



## 2016-2017 Gen V Viper ACR Titanium Springs

### Overview:

Titanium springs save weight from the steel version. In addition, titanium springs are more responsive and have a more consistent rate across various temperatures and over the life of the spring.

### Compatibility:

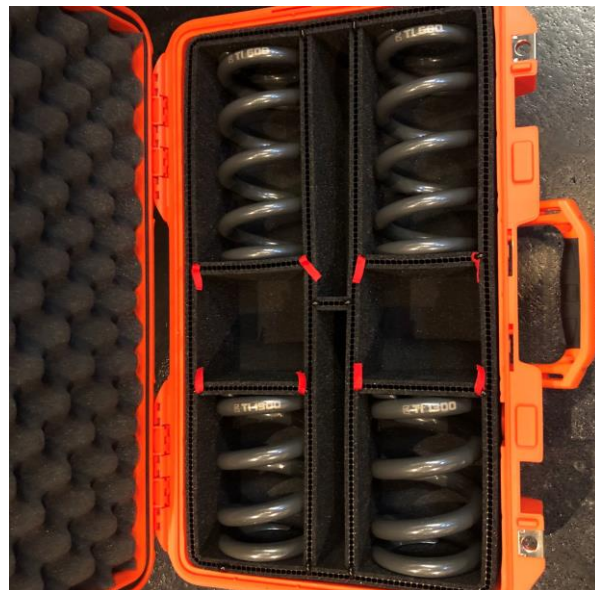
These parts will fit any 2016-2017 Viper ACR. The front and rear springs are marked with rates to ensure correct fitment.

### Construction:

Powder coated titanium springs.

### Weight:

The springs save about 7.5 lbs (1.3 lbs per front corner and 2.5 lbs per rear corner) of semi-sprung weight.



*Titanium Springs in Carrying Case*

### Ordering Information:

<http://dougshelbyengineering.com/Viper.html>

DSE-VP-SP-001 2016-2017 ACR Titanium Springs

### Installation Guide:

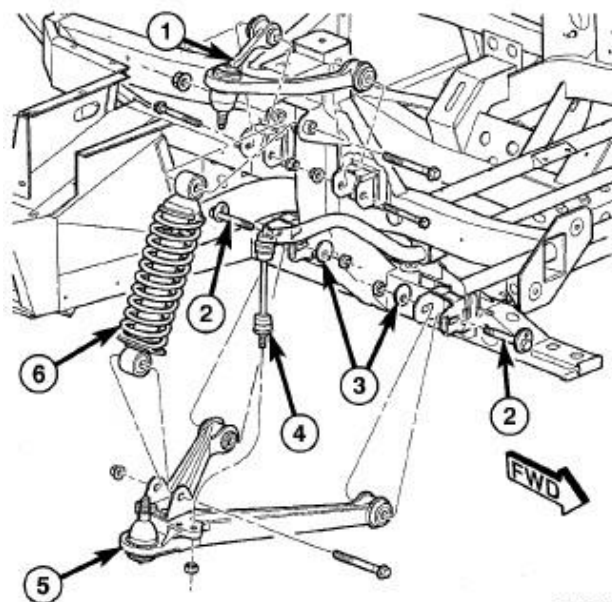
- The springs install in the same way as the OEM springs with the exception of being physically shorter. Although shorter in unsprung length, factory spring rate and max travel are maintained.
  - Remove the damper / spring assembly from the car (instructions below and in service manual)
  - Disassemble the assembly to remove the OEM springs (can be stored in the provided Ti spring case). Take note of the number of turns the spring perch is moved from the original set position.
  - Install the Titanium springs to the damper assembly and reassemble.
  - An adjustment is required on the spring perch to return back to the original ride height as compared to the OEM spring.
  - The adjustment to maintain ride height for the front is roughly 14.5 turns from the factory spring location.
  - The adjustment to maintain ride height for the rear is roughly 25.5 turns from the factory spring location.
  - The above numbers are meant only as a guide; check the setup per the manual after changing the springs to ensure everything is within the desired window

### Excerpts From the Service Manual

(please see full manual for complete instructions):

#### -FRONT SPRING REMOVAL-

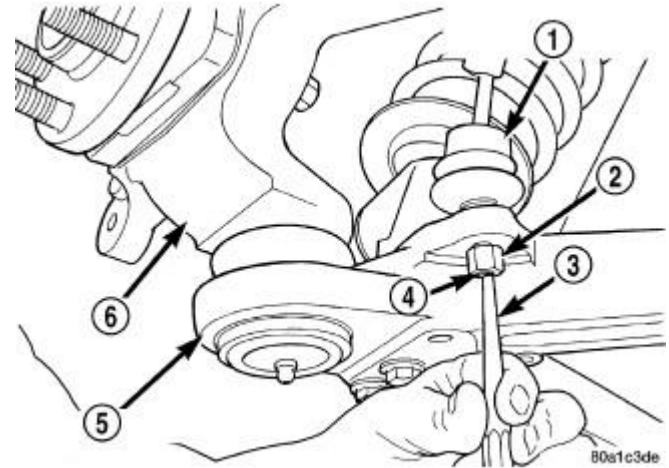
1. Raise vehicle.
2. Remove wheel and tire assembly.
3. Loosen, but do not remove, nut attaching stabilizer bar link (4) to lower control arm (5). Back off and position nut at end of link stud.



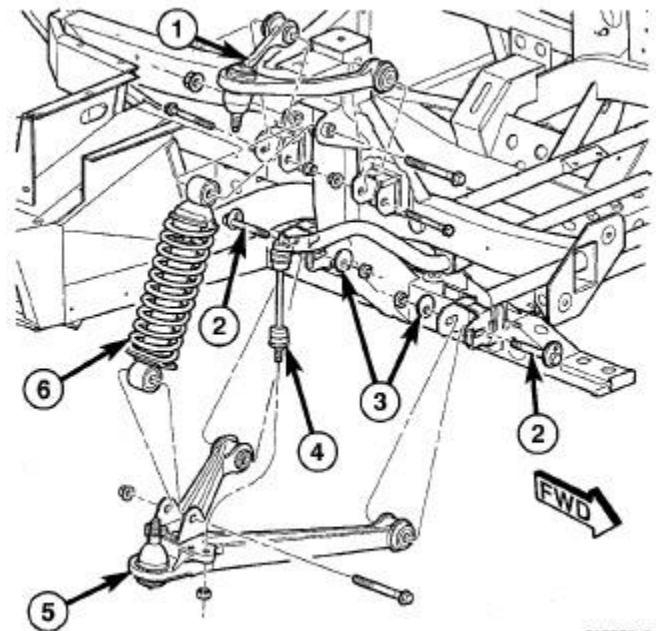
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**CAUTION:** The nut must be positioned at the end of the stabilizer bar link stud to help prevent the end of the stud from being damaged when separating it from the lower control arm.

4. Place center punch (3) in dimple on end of stabilizer bar link stud (4). Strike center punch with hammer, releasing link stud from lower control arm. Remove nut (2).

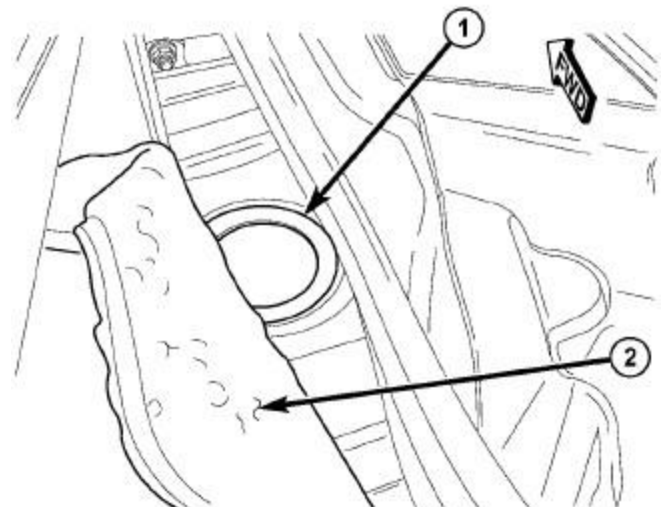


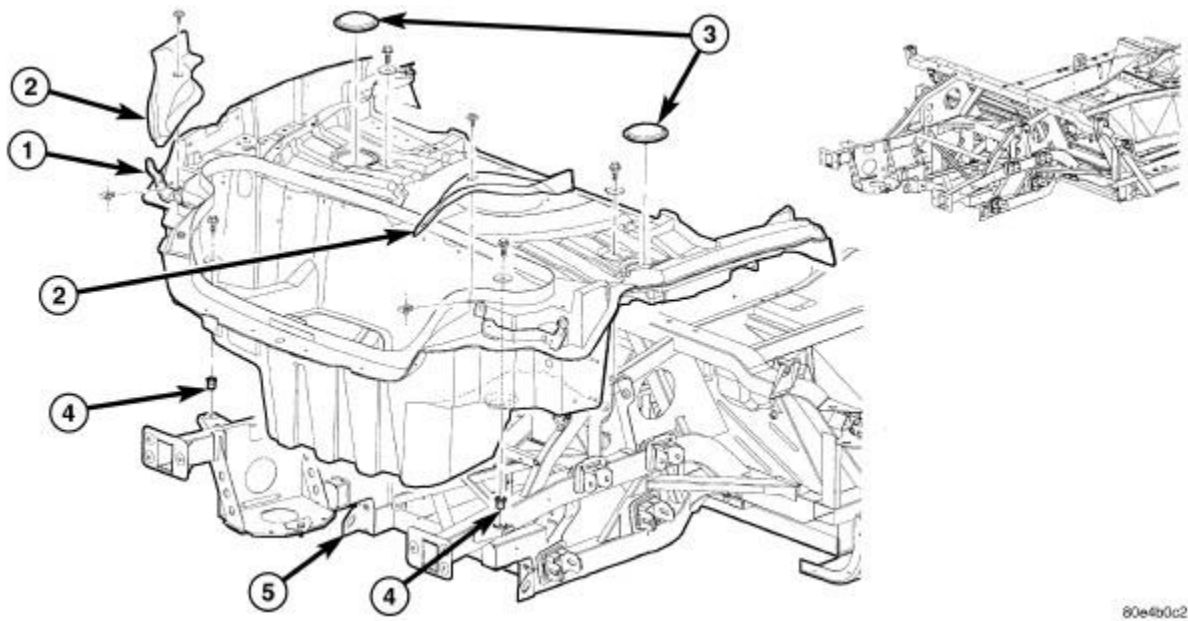
5. Remove bolt and nut attaching shock assembly (6) to bracket on lower control arm (5).
6. Remove bolt and nut attaching shock assembly (6) to bracket on frame.
7. Using a pry bar, carefully push down on upper control arm far enough to remove top of shock assembly from frame bracket.
8. Remove shock assembly from vehicle, out through center of upper control arm (1).



### -REAR SPRING REMOVAL-

1. Remove the B-pillar trim on the side of shock service.
2. Pull back carpet (2) over rear shelf on side of shock service to expose shock service plug (1).

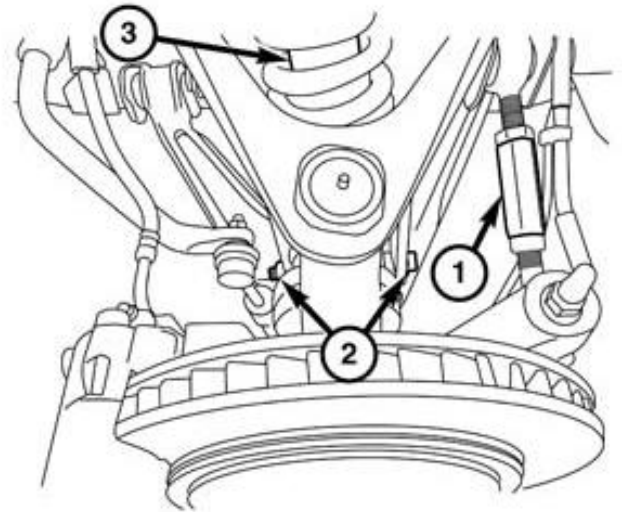




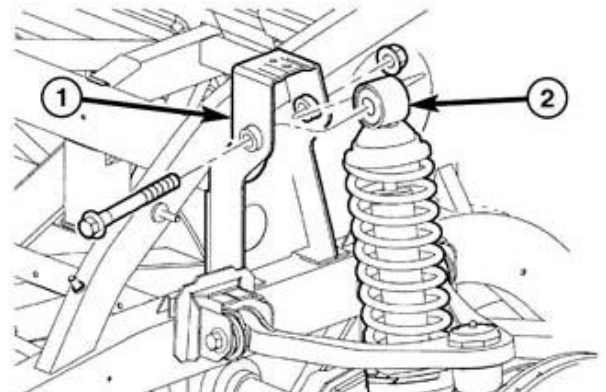
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3. Remove service plug (3) from trunk pan (1) on side of shock service.
4. Raise and support vehicle.
5. Remove wheel and tire assembly.
6. Remove rear wheelhouse splash shield.

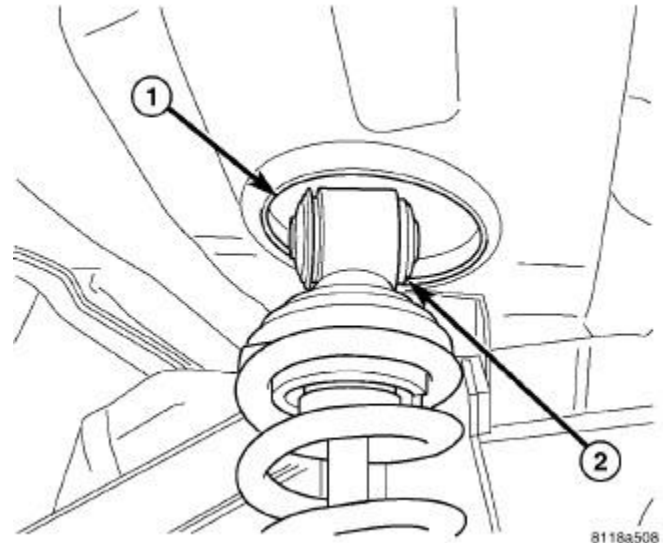
7. Remove nut and bolt (2) mounting shock assembly clevis bracket to isolator bushing on lower control arm.



8. Remove nut and bolt fastening top of shock assembly (2) to frame bracket (1).

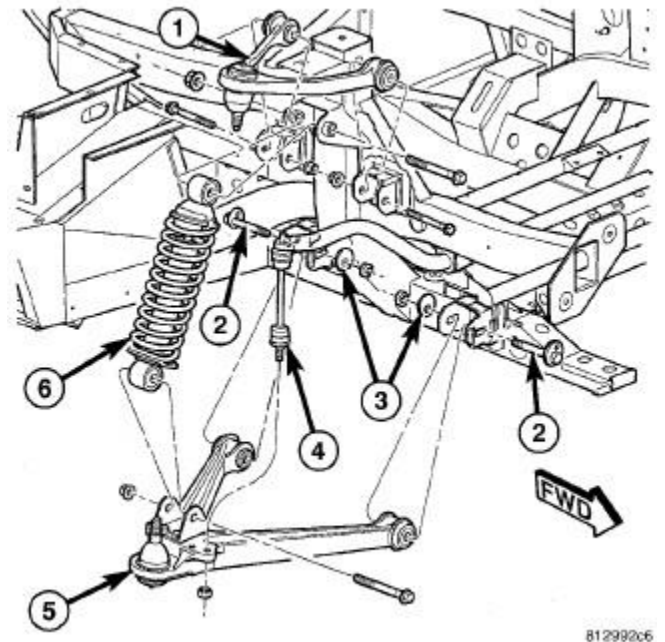


9. Remove shock assembly in following fashion:
  - a. Tip upper end of shock assembly outboard until it aligns with access hole (1) where shock service plug was removed.
  - b. Raise shock assembly upper eye (2) through access hole just enough to allow lower end of shock clevis bracket to be shifted inboard into open area between lower control arm and frame.
  - c. Lower shock assembly into open area and remove shock upper eye from access hole.
  - d. Remove shock assembly upper end first out over upper control arm.



### -FRONT SPRING INSTALLATION-

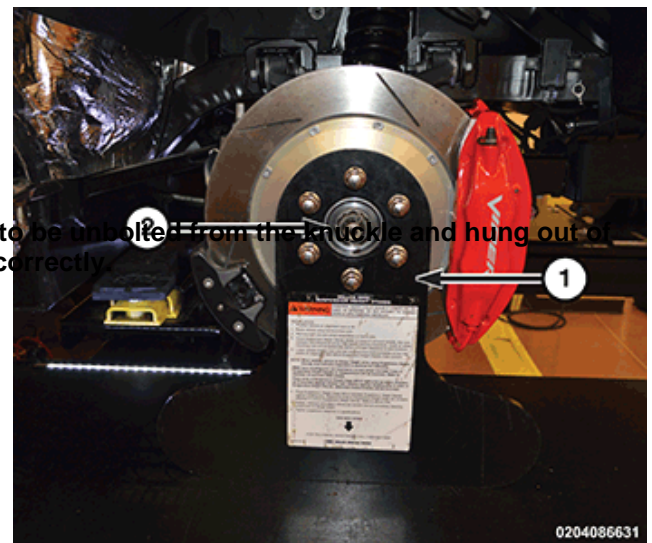
1. Install shock assembly (6) down through center of upper control arm (1).
2. Install shock assembly in mounting bracket on lower control arm (5). Install bolt and nut as shown. **Do not tighten mounting bolt at this time.**
3. Using a pry bar, carefully push down on upper control arm far enough to install top of shock assembly into frame bracket.
4. Install shock assembly into frame bracket and install bolt and nut. **Do not tighten mounting bolt at this time.**
5. Install stabilizer bar link (4) into mounting hole on lower control arm. Install stabilizer bar link nut. **Do not tighten at this time..**



6. Install wheel and tire assembly
7. Lower vehicle.
8. Position vehicle on alignment rack/drive-on hoist.

**NOTE:** On models equipped with six piston calipers the calipers need to be unbolted from the knuckle and hung out of the way so that the suspension height stands can be installed correctly.

9. Remove tire and wheels assemblies and install [Height Stands, Suspension 9096](#) (1) onto the hub and bearing assembly (2) and tighten to the proper [\(Torque Specifications\)](#).
10. Set vehicle to curb height specifications.
11. Tighten shock assembly upper mounting bolt to 100 ft lbs
12. Tighten shock assembly lower mounting bolt to 100 ft lbs
13. Tighten stabilizer link to lower control arm mounting nut to 17 ft lbs



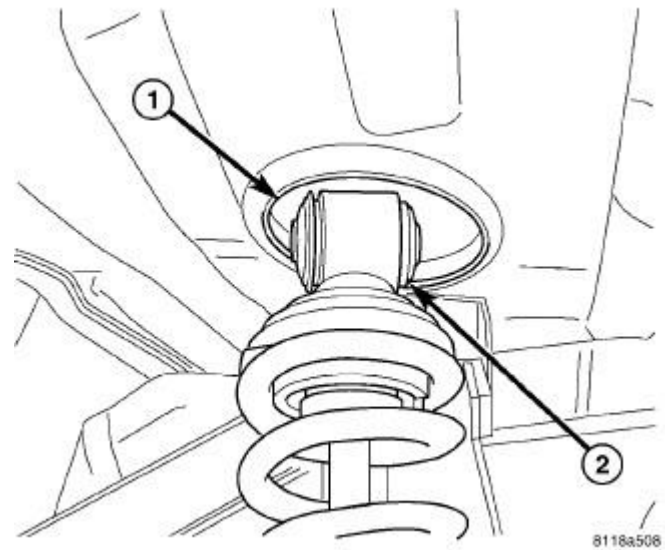
**NOTE:** On models equipped with six piston calipers the calipers need to be reinstalled onto the knuckle and tighten the two mounting bolts to the proper [\(Torque Specifications\)](#).

14. Remove the special tool and install the tire and wheel assemblies
15. Check all tires for proper inflation pressure and adjust as necessary.

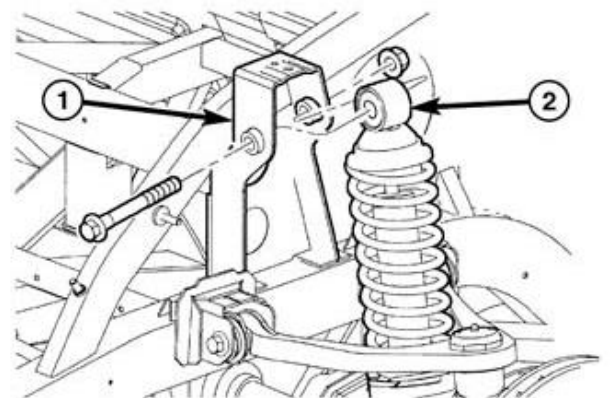
### **-REAR SPRING INSTALLATION-**

**NOTE:** If a standard shock assembly is being installed, functionally, it makes no difference which side of the rear shock clevis bracket is mounted inboard or outboard on the vehicle. But, to be consistent, it is recommended that the shock assembly be installed with the lower seat step oriented inboard.

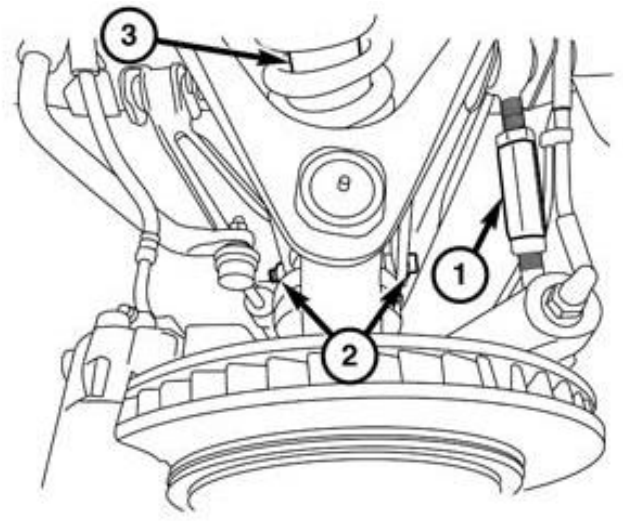
1. Position shock assembly in mounting position as follows:
  - a. Insert shock assembly clevis bracket end first into wheelhouse down through upper control arm and into open area between lower control arm and frame.
  - b. Raise shock assembly upper eye (2) upward through access hole (1) just enough to allow lower end of shock clevis bracket to be shifted outboard over isolator bushing installed on lower control arm.
  - c. Lower shock assembly clevis bracket onto isolator bushing and move upper end of shock assembly inboard until the upper eye aligns with its mounting hole in frame



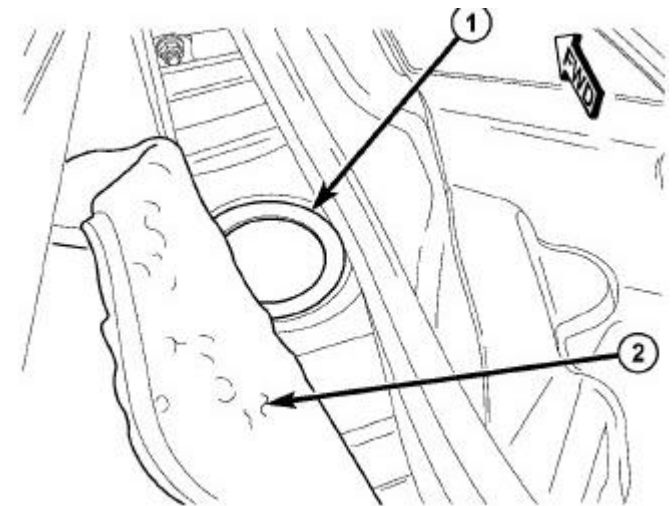
2. Install bolt and nut fastening top of shock assembly (2) to frame bracket (1). **Do not tighten at this time.**



3. Install bolt and nut mounting shock assembly clevis bracket (2) to isolator bushing on lower control arm. **Do not tighten at this time.**
4. Install tire and wheel assembly
5. Lower vehicle.



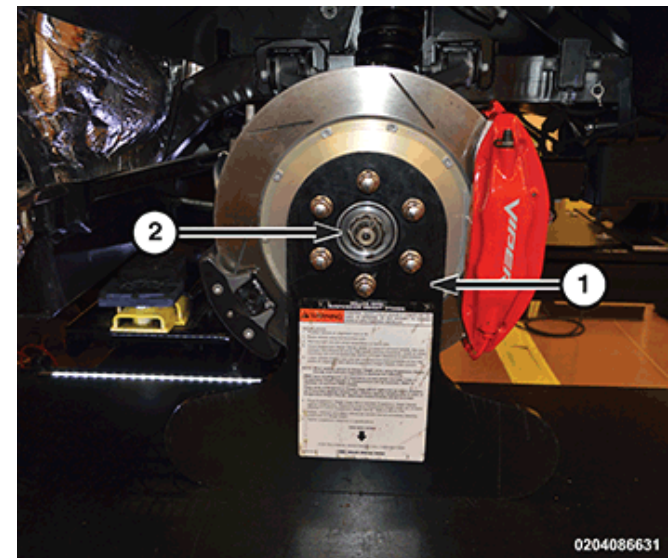
6. Install shock service plug (1).
7. Reposition carpet (2) to original position over rear shelf.



8. Install the B-pillar trim
9. Lower vehicle.
10. Verify vehicle fuel tank is full of fuel. If tank is not full of fuel, reduction in weight will affect height of vehicle and curb height measurement.
11. Remove any load within passenger and luggage compartments that is not factory equipment.
12. Position vehicle on alignment rack/drive-on lift equipped with front turntables and rear slip plates.

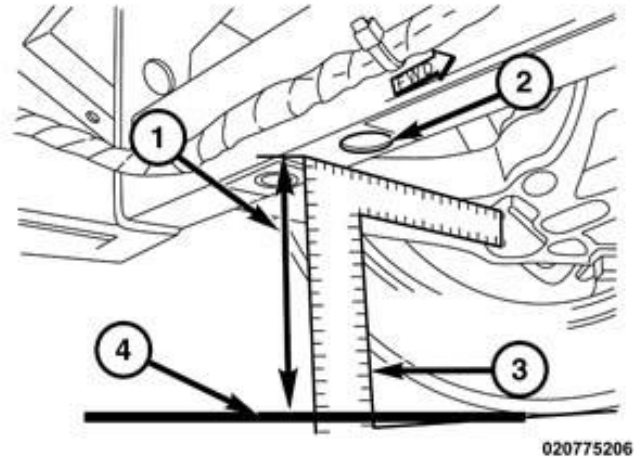
**NOTE:** On models equipped with six piston calipers the calipers need to be unbolted from the knuckle and hung out of the way so that the suspension height stands can be installed correctly.

13. Remove tire and wheels assemblies and install [Height Stands, Suspension 9096](#) (1) onto the hub and bearing assembly (2) and tighten to the proper [Torque Specifications](#).
14. Proceed with STANDARD SHOCK ASSEMBLY below to complete this procedure.



# STANDARD SHOCK ASSEMBLY

1. Jounce vehicle several times, each time paying special attention to release vehicle at **very bottom** of jounce cycle. This is very important in allowing suspension to settle to correct height.
2. Measure and record vehicle's rear curb height. Measure distance (1) between the **bottom** of the straight edge (4) and each frame rail at forward edge of gage. This is the nearest point to the Principle Locating Point PLP hole (2).
3. Compare recorded measurements to specifications per the ACR owner's manual.
4. If recorded height is higher than specifications, jounce vehicle and remeasure. **Before remeasuring curb height, be sure to jounce the vehicle.** If still above specifications, one or more rubber bushing mounted suspension components may not be properly positioned and tightened. Loosen components as necessary to allow suspension to enter specified curb height, then retighten to specified torque ([Refer to 17 - Rear Suspension - Specifications](#)). For further information ([Refer to 02 - Front Suspension/Wheel Alignment - Standard Procedure](#)).



**NOTE:** If loosening lower control arm mounting bolts is necessary, be sure alignment adjustment cams do not turn. The cams must stay in their original position so wheel alignment is not affected.

5. Tighten shock assembly upper mounting bolt to 100 lb ft
6. Tighten shock assembly lower mounting bolt to 100 lb ft
7. Install rear wheelhouse splash shield

**NOTE:** On models equipped with six piston calipers the calipers need to be reinstalled onto the knuckle and tighten the two mounting bolts to 85 lb ft.

8. Remove the special tool and install the tire and wheel assemblies
9. Lower vehicle

## **-FROM THE ACR SUPPLIMENT-**

### Adjusting The Ride Height

1. Raise and support the vehicle. Both left and right side wheels should be lifted off the ground to allow adjustment of the spring seats without damage. Never make ride height adjustments with the suspension loaded. The helper spring should never be fully compressed while adjusting ride heights.
2. Remove the wheel and tire assembly.
3. With a spanner wrench, loosen the lower locking nut below the lower spring seat.
4. To lower the ride height, use the spanner wrench and rotate the lower spring seat counter-clockwise (as viewed from below the damper).
5. To raise the ride height, first turn the seat in the counter-clockwise direction and ensure the reads are clear of debris. Use the spanner wrench and reverse the direction.
6. When the desired ride height is set, retighten the locking nut using the spanner wrench. The ride height adjustment sensitivity is as follows:

Front: One turn = 0.082 inches (2.09 mm)  
height change at frame

Rear: One turn = 0.099 inches (2.52 mm)  
height change at frame

When ride height is adjusted, use corner weighting scales to ensure symmetric handling and even tire loading.



**Titanium Springs Front (left) and Rear (right)**

#### **Inspection and Maintenance:**

- Periodically inspect the springs for signs of debris impact. If the impact has caused damage through the powdercoat to the spring please contact DSE for guidance. Severe damage from debris could weaken or fracture the spring.

#### **Thank you for your purchase!**

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