



RS66504R9 – LEVEL IT System

RS66507R9-1 – 3" Suspension System (Box 1 of 3)

Fits: 2020-2014 Ford F150 4WD ONLY
Excludes SVT Raptor

READ ALL INSTRUCTIONS THOROUGHLY FROM START TO FINISH BEFORE BEGINNING INSTALLATION
IF INSTALLING RS66507R9 OR ANY ADDITIONAL COMPONENTS READ ALL ADDITIONAL INSTRUCTIONS
BEFORE BEGINNING INSTALLATION

RS66504R9 Fits up to 34X12.50 on 9" wide 5.5" backsparing wheel with trimming. Fits up to 33X12.5 on OE wheel.
May require trimming for proper clearance. Before installing any other size tire, consult your local tire and wheel specialist.
Recommended optional Rancho Alignment Cam Kit RS886509.

⚠ 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

Parts List

P/N	DESCRIPTION	QTY.
RS999837UMM	Rancho quickLIFT Strut	2
RS176782	Sway Bar Spacer	2
RS860804	Hardware Kit	1
RS7875	HHCS, 10MMX1.50X50MM GR 8.8	4
RS7755	Washer, 3/8 USS	4
RS770064	Washer, M10	4
RS89502	Instruction	1

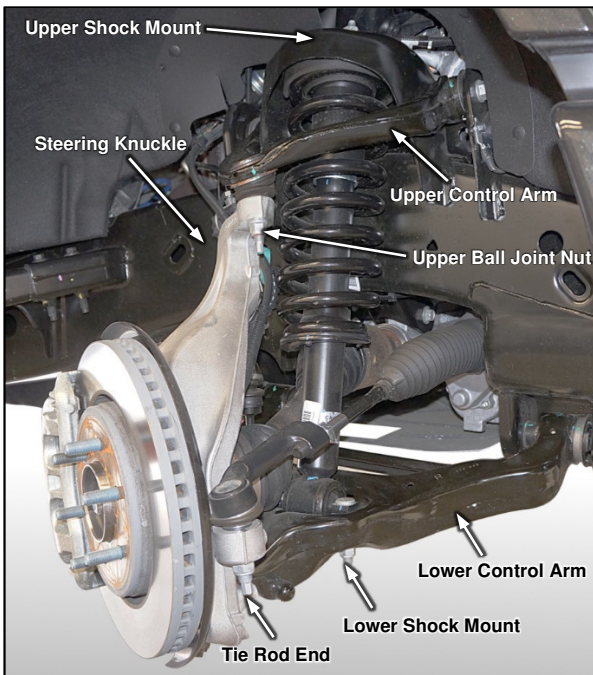


Illustration 1

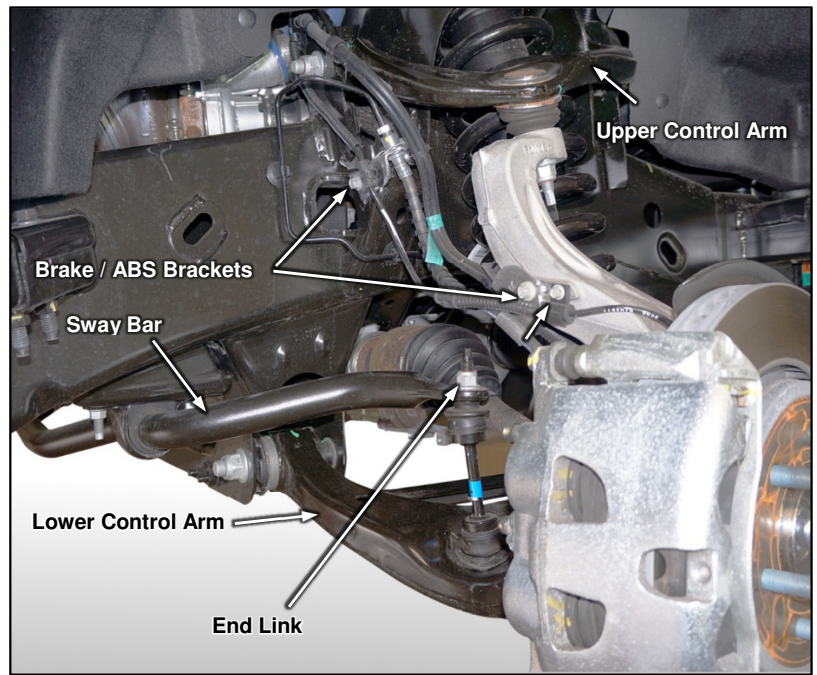


Illustration 2

STRUT 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.

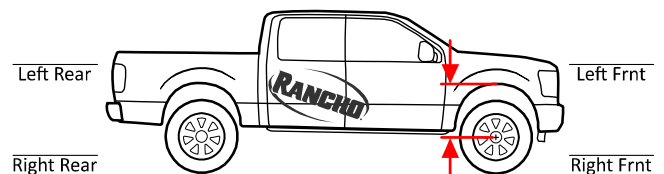


Illustration 3

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

3) Disconnect sway bar at end links. Push bar up off end links See Illustration 2.

NOTE: It is best to work on only one side of the vehicle until you get to "SWAY BAR SPACER INSTALLATION". This way you can refer to the other side if questions arise about the way it was assembled.

4) Remove brake hose and ABS wire brackets from steering knuckle and frame. See Illustration 2.

5) Loosen outer tie rod stud nut. Using appropriate puller, separate then remove tie rod stud from steering knuckle. See Illustration 1.

6) Mark location of lower control arm mounting bolts in the frame slots, or if equipped, mark location of alignment cams.

7) Support lower control arm with jack.

8) Remove upper strut mounting nuts. Loosely re-install one of the upper strut mounting nuts. See Illustration 1.

CAUTION: Do not turn center strut rod nut!

9) Remove lower strut mounting nuts. See Illustration 1.

10) Remove lower control arm mounting bolts.

11) Lower jack and swing lower control arms down and out of frame mounts and off of strut mounting studs. See Illustration 4.

NOTE: Studs may need to be pried out of control arm.

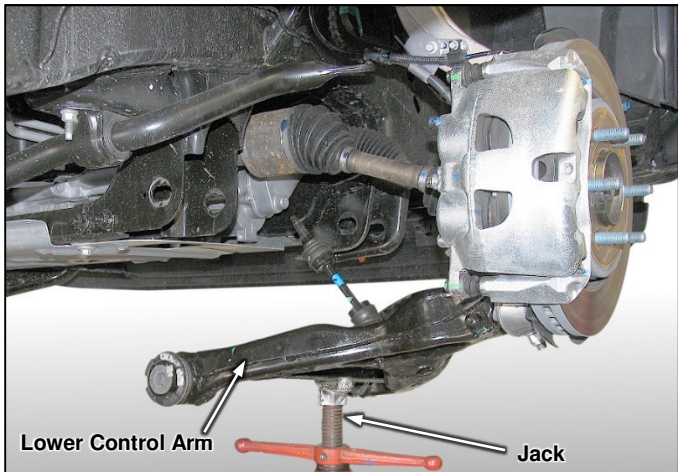


Illustration 4

12) Remove strut from vehicle.

13) Loosely re-attach lower control arm to frame mounts using OE hardware or cam bolts and bracket from optional Rancho alignment cam kit RS886509.

14) Use jack to raise lower control arm until the spindle to-fender measurement is 2.25" greater than OE measurement recorded in Illustration 3.

15) Align lower control arm bolts with previously made marks and torque to 240 lb-ft.

16) Loosen but do not remove upper ball joint stud nut. If required, Use puller to separate upper ball joint stud from steering knuckle. See Illustration 1.

⚠ WARNING: CONTROL ARM WILL SPRING UP WITH GREAT FORCE WHEN BALL JOINT SEPARATES FROM KNUCKLE. USE PRY BAR TO HOLD DOWN AND SLOWLY LIFT BALL JOINT STUD OUT OF KNUCKLE. WHEN REMOVING BALL JOINT STUD NUT.

17) Pry down on upper control arm, remove ball joint nut, and remove ball joint stud from knuckle.

18) Slowly lower jack under lower control arm until control arm hangs on bushings.

STRUT REPLACEMENT

⚠ WARNING: Follow instructions and warnings supplied with strut.

1) Follow instructions supplied with strut to install supplied spring seat, isolator, and bump stop on new Rancho strut.

2) Reference mark top mount, coil spring and strut. See Illustration 5.

⚠ 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.

3) Using a suitable spring compressor tool, compress spring slightly to relieve initial tension.

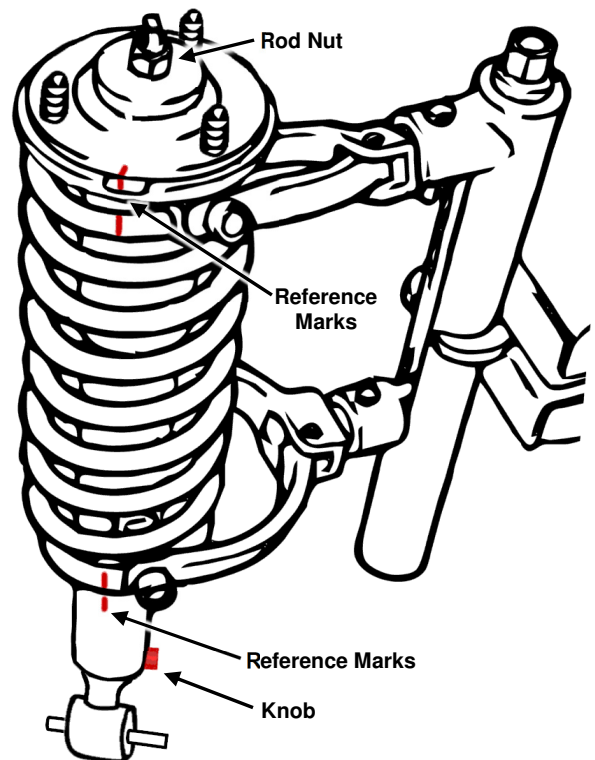


Illustration 5

4) With initial spring tension relieved, loosen rod nut slightly. Compress spring until loose from lower spring seat and then completely remove nut.

5) Remove all upper mounting parts and spring from strut assembly; save for reuse. Note position of all parts as removed to ensure proper installation of replacement parts. Inspect all original parts as removed for wear and damage. Obtain replacements when necessary.

6) Install strut on spring and upper mount assembly using reference marks to align components. Spring may need to be compressed more to fit new Rancho strut. Torque center rod nut to 41 lb-ft.

⚠ WARNING: DO NOT OVER TIGHTEN ROD NUT. EXCESSIVE TORQUE CAN DAMAGE THE THREADS ON THE NUT OR PISTON ROD. USE TORQUE VALUE FROM OE MANUFACTURER.

7) Slowly release spring compressor checking for proper alignment of components.

NOTE: Adjuster knob faces to front of vehicle.

NOTE: If installing RS66507R9 or RS64501, refer to instruction RS84501 to install new upper control arm.

8) Loosely install strut in upper mount using OE hardware. See Illustration 6.

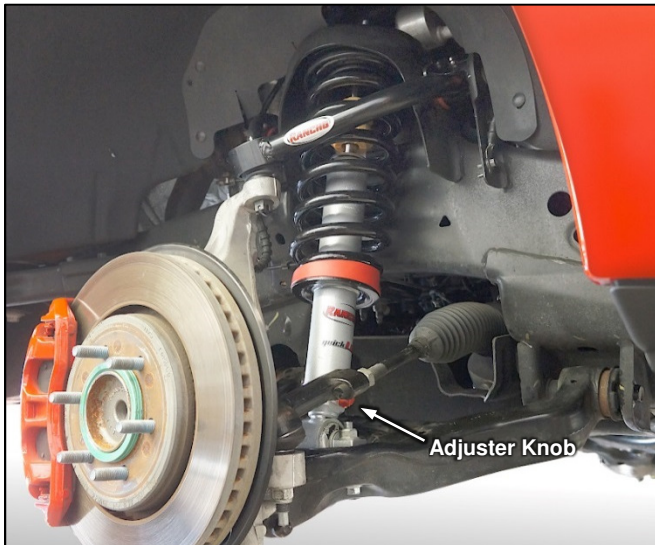


Illustration 6

9) Pry lower mount into position and attach to lower control arm using supplied M12 hardware. Aft bolts must be installed with threads to the bottom to avoid damaging CV boot. Use a jack under the control arm if needed. Torque upper strut mounting nuts to 30 lb-ft, and lower to 66 lb-ft.

CAUTION: Take care not to damage CV boot.

10) Pry down upper control arm and attach upper ball joint stud to steering knuckle using OE hardware. Torque ball stud nut to 46 lb-ft.

11) Attach outer tie rod end to steering knuckle with OE hardware. Torque ball stud nut to 76 lb-ft.

12) Re-install brake hose and ABS wire brackets in original locations.

SWAY BAR SPACER INSTALLATION

- 1) Re-attach sway bar to end links and torque to 59 lb-ft.
- 2) Loosen all four sway bar bracket to frame mounting nuts. See Illustration 7.
- 3) Remove driver side sway bar bracket and studs.
- 4) Loosely install driver side sway bar mount with spacer RS176782 between mount and frame. Use supplied M10-1.50X50MM bolts, larger USS washers under bolt head, and OE nuts. See Illustration 7.

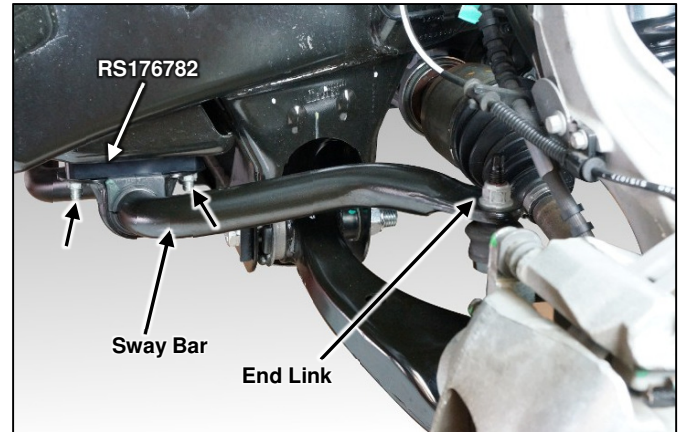


Illustration 7

- 5) Repeat steps 3-4 for passenger side sway bar mount.
- 6) Torque hardware to 41 lb-ft.

LOWER VEHICLE

- 1) Install front wheels.
- 2) Turn the front wheels completely left then right. Verify adequate tire, wheel, brake hose clearance. Check for proper CV axle operation and clearance. Inspect steering and suspension for tightness and proper operation.
- 3) Inspect and rotate all axles and drive shafts.
- 4) Lower vehicle to ground.
- 5) Torque 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) Inspect and rotate all axles and drive shafts.
- 3) Ensure that the vehicle brake system operates correctly.
- 4) Readjust headlamps and have vehicle aligned at a certified alignment facility.

NOTE: Alignment cam kit may be required to align vehicle.

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. Set the parking. Measure and record the distance from the center of each wheel to the top of the fender opening. See Illustration 8.

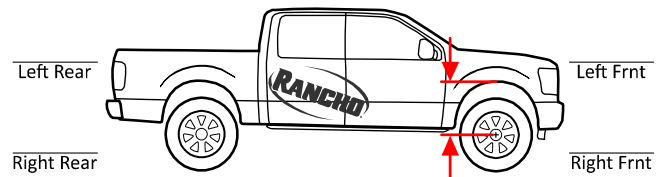


Illustration 8

Vehicle Torque Specifications

Lower Control Arm	240 lb-ft.
Strut Rod Nut	41 lb-ft.
Upper Strut Mounting Nuts	30 lb-ft.
Lower Strut Mounting Bolts	66 lb-ft.
Tie Rod End Ball Stud Nut	76 lb-ft.
Upper Ball Joint Nut	46 lb-ft.
Sway Bar End Links	59 lb-ft.
Sway Bar Mounting Bolts	41 lb-ft.
Wheel Lug Nuts	150 lb-ft.

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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

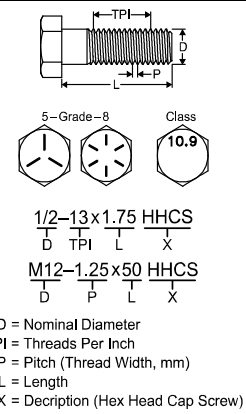
⚠ WARNING: This suspension system will enhance the off-road performance of your vehicle. It will handle differently; both on and off-road, from a factory equipped passenger car or truck. Failure to drive this vehicle safely may result in serious injury or death to the driver and passengers. ALWAYS WEAR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

- 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 kit 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 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.

STANDARD BOLT TORQUE AND IDENTIFICATION

INCH SYSTEM		
Bolt Size	Grade 5	Grade 8
5/16	15 LB-FT	20 LB-FT
3/8	30 LB-FT	35 LB-FT
7/16	45 LB-FT	60 LB-FT
1/2	65 LB-FT	90 LB-FT
9/16	95 LB-FT	130 LB-FT
5/8	135 LB-FT	175 LB-FT
3/4	185 LB-FT	280 LB-FT

METRIC SYSTEM			
Bolt Size	Class 8.8	Class 10.9	Class 12.9
M6	5 LB-FT	9 LB-FT	12 LB-FT
M8	18 LB-FT	23 LB-FT	27 LB-FT
M10	32 LB-FT	45 LB-FT	50 LB-FT
M12	55 LB-FT	75 LB-FT	90 LB-FT
M14	85 LB-FT	120 LB-FT	145 LB-FT
M16	130 LB-FT	165 LB-FT	210 LB-FT
M18	170 LB-FT	240 LB-FT	290 LB-FT



- 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 accordingly.

⚠ 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 DRIV, Inc. and its related companies harmless to the fullest extent permitted by law against any resulting damages.



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