



**FORD PERFORMANCE**

## Ranger ARB Old Man EMU Overland Suspension Kit M-18000-RO

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Please visit [www.performanceparts.ford.com](http://www.performanceparts.ford.com) for the most current instruction and warranty information.

**PLEASE READ ALL OF THE FOLLOWING INSTRUCTIONS CAREFULLY  
PRIOR TO INSTALLATION. AT ANY TIME YOU DO NOT UNDERSTAND  
THE INSTRUCTIONS, PLEASE CALL THE FORD PERFORMANCE  
TECHLINE AT 1-800-367-3788**

**Kit includes:**

- 2 - Front shock/spring assembly
- 2 – Front Trim Packers
- 2 - Rear shock absorbers
- 2 – Rear leaf springs
- 4 – U Bolts with hardware
- 2 – Bushing Packs
- 2 - shackle kits

Factory Ford shop manuals are available from Helm Publications, 1-800-782-4356



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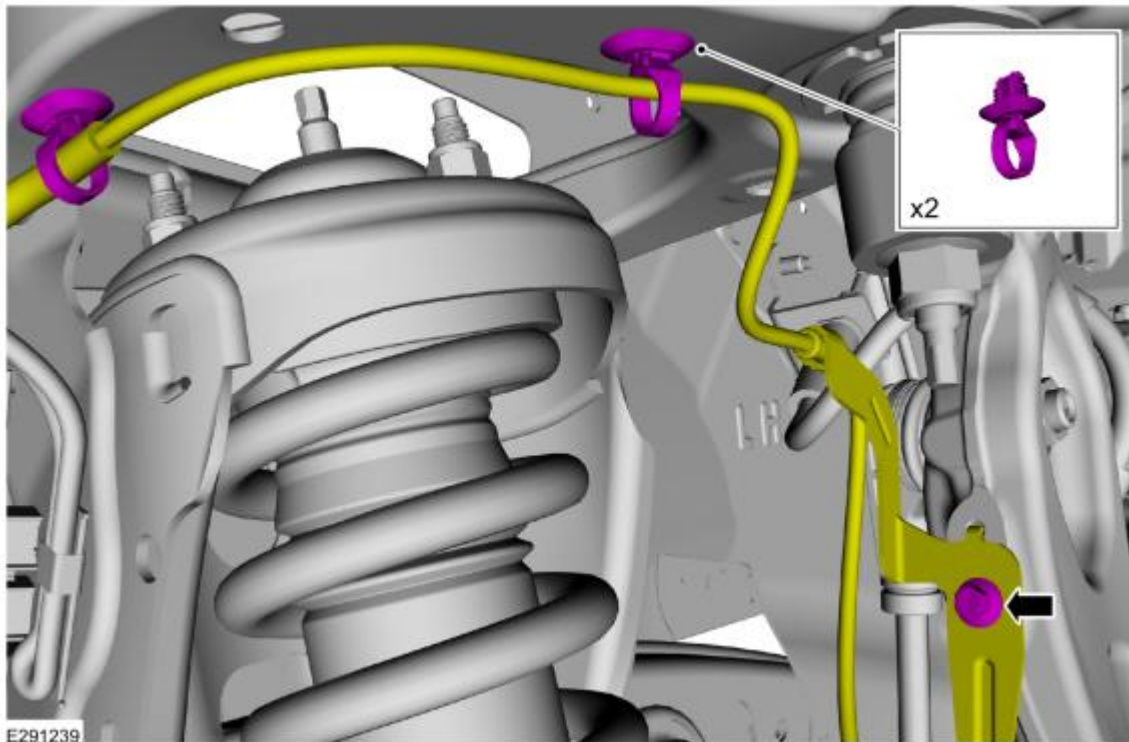
### Removal

**NOTICE:** Suspension fasteners are critical parts that affect the performance of vital components and systems. Failure of these fasteners may result in major service expense. Use the same or equivalent parts if replacement is necessary. Do not use a replacement part of lesser quality or substitute design. Tighten fasteners as specified.

**NOTE:** Removal steps in this procedure may contain installation details.

Remove the wheel and tire

Detach the harness pin-type retainers and remove the harness routing bracket bolt.



Factory Ford shop manuals are available from Helm Publications, 1-800-782-4356

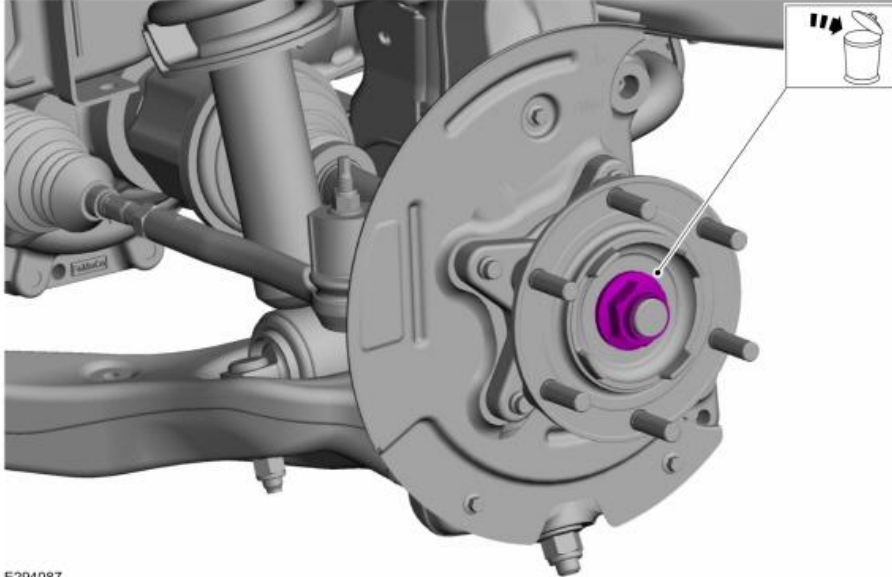


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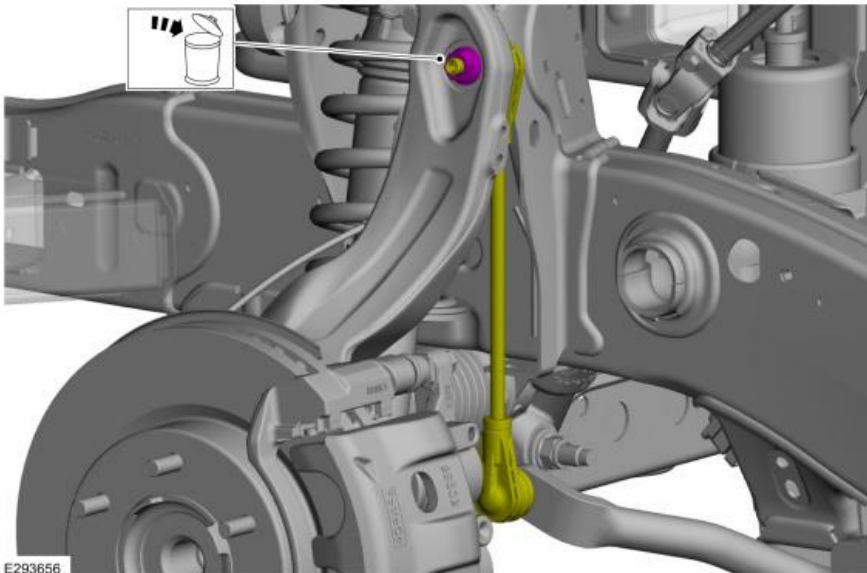
Remove and discard the wheel hub nut. (rotor and caliper removed for clarity)



**NOTE:** The stabilizer bar links are designed with low friction ball joints that have a low breakaway torque.

**NOTE:** Use the hex-holding feature to prevent the stud from turning while removing the nut.

Remove and discard the stabilizer bar link upper nut.



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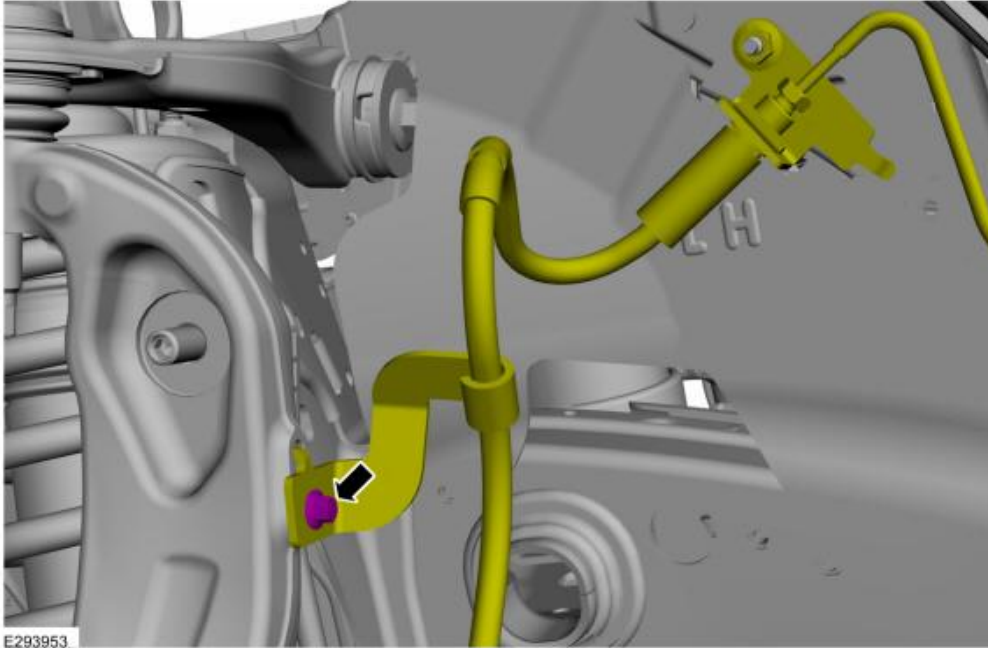


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Remove the brake hose bracket bolt and position the hose aside.



**NOTICE:** Do not use a hammer to separate the outer tie-rod end from the wheel knuckle or damage to the wheel knuckle may result.

**NOTICE:** Use care when installing the tie rod separator or damage to the outer tie-rod end boot may occur.

**NOTE:** Use the hex-holding feature to prevent the stud from turning while removing the nut.

Remove and discard the tie rod end nut and separate the tie rod end from the wheel knuckle. Use Tie Rod End Remover.

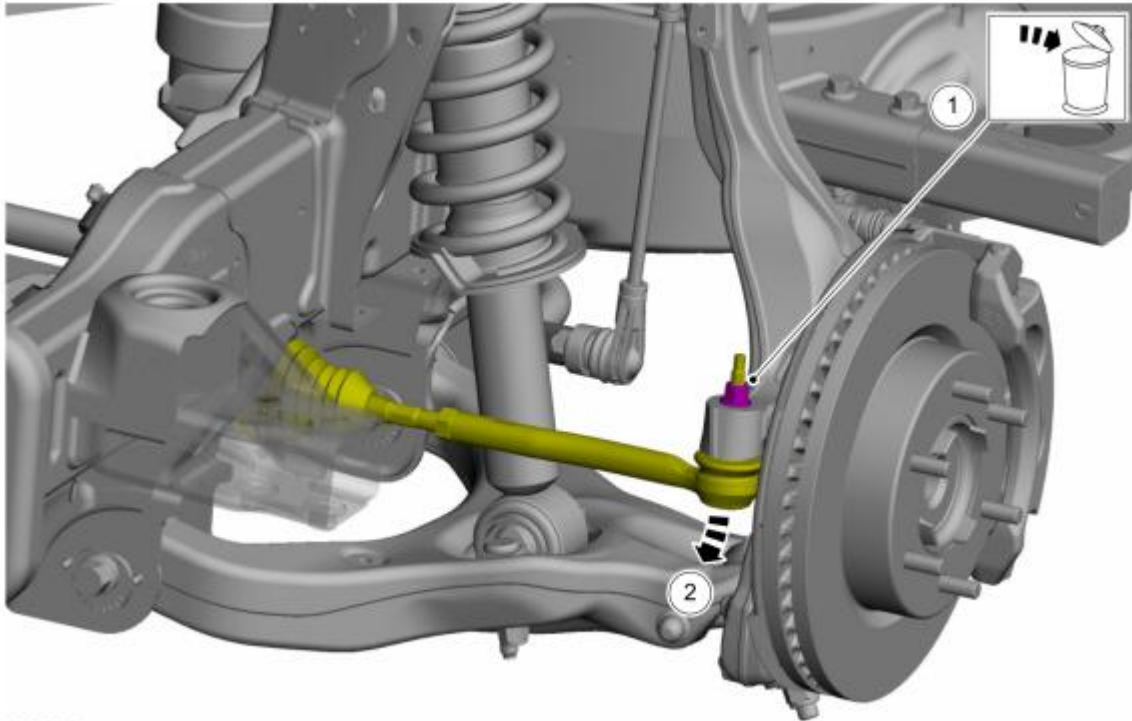
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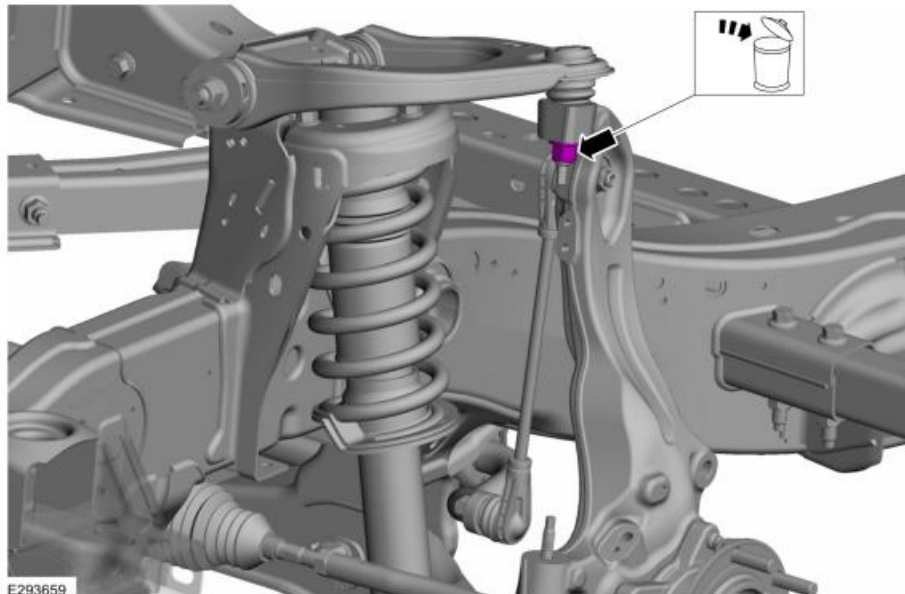
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Loosen the upper arm ball joint nut, do not remove nut completely.



E293659

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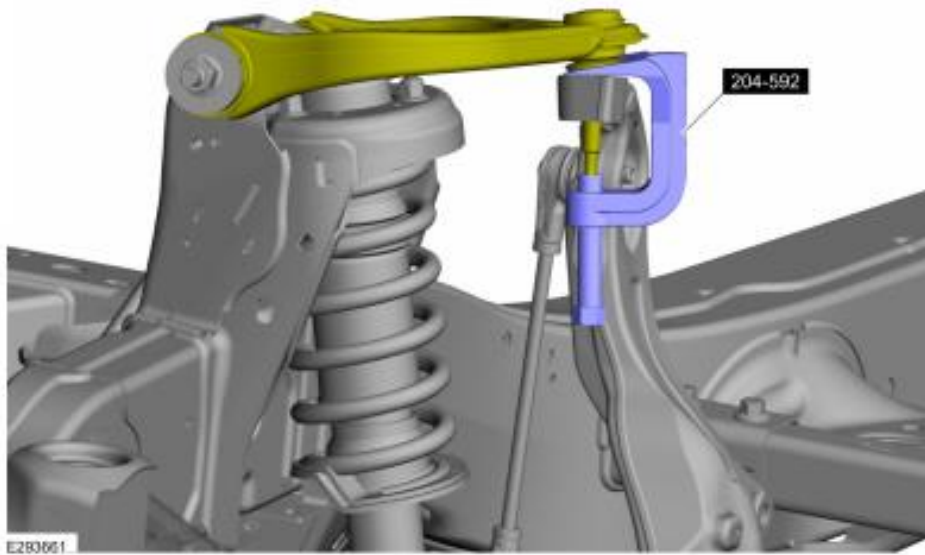
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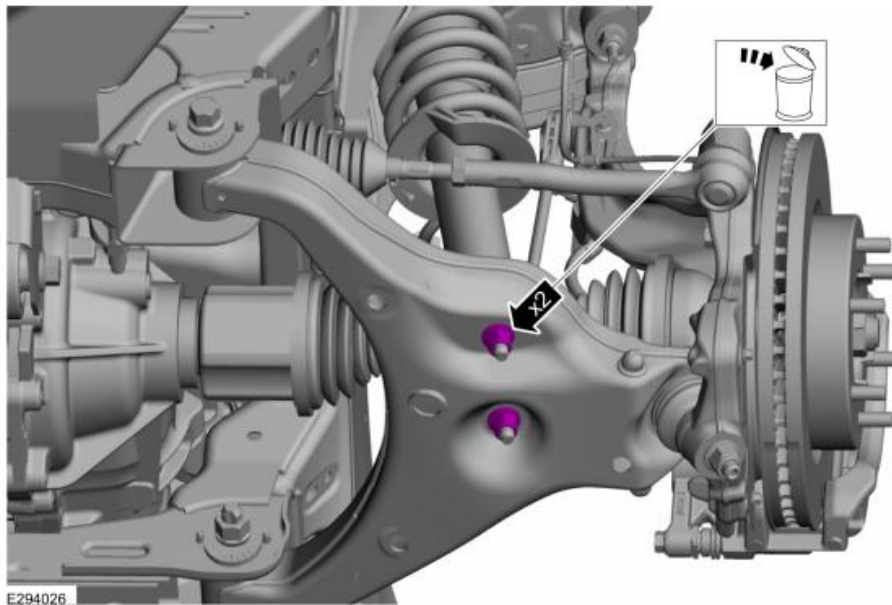
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**NOTE:** *Be sure not to damage the ball joint boot when installing the Ball Joint Separator.*

Separate the upper ball joint from the wheel knuckle.  
Use Ball Joint Separator tool.



Remove and discard the shock absorber and spring assembly lower nuts.



Factory Ford shop manuals are available from Helm Publications, 1-800-782-4356

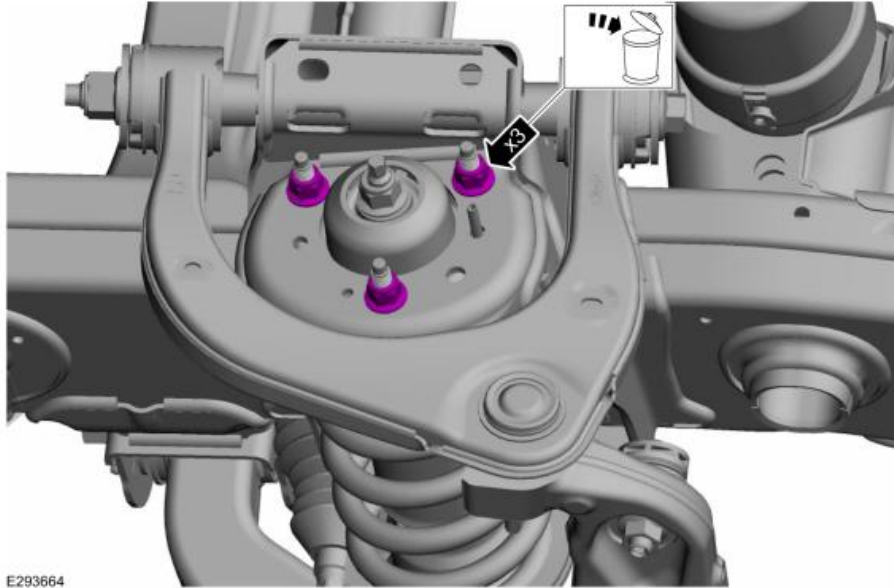


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Remove and discard the shock absorber and spring assembly upper nuts.



Push the axle out of the hub to prevent the axle from popping out of the inner cv joint.

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Prior to releasing the nut from the upper control arm ball joint completely, be sure to support the wheel knuckle so that it does not fall and cause damage. Disconnect upper control arm from the wheel knuckle.



(2wd shown)

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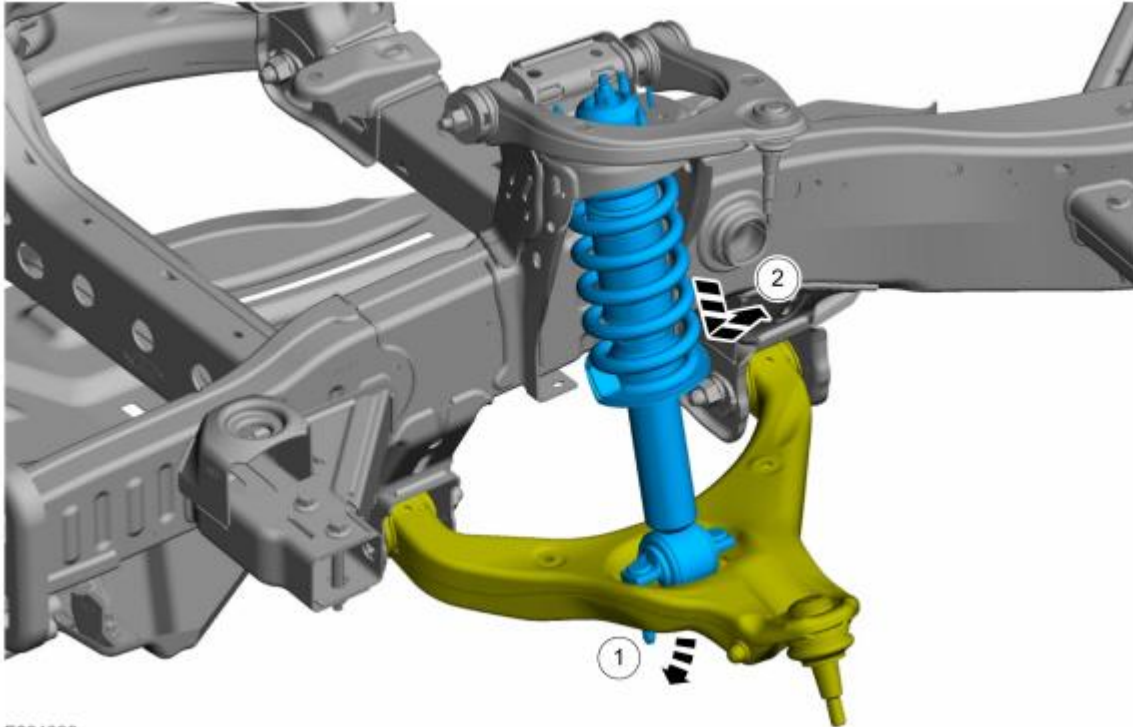
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Position the lower arm down to gain clearance for removing the shock absorber and spring assembly.

Remove the shock absorber and spring assembly. (wheel knuckle removed for clarity)



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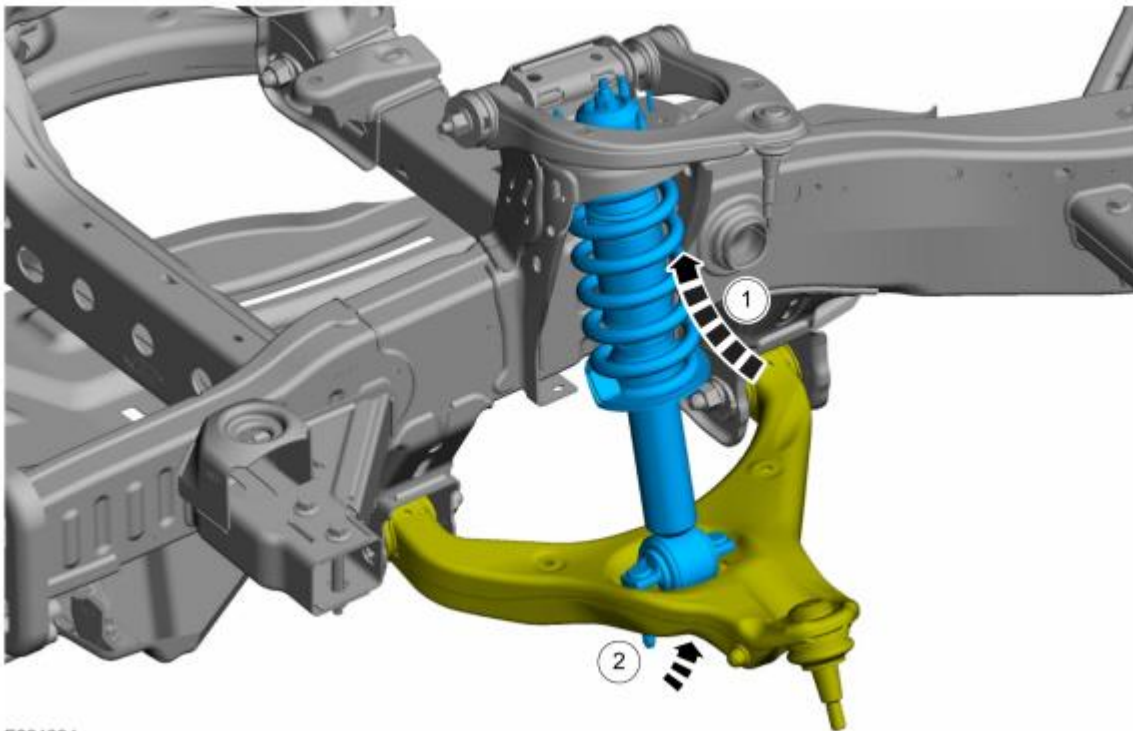
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### Installation

Install the shock absorber and spring assembly. (wheel knuckle removed for clarity)

Position the lower arm up.



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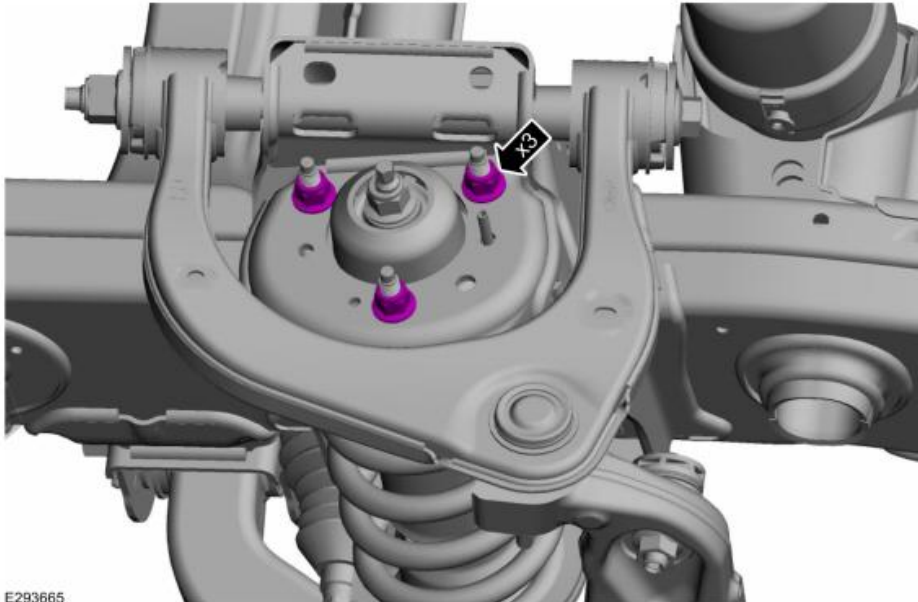
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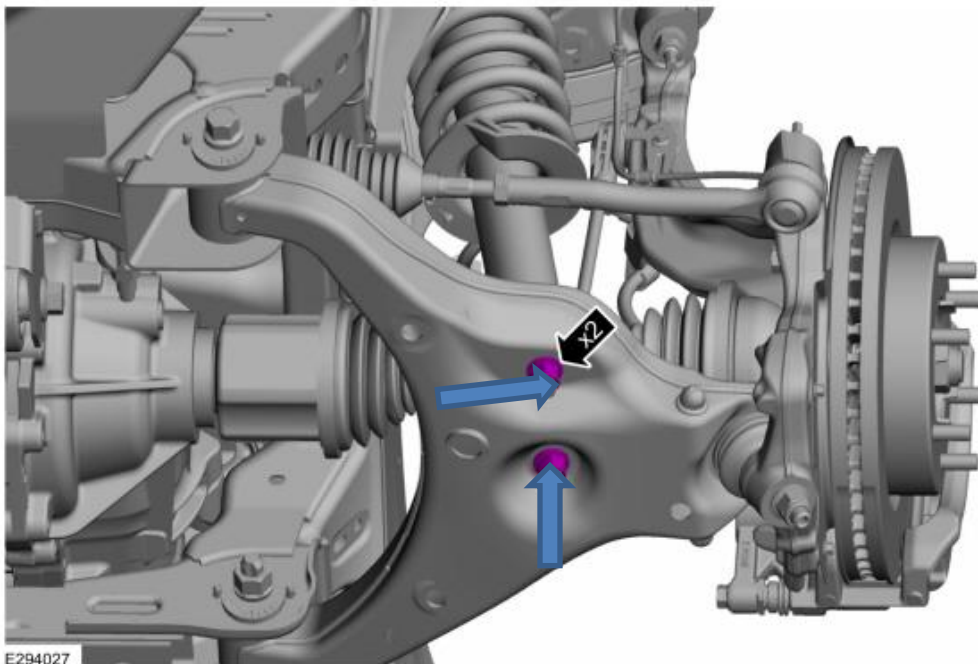
Install the new shock absorber and spring assembly upper nuts.

*Torque: 24 lb.ft (33 Nm)*



Install the new shock absorber and spring assembly using 2 supplied bolts and washers. Apply blue medium strength thread locking compound, install bolts from below through control arm into shock assembly.

*Torque: 50 lb.ft (68 Nm)*



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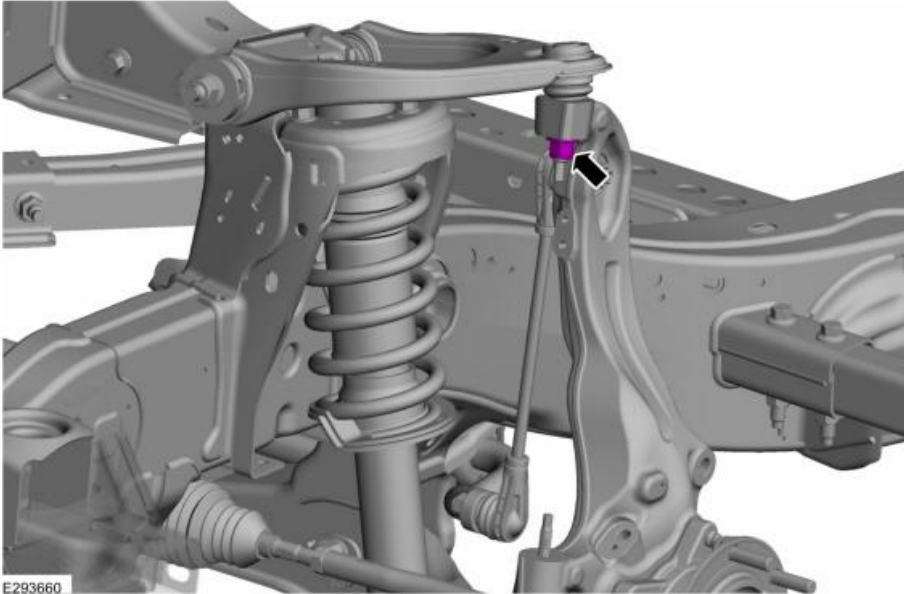
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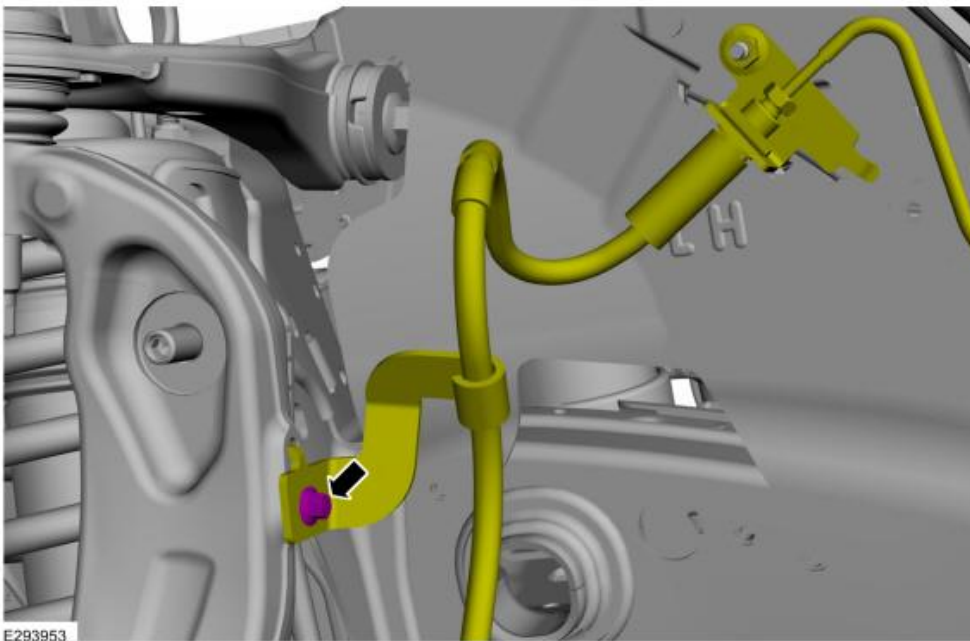
Install the new upper ball joint nut.

*Torque:* 46 lb.ft (63 Nm)



Position the brake hose and install the brake hose bracket bolt.

*Torque:* 159 lb.in (18 Nm)



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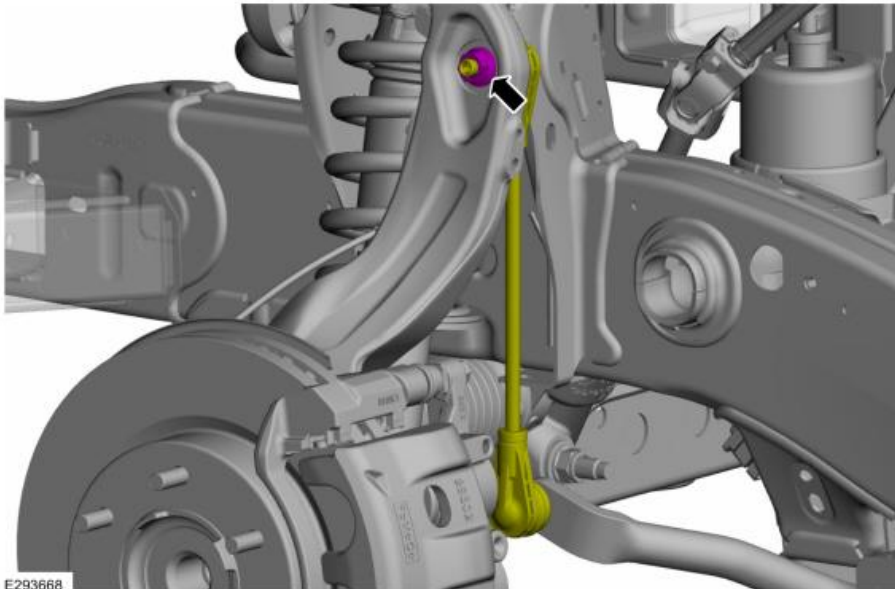
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**NOTE:** Use the hex-holding feature to prevent the stud from turning while installing the nut.

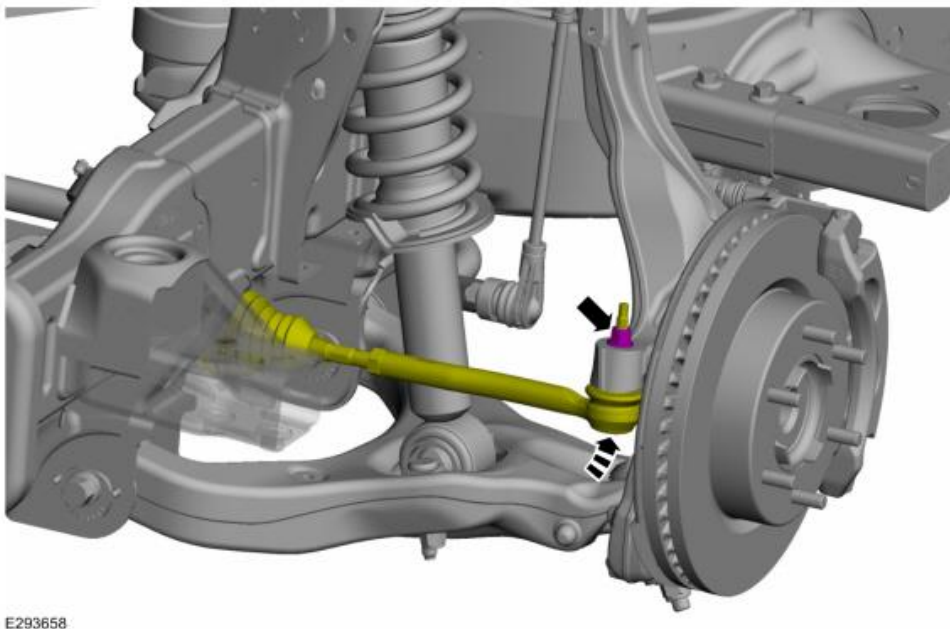
Install the new front stabilizer link upper nut.

*Torque:* 85 lb.ft (115 Nm)



Position the tie rod end and install the new tie rod end nut.

*Torque:* 35 lb.ft (48 Nm)



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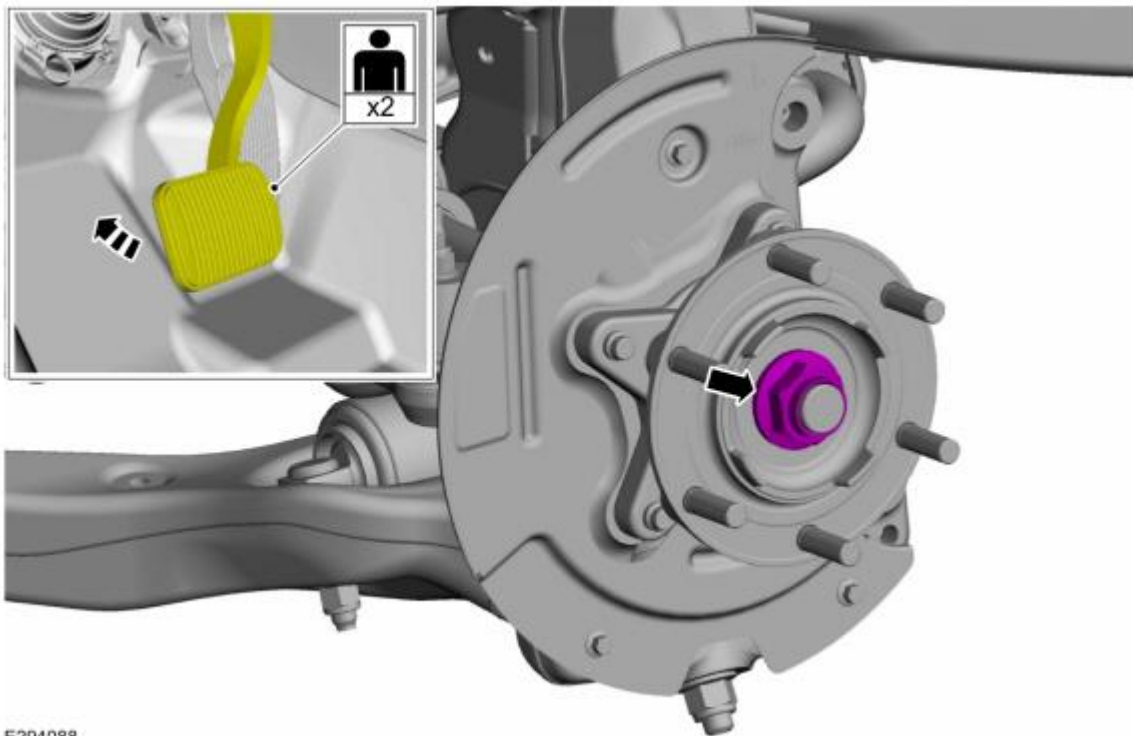
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**NOTICE:** Install and tighten the new wheel hub nut to specification in a continuous rotation. Always install a new wheel hub nut after loosening or when not tightened to specification in a continuous rotation or damage to the components may occur.

**NOTE:** Apply the brake to keep the halfshaft from rotating.

While an assistant applies the brake, install the new wheel hub nut.  
Torque: 221 lb.ft (300 Nm)



E294088

(rotor and caliper removed for clarity)

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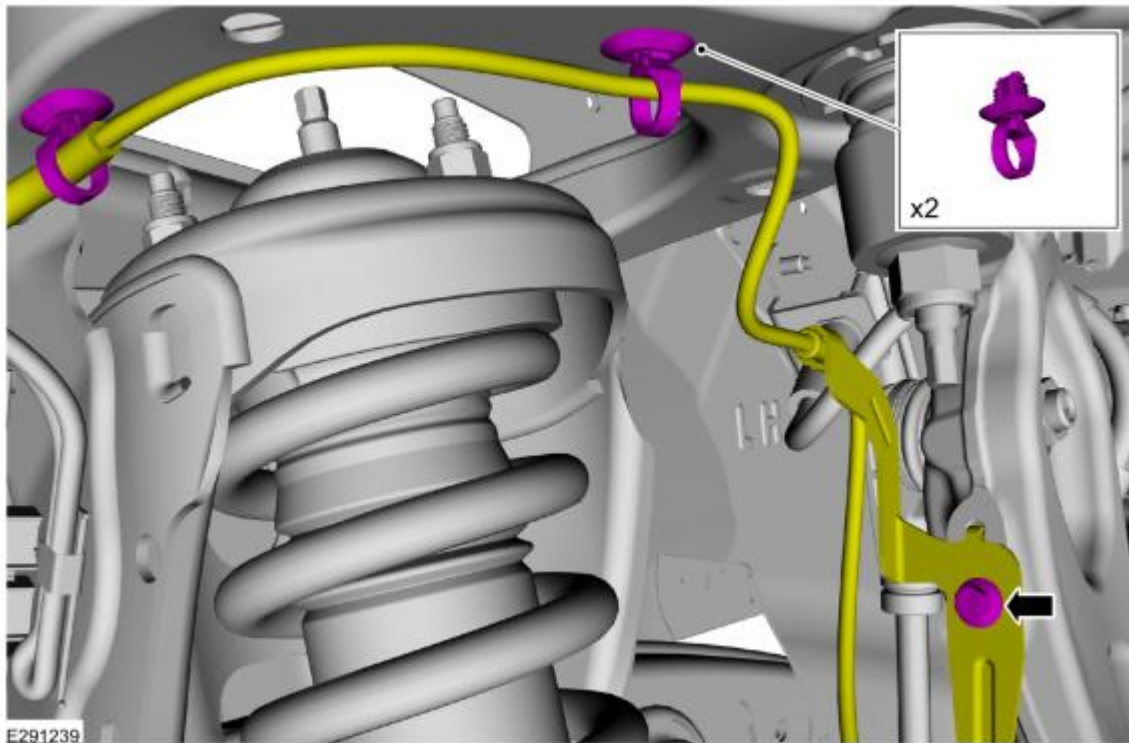


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Install the harness pin-type retainers and install the harness routing bracket bolt.  
*Torque: 53 lb.in (6 Nm)*



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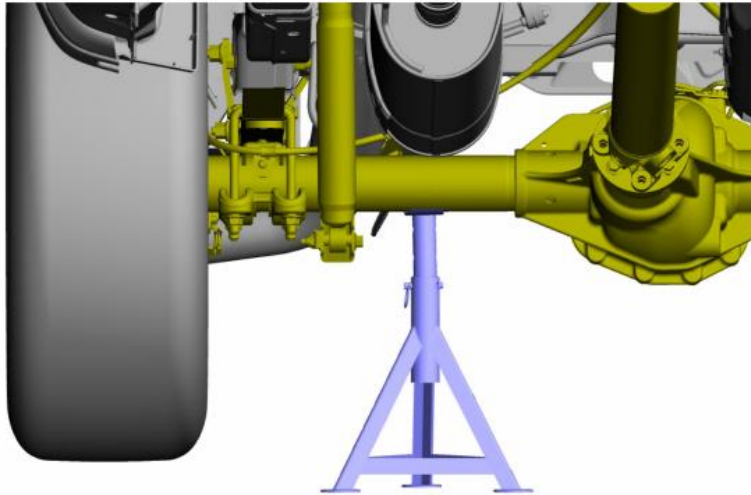
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### Rear Shock Absorber

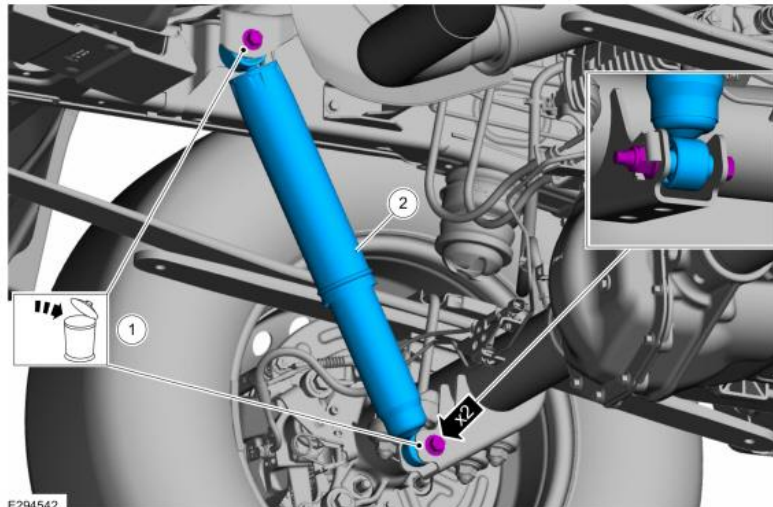
Support the rear axle assembly.



E294543

Remove and discard the rear shock absorber upper and lower bolts and nuts.  
*Torque: 52 lb.ft (70 Nm)*

Remove the rear shock absorber.



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### Rear Shock Installation

To install, reverse the removal procedure.

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### Leaf Spring


### Special Tool(s) / General Equipment


Hydraulic Press
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Vehicle/Axle Stands
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Vise
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### Removal

 **WARNING:** Do not apply heat or flame to the shock absorber or strut tube. The shock absorber and strut tube are gas pressurized and could explode if heated. Failure to follow this instruction may result in serious personal injury.

 **WARNING:** Keep all body parts clear of shock absorbers or strut rods. Shock absorbers or struts can extend unassisted. Failure to follow this instruction may result in serious personal injury.

**NOTICE:** Suspension fasteners are critical parts that affect the performance of vital components and systems. Failure of these fasteners may result in major service expense. Use the same or equivalent parts if replacement is necessary. Do not use a replacement part of lesser quality or substitute design. Tighten fasteners as specified.

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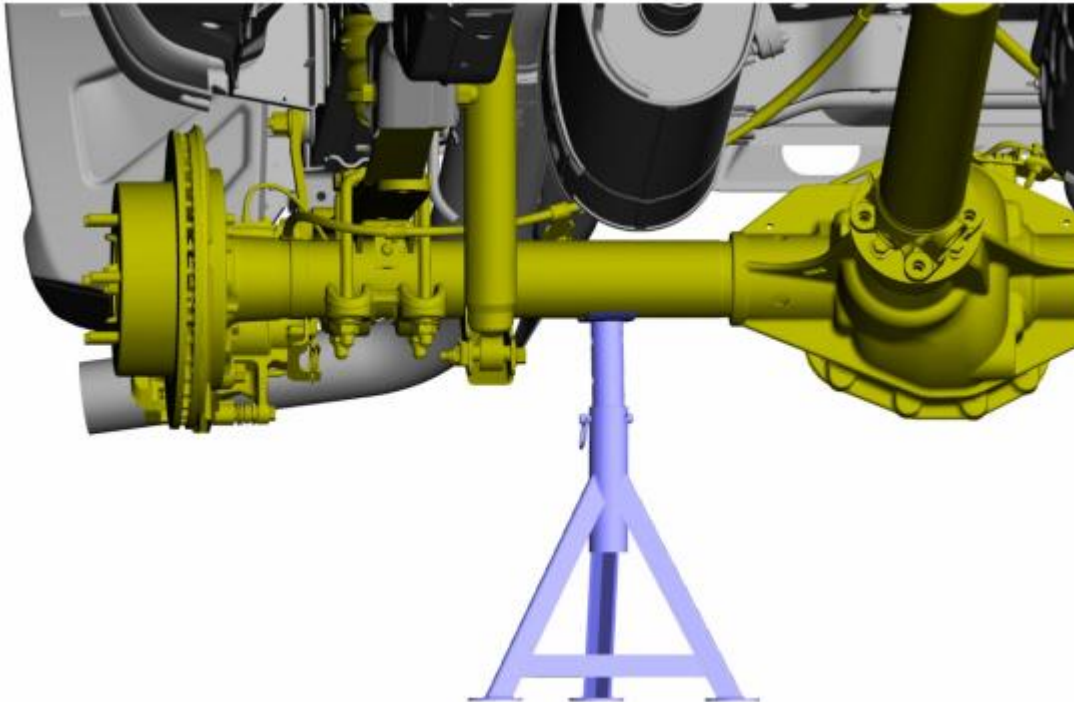
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Remove the wheel and tire.

Refer to: Wheel and Tire (204-04A Wheels and Tires, Removal and Installation).

Support the rear axle assembly.

Use the General Equipment: Vehicle/Axle Stands



E294661

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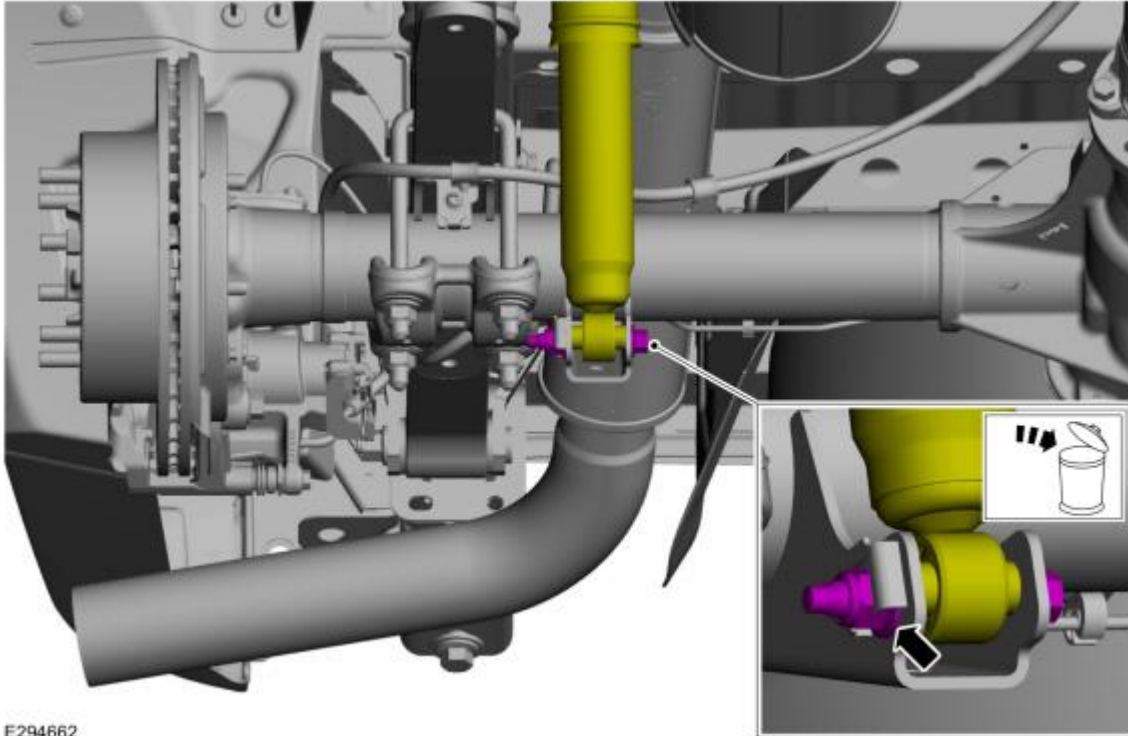


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Remove and discard the rear shock absorber lower nut and bolt.



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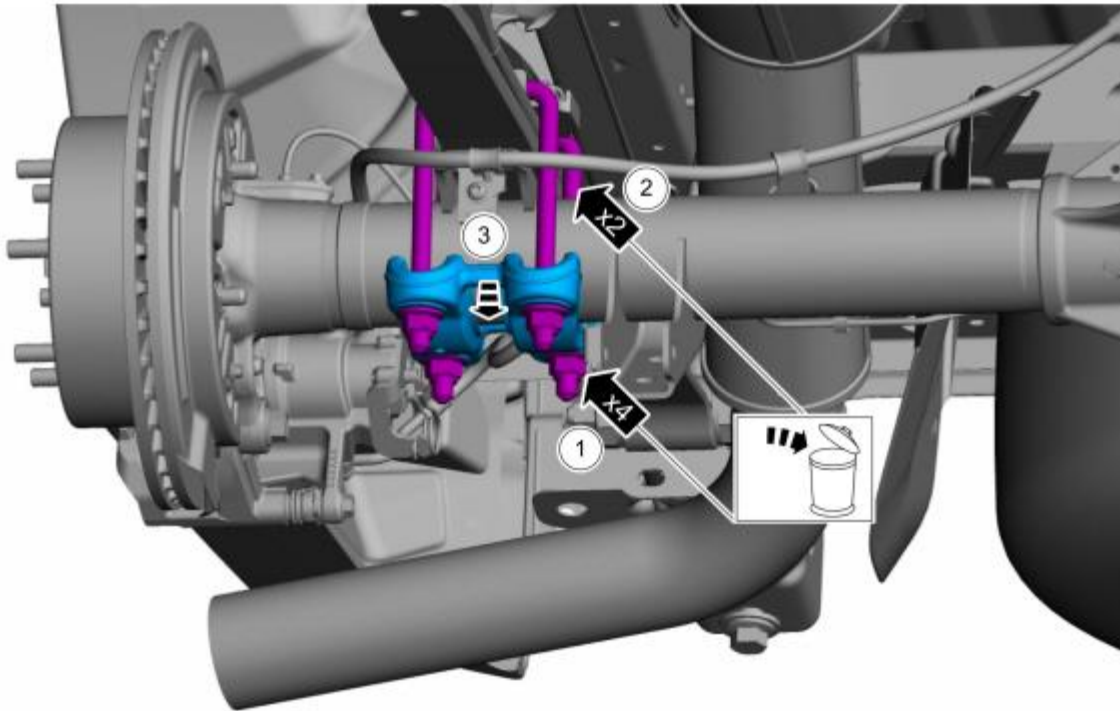
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Remove and discard the U-bolt nuts.

Remove and discard the U-bolts.

Remove the spring clamp.



E294664

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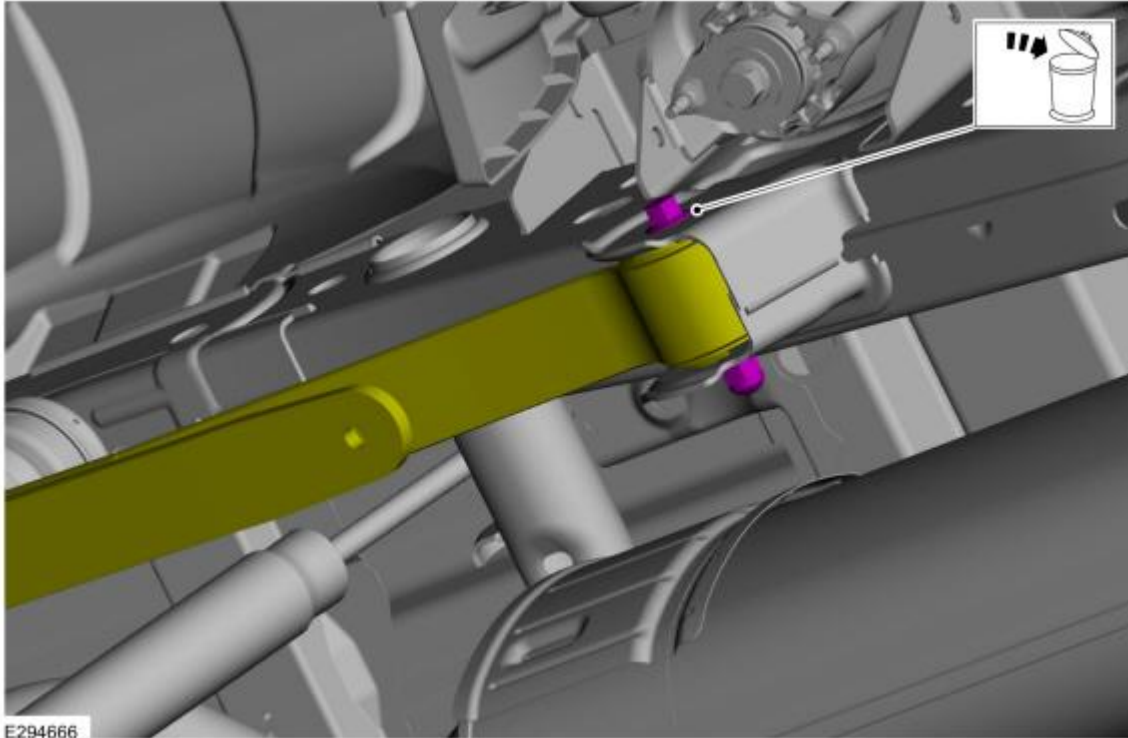


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Remove and discard the spring-to-frame nut and bolt.



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**NOTE:** Only lower the axle enough to gain access to remove the spring.

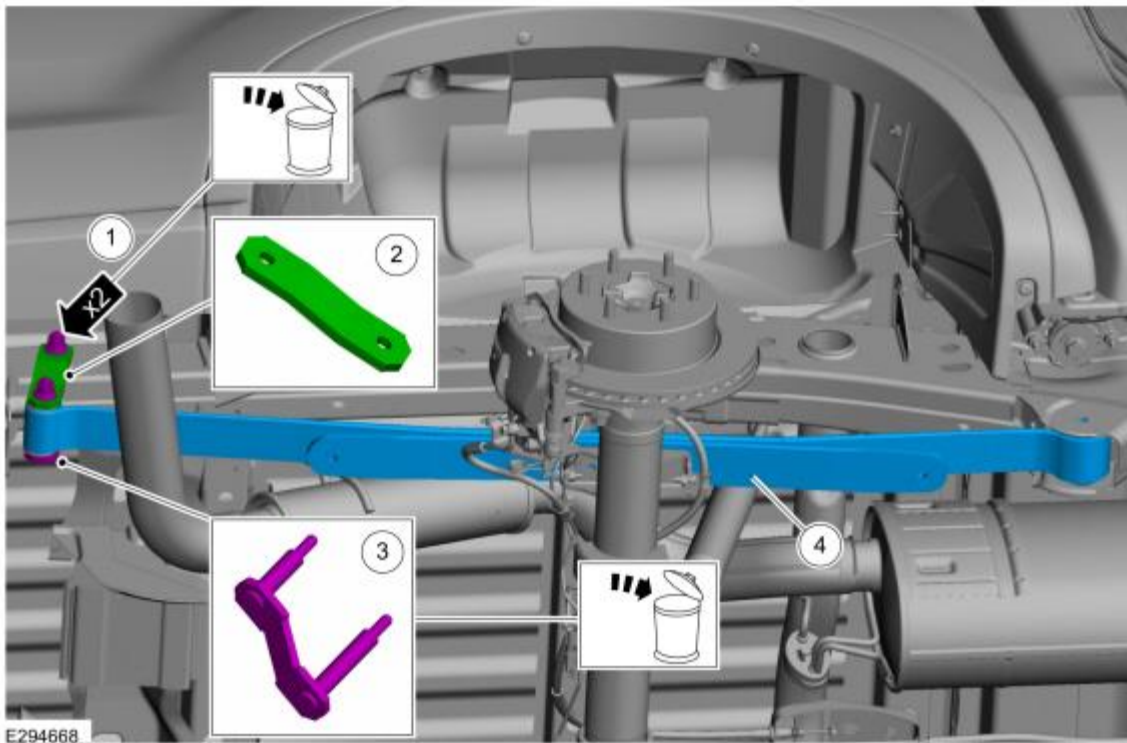
Remove and discard the spring shackle-to-frame nuts.

**NOTE:** Note the position of the component before removal.

Remove the shackle plate.

Remove and discard the shackle assembly bolt.

Lower the axle and Remove the spring assembly.  
Use the General Equipment: Vehicle/Axle Stands



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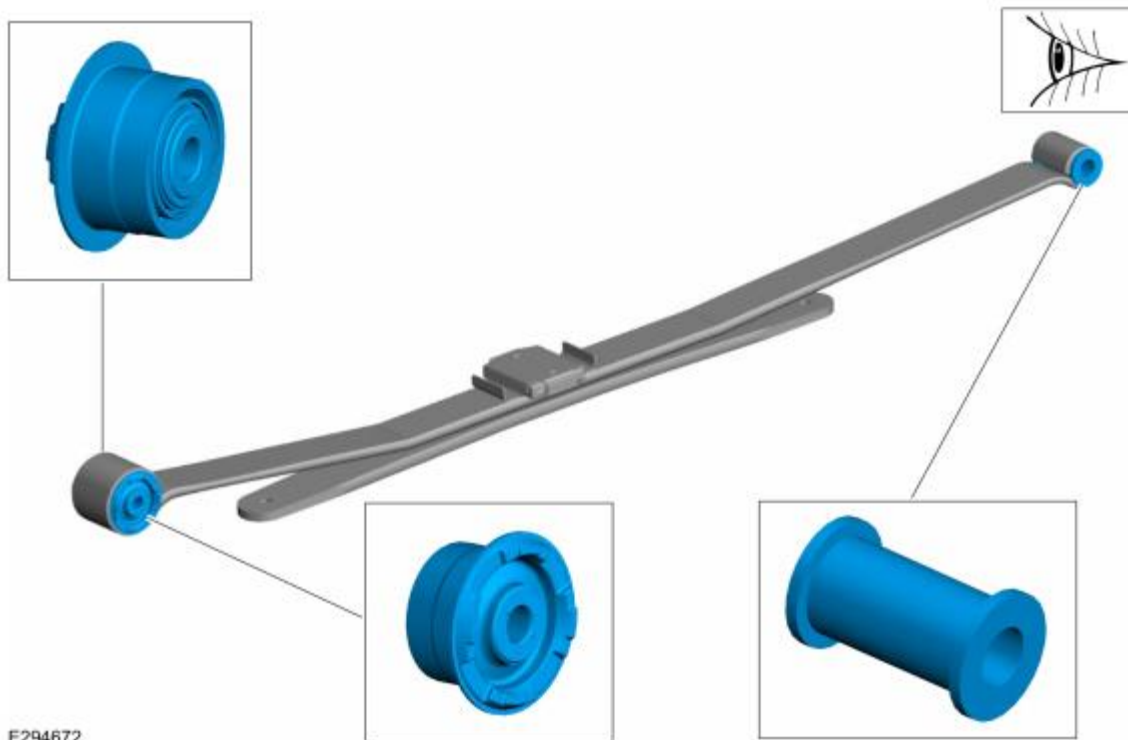
### Installation

**NOTICE:** Tighten the fasteners with the suspension loaded or with the weight of the vehicle resting on the wheels and tires, otherwise incorrect clamp load and bushing damage may occur.

**NOTE:** Note the position of the component before removal.

**NOTE:** This step is only necessary when installing a new component.

Insert provided bushings into new leaf springs and shackles. (stock images shown here)



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Left and Right side spring identification is as follows:

Left side: (Note the Old Man EMU and ARB Logos)



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Right Side: (Note the Old Man EMU text)



**NOTE:** Make sure the spring spacer is correctly seated between the axle and spring.

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**NOTICE:** Tighten the fasteners with the suspension loaded or with the weight of the vehicle resting on the wheels and tires, otherwise incorrect clamp load and bushing damage may occur.

Raise the axle, Install the spring assembly.  
Use the General Equipment: Vehicle/Axle Stands

Assemble and install the new shackle assemblies.



**NOTE:** Only tighten the nuts and bolts finger tight at this stage.

Install the new spring shackle-to-frame nuts.

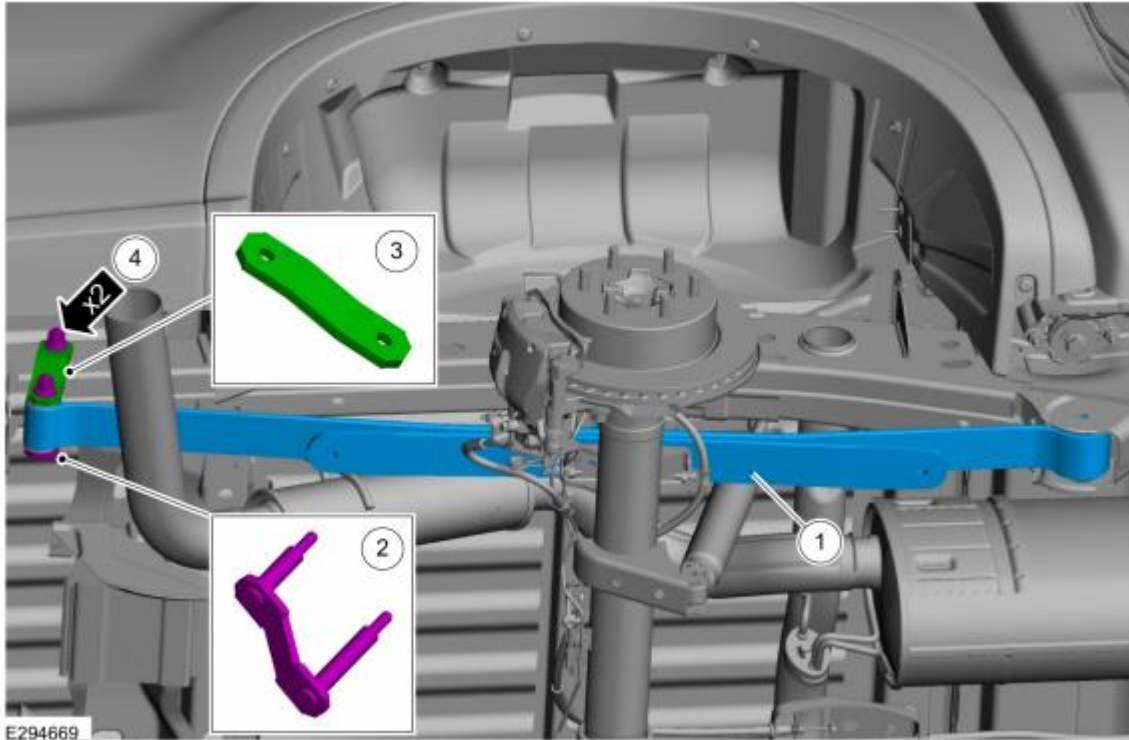
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3. **NOTE:** Only tighten the nuts and bolts finger tight at this stage.

Install the new spring-to-frame nut and bolt.

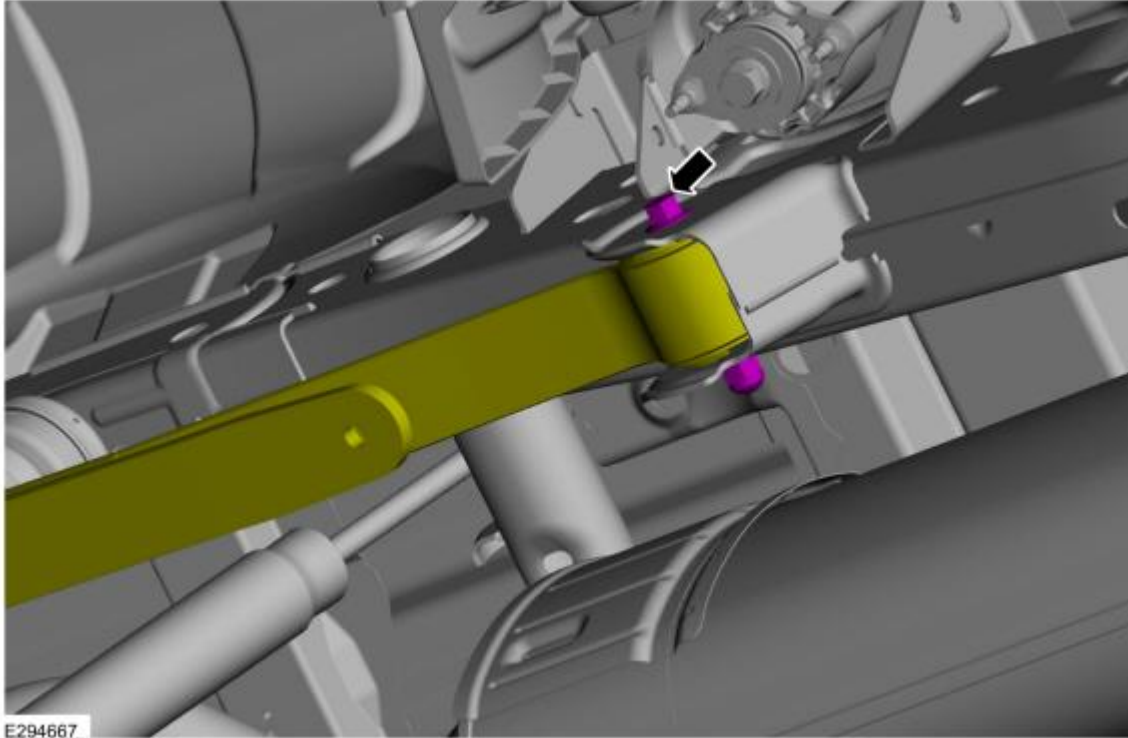
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**NOTE:** *Verify U-bolts are perpendicular and on center to leaf spring. Maintain equal side-to-side clearance to leaf spring stack when securing.*

Install the spring clamp.

Install the new U-bolts.

Install the new U-bolt nuts.

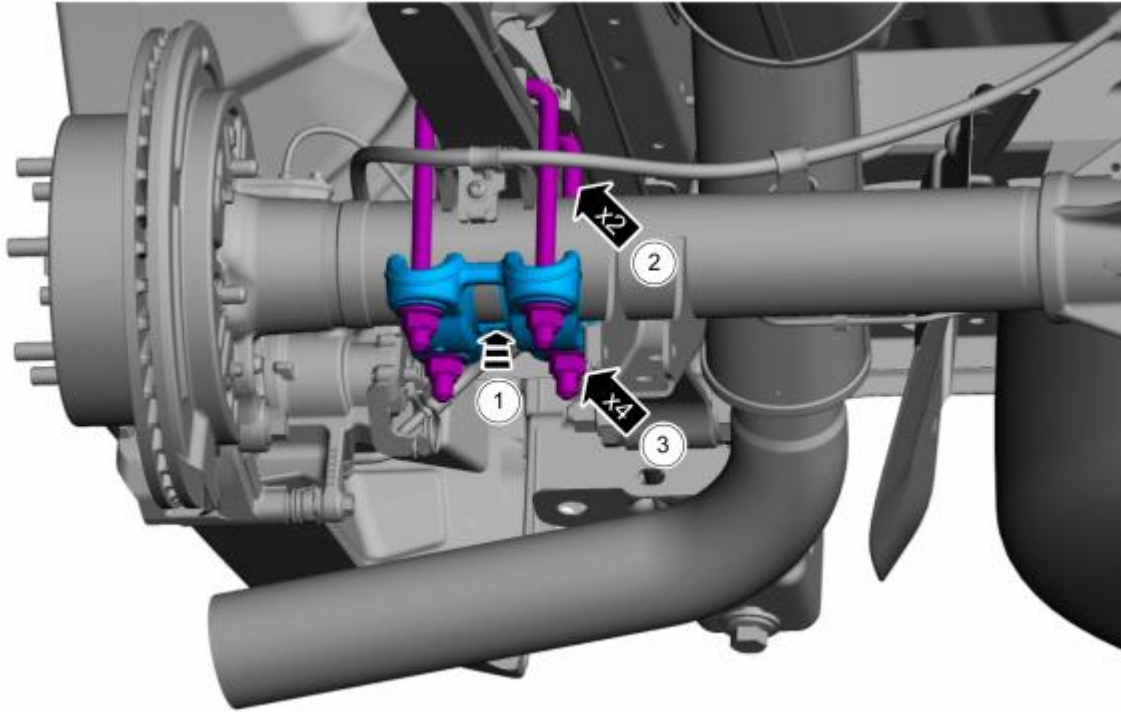
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E294665

Tighten the U-bolt nuts diagonally in stages as shown.

*Torque:*

Stage 1: 26 lb.ft (35 Nm)

Stage 2: 52 lb.ft (70 Nm)

Stage 3: 74 lb.ft (100 Nm)

Stage 4: 98 lb.ft (133 Nm)

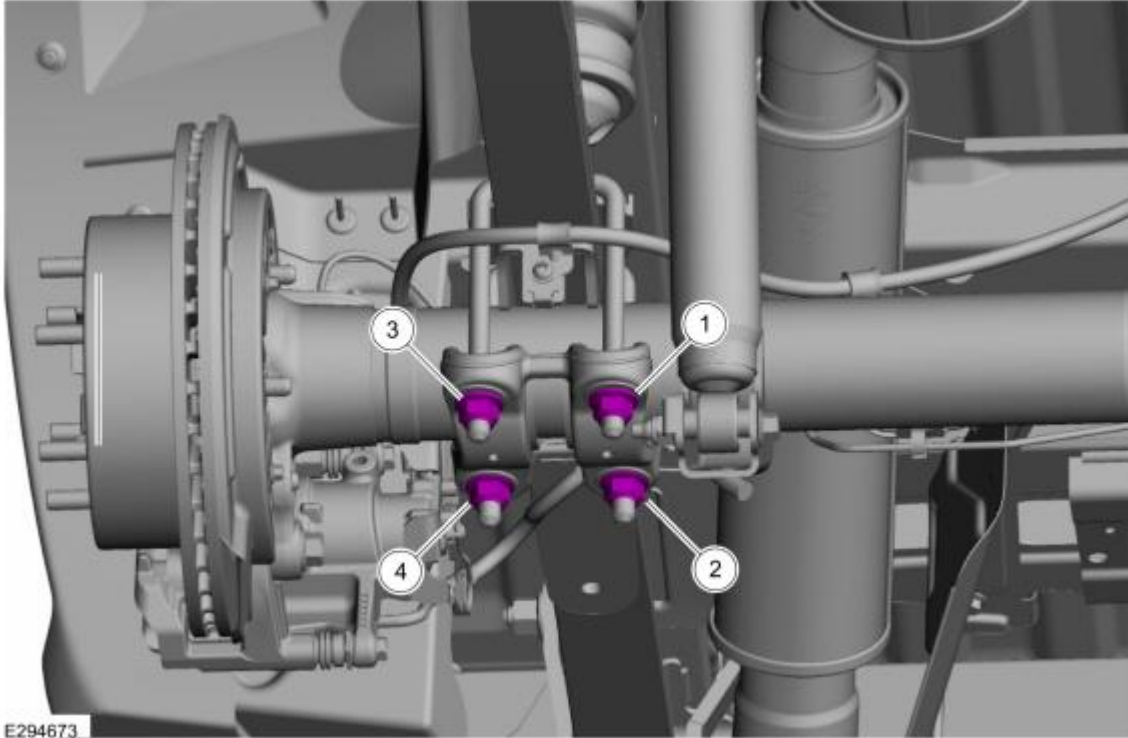
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E294673

**NOTE:** *Only tighten the nuts and bolts finger tight at this stage.*

Install the new rear shock absorber lower nut and bolt.

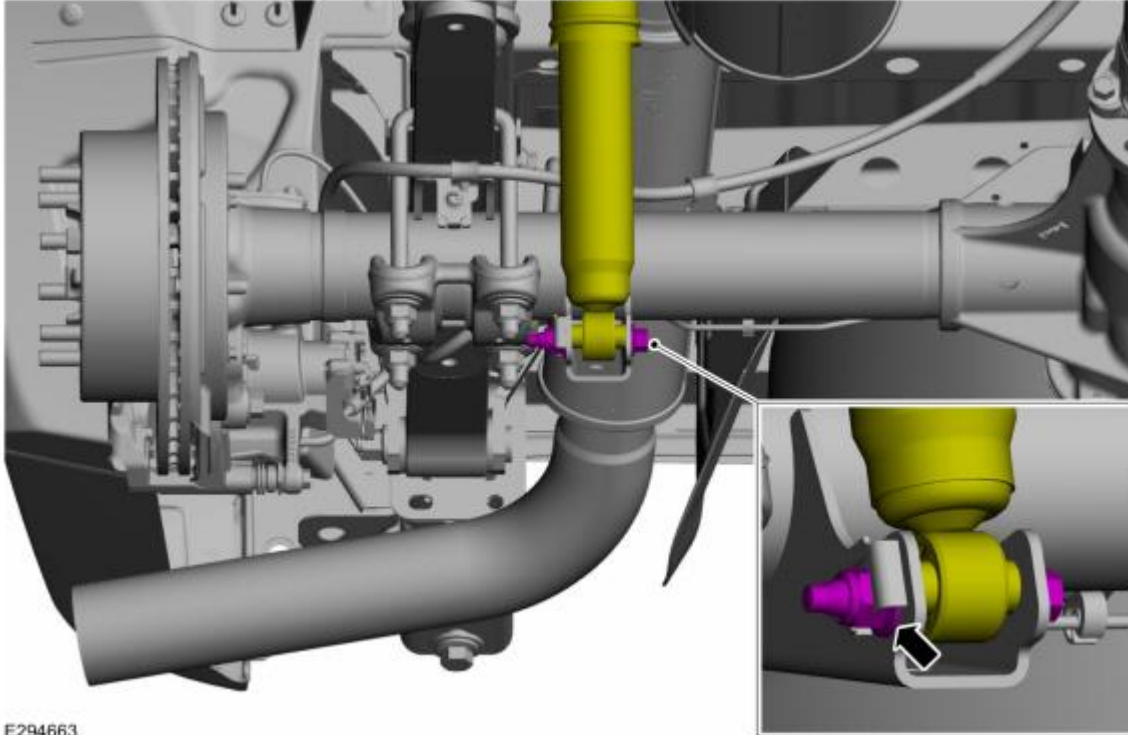
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E294663

Install the wheel and tire.

Refer to: Wheel and Tire (204-04A Wheels and Tires, Removal and Installation).

Lower the vehicle until the weight of the vehicle is resting on the wheels and tires (curb height).

**NOTICE: Tighten the suspension bushing fasteners with the suspension loaded or with the weight of the vehicle resting on the wheels and tires, otherwise incorrect clamp load and bushing damage may occur.**

Tighten the new spring-to-frame nut and bolt.

*Torque:* 119 lb.ft (162 Nm)

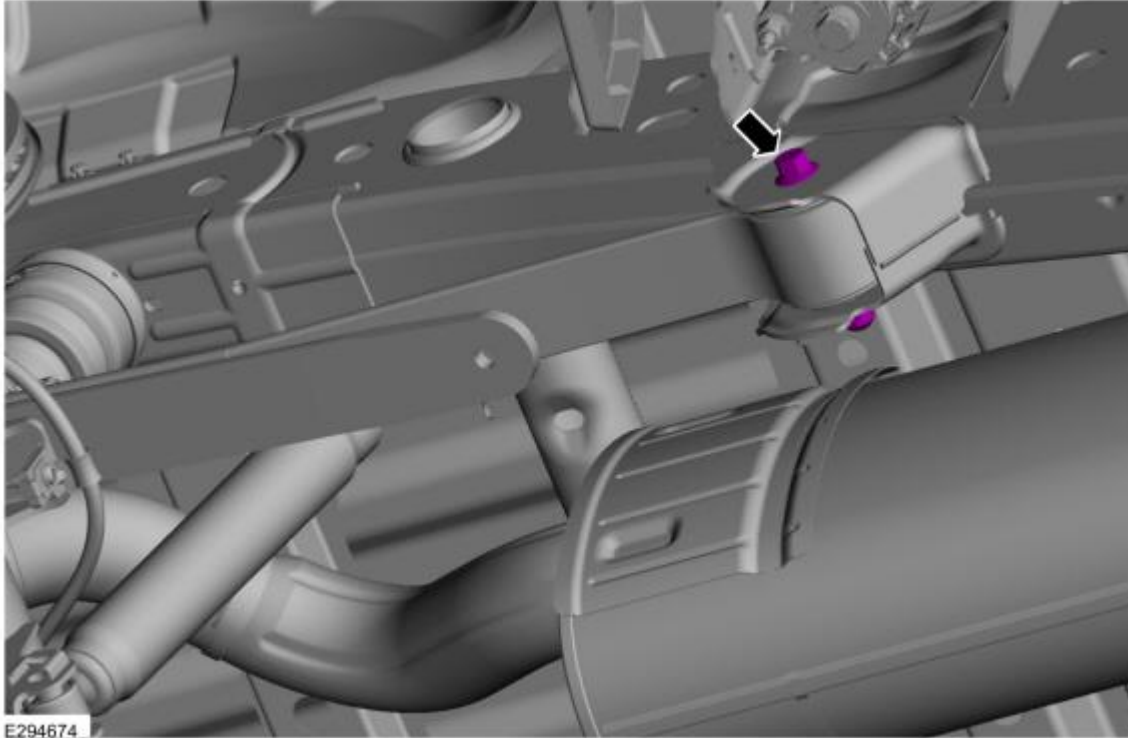
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**NOTICE:** Tighten the suspension bushing fasteners with the suspension loaded or with the weight of the vehicle resting on the wheels and tires, otherwise incorrect clamp load and bushing damage may occur.

Tighten the new shackle-to-spring nuts.  
*Torque:* 76 lb.ft (103 Nm)

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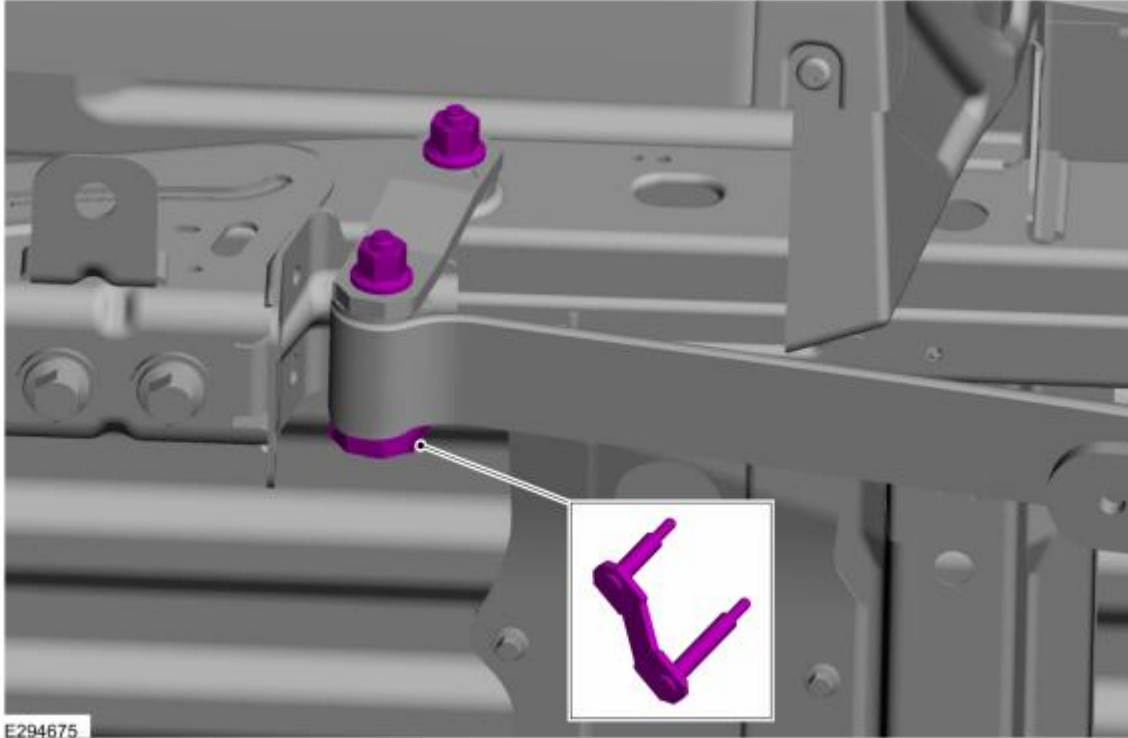




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Tighten the new rear shock absorber lower nut and bolt.  
*Torque: 52 lb.ft (70 Nm)*

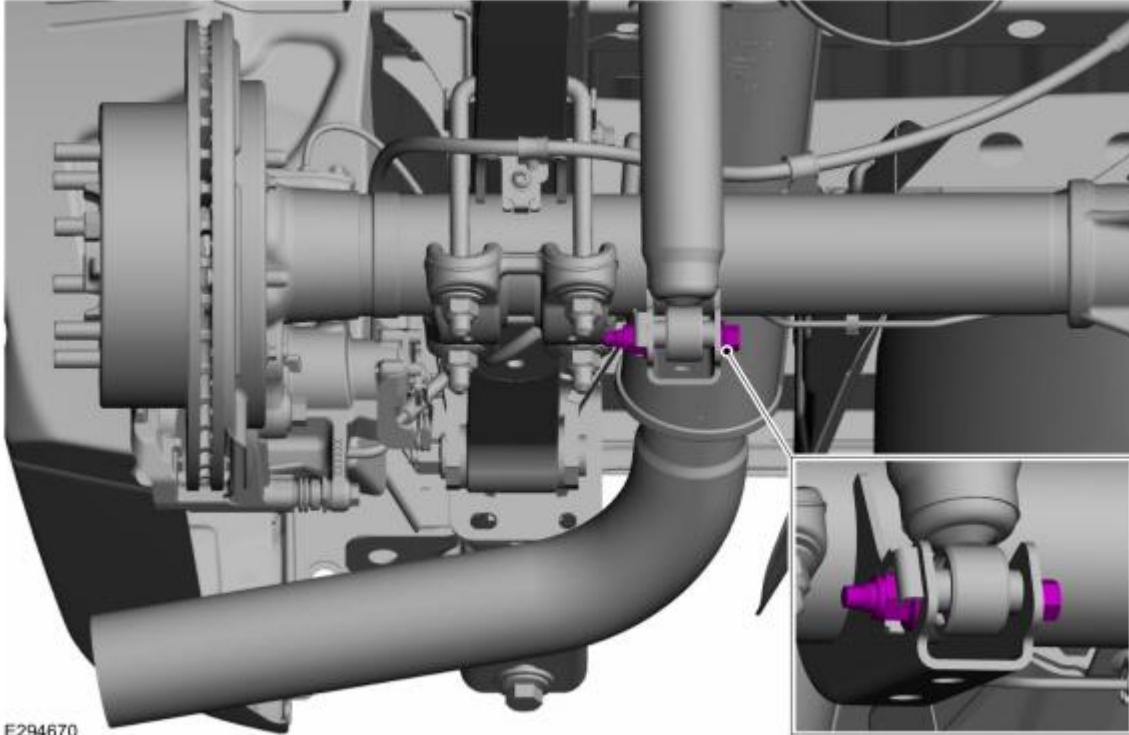
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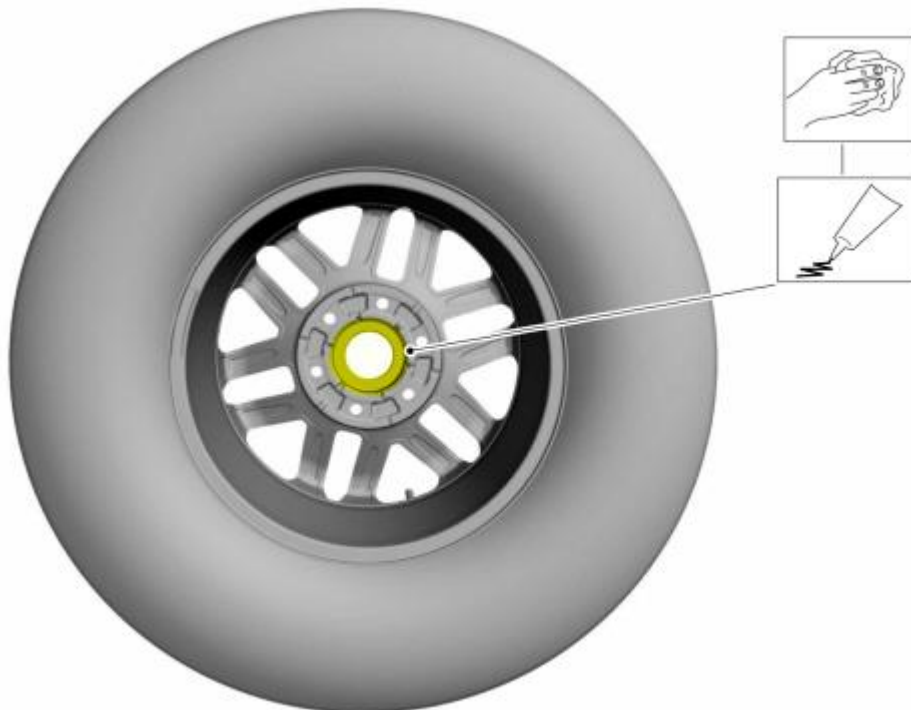
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### Install wheels and tires

**⚠ WARNING:** When a wheel is installed, always remove any corrosion, dirt or foreign material present on the mounting surface of the wheel and the mounting surface of the wheel hub, brake drum or brake disc. Make sure that any fasteners that attach the rotor to the hub are secured so they do not interfere with the mounting surfaces of the wheel. Failure to follow these instructions when installing wheels may result in the wheel nuts loosening and the wheel coming off while the vehicle is in motion, which could result in loss of control, leading to serious injury or death to vehicle occupant(s).

**NOTICE:** Make sure to apply a thin coat of anti-seize lubrication only to the interface between the wheel pilot bore and the hub pilot. Do not allow the anti-seize to make contact with the wheel-to-brake disc/drum mounting surface, wheel studs, wheel nuts, brake pads or brake disc friction surfaces or damage to components may occur.

Clean the mounting surfaces. Apply anti-seize lubrication. Anti-Seize Lubricant (-;XL-2)



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1. **NOTE:** *Only tighten the nuts finger tight at this stage.*

Install the wheel and tire and install the wheel nuts.



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**⚠ WARNING:** Retighten wheel nuts within 160 km (100 mi) after a wheel is reinstalled. Wheels can loosen after initial tightening. Failure to follow this instruction may result in serious injury to vehicle occupant(s).

**NOTICE:** Failure to tighten the wheel nuts in a star/cross pattern can result in high brake disc runout, which accelerates the development of brake roughness, shudder and vibration.

**NOTE:** *The wheel nut torque specification is for clean, dry wheel stud and wheel nut threads.*

**NOTE:** *Use metric hexagonal socket.*

**NOTE:** *Final tightening to be performed with vehicle resting on tires.*

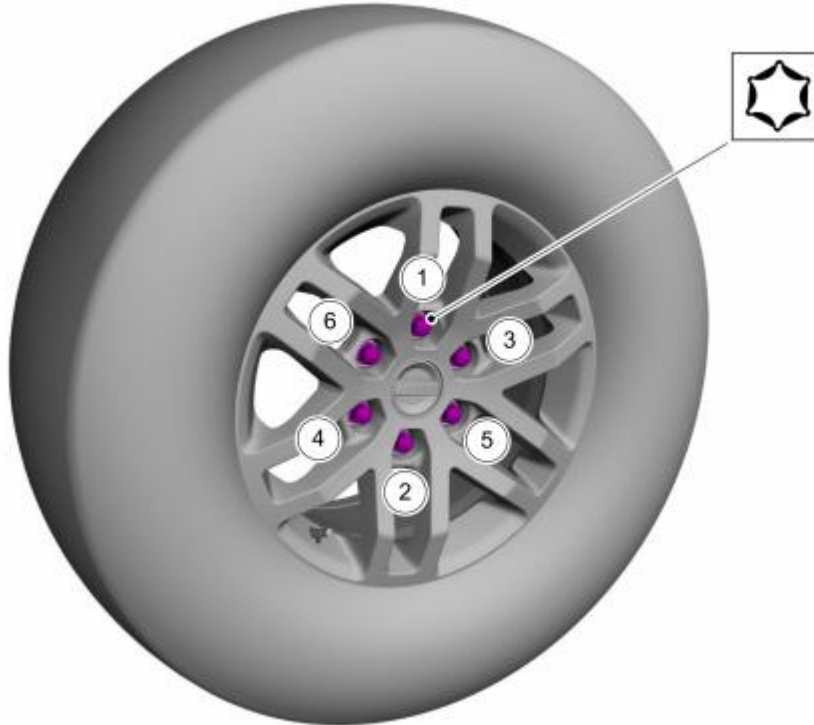
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Tighten the wheel nuts.

Torque: 135 Nm

**Check alignment, adjust as necessary**

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### Cruise Control Radar Alignment (if equipped)

#### Activation

**NOTE:** Make sure that the tire pressures are to specification and that the vehicle is unladen.

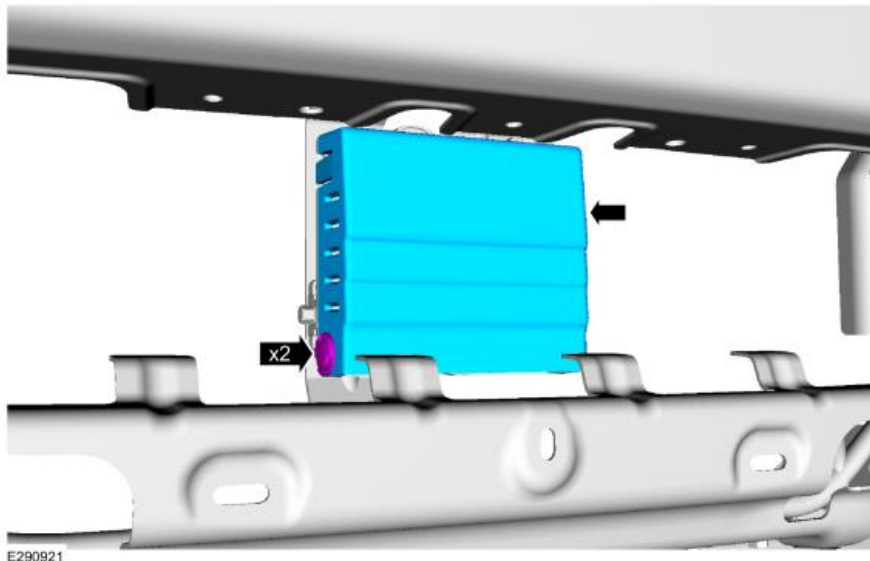
#### Vertical Alignment

**NOTE:** In order to align the CCM, the front bumper cover must be removed to access the sensor and the vehicle must be in a wheel alignment bay station so that the vehicle is level.

**NOTE:** Damage to the CCM bracket may affect correct alignment. When aligning the CCM, inspect the CCM bracket for damage and repair as necessary before carrying out the alignment procedure.

**NOTE:** Damage to the lower grill may affect the performance of the CCM. When aligning the CCM, inspect the lower grill for damage and repair as necessary before carrying out the alignment procedure.

Remove the retainers and the CCM cover.



**NOTE:** Make sure there is no physical damage to any component and if all components are fit correctly on to the vehicle. This will ensure correct operation of the CCM module.

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Place the vehicle on a wheel alignment bay station.

**NOTE:** *Similar application shown.*

Locate the CCM alignment screw.



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**NOTE:** *Similar application shown.*

Place a combination square level on the face of the CCM and check the alignment.



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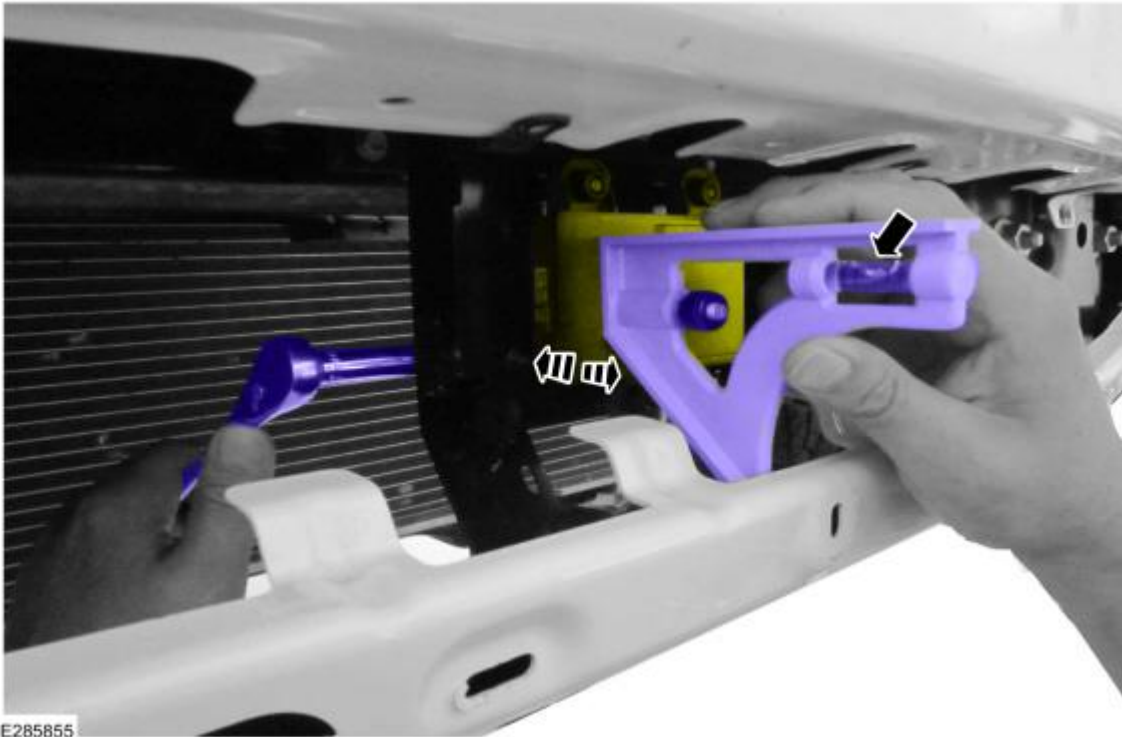
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**NOTE:** *Similar application shown.*

Keeping the combination square level on the face of the CCM, adjust the pitch by adjusting the screw until the CCM is vertical and level.



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**NOTE:** *Prior to installing the front bumper cover, clean and remove any debris on the front or back of the cover.*

Install the front bumper cover.

### Horizontal Alignment

**NOTE:** *Prior to software calibration for horizontal alignment, make sure the CCM vertical alignment has been completed.*

**NOTE:** *The horizontal alignment for the CCM is a software calibration check that is performed by the scan tool to insure the CCM radar is pointed straight. No manual adjustment is needed for this procedure. The scan tool calibrates the CCM through the CCM procedure in programmable parameters. The Alignment Offset specification is +/- 3.0 degrees of offset.*

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**NOTICE:** The vehicle's engine must be running during the horizontal alignment procedure. Failure to leave the engine running throughout the entire procedure results in the cancellation of the alignment procedure and the system remains non-functional.

Start the engine.

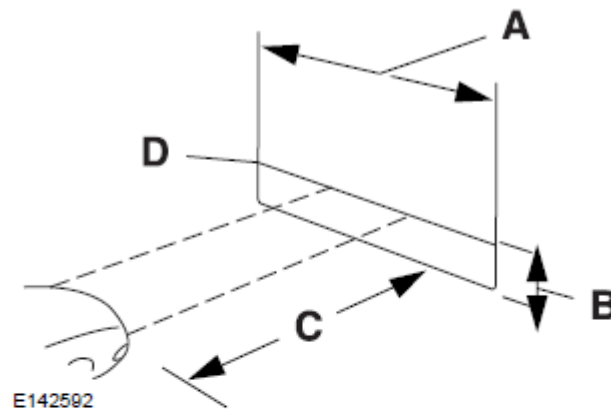
Follow the scan tool on-screen instructions to carry-out the CCM calibration procedure.

### Adjust headlights

## ADJUSTING THE HEADLAMPS

### Vertical Aim Adjustment

If your vehicle has been involved in a crash, have the aim of the headlamp beam checked by an authorized dealer.



- A 8 ft (2.4 m)
- B Ground to the center of the headlamp high beam bulb
- C 25 ft (7.6 m)
- D Horizontal reference line

### Vertical Aim Adjustment Procedure

1. Park your vehicle on level ground approximately 25 ft (7.6 m) from a wall or screen.

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2. Measure the distance from the ground to the center of the headlamp high beam bulb and mark an 8 ft (2.4 m) long horizontal reference line on the wall or screen at this height.

**Note:** *There may be an identifying mark on the lens to help you locate the center line of the headlamp high beam bulb. Refer to the graphic below step 4.*

**Note:** *To see a clearer light pattern for adjusting, you may want to block the light from one headlamp while adjusting the other.*

3. Switch on the low beam headlamps and open the hood.



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4. On the wall or screen you will observe a flat zone of high intensity light located at the top of the beam pattern. If the top edge of the flat zone of high intensity light is not on the horizontal reference line, adjust the aim of the headlamp beam.

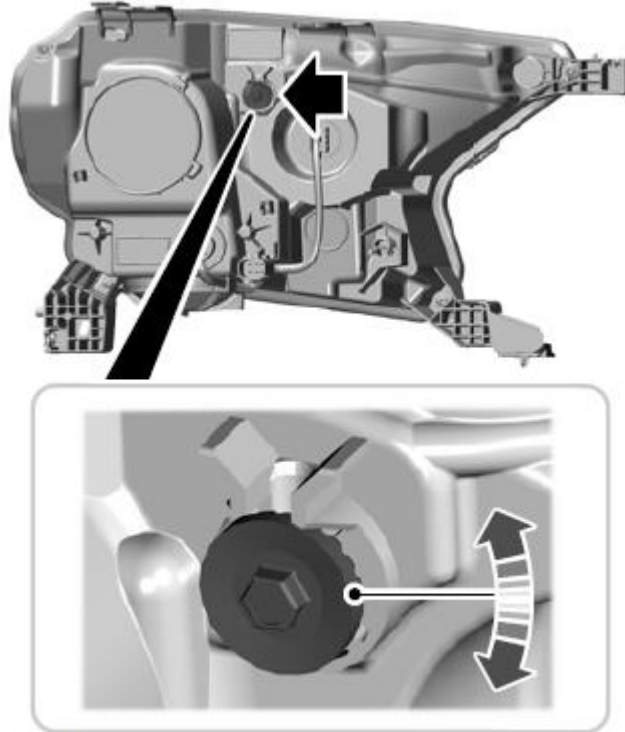
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5. Use a suitable tool, for example a screwdriver or socket wrench, to turn the adjuster clockwise or counterclockwise to adjust the vertical aim of the headlamp. The horizontal edge of the brighter light should touch the horizontal reference line.
6. Close the hood and switch off the lamps.

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### **Torque specifications**

Harness routing bracket bolt *Torque:* 53 lb.in (6 Nm)

Shock/spring assembly upper nuts *Torque:* 24 lb.ft (33 Nm)

Shock/spring assembly lower bolts *Torque:* 50 lb.ft (68 Nm)

Brake hose bracket bolt *Torque:* 159 lb.in (18 Nm)

Stabilizer link upper nut *Torque:* 85 lb.ft (115 Nm)

Tie rod end nut *Torque:* 35 lb.ft (48 Nm)

Wheel hub nut *Torque:* 221 lb.ft (300 Nm)

Rear shock absorber bolts and nuts *Torque:* 52 lb.ft (70 Nm)

Spring clamp *Torque:* See spring clamp section for procedure.

Upper ball joint nut. *Torque:* 46 lb.ft (63 Nm)

Wheel nuts. *Torque:* 135 Nm

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