

2018 SUSPENSION**Front Suspension - Traverse****SPECIFICATIONS****FASTENER SPECIFICATIONS****Single Use Threaded Fastener/Component Tightening Specifications**

NOTE: <i>All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.</i>	
Application	Specification
	Metric (English)
Front Lower Control Arm Front Bolt	
• First Pass:	100 N.m (74 lb ft)
• Final Pass:	90 - 105 degrees
Front Lower Control Arm Rear Bolt	
• First Pass:	100 N.m (74 lb ft)
• Final Pass:	90 - 105 degrees
Front Stabilizer Shaft Insulator Clamp Bolt	
• First Pass:	30 N.m (22 lb ft)
• Final Pass:	90 - 105 degrees
Front Wheel Bearing and Hub Assembly Bolt	
• First Pass:	100 N.m (74 lb ft)
• Final Pass:	15 - 30 degrees

Reusable Threaded Fastener Tightening Specifications

NOTE: <i>All fasteners listed in this table can be reused after removal.</i>	
Application	Specification
	Metric (English)
Front Lower Control Arm Ball Stud Nut	
• First Pass:	40 N.m (30 lb ft)
• Final Pass:	100 - 115 degrees

NOTE:

All fasteners listed in this table can be reused after removal.

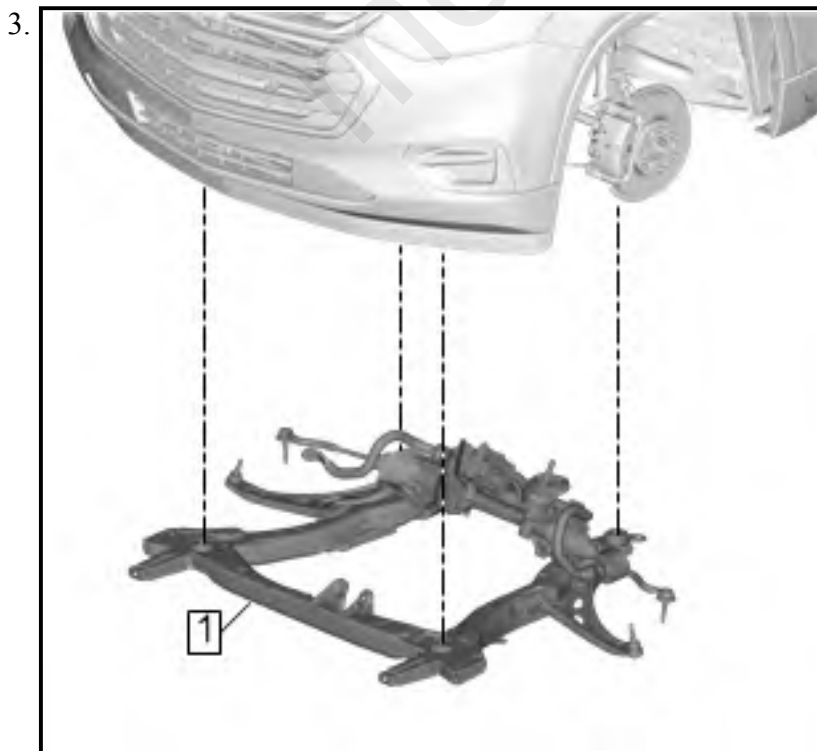
Application	Specification
	Metric (English)
Front Stabilizer Shaft Link Nut	100 N.m (74 lb ft)
Front Strut Rod Mount Nut	70 N.m (52 lb ft)
Front Suspension Strut Bolt	22 N.m (16 lb ft)
Steering Knuckle Nut	
First Pass:	100 N.m (74 lb ft)
Final Pass:	45 - 60 degrees

ADHESIVES, FLUIDS, LUBRICANTS, AND SEALERS

Application	Type of Material	GM Part Number	
		United States	Canada
Front Stabilizer Link to Strut	Thread Locking Adhesive	89021297	10953488
Front Wheel Bearing and Hub Assembly Bolt	Thread Locking Adhesive	89021297	10953488
Steering Knuckle Bearing Pilot Bore	Grease	12345996	10953501

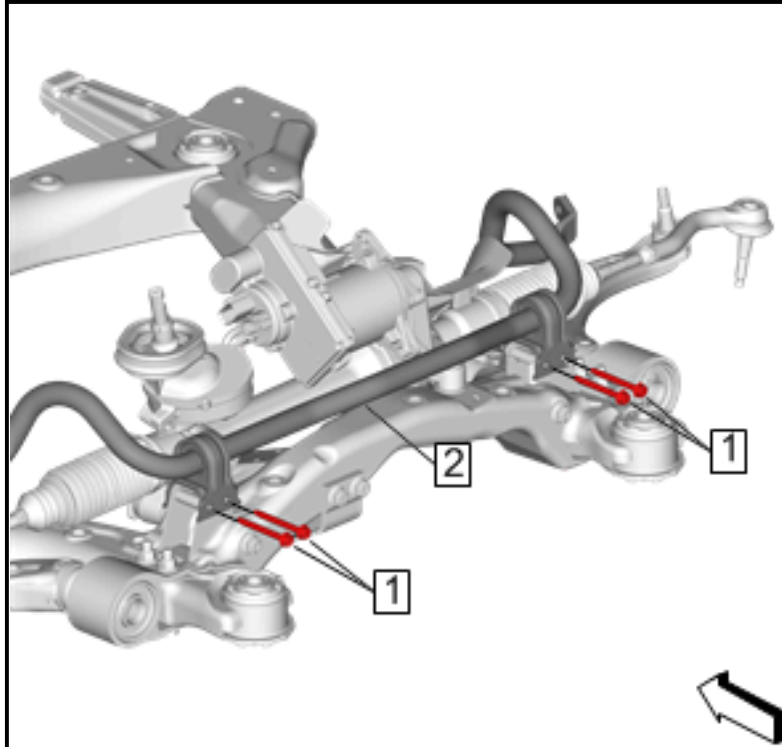
REPAIR INSTRUCTIONS**STABILIZER SHAFT REPLACEMENT****Removal Procedure**

1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#)
2. Before continuing, inspect the brake lines in the area of the front stabilizer shaft to ensure that they are NOT contacting the shaft at any location. [Brake Pipe and Hose Inspection](#)



Drivetrain and Front Suspension Cradle (1) - Remove - [Drivetrain and Front Suspension Cradle Replacement \(All Wheel Drive\)](#) [Drivetrain and Front Suspension Cradle Replacement \(Front Wheel Drive\)](#)

4.



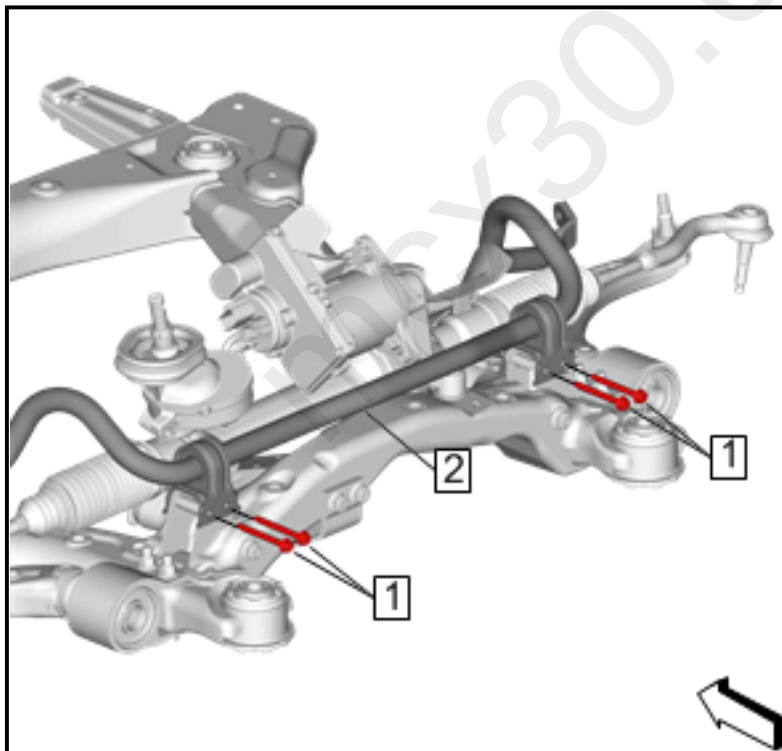
Front Stabilizer Shaft Insulator Clamp Bolt (1) - Remove [4x]

DISCARD the bolts.

5. Remove the front stabilizer shaft (2) from the drivetrain and front suspension cradle.

Installation Procedure

1.



Position the front stabilizer shaft (2) on the drivetrain and front suspension cradle.

CAUTION: Refer to [Fastener Caution](#) .

CAUTION: This vehicle is equipped with torque-to-yield or single use fasteners. Install a **NEW** torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

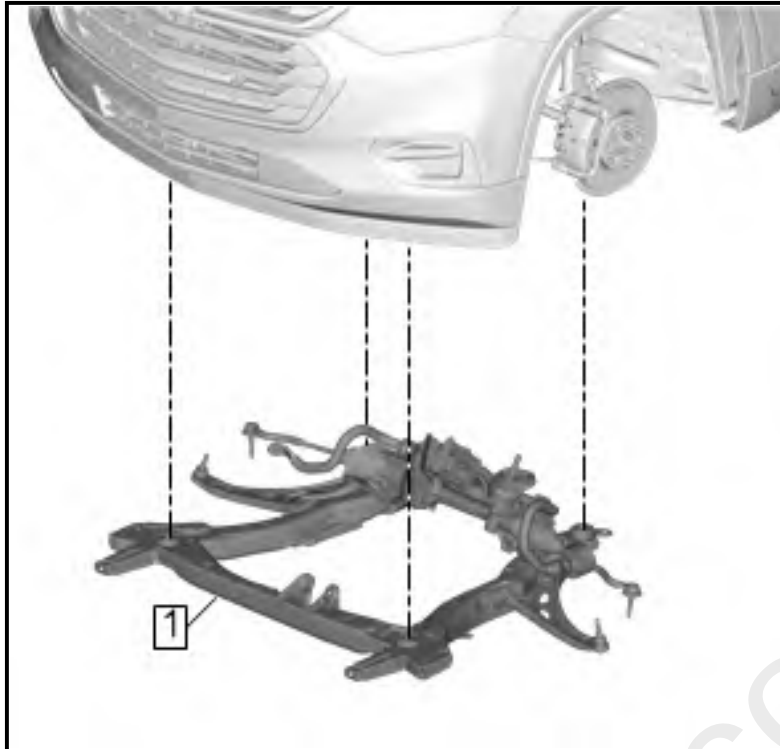
2. Front Stabilizer Shaft Insulator Clamp Bolt (1) - Install and tighten [4x]

Install NEW bolts.

Tighten

1. First Pass: 30 N.m (22 lb ft)
2. Final Pass: (90 - 105 degrees)

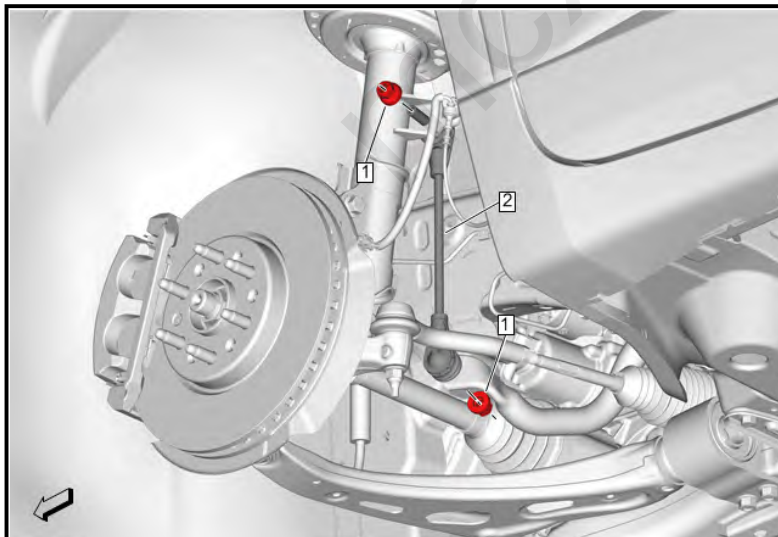
3.



Drivetrain and Front Suspension Cradle (1) - Install - [Drivetrain and Front Suspension Cradle Replacement \(All Wheel Drive\)](#) [Drivetrain and Front Suspension Cradle Replacement \(Front Wheel Drive\)](#).

4. Measure and adjust the wheel alignment. [Wheel Alignment Measurement](#)

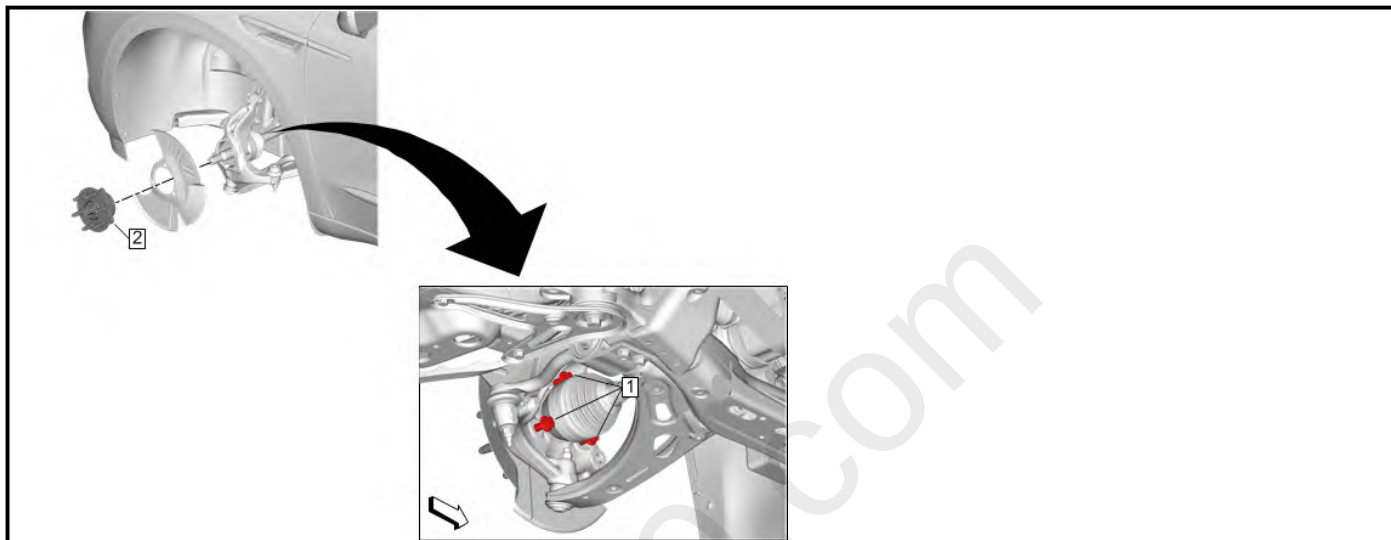
STABILIZER SHAFT LINK REPLACEMENT



Callout	Component Name
Preliminary Procedure	
Remove the front tire and wheel assembly. Tire and Wheel Removal and Installation	

Callout	Component Name
1	Front Stabilizer Shaft Link Nut [2x] CAUTION: Refer to Fastener Caution . Tighten 100 N.m (74 lb ft)
2	Front Stabilizer Shaft Link Procedure Install the front tire and wheel assembly. Tire and Wheel Removal and Installation

FRONT WHEEL BEARING AND HUB REPLACEMENT

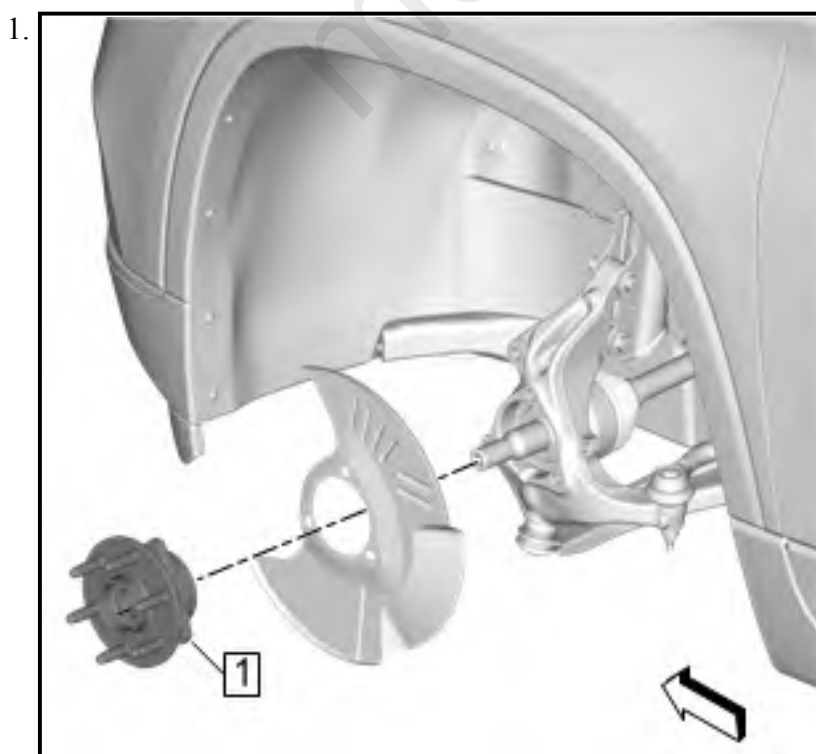


Callout	Component Name
Preliminary Procedures	
1. Front Wheel Speed Sensor @ Steering Knuckle - Remove - Front Wheel Speed Sensor Replacement - Left Side , Front Wheel Speed Sensor Replacement - Right Side 2. Front Wheel Drive Shaft Nut Retainer - Remove - Front Wheel Drive Half Shaft Replacement - Left Side 3. Front Brake Rotor - Remove - Front Brake Rotor Replacement	

Callout	Component Name
1	Front Wheel Bearing and Hub Assembly Bolt [3x] CAUTION: This vehicle is equipped with torque-to-yield or single use fasteners. Install a NEW torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component. Procedure 1. Remove and DISCARD the bolts. 2. Apply thread locking adhesive to the bolt. Adhesives, Fluids, Lubricants, and Sealers Tighten CAUTION: Refer to Fastener Caution . First Pass: 100 N.m (74 lb ft) Final Pass: (15 - 30 degrees)
2	Front Wheel Bearing and Hub Assembly Procedure Apply grease evenly and ensure complete coverage to the steering knuckle bearing pilot bore only. Adhesives, Fluids, Lubricants, and Sealers NOTE: Avoid applying grease to any other machined surfaces, holes, or threads. Ensure the drain channel at the bottom of the bore is not blocked with grease or debris.

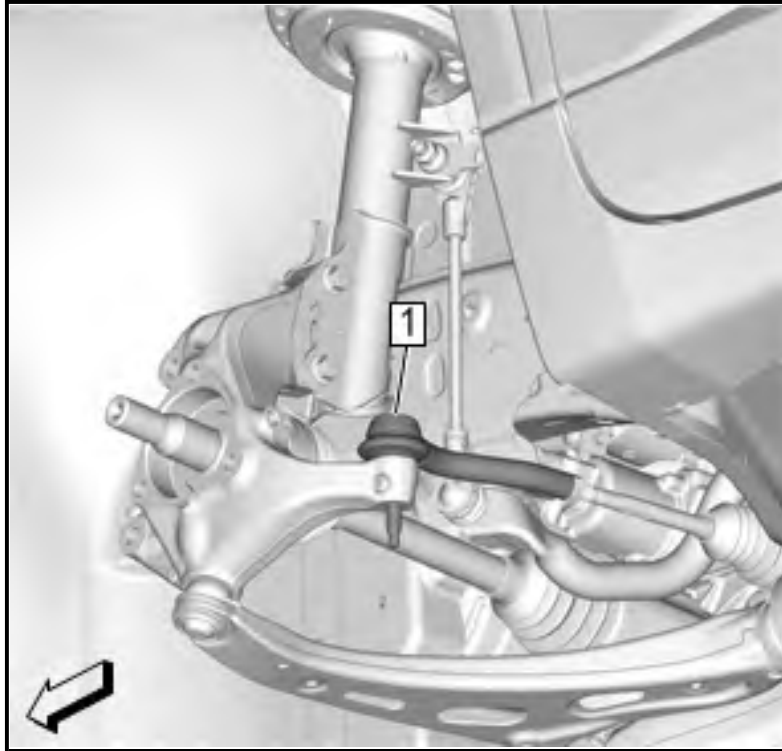
STEERING KNUCKLE REPLACEMENT

Removal Procedure



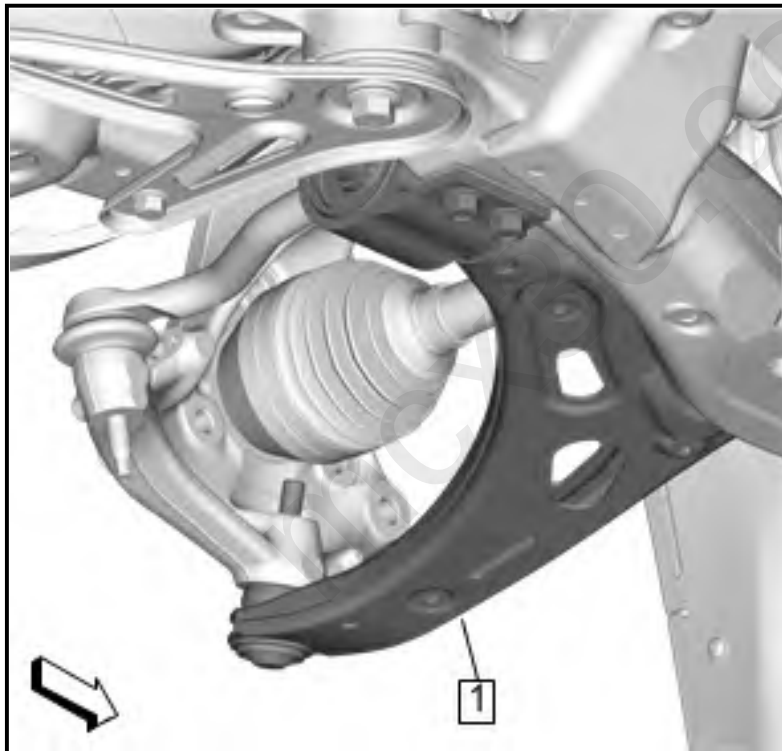
Front Wheel Bearing and Hub Assembly (1) - Remove - [Front Wheel Bearing and Hub Replacement](#)

2.



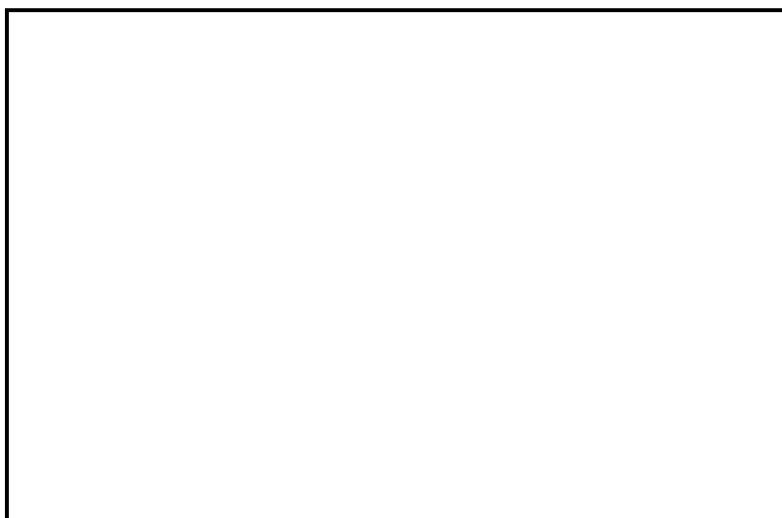
Steering Linkage Outer Tie Rod (1) @ Steering Knuckle - Separate - [Steering Linkage Outer Tie Rod Replacement](#)

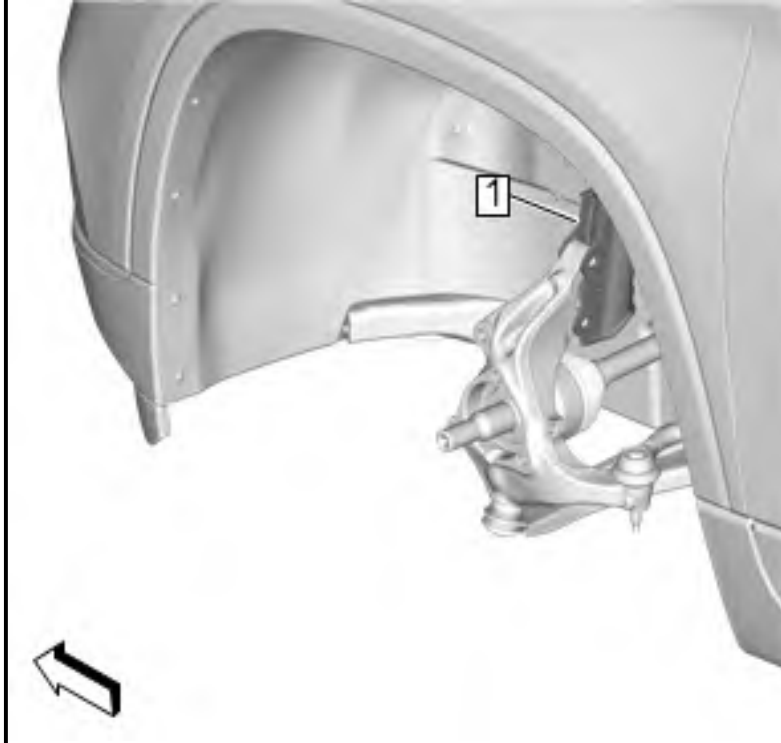
3.



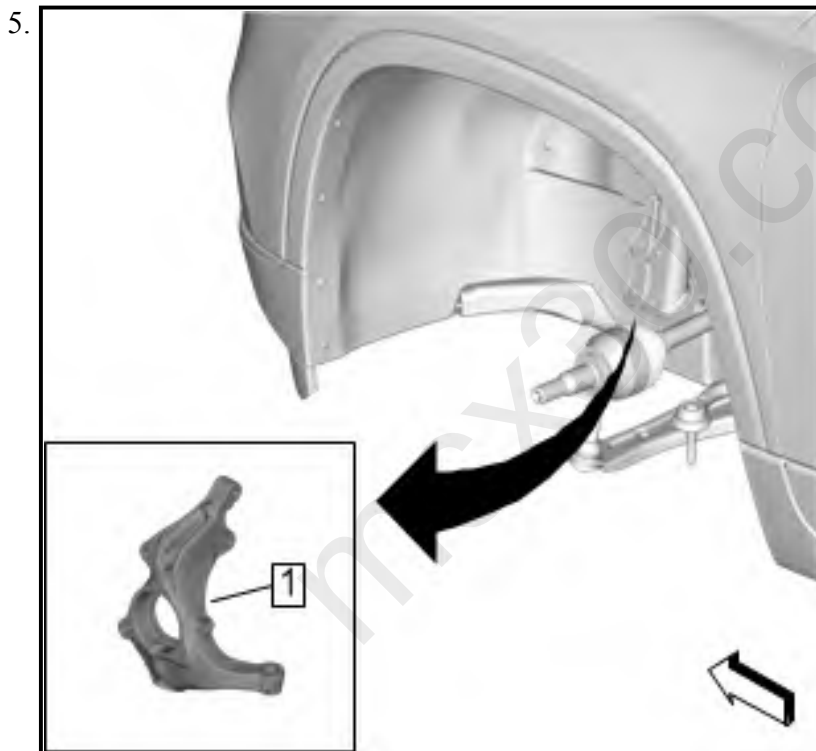
Front Lower Control Arm (1) @ Steering Knuckle - Separate - [Lower Control Arm Replacement](#)

4.





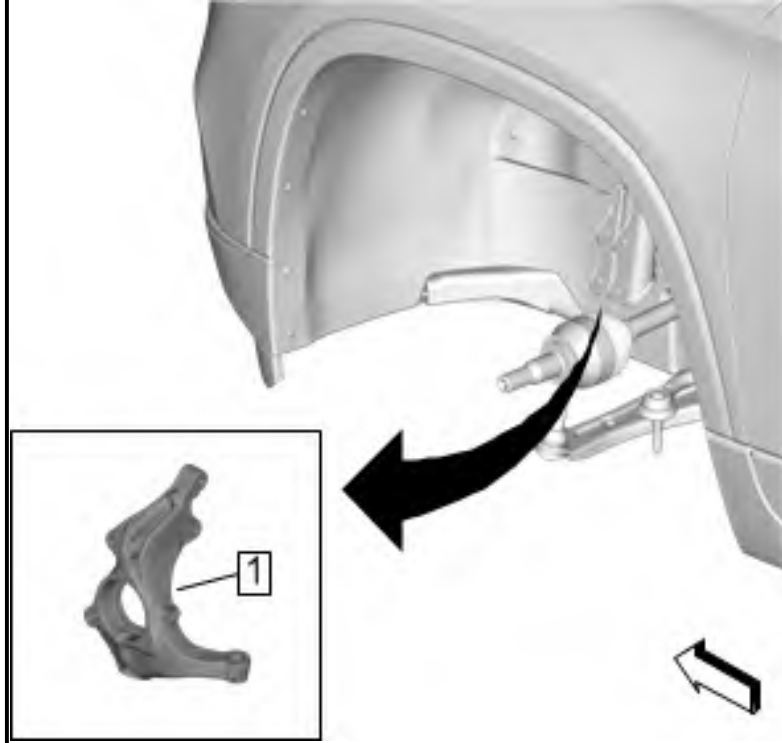
Strut Assembly (1) @ Steering Knuckle - Separate - [Strut Assembly Removal and Installation](#)



Remove the steering knuckle (1) from the vehicle.

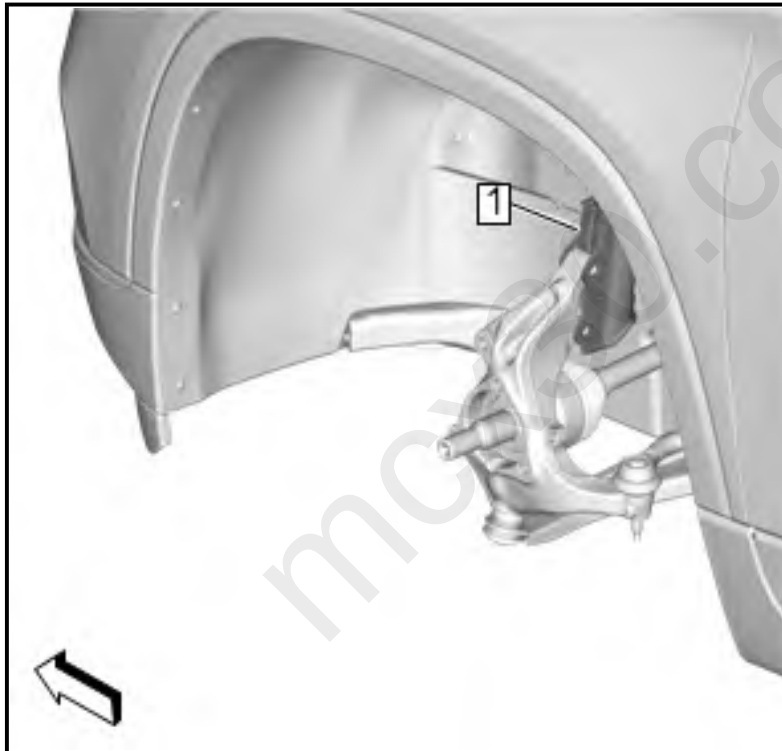
Installation Procedure





Position the steering knuckle (1) on the vehicle.

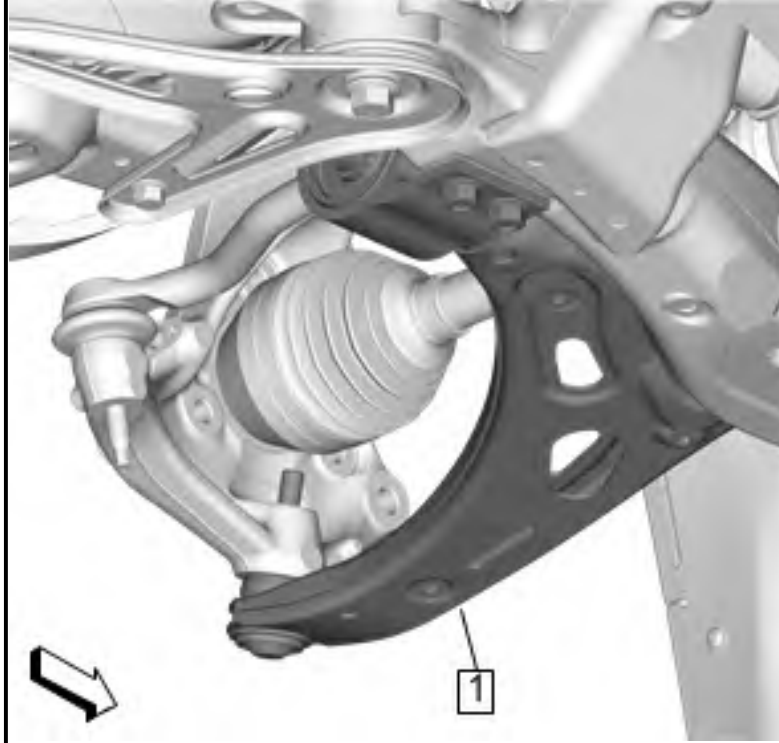
2.



Strut Assembly (1) @ Steering Knuckle - Install - [Strut Assembly Removal and Installation](#)

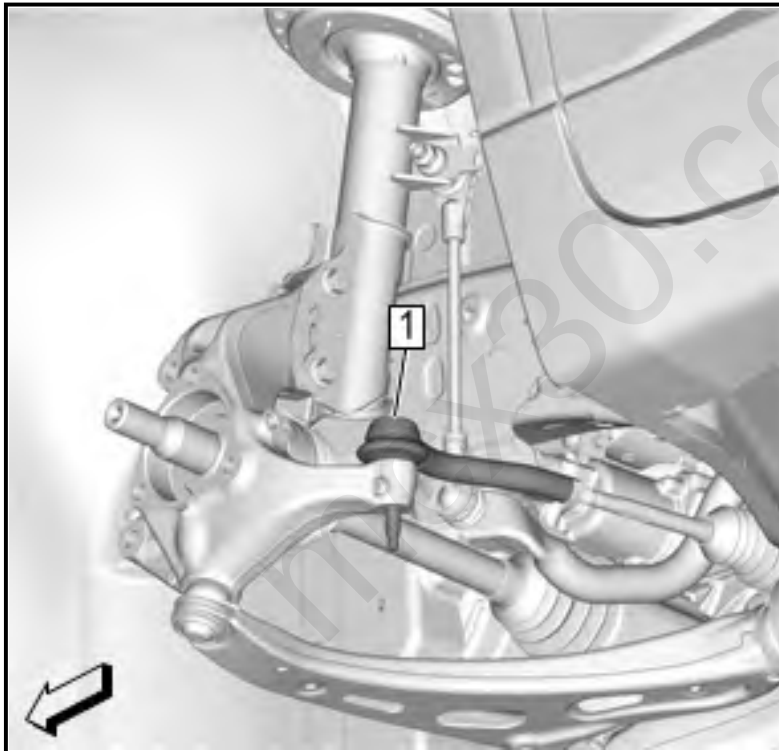
3.





Front Lower Control Arm (1) @ Steering Knuckle - Install - [Lower Control Arm Replacement](#)

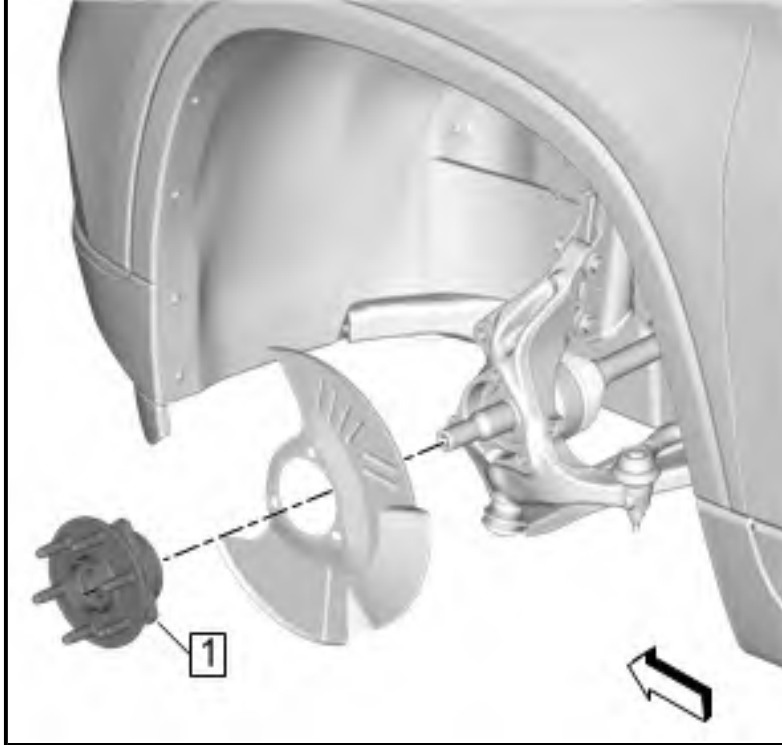
4.



Steering Linkage Outer Tie Rod (1) @ Steering Knuckle - Install - [Steering Linkage Outer Tie Rod Replacement](#)

5.





Front Wheel Bearing and Hub Assembly (1) - Install - [Front Wheel Bearing and Hub Replacement](#)

6. Measure and adjust the wheel alignment. [Wheel Alignment Measurement](#)

LOWER CONTROL ARM REPLACEMENT

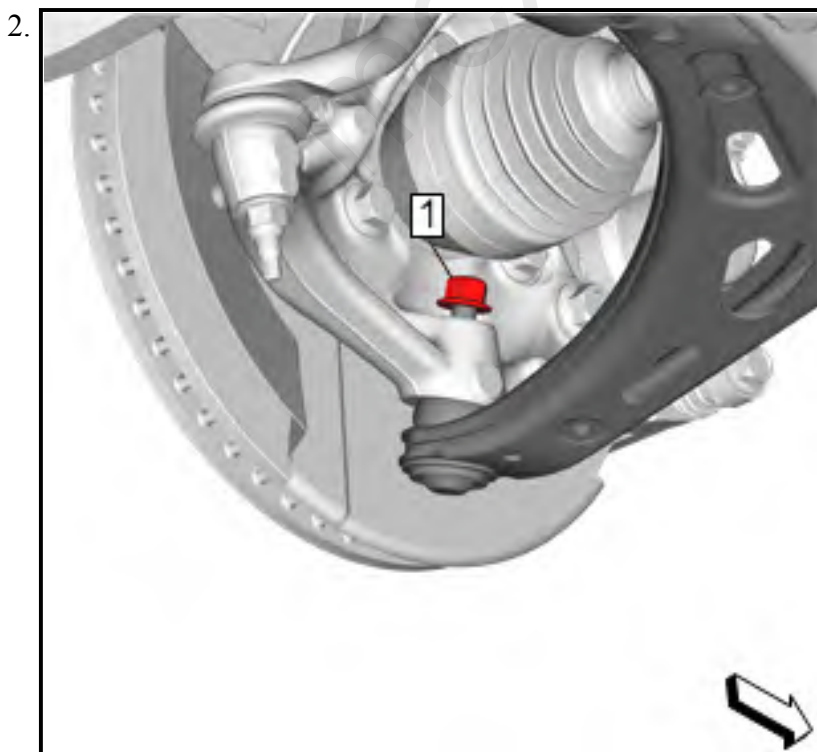
Special Tools

CH-42188-B Ball Joint Separator

Equivalent regional tools: [Special Tools](#)

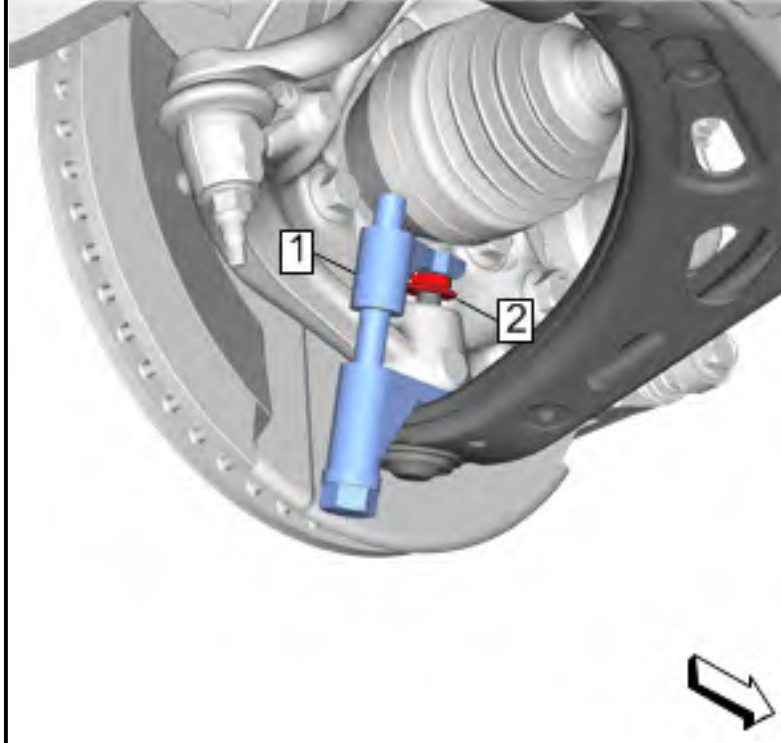
Removal Procedure

1. Remove the front tire and wheel assembly. [Tire and Wheel Removal and Installation](#)



Front Lower Control Arm Ball Stud Nut (1) - Loosen

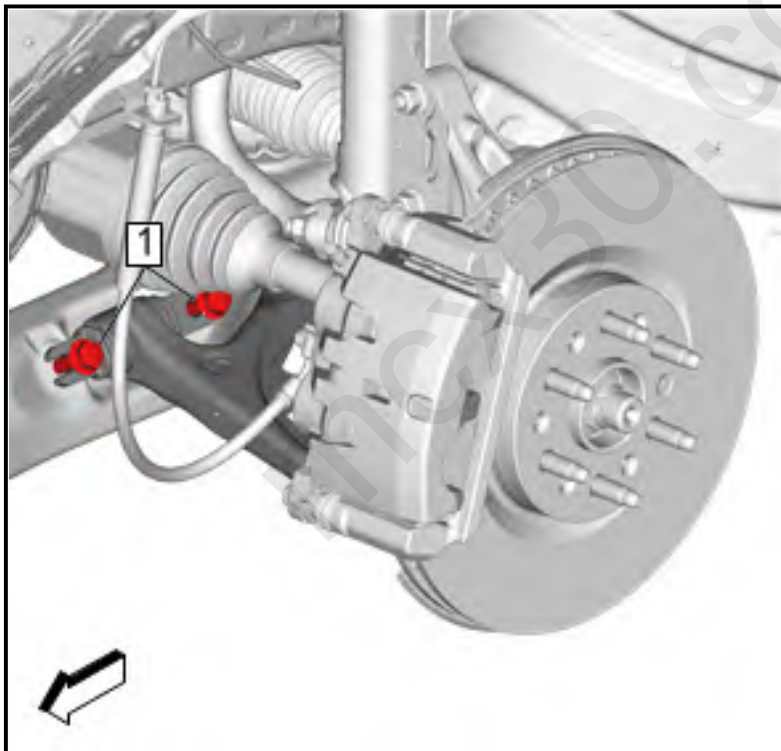




Use the **CH-42188-B** Ball Joint Separator (1) to separate the front lower control arm from the steering knuckle.

4. Front Lower Control Arm Ball Stud Nut (2) - Remove

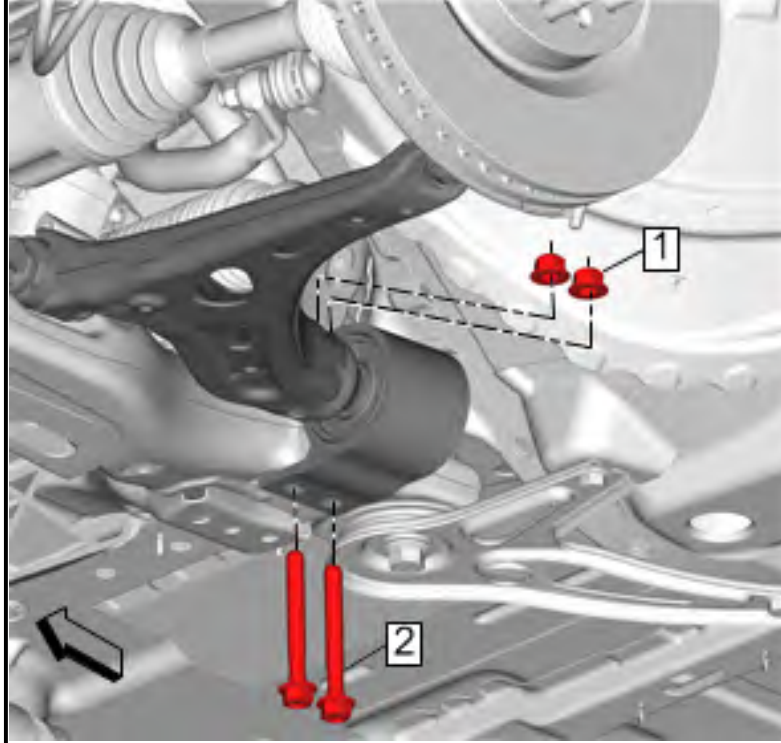
5.



Front Lower Control Arm Front Bolt (1) - Remove and DISCARD [2x]

6.

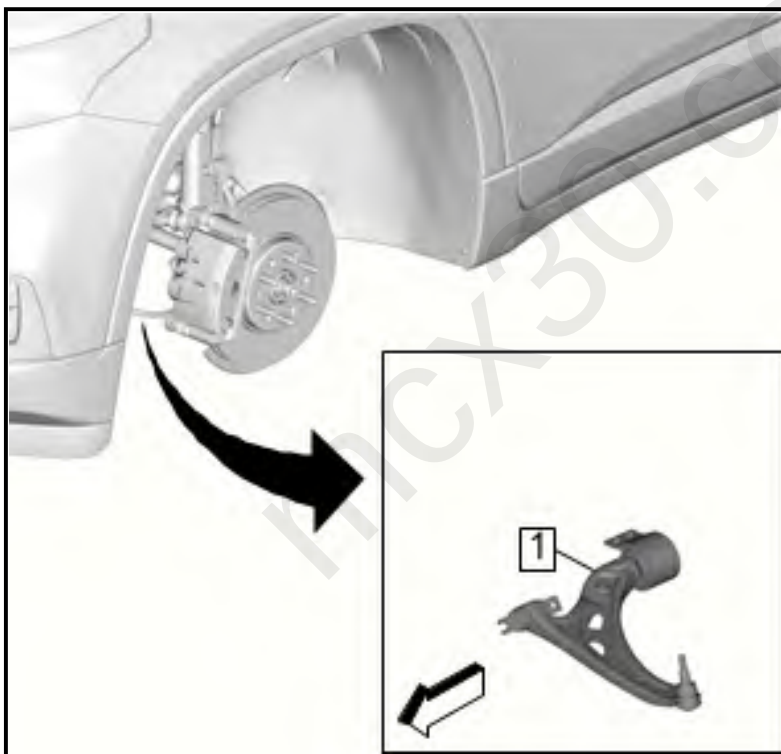




Front Lower Control Arm Rear Nut (1) - Remove [2x]

7. Front Lower Control Arm Rear Bolt (2) - Remove and DISCARD [2x]

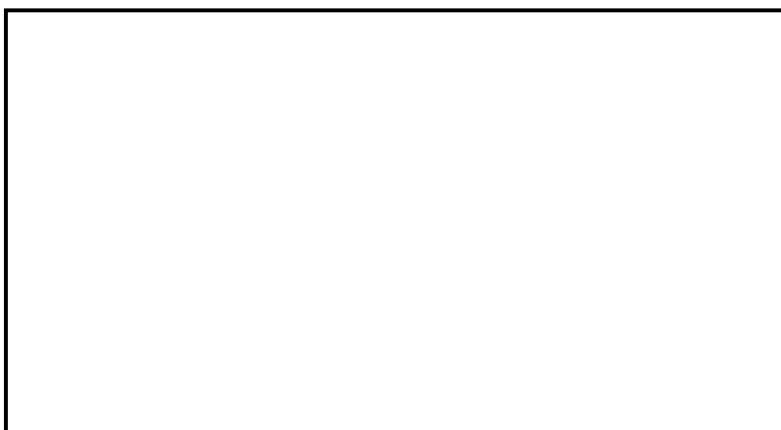
8.

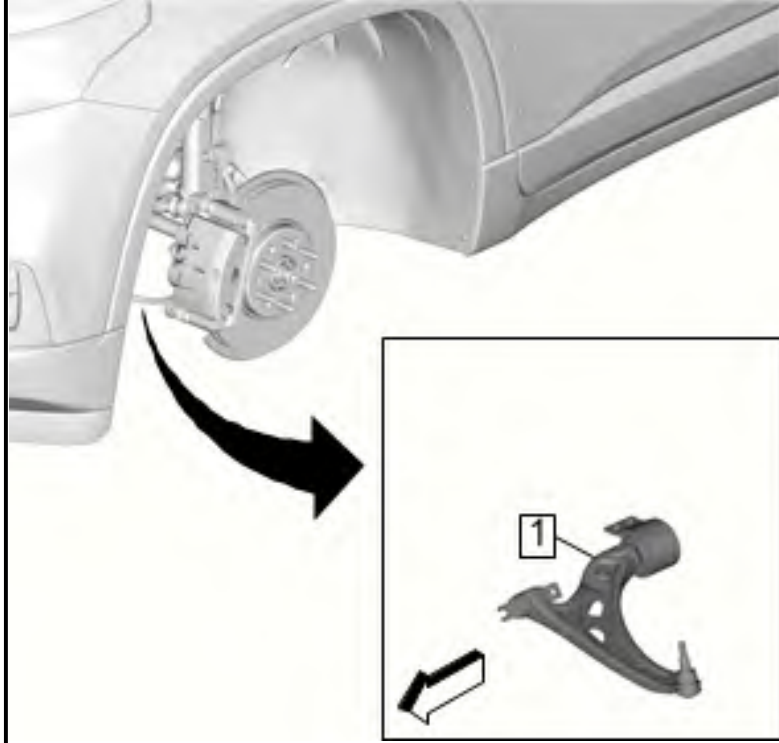


Remove the front lower control arm (1) from the vehicle.

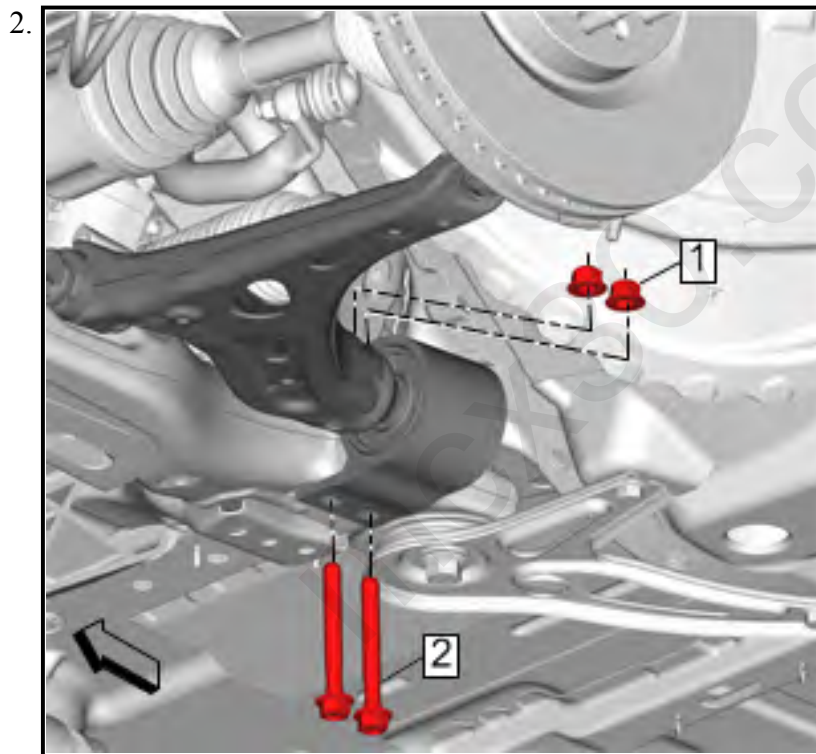
Installation Procedure

1.





Position the front lower control arm (1) on the vehicle.

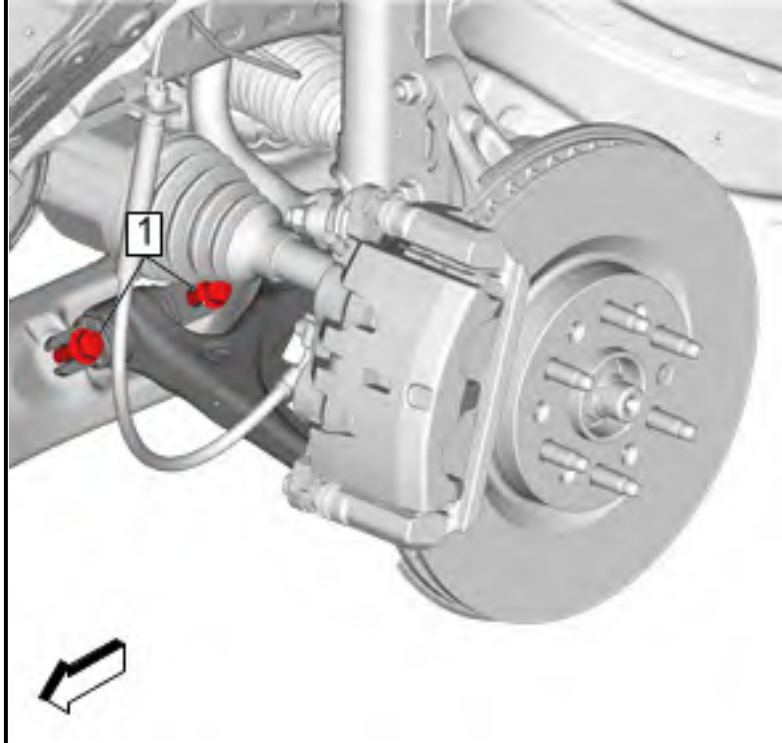


CAUTION: This vehicle is equipped with torque-to-yield or single use fasteners. Install a **NEW** torque-to-yield or single use fastener when installing this component. Failure to replace the torque-to-yield or single use fastener could cause damage to the vehicle or component.

Front Lower Control Arm Rear Bolt (2) - Install NEW [2x]

3. Front Lower Control Arm Rear Nut (1) - Install, but do NOT tighten [2x]

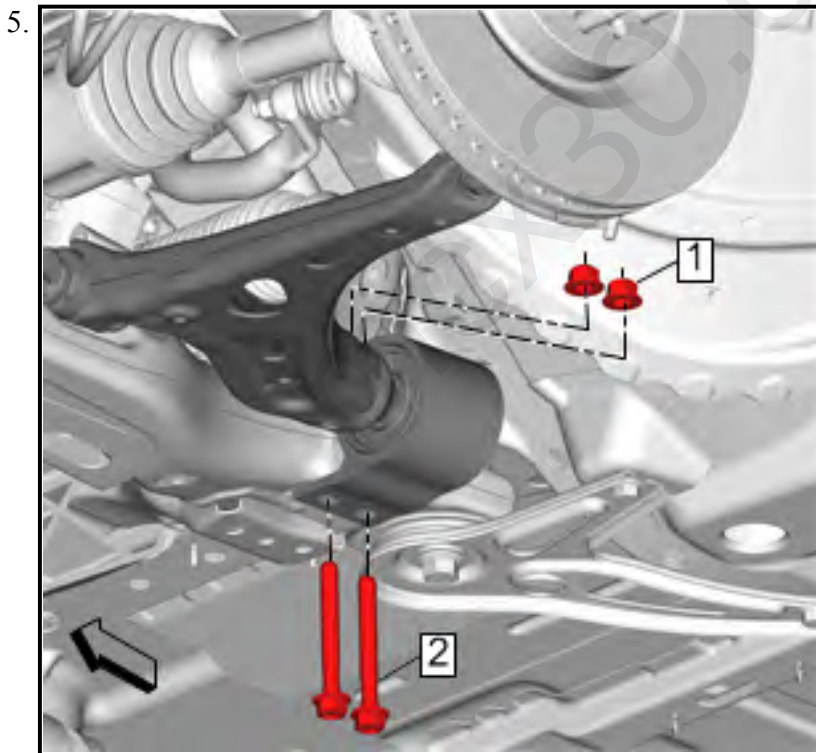




CAUTION: Refer to [Fastener Caution](#) .

Front Lower Control Arm Front Bolt (1) - Install NEW and tighten [2x]

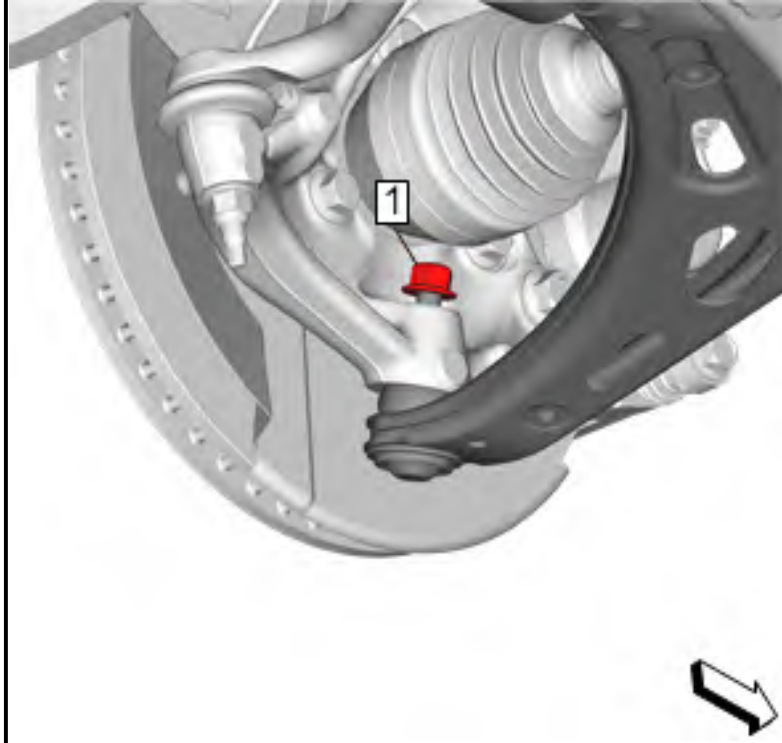
1. First Pass: 100 N.m (74 lb ft)
2. Final Pass: (90 - 105 degrees)



Front Lower Control Arm Rear Bolt (2) - Tighten [2x]

1. First Pass: 100 N.m (74 lb ft)
2. Final Pass: (90 - 105 degrees)





Front Lower Control Arm Ball Stud Nut (1) - Install and tighten

1. First Pass: 40 N.m (30 lb ft)
2. Final Pass: (100 - 115 degrees)
7. Install the front tire and wheel assembly. [Tire and Wheel Removal and Installation](#)
8. Measure and adjust the wheel alignment. [Wheel Alignment Measurement](#)

WHEEL STUD REPLACEMENT

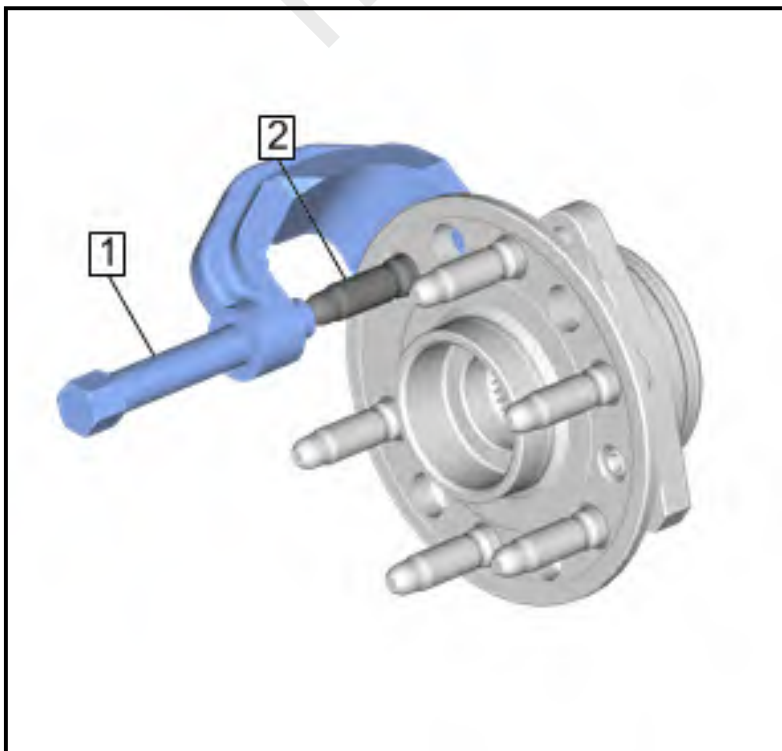
Special Tools

CH-43631 Ball Joint Separator

Equivalent regional tools: [Special Tools](#)

Removal Procedure

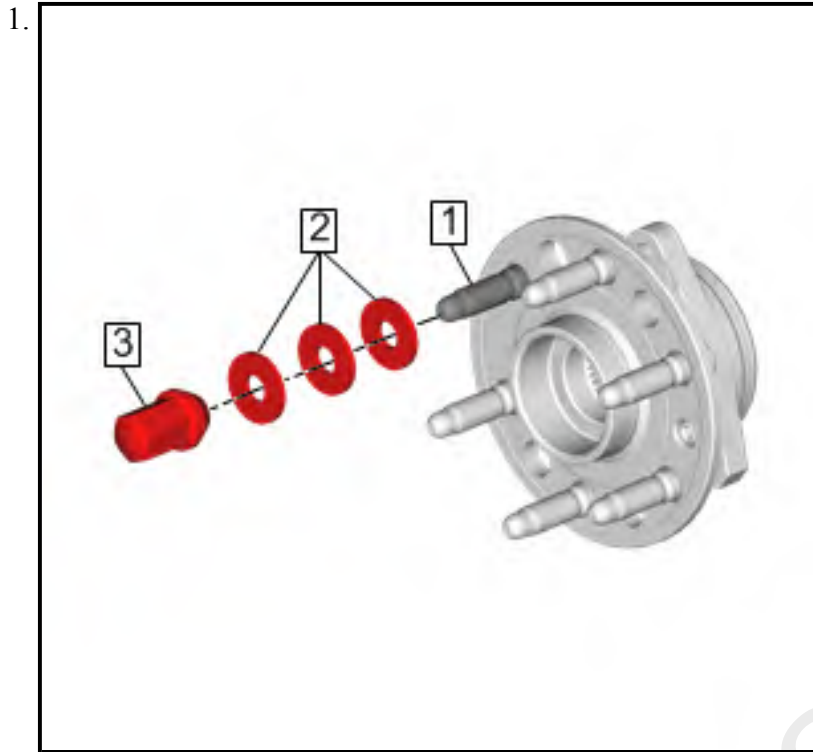
1. Front Wheel Bearing and Hub Assembly - Remove - [Front Wheel Bearing and Hub Replacement](#)
- 2.



Use the **CH-43631** separator (1) to remove the wheel stud (2) from the flange on the hub assembly.

DISCARD the stud.

Installation Procedure



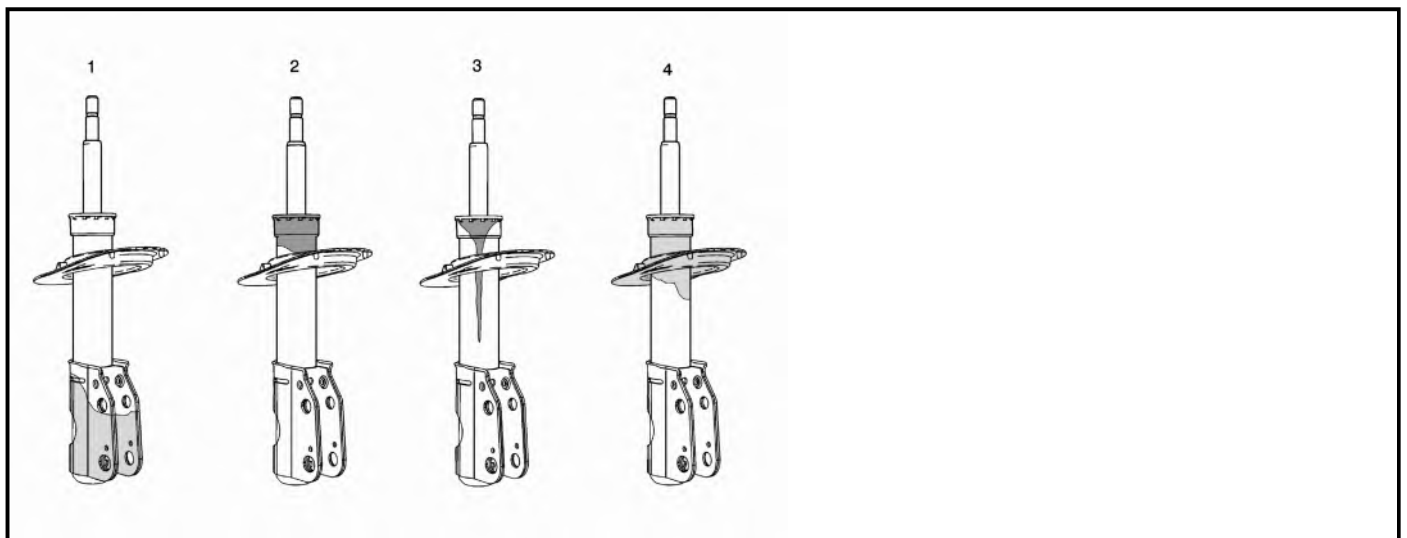
Position the NEW wheel stud (1) in the flange of the hub assembly.

2. Install flat washers (2) and an OLD wheel nut (3) on the wheel stud.
3. Use a suitable tool to prevent the flange on the hub assembly from rotating.
4. Tighten the wheel nut until the wheel stud is firmly seated.
5. Remove the wheel nut and flat washers.
6. Front Wheel Bearing and Hub Assembly - Install - [Front Wheel Bearing and Hub Replacement](#)

STRUT AND SHOCK ABSORBER INSPECTION

NOTE: The strut assembly **DOES NOT** have to be removed from the vehicle to perform the following inspection procedure.

NOTE: A light film of oil on the top portion of the strut is normal. **DO NOT** replace the strut for this condition.



Condition 1

Oil or fluid residue only on the bottom of the strut tube or on other strut components and not originating from the shaft seal, is not a strut related problem. DO NOT replace the strut, look for other external leaks.

Condition 2

Light film/residue on the strut tube, but not on the spring seat and originating from the shaft seal, is a NORMAL condition. DO NOT replace the strut.

Condition 3

Oil drip or trail down the strut tube and originating from the shaft seal, is an ABNORMAL condition. Replace the strut.

Condition 4

Extreme wet film of oil covering the strut tube and pooling in the spring seat and originating from the shaft seal, is an ABNORMAL condition. Replace the strut.

Inspection

1. Verify the customer's concern is present. If the concern is present, continue to the next step. If the concern is not present, then the vehicle is operating normally.

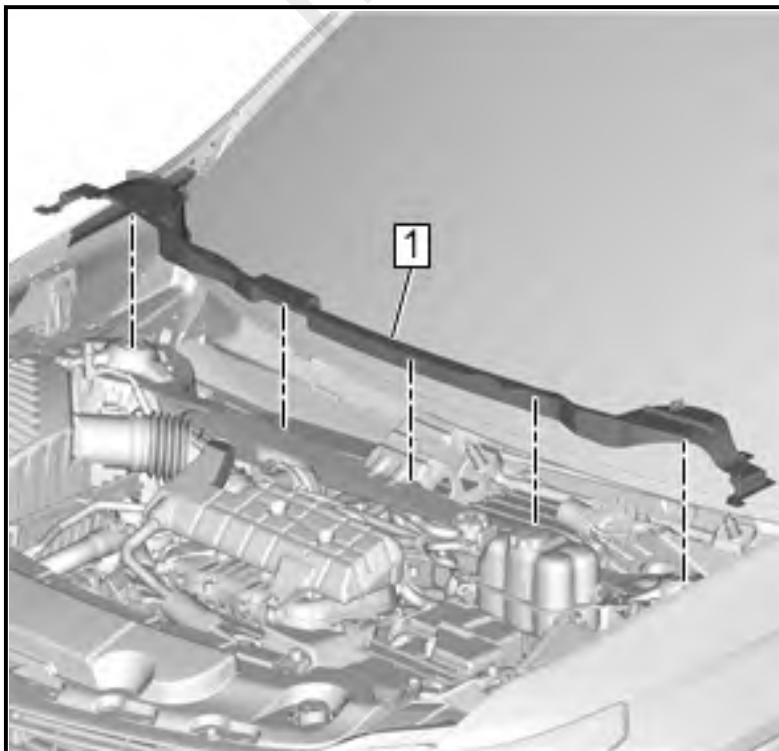
NOTE: The strut assembly DOES NOT have to be removed from the vehicle to perform the following inspection procedure.

2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
3. Visually inspect each of the shock absorbers or struts for external fluid leaks. Refer to the following conditions 1, 2, 3, and 4 for visual inspection.
 - If conditions 1 or 2 are found, continue to step 4.
 - If conditions 3 or 4 are found, replace strut. Refer to Strut Replacement.
4. If equipped with electronic suspension control system, ensure that the system is working properly. Refer to Diagnostic Starting Point-Electronic Suspension Control.
5. Use your hands in order to lift up and push down on each corner of the vehicle 3 times. Remove your hands from the vehicle. If the corner motion exceeds 2 cycles, replace the strut. If the strut does not exceed 2 cycles, NO repair is necessary.

STRUT ASSEMBLY REMOVAL AND INSTALLATION

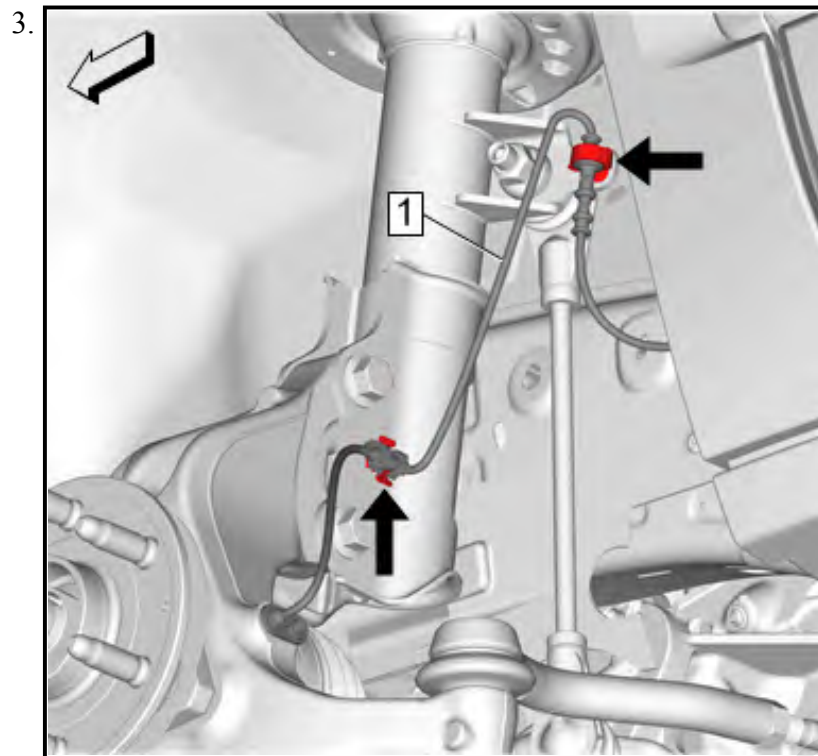
Removal Procedure

1.

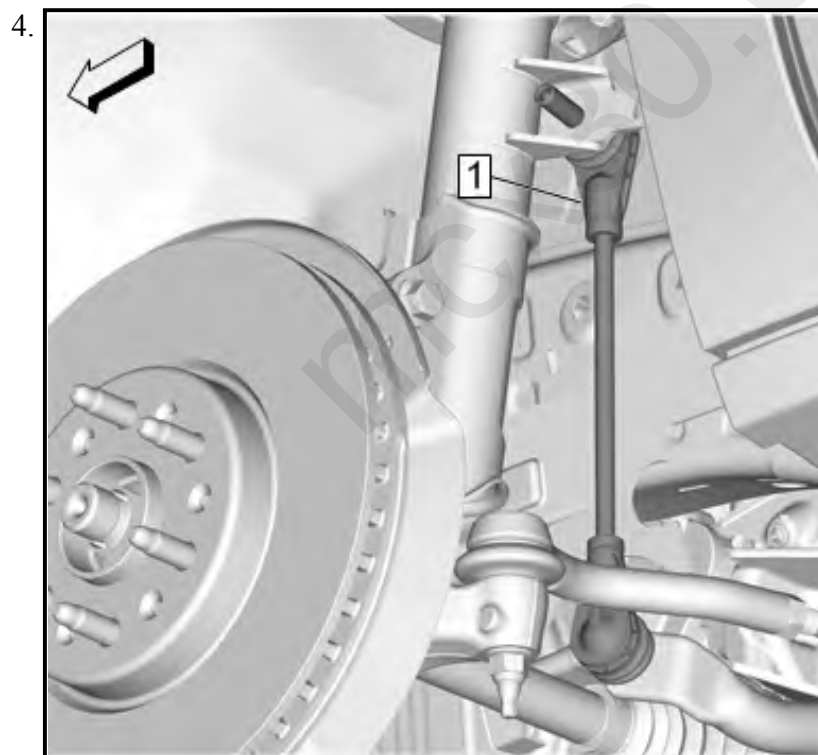


Dash Panel Upper Extension Panel Extension (1) - Remove - [Dash Panel Upper Extension Panel Extension Replacement](#)

2. Remove the front tire and wheel assembly. [Tire and Wheel Removal and Installation](#)

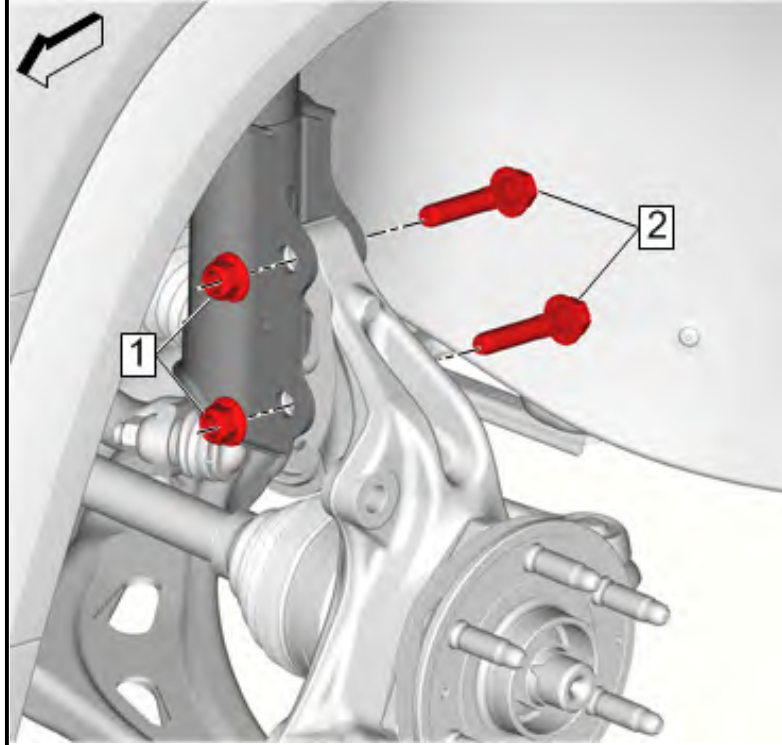


Front Wheel Speed Sensor Wiring Harness (1) @ Strut Assembly - Separate - [Front Wheel Speed Sensor Replacement - Left Side](#) , [Front Wheel Speed Sensor Replacement - Right Side](#)



Front Stabilizer Shaft Link (1) @ Strut Assembly - Separate - [Stabilizer Shaft Link Replacement](#)

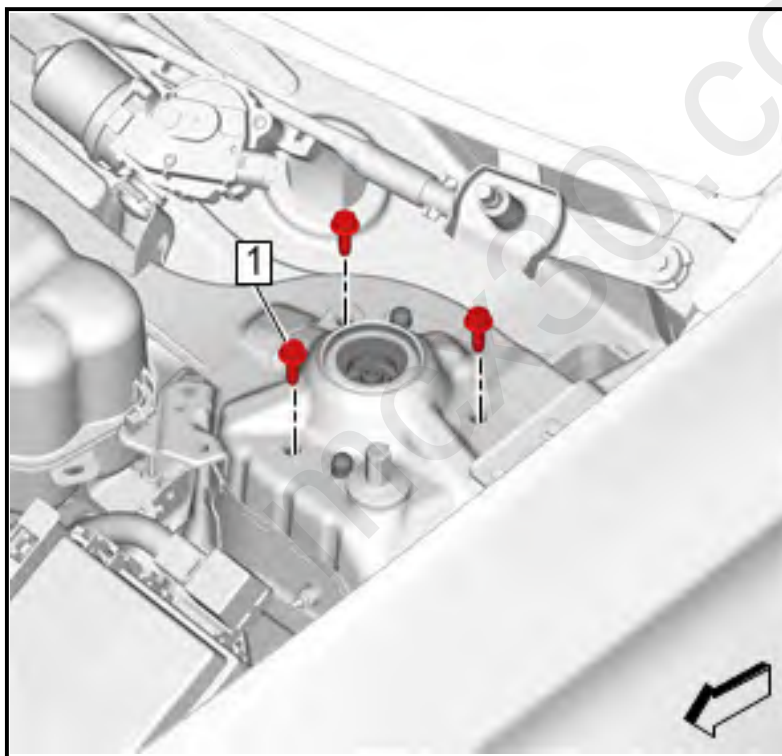




Steering Knuckle Nut (1) - Remove [2x]

6. Steering Knuckle Bolt (2) - Remove [2x]

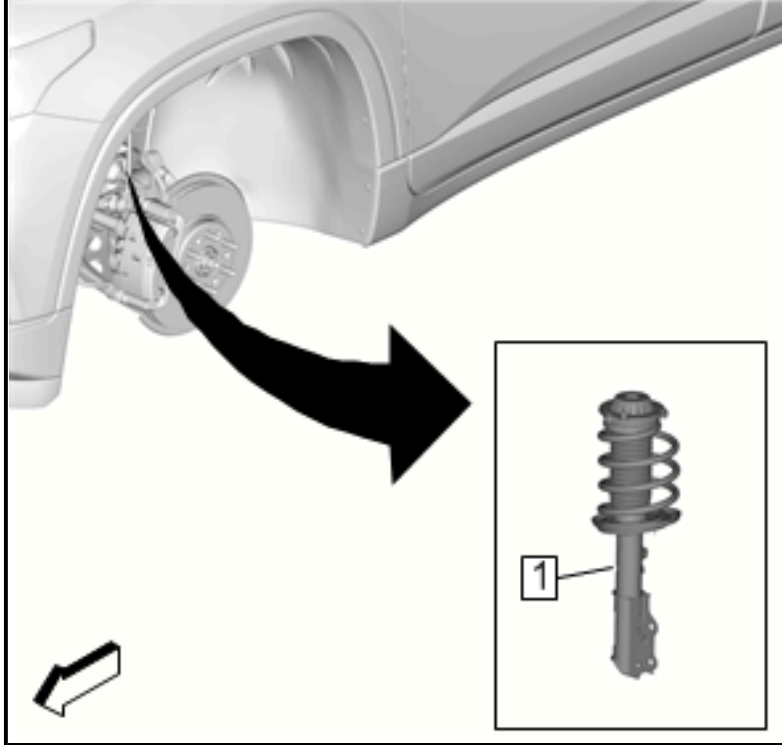
7.



Front Suspension Strut Bolt (1) - Remove [3x]

8.



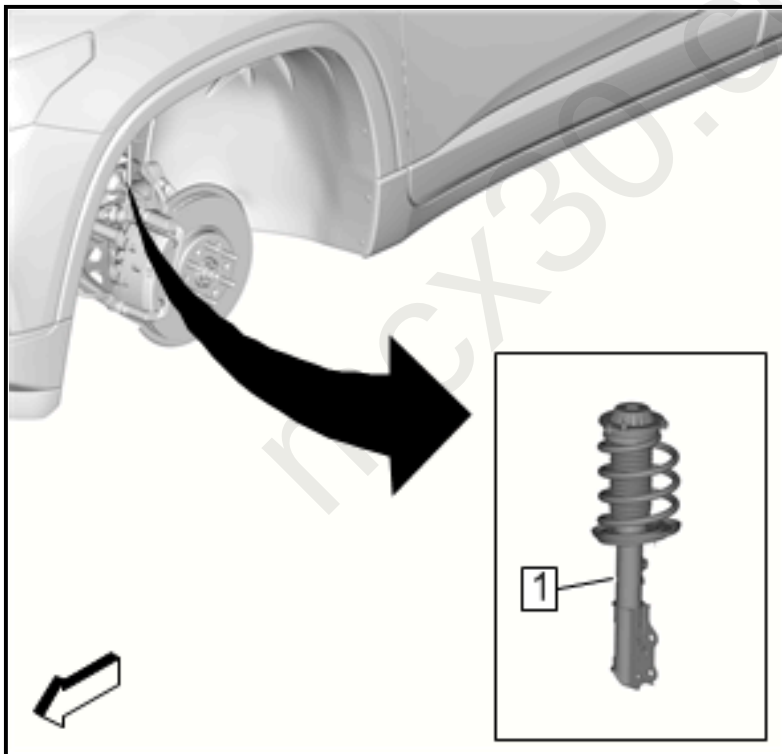


Remove the front suspension strut assembly (1) from the vehicle.

9. Transfer components as necessary.

Installation Procedure

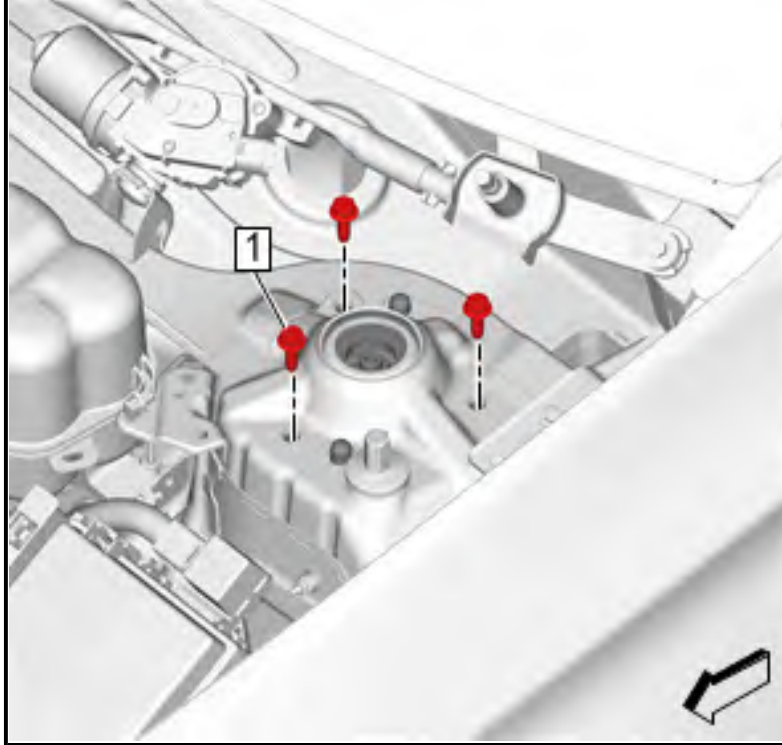
1.



Position the front suspension strut assembly (1) on the vehicle.

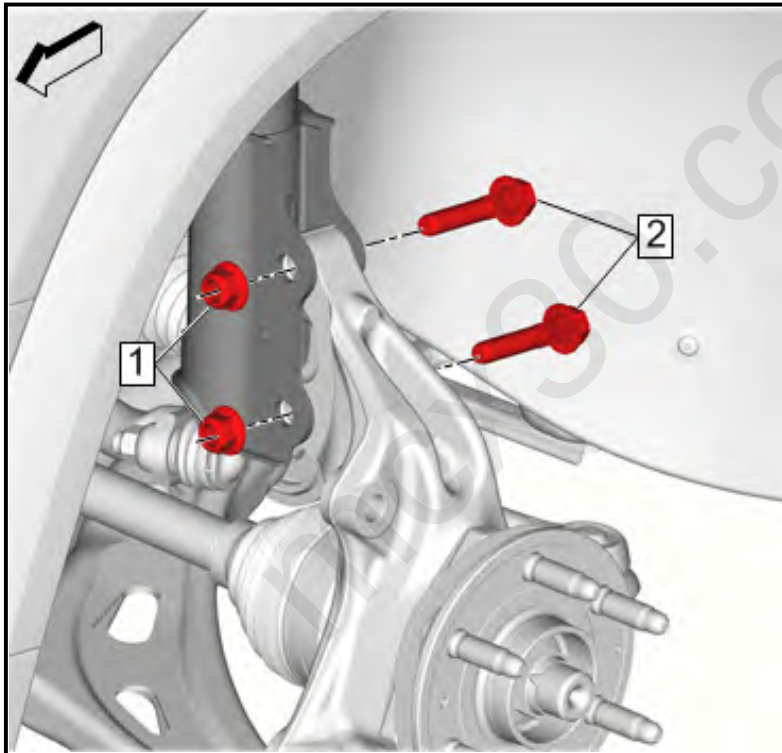
2.





Front Suspension Strut Bolt (1) - Install, but do NOT tighten [3x]

3.



Steering Knuckle Bolt (2) - Install [2x]

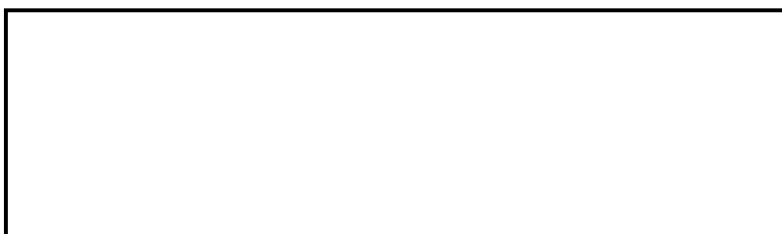
CAUTION: Refer to [Fastener Caution](#) .

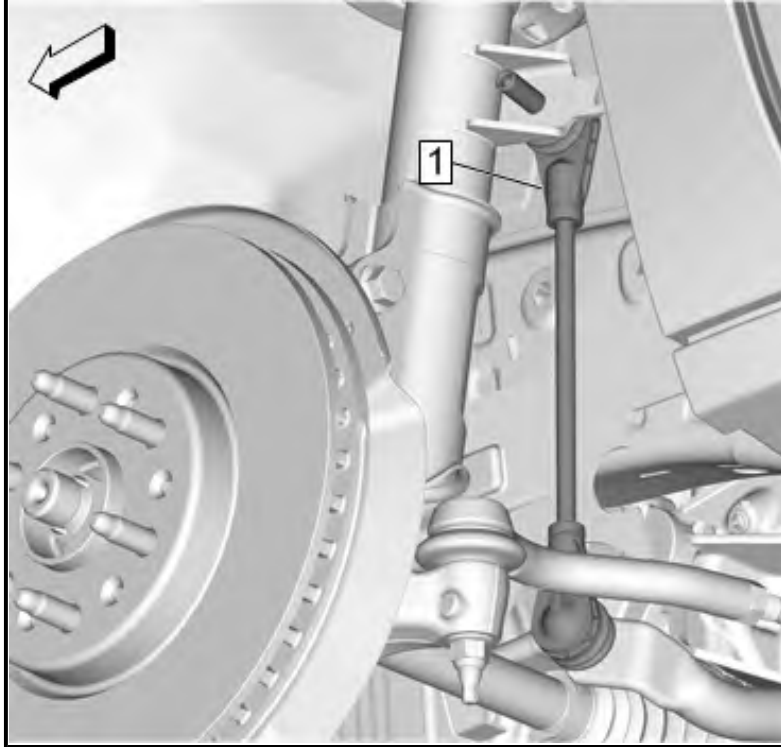
4. Steering Knuckle Nut (1) - Install and tighten [2x]

Tighten

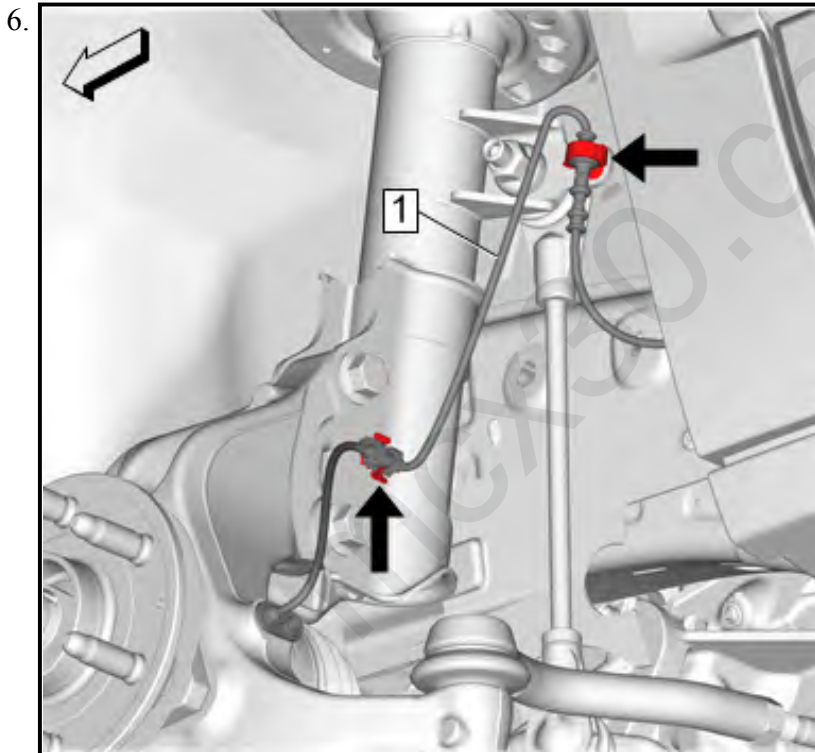
1. First Pass: 100 N.m (74 lb ft)
2. Final Pass: (45 - 60 degrees)

5.





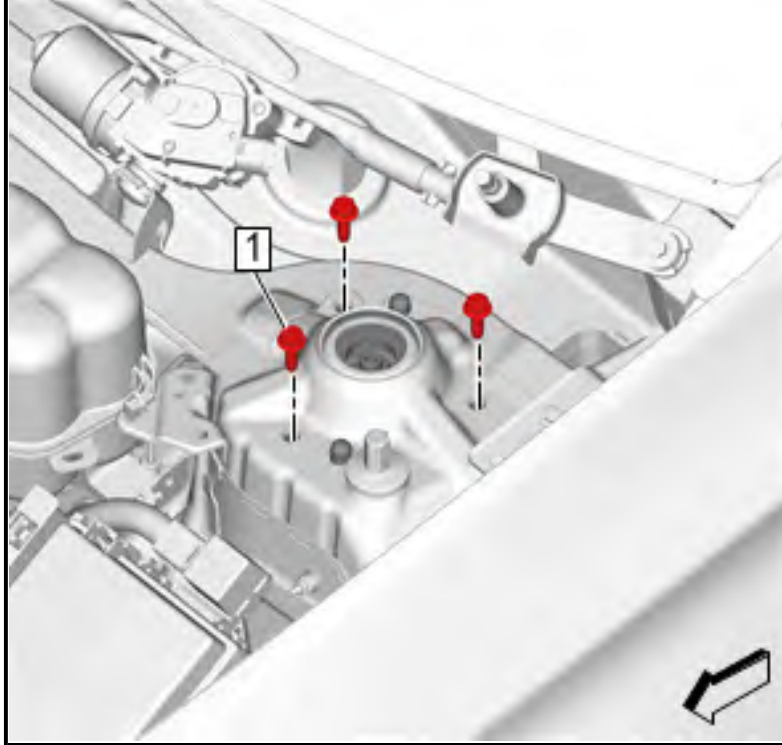
Front Stabilizer Shaft Link (1) @ Strut Assembly - Install - [Stabilizer Shaft Link Replacement](#)



Front Wheel Speed Sensor Wiring Harness (1) @ Strut Assembly - Install - [Front Wheel Speed Sensor Replacement - Left Side](#) , [Front Wheel Speed Sensor Replacement - Right Side](#)

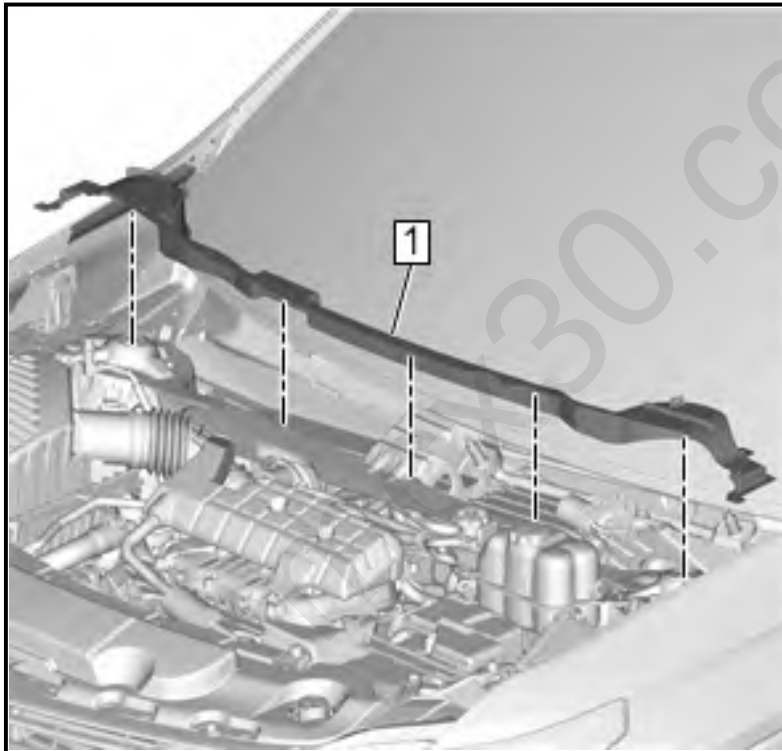
7. Install the front tire and wheel assembly. [Tire and Wheel Removal and Installation](#)
8. Lower the vehicle completely.





Front Suspension Strut Bolt (1) - Tighten [3x] 22 N.m (16 lb ft)

10.



Dash Panel Upper Extension Panel Extension (1) - Install - [Dash Panel Upper Extension Panel Extension Replacement](#)

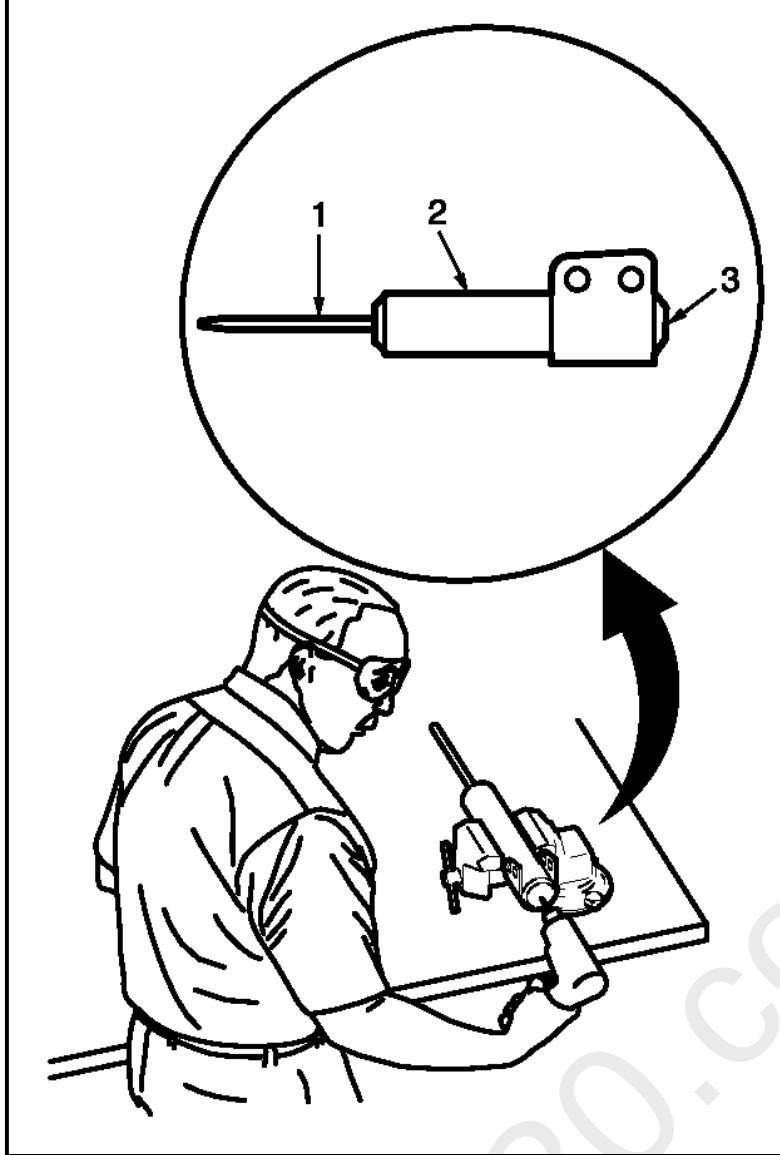
11. Measure and adjust the wheel alignment. [Wheel Alignment Measurement](#)

SUSPENSION STRUT DISPOSAL

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

1.

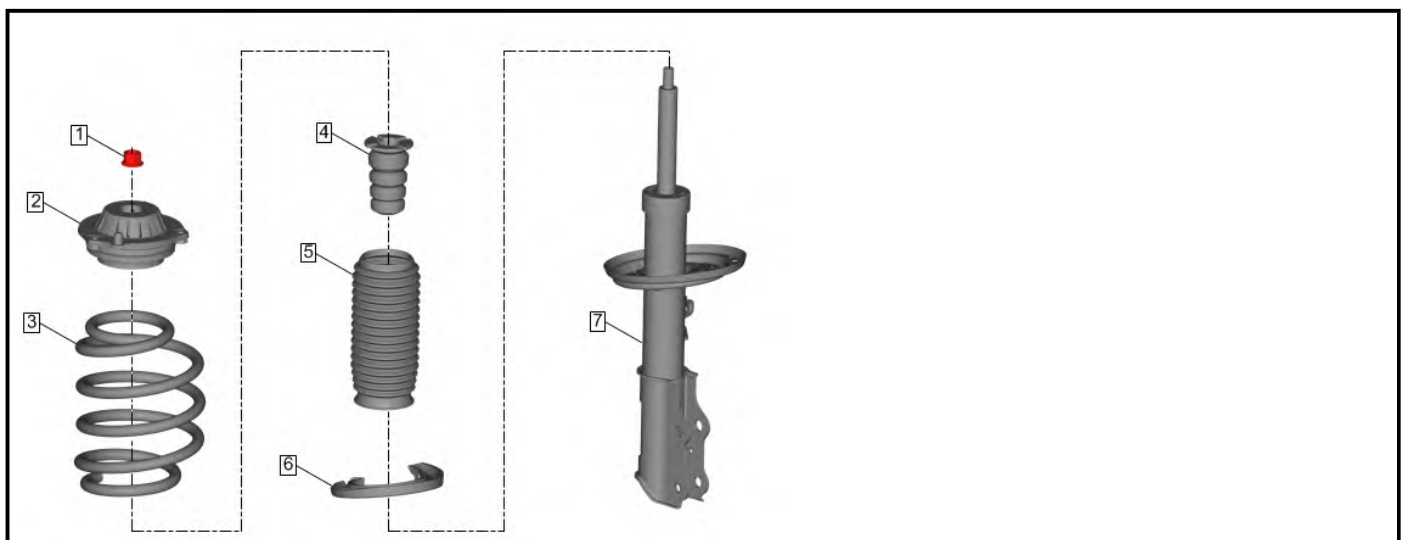




Clamp the strut in a vise horizontally with the rod (1) completely extended.

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, OR SPRING REPLACEMENT



Callout	Component Name

Callout	Component Name
WARNING: To prevent personal injury and/or component damage, use the proper tools to support and compress the coil spring prior to removal of the strut shaft nut when removing the coil spring. The coil spring is under extreme pressure and can become a projectile should the spring separate from the strut before all of the tension is relieved.	
Preliminary Procedure <u>Strut Assembly Removal and Installation</u>	
1	Front Strut Rod Mount Nut CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Use the CH-48845 compressor to compress the front coil spring. 2. Use the CH-49375 wrench to remove and install the front strut rod mount nut. Tighten 70 N.m (52 lb ft) Special Tools • CH-48845 Strut Spring Compressor • CH-49375 Strut Spring Wrench Equivalent regional tools: <u>Special Tools</u>
2	Front Suspension Strut Mount
3	Front Coil Spring
4	Front Suspension Strut Bumper
5	Front Strut Boot
6	Front Coil Spring Lower Insulator
7	Front Suspension Strut

DESCRIPTION AND OPERATION

FRONT SUSPENSION DESCRIPTION AND OPERATION

The front suspension has 2 primary purposes:

- Isolate the driver from irregularities in the road surface.
- Define the ride and handling characteristics of the vehicle.

The front suspension absorbs the impact of the tires travelling over irregular road surfaces and dissipates this energy throughout the suspension system. This process isolates the vehicle occupants from the road surface. The rate at which the suspension dissipates the energy and the amount of energy that is absorbed is how the suspension defines the vehicles ride characteristics. Ride characteristics are designed into the suspension system and are not adjustable. The ride characteristics are mentioned in this description in order to aid in the understanding of the functions of the suspension system. The suspension system must allow for the vertical movement of the tire and wheel assembly as the vehicle travels over irregular road surfaces while maintaining the tire's horizontal relationship to the road.

This requires that the steering knuckle be suspended between a lower control arm and a strut assembly. The lower control arm attaches from the steering knuckle at the outermost point of the control arm. The attachment is through a ball and socket type joint. The innermost end of the control arm attached at 2 points to the vehicle frame through semi-rigid bushings. The upper portion of the steering knuckle is attached to a strut assembly. The strut assembly then connects to the vehicle body by way of an upper bearing. The steering knuckle is allowed to travel up and down independent of the vehicle body structure and frame.

This up and down motion of the steering knuckle as the vehicle travels over bumps is absorbed predominantly by the coil spring. This spring is retained under tension over the strut assembly. A strut is used in conjunction with this system in order to dampen out the oscillations of the coil spring. A strut is a basic hydraulic cylinder. The strut is filled with oil and has a moveable shaft that connects to a piston inside the strut. Valves inside the shock absorber offer resistance to oil flow and consequently inhibit rapid movement of the piston and shaft. Each end of the shock absorber is connected in such a fashion to utilize this recoil action of a spring alone. Each end of the strut is designed as the connection point of the suspension system to the vehicle and acts as the coil spring seat. This allows the strut to utilize the dampening action to reduce the recoil of a spring alone. The lower control arm is allowed to pivot at the vehicle frame in a vertical fashion. The ball joint allows the steering knuckle to maintain the perpendicular relationship to the road surface.

Front suspensions systems utilize a stabilizer shaft. The stabilizer bar connects between the left and right lower control arm assemblies through the stabilizer link and stabilizer shaft insulators. This bar controls the amount of independent movement of the suspension when the vehicle turns. Limiting the independent movement defines the vehicles handling characteristics on turns.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

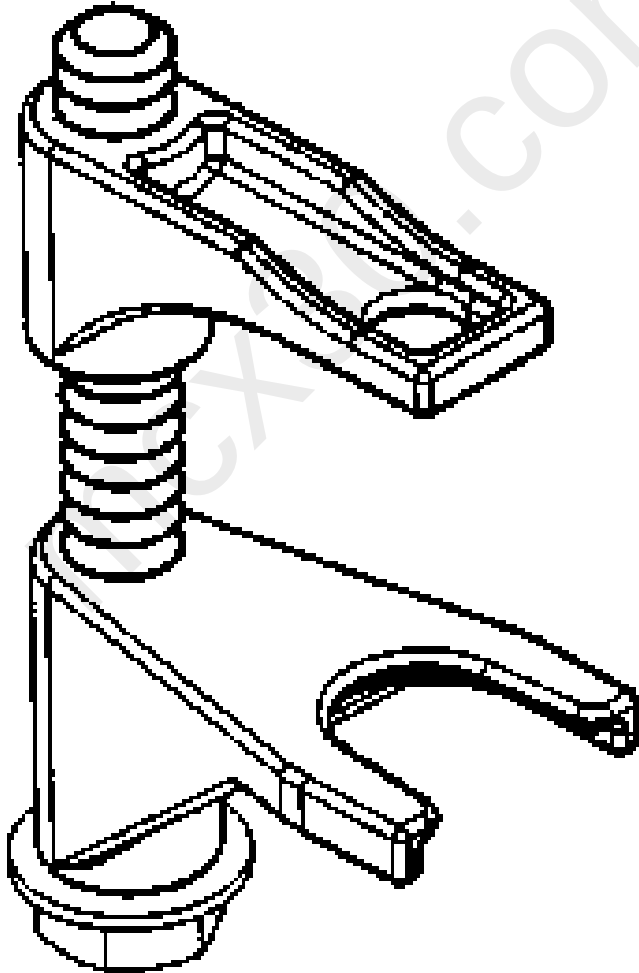
Illustration	Tool Number/Description
	CH-42188 - B J-42188 - B Ball Joint Separator

Illustration	Tool Number/Description
 A blue ball joint separator tool. It features a curved, hook-like end designed to grip a ball joint. The handle is long and cylindrical, with a square-shaped base at the end. A large, light gray watermark "mcx30.com" is diagonally across the image.	CH-43631 CH-49455 J-43631 Ball Joint Separator

Illustration	Tool Number/Description
	CH-48845 Strut Spring Compressor

Illustration	Tool Number/Description
	CH-49375 Strut Spring Wrench