89151 Rev A

# INSTALLATION INSTRUCTION

## Suspension Upgrade System RS66151 / 66151B
## (Upper Adjustable Control Arms)


## Jeep Wrangler (JK)
## 2007 - 2012

## 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. Extreme care must be used to prevent loss of control or vehicle rollover during abrupt maneuvers. 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. Before installing this system, have the vehicle's alignment and frame checked at a state approved facility. The alignment must be within factory specifications and the frame must be sound (no cracks, damage, or corrosion).

B. Do not install a body lift kit with Rancho's suspension system or interchange parts from this system with components from another manufacturer. Use the following Rancho shock absorbers with this system:

RS5000 / RS7000 / RS9000X

| Front | Rear |
|---|---|
| RS5331 | RS5332 |
| RS999331 | RS999332 |
| RS7331 | RS7330 |

C. Compare the contents of this system with the parts list in these instructions. If any parts are missing, including fasteners, contact the Rancho Technical Department at 1-734-384-7804. Each hardware kit in this system contains fasteners of high strength and specific size. Do not substitute a fastener of lesser strength or mix one hardware kit with another.

D. Apply THREAD LOCKING COMPOUND to all bolts during installation. One drop on the exposed threads of each bolt before installing the nut is sufficient to provide an adequate bond. CAUTION: Thread locking compound may irritate sensitive skin. Read warning label on container before use.

E. 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.

F. Unless otherwise specified, tighten all bolts to the standard torque specifications listed at the end of the note's section. USE A TORQUE WRENCH for accurate measurements.

G. Rancho parts come with a protective coating. Do not powder coat, chrome, cadmium, or zinc plate any of the components in this system. If you wish to change the appearance of components enamel paint can be applied over the original coating.

H. Do not weld anything to these components, and do not weld any of these components to the vehicle unless specifically stated in the instructions. If any component breaks or bends, contact your local Rancho dealer or Rancho for replacement parts.

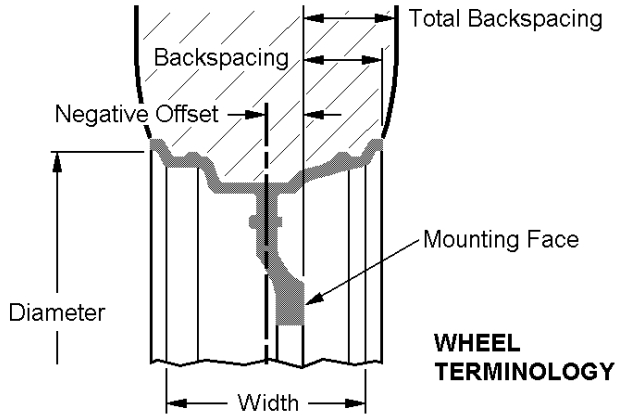
I. Some of the service procedures require the use of special tools designed for specific procedures. The following tools and supplies are recommended for proper installation of this kit. ☑

- ☐ Jeep Service Manual
- ☐ Torque Wrench (250 FT-LB capacity)
- ☐ Hammer
- ☐ 1/2" Drive Ratchet and Sockets
- ☐ Combination Wrenches
- ☐ File
- ☐ Hydraulic Floor Jack
- ☐ Heavy Duty Jack stands
- ☐ Wheel Chocks (Wooden Blocks)
- ☐ Anti-seize compound
- ☐ **Safety Glasses**–Wear safety glasses at all times

J. 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.

K. 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.

L. This suspension system was developed using a BF Goodrich® Mud-Terrain™ T/A® KM-35 x 12.50 x 18 D tire on a 18" x 9" wheel with 4.5" of backspacing. Total backspacing is 5.9". Before installing any other combination, consult your local tire and wheel specialist. Actual tire size varies by manufacturer.




M. The required installation time for this system is approximately 4 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. Welding on a vehicle creates an electrical charge throughout the body and frame. Disconnect the vehicle's battery prior to any welding. Place welding ground clamps as near as possible to the weld. Never use a vehicle suspension component as a welding ground point.

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. During high articulation events, the front driveshaft may contact the transmission oil pan. A smaller diameter driveshaft is suggested for optimal performance. Rancho recommends Powertrain Industries (Garden Grove, CA) front driveshaft 2007 – 2011 models P/N 3194-1925 and 2012 models P/N 3194-2125. 1-800-798-4585.

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

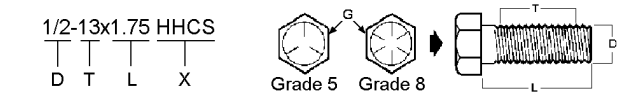
| Compatible With OE Wheels | Development Tire Size (actual) | Optional Tire Size[2] (actual) | Wheel Size (backspacing) |
|---|---|---|---|
| No | 35x12.5xR17 (34.8"x12.5") | 37x12.5xR17 (36.3"x12.8") | 17x9 (4.5") |

[2] Fitment of the optional tire size may require trimming to provide proper clearance.

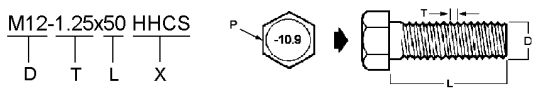
**STANDARD BOLT TORQUE SPECIFICATIONS**

| 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 |

**BOLT IDENTIFICATION**



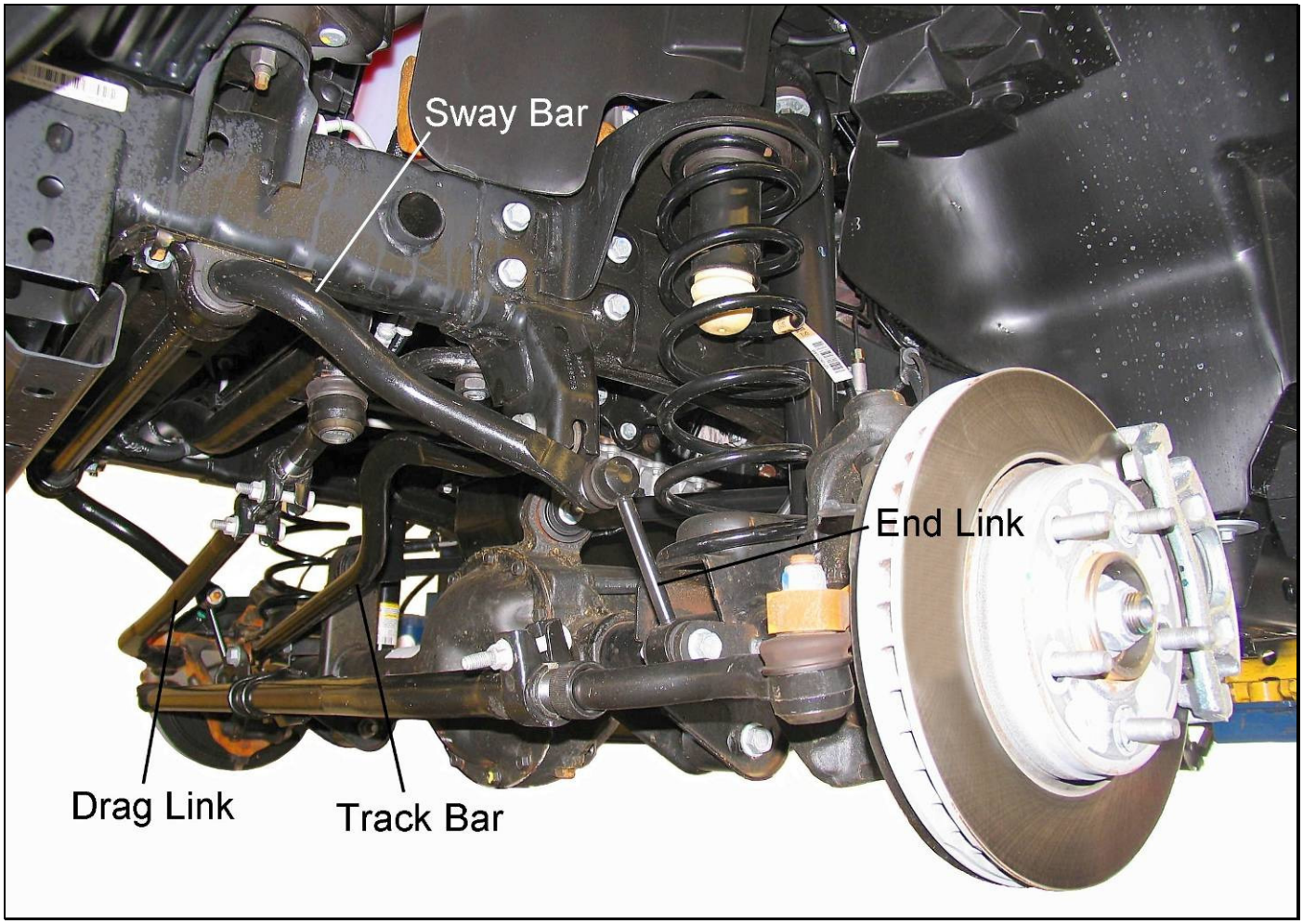

G = Grade Marking (bolt strength)
D = Nominal Diameter (inches)
T = Thread Pitch (threads per inch)
L = Length (inches)
X = Description (hex head cap screw)




P = Property Class (bolt strength)
D = Nominal Diameter (millimeters)
T = Thread Pitch (thread width, mm)
L = Length (millimeters)
X = Description (hex head cap screw)

## PARTS LIST

| P/N | DESCRIPTION | QTY. | P/N | DESCRIPTION | QTY. |
|---|---|---|---|---|---|
| 176522 | Upper Suspension Arm, Front | 2 | 602627 | 7/8-14 Male Rod End | 2 |
| 860712 | Articulation Bushing Kit | 1 | 770196 | .75-M12 High-misalignment Sleeve | 4 |
| 420090 | 2.25” Crush Sleeve | 4 | 176649 | Upper Suspension Arm, Rear | 2 |
| 520090 | Bushing | 8 | 176647 | Rod End w/ Articulation Bushing End | 2 |
| 860613 | Shim Kit | 2 | 860705 | Bearing Kit | 1 |
| 7852 | Washer | 12 | 770173 | 7/8-14 Jam Nut | 4 |
| 860625 | Rod End Kit | 1 | 89151 | Instructions | 1 |




Front Suspension

## FRONT SUSPENSION

### COIL SPRING REMOVAL

1) ☐ Park vehicle on a level surface. Set the parking brake and chock rear wheels. Disconnect the negative ground cable from the battery.

2) ☐ Remove the sway bar end link to axle bracket nut and bolt. Repeat for other side.

3) ☐ Remove the track bar to axle bracket nut and bolt.

4) ☐ Raise the front of the vehicle and support the frame with jack stands. Remove the front wheels and set them aside.

5) ☐ If equipped, remove the transmission skid plate.

6) ☐ Mark driveshaft and pinion mounting flange for alignment.

7) ☐ Remove driveshaft from pinion flange mounting bolts and tie or support driveshaft up. Do not allow drive shaft to hang free.

8) ☐ Remove the bump stop spacer bolt from the axle.

9) ☐ Support the front axle with a jack.

10) ☐ Remove the shock absorber lower nut and bolt.

11) ☐ Repeat steps 6 through 8 for the other side.

12) ☐ If necessary, disconnect any vent hoses and electrical wiring from the axle. Separate the brake hoses from the frame rails by removing the bracket bolts.

13) ☐ 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.

## SUSPENSION ARM BRACKET REMOVAL & SUSPENSION ARM REPLACEMENT

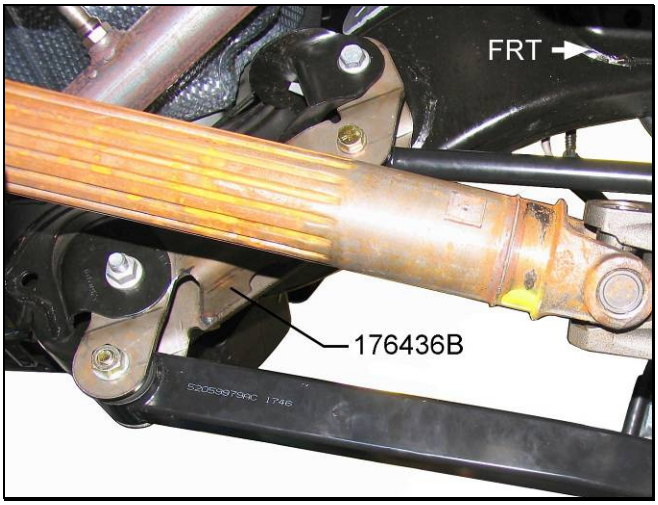
1) ☐ Support the front axle with a jack.

2) ☐ Remove the driver side upper suspension arm from the Rancho suspension arm bracket and axle bracket.

3) ☐ Loosen driver side lower suspension arm hardware at the axle bracket. Do not remove.

4) ☐ Remove the driver side lower suspension arm from the Rancho suspension arm bracket.

5) ☐ Remove Rancho suspension arm bracket 176435 and 176436 from frame brackets. See Illustration 1.




Illus. 1

6) ☐ Reattach lower suspension arm to frame bracket. Do not tighten lower suspension arm bolts until vehicle is at normal ride height.

7) ☐ Thread jam nut on rod end 602627 until 1-2 threads are left. Apply anti-seize compound and thread rod end into upper suspension arm 176522.

8) ☐ Insert the sleeves from kit 860625 and attach rod end to frame bracket with the original hardware. Attach bracket end of upper suspension arm 176522 to the axle bracket with the original hardware. See illustration 2.

9) ☐ Center rod end 602627 and tighten jam nut to 125 ft. lbs. Do not tighten upper suspension arm bolts until vehicle is at normal ride height.


Illus. 2

10) ☐ Repeat steps 2 through 9 to install suspension arms on the passenger side.

## COIL SPRING INSTALLATION

1) ☐ Install original insulator on top of coil spring. Place bump stop spacer 176443 inside the coil spring.

**NOTE**: If you have a winch mounted to the front bumper, add spring spacer RS70082 (purchased separately) to compensate for the additional weight.

2) ☐ Insert the spring assembly into the upper pocket and onto the axle pad. See illustration 3. Align pig tail with groove in axle pad.


Illus. 3

3) ☐ Attach the bump stop spacer to the axle pad with the self-tapping screw.

4) ☐ Repeat steps 1 through 3 for the other side.

5) ☐ Raise front axle and attach shock lower mounts to axle brackets with the original hardware. Tighten nuts and bolts to 56 ft. lbs.

6) ☐ Align marks on driveshaft and pinion flange. Install using original hardware. Blue Loctite is recommended on drive shaft bolts.

7) ☐ Install front wheels and lower vehicle to the ground. Tighten lug nuts to 80–110 ft. lbs.

8) ☐ Attach track bar to axle bracket with original hardware. Tighten the track bar nut and bolt to 125 ft. lbs.

9) ☐ Tighten the upper suspension arm bolts to 125 ft. lbs.

10) ☐ Tighten lower suspension arm bolts to 125 ft. lbs.

## REAR SUSPENSION

### COIL SPRING REMOVAL

1) ☐ Chock front wheels. Disconnect the track bar from the frame bracket. Disconnect the sway bar end links from the axle brackets.

2) ☐ Raise the rear of the vehicle and support the frame with jack stands. Remove the rear wheels.

3) ☐ Remove bolts and separate the brake hoses from the frame rails. If necessary, disconnect any vent hoses and electrical wiring from the axle.

4) ☐ Support the rear axle with a floor jack. Remove the shock absorber lower nut and bolt from the axle bracket.

5) ☐ Carefully lower the rear axle until the coil springs are free from the upper mount seat. Remove the coil springs.

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

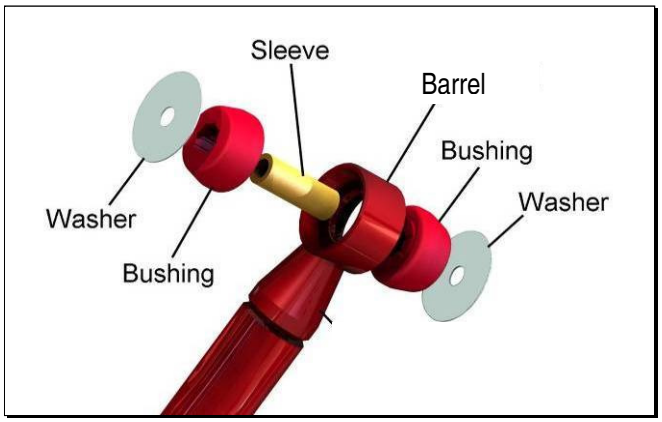
### SUSPENSION ARM REPLACEMENT

1) ☐ Remove the driver side upper suspension arm flag nut and bolt from the axle bracket.

2) ☐ Remove the flag nut and bolt at the frame rail bracket. Remove the upper suspension arm.

3) ☐ Install jam nut on rod end 176647 until 4-5 threads (2dr) or 1-2 threads (4dr) are left. Apply anti-seize compound and thread rod end into upper suspension arm 176524.

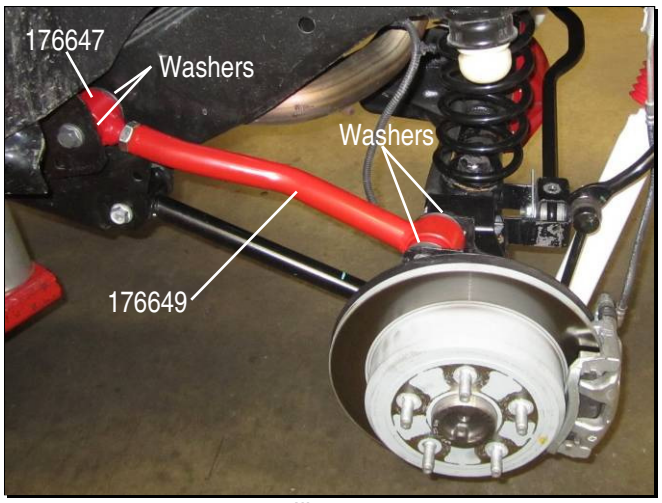
4) ☐ Lubricate two bushings (520090) and a sleeve (420090) from kit 860712 with synthetic lithium grease. Insert bushings and sleeve into upper suspension arm 176649 and rod end 176647. See illustration 4.




Illus. 4

5) ☐ Attach the adjustable end of the suspension arm assembly to the frame bracket with the original hardware plus two greased washers.

6) ☐ Insert two greased washers from kit 860613 and attach suspension arm to axle bracket with the original hardware. See illustration 5.




Illus. 5

7) ☐ Center rod end 176647 and tighten jam nut.

8) ☐ Tighten the suspension arm bolts to 125 ft. lbs.

9) ☐ Repeat steps 1 through 8 for the passenger side.

**COIL SPRING INSTALLATION**

1) ☐ Place the coil springs onto the axle pads. Align upper pigtails towards the front of the vehicle. Raise the axle until the coil springs seat on the upper isolators. See illustration 5.

**NOTE**: When installing coil springs, make sure that the rubber isolator is positioned in the upper mount and the small egg-shaped coil end is at the bottom.

2) ☐ Loosely attach shocks to the axle brackets with the original hardware.

3) ☐ Attach the sway bar end links to axle bracket with the original hardware. Tighten nut and bolt to 40 ft lbs.

4) ☐ Install rear wheels and lower vehicle to the ground. Tighten lug nuts to 80–110 FT-LBS.

5) ☐ Attach track bar to frame bracket with original hardware

6) ☐ Tighten the track bar bolts to 125 ft. lbs. Tighten the shock absorber lower mounting bolts to 56 ft. lbs

7) ☐ Reconnect the battery ground cable.

## FINAL CHECKS & ADJUSTMENTS

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

2) ☐ With the suspension at maximum extension (full droop), inspect and rotate all axles and drive shafts. Check for binding and proper slip yoke insertion. The slip yoke should be inserted a minimum of one inch into the transfer case and/or transmission.

3) ☐ Ensure that the vehicle brake system operates correctly. If new brake hoses were installed, verify that each hose allows for full suspension movement.

4) ☐ Readjust headlamps. Have vehicle Aligned to manufacturer's specifications.

**Alignment Specifications**

| Adjustment | Preferred | Range |
|---|---|---|
| Caster | 5.0° | ±1.0° |
| Camber (fixed angle) | -0.25° | ±0.63° |
| Toe-In (each wheel) | 0.15° | ±0.15° |
| Thrust Angle | 0 | ±0.15° |

**NOTE:** During high articulation events, the front driveshaft may contact the transmission oil pan. A smaller diameter driveshaft is suggested for optimal performance. Rancho recommends Powertrain Industries (Garden Grove, CA) front driveshaft, 2007 – 2012 models P/N 3194-1925 and 2012 models, P/N 3194-2125. 1-800-798-4585.

The length of the upper suspension arms may be adjusted to fit an aftermarket driveshaft.

## IMPORTANT NOTICE

***WARNING:*** DO NOT OPERATE THIS VEHICLE ON PUBLIC ROADS OR AT SPEEDS GREATER THAN 15 MPH WITH THE SWAY BAR END LINKS DISCONNECTED.

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