



RS66310R9 – LEVEL IT System

Fits 2020 – 2019 Chevrolet / GMC 1500 Pickup 4WD & 2WD*

RS66311R9-1 – 3” Suspension System

Fits 2020 – 2019 Chevrolet / GMC 1500 Pickup 4WD Only*

*Excludes Trail Boss, Electronic Suspension.

READ ALL INSTRUCTIONS THOROUGHLY FROM START TO FINISH BEFORE BEGINNING INSTALLATION — IF INSTALLING RS66311R9 OR RS64302 READ ALL INSTRUCTION BEFORE BEGINNING INSTALLATION —

This suspension system was developed using LT285/70R17 tires on a 5”backspacing wheel.

Before installing tires and wheels, consult your local tire and wheel specialist.

⚠️ 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

| P/N | DESCRIPTION | QTY. |
|---------------|-----------------------------------|------|
| RS999846UMM | Rancho Quick Lift Strut, Unloaded | 2 |
| 137400013 | Jounce Bumper | 1 |
| P01763 | Parts Pack | 1 |
| 160300057 | Isolator | 1 |
| 103300051 | Bumper Cap Assembly | 1 |
| P01577 | Parts Pkg | 1 |
| 104461955 | Bolt, M10-1.5 X 65mm | 2 |
| 113900067 | Nut, M10-1.5 | 5 |
| FORM01188T | Instruction Sheet - RS999846UMM | 1 |
| RS176782 | Slotted Sway Bar Spacer | 2 |
| RS860804 | Sub Assy, Sway Bar Spacer | 1 |
| RS7875 | HHCS, M10-1.50 X 50MM | 4 |
| RS7755 | Washer, 3/8 USS | 4 |
| RS770064 | Washer, M10 | 4 |
| RS94180 | Information Pack | 1 |
| RS94177 | Rollover Warning Label | 1 |
| RS94119 | Consumer/Warranty Information | 1 |
| R-RM0082-1112 | Warranty Tag | 1 |
| RS780281 | Rancho Decal - Color | 1 |
| RS780294 | Red Rancho Die Cast Decal | 1 |
| RS780294B | Black Rancho Die Cast Decal | 1 |
| RS89310 | Instructions – RS66310R9 | 1 |

4) On the passenger side, use a 10MM and 15MM socket and extension to remove the two screws holding the plastic wire harness housing to the frame. The screws are located behind the housing. Push the plastic wire harness housing up off the strut upper mounting studs on both the passenger and driver side. The housing is held in with a clip and may need to be pried up. See Illustration 3 and Illustration 4.



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 1.

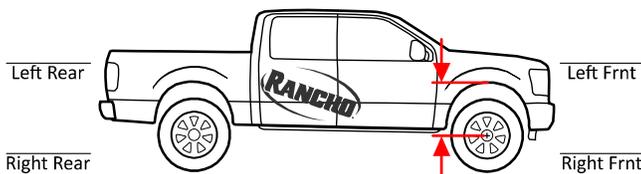


Illustration 1

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

3) Remove passenger mud guard and side inner fender liner using an H15 Torx, 10MM socket and a clip remover. See Illustration 2.

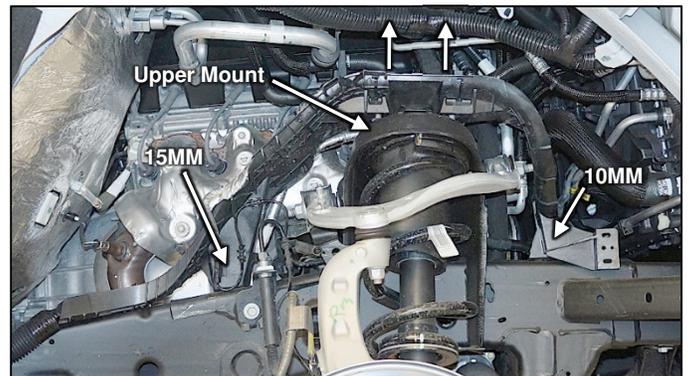


Illustration 3

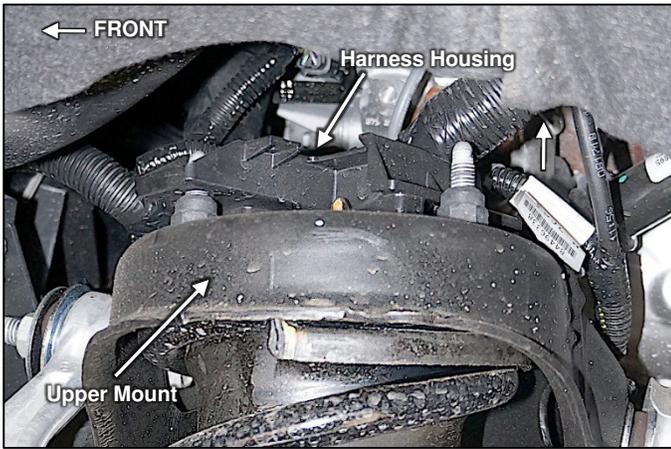


Illustration 4

5) Remove sway bar at frame mount. Allow sway bar to hang from end links. See Illustration 5 and Illustration 7.

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.

6) Remove brake hose and ABS wire brackets from upper control arm, steering knuckle and frame. See Illustration 6 and Illustration 7.

7) Remove CV axle nut. Push or use a mallet to tap on end of CV axle to confirm it slides freely in hub. See Illustration 6.

8) Loosen outer tie rod stud nut. Using appropriate puller, separate then remove tie rod stud from steering knuckle. See Illustration 6.

9) 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 6 and Illustration 7.

10) Use a strap or wire around the top of the steering knuckle and the droop stop to keep the knuckle from swinging out and damaging the CV boot in the next steps. See Illustration 7.

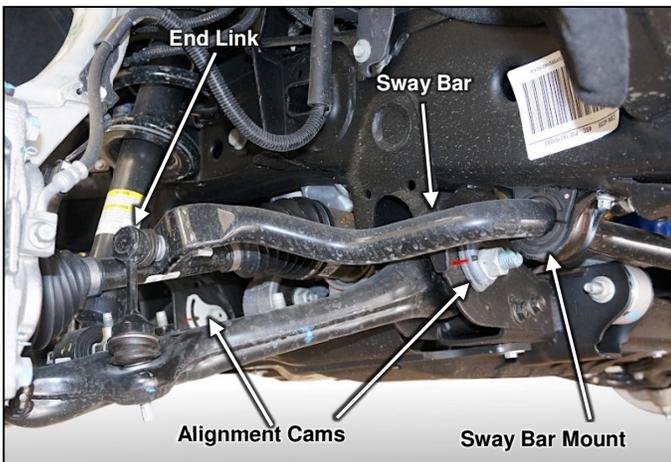


Illustration 5

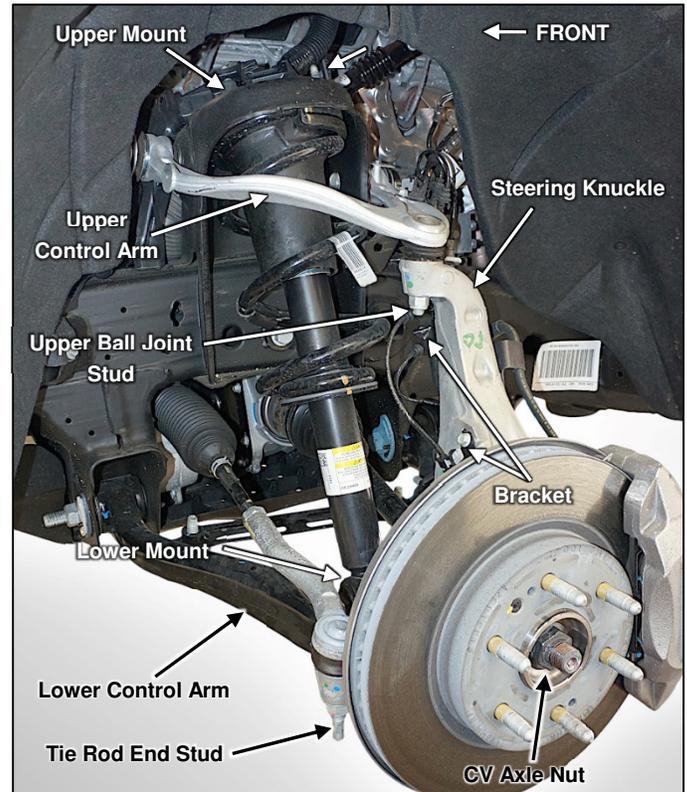


Illustration 6

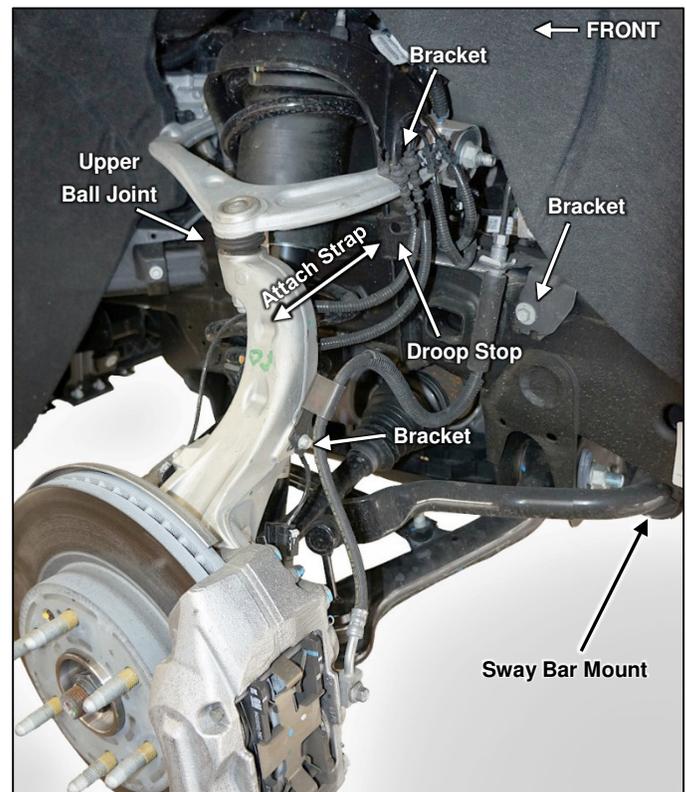


Illustration 7

⚠ 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.

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

CAUTION: Do not allow the knuckle to swing out and pull on CV axle boots. The boots can separate from the housing or tear.

Use a strap or wire to attach top of steering knuckle to droop stop, and push the end of the CV axle partly through the hub to relieve tension on boot.

12) Support lower control arm with jack.

13) Remove all three upper strut mounting nuts.

CAUTION: Do not turn center strut rod nut!

14) Remove lower strut mounting bolts.

15) Remove strut from vehicle. Lower jack if required.

CAUTION: Take care not to damage CV boot with end of strut, or pull CV boot off of housing. Push the end of the CV axle partly through the hub to relieve tension on boot.

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.

If installing RS663119R9 or RS64302, install coil spring spacer RS176959 between spring seat and isolator (see instruction RS84302).

2) Reference mark top mount, coil spring and strut. See Illustration 8.

⚠ 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.

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

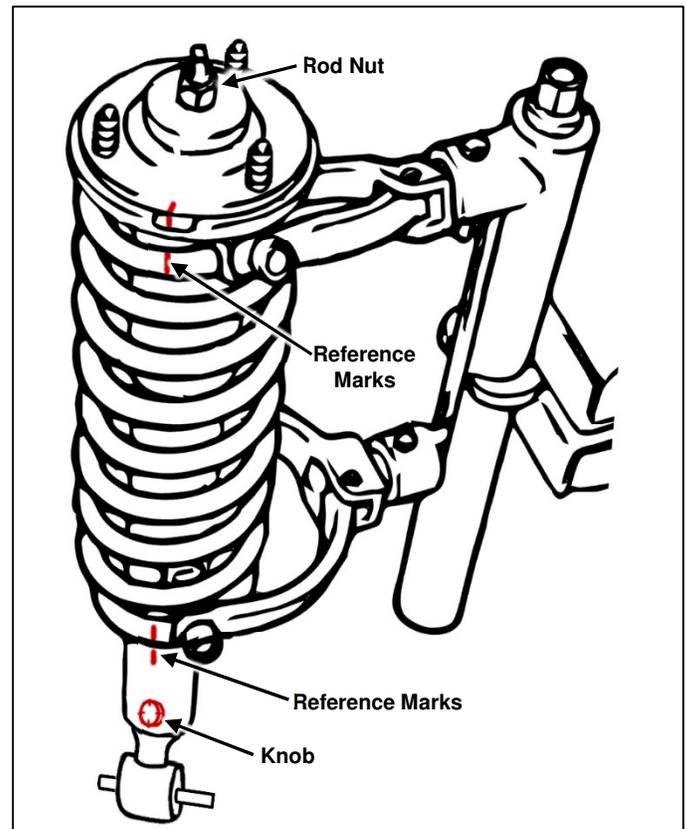


Illustration 8

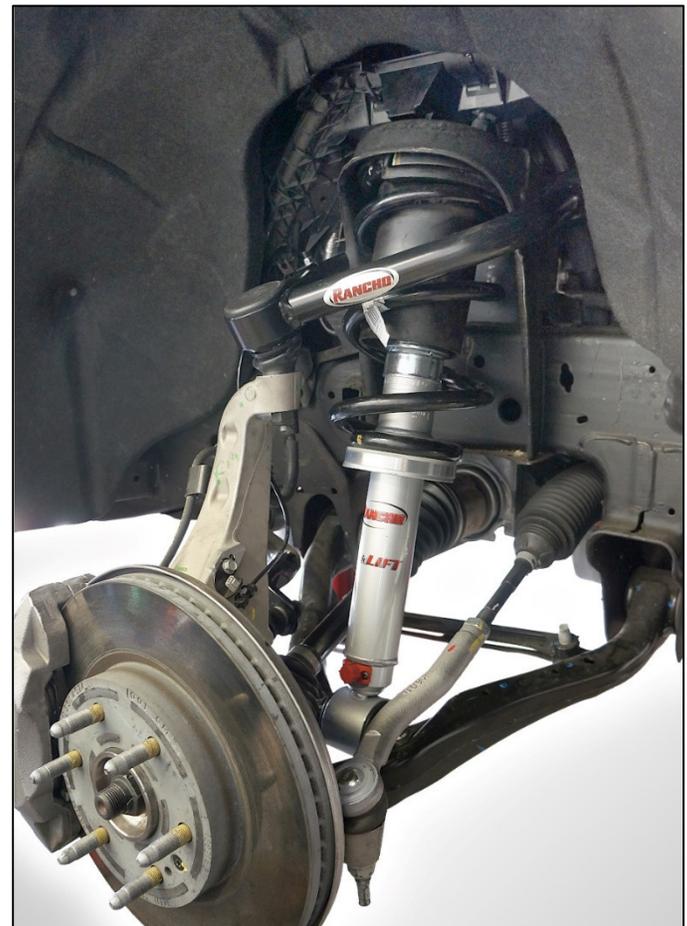


Illustration 9

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 new 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. See Illustration 8 and Illustration 9. Torque center rod nut to 41 lb-ft.

NOTE: Knob faces to outside of vehicle.

⚠ 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: If installing RS663119R9 or RS64302, refer to instruction RS84302 to install new upper control arm.

**— Steps 8-12 applicable only to vehicles with —
NON-TRAIL BOSS, OE height front struts.**

If replacing an OE height, NON-Trail Boss front strut, the control arm bushings must be “re-set” to eliminate tension on them at the new ride height. The vehicle will ride lower than expected and bushings will fail prematurely if control arm mounting hardware is not loosened and re-torqued at the new ride height.

8) Raise lower control arm and loosely reattach steering knuckle to upper control arm.

9) Mark location of all eight lower control arm alignment cams to frame. See Illustration 5.

10) Loosen upper and lower control arm mounting bolts until control arm bushing can move freely in frame mounts.

11) Use jack to raise lower control arm until the spindle-to-fender measurement is 2.0” greater than OE measurement from step 2.

12) Re-align lower control arm cams with marks and torque lower and upper control arms to OE specifications.

13) Strap knuckle to frame again and separate upper ball joint from knuckle.

14) Lower jack and install strut in upper and lower mount on vehicle using OE hardware. Torque hardware to OE specifications.

CAUTION: Take care not to damage CV boot with end of strut, or pull CV boot off of housing. Push the end of the CV axle partly through the hub to relieve tension on boot.

15) Pry down upper control arm and attach upper ball joint stud to steering knuckle using OE hardware. Remove tie wire or strap from knuckle and frame. Torque hardware to OE specifications.

16) Attach outer tie rod end to steering knuckle with OE hardware. Torque hardware to OE specifications.

17) Pull out on end of CV axle and re-install CV axle nut. Torque to OE specifications.

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

19) Re-attach driver side wiring harness housings back over strut upper mounting studs.

20) Re-position passenger side wiring harness housings back over strut upper mounting studs and attach to frame using OE hardware.

21) Reinstall passenger side inner fender liner.

SWAY BAR SPACER INSTALLATION

1) Loosely install driver side sway bar mount with spacer RS176782 between mount and frame. Use M10 hardware supplied in bag RS860804 (larger 3/8” USS washers are not used). See Illustration 10.

2) Install passenger side sway bar mount with spacer RS176782 between mount and frame.

3) Torque hardware to OE specifications.

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 140 ft. lbs.

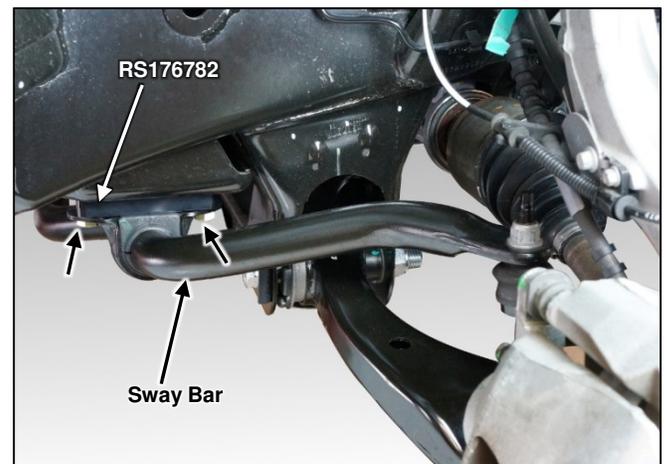


Illustration 10

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) Ensure that the vehicle brake system operates correctly.
- 3) Readjust headlamps and have vehicle aligned at a certified alignment facility.

Recommended Alignment Specifications

Caster (degrees): $4.5^{\circ} \pm 1.0^{\circ}$

Camber (degrees): 0° - neg $.3^{\circ}$

Sum Toe In (degrees): $.1^{\circ} \pm .2^{\circ}$ (.1" in – .05" out)

- 4) 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 11.

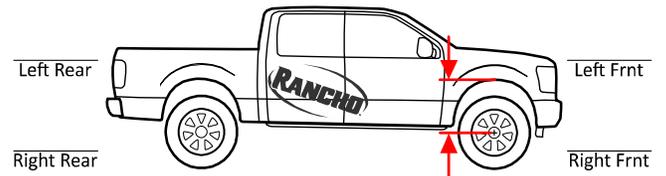


Illustration 11

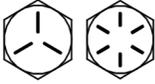
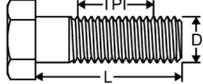
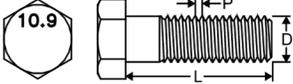
Vehicle Torque Specifications

| | |
|---|-----------------------------|
| Upper Control Arm | 89 LB-FT + 45-60 degrees* |
| Lower Control Arm | 133 LB-FT + 90-105 degrees* |
| Strut Rod Nut | 41 LB-FT |
| Upper Strut Mounting Nuts | 37 LB-FT |
| Lower Strut Mounting Bolts | 37 LB-FT |
| Upper Ball Joint Nut (OE Ball Joint) | 26 LB-FT + 60-75 degrees* |
| Upper Ball Joint Nut (Rancho Upper Control Arm) | 80 LB-FT |
| Tie Rod End Ball Stud Nut | 26 LB-FT + 85-100 degrees* |
| CV Axle Nut | 188 LB-FT |
| Sway Bar Mounting Bolts | 37 LB-FT |
| Wheel Lug Nuts | 140 LB-FT |

* Torque fastener to specification, then turn nut specified amount

STANDARD BOLT TORQUE AND 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>5-Grade-8</p> |  <p>$\frac{1}{2}$-13 x 1.75 HHCS</p> | <p>D = Nominal Diameter TPI = Threads Per Inch P = Pitch (Thread Width, mm) L = Length X = Description (Hex Head Cap Screw)</p> |  <p>10.9 Class</p> <p>M12-1.25 x 50 HHCS</p> |
|--|--|---|---|

⚠ 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.

- 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.
- 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.

⚠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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