



Rancho Suspension Systems:
RS66505B — 2018-2017 Ford F150 4WD 4.5" Kit

Requires replacement Rancho shock absorbers and replacement wheels
Replacement front driveshaft may be required.

See page 4



Fits OE 18" and up rims and spare
ONLY WITH OE TIRES

⚠ WARNING

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

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

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

PRELIMINARY

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

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

The following terminology has been used in this Manual:

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

PRE-INSTALLATION WARNINGS and INSTRUCTIONS

⚠ WARNING: Only the following rim/tire sizes may be used with this suspension system: 35X12.50R18LT tires 18X9 +18 offset (5.6" Back-spacing) wheel

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

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

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

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

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

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

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

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

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

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

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

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

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

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

AFTER INSTALLATION WARNINGS AND INSTRUCTIONS

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

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

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

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

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

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

OPERATION

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

IMPORTANT NOTES

- A. Before installing this system, have the vehicle's alignment and frame checked by a certified technician. The alignment must be within factory specifications and the frame of the vehicle must be sound (no cracks, damage or corrosion). Have all suspension, steering and driveline components inspected and replaced if worn or damaged
- B. The components of Rancho's suspension system are designed as a single integrated system. To avoid compromises in terms of safety, performance, durability or function, do not install a body lift kit with Rancho's suspension system or interchange parts from this system with components from another manufacturer. Use of other components will result in the forfeiture of any type of warranty on the vehicle/suspension system.
- C. Some components required for the installation of this kit may need to be purchased separately. See "SPECIFICATIONS & REQUIREMENTS" on next page of this manual.
- D. Compare the contents of this system with the parts list in these instructions.
- E. Do not powder-coat or plate any of the components in this system. To change the appearance of components, automotive paint can be applied over the original coating.
- F. Each hardware kit in this system contains fasteners of high strength and specific size. Do not mix hardware kits or substitute a fastener of lesser strength. See bolt identification table at end of instruction.
- G. Install all nuts and bolts with a flat washer. When both SAE (small OD) and USS (large OD) washers are used in a fastener assembly, place the USS washer against the slotted hole and the SAE washer against the round hole.
- H. Apply a drop of thread locking compound to all bolts during installation. ⚠ CAUTION: Thread locking compound may irritate sensitive skin. Read warning label on container before use.
- I. Unless otherwise specified, tighten all nuts and bolts to the standard torque specifications shown in the table at end of instruction. USE A TORQUE WRENCH for accurate measurements.
- J. Do not weld anything to these components, and do not weld any of these components to the vehicle unless specifically stated in the instructions
- K. It is extremely important to replace coil springs, axle flanges, and drive shaft/pinion relationships as original. Be sure to mark left/right, front/rear, and indexing of mating parts before disassembly. A paint marker or light colored nail polish is handy for this.
- L. Suspension components that use rubber or urethane bushings should be tightened with the vehicle at normal ride height unless otherwise specified. This will prevent premature failure of the bushing and maintain ride comfort.
- M. Some of the service procedures require the use of special tools designed for specific procedures. If you do not know how to safely use any of these tools, or do not have them, stop the project and consult a qualified mechanic. See "Tools and Supplies" on next page of this manual
- N. The required installation time for this system is approximately 8 hours for two people. Check off the box (☐) at the beginning of each step when you finish it. Then when you stop during the installation, it will be easier to find where you need to continue from.
- O. Important information for the end user is contained in the consumer/installer information pack. If you are installing this system for someone else, place the information pack on the driver's seat. Please include the installation instructions when you finish.
- P. The lifespan of Rancho products depends on many factors. Improper use, abuse or harsh use in general may compromise the integrity of the suspension system and significantly reduce its lifespan. The suspension system is also subject to wear over time. Have the suspension system regularly inspected and maintained by qualified mechanics. If the inspection reveals any damage or excessive wear, no matter how slight, immediately replace or repair the component. The suspension system must be regularly maintained in order to optimize its safe and efficient use. The more severe the conditions under which the suspension system is operated, the more often it must be inspected and maintained.

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

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

SPECIFICATIONS & REQUIREMENTS

Shock Absorbers

New Rancho shock absorbers must be used with this kit, and must be purchased separately

OE front shock absorbers can be re-used with Rancho Strut Tower Kit RS88519

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

Required Rancho Shock Absorbers

	Front	Rear
RS9000XL		RS999287
RS7000MT	RS7838	RS7287
RS5000X	RS55838	RS55287
RS5000		RS5287
Strut Tower	RS886519*	

*FOR USE WITH OE FRONT SHOCK ONLY

Front Driveshaft

Due to the change in the front drive shaft angle, Rancho suggests replacing the front drive shaft with a double cardan design if the truck is going to be driven in 4 Wheel Drive mode often, or if driven in 4A (4-Wheel Drive Auto).

A replacement front double cardan driveshaft is available from Powertrain Industries.

Wheels and Tires

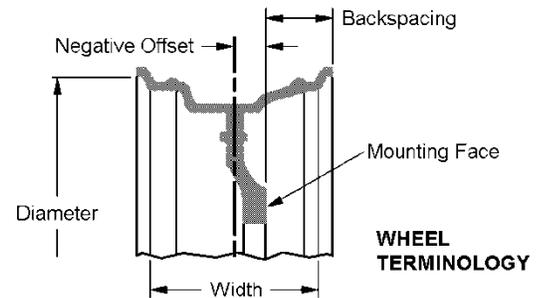
This suspension system was developed using the following tire & wheel combination:

Tire: BFGoodrich All-Terrain T/A KO2 35X12.50R18LT

Wheel: 18 x 9 +18 Offset (5.6" Backspacing)

Because of manufacturer variances, before installing any combination, consult your local tire and wheel specialist.

Compatible With OE Wheels	Development Tire Size (Actual)	Wheel Size (Backspacing)
Yes ¹	35X12.50R18LT (34.8"x12.5")	18x9 (5.6")



Available Accessories

RS60501: Rancho Rear Add-A-Leaf – Provides an additional 1.5" – 2" of lift in rear.

If additional rear lift is desired, Rancho Add-A-Leaf RS60501 may be purchased separately.

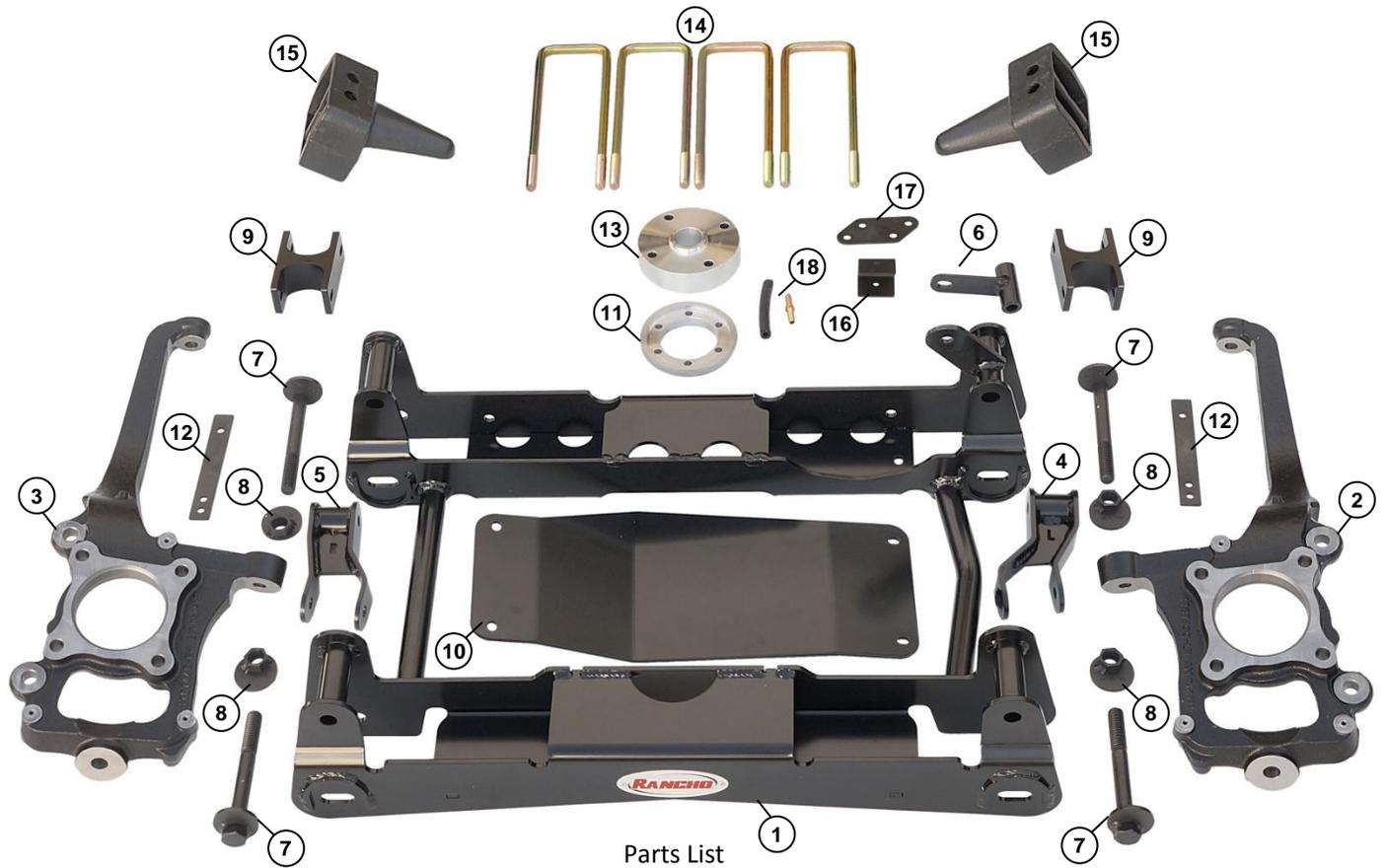
Perfect for towing, the additional weight of a camper, or any time more lift is desired in the rear.

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

Ford Service Manual
 Die Grinder with cut-off blade or Sawzall
 Vacuum Cap
 Coil Spring Compressor
 Torque Wrench (260 FT-LB capacity)
 Ford Ball Joint Tool- part number- 204-592
 1/2" Drive Ratchet and Sockets
 Assorted Combination Wrenches

Heavy Duty Jack Stands
 Wheel Chocks (wooden blocks)
 Hydraulic Floor Jack
 File
 Hammer
 Wire Brush (to clean bracket mounting surfaces)
 Black Enamel Paint

Silicone Spray Lubricant
 Tape Measure
Safety Glasses--
 Wear safety glasses at all times



Parts List

ITEM	PART #	DESCRIPTION	QTY
	RS66505B-1	Box 1 Of 4	1
1	RS176880B	Subframe	1
	RS66505B-2	Box 2 Of 4	1
2	RS176753	Knuckle - Left 4.5"	1
	RS66505B-3	Box 3 Of 4	1
3	RS176754	Knuckle - Right 4.5"	1
	RS66505B-4	Box 4 of 4	1
	RS94180	Information Pack	1
	RS89505	Instruction	1
	RS94177	Rollover Warning Label	1
	RS94119	Consumer/Warranty Information	1
	R-RM0082-1112	Warranty Tag	1
	RS780281	Rancho Decal	1
	RS780294	Red Rancho Decal, Die Cut	1
	RS780294B	Black Rancho Decal, Die Cut	1
4	RS176881B	Fwd Diff Drop Bracket, Left	1
5	RS176882B	Fwd Diff Drop Bracket, Right	1
6	RS176883B	Aft Diff Drop, Left	1
	RS860838	Sub Assy, Alignment Hardware	1
7	RS176578	Cam Bolt Assembly	4
8	RS176858	Hex Cam	4
	RS770123	Washer M18 SAE	4
	RS770118	Nut M18-2.5 Nylock	4
9	RS176579	Sway Bar Drop Bracket	2
10	RS176884B	Skid Plate	1
11	RS176586	Front Driveshaft Spacer	1
12	RS176780	Front Brake Line Bracket	2
	RS860731	Sub Assy, Rear Drive Shaft	1
13	RS176691	Rear Drive Shaft Spacer	1
	RS860732	Sub Assy, Spacer Hardware	1
	RS77035	HHCS M12-1.75X70MM	4
	RS7915	Washer M12	4
14	RS740017	U-Bolt 9/16-18 X 3.16 X 12	4

ITEM	PART #	DESCRIPTION	QTY
15	RS15104	Winged Spacer Block	2
	RS860837	Sub Assy, Hdw Box	1
	RS860783	Sub Assy, Diff Drop	1
	RS770129	HHCS, M14-2.00X80MM	1
	RS770041	HHCS, M14-2.00X90MM	2
	RS7877	Nut, M14-2.00 Toplock	2
	RS770109	Washer, M14	5
	RS860506	Sub Assy, M10 Hardware	2
	RS770080	HHCS, M10-1.50X30MM	4
	RS7657	Nut, M10-1.50 Nylock	4
	RS770064	Washer, M10	8
	RS860785	Sub Assy, Front Driveshaft Spacer	1
	RS770256	12pt. M10-1.5 Class 12.9	6
	RS770230	M10 Washer, 18MM OD	6
	RS42702	Thread Lock	1
	RS860786	Sub Assy, Front Brake line Bracket	1
	RS770127	HHCS, M8-1.25X20mm	2
	RS603112	Nut, M8-1.25 Nylock	2
	RS770128	Washer, M8	4
	RS860152	Sub Assy, 9/16 U-Bolt	1
	RS770062	Washer, 9/16 X 3/16 Thick	8
	RS7737	Nut, 9/16-18 Nylock	8
	RS860787	Sub Assy, Rear Brake	1
16	RS176748	Parking Brake Cable Drop	1
17	RS176314	Rear Brake Hose Drop	1
	RS770128	Washer, M8	5
	RS603112	Nut, M8-1.25 Nylock	3
	RS770127	HHCS, M8-1.25X20MM	2
18	RS860749	Sub Assy, Vent Hose	1
	RS96327	Tube Fitting	1
	RS96328	Rubber Tube	1
	RS1900-12	Kit Boot Tie Black 10/Pk	1
	136763624	Tie Strap-Black	10

FRONT SUSPENSION

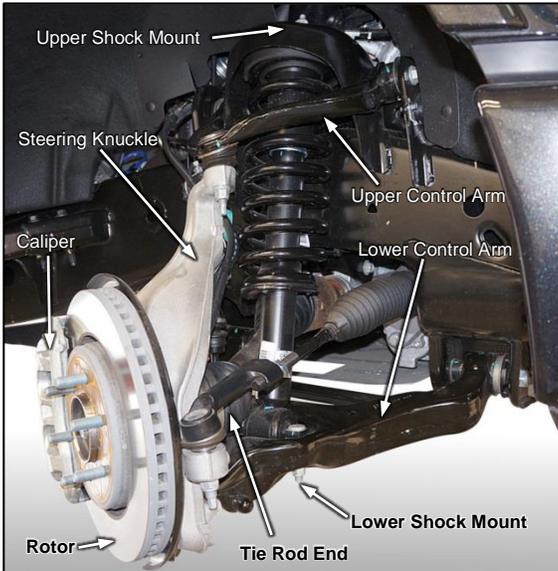


Illustration 1

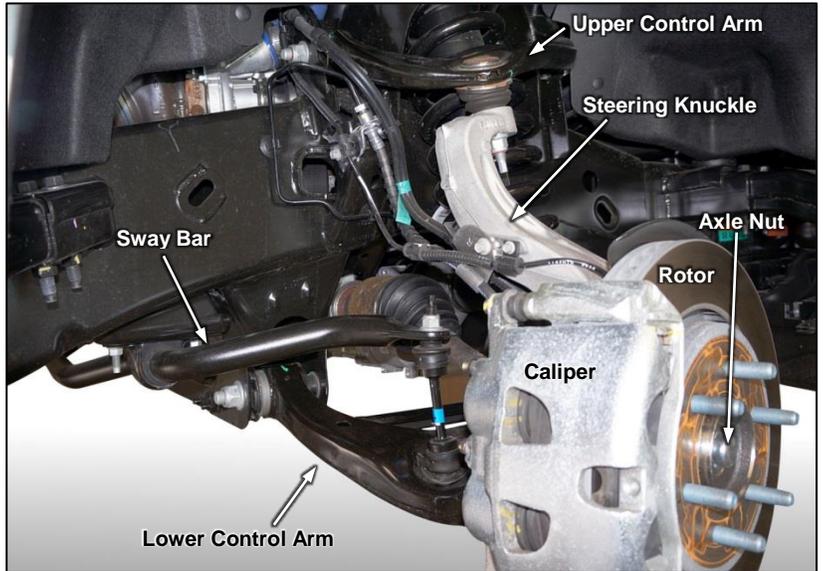


Illustration 2

VEHICLE PREPARATION & SWAY BAR REMOVAL

1) Park the vehicle on a level surface. Set the parking brake and chock rear wheels. Measure and record the distance from the center of each wheel to the top of the fender opening. See Illustration 3.

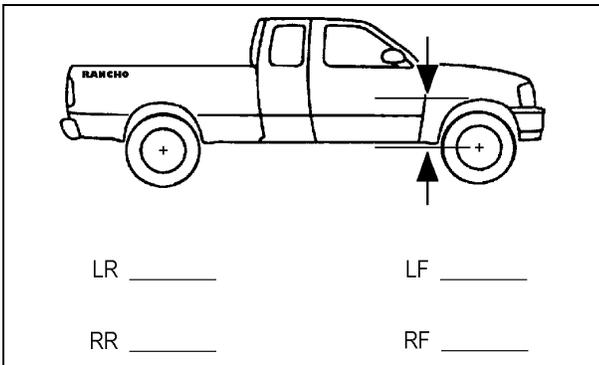


Illustration 3

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

3) If applicable, remove the front splash shields and / or skid plates. Remove splash shield brackets from side of frame rails. See Illustration 4 and Illustration 5.

4) Hold the hex stud and remove the nut attaching the sway bar end link to the sway bar. See Illustration 2 and Illustration 6. Repeat for other side.

5) Remove the four nuts holding the sway bar to the frame. Remove the sway bar assembly. See Illustration 6.



Illustration 4



Illustration 5

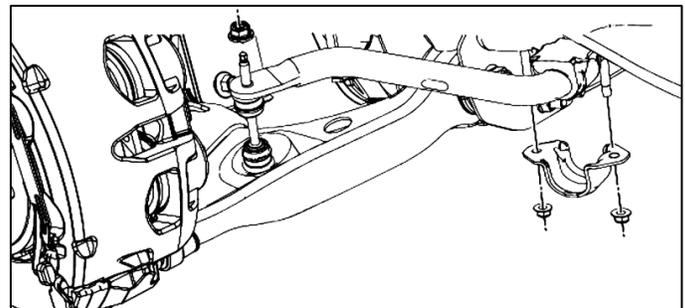


Illustration 6

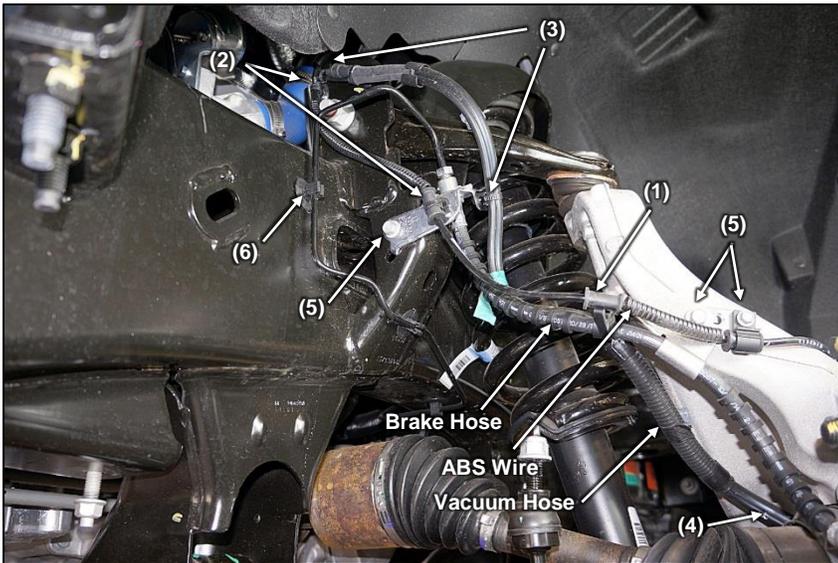


Illustration 7

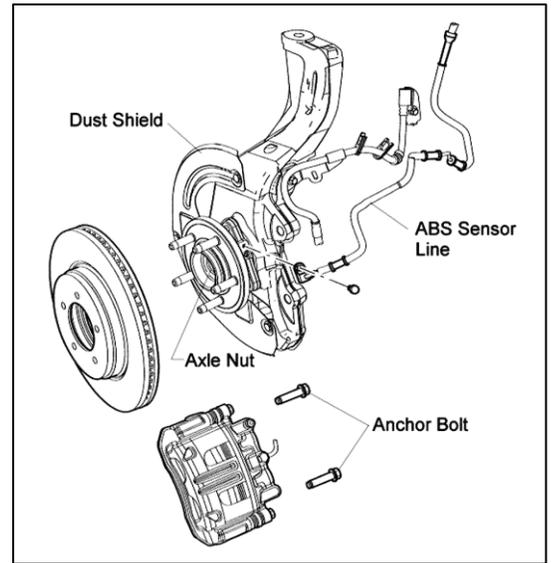


Illustration 8

**STEERING KNUCKLE, SHOCK & LOWER CONTROL ARM
REMOVAL**

1) Separate the ABS wire from brake hose (1). Remove plastic clips holding ABS wire to bracket (2) and frame (2). Remove plastic clips holding vacuum hose to bracket (3) and frame (3). Remove vacuum hose from hub (4). Remove screws holding bracket to frame, and lines to knuckle (5). Remove brake line from plastic clip at frame (6). See Illustration 7.

2) Remove the brake caliper anchor bolts. See Illustration 8. Remove the brake caliper and its mounting bracket as an assembly. Hang the caliper assembly with wire or a tie wrap.

⚠ 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.

3) Label the brake rotor left or right. Remove the brake rotor.

4) Remove the dust shield. Disconnect the ABS sensor from the wheel hub. See Illustration 8.

5) Remove the axle cap using a small chisel and hammer to pry off. Remove axle nut. See Illustration 8.

⚠ WARNING: Do not hammer the ball studs to separate them from components. You could damage the ball studs, without this damage being visible to you, resulting in sudden and unexpected failure of the ball studs and an accident.

6) Mark position of alignment cams (if equipped) and loosen all four lower control arm pivot bolts.

7) Remove the nut from the outer tie rod stud. Using Ford Service tool #204-592 separate tie rod end stud from knuckle. Loosely re-install to keep steering knuckle from turning. See Illustration 1.

8) Loosen the nuts at the upper and lower ball joints. Using Ford Service tool #204-592 separate ball joints from knuckle.

9) Remove the upper and lower ball joint nuts. Carefully remove the steering knuckle. Cover the exposed hub to prevent contamination.

10) Loosen the three shock absorber upper mount to frame nuts. See Illustration 9

11) Remove the shock absorber lower mounting nuts and swing lower control arm down off the shock studs.

12) Remove the three shock absorber upper mount to frame nuts. Remove the shock absorber and spring assembly.

13) Remove the lower control arm pivot bolts. Remove the lower control arm. See Illustration 9.

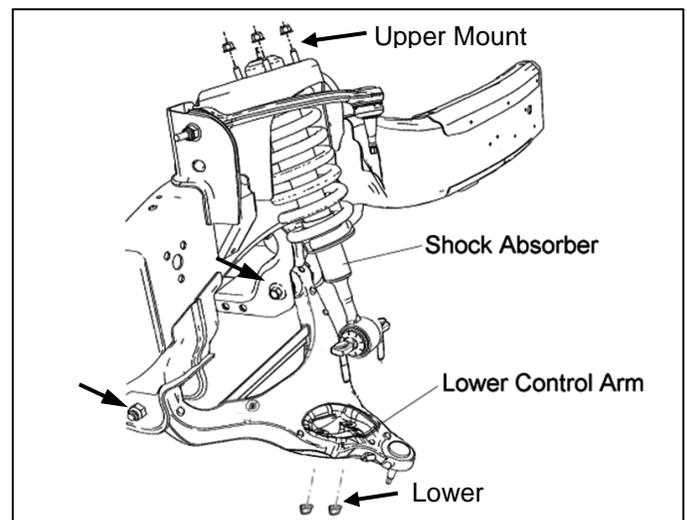


Illustration 9

FRONT DIFFERENTIAL REMOVAL

- 1) Remove the four bolts that attach the cross-member to the lower control arm pockets. Remove the cross-member. See Illustration 10.

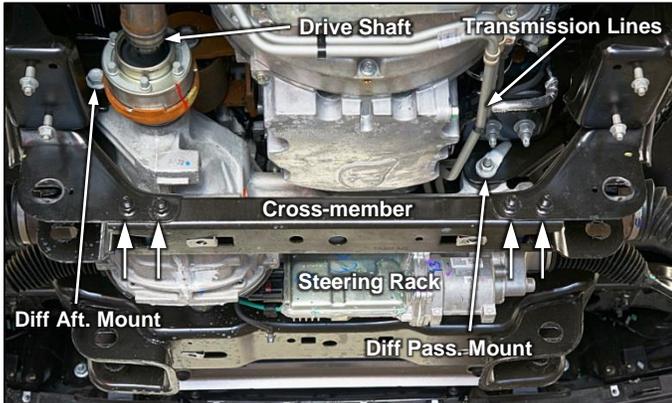


Illustration 10

- 2) Disconnect the electrical connections to the steering rack. Slide the red clip lock out, then push down on the black clip lever while pulling the plug. See Illustration 10 and Illustration 11. Clips locks shown in out position.

⚠ WARNING: Do not pull on wires. Do not damage the plug, lever or clip. The steering rack may not function properly, without the damage being visible to you, resulting in loss of vehicle control and an accident.

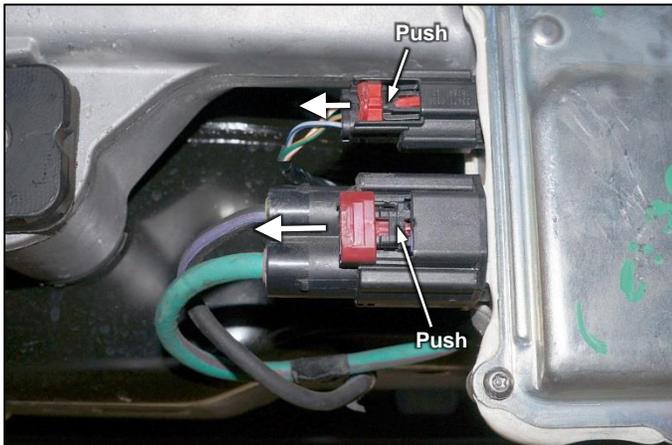


Illustration 11

- 3) Index-mark the front driveshaft flange to the front differential pinion flange.
- 4) Remove the six bolts from the driveshaft flange. Disconnect and support the front driveshaft.
- 5) Disconnect the vent hose from the axle housing. See Illustration 12.
- 6) Support the front differential assembly with a floor jack.

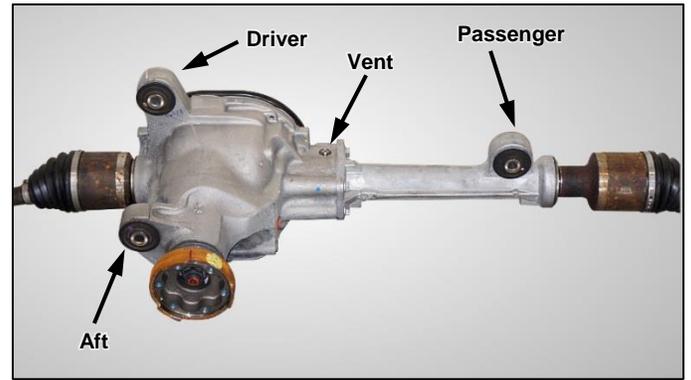


Illustration 12

- 7) Loosen all three differential mounting bolts. See Illustration 12

Note: A plastic shield covering the steering rack may need to be removed to access bolt. This shield is fastened to the frame with two plastic clips. See Illustration 13. Shield shown removed. Shield fits in same position, but inside of frame rail.



Illustration 13

- 8) Remove the front differential assembly aft mounting bolt. See Illustration 12.
- 9) Remove the differential assembly passenger side mounting bolt. Take care that flag-nut does not damage metal transmission lines.
- 10) Pushing up on the right side of the right axle housing, remove the driver side mounting bolt.
- 11) With the help of an assistant, remove the differential assembly from the vehicle.

The differential will have to be tilted with the rear pinion flange up, and the passenger side down to remove.

TWO PEOPLE WILL BE NEEDED TO REMOVE THE ASSEMBLY!

- 12) Reattach plugs to steering rack and push red clip lock back over clip lever

FRONT DIFFERENTIAL & SUBFRAME INSTALLATION

-  Box RS66505B-1 (Box 1 of 4)
-  Subframe RS176880B
-  Box RS66505B-4 (Box 4 of 4)
-  Left Diff Drop Bracket RS176881B
-  Right Diff Drop Bracket RS176882B
-  Skid Plate RS176884B
-  Diff Drop Hardware RS860783
-  Cam Bolt Hardware RS860838
-  Skid Plate Hardware RS860506

1) If applicable, cut the driver side corner off the steering rack skid plate and de-bur cut edge. Reinstall using OE hardware. See Illustration 14.

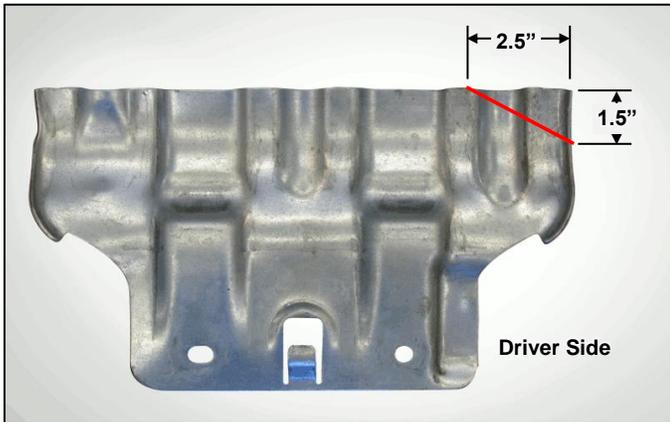


Illustration 14

2) Install skid plate RS176884B to the bottom of subframe RS176880B using 10MM hardware from RS860506. Torque to 45 ft. lbs. See Illustration 15.



Illustration 15

3) Draw a line, perpendicular to the bottom edge and 1/2" from the edge of the slotted hole, on the front and back of the driver side crossmember bracket. Connect the lines on the top of the bracket providing a minimum of 6" clearance. See Illustration 16.

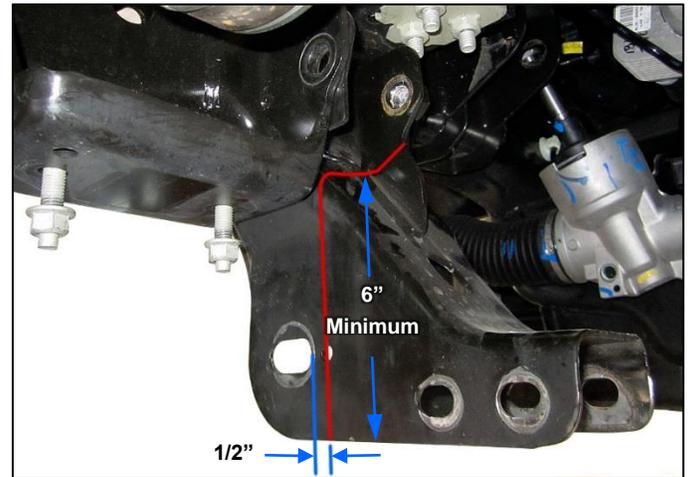


Illustration 16

4) Using a die grinder and Sawzall follow the line and cut off the crossmember bracket. Do not remove aft differential mount. See Illustration 17.

⚠ WARNING: Do not use a flame cutter or torch to remove bracket. You could warp, weaken or damage the bracket without the damage being visible to you, resulting in loss of vehicle control and an accident.

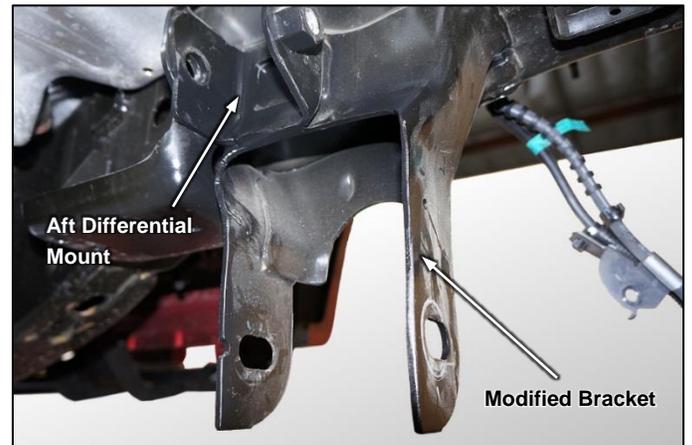


Illustration 17

5) Round off any sharp corners and deburr edges. Paint bare metal to prevent rust.

6) Loosely attach diff drop bracket RS176881B to the front differential driver side frame bracket, and RS176882B passenger side frame bracket with the original hardware. See Illustration 18 and Illustration 19.



Illustration 18

7) With the help of an assistant, carefully raise the front differential assembly up into the newly installed drop brackets. Loosely attach the differential assembly to the brackets with the hardware from kit RS860783. Use the shorter 80MM bolt on the driver side.

8) With the help of an assistant, raise subframe RS176880B into the lower control arm frame brackets. Attach sub frame to the lower control arm brackets with original hardware.

9) Loosely attach aft differential bracket RS176883B to the aft frame mount with OE hardware. See Illustration 20 and Illustration 21.

10) Lift up on rear of differential and loosely attach differential to subframe and aft differential bracket with hardware from kit RS860783. See Illustration 20 and Illustration 21.

CAUTION: With sub frame in place, verify that the differential aft mount does not contact the modified frame bracket. There must be a minimum of ¼" clearance between frame and differential. Contact may cause vibration. See Illustration 20 and Illustration 21.

11) Push up on subframe and torque subframe to frame bolts to 258 ft. lbs.

12) Torque all differential mounting hardware to 85 ft. lbs. (six bolts).

13) Attach the lower control arm to the subframe with the cam bolts and hardware from kit RS860838. Insert front alignment cam bolts from front to rear, and rear cam bolts rear to front. Align cams straight up or down.

14) Install hex cam and washer on each cam bolt, aligning cam the same as the cam bolt. Apply grease or anti-seize (not included) to the threads of cam bolts and install nut. Hold head of cam bolt and tighten nut against hex cam and washer. Control arm should remain loose enough to rotate in subframe

CAUTION: Do not get grease or anti-seize on cam or sub-frame where cam seats.

NOTES: Do not torque the lower control arm bolts until the vehicle is at normal ride height.

FRONT DRIVESHAFT SPACER INSTALLATION

 Box RS66505B-4 (Box 4 of 4)

 Driveshaft Spacer RS176586

 Hardware from Sub Assy RS860785

1) Align index marks on front driveshaft, insert spacer RS176586 between driveshaft and pinion flange. Secure together with 12pt 10mm hardware from kit RS860785 using OE torque plates. Tighten bolts to 41 ft. lbs. See Illustration 22. **Use of blue thread lock is recommended but not included.**

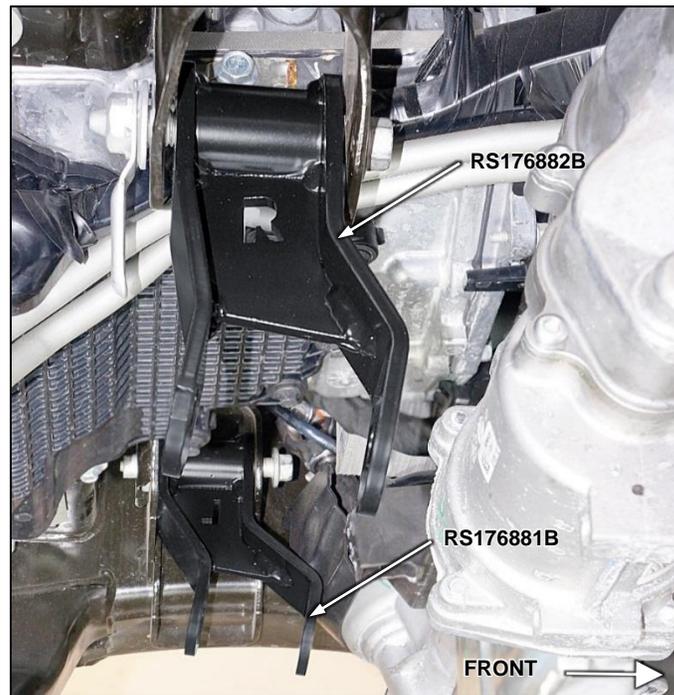


Illustration 19



Illustration 20

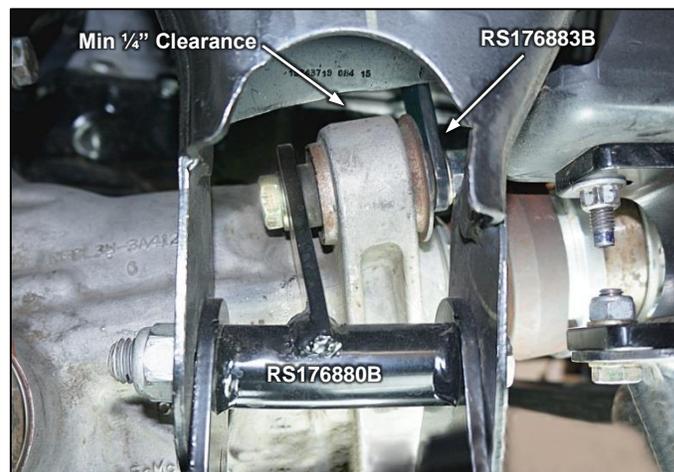


Illustration 21

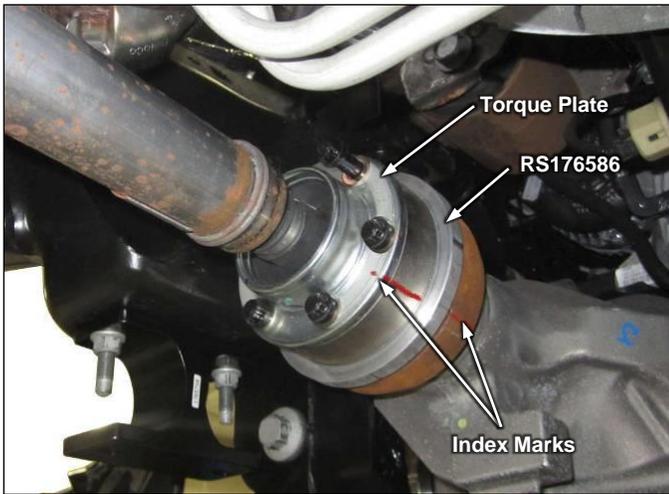


Illustration 22

SHOCK ASSEMBLY

FOR OPTIONAL RANCHO REPLACEMENT SHOCK ABSORBERS RS55389.

If reusing OE shock absorber, proceed to next section - "Strut Tower Installation"

CAUTION: Follow instructions and warnings supplied with shock absorber.

⚠ WARNING: SPRING IS UNDER COMPRESSION LOAD WHEN INSTALLED. ATTEMPTS TO REMOVE SPRING WITHOUT PROPERLY RESTRAINING THIS LOAD MAY RESULT IN INJURY. NEVER REMOVE THE CENTRAL LOCK NUT OF THE UPPER MOUNTING PARTS BEFORE THE SPRING IS COMPRESSED.

IF A SUITABLE SPRING COMPRESSOR TOOL IS NOT AVAILABLE, OR A QUALIFIED OPERATOR IS NOT AVAILABLE, MOST REPAIR SHOPS CAN SWAP THE COIL FOR A SMALL CHARGE.

- 1) Using a quality spring compressor, compress the coil spring until the tension is released from the shock absorber. See Illustration 23.
- 2) Remove the upper shock rod mounting nut. Slide the shock absorber out of the spring assembly.
- 3) Insert new shock absorber into spring assembly. Use index marks to align shock with the coil and upper mount. Install the original mounting nut. Tighten the nut to 22 ft. lbs.
- 4) Remove spring compressor.
- 5) Insert the shock absorber assembly into the upper frame mount. Loosely install with OE nuts.

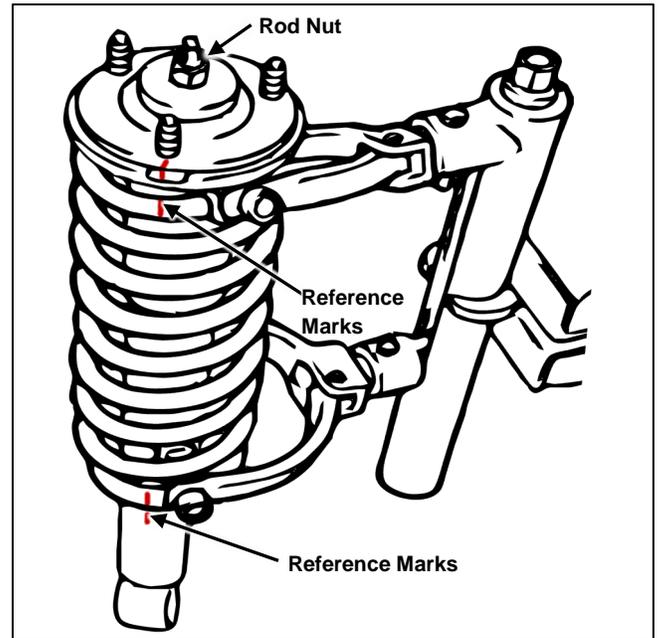


Illustration 23

STRUT TOWER ASSEMBLY (RS886520)

FOR OE FORD SHOCK ONLY.

If replacing shock absorbers with Rancho shock absorber RS55839, skip to next section - "Shock Absorber Installation"

- 1) Using OE nuts, install strut tower RS176750B onto OE shock absorber. Tighten to 30 ft. lbs. See Illustration 24 .

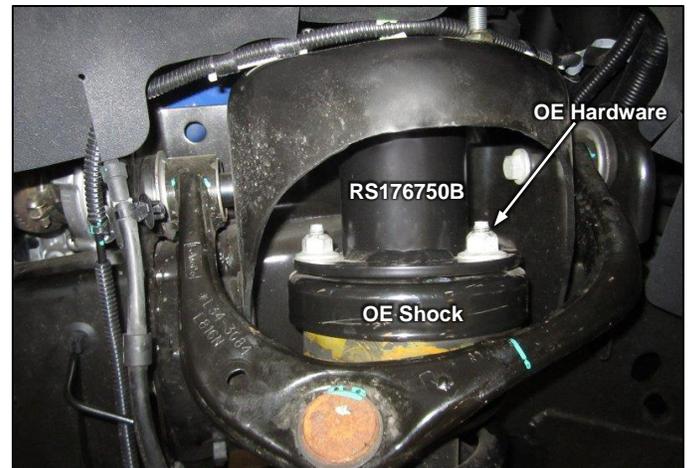


Illustration 24

- 2) Insert the shock absorber and strut tower assembly into the upper frame mount. Loosely install with nuts and washers from hardware kit RS860746. See Illustration 24 and Illustration 25.

SHOCK ABSORBER INSTALLATION

1) Attach the shock absorber to the lower control arm with the original hardware. Tighten lower mounting bolts to 66 ft. lbs. Tighten nuts at upper mount to 30 ft. lbs. See Illustration 25.



Illustration 25

STEERING KNUCKLE INSTALLATION

 Box RS66505B-2 (Box 2 of 4)

 Left Steering Knuckle RS176753

 Box RS66505B-3 (Box 3 of 4)

 Right Steering Knuckle RS176754

1) Remove the integrated wheel end and wheel hub from the passenger side steering knuckle. See Illustration 26.

CAUTION: Do not damage the O-ring on the wheel hub.

2) Align the ABS sensor hole to the top of the knuckle and attach the wheel hub to right Rancho knuckle RS176754 with the original bolts. Tighten the bolts to 129 ft. lbs.

3) Align vacuum port upward and attach the integrated wheel end to the knuckle with the original hardware. Tighten the bolts to 11 ft. lbs.

4) Install knuckle on vehicle:

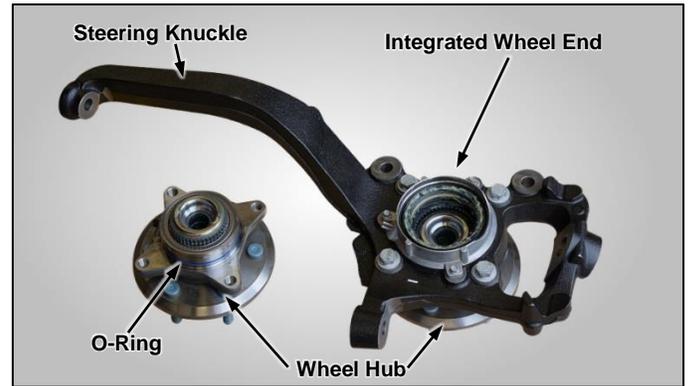


Illustration 26

Carefully insert the axle into the hub until the threads protrude from hub bearing. See Illustration 27

Insert lower ball joint stud into steering knuckle and loosely attach with OE nut.

Insert upper ball joint stud into steering knuckle and loosely attach with OE nut.

Pull, wiggle and turn axle to seat fully in hub bearing. See Illustration 27

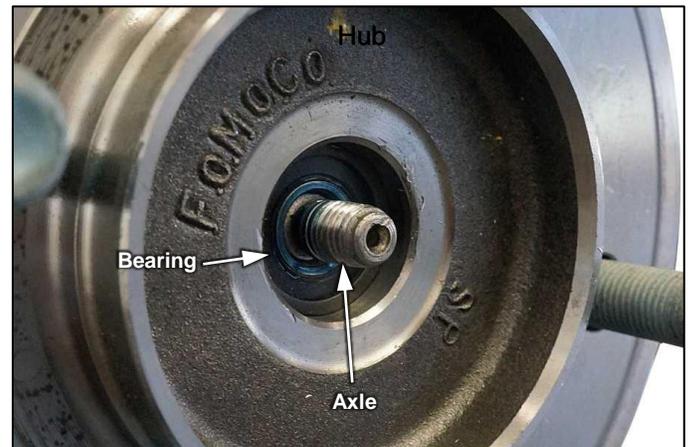


Illustration 27

Note: The axle splines must line up with the integrated wheel end. Do not force axle in. You may need to separate upper ball joint and turn axle or integrated wheel end, then repeat step 4.

Do not move on to next step until axle is seated in bearing.

5) Tighten the lower ball joint stud nut to 111 ft. lbs. and the upper nut to 85 ft. lbs.

6) Install the axle half shaft nut. Tighten the nut to 20 ft. lbs. Install the axle cap.

7) Loosen the jam nut on the tie rod and thread the tie rod end out approximately 6 turns. Insert the tie rod end from the top into the steering knuckle and install the original nut. Tighten the ball stud nut to 85 ft. lbs. and the jam nut to 76 ft. lbs.

8) Repeat steps 1 through 7 for the driver side using left Rancho knuckle RS176753.

CALIPER AND BRAKE HOSE DROP BRACKET INSTALLATION

 Box RS66505B-4 (Box 4 of 4)

 Front Brake line Brackets RS176780

 Hardware from Sub Assy RS860786

 Wire Ties from RS1900-12

- 1) Reattach the ABS sensor to the wheel hub and the vacuum hose to the integrated wheel end.
- 2) Attach the dust shield with the original hardware. Tighten the bolts to 12 ft. lbs.
- 3) Install the right brake rotor on the passenger side wheel hub.
- 4) Install the brake caliper over the rotor. Attach the caliper to the knuckle with the original anchor bolts. Tighten the bolts to 175 ft. lbs. Refer back to Illustration 1 and Illustration 2.



Illustration 28

- 5) Using the original bolt and location, attach brake hose drop bracket RS176780 to the frame rail. Tighten bolt securely.
- 6) Carefully re-shape metal brake lines and attach OE brake hose bracket to drop bracket RS176780 with hardware from kit RS860786. See Illustration 28.

7) Reattach the vacuum line clips to brake line brackets. Reposition line on clips if needed.

8) Reattach ABS and brake line to knuckle with original hardware.

9) Use wire ties from RS1900-12 to attach ABS wire to brake line and upper OE mount. Attach ABS wire and vacuum line to frame at upper control arm mount with wire ties. See Illustration 28.

10) Repeat for other side.

11) Turn the front wheels completely left then right. Verify adequate, ABS, brake, and vacuum line clearance and length.

VENT HOSE EXTENSION INSTALLATION

 Box RS66505B-4 (Box 4 of 4)

 Hardware from Sub Assy RS860749

- 1) Insert tube fitting into rubber tube from kit RS860749.
- 2) Insert other end of tube fitting in OE vent hose.
- 3) Install lengthened vent hose on differential in OE location. See Illustration 29.

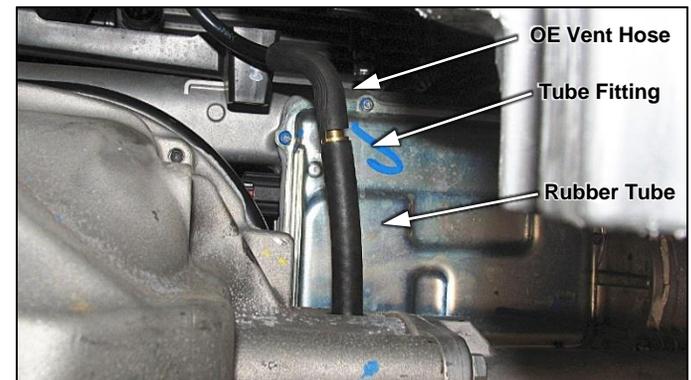


Illustration 29

SWAY BAR INSTALLATION

 Box RS66505B-4 (Box 4 of 4)

 Sway Bar Drop Brackets RS176579

 Hardware from Sub Assy RS860506

1) Attach sway bar drop brackets RS176579 to the frame with the original hardware. Tighten the nuts to 35 ft. lbs.

2) Attach the sway bar to the drop brackets with 10MM hardware from kit RS860506. Torque to 35 ft. lbs. See Illustration 30.

3) Attach the sway bar end links to the sway bar. Tighten the nuts to 59 ft. lbs.

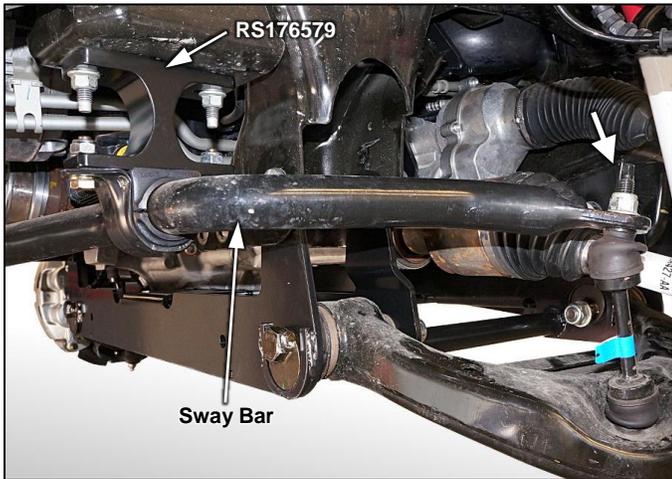


Illustration 30

- 4) Attach the sway bar end links to the sway bar. Tighten the nuts to 59 ft. lbs.

- 5) Install front wheels and turn the front wheels completely left then right. Verify adequate tire, wheel, and ABS, brake, and vacuum line clearance and length.
- 6) Lower vehicle to ground. Tighten the lug nuts to 150 ft. lbs.
- 7) Align the cam bolts in the center and tighten the lower control arm pivot nuts to 240 ft. lbs.

CAUTION: The cam nut can rotate independent of the cam bolt. Make sure cam bolt and cam nut are both aligned the same direction.

When adjusting alignment cams, use a 27mm wrench on BOTH cam bolt and cam nut.

Inform alignment tech of this caution.

NOTE: If full torque cannot be achieved with vehicle at ride height, tighten cam bolts as much as possible on ground to lock bushing and alignment in place, and then raise front of vehicle onto jack stands to apply final torque.

⚠ WARNING: Failure to fully torque lower control arm cam bolts can cause a sudden and unexpected change of vehicle alignment, resulting in loss of vehicle control and an accident.

REAR SUSPENSION

VEHICLE PREPARATION

- 1) Chock front wheels. Raise the rear of the vehicle and support the frame with jack stands. Remove the rear wheels.
- 2) On the driver side, separate the parking brake cable bracket from the bottom of the leaf spring mount. See Illustration 31.

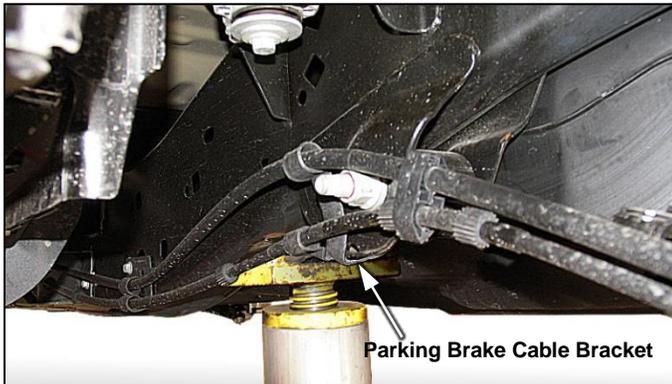


Illustration 31

- 3) Remove the brake hose bracket from the inside of the driver side frame rail. Disconnect plastic clips holding brake line and wire harness to inside of frame rail. See Illustration 34.

RISER BLOCK INSTALLATION

-  RS66505B-4 (Box 4 of 4)
-  Riser Blocks RS15104
-  U-Bolts RS740017
-  Hardware from Sub Assy RS860152

- 1) Support the rear axle assembly with a floor jack.
- 2) Remove both rear shock absorbers. Do not reuse OEM shock absorbers.
- 3) Loosen the U-bolt nuts on both sides of the vehicle.
- 4) Remove the passenger side U-bolts only. Carefully lower the rear axle and remove the original riser block. See Illustration 32.

⚠ WARNING: Do not allow the axle to hang by any hoses or ABS cables. You could damage the hoses or ABS cables, without this damage being visible to you, resulting in sudden and unexpected failure of a hose or ABS system, and an accident.

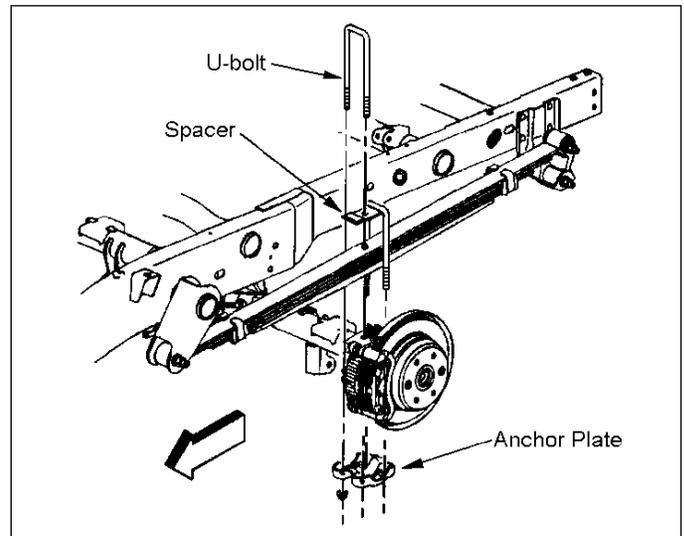


Illustration 32

- 5) Place riser block RS15104 on the axle pad. Loosely attach the leaf spring to the axle with U-bolts RS740017 and the hardware from kit 860152. See Illustration 33

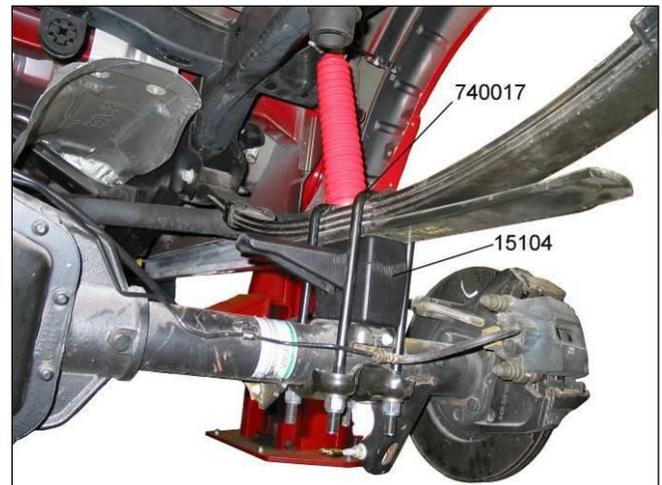


Illustration 33

- 6) Repeat steps 4 - 5 for the driver side.
- 7) Cross tighten all U-bolt nuts evenly to 85 ft. lbs.
- 8) Install new Rancho shock absorbers and torque to 66 ft. lbs.

BRAKE DROP BRACKETS INSTALLATION

-  RS66505B-4 (Box 4 of 4)
-  Rear Brake Hose Drop Bracket RS176314
-  Parking Brake Cable Drop Bracket RS176748
-  Hardware from Sub Assy RS860787

1) Attach rear brake hose drop bracket RS176314 to the frame with the original bolt. Tighten the bolt to 12 ft. lbs. See Illustration 34.

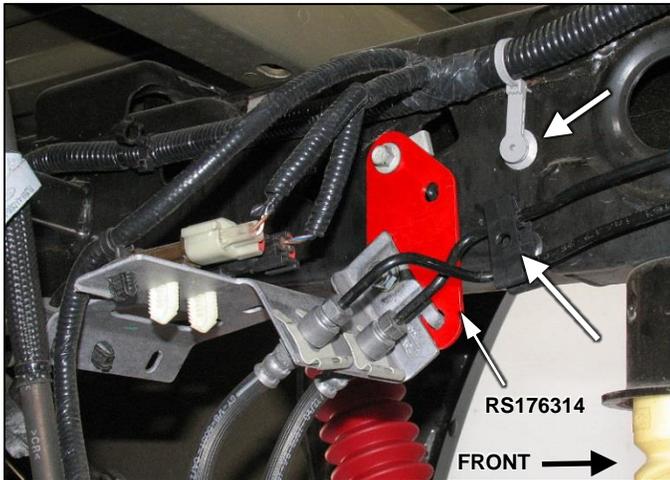


Illustration 34

2) Attach the original brake hose bracket to drop bracket RS176314 with the 8mm hardware from kit RS860787. Insert plastic clip on wire harness back into frame.

3) Attach parking-brake cable drop RS176748 to the leaf spring mount using OE bolt and hardware from kit RS860787. See Illustration 35



Illustration 35

DRIVESHAFT SPACER INSTALLATION

-  RS66505B-4 (Box 4 of 4)
-  Sub Assy RS860731
-  Rear Driveshaft Spacer RS176691
-  Hardware from Sub Assy RS860732

1) Measure pull-out of rear output shaft slip joint. If pull-out exceeds 1/4" follow steps 2-5 to install rear driveshaft spacer RS176691. See Illustration 36.

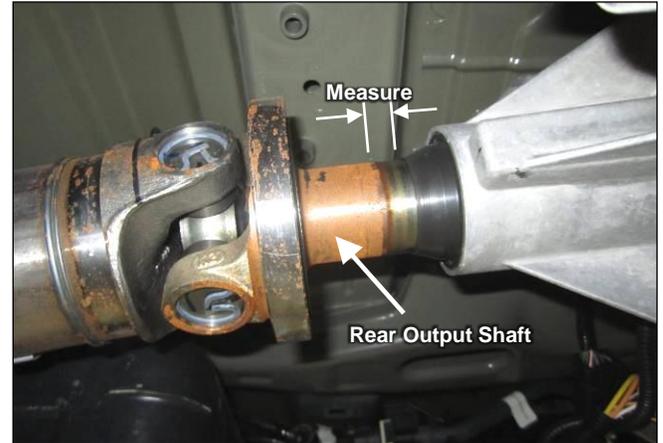


Illustration 36

2) Attach original parking brake cable bracket to RS176748 using 8mm hardware from kit RS860787. Tighten the bolt to 12 ft. lbs.

3) Index-mark the rear driveshaft flange to the rear differential pinion flange.

4) Support rear driveshaft with floor jack.

5) Remove rear driveshaft flange to the rear differential pinion flange mounting bolts

6) Align index marks on rear driveshaft, insert rear driveshaft spacer RS176691 between driveshaft and pinion flange. Secure together with 12mm hardware from kit RS860732. Tighten bolts to 75 ft. lbs. See Illustration 37. **Use of blue thread lock is recommended but not included.**

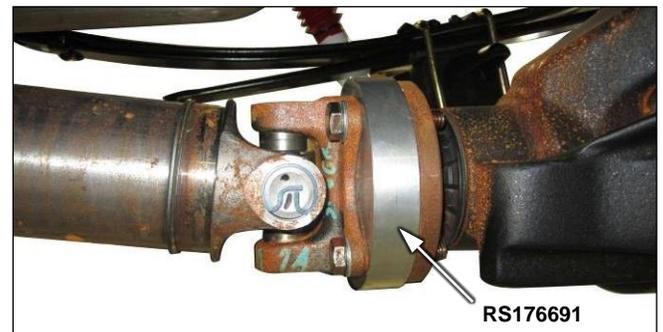


Illustration 37

- 7) Install rear wheels.
- 8) Lower vehicle to ground. Tighten the lug nuts to 150 ft. lbs.

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 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 steering and brake systems operate correctly.
- 4) Readjust headlamps. Have vehicle Aligned at a certified alignment facility.

Recommended Alignment Specifications

Caster (degrees): $3.60^{\circ} \pm 1.00^{\circ}$

Camber (degrees): $-0.10^{\circ} \pm 0.75^{\circ}$

Sum Toe In (degrees): $0.2^{\circ} \pm 0.2^{\circ}$ or $0.10" \pm 0.10"$

- 5) Park the vehicle on a level surface Measure and record the distance from the center of each wheel to the top of the fender opening. See Illustration 38 and Illustration 3.

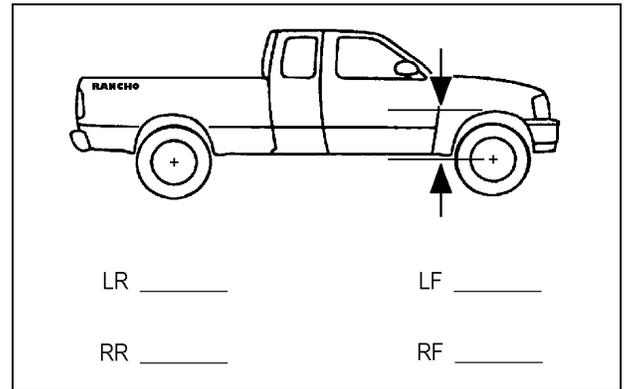


Illustration 38

Torque Specs

Front Components

Skid Plate RS176884B	45 ft. lbs.
Subframe RS176880B to Frame	258 ft. lbs.
Lower Control Arm to Subframe RS176880B	240 ft. lbs.
Differential Aft Mount to Subframe RS176880B	85 ft. lbs.
Differential Drop Bracket RS176745B	85 ft. lbs.
Driveshaft to Pinion Flange	41 ft. lbs.
Shock Mount, Upper	30 ft. lbs.
Shock Mount, Lower	66 ft. lbs.
Shock Spacer RS176750B	30 ft. lbs.
Wheel Hub to Steering Knuckle	129 ft. lbs.
Integrated Wheel End to Hub	11 ft. lbs.
Lower Ball Joint	111 ft. lbs.
Upper Ball Joint	85 ft. lbs.
Tie Rod End Ball Stud	85 ft. lbs.
Tie Rod Jam Nut	76 ft. lbs.
Axle Shaft	20 ft. lbs.
Dust Shield to Steering Knuckle	12 ft. lbs.
Brake Caliper to Steering Knuckle	175 ft. lbs.
Brake Line Bracket	12 ft. lbs.
Sway Bar Drop Bracket RS176746B	35 ft. lbs.
Sway Bar End Link	59 ft. lbs.
Wheel Lug Nuts	150 ft. lbs.

Rear Components

Brake Hose Drop Bracket RS176314	12 ft. lbs.
Parking-Brake Cable Drop Bracket RS176748	12 ft. lbs.
Driveshaft to Pinion Flange	75 ft. lbs.
Leaf Spring Center Bolts	65 ft. lbs.
Leaf Spring U-bolt	85 ft. lbs.
Shock Absorbers	66 ft. lbs.
Wheel Lug Nuts	150 ft. lbs.

STANDARD BOLT TORQUE & IDENTIFICATION

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

<p>1/2-13x1.75 HHCS</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>D T L X</p> </div> <div style="text-align: center;"> <p>Grade 5 Grade 8</p> </div> </div> <p>G = Grade Marking (bolt strength) D = Nominal Diameter (inches) T = Thread Pitch (threads per inch)</p> <p style="margin-left: 100px;">L = Length (inches) X = Description (hex head cap screw)</p>	<p>M12-1.25x50 HHCS</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>D T L X</p> </div> <div style="text-align: center;"> <p>P L X</p> </div> </div> <p>P = Property Class (bolt strength) D = Nominal Diameter (millimeters) T = Thread Pitch (thread width, mm)</p> <p style="margin-left: 100px;">L = Length (millimeters) X = Description (hex head cap screw)</p>
---	---

