment arm matches the mark on the end of the torsion bar. The adjustment arm must be properly indexed on the end of the bar. Mis-indexing can cause failure to achieve proper ride height. It can also make it impossible to install the adjusting bolt and retaining plate.

- 145) Increase the tension on the torsion bar, using Chevrolet tool #J 36202 or a 2 arm puller.

- 146) Install the retaining plate and its adjustment bolt.

- 147) Insert the adjustment bolt to the original depth as marked in step #12.

- 148) Release tension on the torsion bar until the load is taken up by the adjustment bolt.

- 149) Remove Chevrolet tool #J 36202 or the 2 arm puller.

- 150) Re-check CV joint for binding per step #113.

- 151) Repeat steps 141-147 for the opposite side.

- 152) Lubricate upper control arm pivot bushings via 4 "zerk fittings", ball joints, steering linkage, U-joints, etc. using a high grade moly grease.
- 153) Install tires and lower front of vehicle to the ground.

REAR RISER BLOCKS - INSTALLATION

- 154) Raise rear of vehicle and support frame with jack stands.
- 155) Remove rear tires
- 156) Remove shock absorbers. Do not reuse OEM shock absorbers.
- 157) Remove the OE brake line junction block bracket from the differential
- 158) Install the 170010 brake line extender bracket from hardware kit 860053 in the OE bracket location. See illustration 26.



Illustration (26)

- 159) With jack supporting the rear axle, remove U-bolts on both sides of vehicle.
- 160) Lower rear axle approximately 6", taking care not to stretch the brake hose.
- 161) Install riser block pins from hardware kit #8574 into hole of #1509 2.5" riser blocks.
- 162) Place riser block onto rear axle with the shorter end of the block towards the front. The side of the block that has "BACK" cast into it must also be installed "UP".
- 163) Be sure riser block pins are aligned with mating holes and raise axle until riser blocks contact leaf springs.
- 164) Be sure the spring center bolt head aligns with the hole in the top of the riser block as they contact each other.
- 165) Place a pair of #7489 U-bolts over each spring.

- 166) Then place the axle retaining plate in position, and tighten nuts from hardware kit #8102. See note F for torque spec.

Note:

Be sure to cross torque the nuts.

REAR BUMPSTOP SPACER - INSTALLATION

- 167) Remove the stock rear rubber bumpstop.
- 168) Install #1417 Bumpstop onto #170011 Bumpstop Spacer using the 5/16-24 locknuts and 5/16 washers from hardware kit #860053. and torque to spec. See note F for torque spec. See Illustration (27)
- 169) Install the Bumpstop assembly onto vehicle by placing the 7/16 X 1.25 bolts(from #860058) up through the large holes in the bracket and through the T-slot on the chassis. Fasten together using the 7/16 nuts and washers from package #860053. Torque to spec. See Illustration (27)

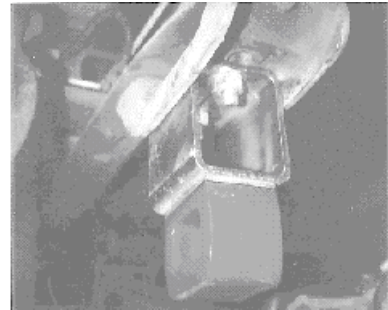


Illustration (27)

- 170) Raise the axle and install Rancho rear shock absorbers. Then remove the jack from under the axle.
- 171) With the rear axle is hanging, check the brake hose and vent tube to be sure they are not stretched or kinked.

FINAL CHECKS & ADJUSTMENTS

- 172) Install tires, remove jackstands from frame, and lower vehicle to the ground.
- 173) After pushing down on the bumpers several times and/or rolling the vehicle to allow the suspension to settle, verify that the "spindle-to-fender" dimension measures 25.5".

Note:

Torsion bars should only be adjusted with the front tires off the ground.

- 174) Verify adequate front brake hose clearance. Double check to be sure both brake hoses clear tires at all steering angles.

175) Set Toe-in and then tighten adjusting sleeve clamps on tie rods.

176) Have a front end alignment performed at a certified alignment facility. Rancho recommends the following specs:

Caster* $3^{\circ} \pm 1^{\circ}$

Camber** 0° to -3°

Toe*** $.24^{\circ} \pm .2^{\circ}$

* Left and right side to be equal within $.50^{\circ}$.

** Left and right side to be equal within $.50^{\circ}$.

Caster angle must be corrected to level frame angle.

*** Toe is shown in "Sum Toe Degrees". Toe-in left and right side to be set equally per wheel and steering wheel must be held in straight ahead position within $\pm 5.0^{\circ}$

Note:

If the vehicle will be regularly used off-road, Rancho recommends that the D-Washers be tack welded in place after alignment.

177) Tighten lower control arm pivot bolts to 135 ft-lbs. Be sure vehicle is on the ground and not on jackstands.

Note:

Tightening these bolts was intentionally left until this step to assure minimum load on the standard rubber bushings. Tightening these bolts with the suspension at full droop will lead to premature bushing failure.

178) Bottom corner of air dam may require slight trimming to clear 285/75X16 tires when turning. See Illustration (28)

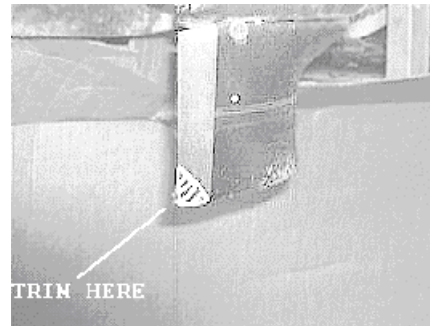


Illustration (28)

NOTE S:
