

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Ball Joint To Control Arm Nuts and Bolts	68 N·m	50 lb ft
Brake Hose Bracket To Strut Bolt	15 N·m	11 lb ft
Control Arm Ball Joint To Knuckle Nut	10 N·m	89 lb in
Control Arm To Cradle Front Nuts and Bolts	120 N·m	89 lb ft
Control Arm To Cradle Rear Nuts and Bolts	70 N·m	52 lb ft
Hub To Axle Shaft Nut	205 N·m	157 lb ft
Hub To Knuckle Bolts	115 N·m	85 lb ft
Outer Tie Rod To Knuckle Nut	50 N·m	37 lb ft
Stabilizer Link Nuts	85 N·m	63 lb ft
Stabilizer Shaft Insulator Bracket To Cradle Bolts	50 N·m	37 lb ft
Strut Shaft Nut	75 N·m	55 lb ft
Strut To Body Nuts	30 N·m	22 lb ft
Strut To Knuckle Nuts and Bolts	180 N·m	133 lb ft

[2009 Chevrolet Equinox](#) | [Equinox, Torrent \(VIN L\) Service Manual](#) | [Suspension](#) | [Front Suspension](#) | [Specifications](#) |

Document ID: 2165371

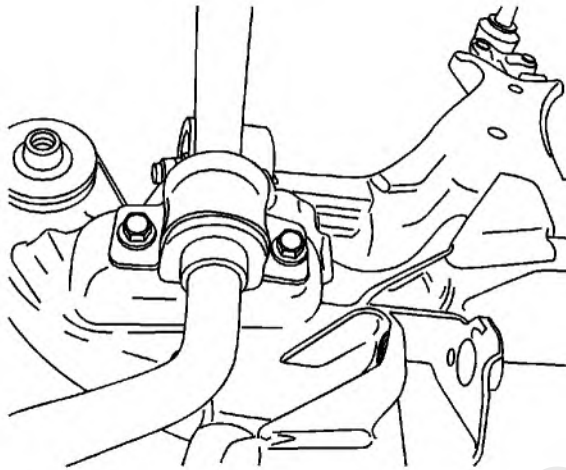
Adhesives, Fluids, Lubricants, and Sealers

Application	Type of Material	GM Part Number	
		US	Canada
Front and Rear Wheel Bearing/Hub Mounting Bolts	Thread Locker©	89021297	10953488

Stabilizer Shaft Replacement

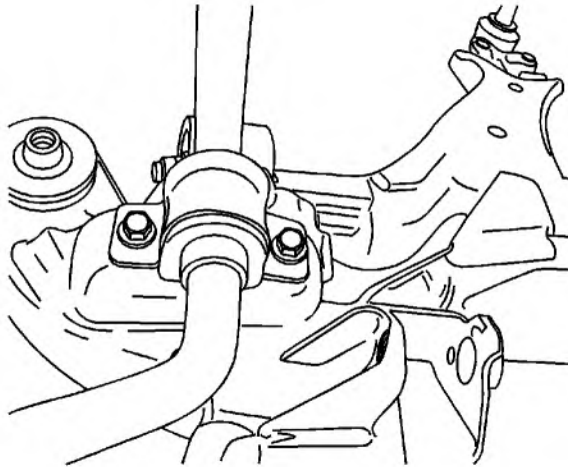
Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Lower the front suspension frame. Refer to [Frame Replacement](#).



3. Remove the stabilizer shaft insulator bracket bolts.
4. Remove the stabilizer shaft assembly from the frame.
5. Remove the stabilizer shaft insulator brackets.
6. Remove the stabilizer shaft insulators.

Installation Procedure

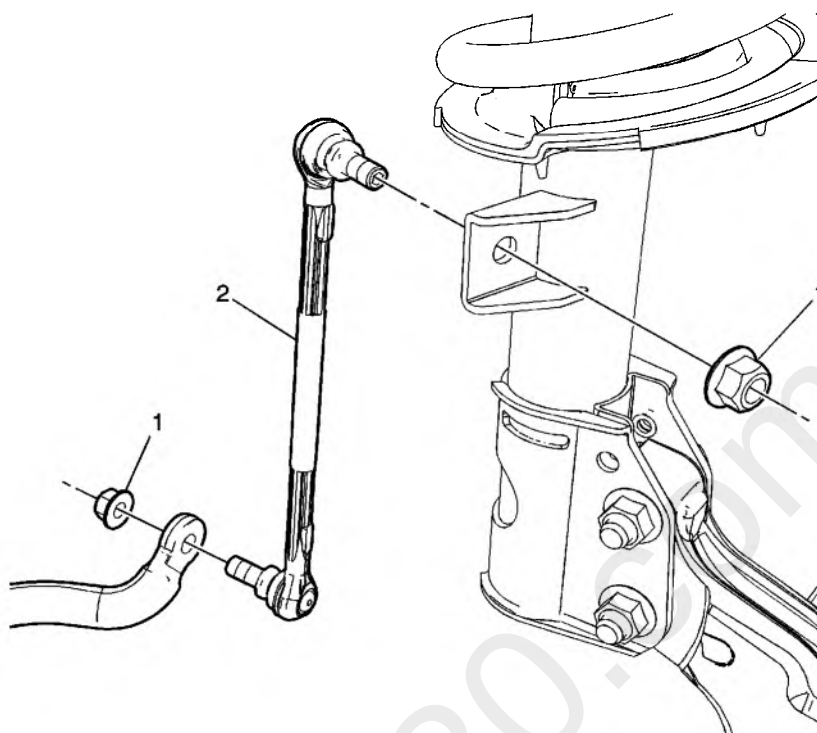


1. Install the stabilizer shaft insulators to the stabilizer shaft.
2. Install the stabilizer shaft insulator brackets.
3. Install the stabilizer shaft assembly to the frame.

Caution: Refer to [Fastener Caution](#) in the Preface section.

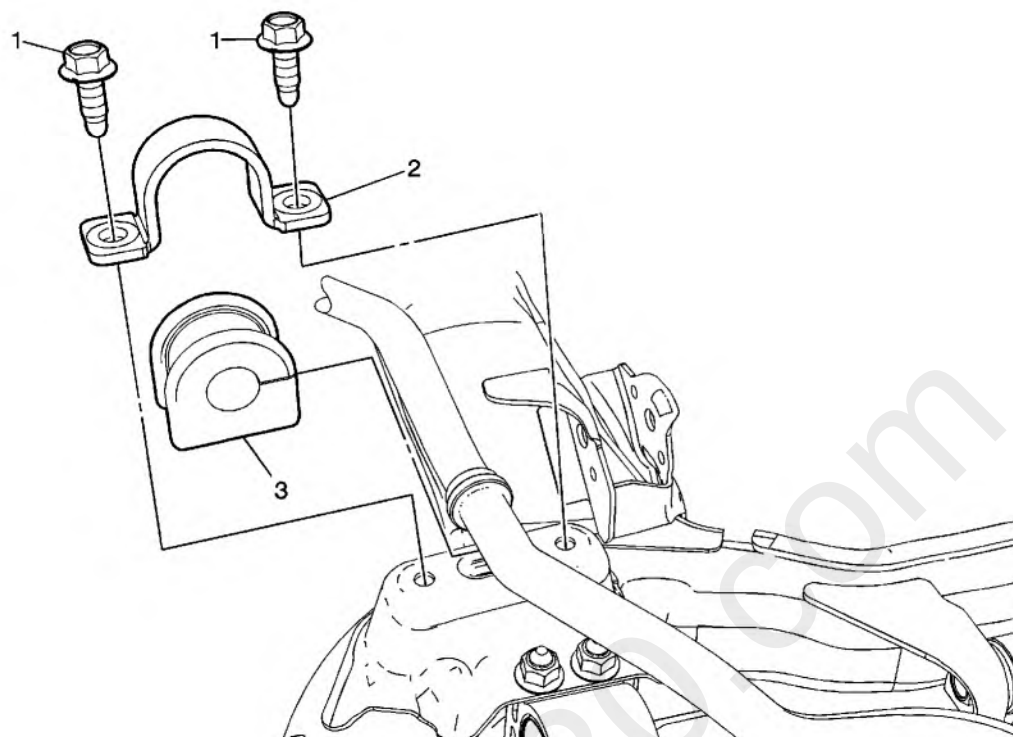
4. Install the stabilizer shaft insulator bracket bolts to **50 N·m (37 lb ft)**.
5. Install the front suspension frame. Refer to [Frame Replacement](#).
6. Lower the vehicle.

Stabilizer Shaft Link Replacement



Callout	Component Name
Preliminary Procedures 1. Raise the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the front wheel and tire assembly. Refer to Tire and Wheel Removal and Installation.	
1	Stabilizer Shaft Link Ball Stud Nut (Qty: 2) Caution: Refer to Fastener Caution in the Preface section. Tip Use the proper size allen wrench to keep the stabilizer link ball stud from rotate while removing or installing the nut. Tighten 85 N·m (63 lb ft).
2	Stabilizer Shaft Link

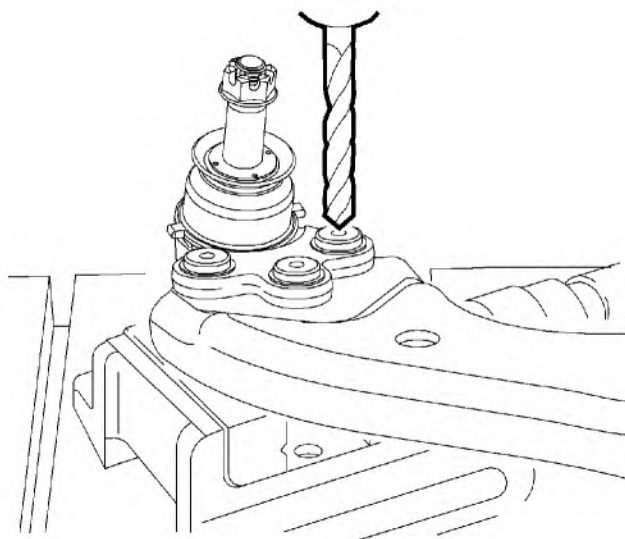
Stabilizer Shaft Insulator Replacement



Callout	Component Name
Preliminary Procedures 1. Raise the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the front wheel and tire assemblies. Refer to Tire and Wheel Removal and Installation.	
1	Stabilizer Shaft Insulator Bolt (Qty: 4) Caution: Refer to Fastener Caution in the Preface section. Tighten 50 N·m (37 lb ft).
2	Stabilizer Shaft Insulator Clamp (Qty: 2)
3	Stabilizer Shaft Insulator (Qty: 2)

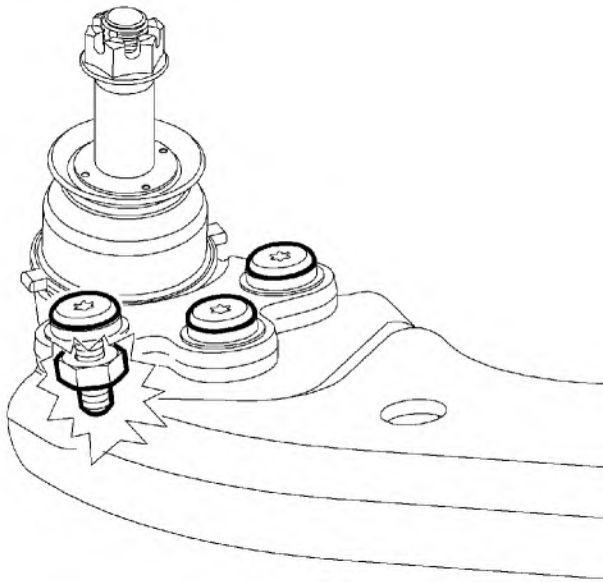
Lower Control Arm Ball Joint Replacement

Removal Procedure



1. Remove the lower control arm. Refer to [Lower Control Arm Replacement](#).
2. Place the control arm in a vise or suitable holding device.
3. Remove the ball joint rivets using the following procedure.
 - 3.1. Drill through the rivets using a 8 mm (5/16 in) drill bit.
 - 3.2. Enlarge the hole using a 12 mm (31/64 in) drill bit.
 - 3.3. Remove any remaining burrs from the control arm.
4. Remove the ball joint from the control arm. Note the position of the ball joint for reassembly.

Installation Procedure



Note: The control arm must be clean and free of debris.

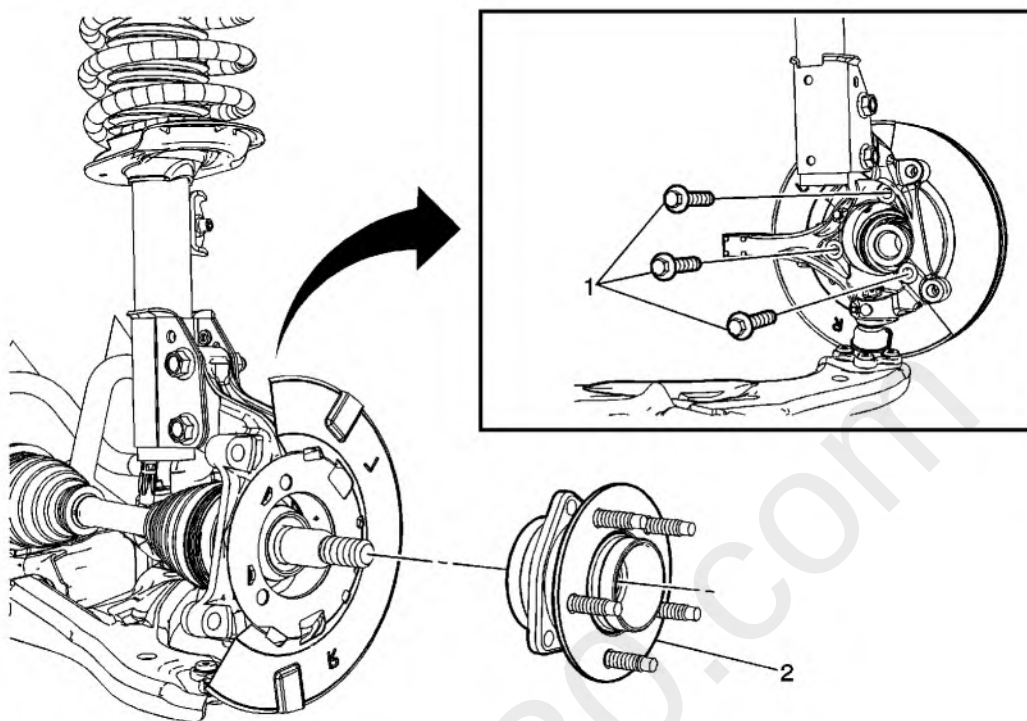
1. Install the ball joint to the control arm as previously noted.

Caution: Refer to [Fastener Caution](#) in the Preface section.

Note:

- Only use hardware provided with the new ball joint.
 - The bolts must be installed with the bolt head on top of the ball joint.
2. Install the ball joint to control arm bolts and tighten the bolts/nuts to **68 N·m (50 lb ft)**.
 3. Install the lower control arm. Refer to [Lower Control Arm Replacement](#).

Front Wheel Bearing and Hub Replacement



Callout	Component Name
Preliminary Procedure	
1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the tire and wheel. Refer to Tire and Wheel Removal and Installation. 3. Remove the wheel drive shaft nut. Refer to Front Wheel Drive Shaft Replacement. 4. Remove the brake rotor. Refer to Front Brake Rotor Replacement. 5. Remove the wheel speed sensor. Refer to Front Wheel Speed Sensor Replacement.	
1	Wheel Bearing/Hub Bolt (Qty: 3) Caution: Refer to Fastener Caution in the Preface section. Procedure 1. Use the proper cleaner on the threads on the wheel bearing/hub bolts. 2. Apply threadlocker on 2/3 of the wheel bearing/hub bolts. Refer to Adhesives, Fluids, Lubricants, and Sealers. Tip Allow the threadlocker to set for 10 minutes before using.

© 2010 General Motors Corporation. All rights reserved.

	Tighten 130 N·m (96 lb ft)
2	Wheel Bearing and Hub Assembly Tip If removing the wheel bearing/hub assembly to service other components, support the wheel drive shaft with mechanics wire.

mcx30.com

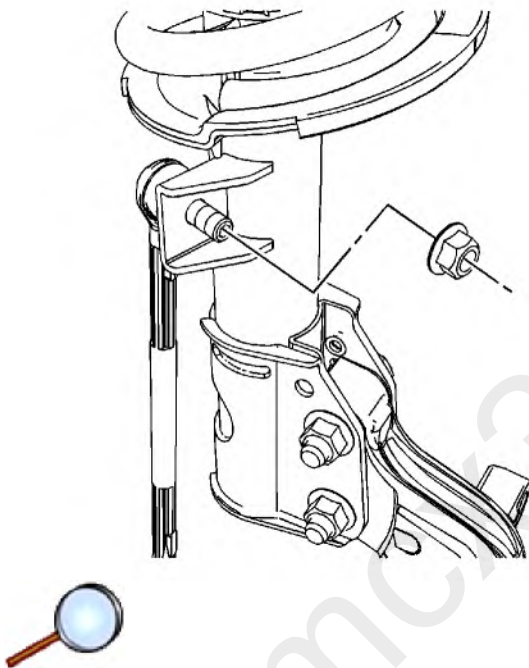
Steering Knuckle Replacement

Special Tools

[J-42188-B](#) Ball Joint Separator

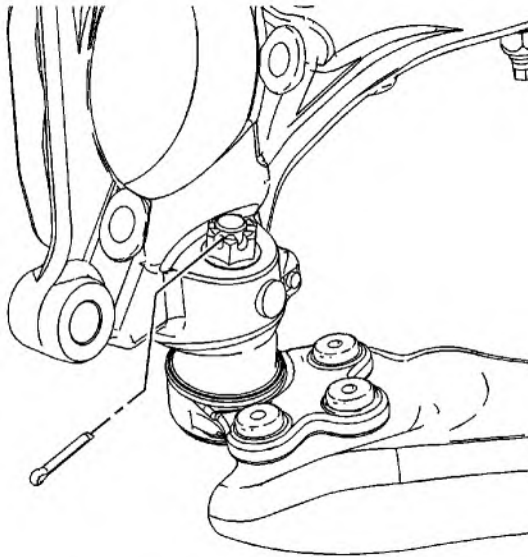
Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the tire and wheel. Refer to [Tire and Wheel Removal and Installation](#).
3. Remove the wheel bearing/hub assembly. Refer to [Front Wheel Bearing and Hub Replacement](#).

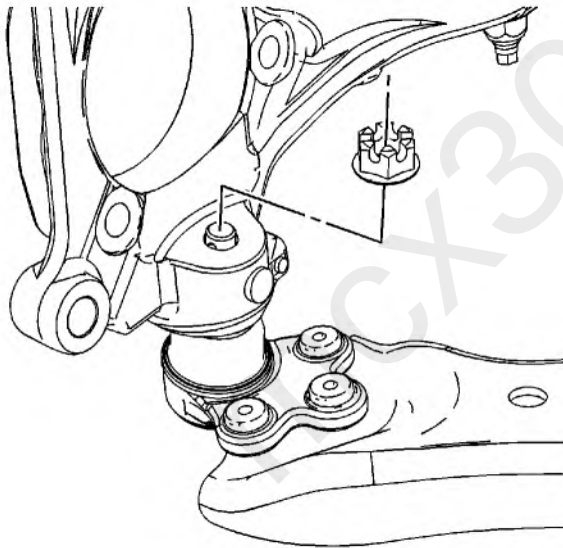


Note: Do not allow the stabilizer link ball stud to rotate while removing the link nut.

4. Remove the nut and separate the stabilizer link from the strut assembly.
5. Loosen the steering knuckle to strut bolts and nuts.



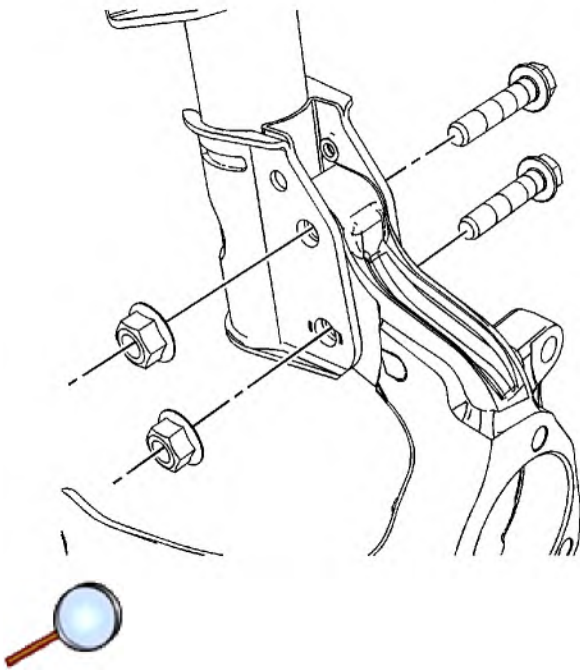
6. Remove and discard the lower ball joint cotter pin.
7. Loosen the ball stud nut, until level with the top of the ball stud.
8. Using the [J-42188-B](#) , separate the lower ball joint from the steering knuckle.



9. Remove the lower ball joint nut and separate from the knuckle.

Caution: Do not free the ball stud by using a pickle fork or a wedge-type tool. Damage to the seal or bushing may result.

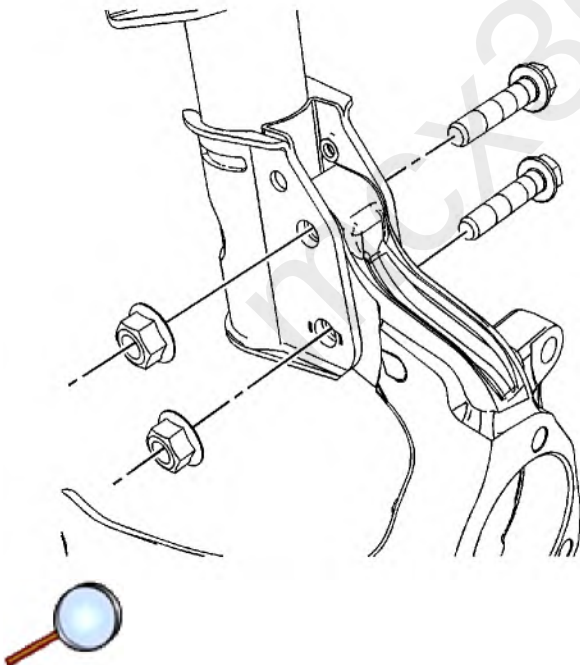
10. Remove the outer tie rod end from the knuckle. Refer to [Steering Linkage Outer Tie Rod Replacement](#).



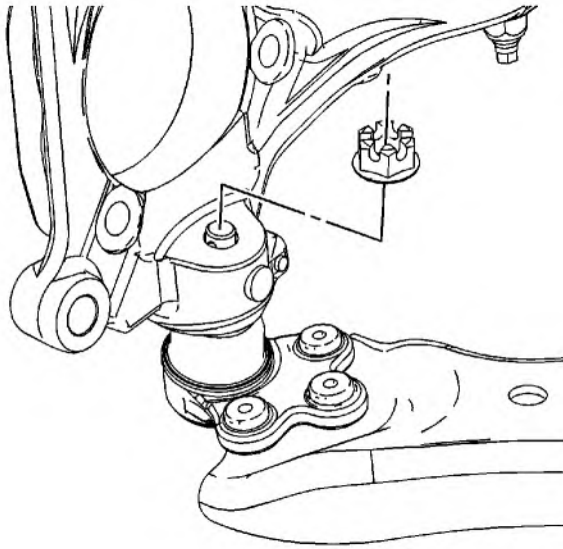
11. Remove the steering knuckle to strut bolts and nuts.
12. Remove the steering knuckle from the vehicle.

Installation Procedure

1. Position the steering knuckle to strut assembly.



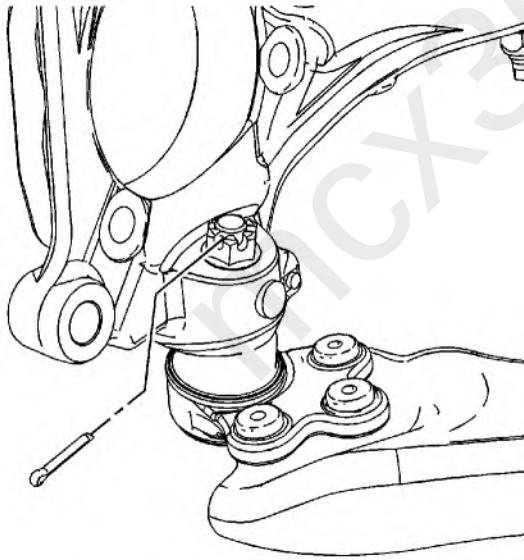
2. Loosely install the strut to steering knuckle bolts and nuts.



3. Position the lower ball joint stud into the steering knuckle.

Caution: Refer to [Fastener Caution](#) in the Preface section.

4. Install the ball stud nut and tighten to **40 N·m (30 lb ft)**.
5. Tighten the strut to steering knuckle bolts and nuts to **180 N·m (133 lb ft)**.

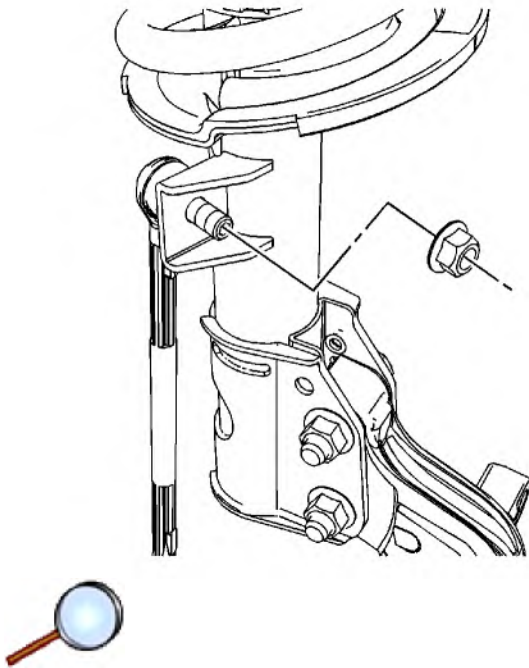


Note: Do not loosen the castle nut for cotter pin installation.

6. Tighten the castle nut enough to allow for cotter pin installation.

Note: The cotter pin must not contact the wheel speed sensor or drive axle.

7. Install a new cotter pin.
8. Install the outer tie rod end to the knuckle. Refer to [Steering Linkage Outer Tie Rod Replacement](#).



Note: Do not allow the stabilizer link ball stud to rotate while installing the link nut.

9. Position the stabilizer shaft link to the strut assembly and install the nut.

Tighten the nut to **65 N·m (48 lb ft)**.

10. Install the wheel bearing/hub assembly. Refer to [Front Wheel Bearing and Hub Replacement](#).
11. Install the tire and wheel. Refer to [Tire and Wheel Removal and Installation](#).
12. Lower the vehicle.
13. Perform a wheel alignment. Refer to [Wheel Alignment Measurement](#).

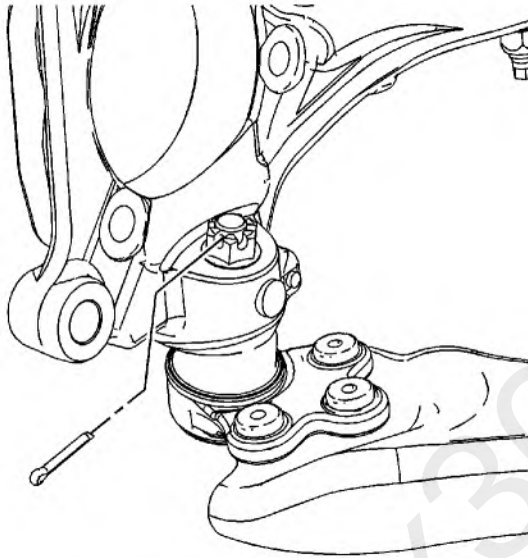
Lower Control Arm Replacement

Special Tools

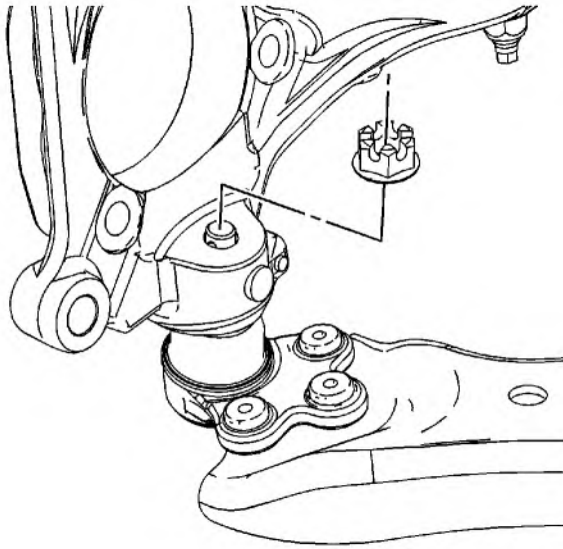
[J-42188-B](#) Ball Joint Separator

Removal Procedure

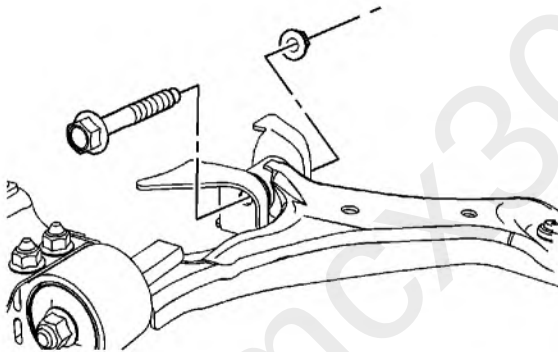
1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the wheel and tire assembly. Refer to [Tire and Wheel Removal and Installation](#).



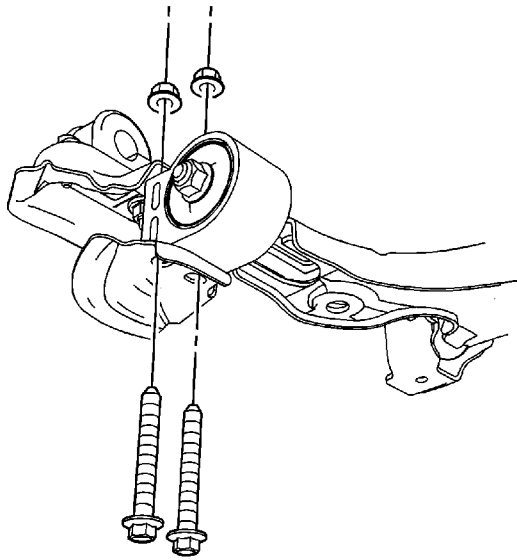
3. Remove the lower ball joint stud cotter pin. Discard the cotter pin.
4. Loosen the ball stud nut until the nut is level with the top of the ball stud.
5. Using [J-42188-B](#) , separate the lower control arm from the steering knuckle.



6. Remove the lower ball joint stud nut.



7. Remove the control arm-to-frame front bolt and nut. Discard the bolt and nut.

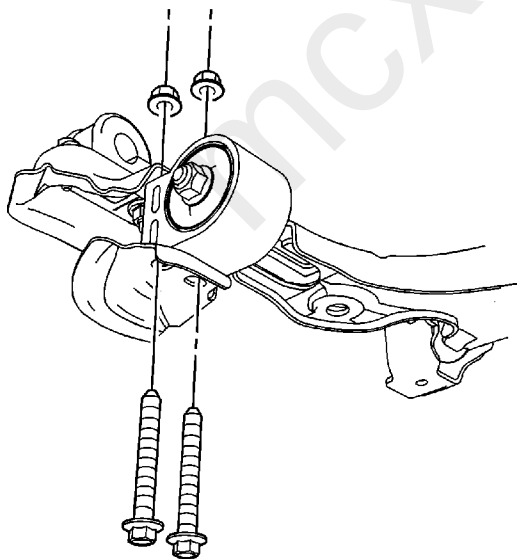


8. Remove the control arm-to-frame rear bolts and nuts. Discard the bolts and nuts.
9. Remove the control arm.

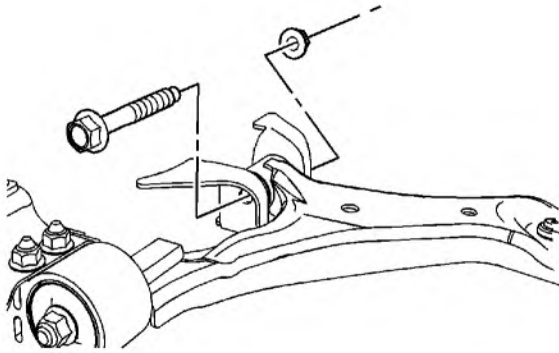
Installation Procedure

1. Position the control arm to the cradle/frame.

Caution: Refer to [Fastener Caution](#) in the Preface section.

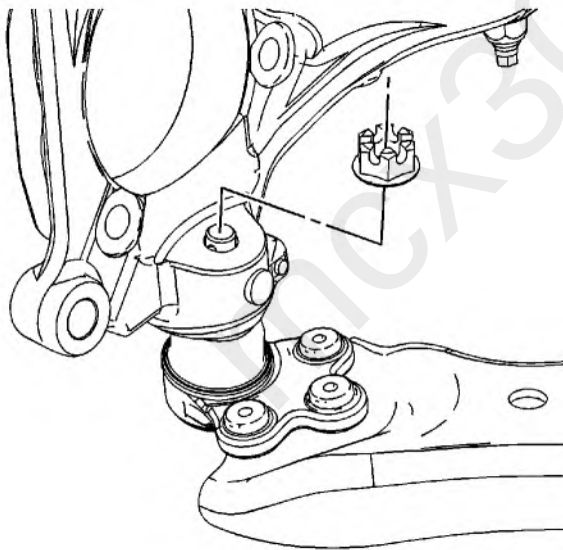


2. Install new control arm-to-frame rear bolts and nuts and tighten to **70 N·m (52 lb ft)**.



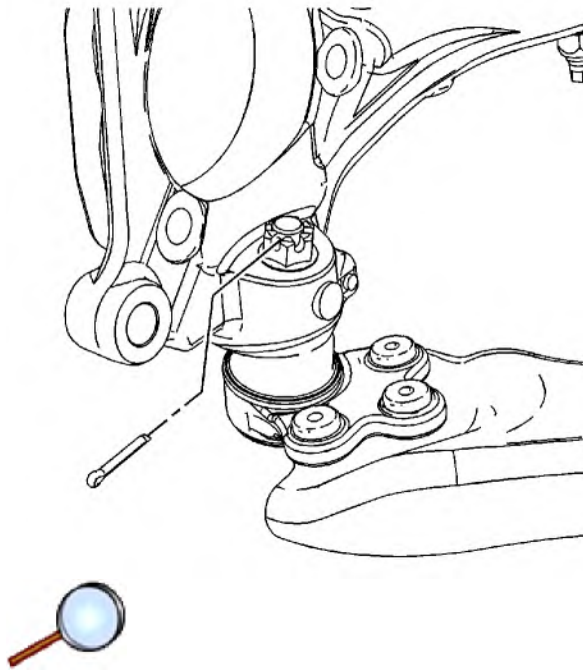
3. Install a new arm-to-frame front bolt and nut.

Install new control arm-to-frame rear bolts and nuts and tighten to **120 N·m (89 lb ft)**.



4. Position the control arm ball stud into the steering knuckle and install the nut.

Tighten the nut to **40 N·m (30 lb ft)**.

**Note:**

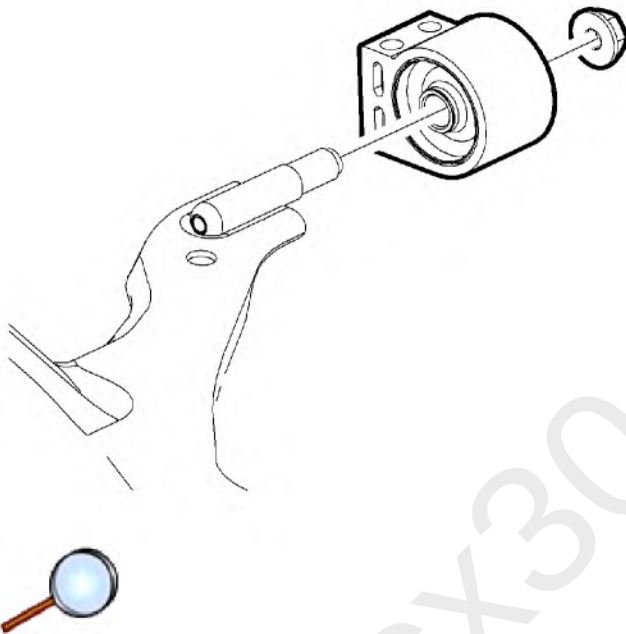
- Do not loosen the castle nut, only tighten to align the ball stud slot.
- Ensure that the cotter pin ends do not contact the antilock brake system (ABS) sensor harness or drive axle.

5. Continue to tighten the nut only enough to align the castle nut slots with the ball stud, install a new cotter pin.
6. Install the wheel and tire assembly. Refer to [Tire and Wheel Removal and Installation](#).
7. Verify front end alignment. Refer to [Wheel Alignment Specifications](#).
8. Lower the vehicle.

Front Lower Control Arm Bushing Replacement (Rear Bushing)

Removal Procedure

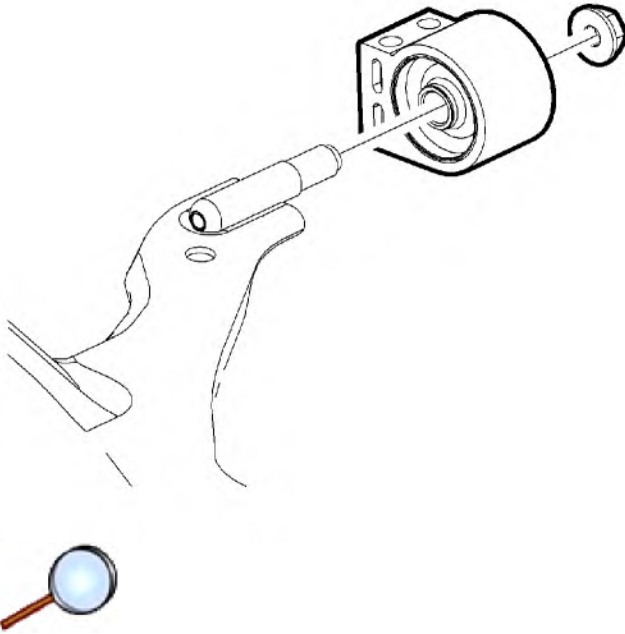
1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the front tire and wheel assembly. Refer to [Tire and Wheel Removal and Installation](#).
3. Remove the lower control arm. Refer to [Lower Control Arm Replacement](#).



4. Remove the rear bushing nut.
5. Remove the rear bushing.

Installation Procedure

Caution: Refer to [Fastener Caution](#) in the Preface section.



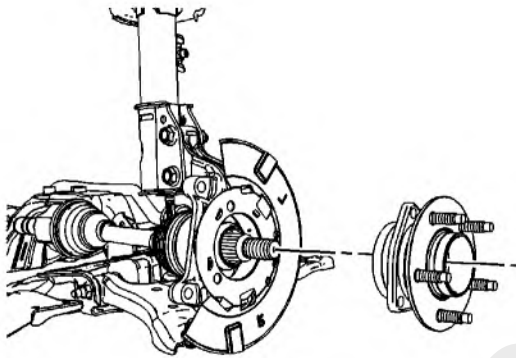
1. Install the rear bushing to the lower control arm and tighten the nut to **150 N·m (110 lb ft)**.
2. Install the lower control arm. Refer to [Lower Control Arm Replacement](#).
3. Install the front tire and wheel assembly. Refer to [Tire and Wheel Removal and Installation](#).
4. Lower the vehicle.

Wheel Stud Replacement

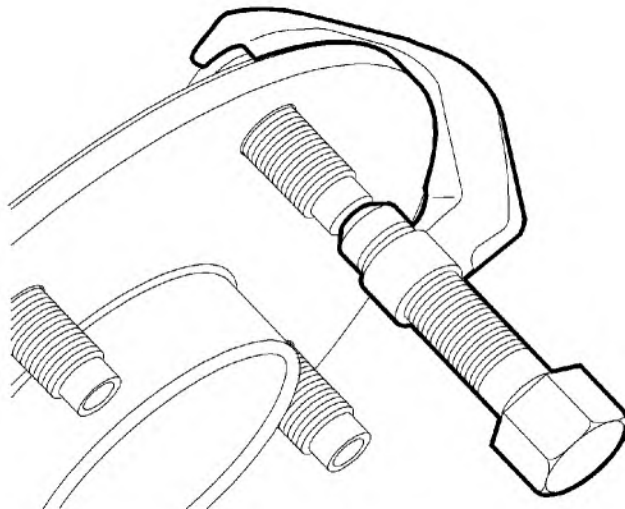
Tools Required

[J 43631](#) Ball Joint Remover

Removal Procedure

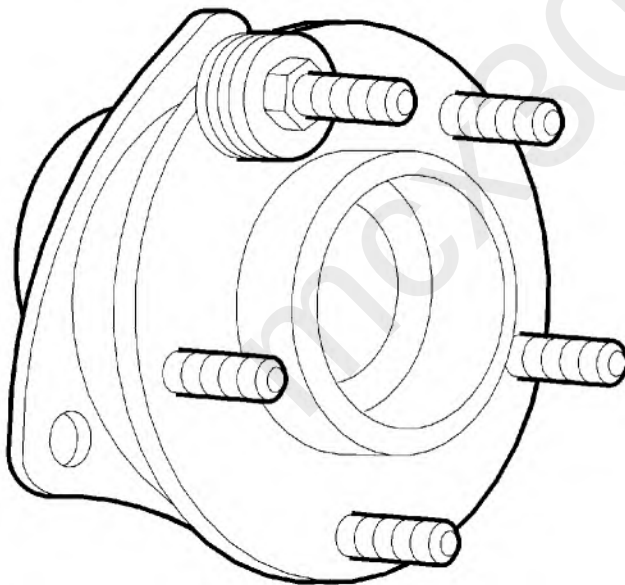


1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#) .
2. Remove the tire and wheel assembly. Refer to [Tire and Wheel Removal and Installation](#) .
3. Remove the wheel bearing/hub assembly. Refer to [Front Wheel Bearing and Hub Replacement](#) .

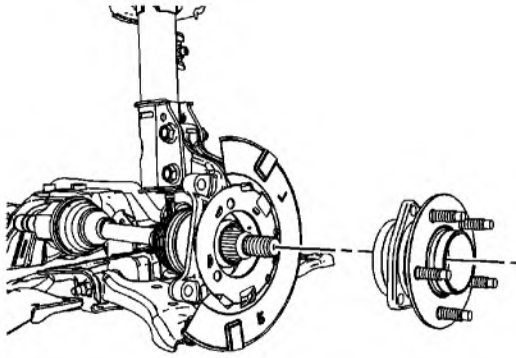


4. Using the [J 43631](#) , press out the wheel stud from the wheel bearing/hub assembly.

Installation Procedure



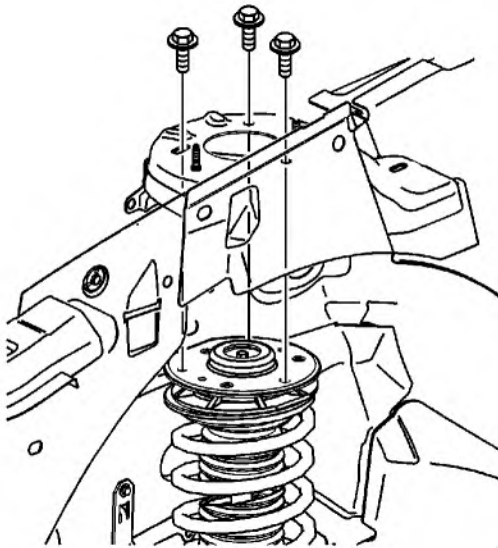
1. Install the wheel stud to the wheel bearing/hub assembly from the bearing side of the hub flange.
2. Place flat washers over the wheel stud being installer.
3. Install the wheel nut or a hex head nut to the wheel stud.
4. Gradually tighten the nut in order to draw the stud into the hub flange until the head of the wheel stud is fully seated against the hub flange.
5. Remove the nut and flat washers.



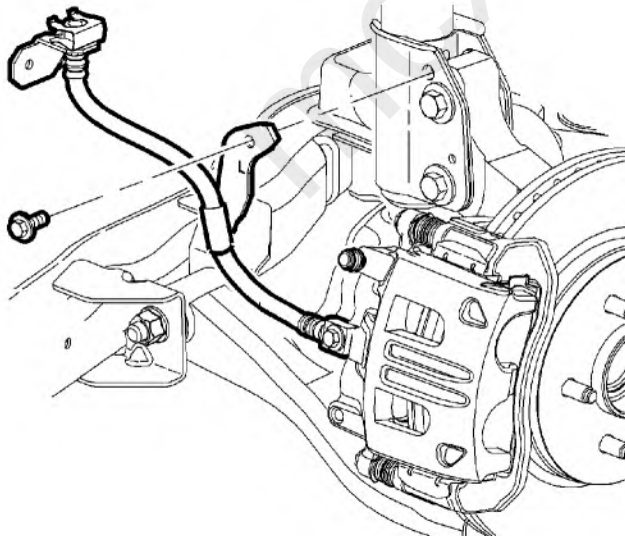
6. Install the wheel bearing/hub assembly to the steering knuckle. Refer to [Front Wheel Bearing and Hub Replacement](#) .
7. Install the tire and wheel assembly. Refer to [Tire and Wheel Removal and Installation](#) .
8. Lower the vehicle.

Strut Assembly Replacement

Removal Procedure

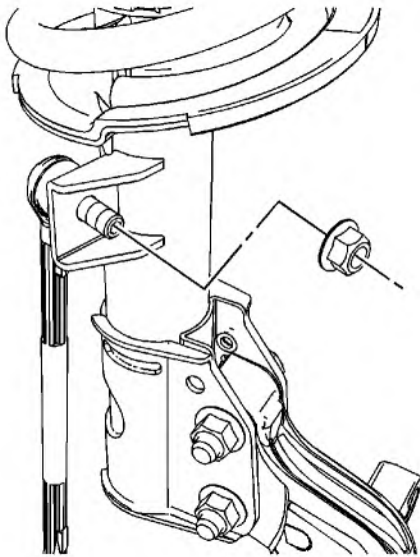


1. Remove the 3 upper strut mount bolts.
2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
3. Remove the wheel and tire assembly. Refer to [Tire and Wheel Removal and Installation](#).

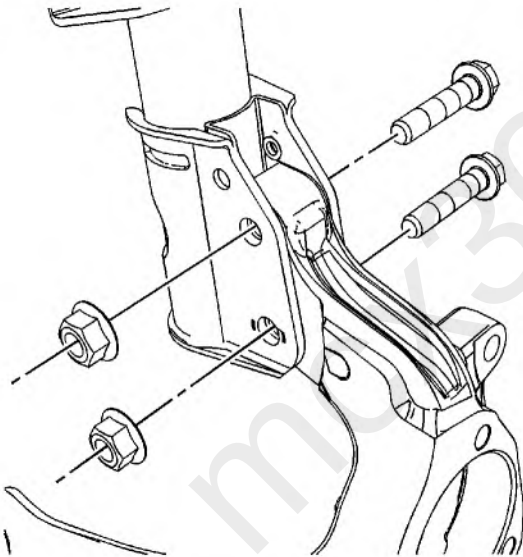


4. Remove the brake hose bracket bolt from the strut assembly.

© 2010 General Motors Corporation. All rights reserved.

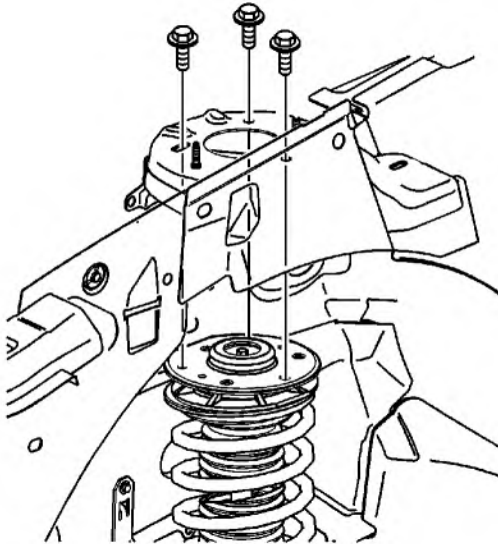


5. Remove the stabilizer link nut and separate the link from the strut assembly.



6. Remove the lower strut bolts and nuts.
7. Remove the strut assembly from the vehicle.

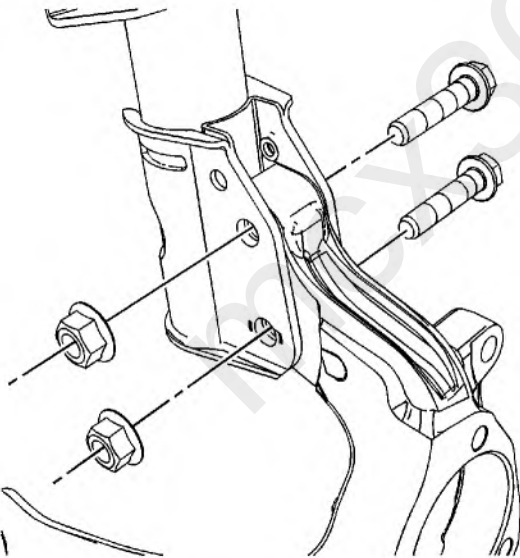
Installation Procedure



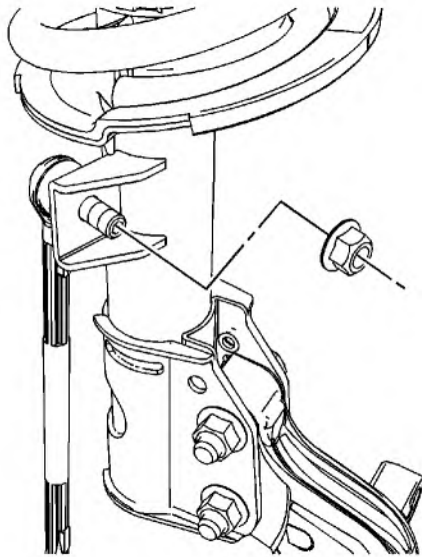
1. Position the strut assembly to the vehicle.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the 3 upper strut mount bolts and tighten to **25 N·m (18 lb ft)**.



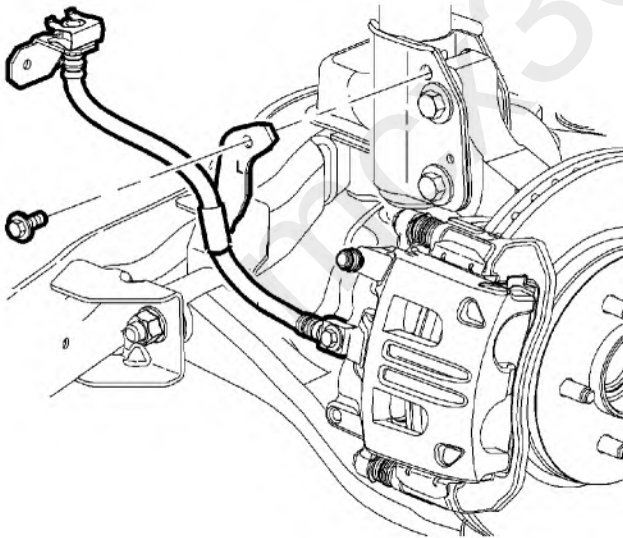
3. Install the lower strut bolts and nuts and tighten to **200 N·m (148 lb ft)**.



Note: Inspect the stabilizer link seals for damage prior to installation. Replace as required.

Note: Do not allow the stabilizer link ball stud to rotate while installing the link nut.

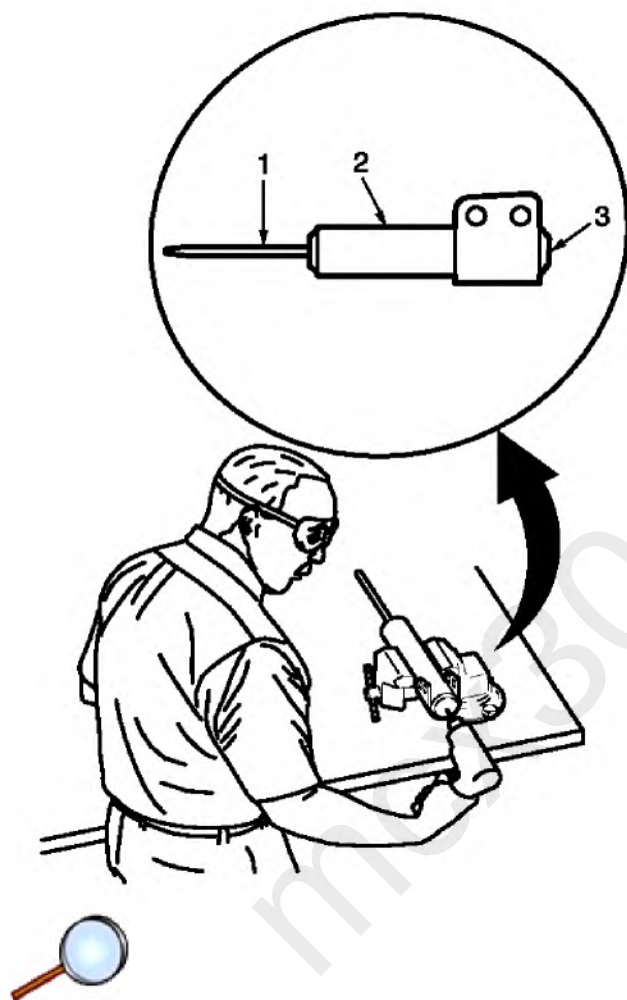
4. Position the stabilizer link to the strut and install the nut and tighten the nut to **65 N·m (48 lb ft)**.



5. Position the brake hose bracket to the strut assembly and install the bolt and tighten to **15 N·m (11 lb ft)**.
6. Install the wheel and tire. Refer to [Tire and Wheel Removal and Installation](#).
7. Lower the vehicle.
8. Perform a wheel alignment. Refer to [Wheel Alignment Measurement](#).

Suspension Strut Disposal

Warning: Use the proper eye protection when drilling to prevent metal chips from causing physical injury.



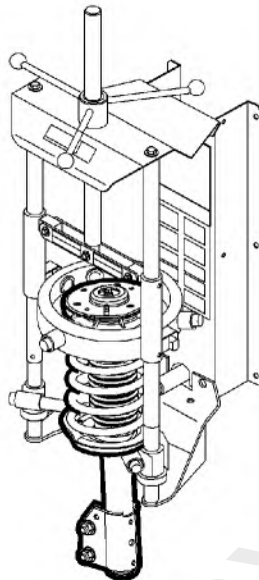
1. Clamp the strut in a vise horizontally with the rod (1) completely extended.
2. Drill a hole in the strut at the center of the end cap (3) using a 5 mm (3/16 in) drill bit. Gas or a gas/oil mixture will exhaust when the drill bit penetrates the strut. Use shop towels in order to contain the escaping oil.
3. Remove the strut from the vise.
4. Hold the strut over a drain pan vertically with the hole down.
5. Move the rod (1) in and out of the tube (2) to completely drain the oil from the strut.

Strut, Strut Component, and Spring Replacement

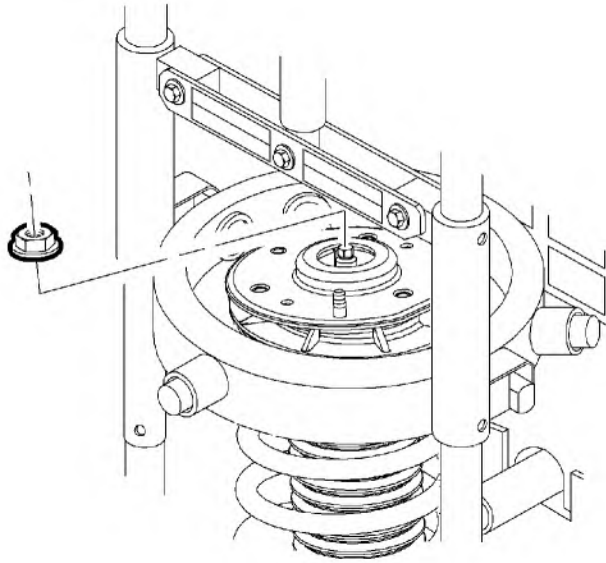
Special Tools

- [J 42991](#) Strut Rod Nut Socket
- [J 45400](#) Strut Spring Compressor

Removal Procedure

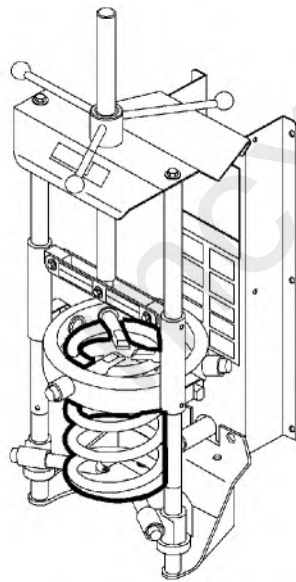


1. Install the strut assembly in the [J 45400](#) using the following procedure.
 - 1.1. Adjust the lower legs of the [J 45400](#) to the lowest possible coil of the spring.
 - 1.2. Adjust the upper legs of the [J 45400](#) to the highest possible coil of the spring.
 - 1.3. Inspect the strut assembly to insure hooks on the strut compress legs are properly installed on the spring coils.
 - 1.4. Verify the strut assembly is parallel with the [J 45400](#).
2. Compress the spring enough to unload the upper strut mount.



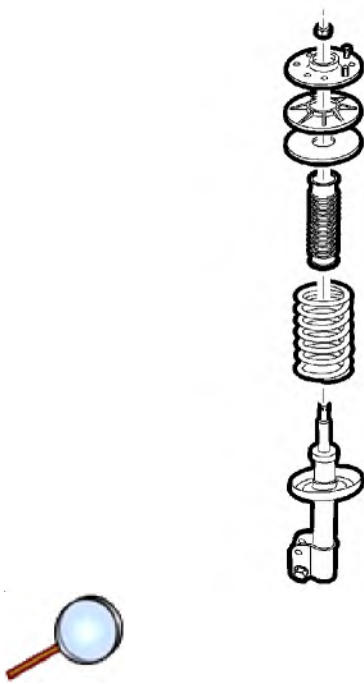
Caution: Do not allow the absorber rod to rotate during disassembly/reassembly. Use hand tools to keep the absorber rod from rotating. If air tools are used, and the rod is allowed to rotate, damage to the absorber may occur.

3. Use the [J 42991](#) or equivalent hand tools to remove the strut shaft nut.



Note: Leave the spring in the spring compressor.

4. Lower the strut from the spring assembly.



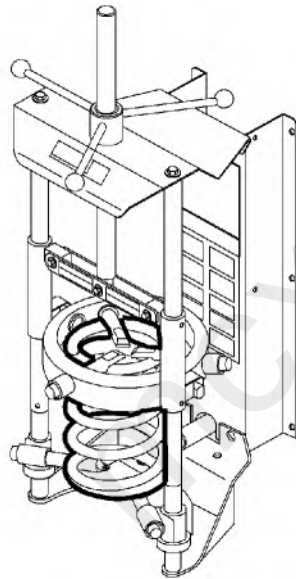
Caution: Do not handle the top mount assembly by the plastic portion. Handle the top mount assembly by the metal portion when removing/installing the top mount from/to the strut assembly. Holding the top mount assembly by the plastic portion may loosen the snap fit of the bearing components and cause the bearing to fall apart.

5. Remove the upper mount assembly, inspect for damage and deterioration. Replace as necessary.
6. Remove the strut dust shield and inspect for damage and deterioration. Replace as necessary.
7. Remove the hollow bumper from the strut shaft and inspect for damage and deterioration. Replace as necessary.
8. Inspect the spring for damage. Replace as necessary.

Installation Procedure



1. Extend the strut to its limit of travel.
2. Install the hollow bumper and dust boot to the strut shaft.



Note: The tag identifying the spring will be closer to the bottom of the spring. The end of the coil sits up against the tab on the spring seat.

3. With the spring in the compressor, install the strut into the spring.

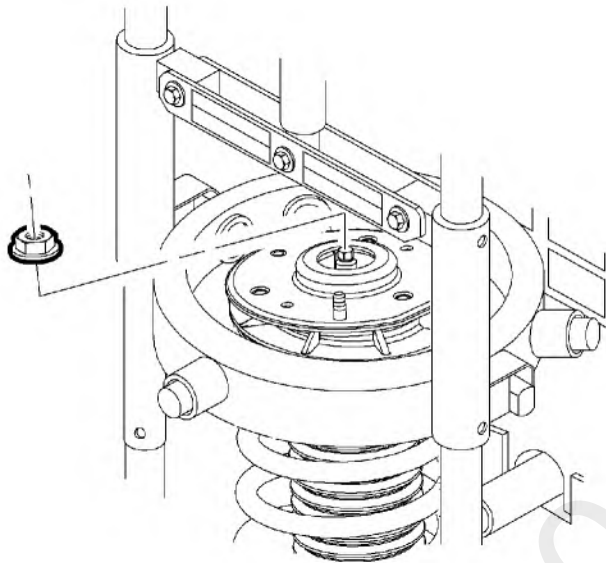
Note: The anti-rotation tab on the spring seat must face 180 degrees from the direction that the knuckle bracket points.

4. Assemble the upper spring seat onto the strut shaft and align the flat with the strut to knuckle mounting bracket.

Caution: Do not handle the top mount assembly by the plastic portion. Handle the top mount assembly by the metal portion when removing/installing the top mount from/to the strut assembly. Holding the top mount assembly by the plastic portion may loosen the snap fit of the bearing components and cause the bearing to fall apart.

Note: The flat on the metal plate of the top mount assembly must face the same direction of the anti-rotation tab on the spring seat.

5. Assemble the top mount onto the strut shaft and align the flat 180 degrees from flat on the upper spring seat.



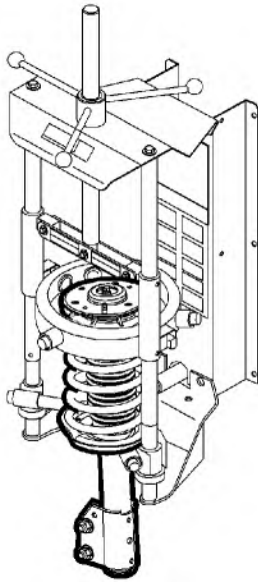
6. Loosely install the strut shaft nut.

Caution: Refer to [Fastener Caution](#) in the Preface section.

Caution: Do not allow the absorber rod to rotate during disassembly/reassembly. Use hand tools to keep the absorber rod from rotating. If air tools are used, and the rod is allowed to rotate, damage to the absorber may occur.

7. Hold the strut shaft and use the [J 42991](#) or equivalent hand tools to tighten the shaft while verifying that the upper spring seat flats align with the top mount.

Tighten the strut shaft to **55 N·m (41 lb ft)**.



8. Release the tension on the [J 45400](#) .
9. Remove the strut assembly from the [J 45400](#) .