



Rancho **rockGEAR™** High-Steer Knuckle

RS62100 Fits 2016-2007 Jeep Wrangler JK

Left and Right Hand Drive Models

Requires use of flipped drag link, and 3" or higher lift with a 3" track bar relocation bracket (Not Included). See Installation Notes & Requirements (pg 2).

READ ALL INSTRUCTIONS THOROUGHLY FROM START TO FINISH BEFORE BEGINNING INSTALLATION



Parts List

P/N	DESCRIPTION	QTY.
RS176796	JK High-Steer Knuckle - Left	1
RS176797	JK High-Steer Knuckle - Right	1
RS176802	3" Bump Stop Spacer	2
RS860810	Sub Assy, Bump Stop	1
RS7713	HHTS, 3/8-16 X 1.5	2
RS82100	Instruction	1

**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.

## **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).


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 substitute Rancho components with components manufactured by other companies. Use of other components will result in the forfeiture of any type of warranty on the vehicle/suspension system. Some components required for the installation of this kit may need to be purchased separately. See "Installation Notes & Requirements"

C. 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.

D. 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.

E. 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.

F. 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.

G. 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.

H. 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.

## **INSTALLATION NOTES & REQUIREMENTS**

Rancho High-Steer Knuckles RS176796 and RS176797 are designed with OE size tapers for all ball joint and rod end connections. **Use only OE size ball joints, tie rods and drag links.** Clean all taper surfaces before assembly.

Installation requires the removal of tie rod, drag link, brake calipers, rotors, axles, wheel bearings, and steering knuckles. Inspect all components before, during, and after installation for wear and damage. Replace worn and damaged components during installation.

### **The following components must be installed with this kit and MUST BE PURCHASED SEPARATELY:**

- 3" or higher suspension lift to allow sufficient clearance of new steering geometry.
- 3" Track bar relocation bracket to prevent bump steer. If not included with suspension lift, use Rancho RS62101.
- Flipped Drag Link – FOR LEFT HAND DRIVE VEHICLES: Rancho RS62102

FOR RIGHT HAND DRIVE VEHICLES: Rancho RS62106

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

Safety Glasses (wear safety glasses at all times)  
Heavy Duty Jack Stands  
Wheel Chocks  
Hydraulic Floor Jack  
Torque Wrench (150 LB-FT capacity)  
1/2" Breaker Bar  
1/2" Drive Ratchet and Sockets  
13MM 12-Point Socket  
36MM Socket  
Assorted Combination Wrenches  
Assorted Metric Allen Wrenches  
1/4" & 5/16" Drill

3/8" Tap  
Ball Joint Puller  
Hammer  
Rubber Mallet  
Wire Brush (to clean mounting surfaces)  
Red Loctite  
Penetrating Lube (to aid removal of corroded and frozen hardware)  
Silicon Gasket Maker (for differential cover)  
Degrease/Cleaner or Solvent  
Differential Fluid  
Cotter Pins

I. 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 tool list

J. 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.

K. 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.

L. The required installation time for this system is approximately 2 to 3 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.

N. 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.

O. 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.

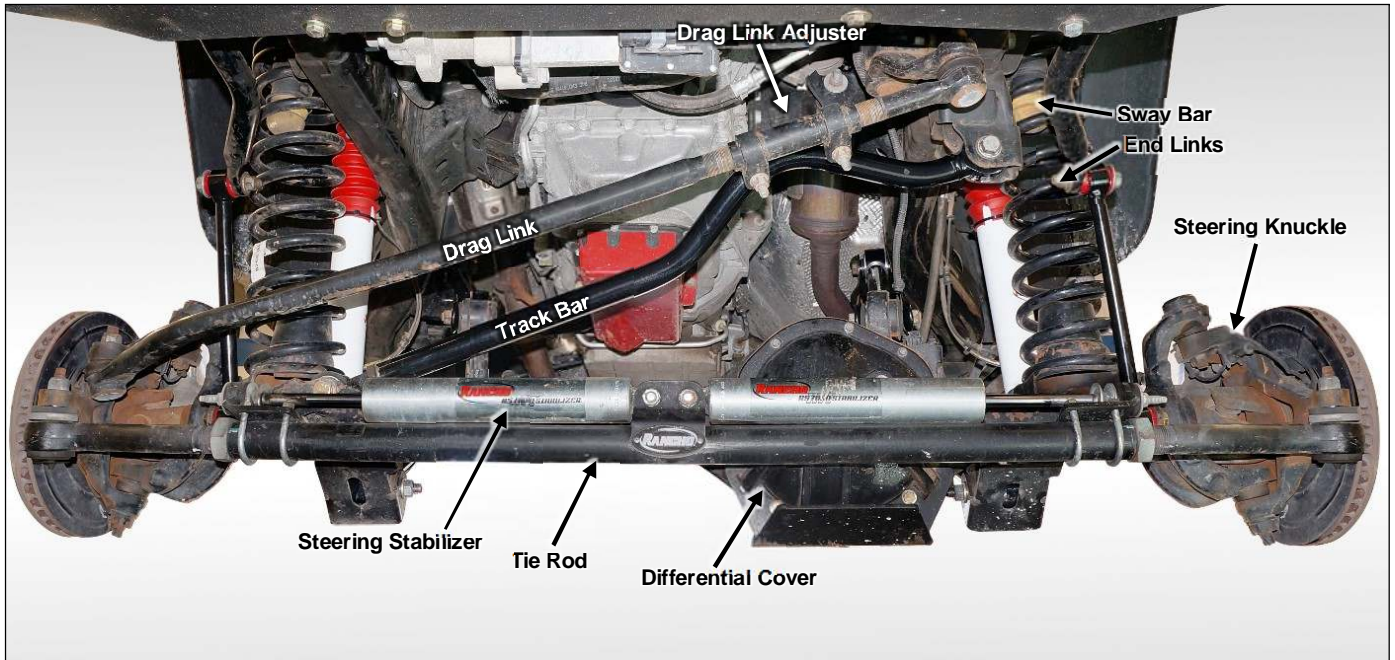


Illustration 1

**VEHICLE PREPARATION**

- 1)  Park the vehicle on a level surface. Set the parking brake and chock rear wheels.
- 2)  Raise the front of the vehicle and support the frame with jack stands. Remove the front wheels and set them aside.

NOTE: Draining differential is recommended to prevent fluid from leaking when removing axles.

- 3)  Drain the differential of fluid by removing the cover or drain plug. Clean all mating surfaces of silicone. See Illustration 1.

**STEERING LINKAGE REMOVAL**

- 1)  Remove steering stabilizer if equipped.
- 2)  Loosen both tie rod end stud nuts using 21mm socket. Using ball joint puller, separate tie rod ends from steering knuckle. Remove nuts and tie rod. See Illustration 1 and Illustration 2.

- Loosen drag link rod end stud nuts at steering knuckle using 21mm socket. Using ball joint puller, separate drag link rod end from steering knuckle. Remove nut and drag link. See Illustration 1 and Illustration 2.

- 3)  Mark where drag link enters adjusting sleeve. See Illustration 3. Loosen lower drag link adjusting sleeve clamp and un-screw drag link from adjusting sleeve.

**BRAKE CALIPER REMOVAL**

- 1)  Remove the brake caliper from steering knuckle using 21mm socket. See Illustration 4. Hang caliper using heavy wire or wire ties.

**⚠ WARNING: Do not allow the caliper to hang by the brake hose. You could damage the hose, without this damage being visible to you, resulting in sudden and unexpected brake failure and an accident.**

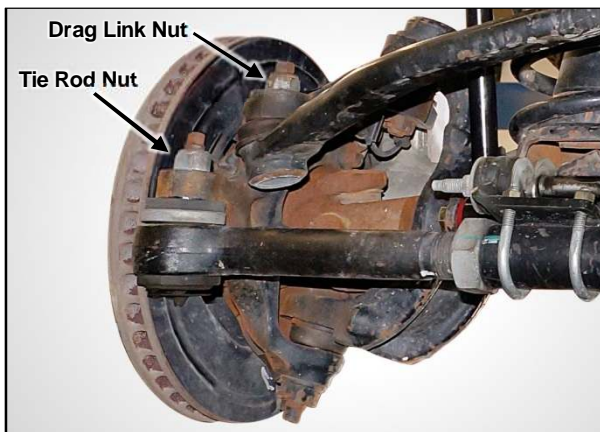


Illustration 2



Illustration 3

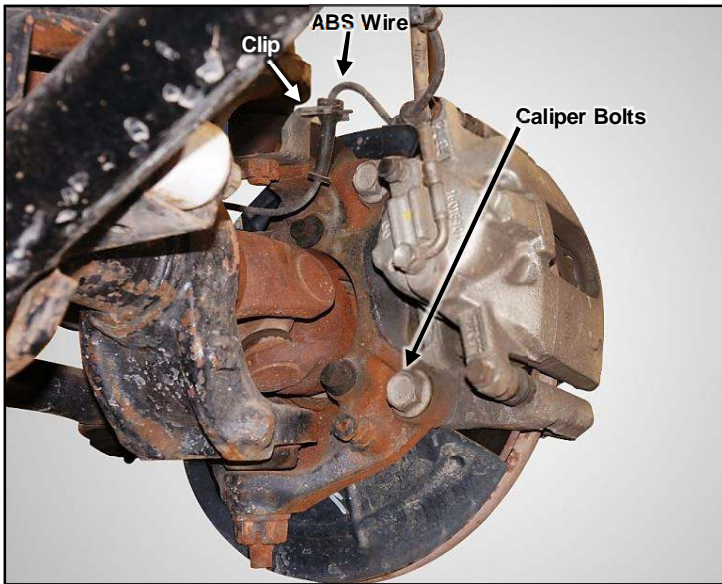


Illustration 4

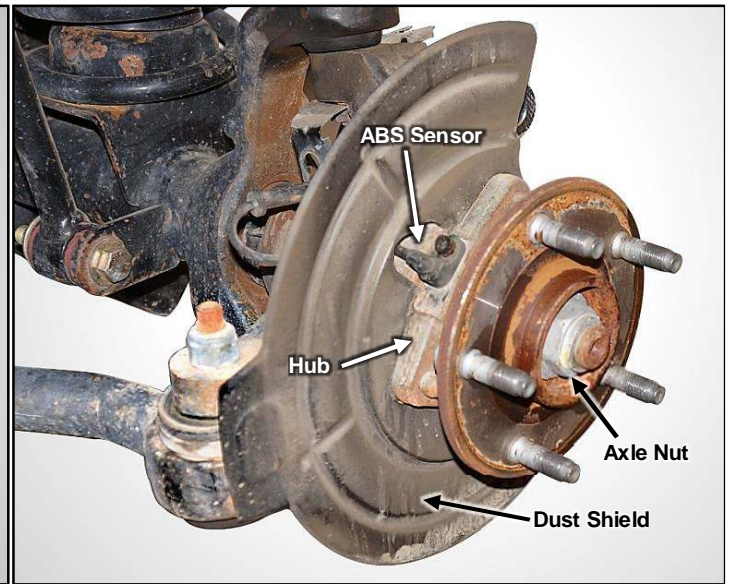


Illustration 5

- 2)  Mark rotors left and right and remove.
- 3)  Clean ABS sensors and remove from hub with 5mm allen wrench. Gently pry sensor from hub. Remove ABS wire from clips. See Illustration 4 and Illustration 5.

**AXLE AND HUB REMOVAL**

- 1)  Remove axle nut using 36mm socket and impact wrench or breaker bar. See Illustration 5
- 2)  Remove the three hub bolts using 13MM 12-pt socket and breaker bar. See Illustration 7.
- 3)  Remove hub, and dust shield. Do not damage ABS wire or sensor.

- 4)  Support axle where it enters tube to prevent damage to seal and carefully pull axle out of tube. Take care not to damage axle seal that is located where the axle tube and differential meet

- 5)  If plastic axle shaft guide is not on end of axle shaft, find and remove from axle tube. Not all axles will have the guide. See Illustration 6



Illustration 6

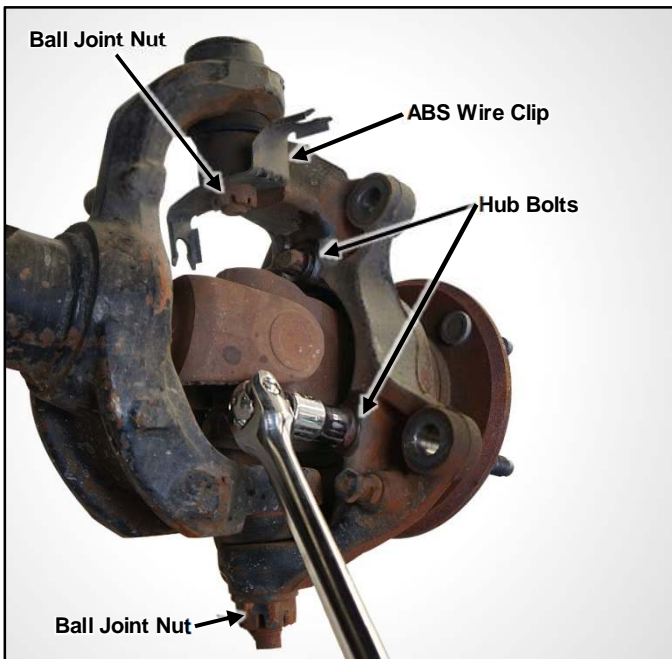


Illustration 7

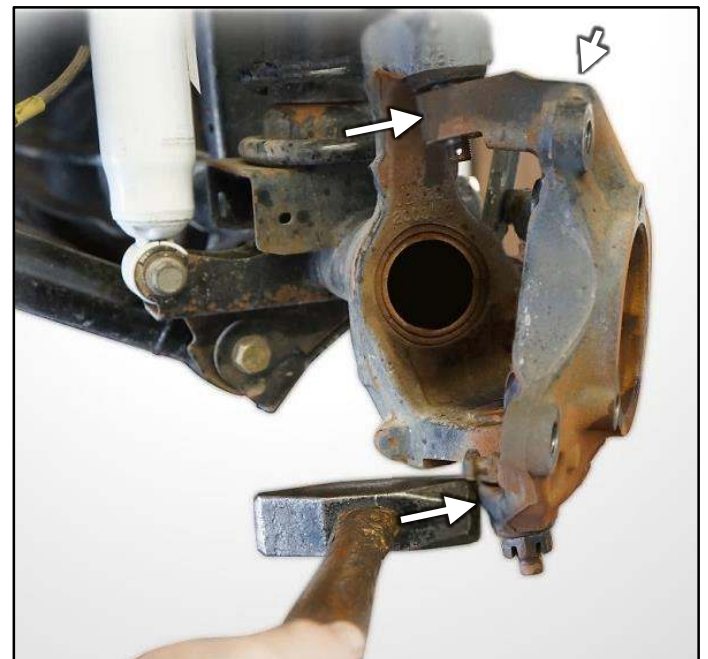


Illustration 8

### STEERING KNUCKLE REMOVAL

- 1)  Remove cotter pins from ball joints. See Illustration 7.
- 2)  Loosen lower ball joint nuts several turns. Do not remove nut.
- 3)  Remove upper ball joint nut and ABS wire clip.
- 4)  Separate knuckle from ball joints by striking knuckle with hammer. See Illustration 8.  
Alternatively use appropriate puller.

NOTE: the use of a pickle-fork style ball joint tool is not recommended because of the damage they cause to ball joints.

- 5)  Remove lower nut, and steering knuckle.

### BUMP STOP SPACER INSTALLATION

- 1)  Support front axle with hydraulic jack.
- 2)  Disconnect sway bar end links from axle using 18mm wrenches. See Illustration 1.
- 3)  Disconnect shocks at axle using 18mm wrenches. See Illustration 9.
- 4)  Carefully lower the front axle and remove the coil springs. Push down on axle if necessary.

**CAUTION:** Do not allow the front axle to hang by any hoses or cables.

- 5)  Drill a 1/4" hole through the center of the coil spring axle pad, then enlarge to 5/16". For ease of installation, tap the hole (3/8-16). If no tap is available use self-tapping screw from kit RS860810 to tap hole. Use oil or cutting fluid when tapping. Clean hole and bolt.

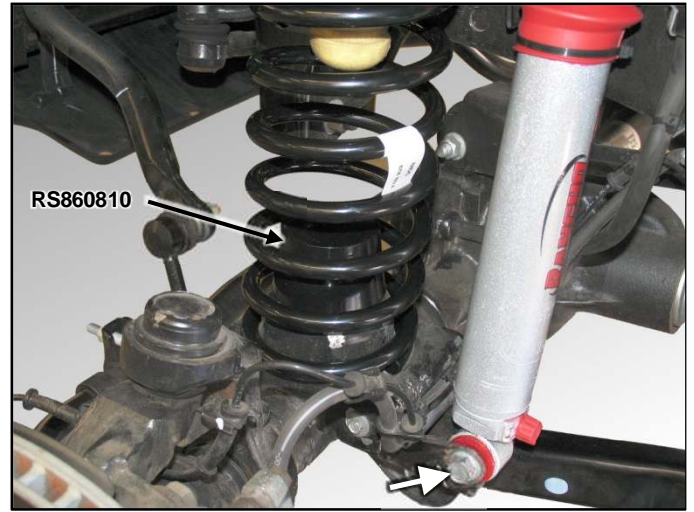


Illustration 9

- 6)  Place bump stop spacer RS176802 inside the coil spring.
- 7)  Insert the spring assembly into the upper pocket and onto the axle pad. Align pig tail with groove in axle pad.
- 8)  Attach the bump stop spacer to the axle pad with the self-tapping screw from kit RS860810 and red Loctite. Torque to 20 lb-ft.
- 9)  Raise axle and reattach shocks to axle with OE hardware. Torque to 56 lb-ft.
- 10)  Reattach sway bar end links to axle. Torque to 75 lb-ft.

NOTE: If end links will not line up with axle, reattach when vehicle is on ground.



Illustration 10

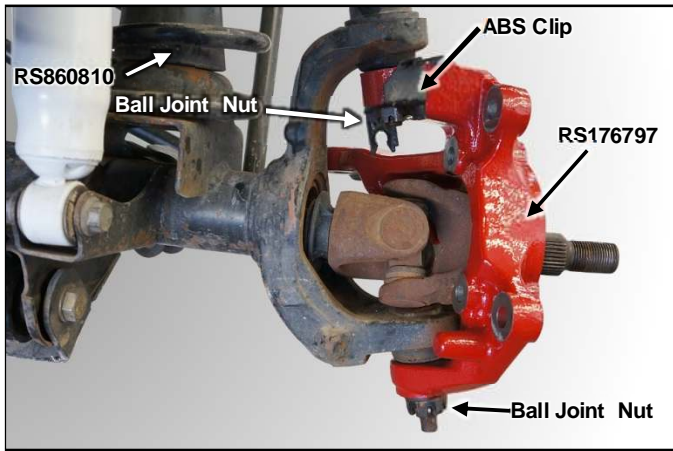


Illustration 11

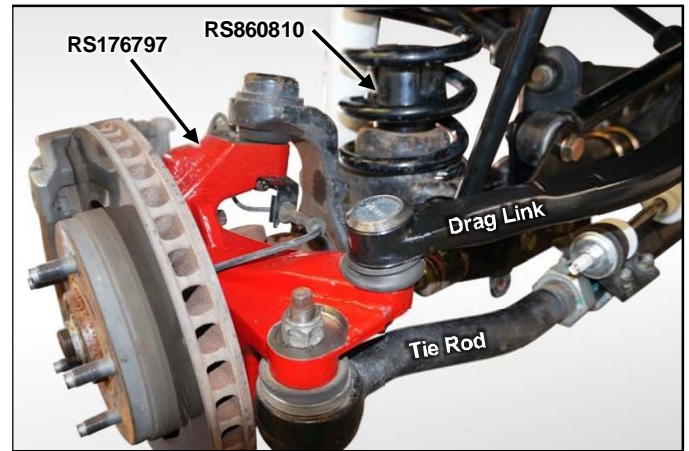


Illustration 12

### STEERING KNUCKLE INSTALLATION

- 1)  Clean ball joint studs and tapered holes in new Rancho steering knuckle of any grease or contamination.
- 2)  Loosely attach new Rancho steering knuckle and OE ABS wire bracket to ball joints using OE nuts. See Illustration 10 and Illustration 11.
- 3)  FIRST Tighten upper ball joint nut to 70 lb-ft, then tighten lower ball joint nut to 70 lb-ft. Install NEW cotter pins, tightening ball joint nuts as needed to align castle nut with hole.

DO NOT LOOSEN BALL JOINT NUT TO INSTALL COTTER PIN!

### AXLE AND HUB INSTALLATION

- 4)  Clean axle and apply thin coating of grease or differential fluid on axle splines and seal seating surface.
- 5)  Support axle where it enters axle shaft where it enters tube and carefully insert axle shaft through tube and seal.

**CAUTION:** Do not allow axle to drag on inside of tube or it will pick up contamination and damage seal.

Make sure to keep axle centered in tube on re-install to not damage the inner seal. Damage to inner seal will cause fluid leakage and require replacement of the seal

- 6)  Reinstall hub and dust shield.
- 7)  Slide ABS sensor through slot in dust shield and insert into hub.
- 8)  Apply red Loctite to OE hub bolts and attach hub to steering knuckle. Torque to 75 lb-ft.

### BRAKE INSTALLATION

- 1)  Attach ABS wire to clips, and ABS sensor to hub with OE bolt. Tighten to 34-50 lb-in.
- 2)  Reinstall brake rotors. Reinstall calipers using OE hardware and red Loctite. Torque to 120 lb-ft.

### STEERING LINKAGE INSTALLATION

- 1)  Transfer mark from previously removed drag link to new flipped drag link (see pg 2). Thread new drag link into adjusting sleeve up to mark. See Illustration 10
- 2)  Attach new drag link rod end to steering knuckle using OE nut. Torque to 63 lb-ft. Torque adjusting sleeve clamp hardware to 26 lb-ft. See Illustration 12.
- 3)  Reattach tie rod to steering knuckles using OE nuts. Torque to 63 lb-ft. See Illustration 12.

### DIFFERENTIAL COVER INSTALLATION

- 1)  Be sure that all silicone and oil residue has been removed from mating surfaces
- 2)  Apply a 3/16 bead of silicon gasket maker. To differential cover.
- 3)  Install cover and Torque bolts in crisscross pattern to 30 lb-ft. Fill with oil to vehicle, differential, or differential covers specifications.

### LOWER VEHICLE

- 1)  Install front wheels and torque 85-125 lb-ft.
- 2)  Raise vehicle and remove jack stands. Lower vehicle to ground.

### FINAL CHECKS & ADJUSTMENTS

- 1)  Turn the front wheels completely left then right. Verify adequate tire, wheel, and brake hose clearance. Inspect steering and suspension for tightness and proper operation.
- 2)  With the suspension at maximum extension (full droop), inspect and rotate all axles and drive shafts. Check for binding
- 3)  Ensure that the vehicle steering and brake systems operate correctly.

4)  Set toe by adjusting tie rod length. Recommended toe setting is .125" toe in,  $\pm .100$ ".

5)  Center steering wheel by adjusting drag link length using adjusting sleeve.

Drive vehicle and recheck toe and steering wheel center. Readjust as needed

6)  Have vehicle Aligned at a certified alignment facility.

**ADJUST STEERING STOPS (IF REQUIRED)**

The steering stops are cast into the Rancho High-Steer Knuckle to resist bending and breakage better than stock adjustable bolts. The stops are made long so adjustments can be made by grinding the stops to fit.

Toe-in and steering wheel center must be set before grinding stops because these alignment settings will change the stop settings.

1)  To adjust, cycle the steering back and forth, grinding small amounts of the stop until the desired degree of steering is set.

2)  The front and rear steering stops must be adjusted simultaneously and equally.

3)  Check for u-joint binding and yoke to yoke interference at full lock in both directions.

**WARNING: If binding or contact occurs, axle will break**

4)  If a stock style adjustable steering stop is desired, the cast stop can be cut off at the knuckle then drilled and tapped for a 3/8" bolt.

**Torque Specs**

Bump Stop Spacer RS176802	20 lb-ft
Shock Absorber Lower Mount	56 lb-ft
Sway Bar end Link to Axle	75 lb-ft
Ball Joint Lower	70 lb-ft
Ball Joint Upper	70 lb-ft
Hub to steering knuckle	75 lb-ft
ABS sensor	34-50 LB-IN

Drag Link Ball Stud at Knuckle	63 lb-ft
Drag Link Adjustment Sleeve Clamp	26 lb-ft
Tie Rod Ball Stud	63 lb-ft.
Brake Caliper	120 lb-ft
Differential Cover	30 lb-ft
Wheel Lug Nuts	85-125 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

**1/2-13x1.75 HHCS**

D T L X

Grade 5 Grade 8

G = Grade Marking (bolt strength)  
D = Nominal Diameter (inches)  
T = Thread Pitch (threads per inch)

L = Length (inches)  
X = Description (hex head cap screw)

**M12-1.25x50 HHCS**

D T L X

P = Property Class (bolt strength)  
D = Nominal Diameter (millimeters)  
T = Thread Pitch (thread width, mm)

L = Length (millimeters)  
X = Description (hex head cap screw)



**⚠ 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: 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.**

5) 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.

6) 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 kit improperly and will be creating a significant risk of an accident. In case of any doubt, consult a qualified mechanic.

7) If any component does not fit properly, something is wrong. You are installing the 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.

8) 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.

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

10) 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.

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

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

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

14) 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.

15) 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.

16) 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**

17) 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.

18) 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.

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

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

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

22) 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**

23) 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 accordantly.

**The driver of this suspension system recognizes and agrees that there are risks inherent in driving a vehicle with a modified 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.**