

FOR RANCHO SUSPENSION SYSTEM **RS6592**: NISSAN XTERRA & 2WD FRONTIER

READ ALL INSTRUCTIONS THOROUGHLY FROM START TO FINISH BEFORE BEGINNING INSTALLATION



IMPORTANT NOTES!

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.

A. New upper ball joints are required and must be purchased separately to complete this installation. The following ball joint part numbers will fit the Rancho Upper Control Arm: Moog K9022, Elgin 1K9022, McQuay-Norris FA1227, TRW (Federal Mogul) 10424, & Nissan 4011001G25.

B. 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).

C. Do not install a body lift kit with this suspension system or interchange Rancho components with parts

from another manufacturer. Use the appropriate Rancho shock absorbers. Contact your local representative for the correct applications.

D. Do not chrome, cadmium, or zinc plate any of the components in this system. To change the appearance of components, enamel paint can be applied over the original coating.

E. 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 on page 2.

F. Compare the contents of this system with the parts list in these instructions. If any parts are missing, contact the Rancho Technical Department at 1-800-574-6257.

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 below. USE A TORQUE WRENCH for accurate measurements.

J. Some of the service procedures require the use of special tools designed for specific procedures. The following tools and supplies are recommended for proper installation of this system:

- Nissan Xterra/Frontier Service Manual
- Upper Ball Joint 4011001G25 (see note "A")
- Ball Joint Remover HT72520000
- Drill motor
- Assorted Drills: 1/8" through 17/32"
- Torque Wrench (250 FT-LB capacity)
- 1/2" Drive Ratchet and Sockets
- Assorted Combination Wrenches
- Heavy Duty Jack Stands
- Wheel Chocks (wooden blocks)
- Hydraulic Floor Jack
- Center punch
- File
- Large "C" Clamps or Bench Vise
- Hammer
- Wire Brush (to clean bracket mounting surfaces)
- Grease
- Tape Measure
- Safety Glasses** (wear safety glasses at all times)

K. It is extremely important to replace torsion bars, CV flanges, and 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.

L. Suspension components that use rubber or urethane bushings should be tightened with the vehicle at normal ride height. This will prevent premature failure of the bushing and maintain ride comfort.

M. The required installation time for this system is approximately 4 to 5 hours. Check off the box () at the beginning of each step when you finish it. Then when you stop during the installation, it will be easier to find where you need to continue from.

N. This suspension system was developed using the following tire & wheel combination: 265/75 R16 tire, 16 x 8 wheel with 5.5 inches of wheel backspacing. To provide clearance, removing the mudguards and trimming the wheel wells is necessary. Before installing any other combination, consult your local tire and wheel specialist.

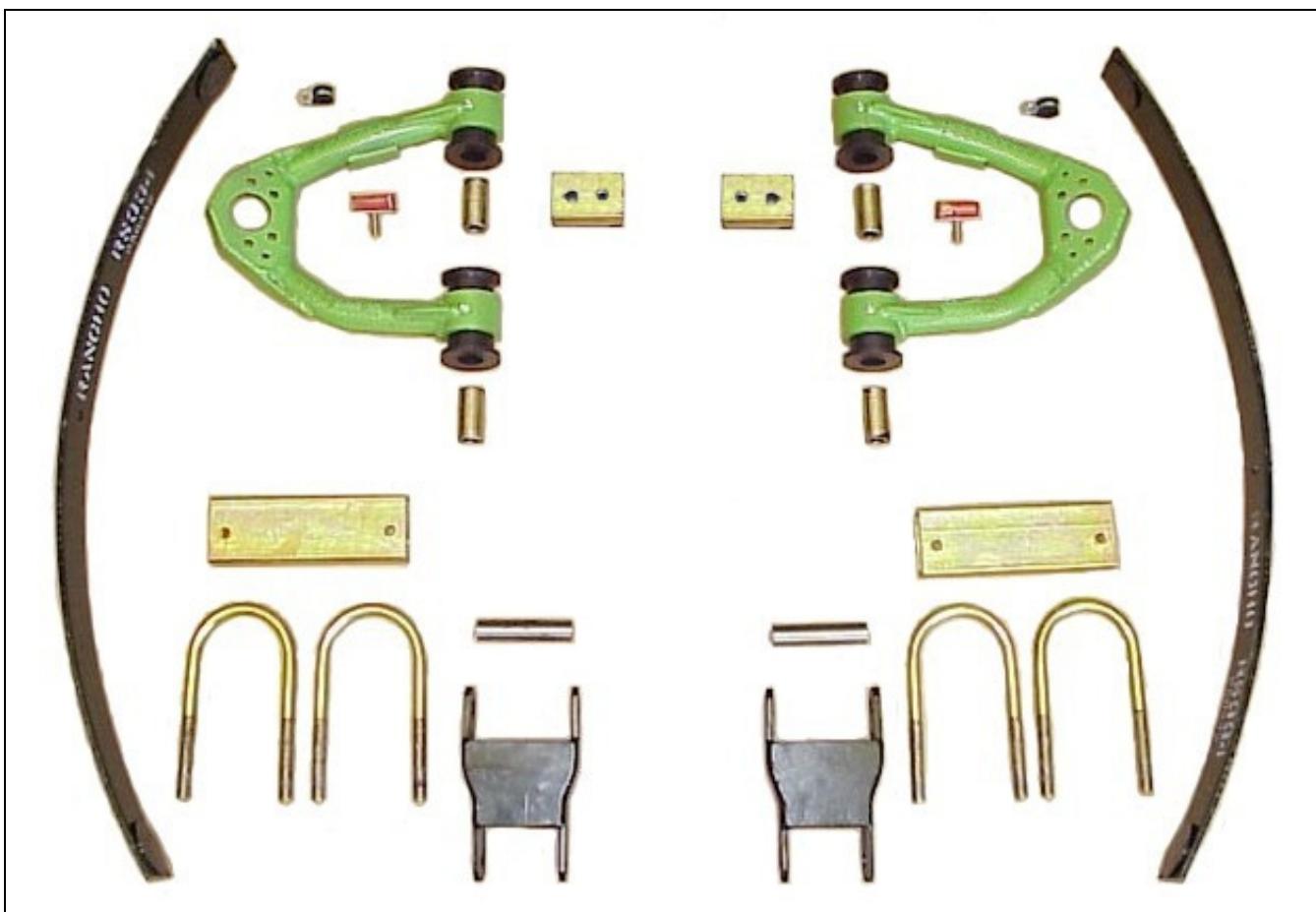
O. Important information for the end user is contained in the consumer/installer information pack. If you are installing this system for someone else, place the information pack on the driver's seat. Please include the installation instructions when you finish.

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

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

PARTS LIST

<u>P/N</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>P/N</u>	<u>DESCRIPTION</u>	<u>QTY.</u>
180001	CONTROL ARM, LEFT	1	860254	BOXED SUB ASSEMBLY	1
180002	CONTROL ARM, RIGHT	1	180003	Shackle	2
334	ADD-A-LEAF	2	420054	Sleeve	2
			42702	Thread Lock	2
860253	BOXED SUB ASSEMBLY	1	7414	U-bolt	4
130014	Bump Stop Spacer, Rear	2	8011	U-bolt Hardware Kit	1
860419	Front Droop Stop Hardware Kit	1		1/2-20 Nyloc Nut	8
1412	Droop Stop	2		1/2 SAE Flat Washer	8
	5/16-24 Nyloc Nut	2	860410	Center Bolt Hardware Kit	1
	5/16 SAE Flat Washer	2	770091	3/8-24 x 4.5 Center Bolt	2
180004	Bump Stop Spacer, Front	2	770025	3/8-24 Hi-Nut	2
420053	Sleeve	4	860426	Shackle Hardware Kit	1
520053-4	Bushing	8		M12-1.75 x 130 HHCS	2
860422	Bushing Washer Kit	1		M12-1.75 x 110 HHCS	2
7852	Washer	8		M12-1.75 Nyloc Nut	4
860423	Front Hardware Kit	1		12mm Flat Washer	8
770095	1/2" Loop Strap	2	94180	Information Pack	1
770093	Standoff Nut	2	780281	Rancho Decal	1
	1/4-20 x .75 HHCS	2	88092	Instructions	1
	1/4-20 Nyloc Nut	2	94119	Consumer/Warranty Information	1
	1/4 SAE Flat Washer	2	94177	Warning Sticker	1
860424	Rear Bump Stop Hardware Kit	1			
	M10-1.25 x 50 HHCS	4			
	10mm Flat Washer	4			
	10mm Lock Washer	4			



FRONT SUSPENSION

UPPER CONTROL ARM ASSEMBLY

1. Attach new ball joint (purchased separately) to Rancho upper control arm 180001 as shown in illustration #1. Refer to "Important Note A". Tighten the bolts (supplied with ball joint) to 12-15 ft. lbs.

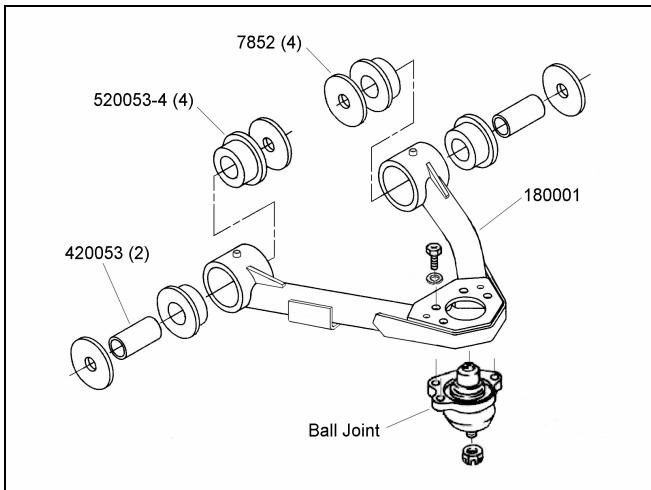


Illustration #1

2. Apply a film of grease to the inside of the tubes on upper control arm 180001.
3. Insert two bushings (520053-4) into each tube as shown in illustration #1.
4. Apply a film of grease to the inside of the installed bushings. Insert sleeve 420053 into each bushing assembly.
5. Repeat steps 1 through 4 to assemble Rancho upper control arm 180002.

VEHICLE PREPARATION & TORSION BAR UNLOADING

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

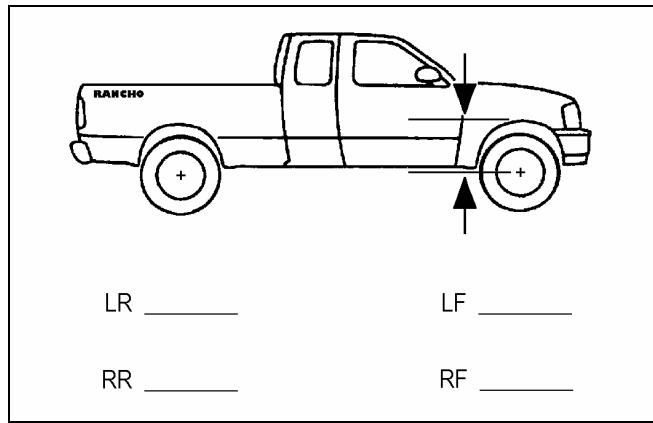


Illustration #2

3. Measure and record the length of each torsion bar anchor bolt. See illustration #3. As a precaution, label the torsion bars left and right. Paint matching marks on the torsion bar and the corresponding lower control arm.

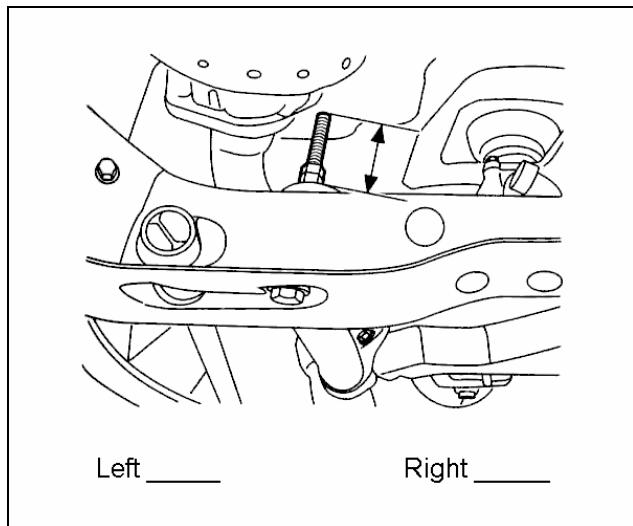


Illustration #3

4. Remove the tension on both of the torsion bars by loosening the lock nuts and the adjusting nuts. Ensure that the twisting force is eliminated from the torsion bars.

NOTE: It is not necessary to remove the torsion bars or the anchor bolts.

SHOCK ABSORBER, UPPER CONTROL ARM, & DROOP STOP REMOVAL

1. Support the lower control arm with a jack.
2. Remove the nuts and bolts attaching the shock to the frame bracket and lower control arm. See illustration #4.

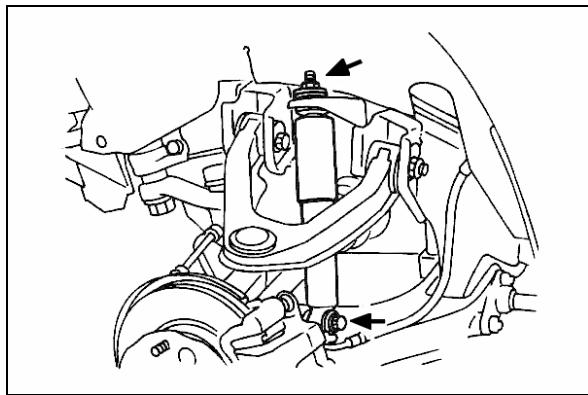


Illustration #4

3. Remove the shock absorber.
4. If applicable, separate the ABS cable from the upper control arm.
5. Loosen upper ball joint nut. Separate knuckle from upper ball joint with removing tool HT72520000. See illustration #5.

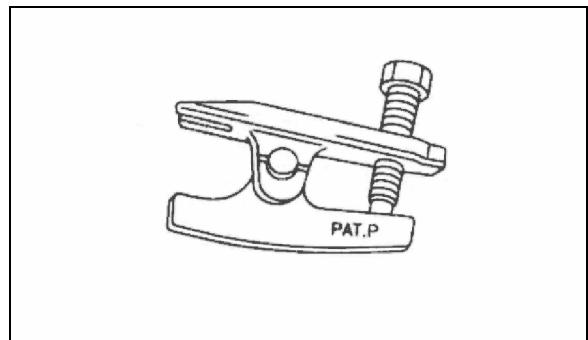


Illustration #5

6. Remove the upper control arm adjusting bolts. See illustration #6. Remove the upper control arm.

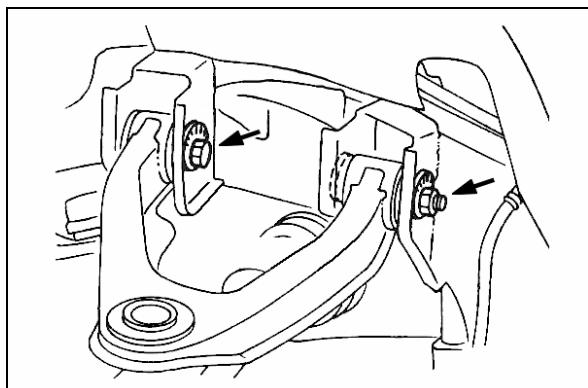


Illustration #6

7. Remove the droop stop from the frame bracket.
8. Repeat steps 1 through 7 for the other side.

DROOP STOP, UPPER CONTROL ARM, & SHOCK ABSORBER INSTALLATION

1. Loosely attach Rancho droop stop 1412 to the frame bracket with the hardware from kit 860419.
2. Place Rancho upper control arm (180001 for driver side or 180002 for passenger side) under the ABS cable and into the frame brackets.
3. Insert a washer from kit 860422 into the frame bracket on each side of the bushing. See illustration #7. Attach the bushing assembly to the bracket with the original adjustment bolt.

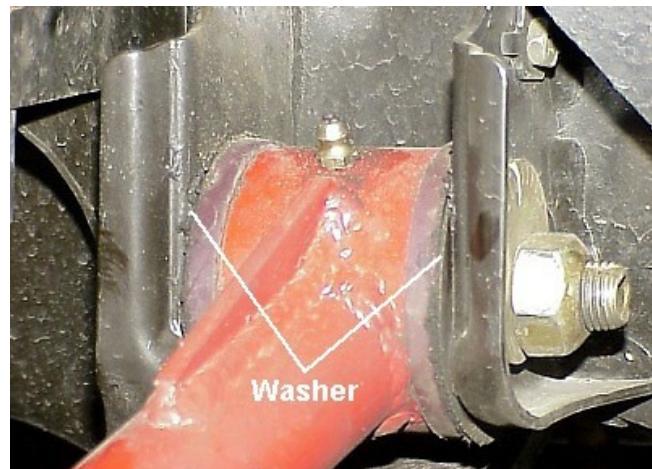


Illustration #7

4. Repeat step 3 for the other frame bracket and bushing. Center adjustment cams but do not tighten the adjustment bolts until the vehicle is at normal ride height.
5. Attach upper ball joint to knuckle. Tighten the ball joint nut to 58-108 ft. lbs. See illustration #8. If applicable, install a new cotter pin.



Illustration #8

6. Install new Rancho shock absorber. Do not reuse original shock absorber.
7. Align droop stop with control arm pad. Tighten nut securely. See illustration #9.

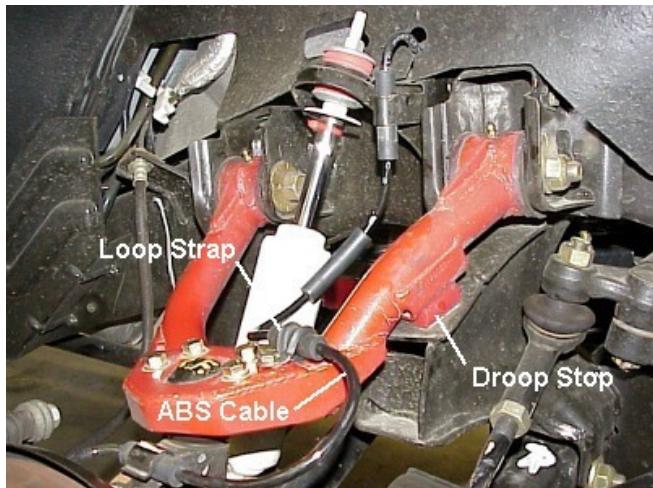


Illustration #9

8. If applicable, slide the protective sheaths on the ABS cable to the locations shown in illustration #9. Install the loop strap from hardware kit 860423.
9. Place a washer between the loop strap and control arm. Attach the ABS cable to the front of the control arm with the 1/4" hardware from kit 860423 (illustration #9). Tighten nut and bolt securely.
10. Tighten the adjusting nut on the torsion bar anchor bolt to the corresponding measurement from illustration #3.

NOTE: Adjustment of anchor bolt nut is in a tightening direction only. Do not adjust by loosening the nut. Final height adjustment is done with kit installed and vehicle on the ground.

11. Repeat steps 1 through 10 for the other side.

BUMP STOP SPACER INSTALLATION

1. Remove the nut attaching the bump stop to the lower control arm. See illustration #10.
2. Remove the bump stop.

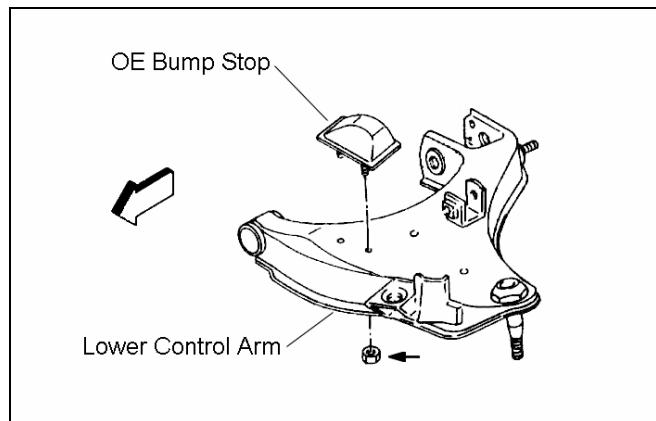


Illustration #10

3. Enlarge the mounting hole in the lower control arm to 1/2". See illustration #11. File the front outside corner of the OE bump stop to provide clearance for the sway bar.

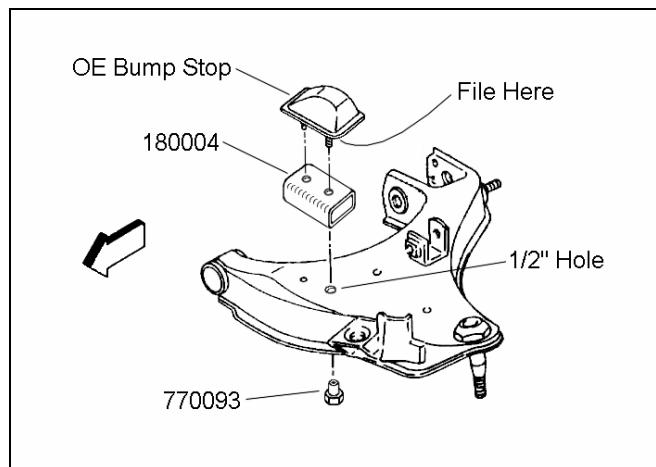


Illustration #11

4. Place bump stop on spacer (180004) as shown in illustration #11.
5. Attach spacer and bump stop to lower control arm with the standoff nut from hardware kit 860423. Tighten the nut to 12-16 ft. lbs.
6. Repeat for other side.
7. Apply grease to the upper control arm bushings through the grease fittings.
8. Install front wheels and lower vehicle to the ground. Tighten lug nuts to 87-108 ft. lbs.
9. Tighten the upper control arm adjustment bolts to 72-87 ft. lbs.

REAR SUSPENSION

ADD-A-LEAF & SHACKLE INSTALLATION

1. Chock front wheels. Raise the rear of the vehicle and support the frame with jack stands. Remove rear wheels and set them aside.
2. Support the rear axle with a floor jack. Disconnect the end links from the sway bar.
3. Remove the upper and lower mounting hardware from the left rear shock absorber (driver side). See illustration #12.
4. Remove the left rear shock.
5. Remove the U-bolt nuts, spring pad, and U-bolts. Disconnect the leaf spring shackle and remove the front eyebolt. See illustration # 13.

6. Remove the leaf spring.

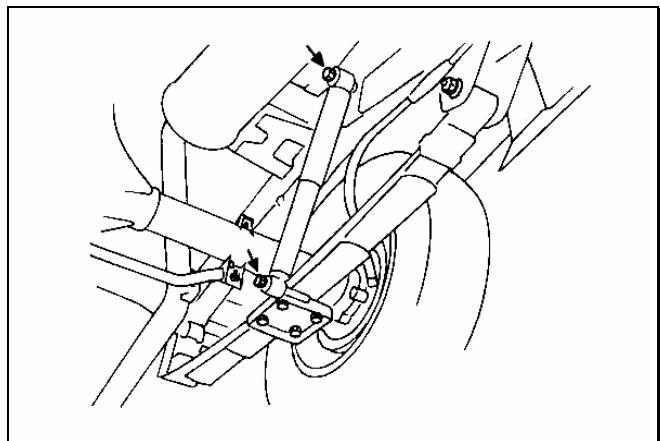


Illustration #12

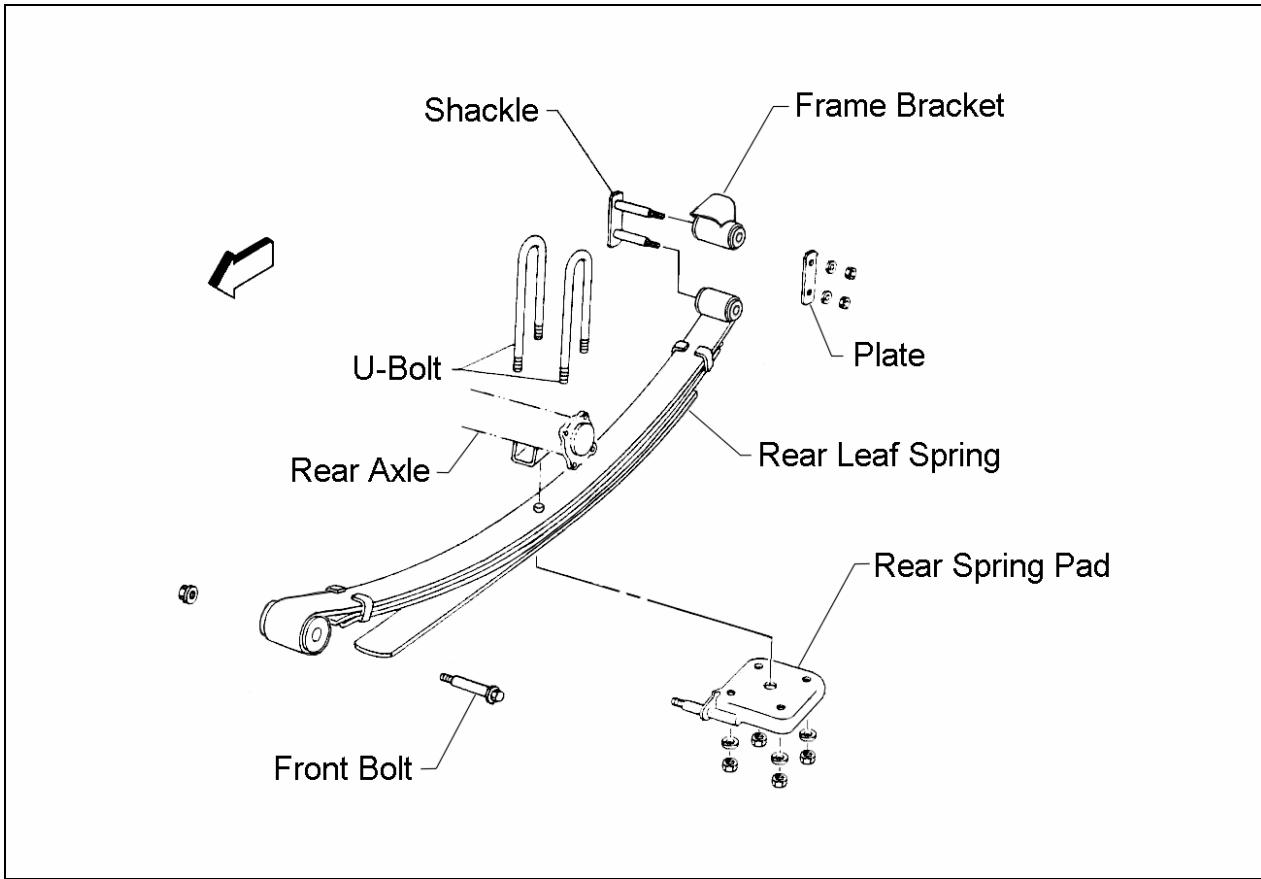


Illustration #13

7. Hold the spring assembly securely together with two c-clamps (illustration #14) or place the assembly in a bench vise.

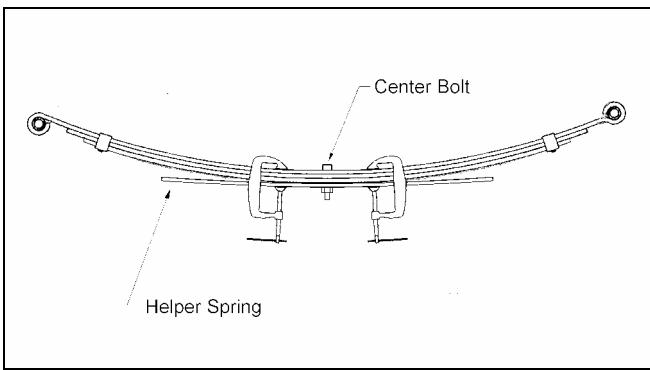


Illustration #14

8. Mark the front of the helper spring for installation reference. Remove the center bolt
9. Carefully remove the C-clamps or remove the assembly from the bench vise. Set the helper spring aside.
10. Lightly grease the tip sliders of new add-a-leaf 334. Place the add-a-leaf on the bottom of the existing spring pack and reinstall the helper spring. See illustration #15.

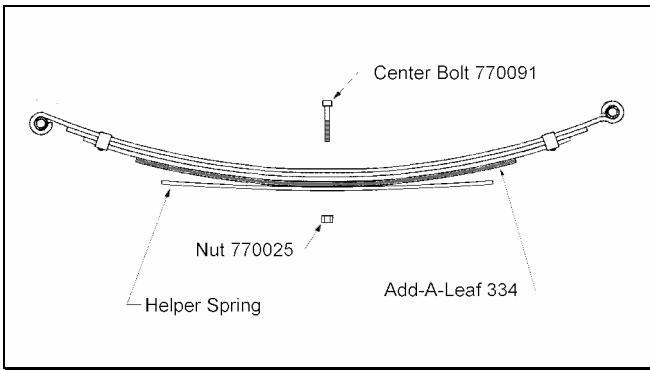


Illustration #15

11. Insert a new center bolt (770091) from kit 860410. Loosely secure the assembly with the supplied nut (770025). **Do not compress the spring with the center bolt.**
12. Compress the spring assembly with two C-clamps (illustration #16) or a bench vise. Tighten the center bolt nut to 25 ft. lbs.
13. Remove the C-clamps or remove the assembly from the bench vise.

NOTE: Trim the new center bolt if the threads extend more than 1/2" beyond the nut.

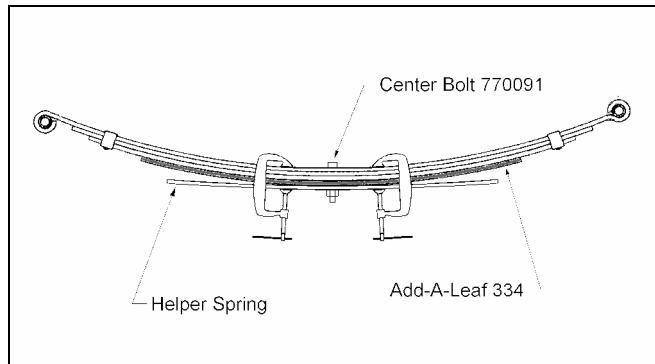


Illustration #16

14. Insert sleeve 420054 into the leaf spring rear frame bracket. See illustration #17. Attach shackle 180003 to the frame bracket with the 12mm hardware from kit 860426.
15. Loosely attach the leaf spring to the front bracket and rear shackle. Use the original hardware for the front bracket and the 12mm hardware from kit 860426 for the rear shackle.
16. Enlarge the U-bolt holes in the original spring pad to 17/32".
17. Align the head of the center bolt with the hole in the axle pad. Reinstall the original spring pad. See illustration #17. Attach the axle to the leaf spring with the new U-bolts, and the hardware from kit 8011. Tighten the U-bolt nuts diagonally to 72-80 ft. lbs.

NOTE: The amount of U-bolt threads exposed should be equal after tightening the nuts. Trim the U-bolts if they extend more than 1/2" below the spring pad.

18. Install new Rancho shock absorber. Tighten mounting nuts to 30-37 ft. lbs.
19. Remove the clamp (passenger side only) attaching the sway bar to the rear axle.
20. Remove the upper and lower mounting hardware from the right rear shock absorber (passenger side).
21. Move the sway bar aside and remove the right rear shock.
22. Repeat steps 5 through 17 to install the add-a-leaf and shackle on the passenger side.

NOTE: Before the leaf spring front eyebolt can be removed, it may be necessary to remove the fuel tank guard.

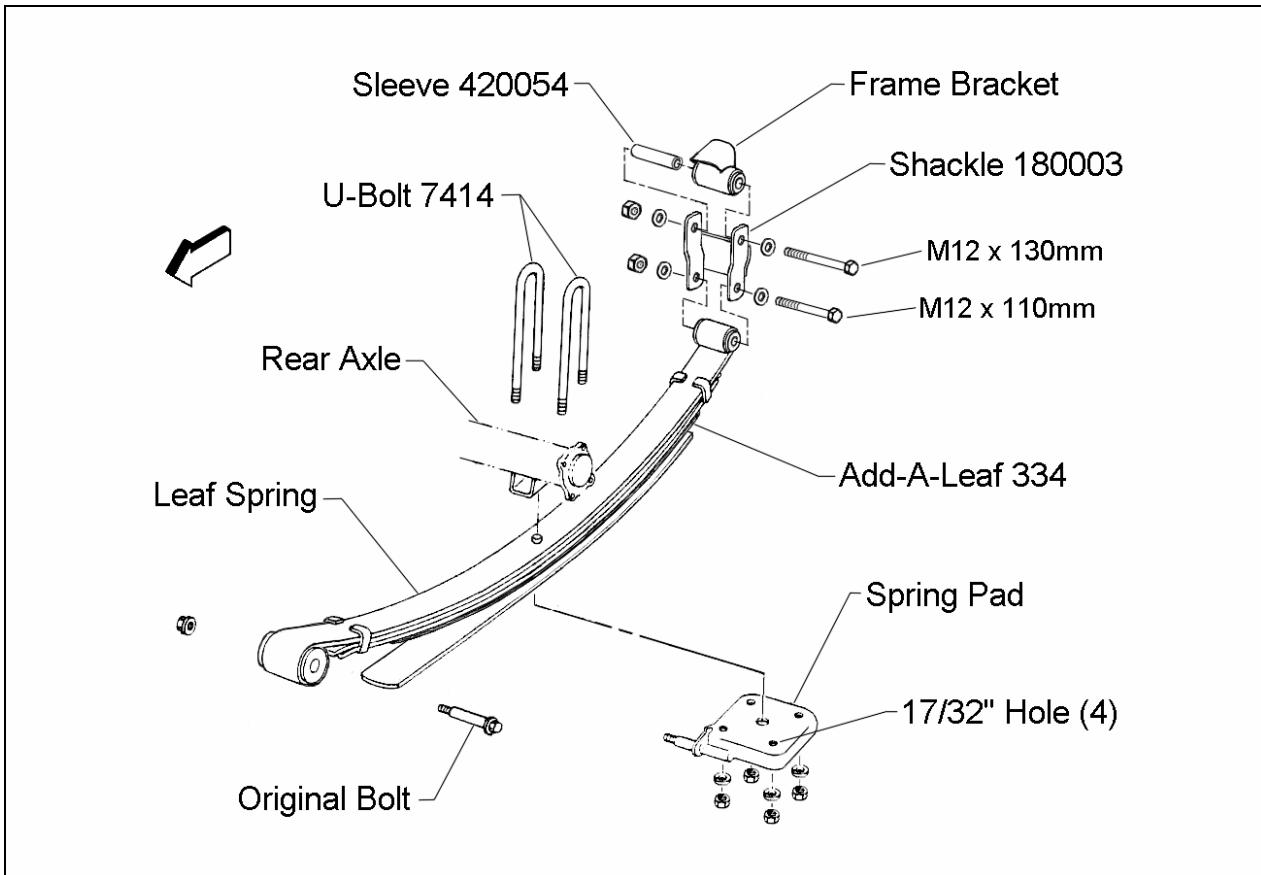


Illustration #17

23. Install new Rancho shock absorber. Tighten mounting nuts to 30-37 ft. lbs.
24. Reinstall the sway bar clamp and end links. Tighten the sway bar bolts to 32-41 ft. lbs and the end link nuts to 30-35 ft. lbs.
2. Place spacer 130014 against frame rail at the bump stop location. See illustration #19. Attach the original bump stop to the spacer and frame with the 10mm hardware from kit 860424. Tighten the bolts to 12-16 ft. lbs.

BUMP STOP SPACER INSTALLATION

1. Remove the bump stop attached to the frame rail above the rear axle. See illustration #18.

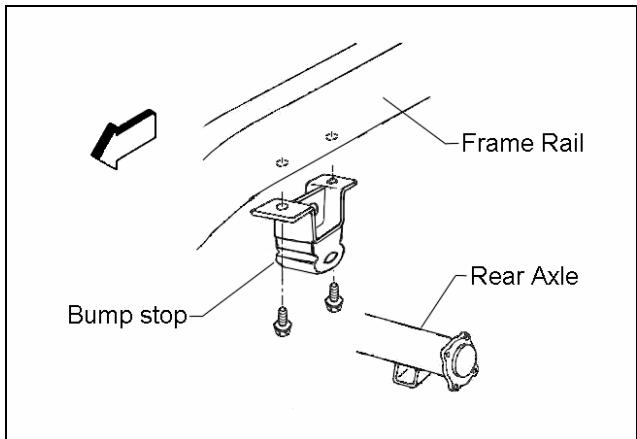


Illustration #18

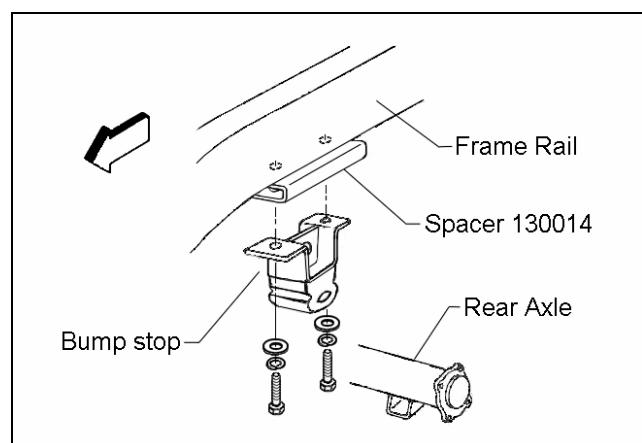


Illustration #19

3. Repeat spacer installation for the other side.
4. Install rear wheels and lower vehicle to the ground. Tighten the lug nuts to 87-108 ft. lbs.

5. Tighten the leaf spring front pivot bolts to 86-108 ft. lbs. and the rear shackle bolts to 58-72 ft. lbs.

FINAL CHECKS & ADJUSTMENTS

1. Jounce suspension and move the vehicle to normalize ride height. If you prefer optimum clearance, adjust the tension on the torsion bars until the left front and right front measurements are both 22 inches. Refer back to illustration #2. If you prefer optimum ride control, set the front measurements to 21.5 inches.

NOTE: Adjust the nut on the anchor bolt in a tightening direction only. Do not adjust the height by loosing the nut.

2. Tighten the lock nuts on the anchor bolts to 22-30 ft. lbs.
3. Remove mudguards and trim wheel wells if necessary. Refer to "Important Note N".
4. Turn the front wheels completely left then right. Verify adequate tire, wheel, and brake hose clearance. Inspect steering and suspension for tightness and proper operation.

5. 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.

6. Ensure that the vehicle brake system operates correctly. If new brake hoses were installed, verify that each hose allows for full suspension movement.
7. Readjust headlamps. Have vehicle Aligned at a certified alignment facility.

Recommended Alignment Specifications

Caster (degrees): 2.17° to 3.07°

Camber (degrees): $-.5^\circ$ to $.5^\circ$

Sum Toe In (inches): .12 to .20

Please retain this publication for future reference. See Important Note O.
