

2021 SUSPENSION

Front Suspension - Canyon, Colorado

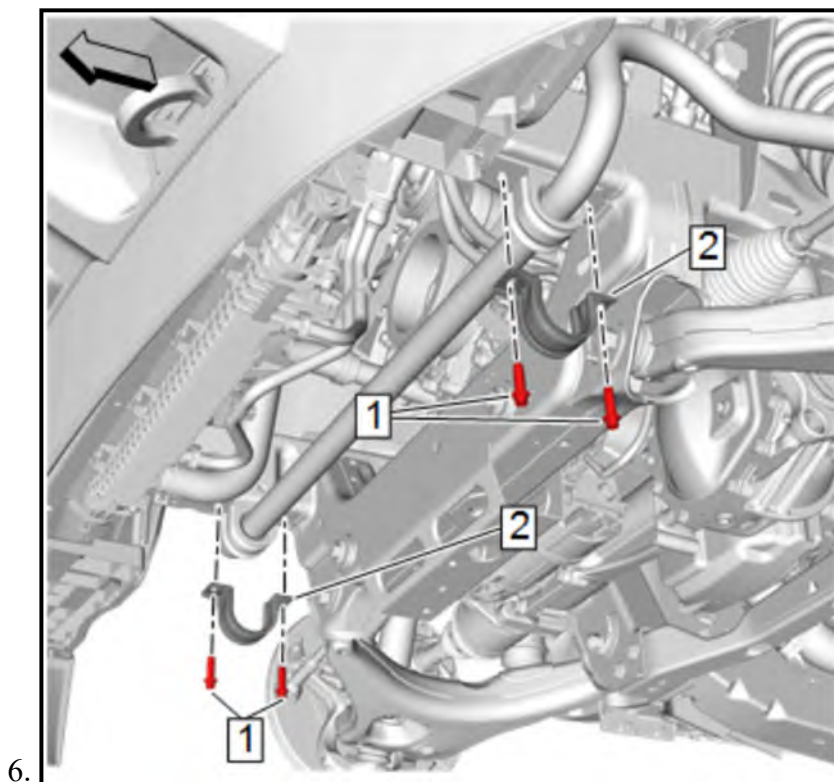
SPECIFICATIONS

FASTENER SPECIFICATIONS

Reusable Threaded Fastener Tightening Specifications

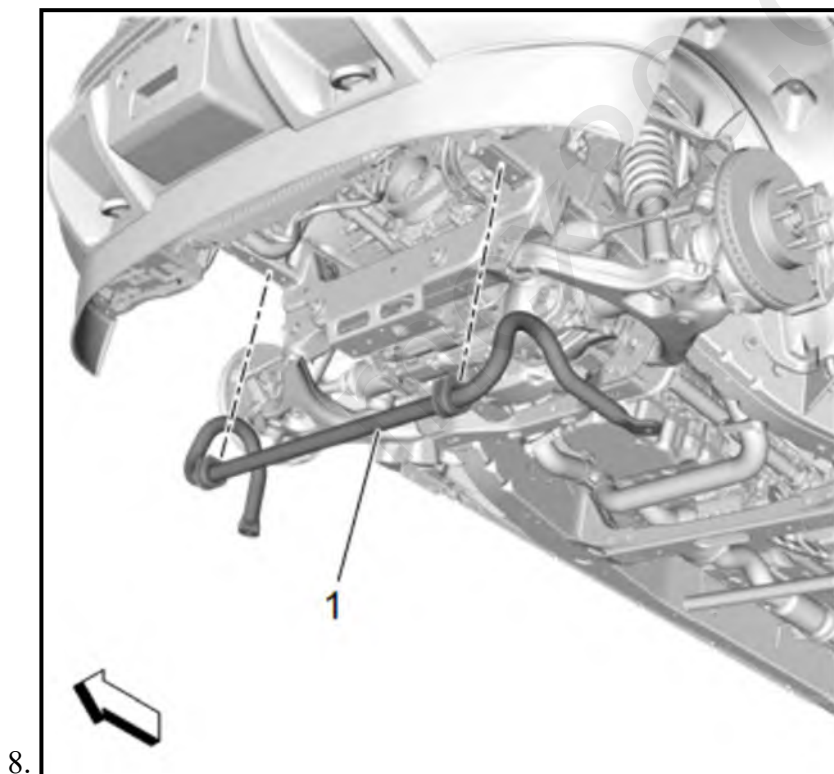
NOTE: <i>All fasteners listed in this table can be reused after removal.</i>	
Application	Specification
	Metric (English)
Front Lower Control Arm Ball Stud Nut (With ZR2)	
• First Pass:	75 N.m (55 lb ft)
• Final Pass:	90 - 105 degrees
Front Lower Control Arm Ball Stud Nut (Without ZR2)	
• First Pass:	65 N.m (48 lb ft)
• Final Pass:	60 - 75 degrees
Front Lower Control Arm Nut	260 N.m (192 lb ft)
Front Shock Absorber Lower Bracket Bolt (Without ZR2)	
• First Pass:	100 N.m (74 lb ft)
• Final Pass:	25 - 35 degrees
Front Shock Absorber Bolt (With ZR2)	50 N.m (37 lb ft)
Front Shock Absorber Nut (Upper Assembly to Frame)	58 N.m (43 lb ft)
Front Shock Absorber Nut (Upper Mount to Spring)	38 N.m (28 lb ft)
Front Stabilizer Shaft Bolt	50 N.m (37 lb ft)
Front Stabilizer Shaft Link Bolt	30 N.m (22 lb ft)
Front Upper Control Arm Ball Stud Nut	
• First Pass:	50 N.m (37 lb ft)
• Final Pass:	90 - 110 degrees
Front Upper Control Arm Nut	160 N.m (118 lb ft)
Front Wheel Bearing and Hub Assembly Bolt	130 N.m (96 lb ft)

ADHESIVES, FLUIDS, LUBRICANTS, AND SEALERS



6. Front Stabilizer Shaft Bolt (1) - Remove [4x]

7. Front Stabilizer Shaft Clamp (2) - Remove [2x]

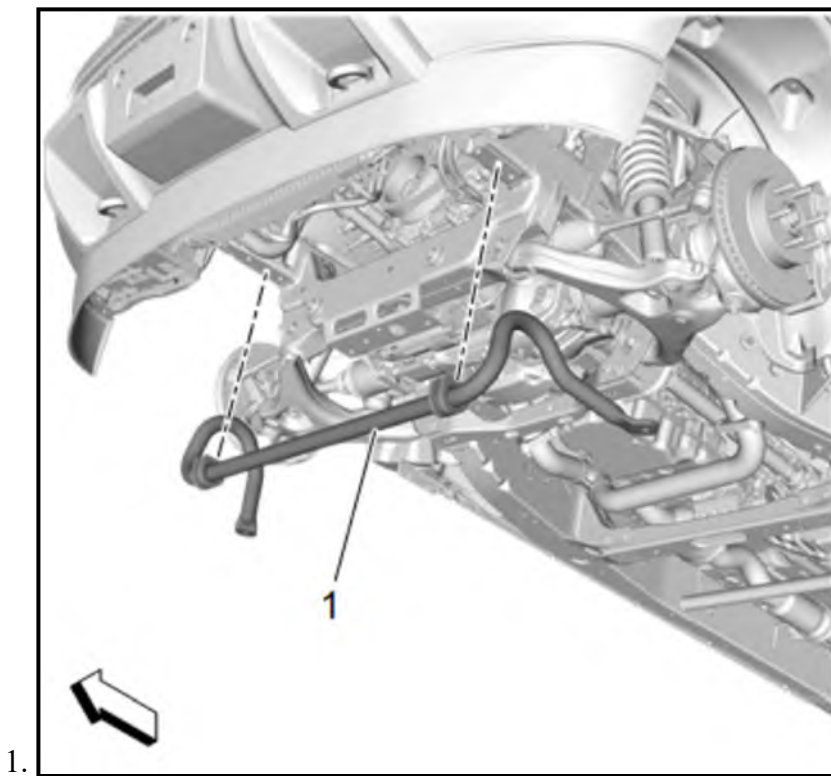


8.

NOTE: The front stabilizer shaft bushings are bonded to and serviced with the front stabilizer shaft (1).

Remove the front stabilizer shaft (1) from the vehicle.

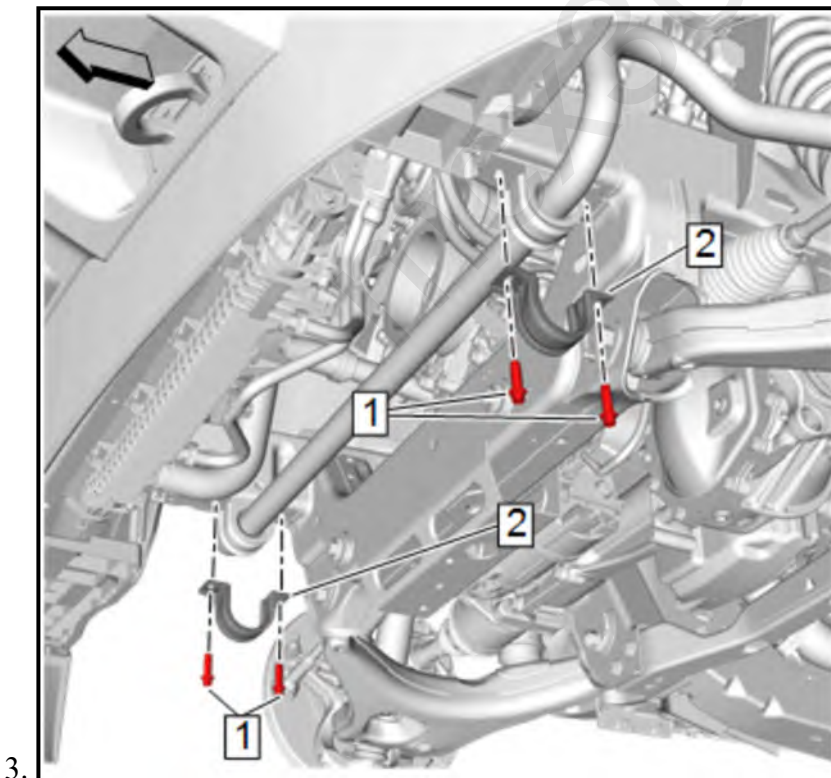
Installation Procedure



NOTE: The front stabilizer shaft bushings are bonded to and serviced with the front stabilizer shaft (1).

Position the front stabilizer shaft (1) on the vehicle.

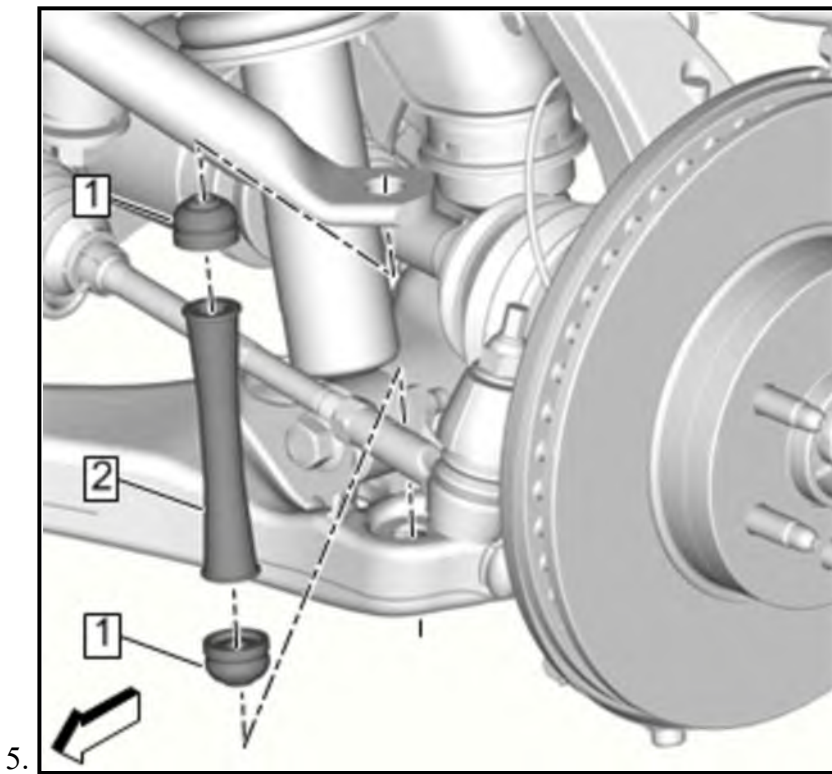
2. Support the center of the front stabilizer shaft with an appropriate jack or stand.



Front Stabilizer Shaft Clamp (2) - Install [2x]

CAUTION: Refer to Fastener Caution .

4. Front Stabilizer Shaft Bolt (1) - Install and tighten [4x] 50 N.m (37 lb ft)

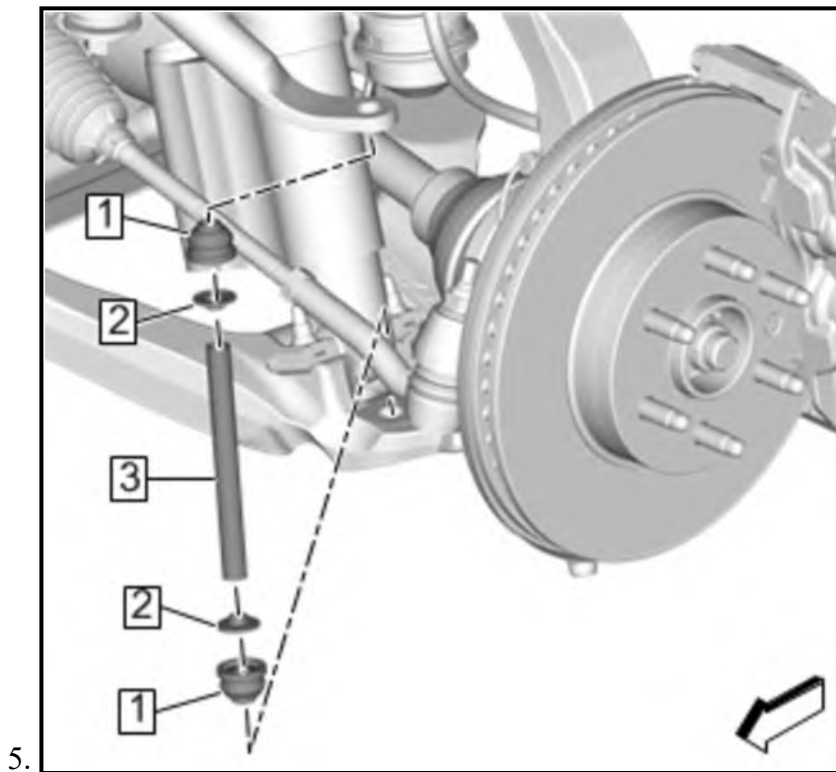


5. Front Stabilizer Shaft Link (2) - Install [2x] - [Stabilizer Shaft Link Replacement \(Without ZR2\)](#).
6. Remove any jacks or stands used.
7. {If equipped} Underbody Splash Shield - Install - [Underbody Splash Shield Replacement \(without ZR2\)](#).
8. Install the front tire and wheel assemblies. [Tire and Wheel Removal and Installation](#)
9. Remove the support and lower the vehicle.

STABILIZER SHAFT REPLACEMENT (WITH ZR2)

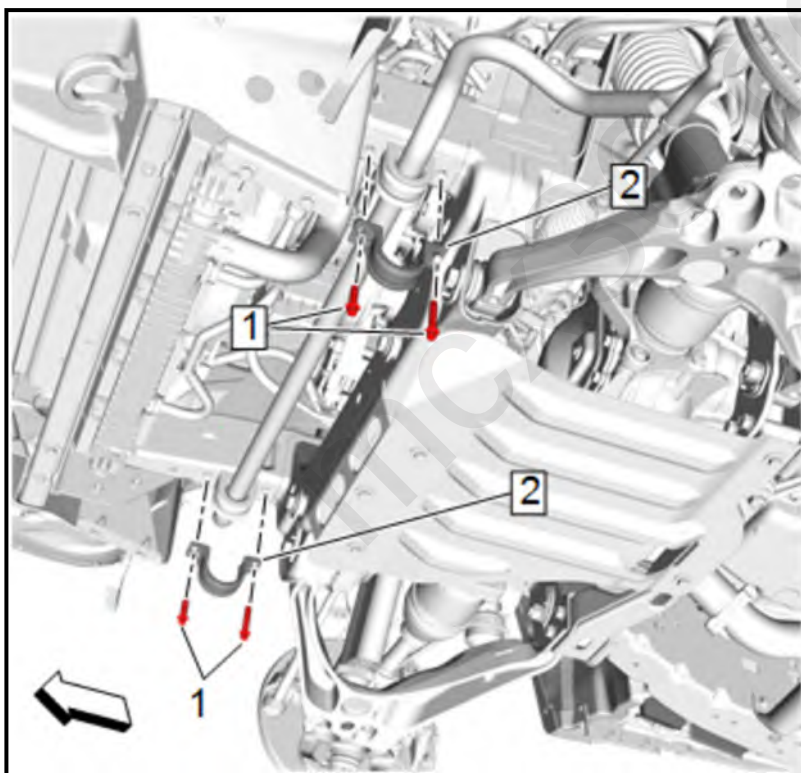
Removal Procedure

1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#)
2. Remove the front tire and wheel assemblies. [Tire and Wheel Removal and Installation](#)
3. Underbody Splash Shield - Remove - [Underbody Splash Shield Replacement \(with ZR2\)](#)
4. Support the center of the front stabilizer shaft with an appropriate jack or stand.



5.

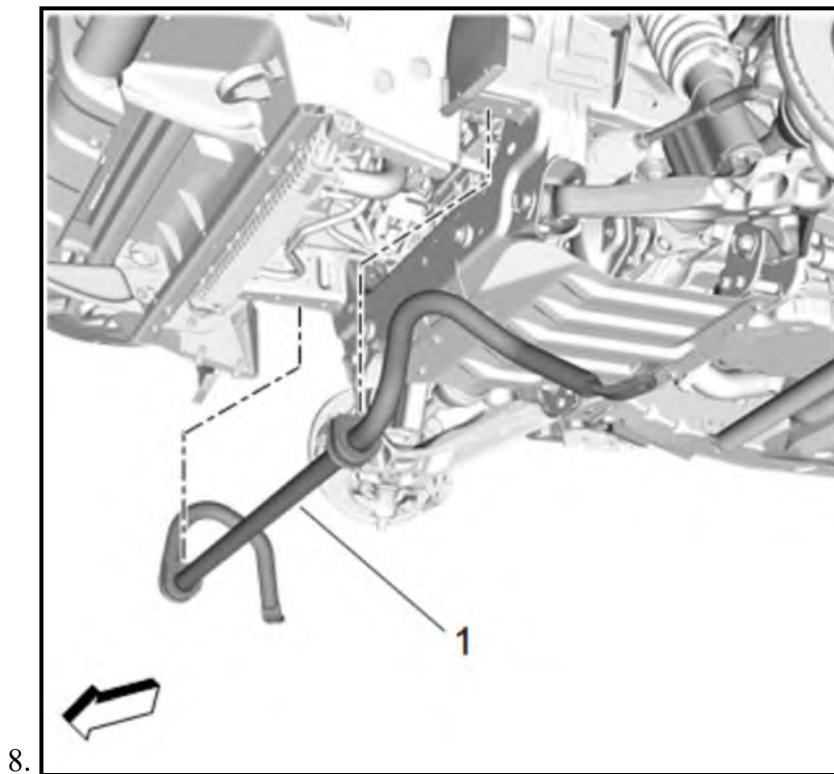
Front Stabilizer Shaft Link (3) - Remove [2x] - [Stabilizer Shaft Link Replacement \(With ZR2\)](#).



6.

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

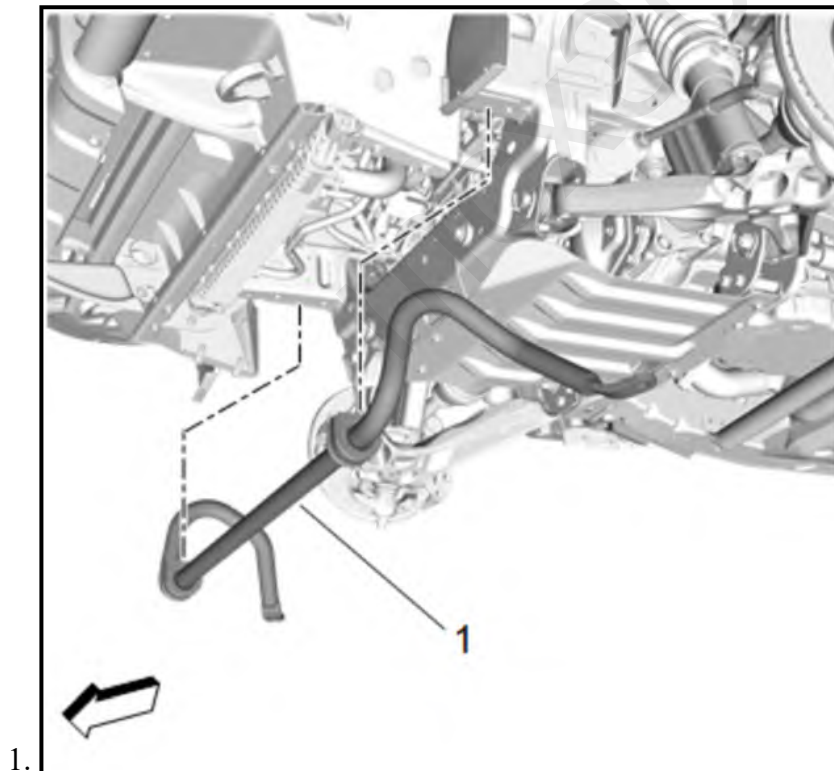
7. Front Stabilizer Shaft Clamp (2) - Remove [2x]



NOTE: The front stabilizer shaft bushings are bonded to and serviced with the front stabilizer shaft (1).

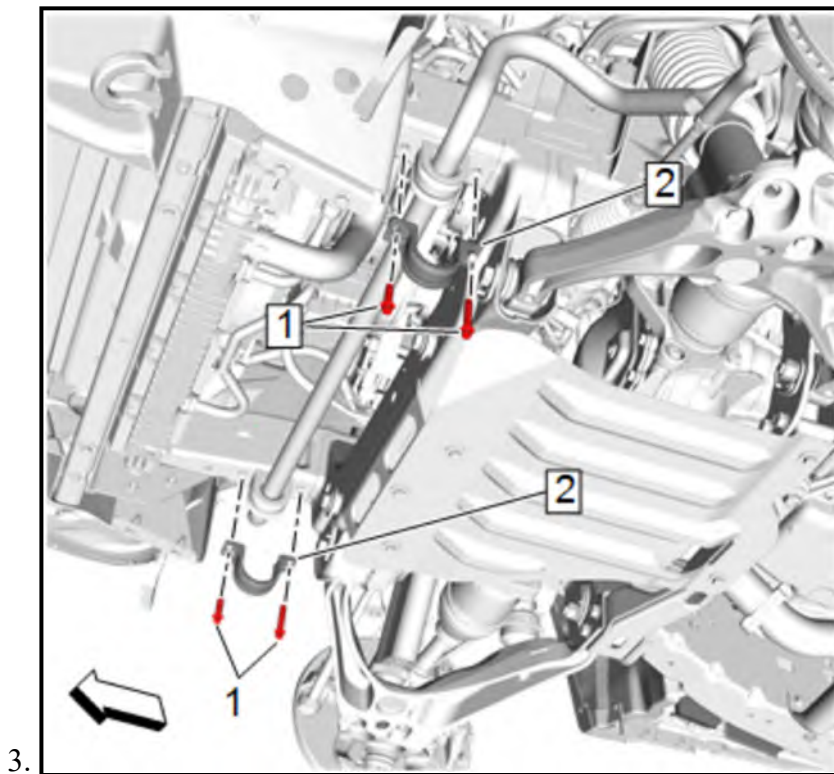
Remove the front stabilizer shaft (1) from the vehicle.

Installation Procedure



Support the center of the front stabilizer shaft (1) with an appropriate jack or stand.

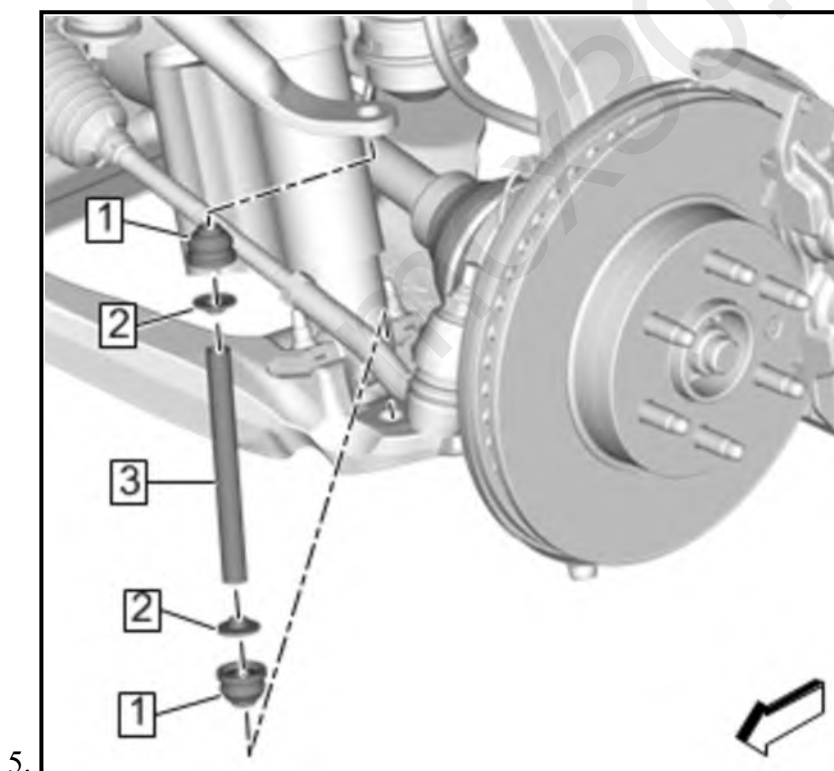
2. Position the front stabilizer shaft (1) on the vehicle.



3. Front Stabilizer Shaft Clamp (2) - Install [2x]

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

4. Front Stabilizer Shaft Bolt (1) - Install and tighten [4x] 50 N.m (37 lb ft)



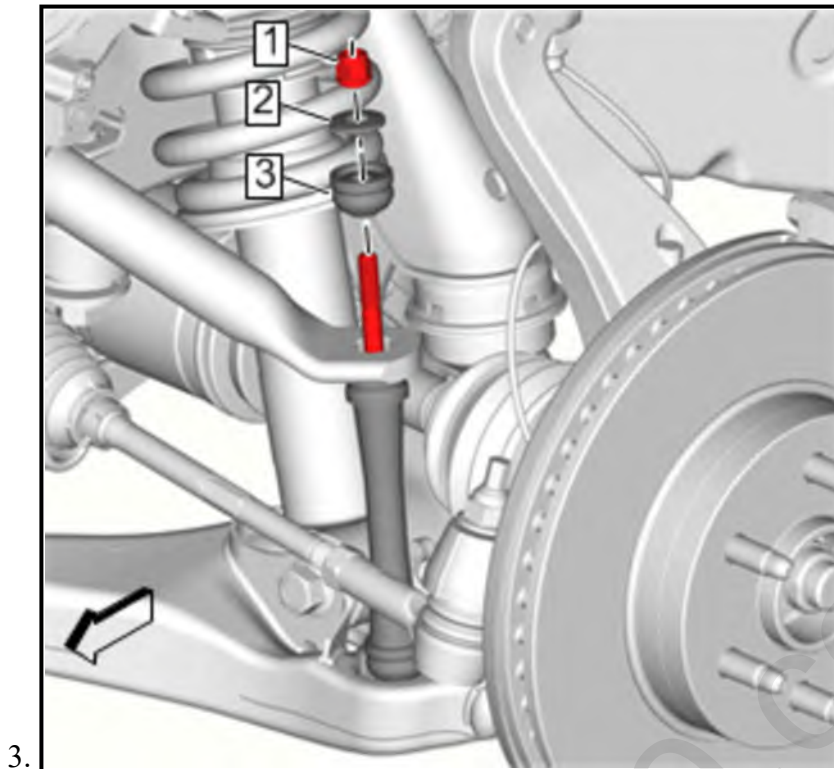
5. Front Stabilizer Shaft Link (3) - Install [2x] - [Stabilizer Shaft Link Replacement \(With ZR2\)](#)

6. Remove any jacks or stands used.
7. Underbody Splash Shield - Install - [Underbody Splash Shield Replacement \(with ZR2\)](#)
8. Install the front tire and wheel assemblies. [Tire and Wheel Removal and Installation](#)
9. Remove the support and lower the vehicle.

STABILIZER SHAFT LINK REPLACEMENT (WITHOUT ZR2)

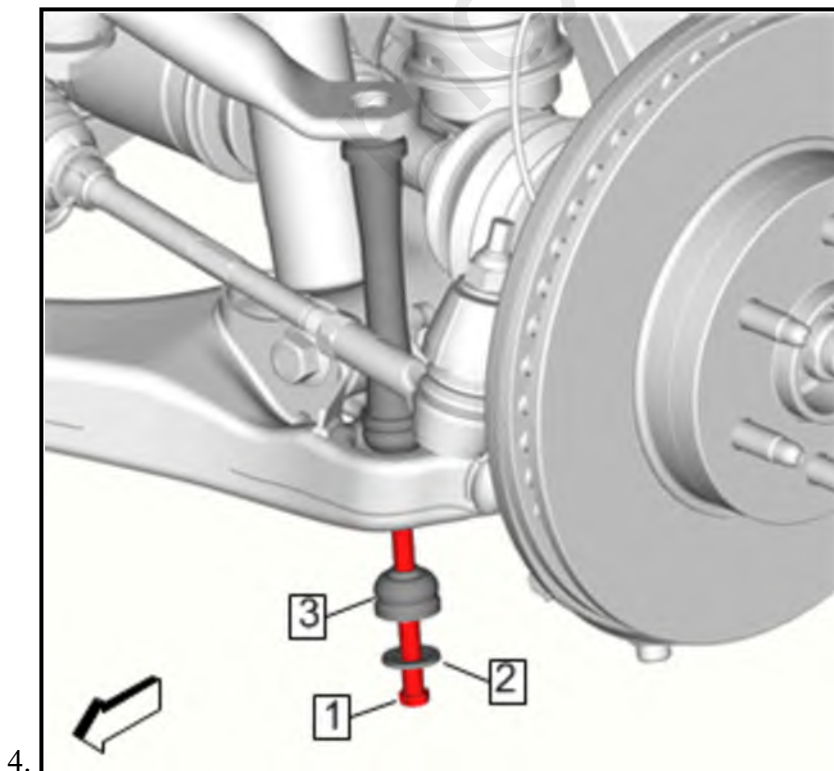
Removal Procedure

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

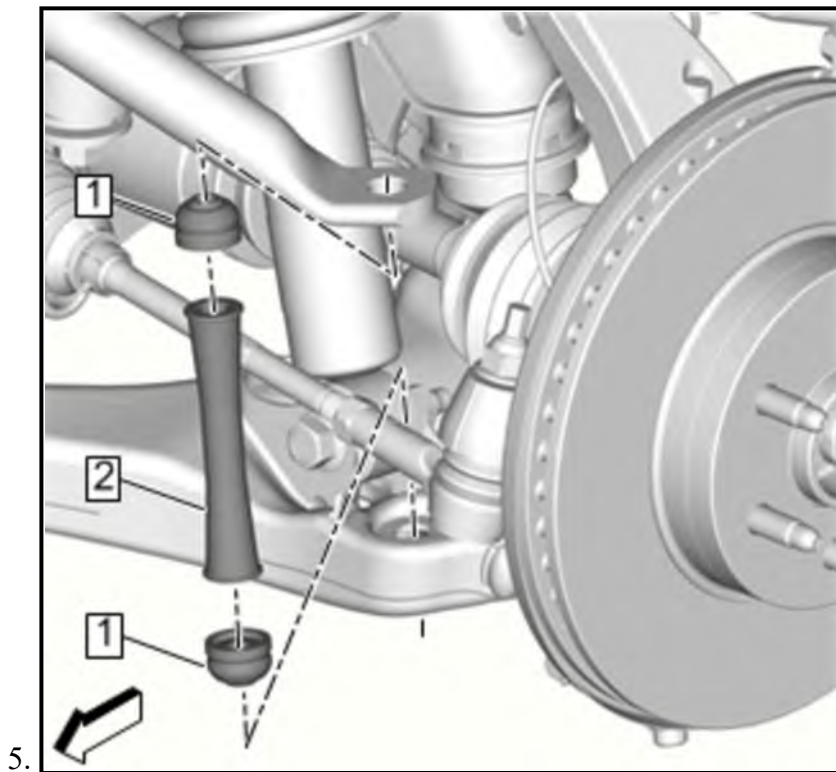


NOTE: Rest the front stabilizer shaft on a suitable support to relieve the tension on the front stabilizer shaft link.

At the top of the front stabilizer shaft link assembly, remove the nut (1), washer (2), and spacer (3).



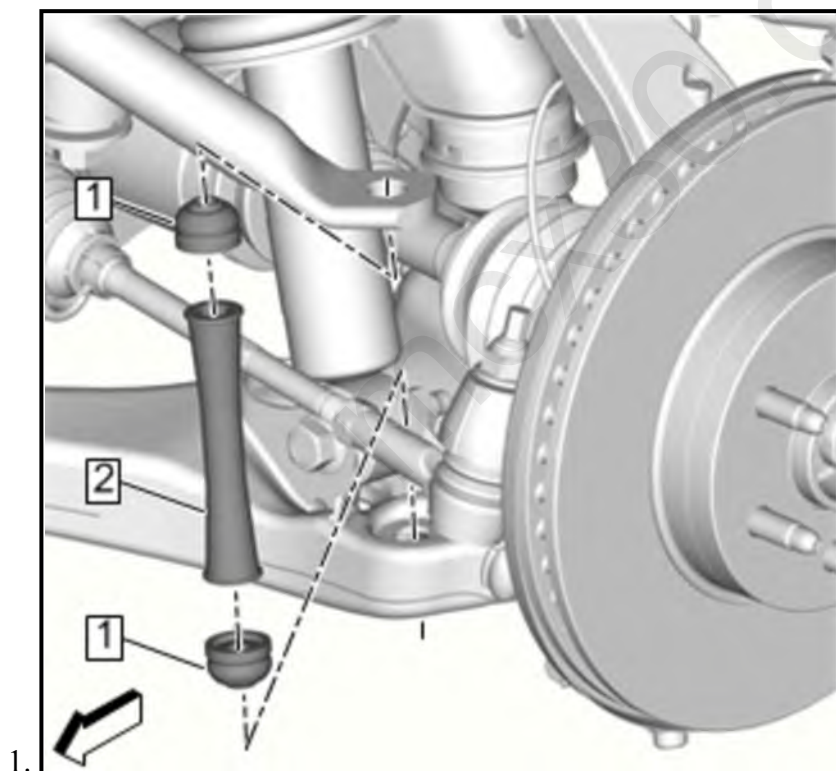
At the bottom of the front stabilizer shaft link assembly, remove the bolt (1), washer (2), and spacer (3).



5.

At the middle of the front stabilizer shaft link assembly, remove the spacers (1) and spacer (2).

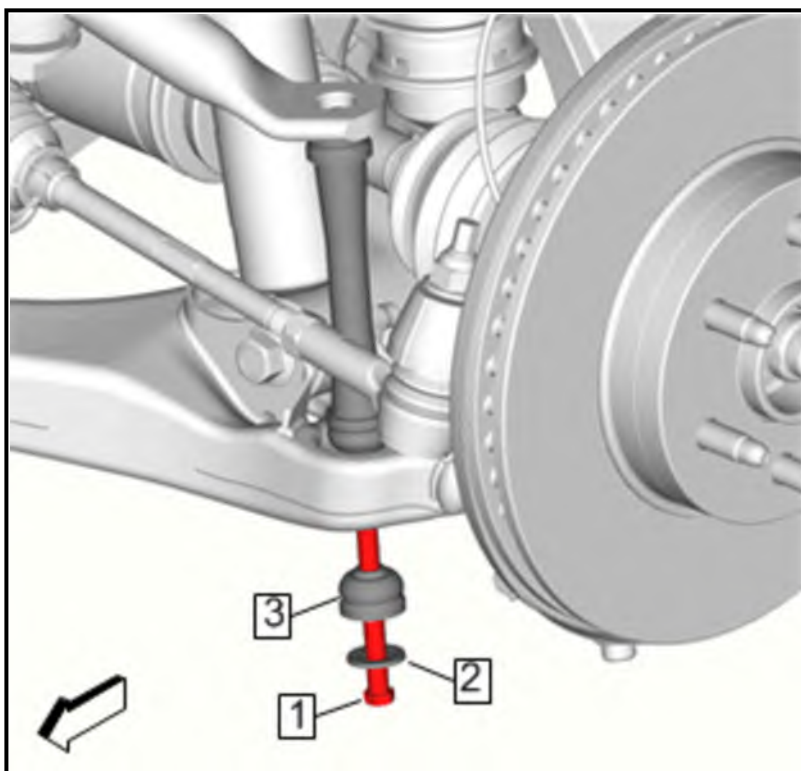
Installation Procedure



1.

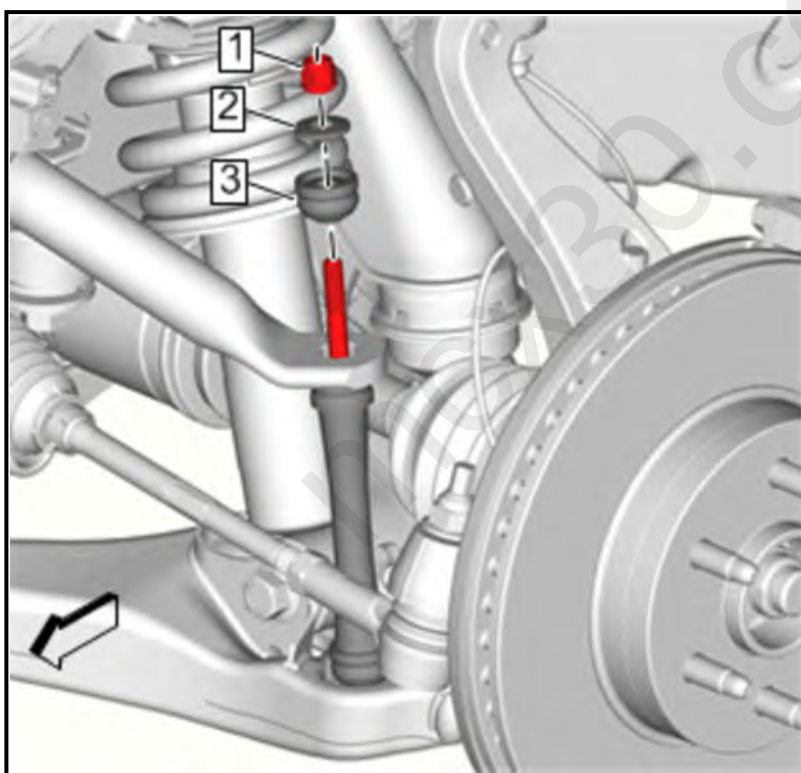
At the middle of the front stabilizer shaft link assembly, install the spacer (2) and spacers (1).

2.

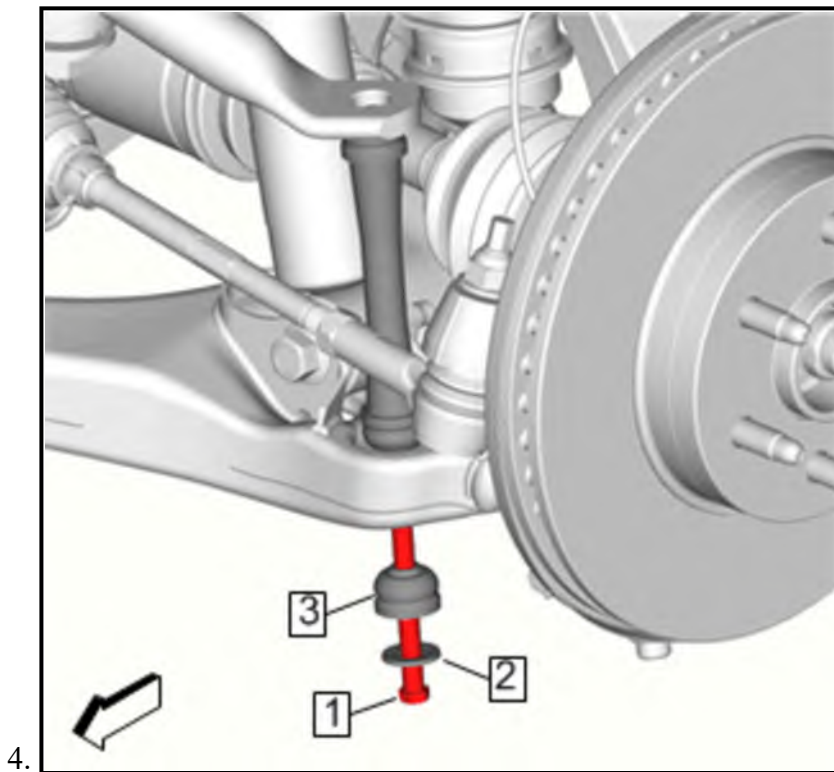


At the bottom of the front stabilizer shaft link assembly, install the spacer (3), washer (2), and bolt (1).

3.



At the top of the front stabilizer shaft link assembly, install the spacer (3), washer (2), and nut (1).



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

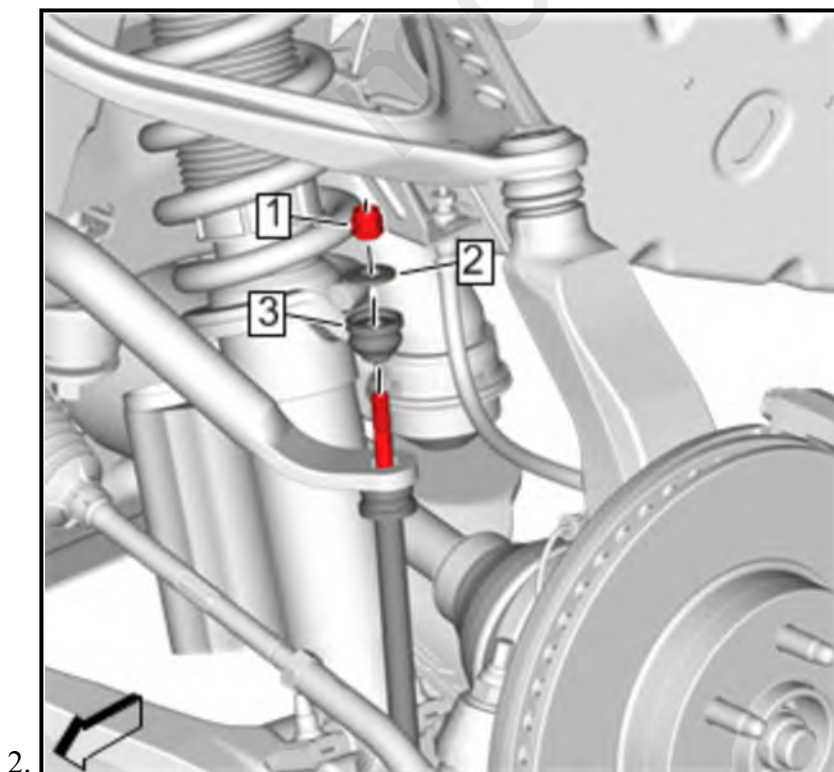
Tighten the front stabilizer shaft link bolt (1) to 30 N.m (22 lb ft).

5. Install the front tire and wheel assembly. [Tire and Wheel Removal and Installation](#)
6. Remove the support and lower the vehicle.

STABILIZER SHAFT LINK REPLACEMENT (WITH ZR2)

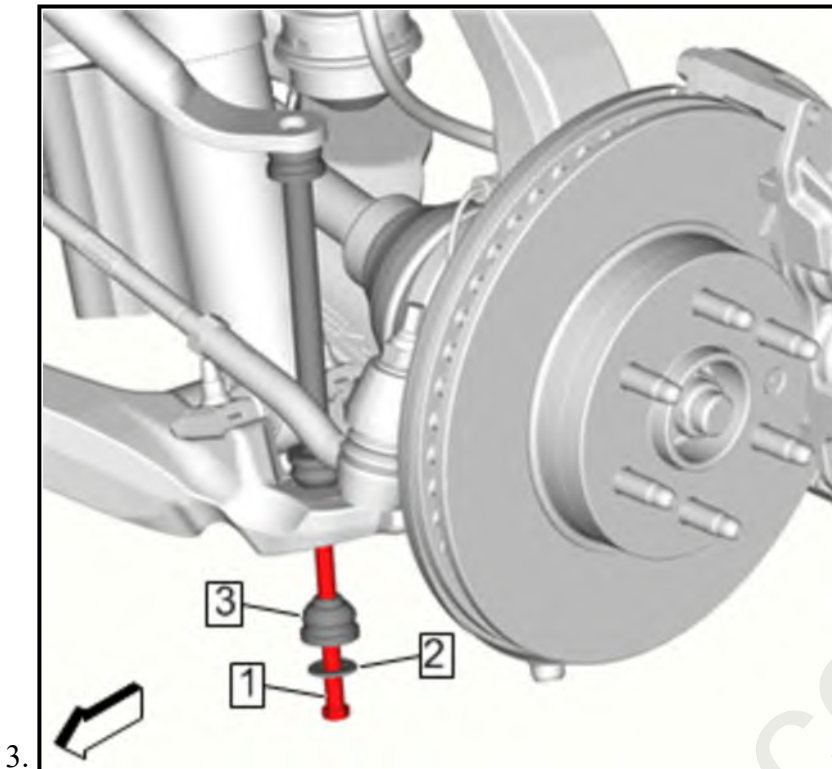
Removal Procedure

1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#)

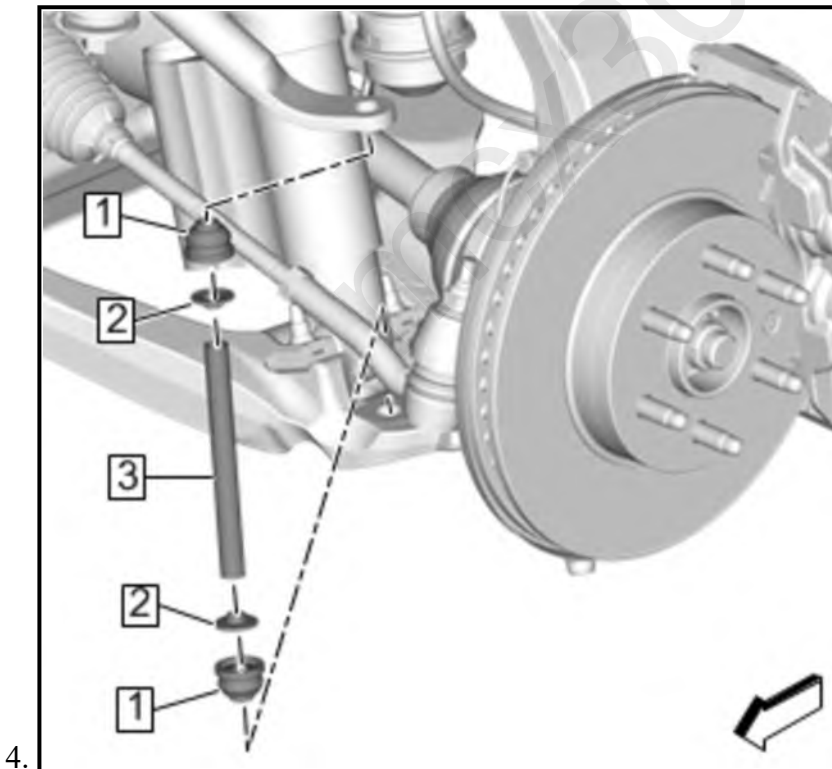


NOTE: Rest the front stabilizer shaft on a suitable support to relieve the tension on the front stabilizer shaft link.

At the top of the front stabilizer shaft link assembly, remove the nut (1), washer (2), and spacer (3).

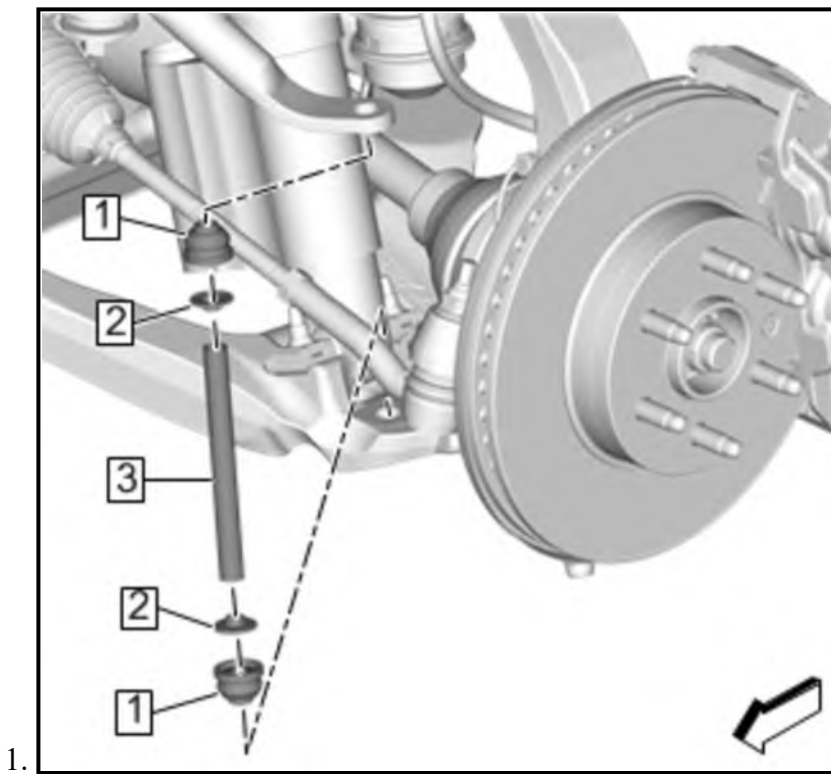


At the bottom of the front stabilizer shaft link assembly, remove the bolt (1), washer (2), and spacer (3).

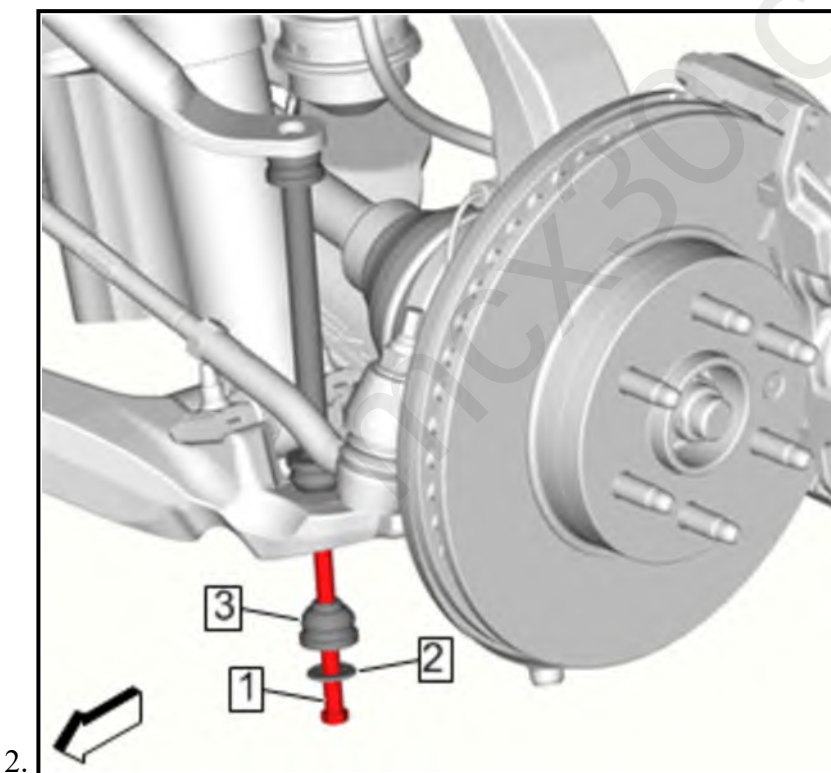


At the middle of the front stabilizer shaft link assembly, remove the spacers (1), washers (2), and spacer (3).

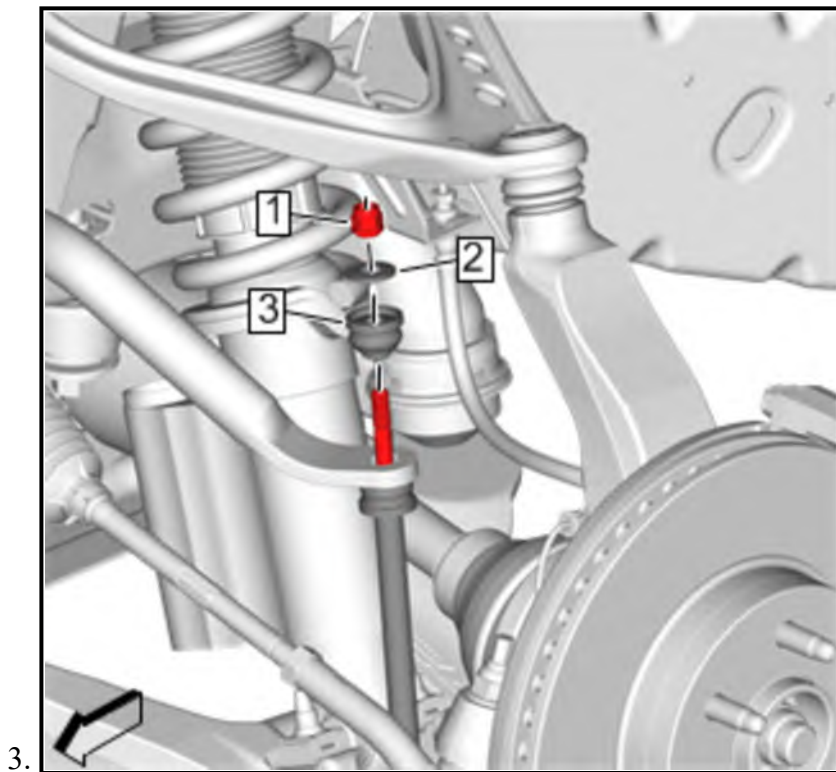
Installation Procedure



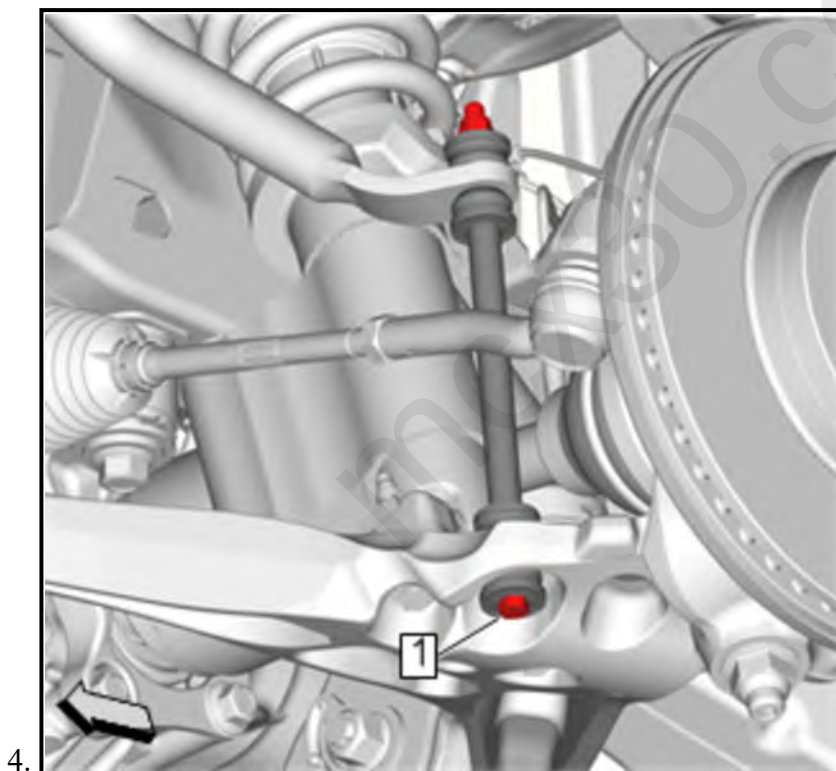
1. At the middle of the front stabilizer shaft link assembly, install the spacer (3), washers (2), and spacers (1).



2. At the bottom of the front stabilizer shaft link assembly, install the spacer (3), washer (2), and bolt (1).



At the top of the front stabilizer shaft link assembly, install the spacer (3), washer (2), and nut (1).



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

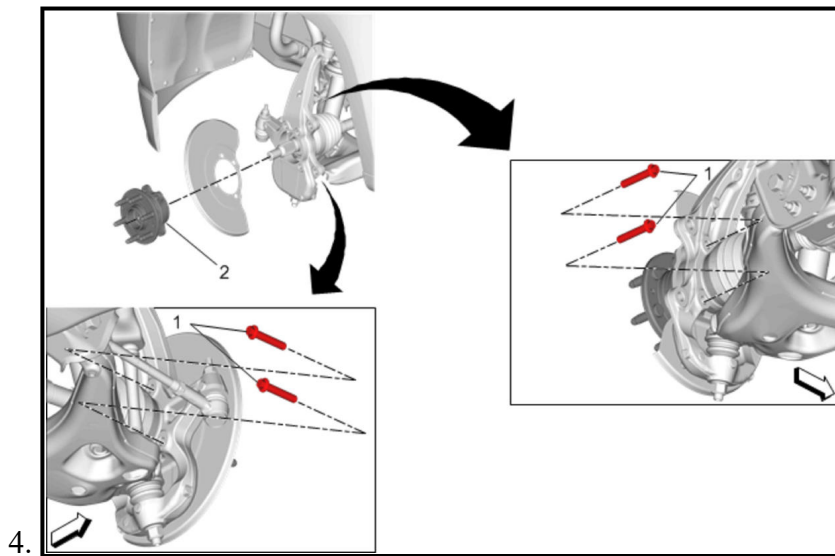
Tighten the front stabilizer shaft link bolt (1) to 30 N.m (22 lb ft).

FRONT WHEEL BEARING AND HUB REPLACEMENT (4WD, WITHOUT ZR2)

Removal Procedure

1. Remove the front wheel speed sensor from the steering knuckle and set aside. [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#)

2. Front Wheel Drive Shaft @ Front Wheel Bearing and Hub Assembly - Separate - [Front Wheel Drive Shaft Replacement - Left Side \(Without ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Right Side \(Without ZR2\)](#)
3. Front Brake Rotor - Remove - [Front Brake Rotor Replacement](#)



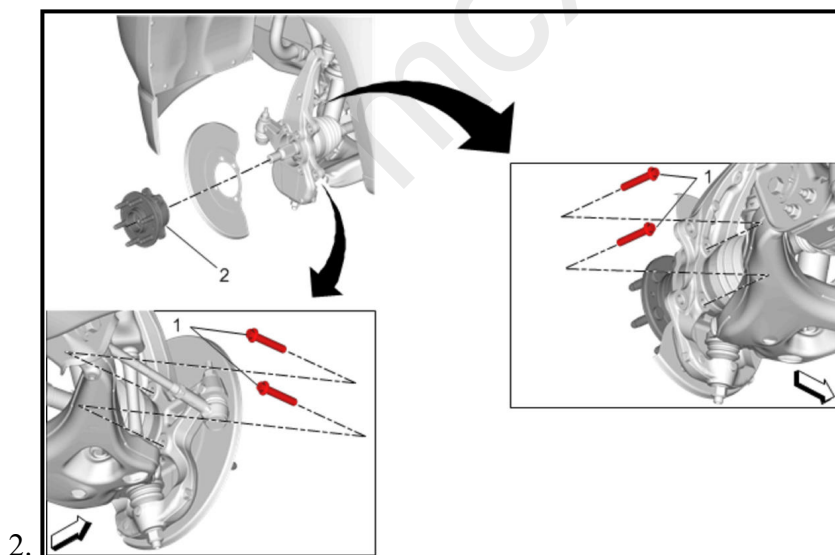
Front Wheel Hub Bolt (1) - Remove [4x]

5. Front Wheel Bearing and Hub Assembly (2) - Remove

Installation Procedure

1. 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.



Front Wheel Bearing and Hub Assembly (2) - Install

3. If NEW threaded components are being installed, loosen the adhesive using a metal pick or similar tool before proceeding. If threaded components are reused, prepare the threaded components using the following steps:
 1. Remove any loose cured adhesive from the external threads of the components using a lint free cloth.

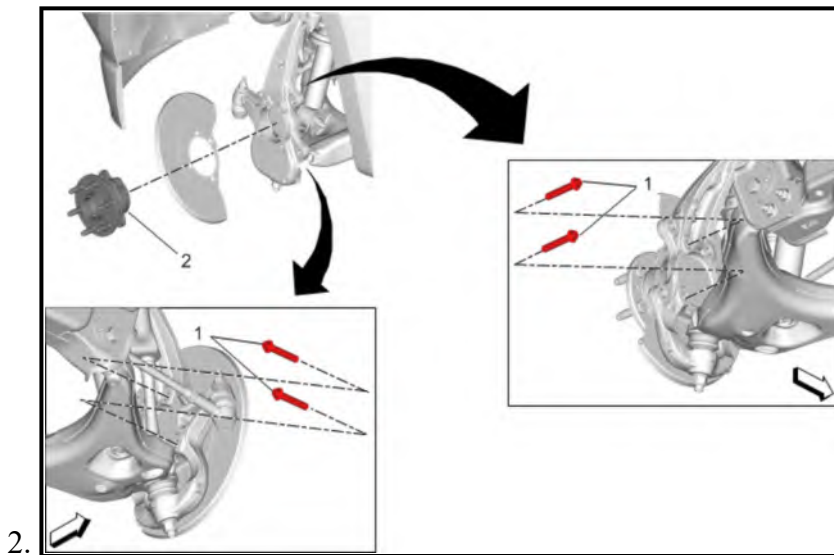
2. Thread the cleaned components into the internal mating threads and remove to loosen trapped cured adhesive.
3. Apply thread locking adhesive to the external threads of the components.
4. Ensure there are no gaps in the thread locking adhesive once applied to the component.

4. Install the four front wheel hub bolts (1) and tighten to 130 N.m (96 lb ft).
5. Front Brake Rotor - Install - [Front Brake Rotor Replacement](#)
6. Front Wheel Drive Shaft @ Front Wheel Bearing and Hub Assembly - Install - [Front Wheel Drive Shaft Replacement - Left Side \(Without ZR2\)](#), or [Front Wheel Drive Shaft Replacement - Right Side \(Without ZR2\)](#).
7. Install the front wheel speed sensor to the steering knuckle. [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#)

Removal Procedure

Front Wheel Hub Bolt [4x] - Remove

Installation Procedure



2. Front Wheel Bearing and Hub Assembly (2) - Install
3. If NEW threaded components are being installed, loosen the adhesive using a metal pick or similar tool before proceeding. If threaded components are reused, prepare the threaded components using the following steps:
1. Remove any loose cured adhesive from the external threads of the components using a lint free cloth.
 2. Thread the cleaned components into the internal mating threads and remove to loosen trapped cured adhesive.
 3. Apply thread locking adhesive to the external threads of the components.
 4. Ensure there are no gaps in the thread locking adhesive once applied to the component.

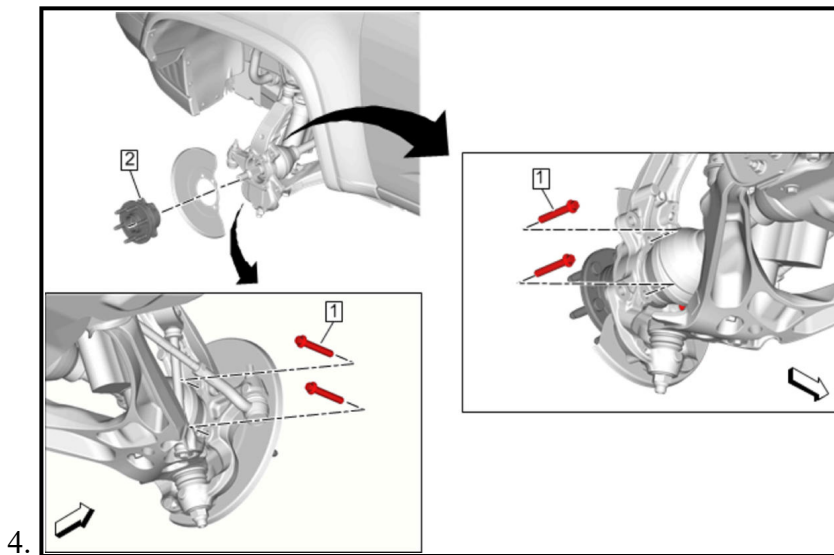
CAUTION: Refer to [Fastener Caution](#) .

4. Install the four front wheel hub bolts (1) and tighten to 130 N.m (96 lb ft).
5. Front Brake Rotor - Install - [Front Brake Rotor Replacement](#)
6. Install the front wheel speed sensor to the steering knuckle. [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#).

FRONT WHEEL BEARING AND HUB REPLACEMENT (4WD, WITH ZR2)

Removal Procedure

1. Remove the front wheel speed sensor from the steering knuckle and set aside. [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).
2. Front Wheel Drive Shaft @ Front Wheel Bearing and Hub Assembly - Separate - [Front Wheel Drive Shaft Replacement - Left Side \(With ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Right Side \(With ZR2\)](#).
3. Front Brake Rotor - Remove - [Front Brake Rotor Replacement](#)



4.

Front Wheel Hub Bolt [4x] - Remove

5. Front Wheel Bearing and Hub Assembly (2) - Remove

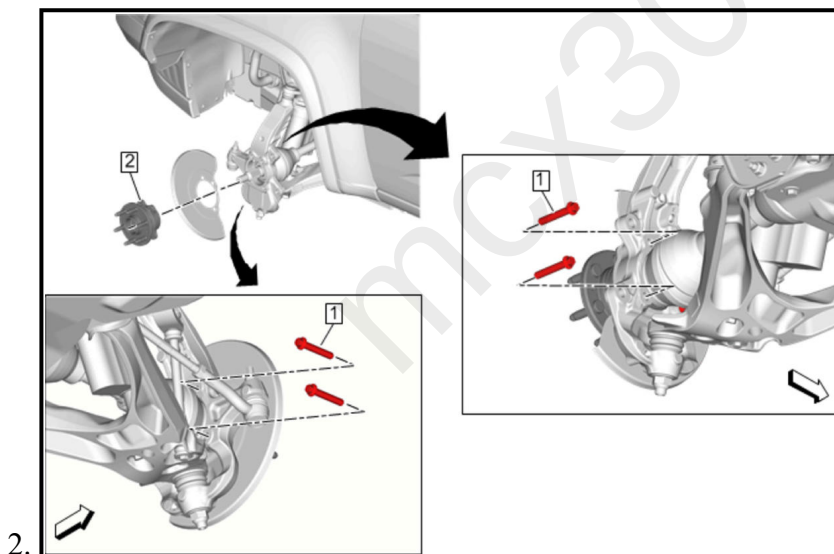
Installation Procedure

1. 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.



2.

Front Wheel Bearing and Hub Assembly (2) - Install

3. If NEW threaded components are being installed, loosen the adhesive using a metal pick or similar tool before proceeding. If threaded components are reused, prepare the threaded components using the following steps:

1. Remove any loose cured adhesive from the external threads of the components using a lint free cloth.
2. Thread the cleaned components into the internal mating threads and remove to loosen trapped cured adhesive.
3. Apply thread locking adhesive to the external threads of the components.
4. Ensure there are no gaps in the thread locking adhesive once applied to the component.

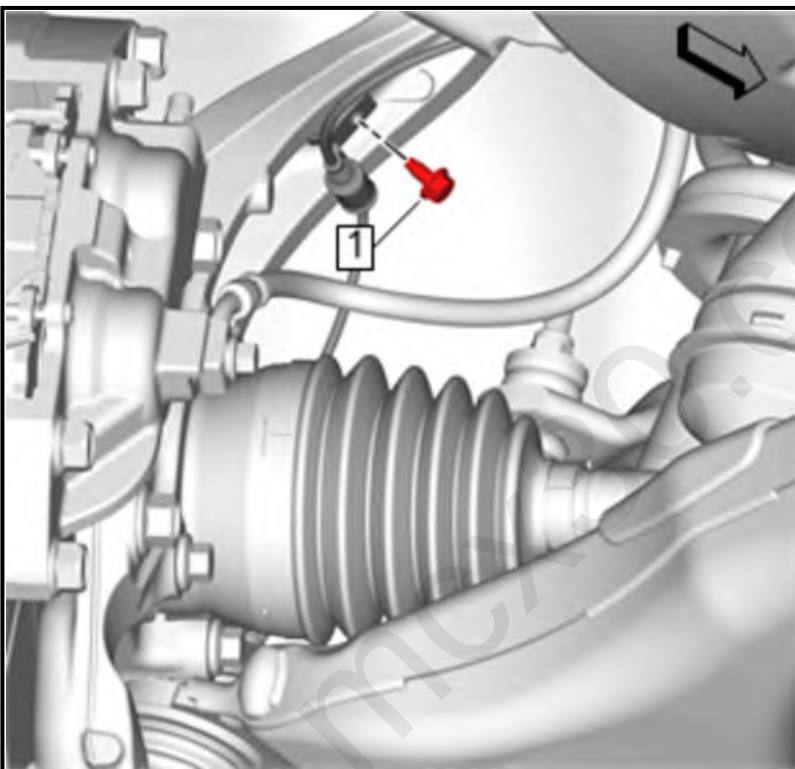
CAUTION: Refer to [Fastener Caution](#) .

4. Install the four front wheel hub bolts (1) and tighten to 130 N.m (96 lb ft).
5. Front Brake Rotor - Install - [Front Brake Rotor Replacement](#)
6. Front Wheel Drive Shaft @ Front Wheel Bearing and Hub Assembly - Install - [Front Wheel Drive Shaft Replacement - Left Side \(With ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Right Side \(With ZR2\)](#).
7. Install the front wheel speed sensor to the steering knuckle. [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).

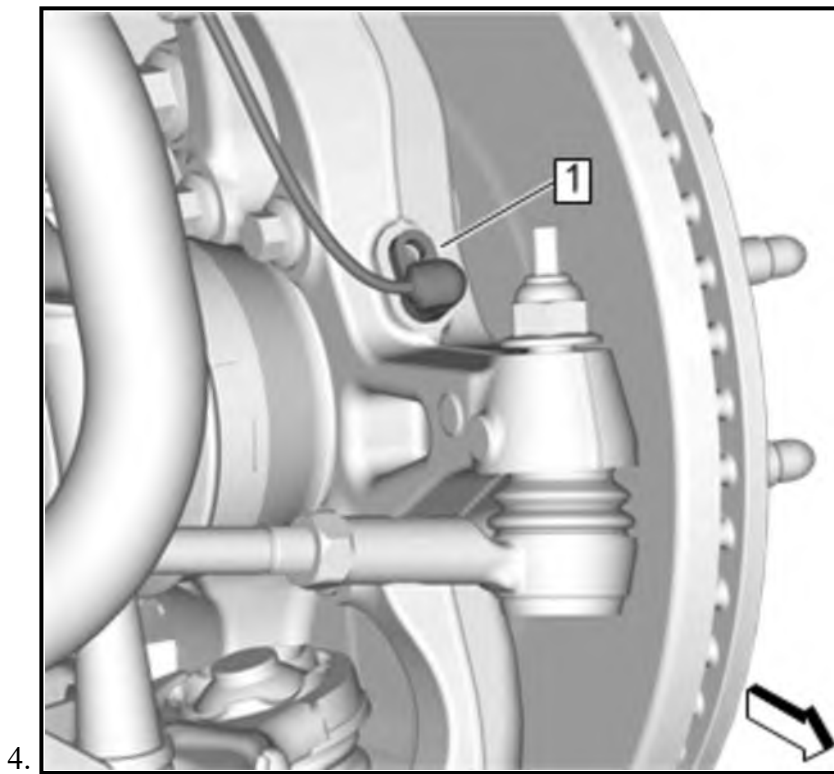
STEERING KNUCKLE REPLACEMENT (4WD WITHOUT ZR2)

Removal Procedure

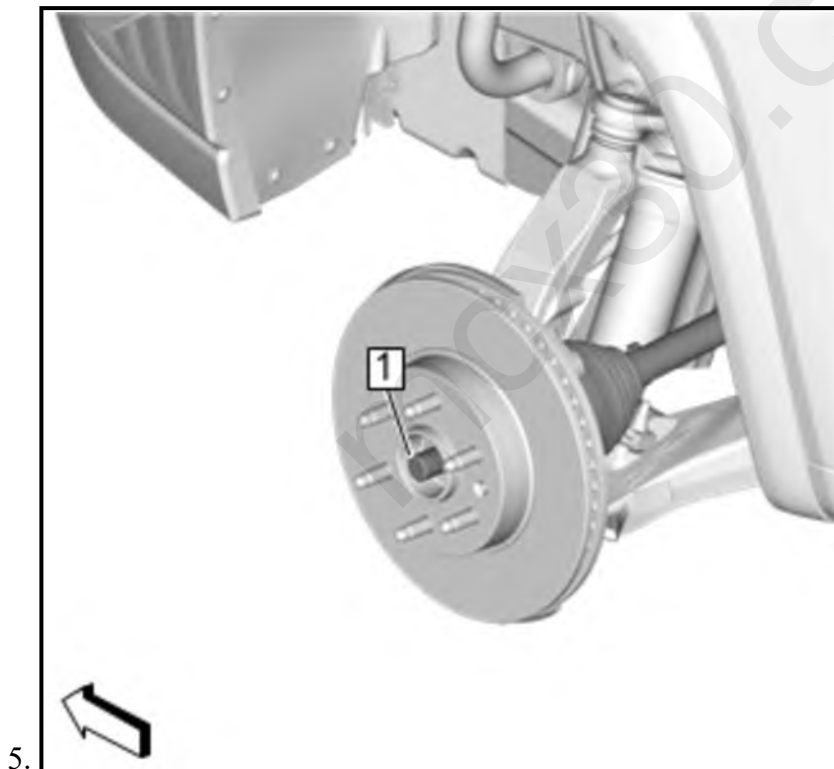
1. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#)
2. Remove the front tire and wheel assembly. [Tire and Wheel Removal and Installation](#)



3. Remove the front wheel speed sensor harness bracket bolt (1). [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#).



Remove the front wheel speed sensor (1) from the steering knuckle and set aside. [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#)



Front Wheel Drive Shaft (1) @ Front Wheel Bearing and Hub Assembly - Separate

- [Front Wheel Drive Shaft Replacement - Left Side \(Without ZR2\)](#)
- [Front Wheel Drive Shaft Replacement - Right Side \(Without ZR2\)](#)

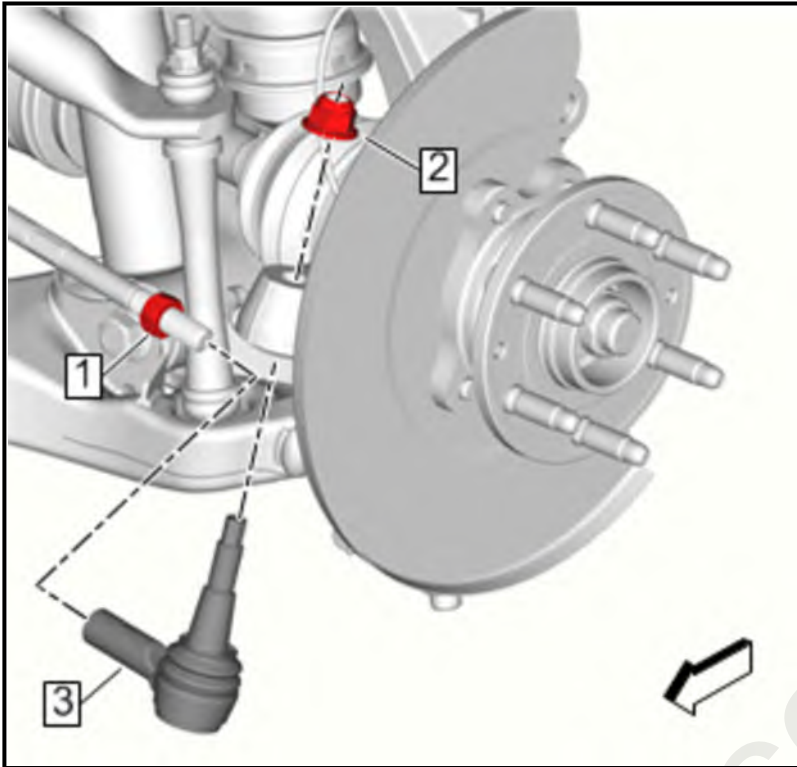
CAUTION:

Support the brake caliper with heavy mechanic wire, or equivalent, whenever it is separated from its mount and the hydraulic flexible brake hose is still connected. Failure to support the caliper in this manner will cause the flexible brake hose to bear the weight of the caliper, which may cause damage to the brake hose and in turn may cause a brake fluid leak.

6. Without disconnecting the front brake hose, remove the front brake caliper from the steering knuckle.

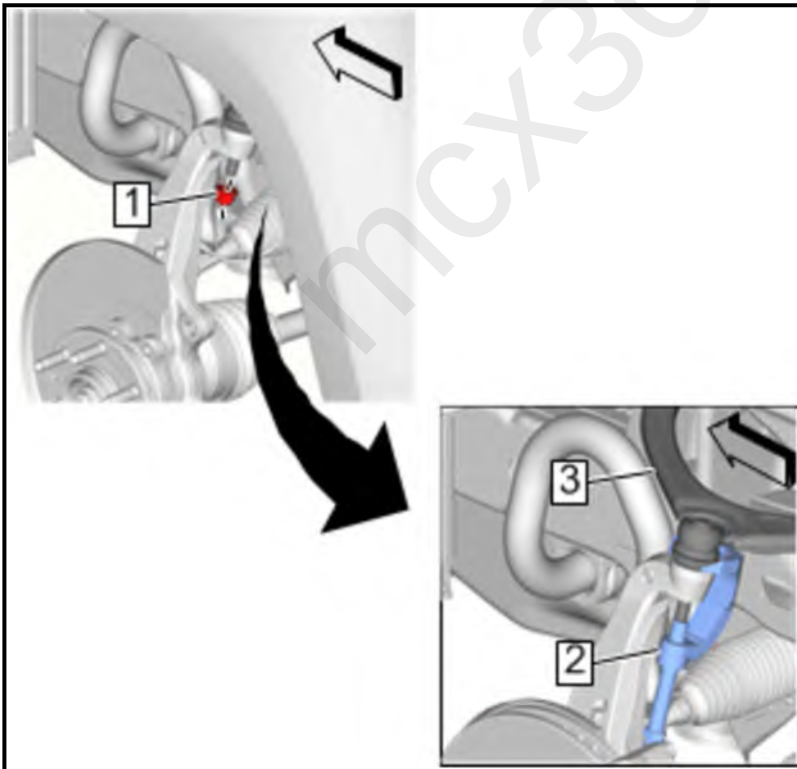
Front Brake Caliper Replacement

7. Support the brake caliper with heavy mechanics wire.



8.

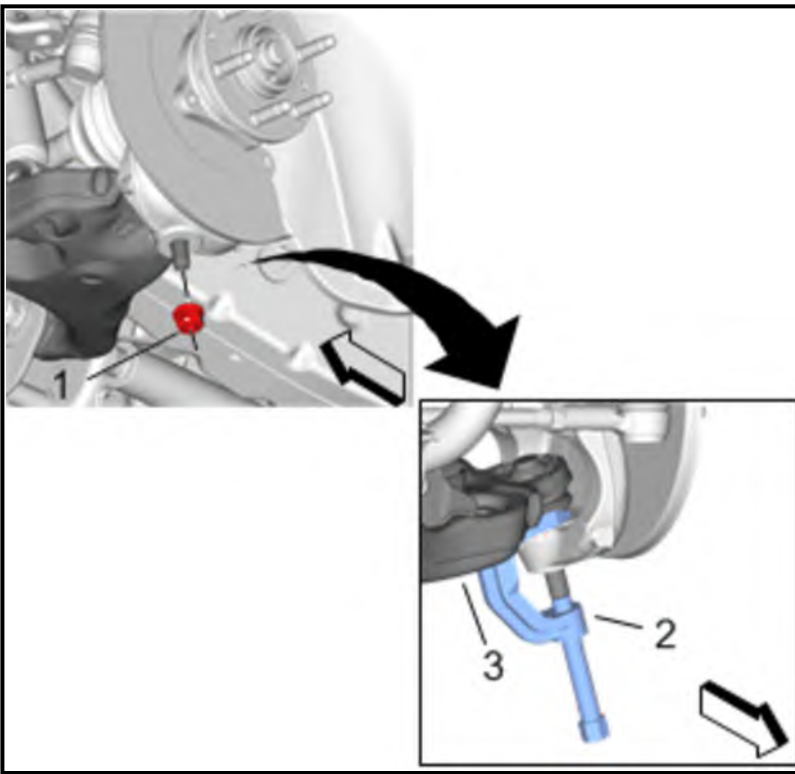
Steering Linkage Outer Tie Rod (3) @ Steering Knuckle - Separate - **Steering Linkage Outer Tie Rod Replacement (Without ZR2)**



9.

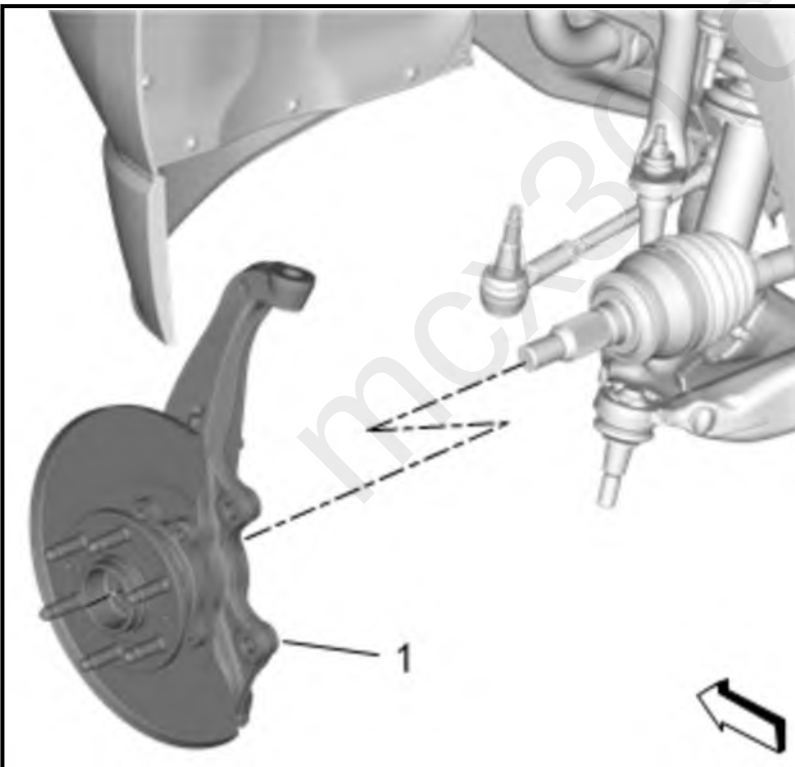
Front Upper Control Arm (3) @ Steering Knuckle - Separate - **Upper Control Arm Replacement (Without ZR2)**

10.



Front Lower Control Arm (3) @ Steering Knuckle - Separate - [Lower Control Arm Replacement \(2WD, Without ZR2\)](#), or [Lower Control Arm Replacement \(4WD, Without ZR2\)](#).

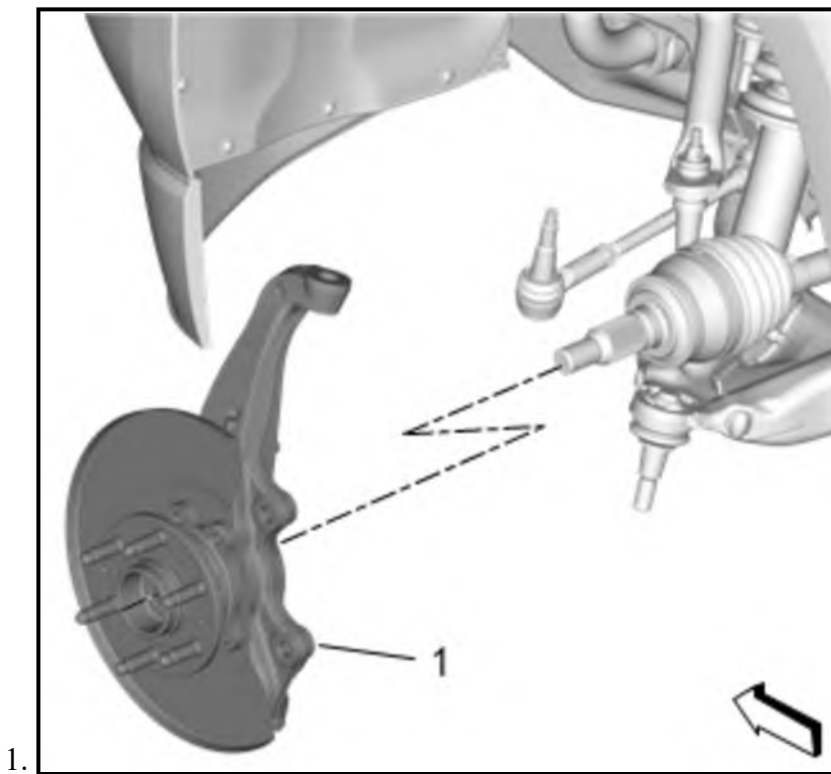
11.



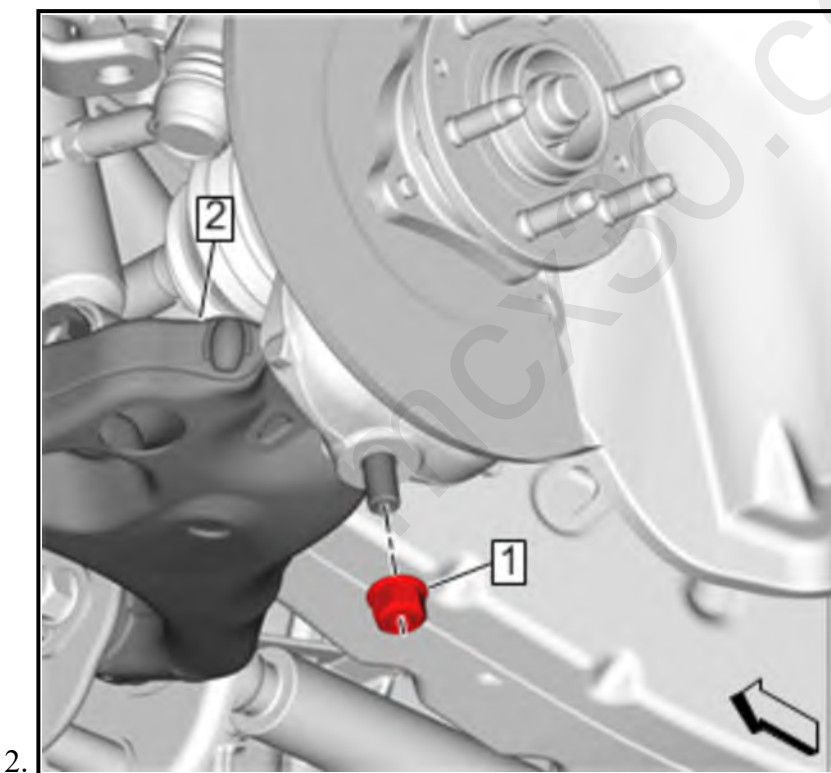
Remove the steering knuckle (1) from the vehicle.

12. Transfer components as necessary.

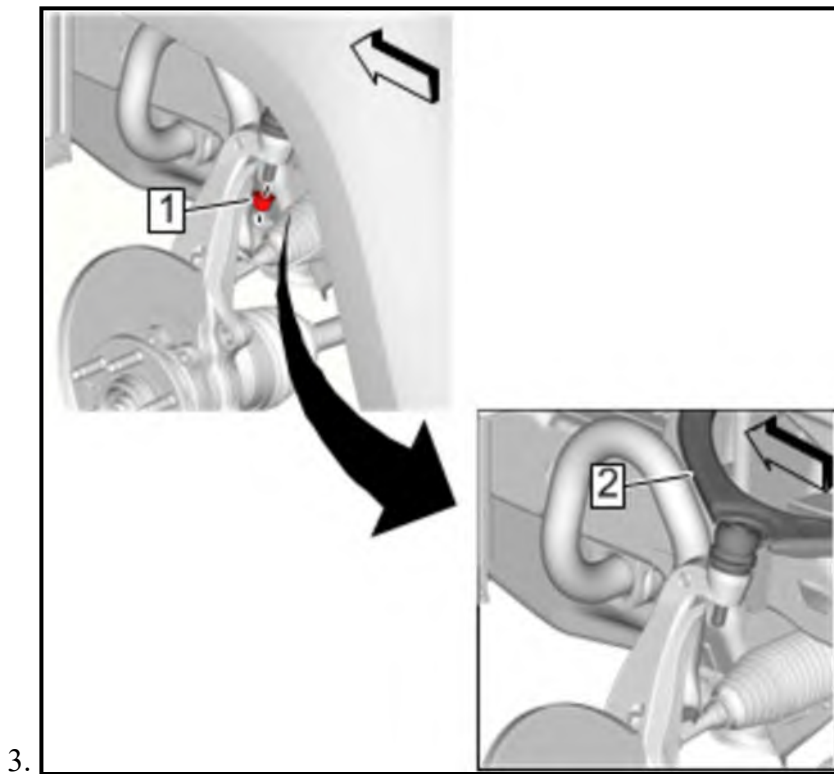
Installation Procedure



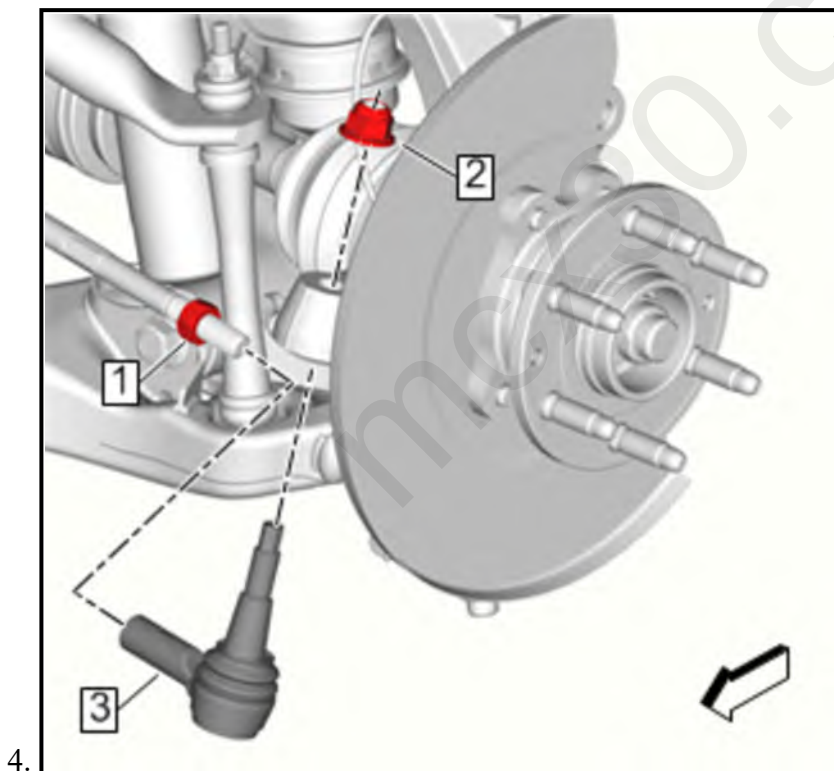
Position the steering knuckle (1) on the vehicle.



Front Lower Control Arm (2) @ Steering Knuckle - Install - [Lower Control Arm Replacement \(2WD, Without ZR2\)](#), or [Lower Control Arm Replacement \(4WD, Without ZR2\)](#).

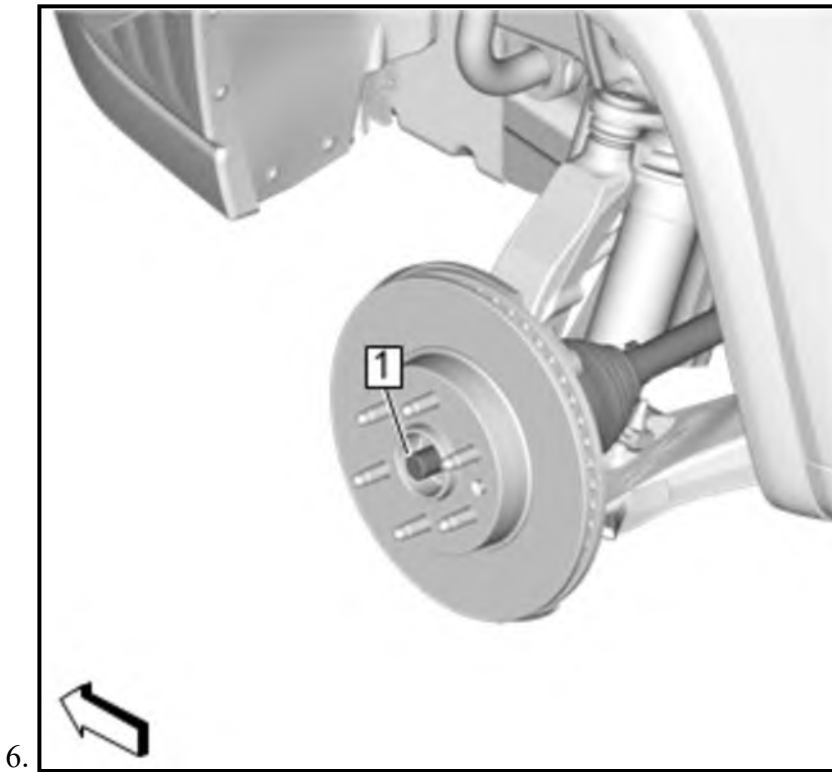


Front Upper Control Arm (2) @ Steering Knuckle - Install - [Upper Control Arm Replacement \(Without ZR2\)](#)



Steering Linkage Outer Tie Rod (3) @ Steering Knuckle - Install - [Steering Linkage Outer Tie Rod Replacement \(Without ZR2\)](#)

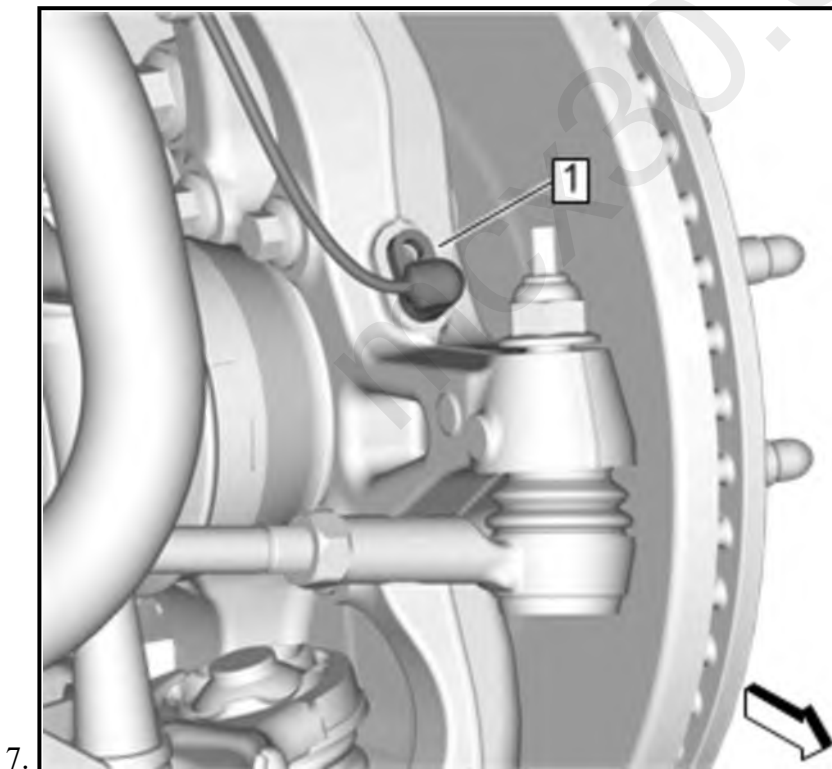
5. Front Brake Caliper @ Steering Knuckle - Install - [Front Brake Caliper Replacement](#)



6.

Front Wheel Drive Shaft (1) @ Front Wheel Bearing and Hub Assembly - Install

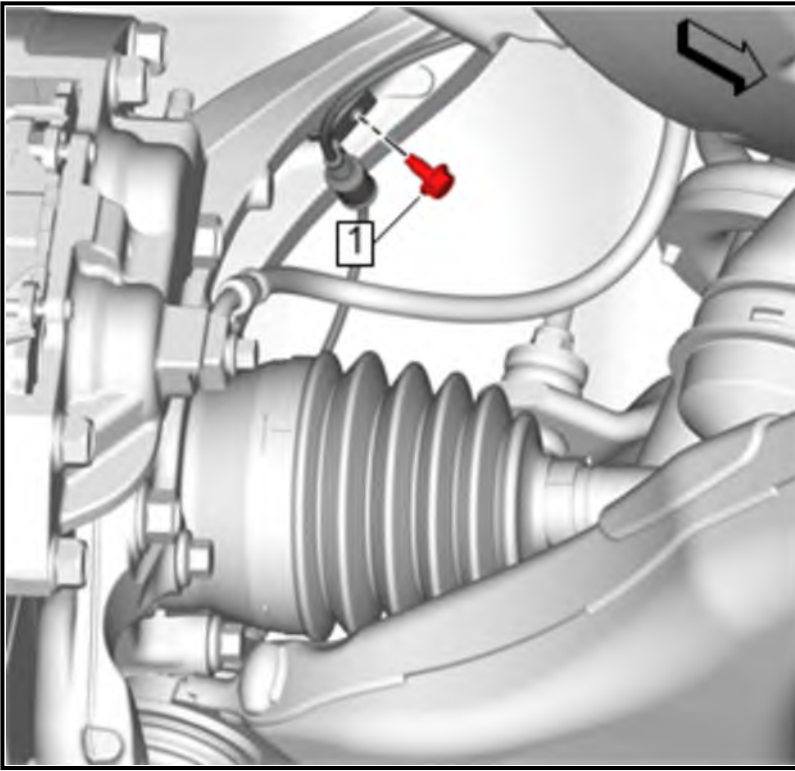
- [Front Wheel Drive Shaft Replacement - Left Side \(Without ZR2\).](#)
- [Front Wheel Drive Shaft Replacement - Right Side \(Without ZR2\).](#)



7.

Front Wheel Speed Sensor (1) - Install - [Front Wheel Speed Sensor Replacement \(Without ZR2\).](#)

8.



Install the front wheel speed sensor harness bracket bolt (1). [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#)

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

10. Remove the support and lower the vehicle.

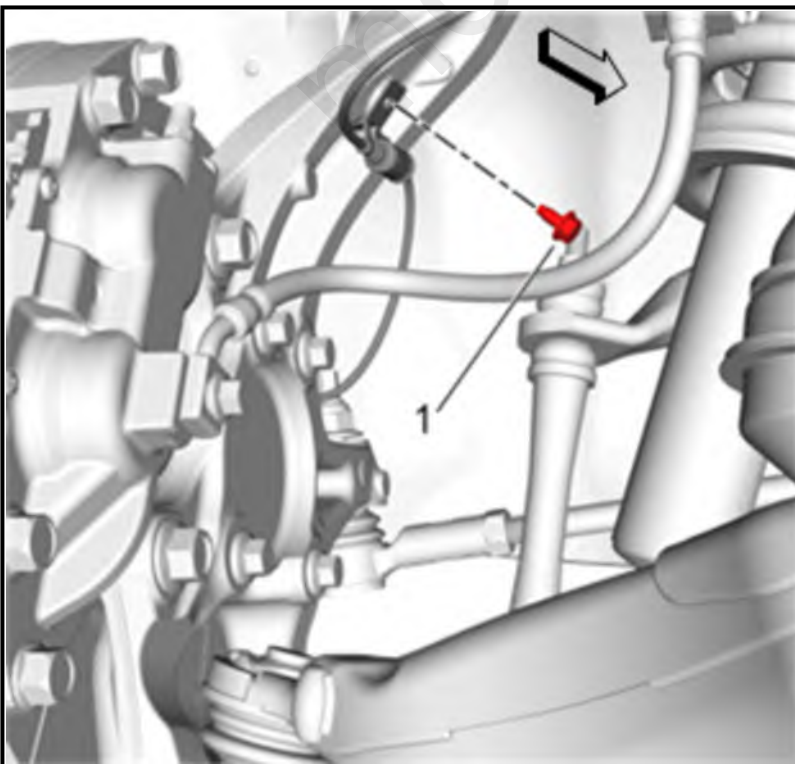
11. Measure and adjust the wheel alignment. [Wheel Alignment Measurement](#)

STEERING KNUCKLE REPLACEMENT (2WD)

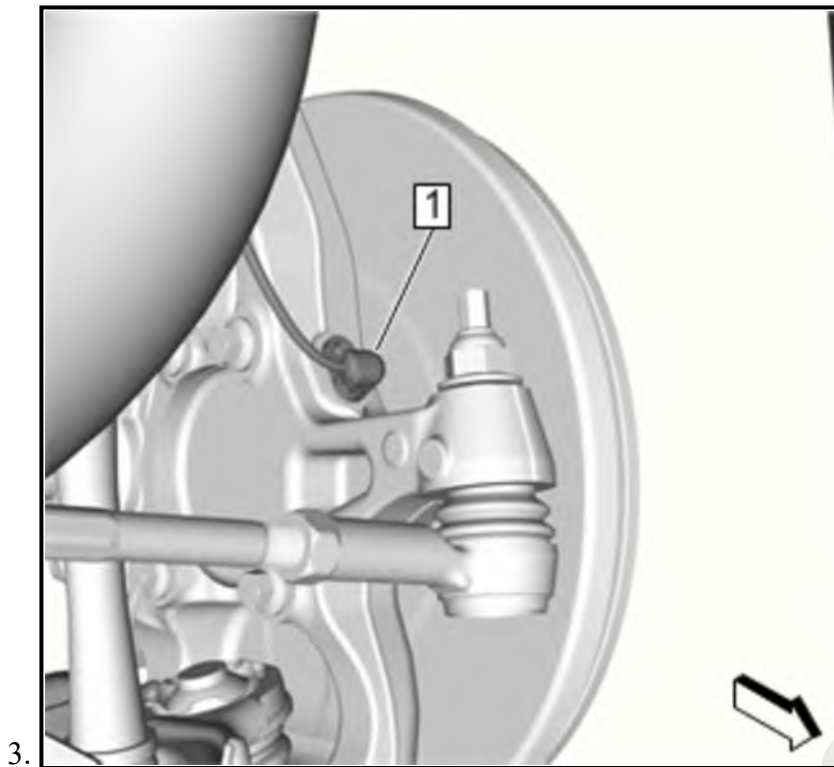
Removal Procedure

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

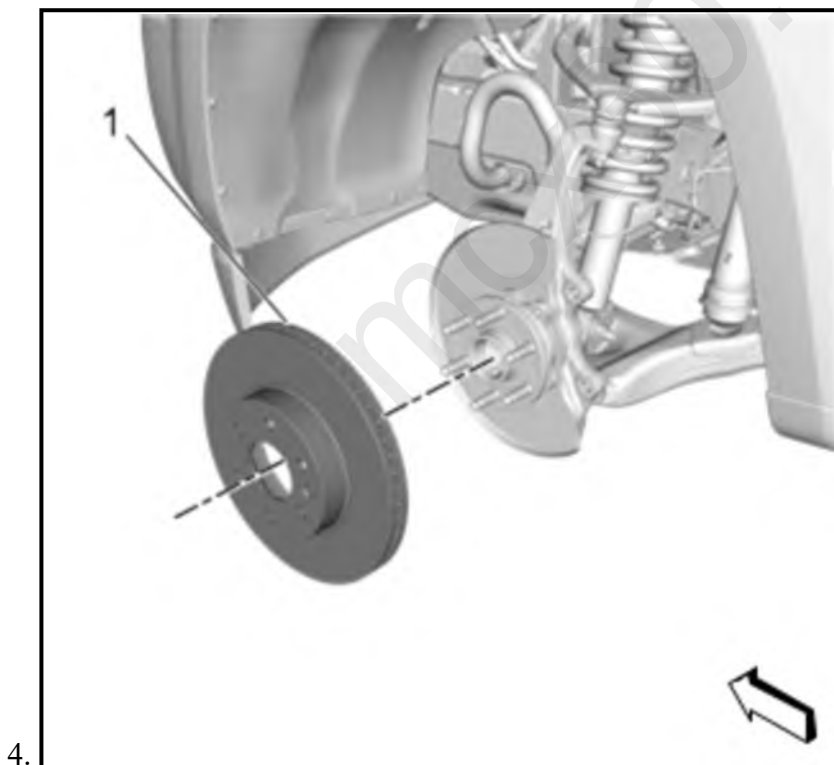
2.



Remove the front wheel speed sensor harness bracket bolt (1). [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#) , or [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).

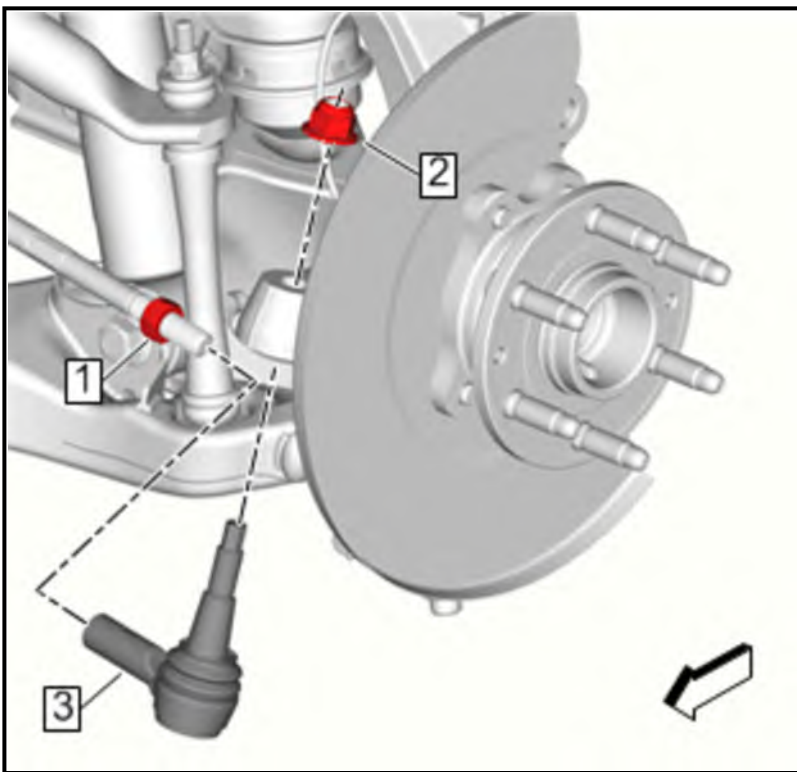


Remove the front wheel speed sensor (1) from the steering knuckle and set aside. [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#) , or [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).



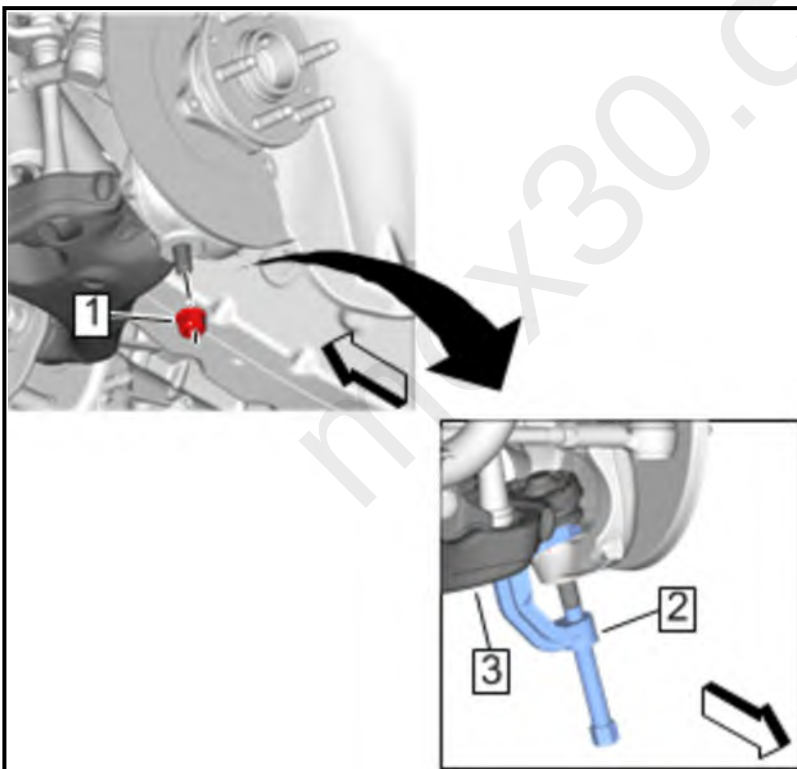
Front Brake Rotor (1) - Remove - [Front Brake Rotor Replacement](#)

5.

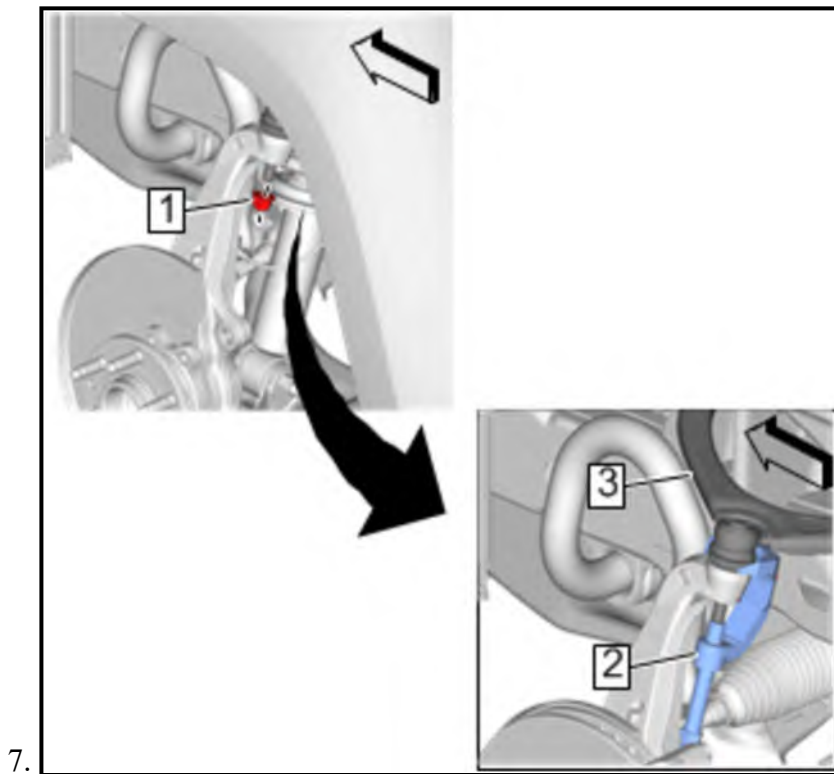


Steering Linkage Outer Tie Rod (3) @ Steering Knuckle - Separate - [Steering Linkage Outer Tie Rod Replacement \(Without ZR2\)](#), or [Steering Linkage Outer Tie Rod Replacement \(With ZR2\)](#)

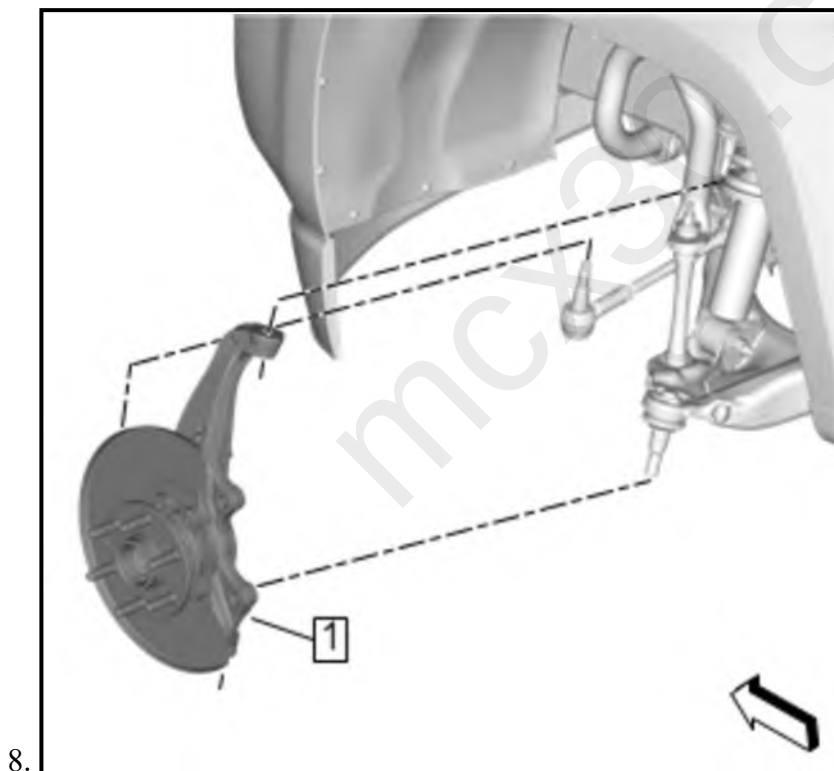
6.



Front Lower Control Arm (3) @ Steering Knuckle - Separate - [Lower Control Arm Replacement \(2WD, Without ZR2\)](#)



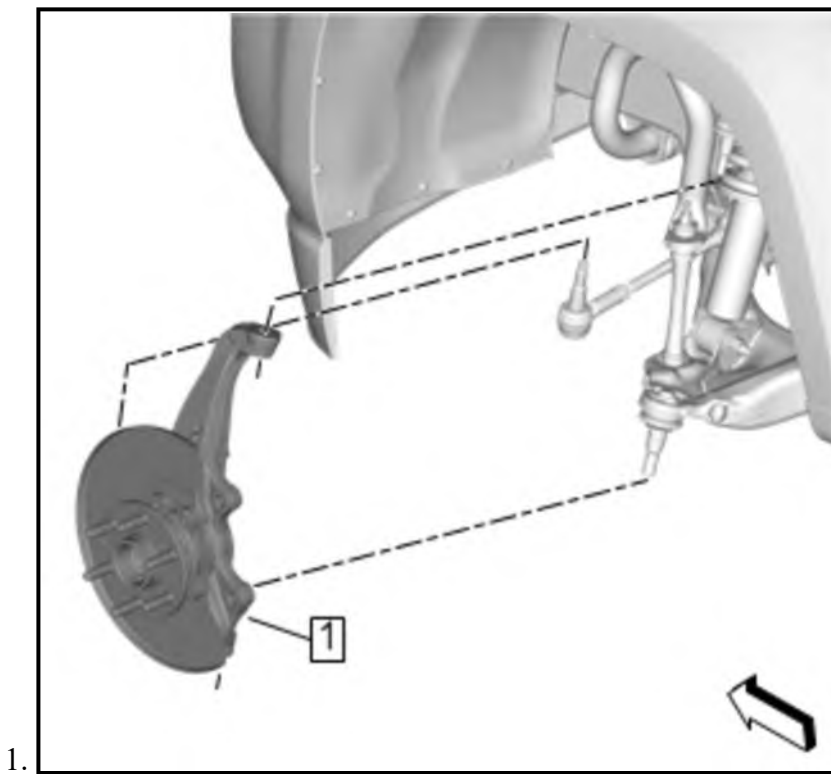
Front Upper Control Arm (3) @ Steering Knuckle - Separate - [Upper Control Arm Replacement \(Without ZR2\)](#), or [Upper Control Arm Replacement \(With ZR2\)](#).



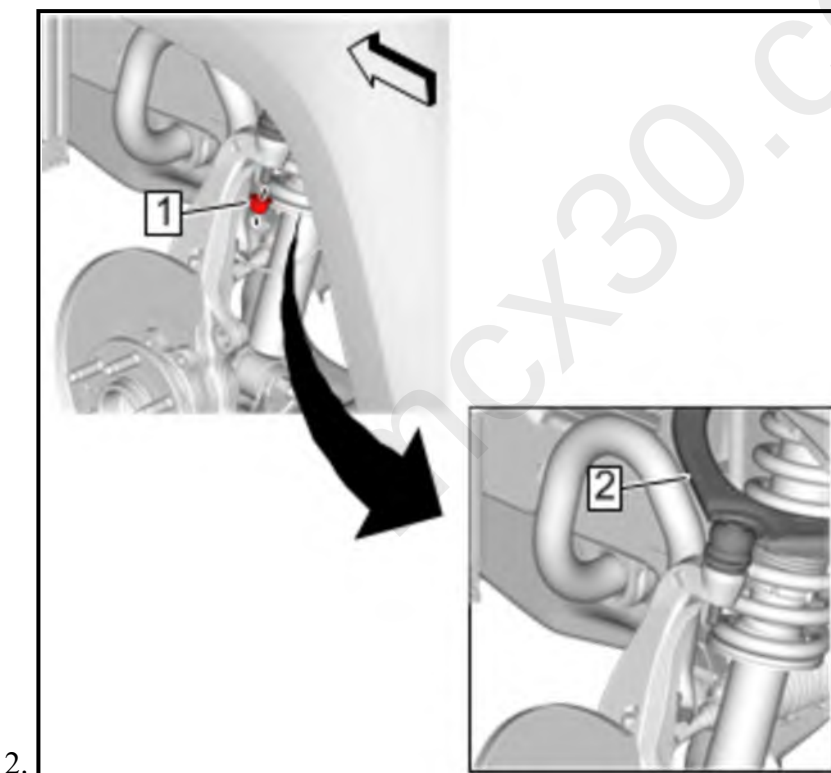
Remove the steering knuckle (1) from the vehicle.

9. Transfer components as necessary.

Installation Procedure

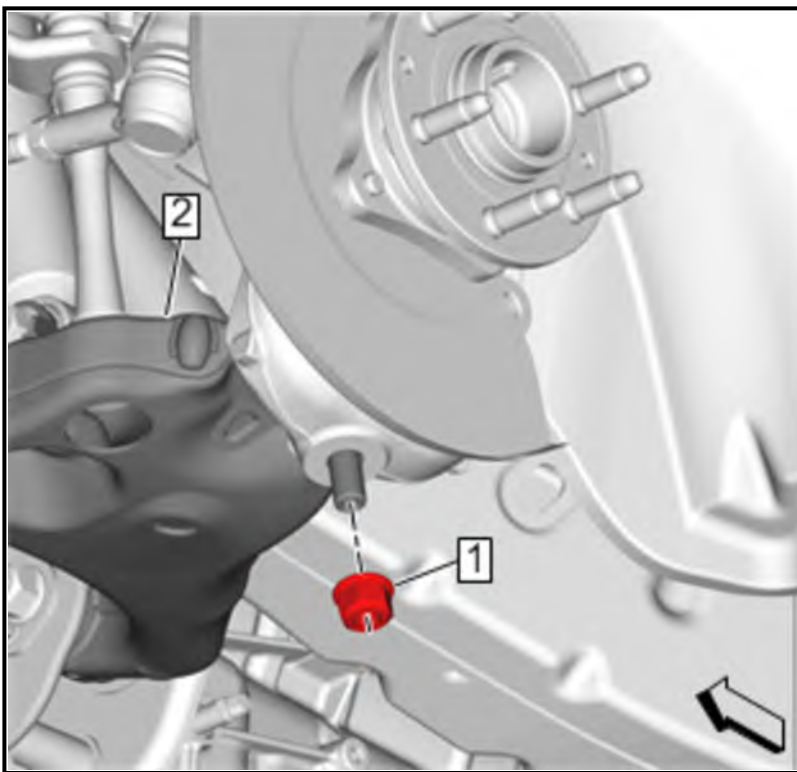


1. Position the steering knuckle (1) on the vehicle.



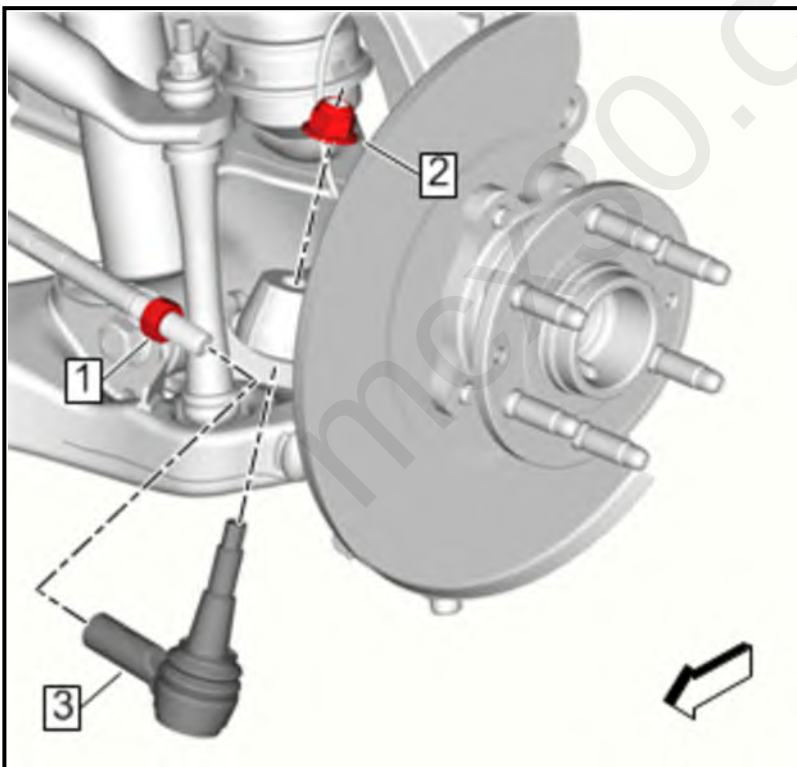
2. Front Upper Control Arm (2) @ Steering Knuckle - Install - [Upper Control Arm Replacement \(Without ZR2\)](#), or [Upper Control Arm Replacement \(With ZR2\)](#).

3.

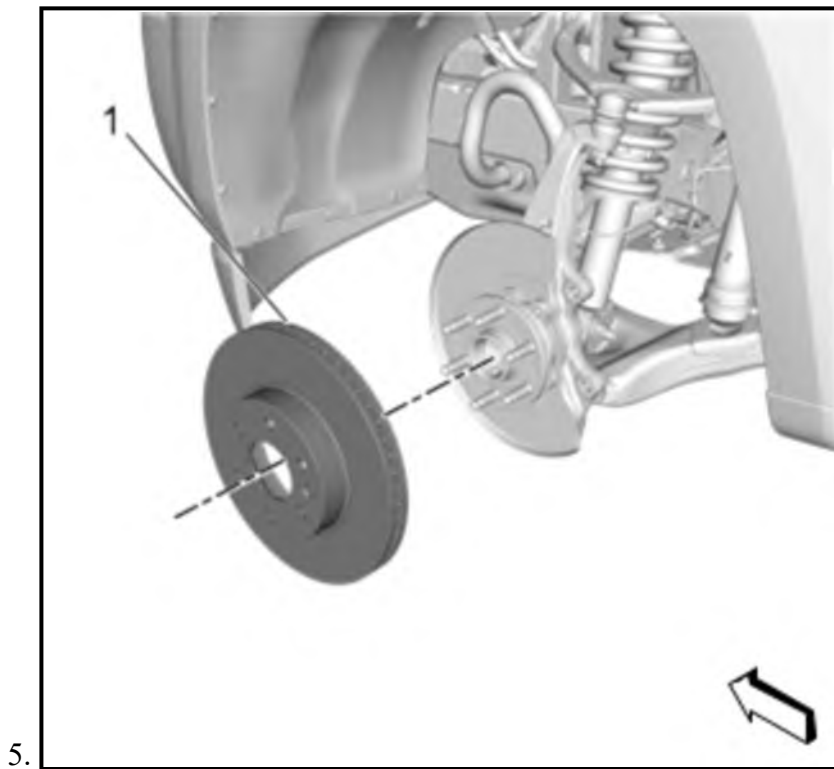


Front Lower Control Arm (2) @ Steering Knuckle - Install - [Lower Control Arm Replacement \(2WD, Without ZR2\)](#)

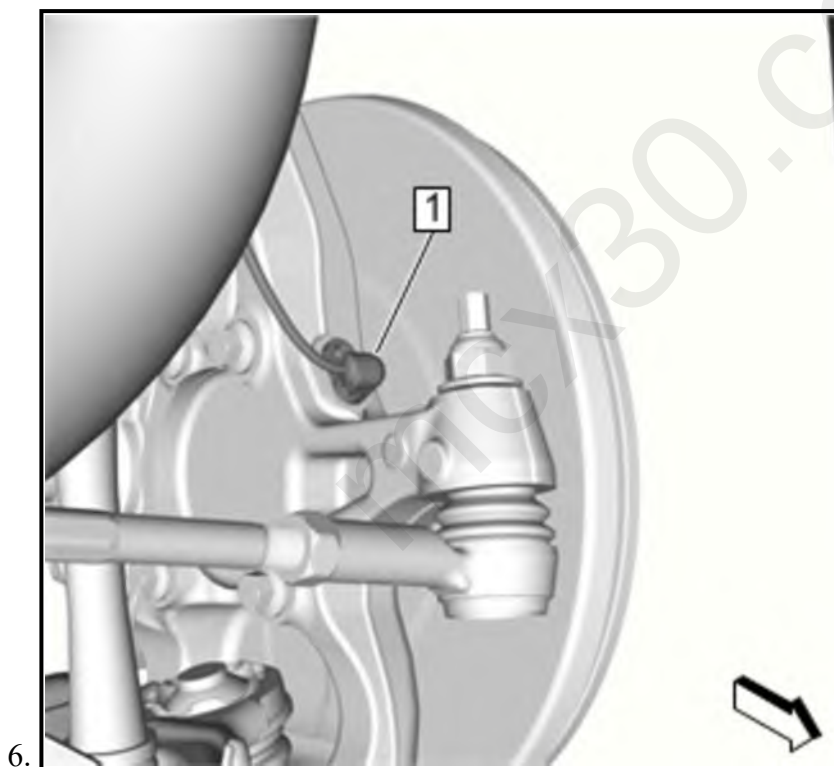
4.



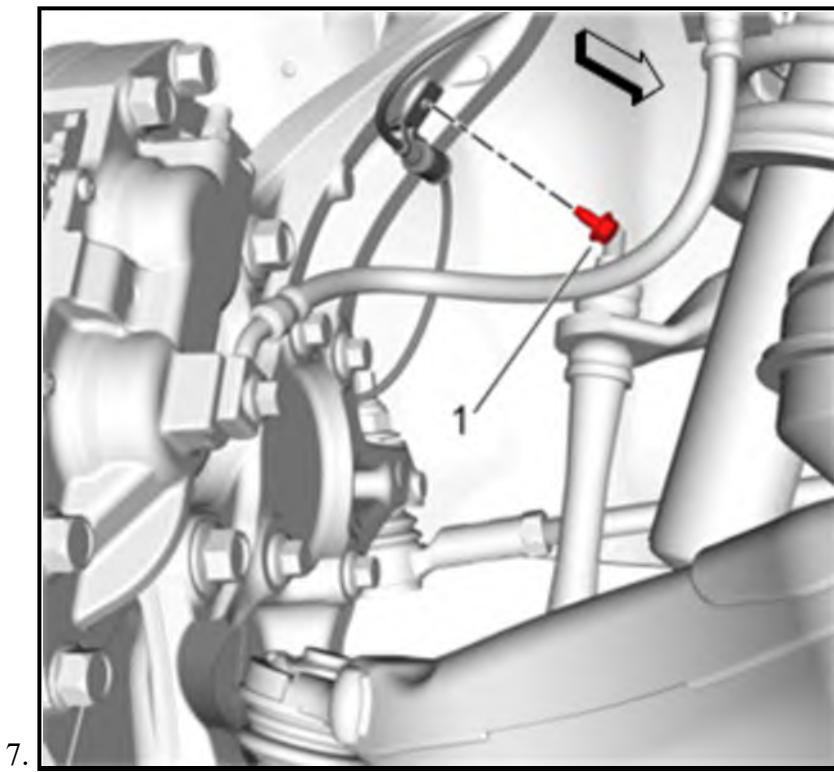
Steering Linkage Outer Tie Rod (3) @ Steering Knuckle - Install - [Steering Linkage Outer Tie Rod Replacement \(Without ZR2\)](#) , or [Steering Linkage Outer Tie Rod Replacement \(With ZR2\)](#)



Front Brake Rotor (1) - Install - [Front Brake Rotor Replacement](#)



Front Wheel Speed Sensor (1) - Install - [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#) , or [Front Wheel Speed Sensor Replacement \(With ZR2\)](#)

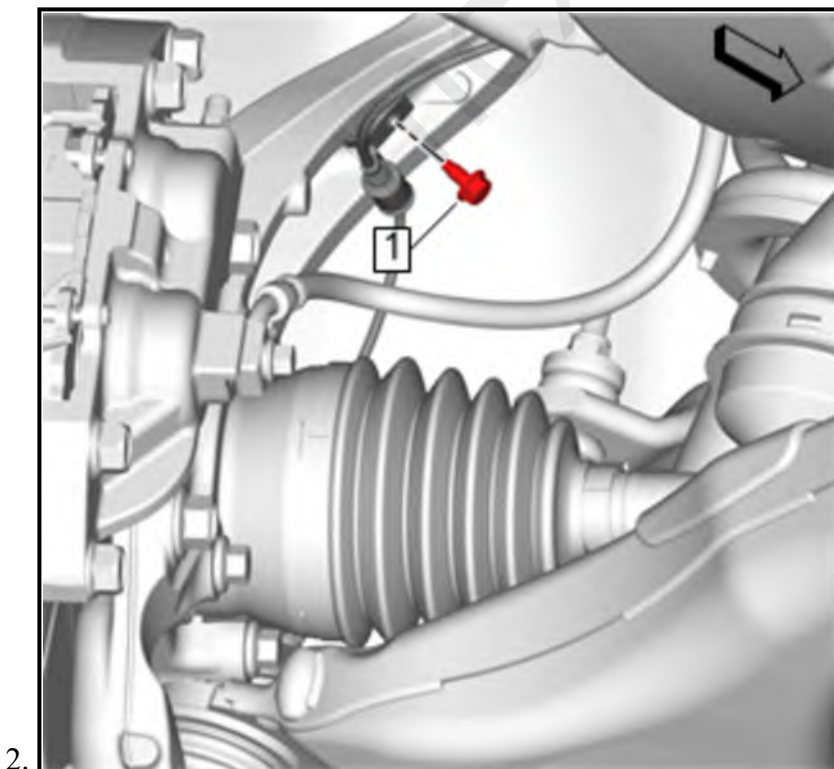


7. Install the front wheel speed sensor harness bracket bolt (1). [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#), or [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).
8. Install the front tire and wheel assembly. [Tire and Wheel Removal and Installation](#)
9. Measure and adjust the wheel alignment. [Wheel Alignment Measurement](#)

STEERING KNUCKLE REPLACEMENT (4WD WITH ZR2)

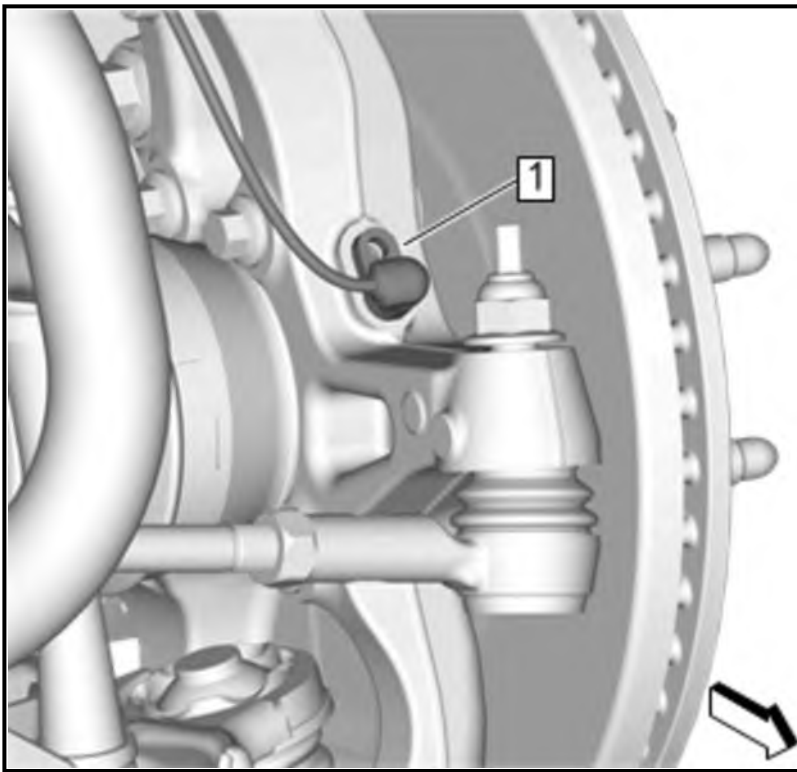
Removal Procedure

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



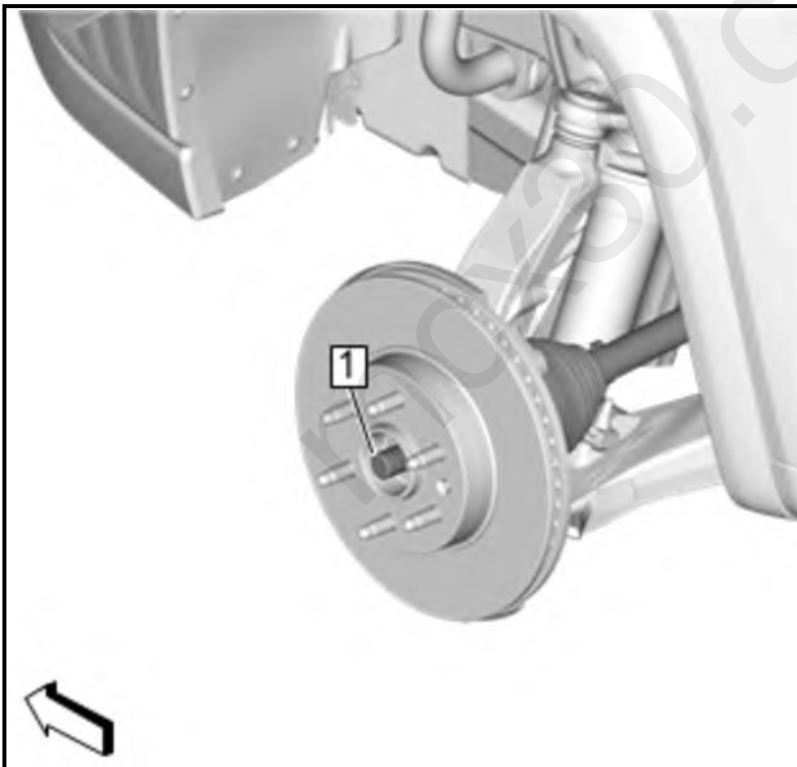
2. Remove the front wheel speed sensor harness bracket bolt (1). [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#), or [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).

3.



Remove the front wheel speed sensor (1) from the steering knuckle and set aside. [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#) , or [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).

4.



Front Wheel Drive Shaft (1) @ Front Wheel Bearing and Hub Assembly - Separate - [Front Wheel Drive Shaft Replacement - Left Side \(Without ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Left Side \(With ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Right Side \(Without ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Right Side \(With ZR2\)](#).

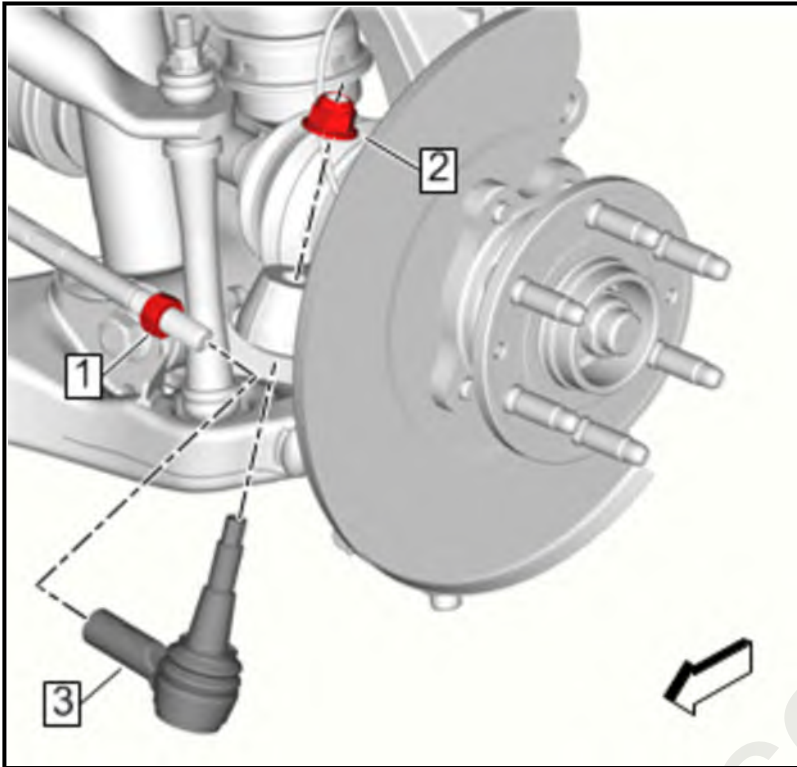
CAUTION:

Support the brake caliper with heavy mechanic wire, or equivalent, whenever it is separated from its mount and the hydraulic flexible brake hose is still connected. Failure to support the caliper in this manner will cause the flexible brake hose to bear the weight of the caliper, which may cause damage to the brake hose and in turn may cause a brake fluid leak.

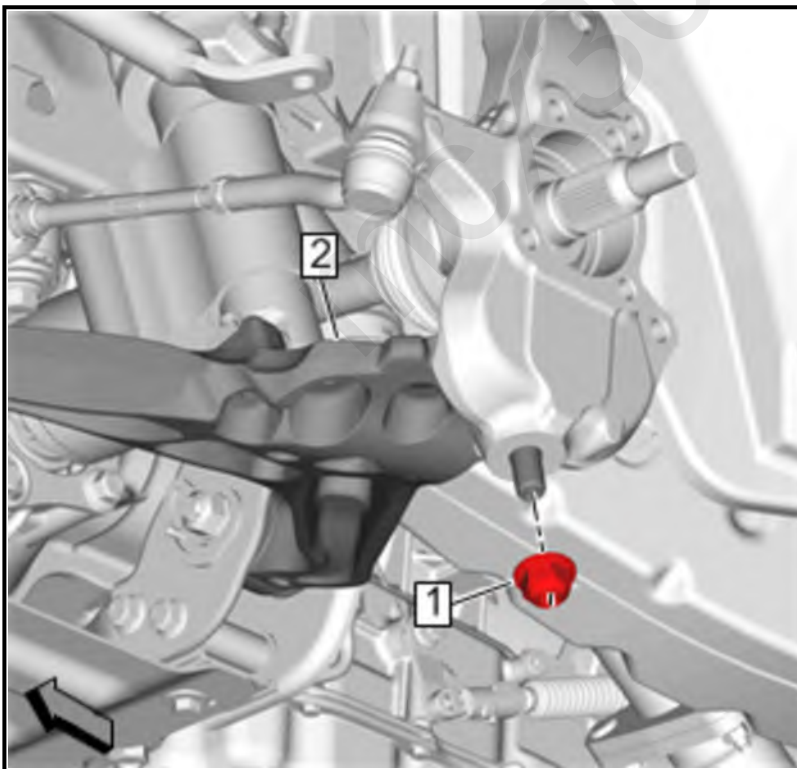
5. Without disconnecting the front brake hose, remove the front brake caliper from the steering knuckle.

Front Brake Caliper Replacement

6. Support the brake caliper with heavy mechanics wire.

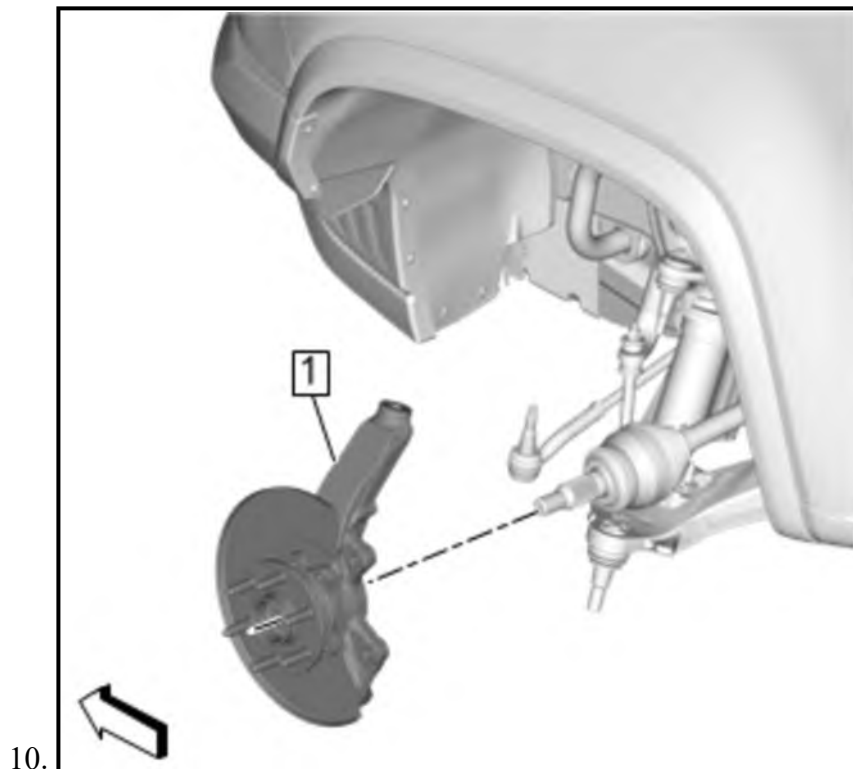


7. Steering Linkage Outer Tie Rod (3) @ Steering Knuckle - Separate - **Steering Linkage Outer Tie Rod Replacement (Without ZR2)**, or **Steering Linkage Outer Tie Rod Replacement (With ZR2)**



8. Lower Control Arm (2) @ Steering Knuckle - Remove - **Lower Control Arm Replacement (4WD, Without ZR2)**, or **Lower Control Arm Replacement (4WD, With ZR2)**

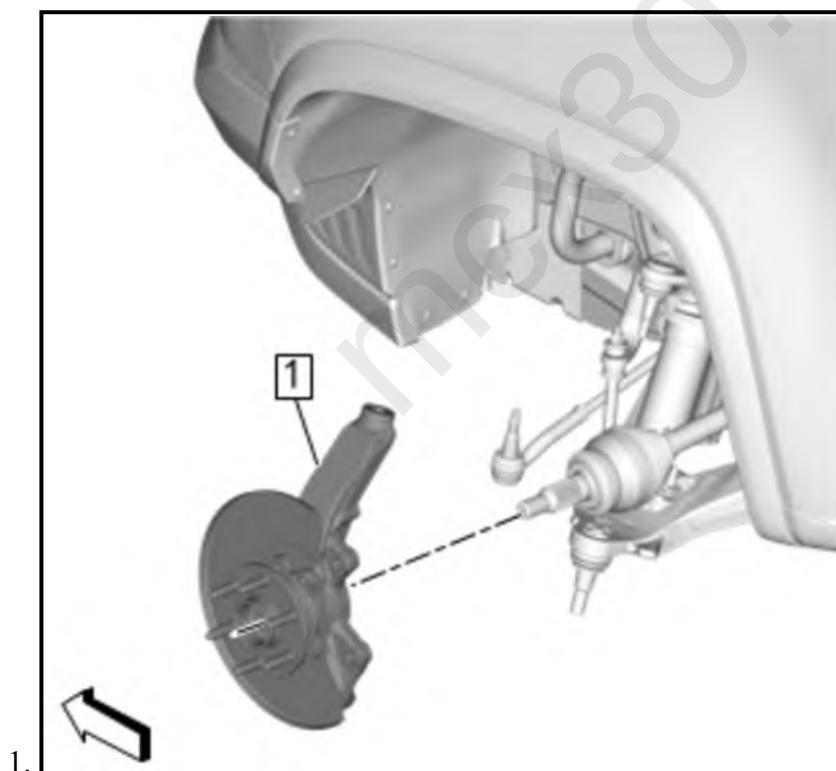
9. Upper Control Arm @ Steering Knuckle - Remove - **Upper Control Arm Replacement (Without ZR2)**, or **Upper Control Arm Replacement (With ZR2)**



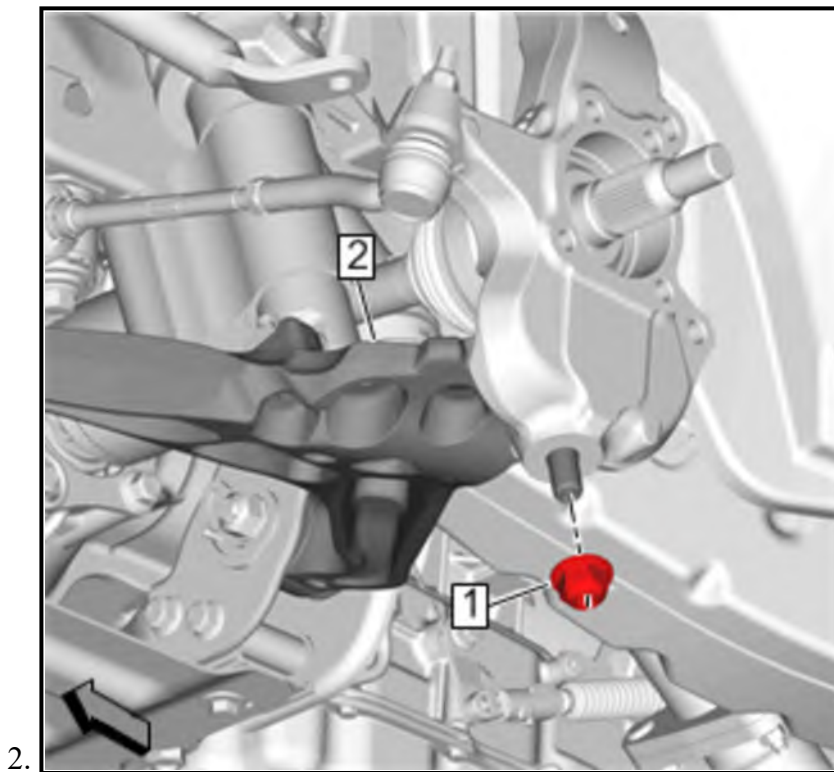
10. Remove the steering knuckle (1) from the vehicle.

11. Transfer components as necessary.

Installation Procedure

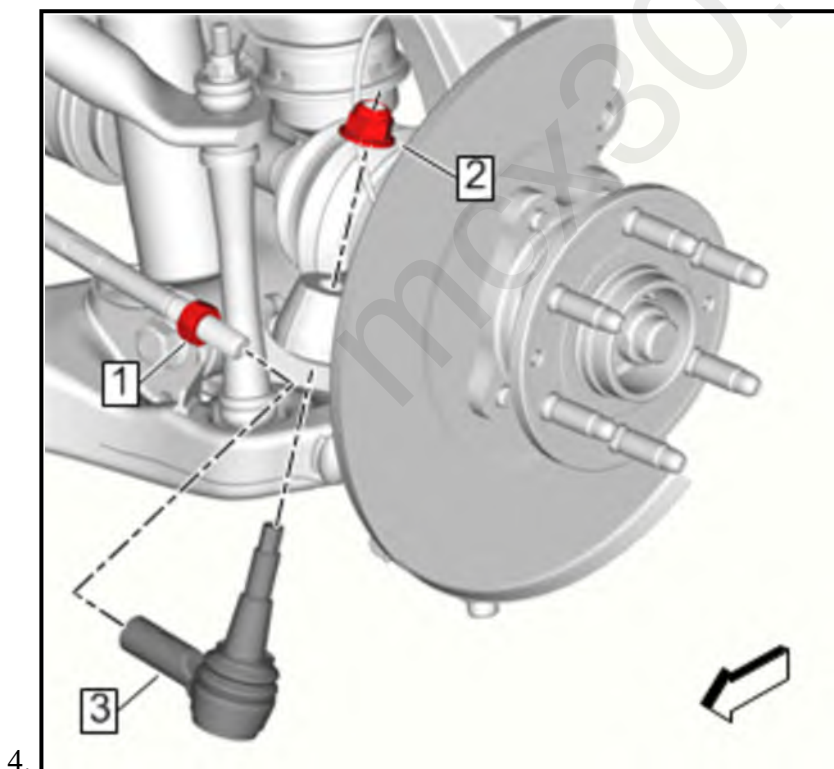


1. Position the steering knuckle (1) on the vehicle.



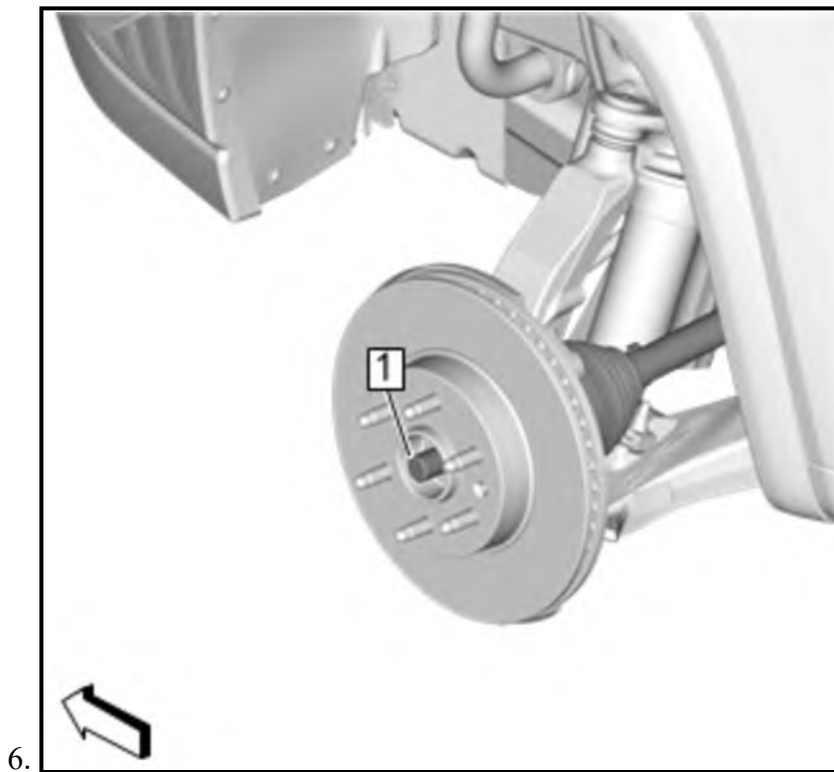
Lower Control Arm (2) @ Steering Knuckle - Install - [Lower Control Arm Replacement \(4WD, Without ZR2\)](#), or [Lower Control Arm Replacement \(4WD, With ZR2\)](#).

3. Front Upper Control Arm @ Steering Knuckle - Install - [Upper Control Arm Replacement \(Without ZR2\)](#), or [Upper Control Arm Replacement \(With ZR2\)](#).

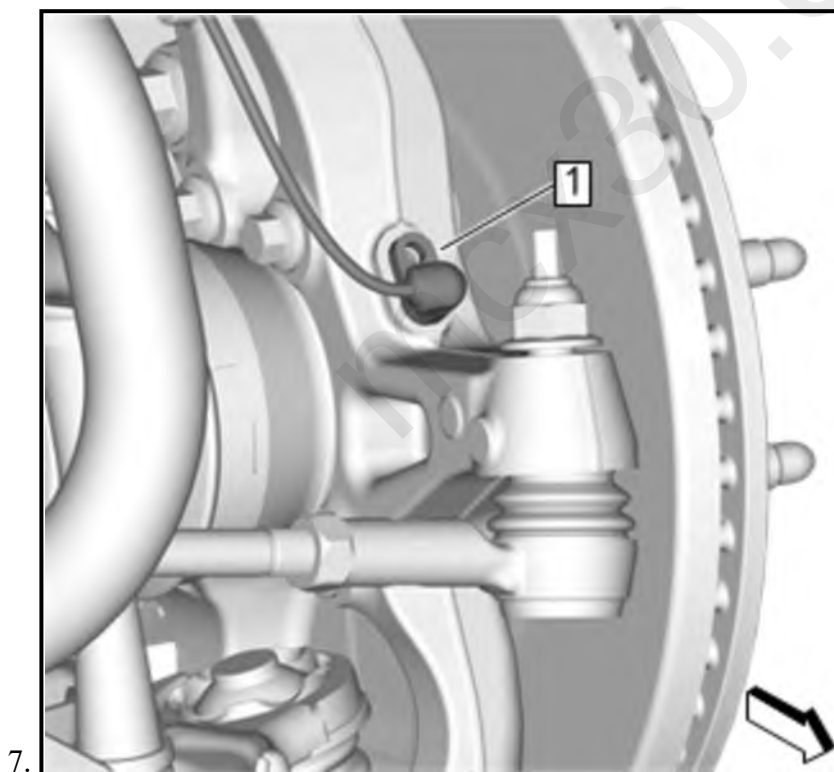


Steering Linkage Outer Tie Rod (3) @ Steering Knuckle - Install - [Steering Linkage Outer Tie Rod Replacement \(Without ZR2\)](#), or [Steering Linkage Outer Tie Rod Replacement \(With ZR2\)](#).

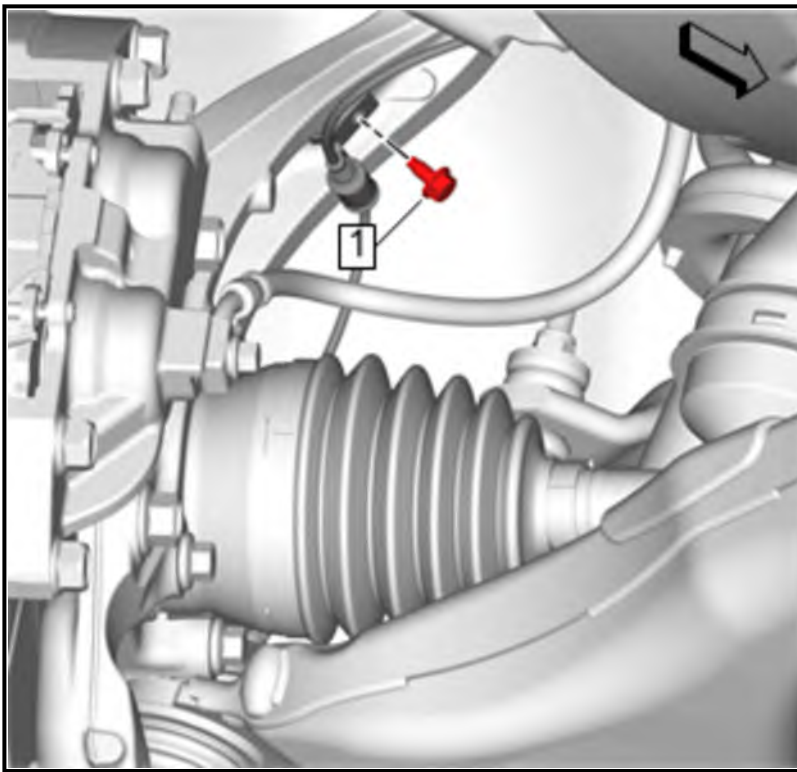
5. Front Brake Caliper @ Steering Knuckle - Install - [Front Brake Caliper Replacement](#)



6. Front Wheel Drive Shaft (1) @ Front Wheel Bearing and Hub Assembly - Install - [Front Wheel Drive Shaft Replacement - Left Side \(Without ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Left Side \(With ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Right Side \(Without ZR2\)](#) , or [Front Wheel Drive Shaft Replacement - Right Side \(With ZR2\)](#).



7. Front Wheel Speed Sensor (1) - Install - [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#) , or [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).



8. Install the front wheel speed sensor harness bracket bolt (1). [Front Wheel Speed Sensor Replacement \(Without ZR2\)](#), or [Front Wheel Speed Sensor Replacement \(With ZR2\)](#).
9. Install the front tire and wheel assembly. [Tire and Wheel Removal and Installation](#)
10. Lower the vehicle.
11. Measure and adjust the wheel alignment. [Wheel Alignment Measurement](#)

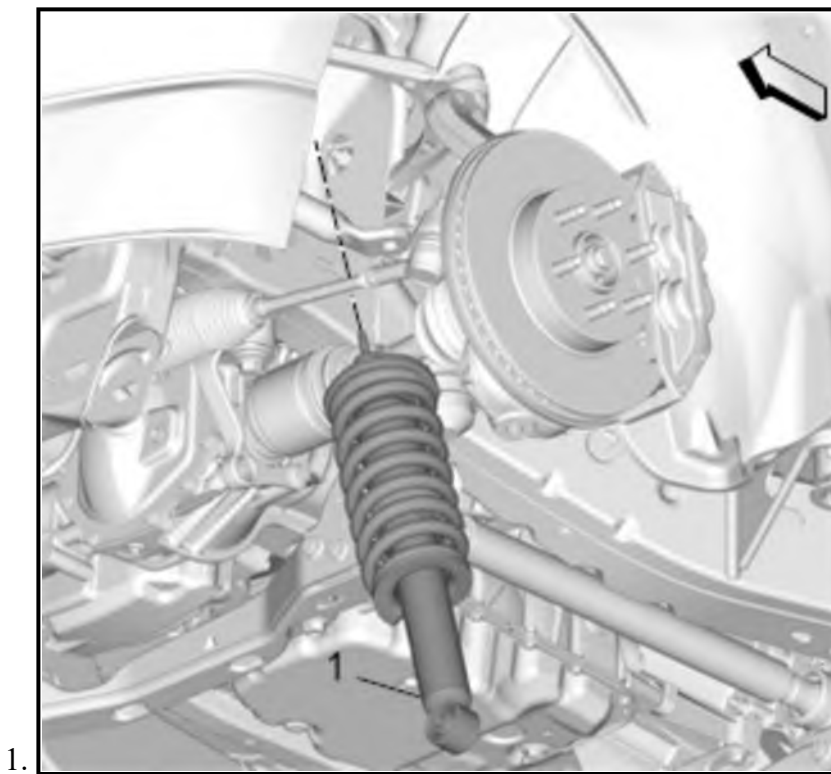
UPPER CONTROL ARM REPLACEMENT (WITHOUT ZR2)

Special Tools

- CH-43631 Ball Joint Separator
- EN-45059 Torque Angle Meter

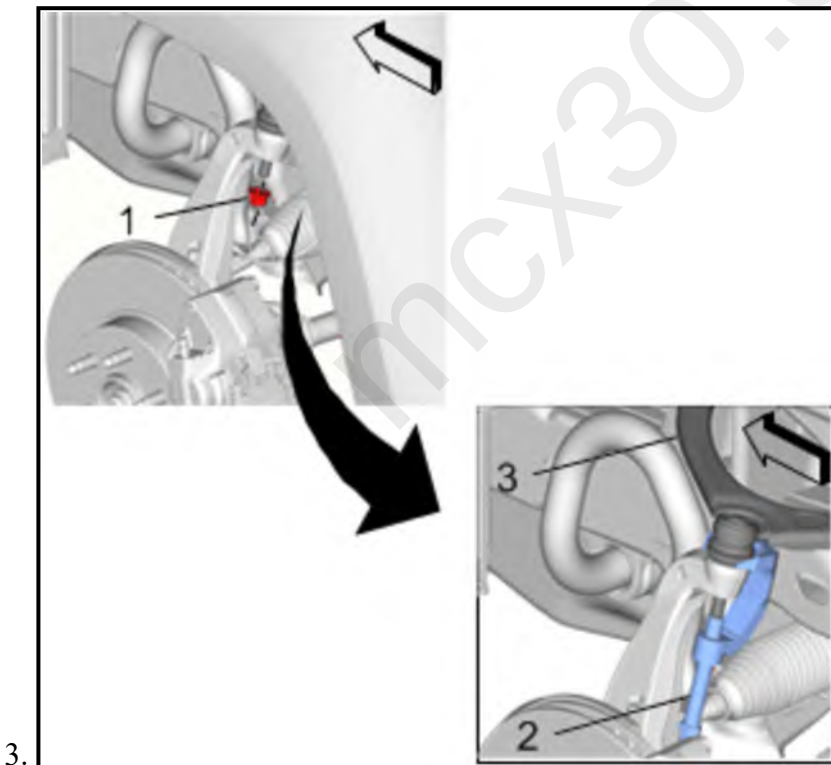
Equivalent regional tools: [Special Tools](#)

Removal Procedure

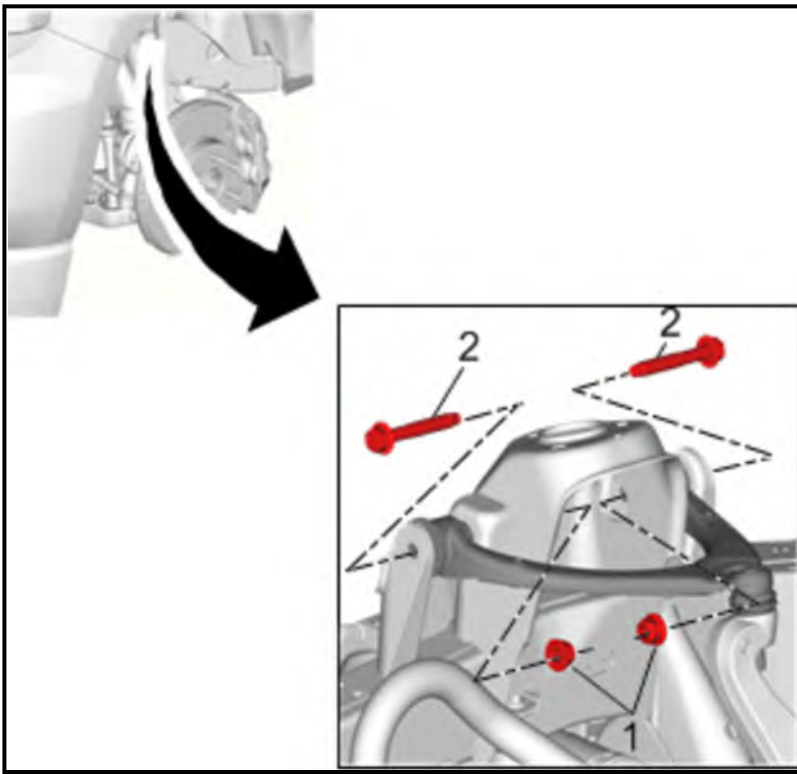


1. Front Shock Absorber and Spring Assembly (1) - Remove - [Shock Absorber and Spring Removal and Installation \(Without ZR2\)](#)

2. Support the steering knuckle with a suitable support.



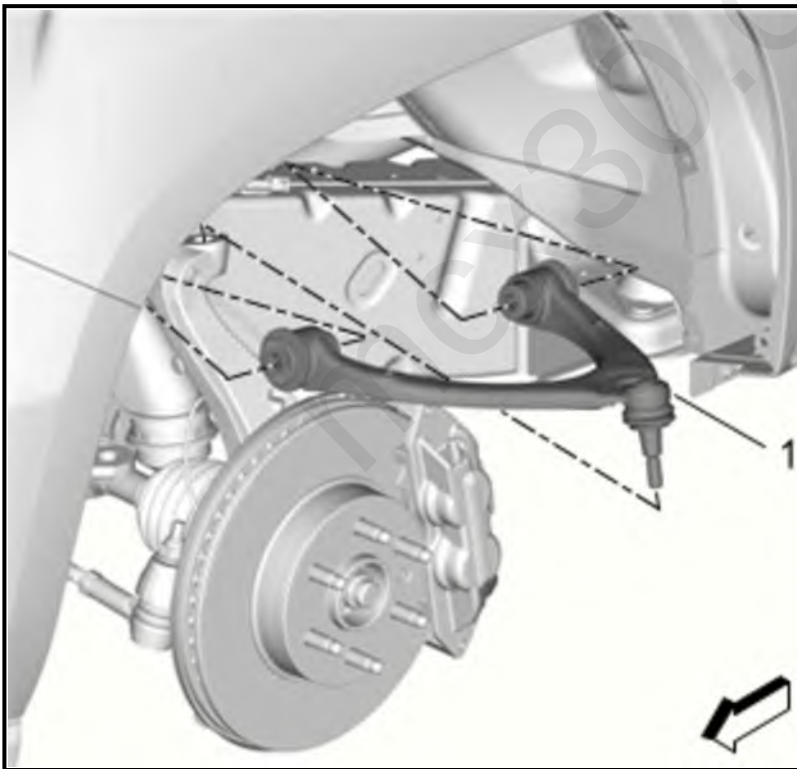
3. Front Upper Control Arm Ball Stud Nut (1) - Remove
4. Use the **CH-43631** separator (2) to separate the front upper control arm (3) from the steering knuckle.



5.

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

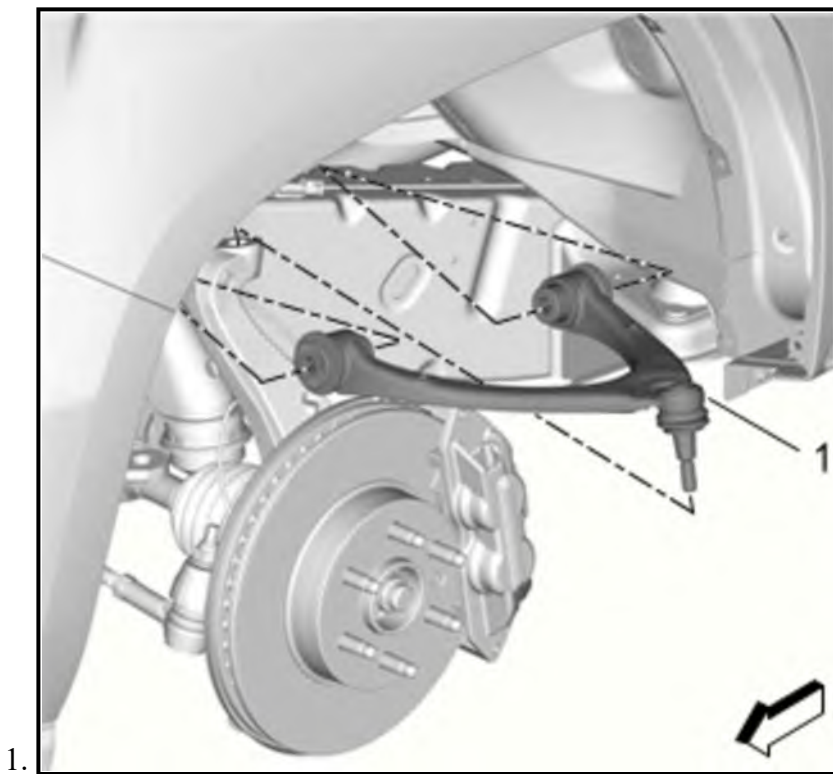
6. Front Upper Control Arm Bolt (2) - Remove [2x]



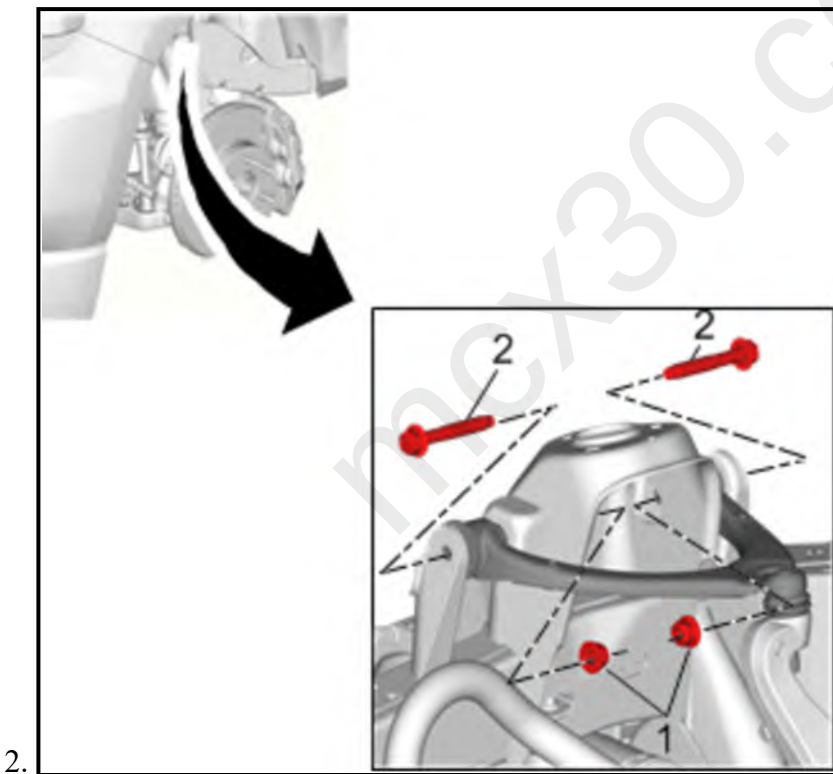
7.

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

Installation Procedure



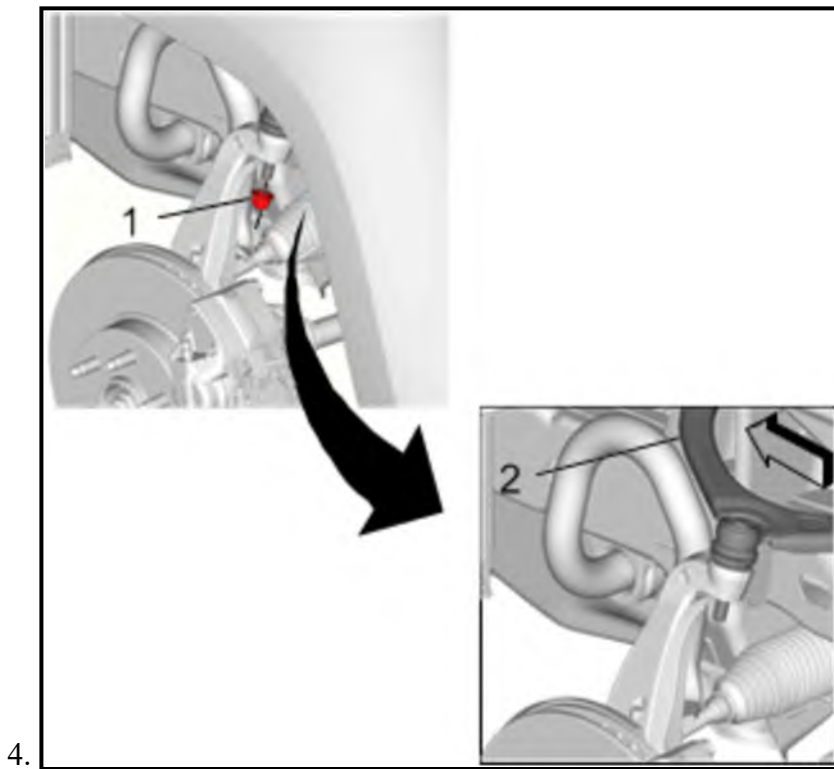
Position the front upper control arm (1) on the vehicle.



Front Upper Control Arm Bolt (2) - Install [2x]

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

3. Front Upper Control Arm Nut (1) - Install and tighten [2x] 160 N.m (118 lb ft)



4.

Front Upper Control Arm Ball Stud Nut (1) - Install

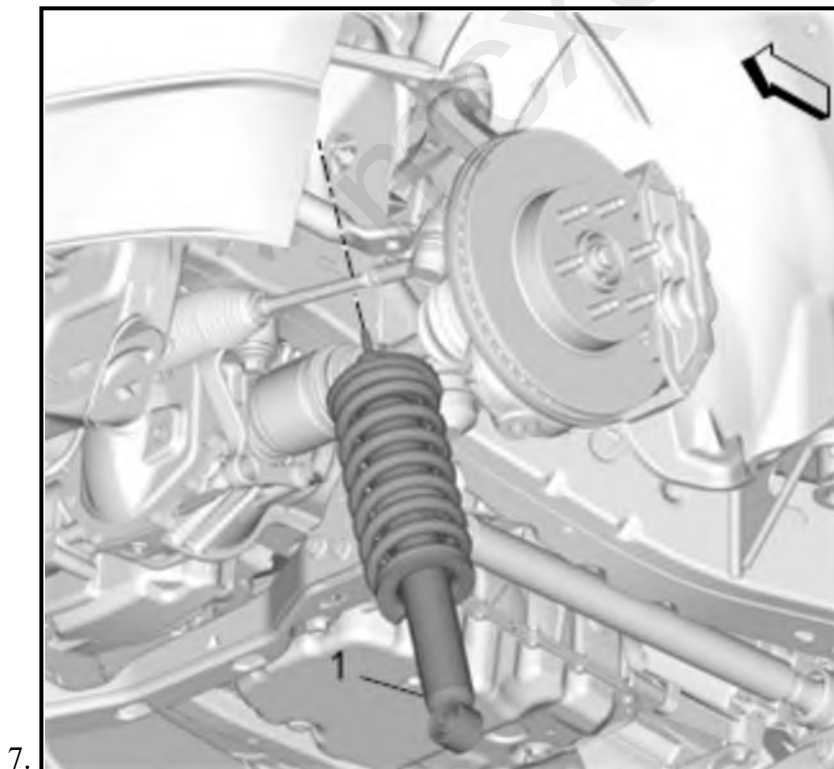
5. Use the **EN-45059** meter to tighten the front upper control arm ball stud nut (1).

Tighten

1. First Pass: 50 N.m (37 lb ft)

2. Final Pass: (90 - 110 degrees)

6. Remove the support from the steering knuckle.



7.

Front Shock Absorber and Spring Assembly (1) - Install - [Shock Absorber and Spring Removal and Installation \(Without ZR2\)](#)

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

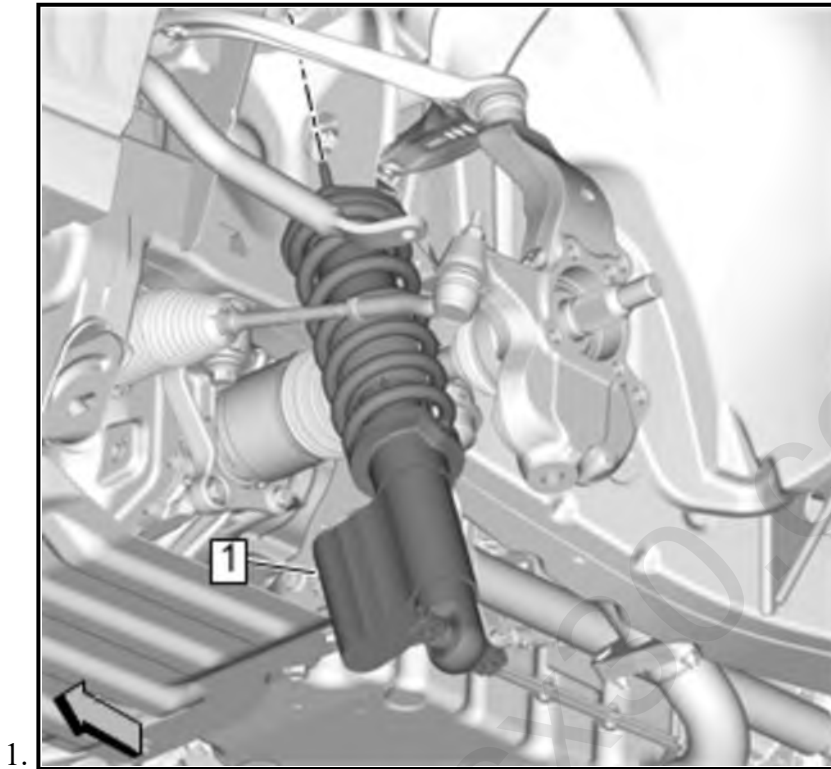
UPPER CONTROL ARM REPLACEMENT (WITH ZR2)

Special Tools

- CH-43631 Ball Joint Separator
- EN-45059 Torque Angle Meter

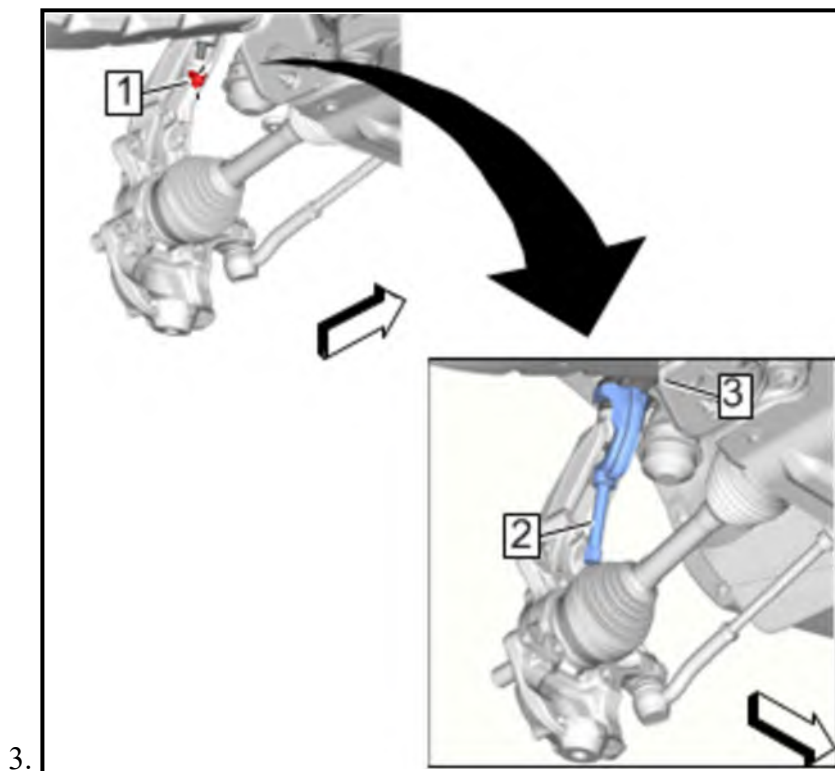
Equivalent regional tools: [Special Tools](#)

Removal Procedure



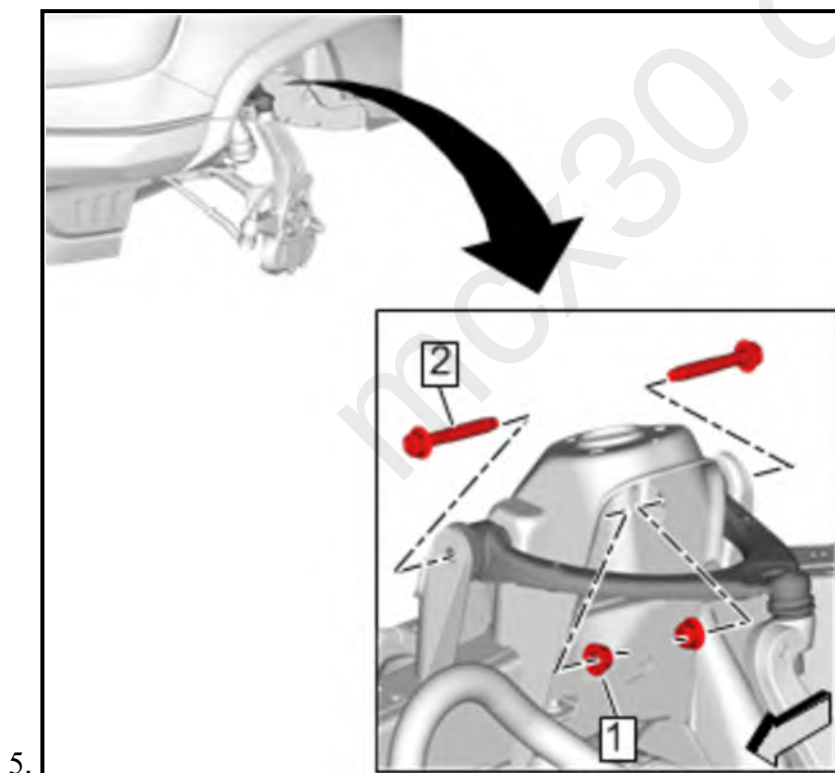
Front Shock Absorber and Spring Assembly (1) - Remove - [Shock Absorber and Spring Removal and Installation \(With ZR2\)](#)

2. Support the steering knuckle with a suitable support.



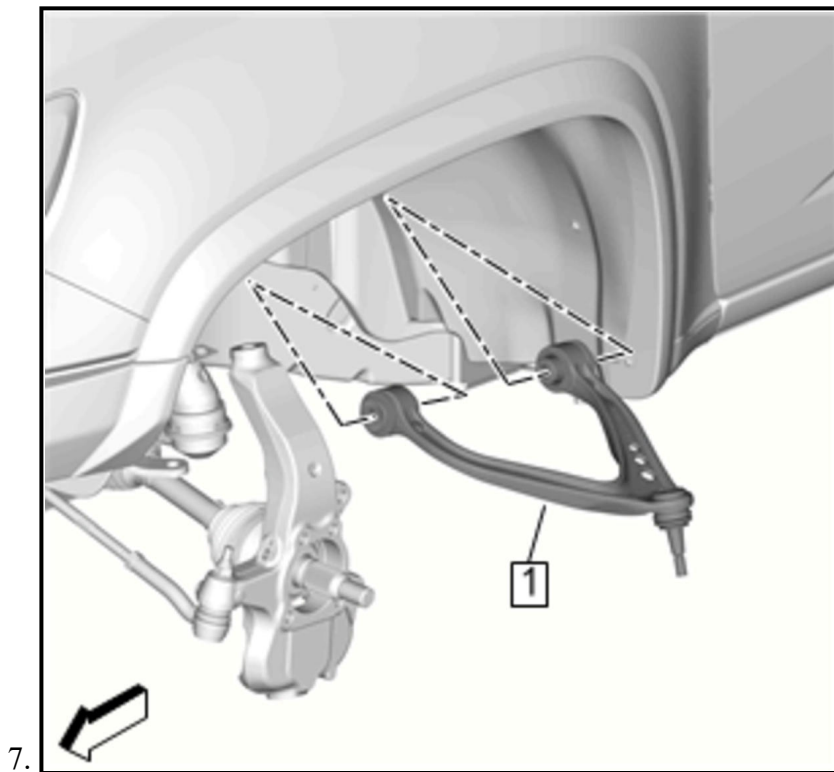
Front Upper Control Arm Ball Stud Nut (1) - Remove

4. Use the **CH-43631** separator (2) to separate the front upper control arm (3) from the steering knuckle.



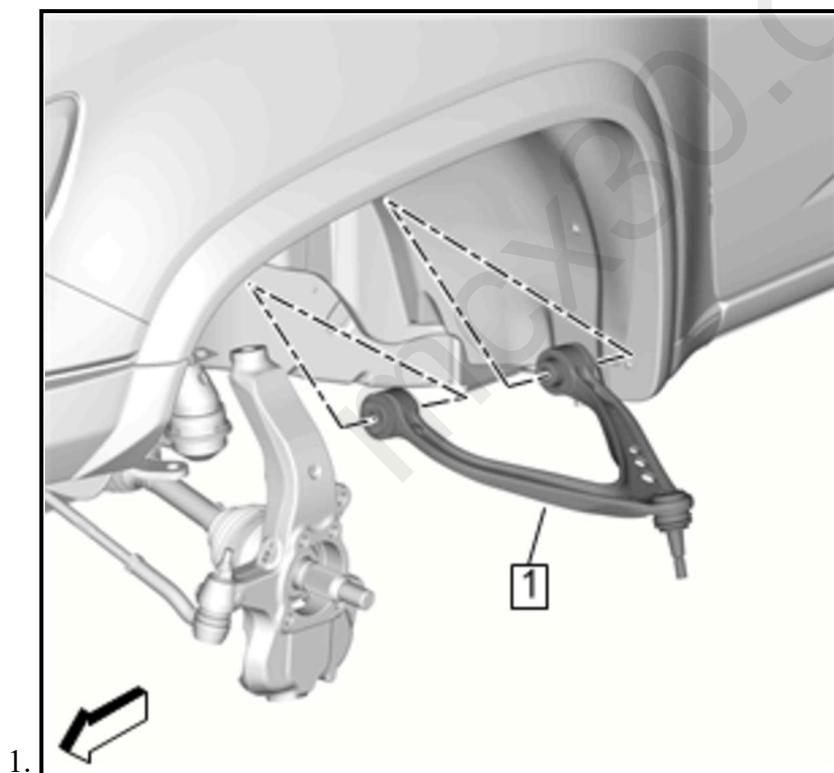
Front Upper Control Arm Nut (1) - Remove [2x]

6. Front Upper Control Arm Bolt (2) - Remove [2x]

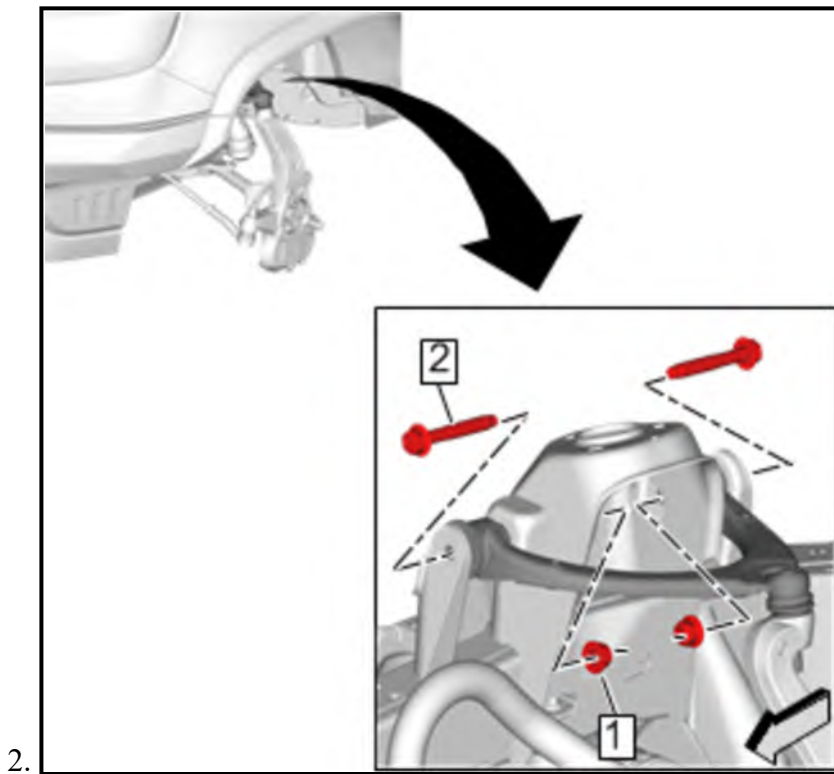


Remove the front upper control arm (1) from the vehicle.

Installation Procedure



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

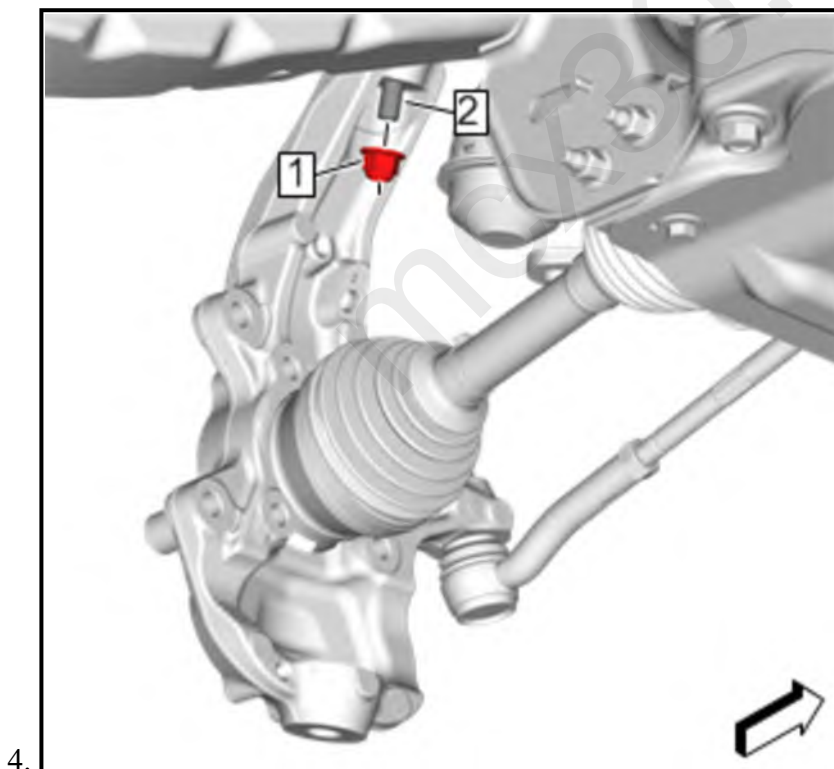


2.

Front Upper Control Arm Bolt (2) - Install [2x]

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

3. Front Upper Control Arm Nut (1) - Install and tighten [2x] 160 N.m (118 lb ft)



4.

Front Upper Control Arm Ball Stud Nut (1) - Install

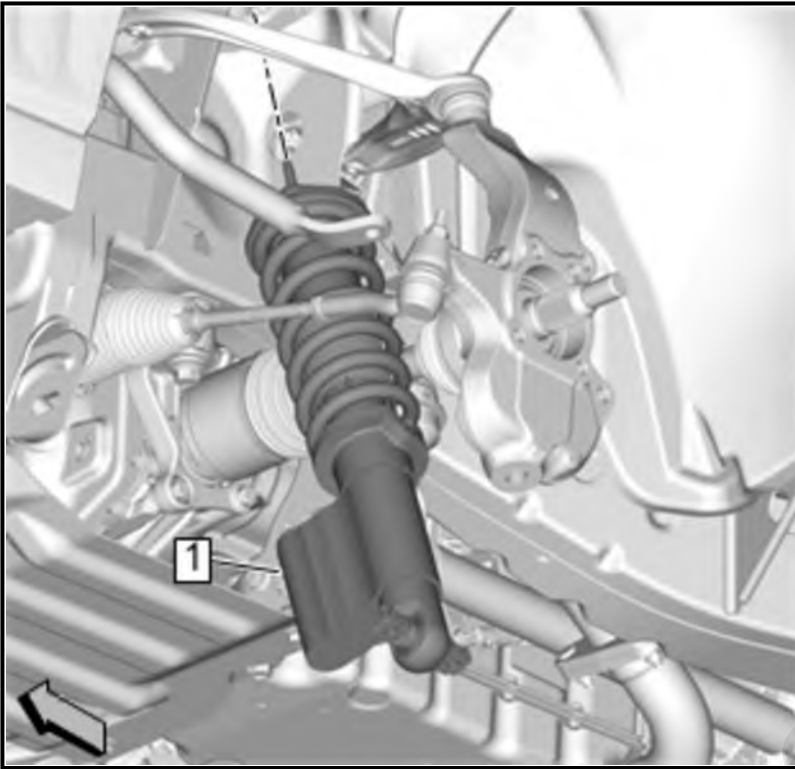
5. Use the **EN-45059** meter to tighten the front upper control arm ball stud nut (1).

Tighten

1. First Pass: 50 N.m (37 lb ft)

2. Final Pass: (90 - 110 degrees)

6. Remove the support from the steering knuckle.



7.

Front Shock Absorber and Spring Assembly (1) - Install - [Shock Absorber and Spring Removal and Installation \(With ZR2\)](#)

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

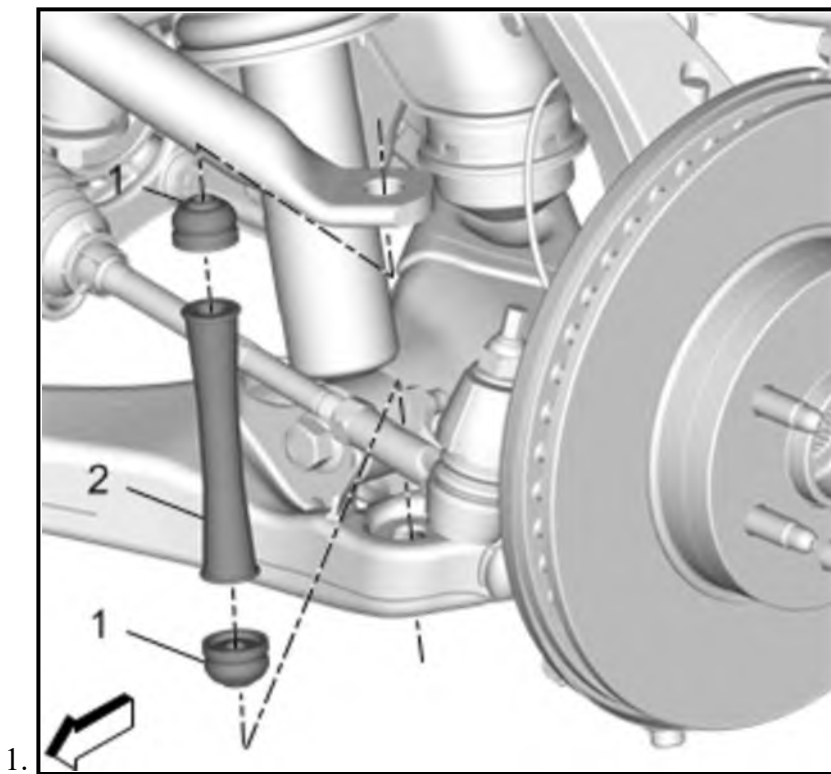
LOWER CONTROL ARM REPLACEMENT (2WD, WITHOUT ZR2)

Special Tools

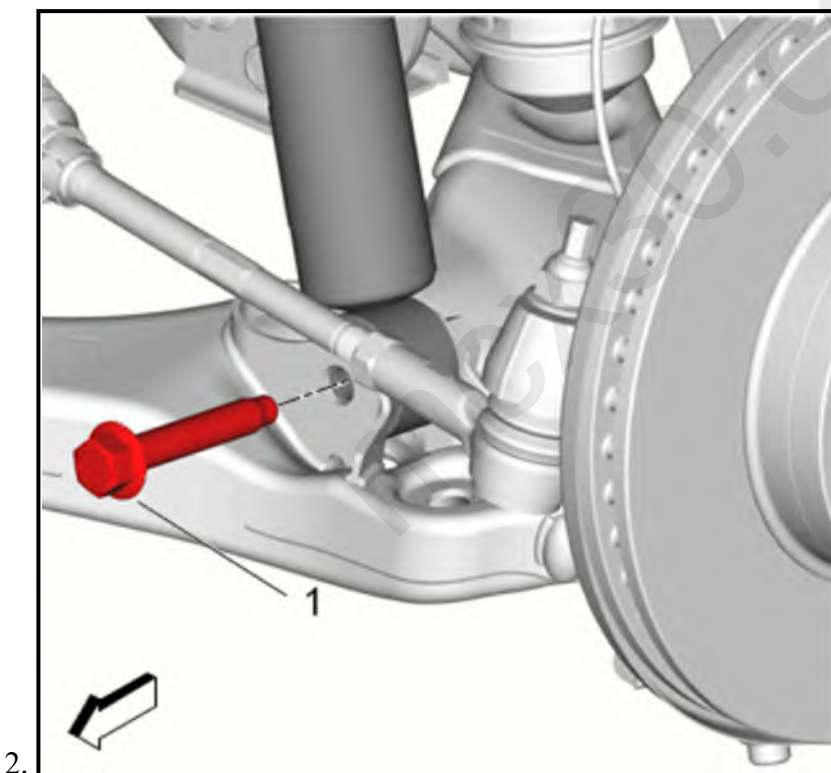
- CH-43631 Ball Joint Separator
- EN-45059 Torque Angle Meter

Equivalent regional tools: [Special Tools](#)

Removal Procedure

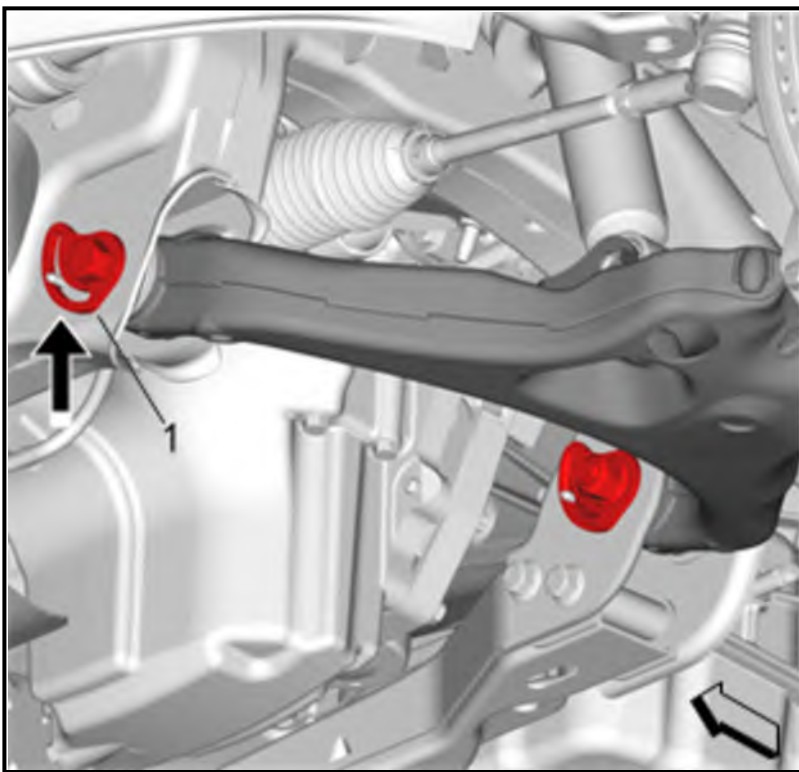


1. Front Stabilizer Shaft Link (2) - Remove - [Stabilizer Shaft Link Replacement \(Without ZR2\)](#)



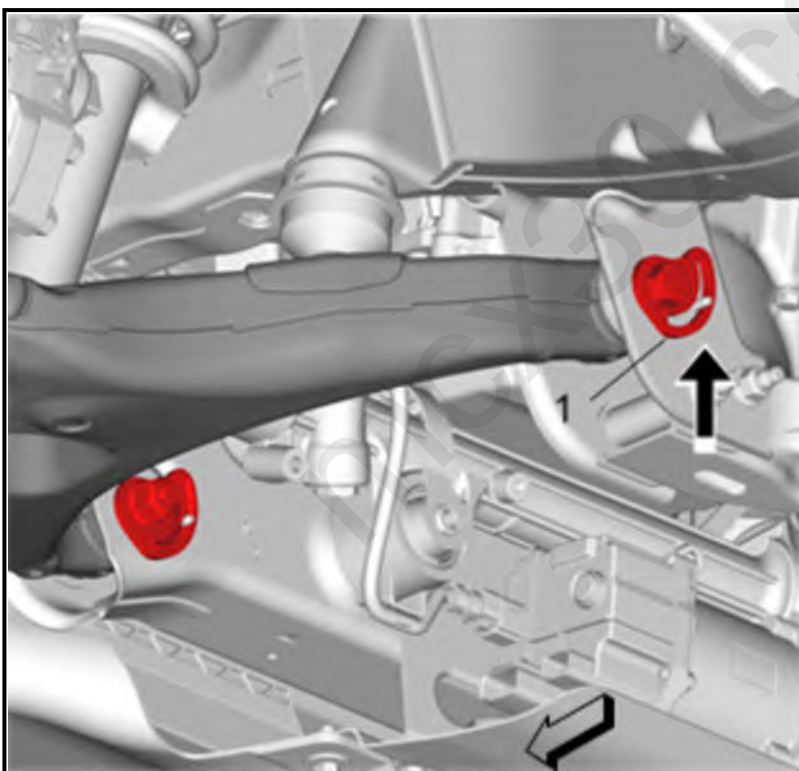
2. Remove the front shock absorber lower bracket bolt (1). [Shock Absorber and Spring Removal and Installation \(Without ZR2\)](#)

3.

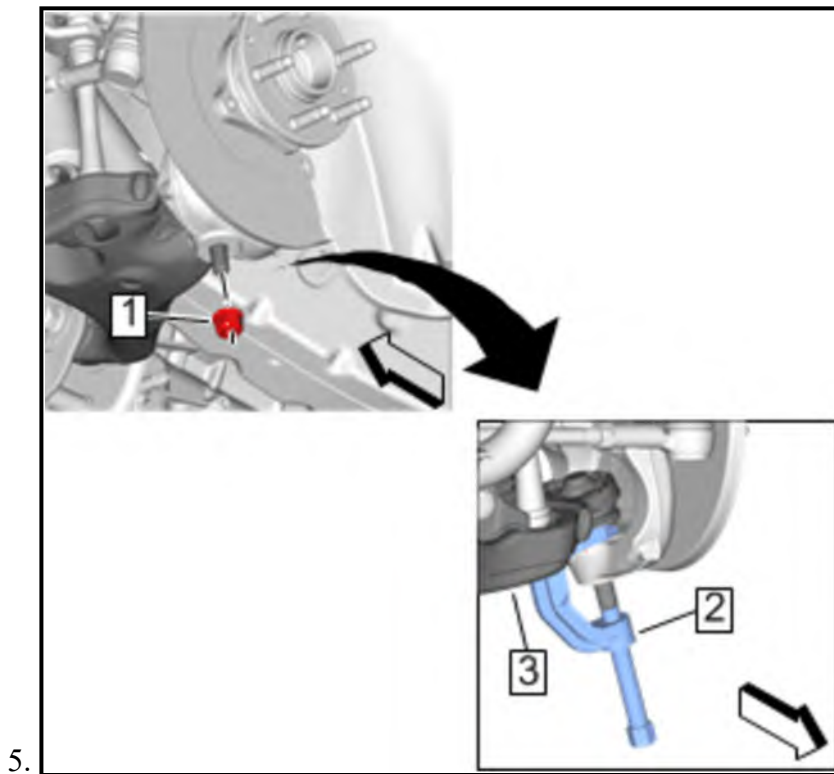


Mark the position of the front lower control arm front adjust cam (1).

4.



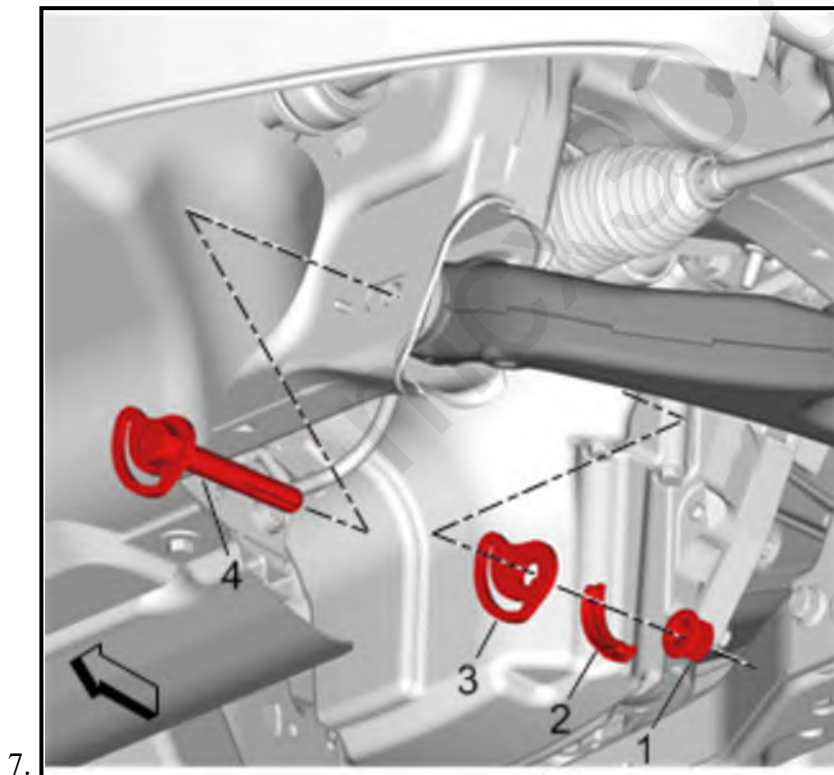
Mark the position of the front lower control arm rear adjust cam (1).



5.

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

6. Use the **CH-43631** separator (2) to separate the front lower control arm (3) from the steering knuckle.



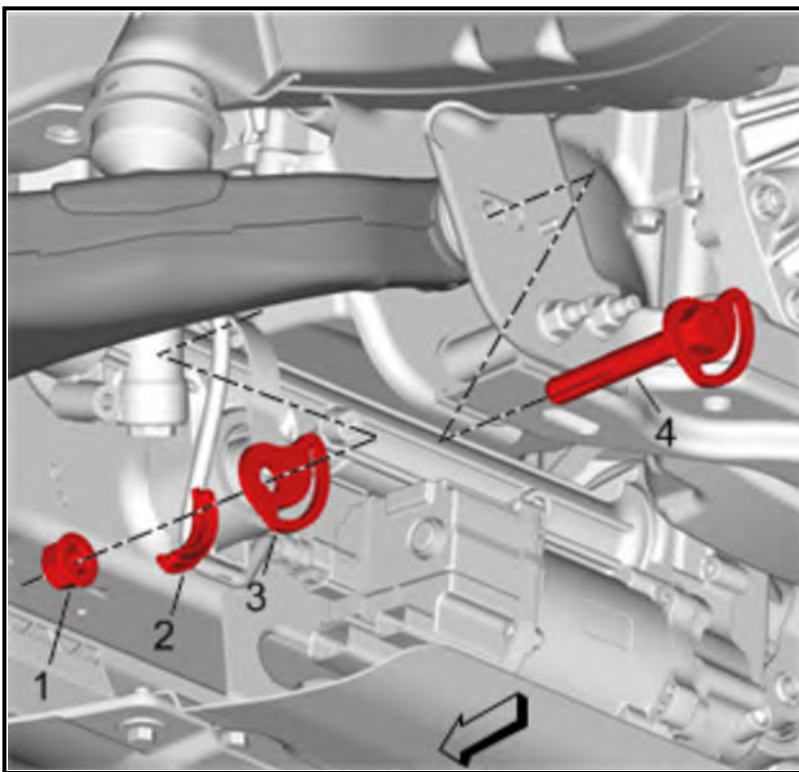
7.

NOTE: The front lower control arm adjust cam insert is installed in the factory to aid in alignment. Once removed, the insert should **NOT** be reused.

Remove the front lower control arm nut (1), front lower control arm adjust cam insert (2), front lower control arm adjust cam (3), and front lower control arm adjust bolt (4).

DISCARD the insert.

8.



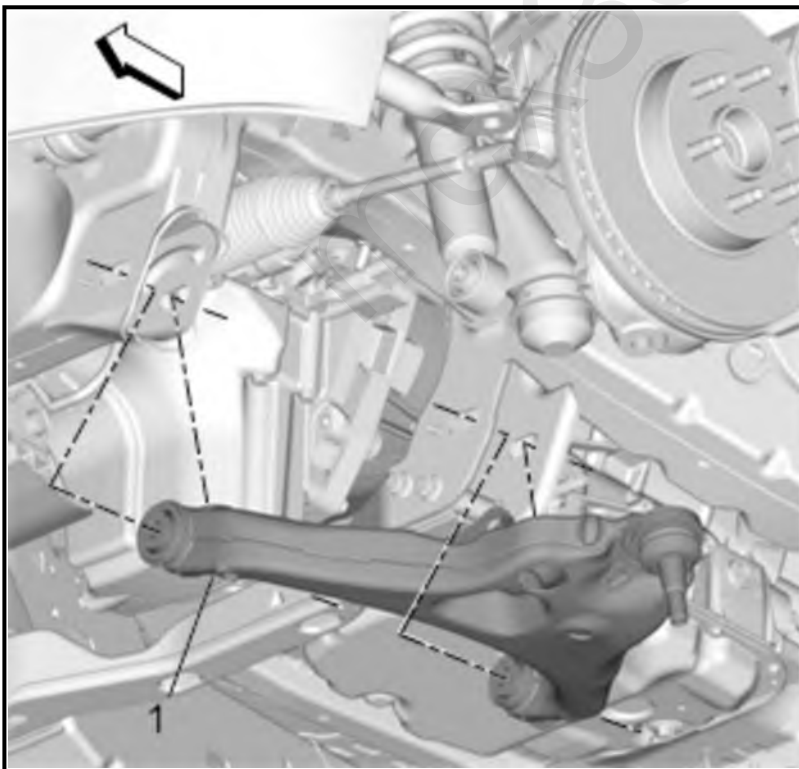
NOTE:

The front lower control arm adjust cam insert is installed in the factory to aid in alignment. Once removed, the insert should **NOT** be reused.

Remove the front lower control arm nut (1), front lower control arm adjust cam insert (2), front lower control arm adjust cam (3), and front lower control arm adjust bolt (4).

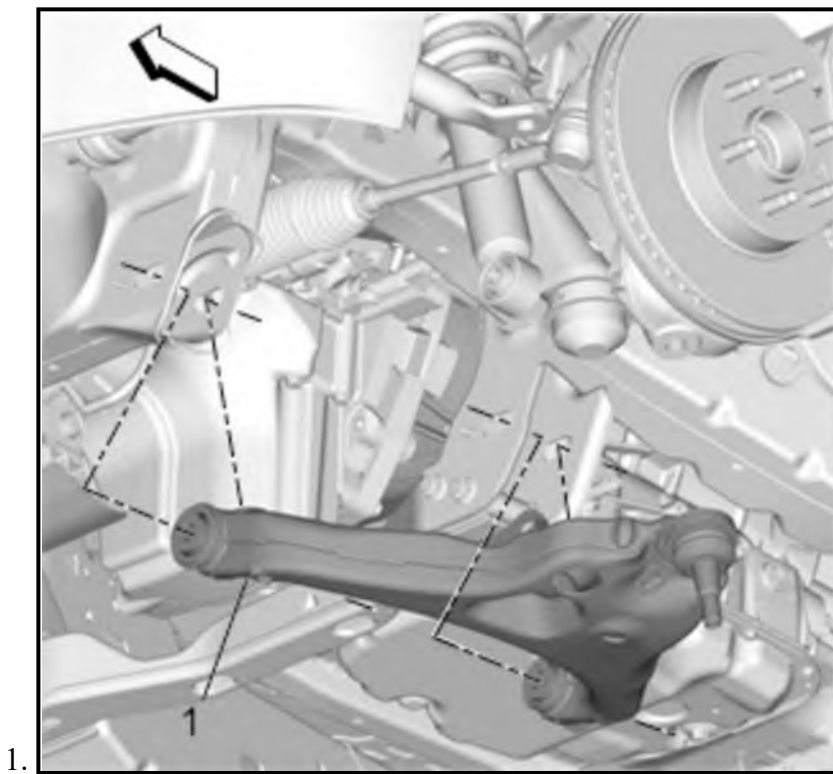
DISCARD the insert.

9.

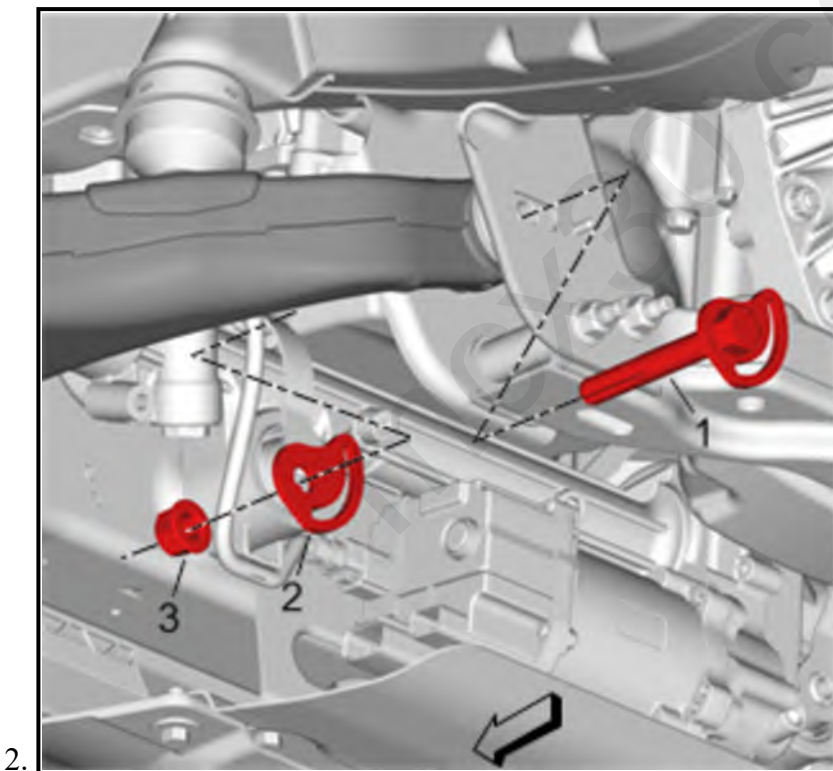


Remove the front lower control arm (1) from the vehicle.

Installation Procedure



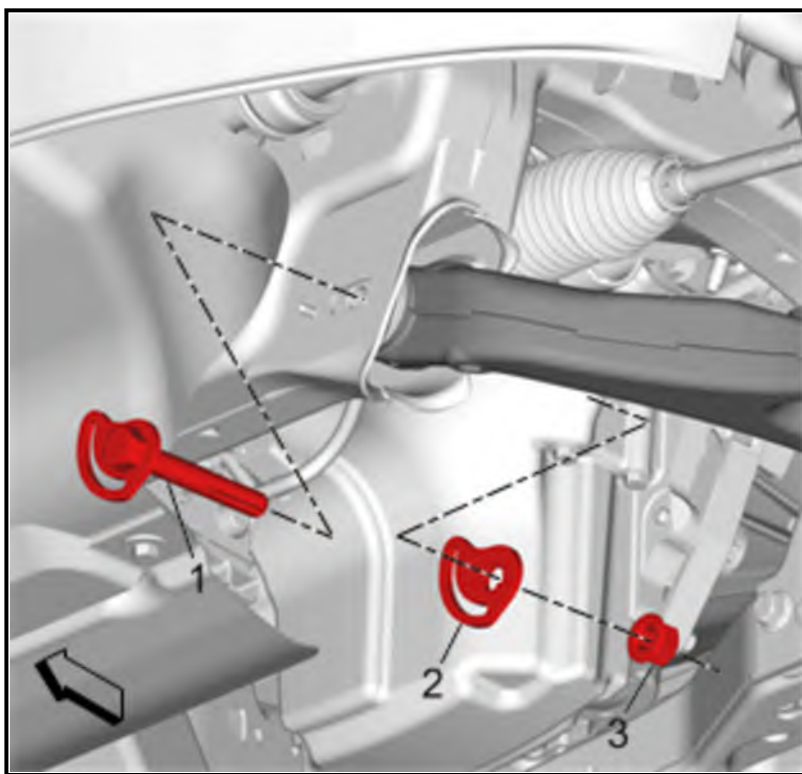
1. Position the front lower control arm (1) on the vehicle.



2. Install the front lower control arm adjust bolt (1), front lower control arm adjust cam (2), and front lower control arm nut (3).

Lightly tighten the fastener but do NOT tighten to specification.

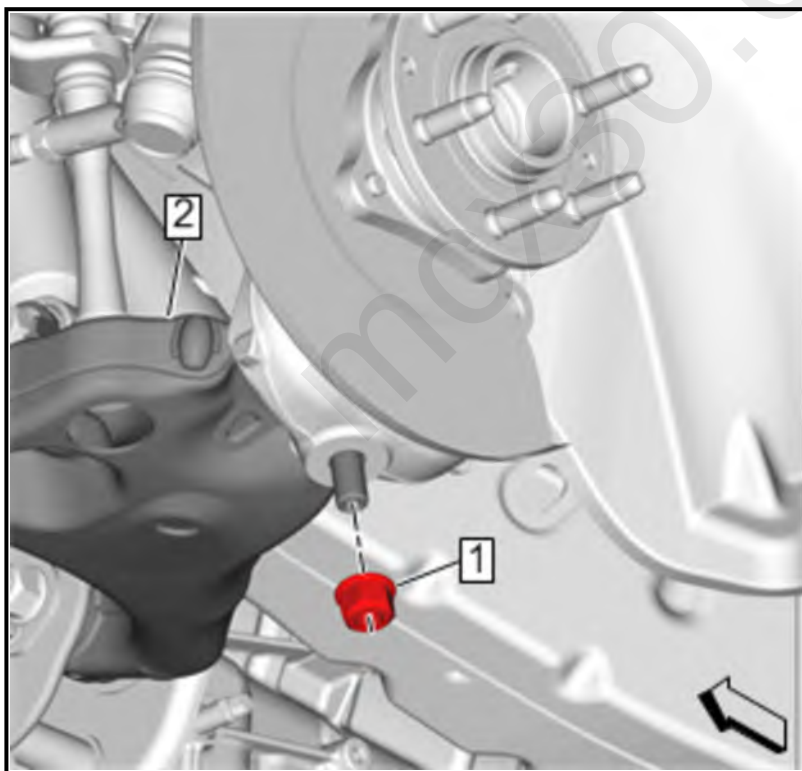
3.



Install the front lower control arm adjust bolt (1), front lower control arm adjust cam (2), and front lower control arm nut (3).

Lightly tighten the fastener but do NOT tighten to specification.

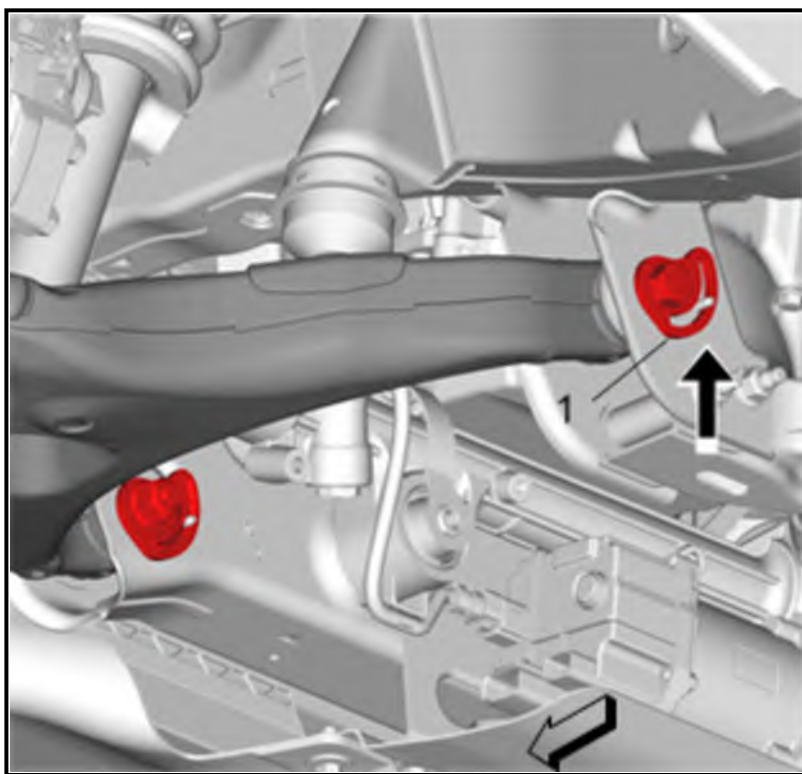
4.



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

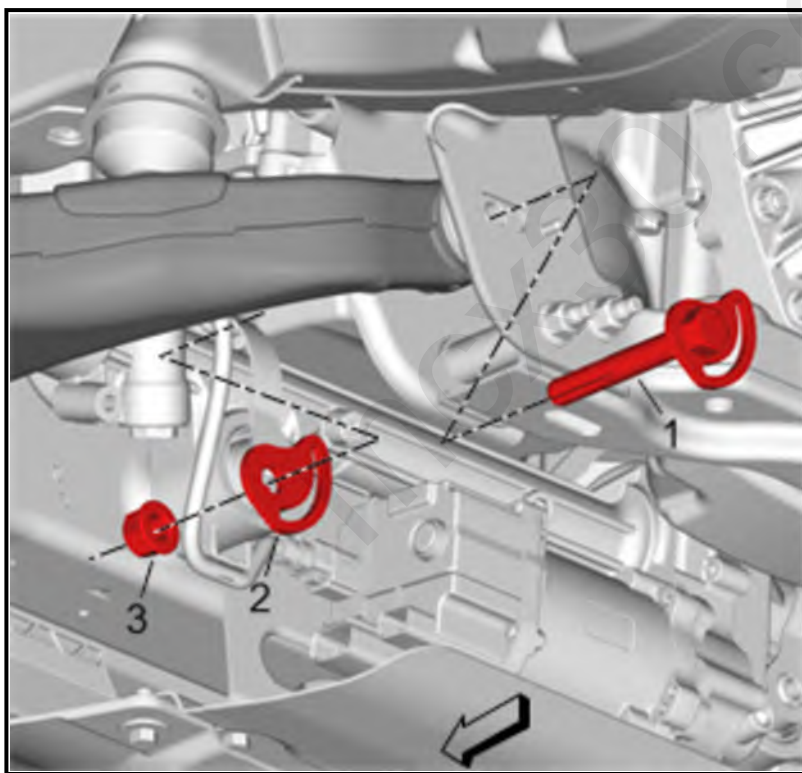
Lightly tighten the fastener but do NOT tighten to specification.

5.



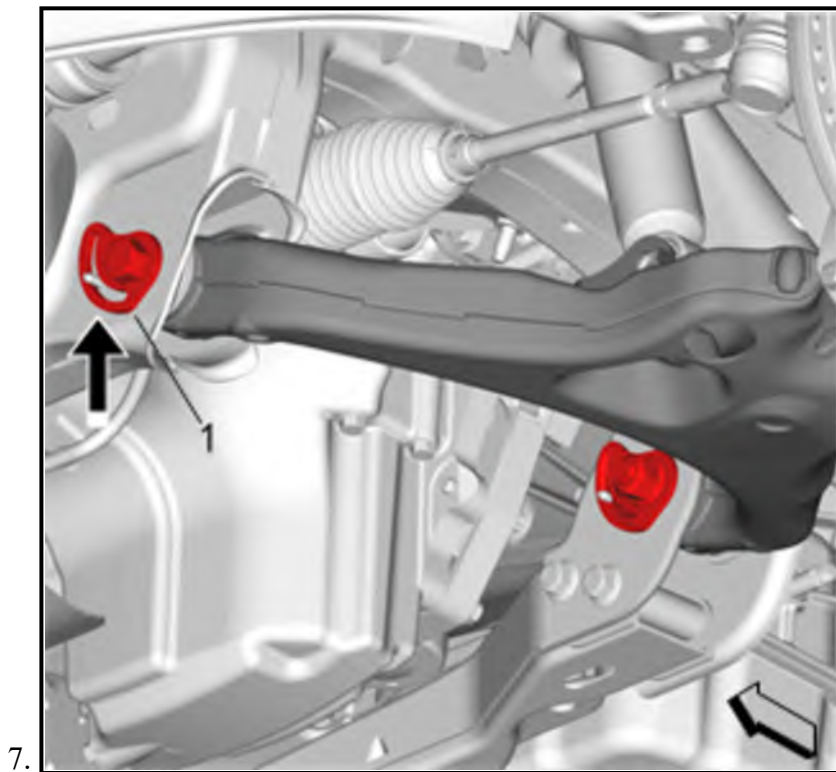
Align the front lower control arm rear adjust cam (1) to the position previously marked.

6.

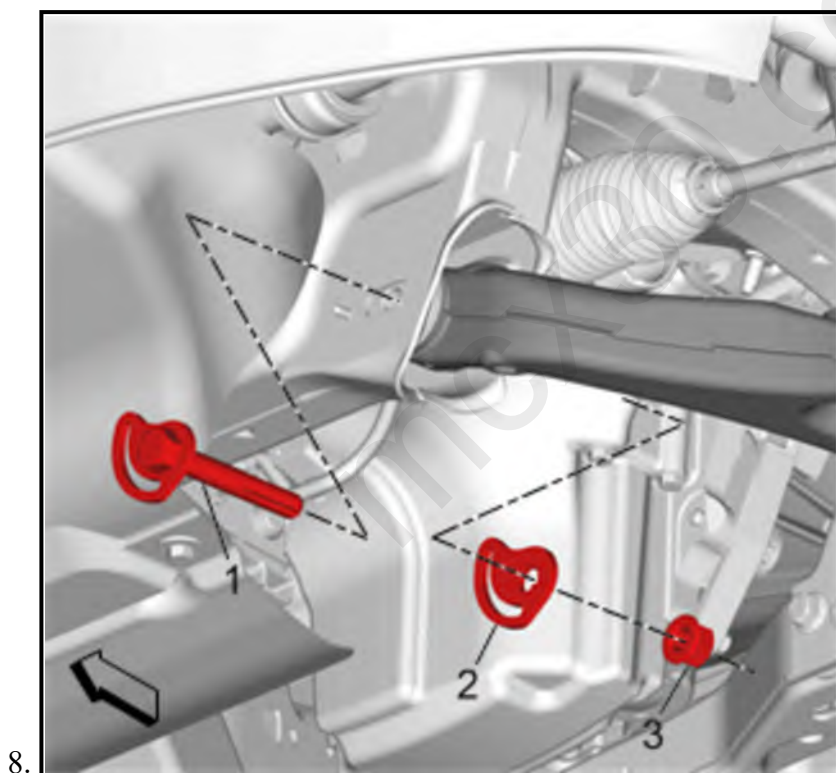


CAUTION: Refer to [Fastener Caution](#) .

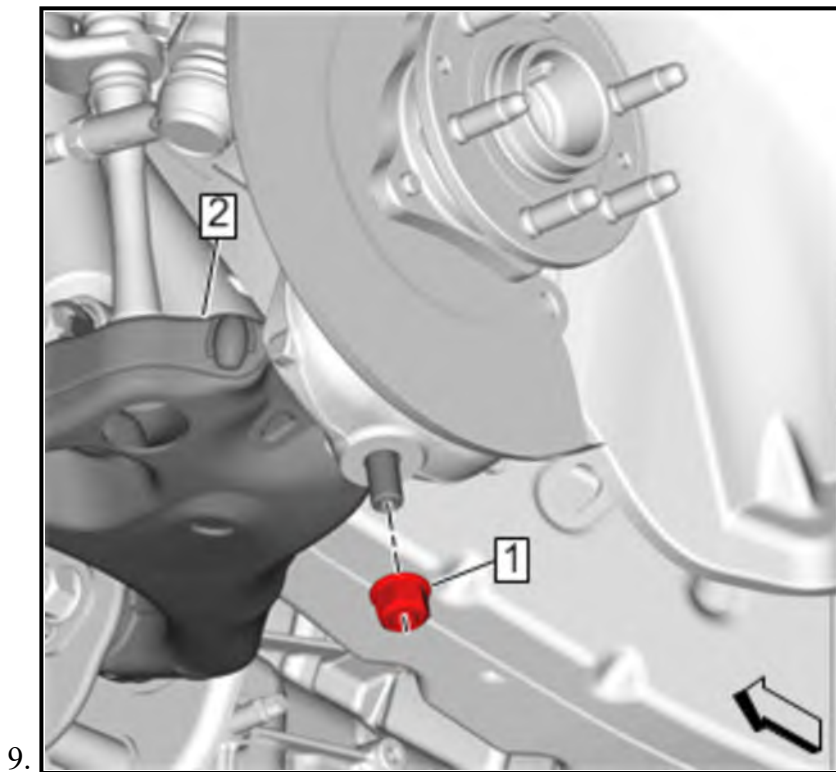
Tighten the front lower control arm nut (3) to 260 N.m (192 lb ft).



Align the front lower control arm front adjust cam (1) to the position previously marked.



Tighten the front lower control arm nut (3) to 260 N.m (192 lb ft).

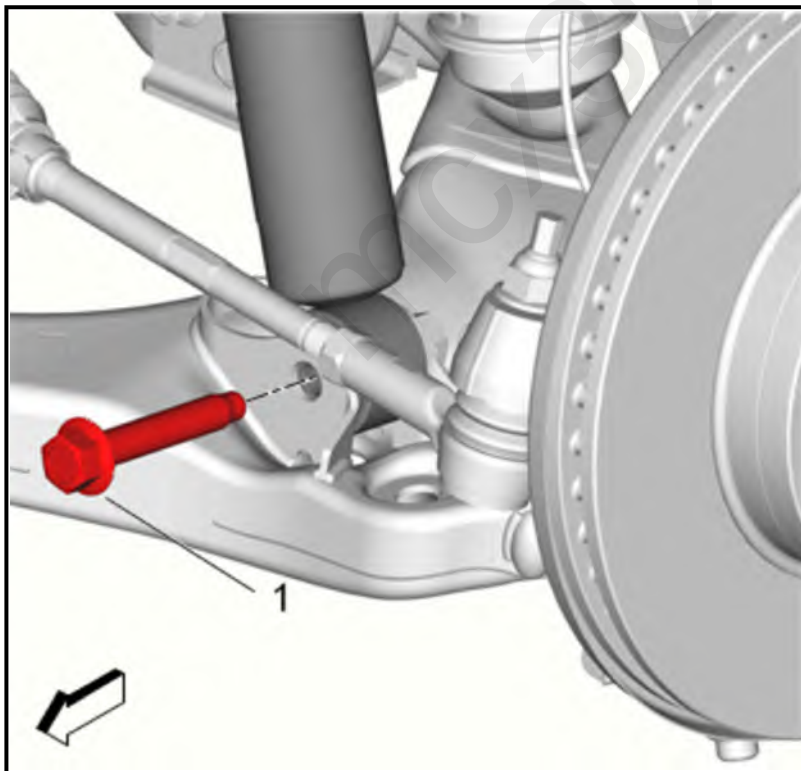


9.

Use the **EN-45059** meter to tighten the front lower control arm ball stud nut (1).

Tighten

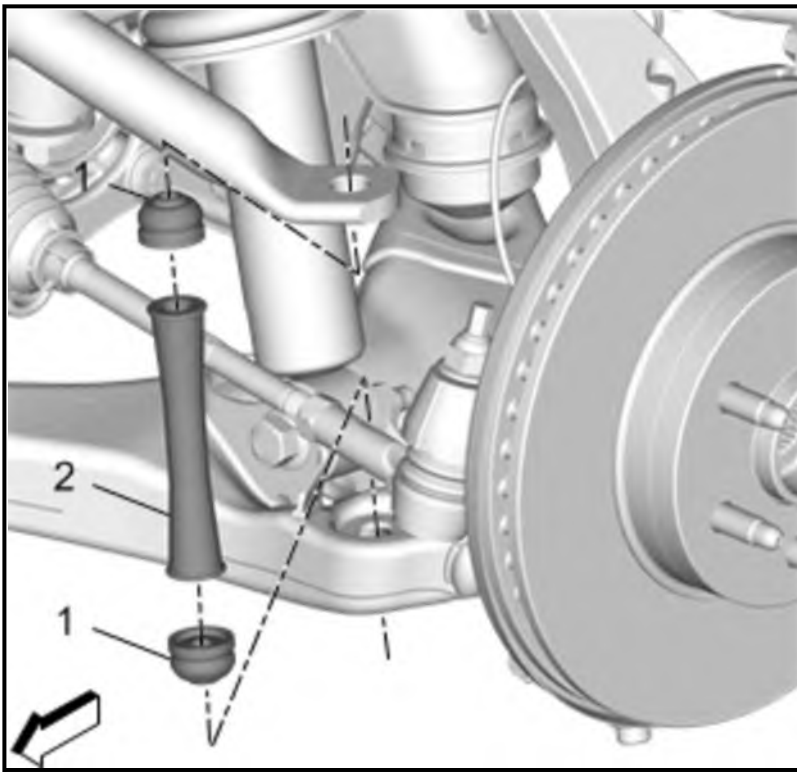
1. First Pass: 65 N.m (48 lb ft)
2. Final Pass: (60 - 75 degrees)



10.

Install the front shock absorber lower bracket bolt (1). [Shock Absorber and Spring Removal and Installation \(Without ZR2\)](#)

11.



Front Stabilizer Shaft Link (2) - Install - [Stabilizer Shaft Link Replacement \(Without ZR2\)](#)

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

LOWER CONTROL ARM REPLACEMENT (4WD, WITHOUT ZR2)

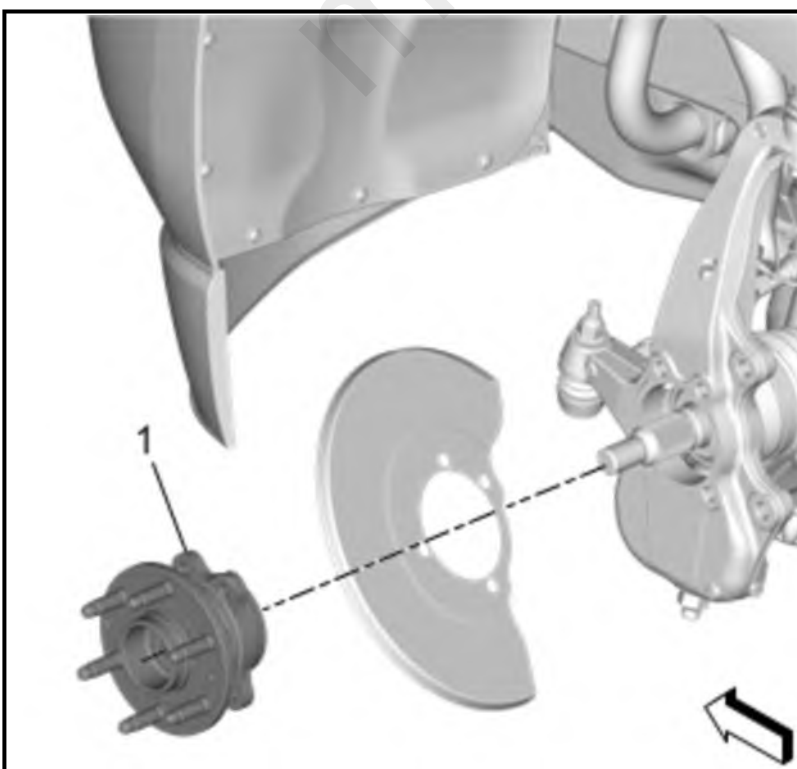
Special Tools

- CH-43631 Ball Joint Separator
- EN-45059 Torque Angle Meter

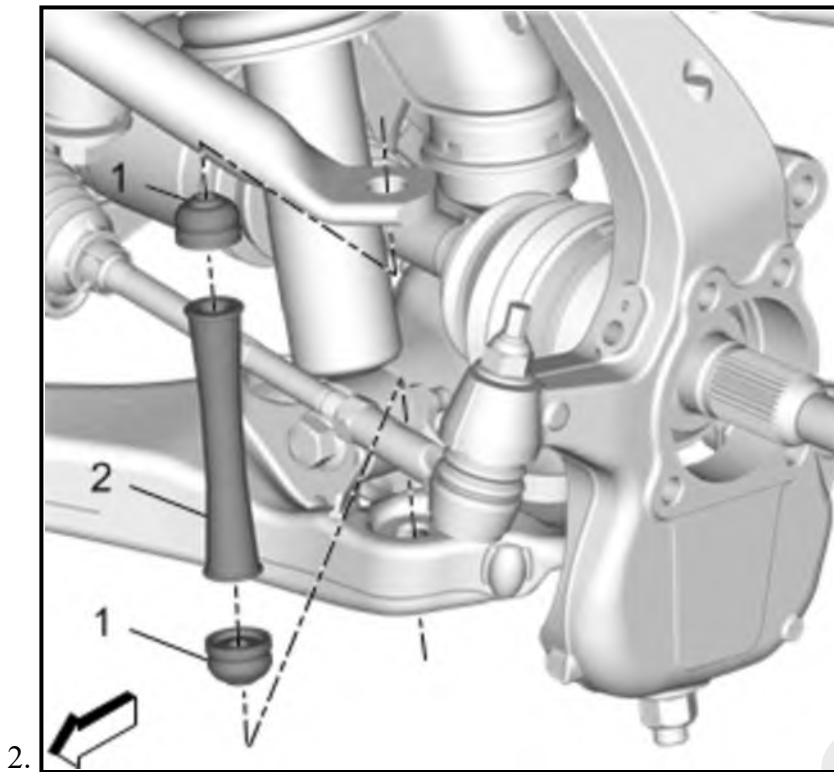
Equivalent regional tools: [Special Tools](#)

Removal Procedure

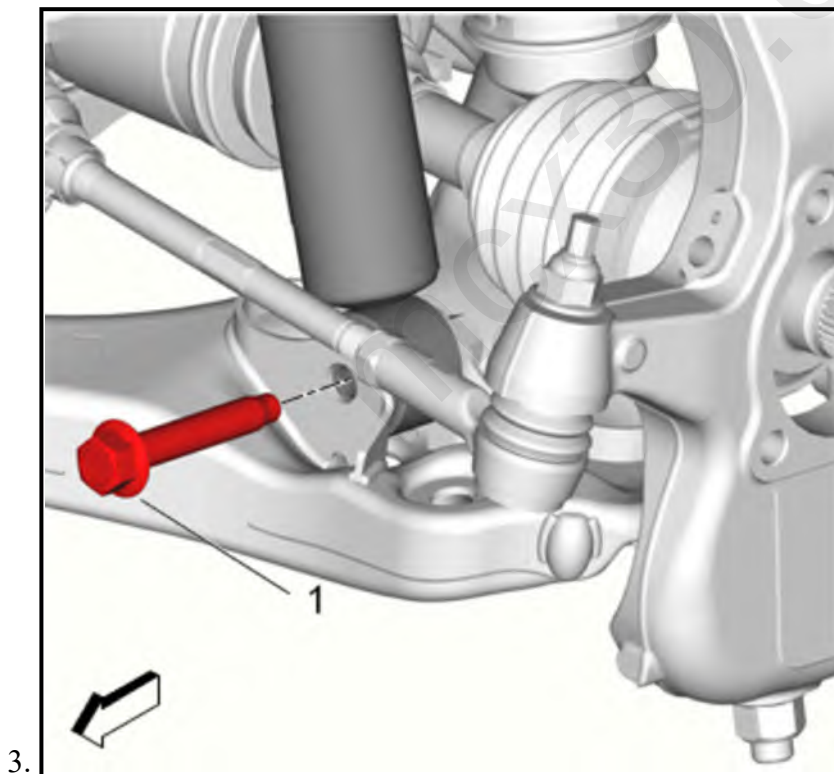
1.



Front Wheel Bearing and Hub Assembly (1) - Remove - [Front Wheel Bearing and Hub Replacement \(4WD, Without ZR2\)](#)

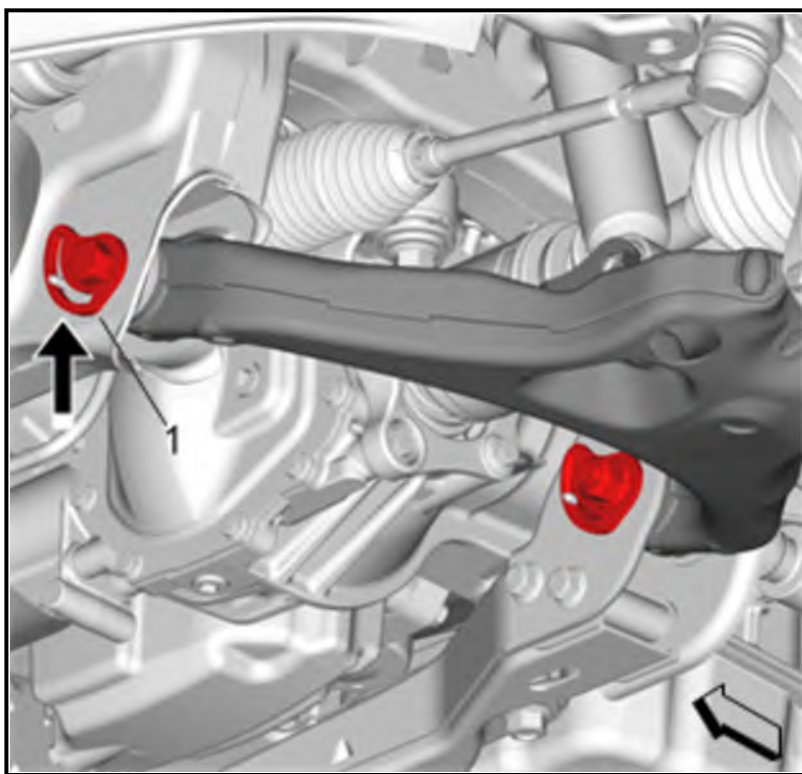


Front Stabilizer Shaft Link (2) - Remove - [Stabilizer Shaft Link Replacement \(Without ZR2\)](#)



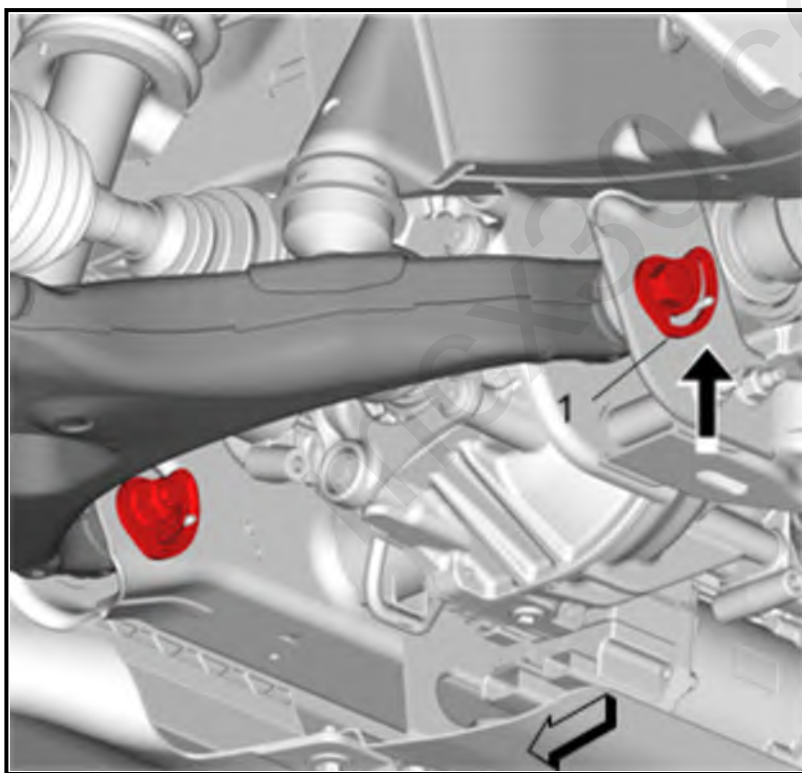
Remove the front shock absorber lower bracket bolt (1). [Shock Absorber and Spring Removal and Installation \(Without ZR2\)](#)

4.

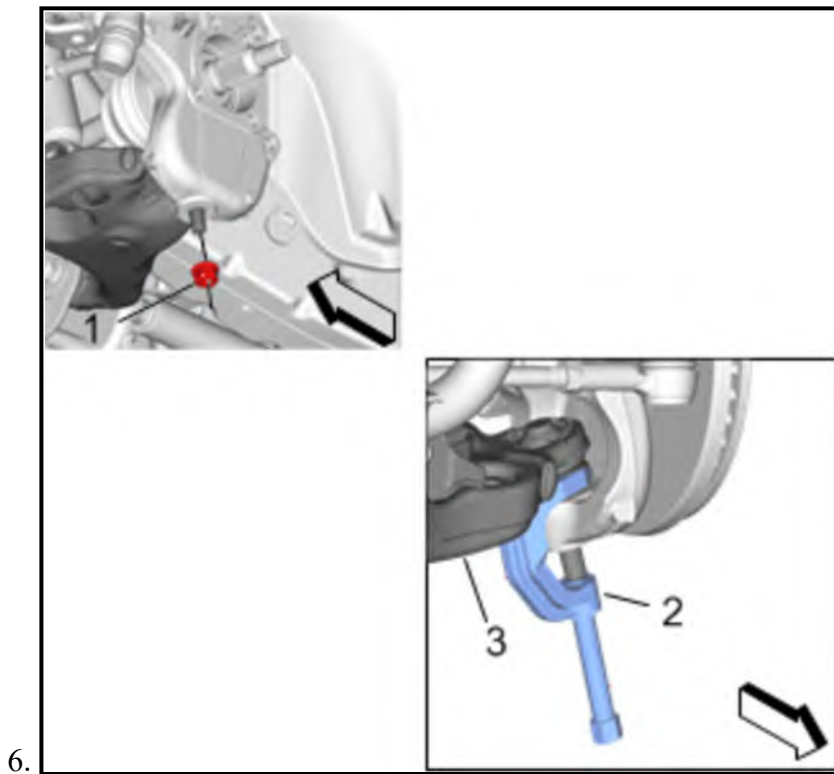


Mark the position of the front lower control arm front adjust cam (1).

5.



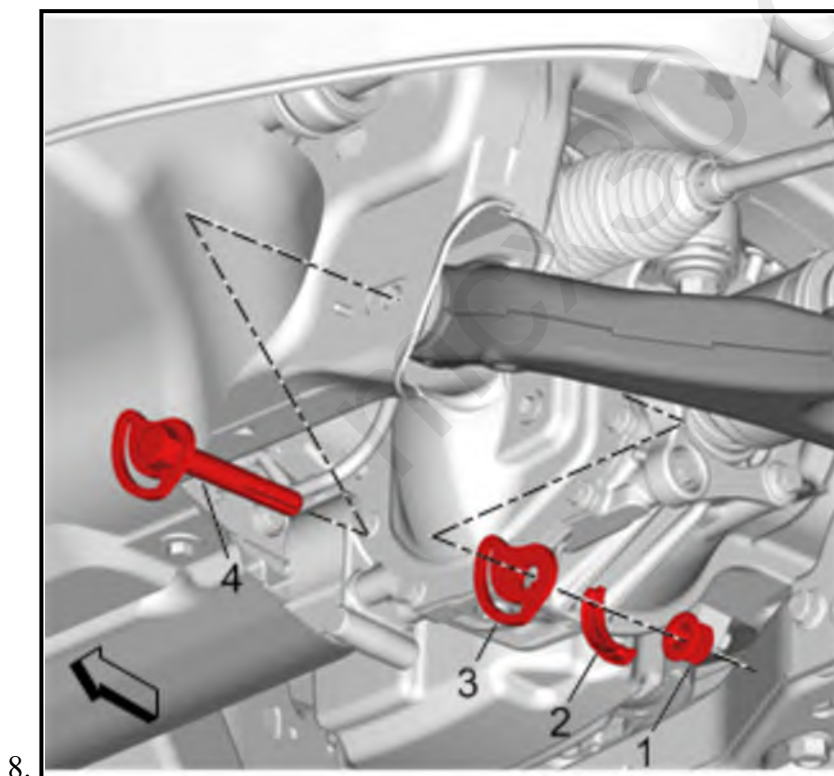
Mark the position of the front lower control arm rear adjust cam (1).



6.

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

7. Use the **CH-43631** separator (2) to separate the front lower control arm (3) from the steering knuckle.

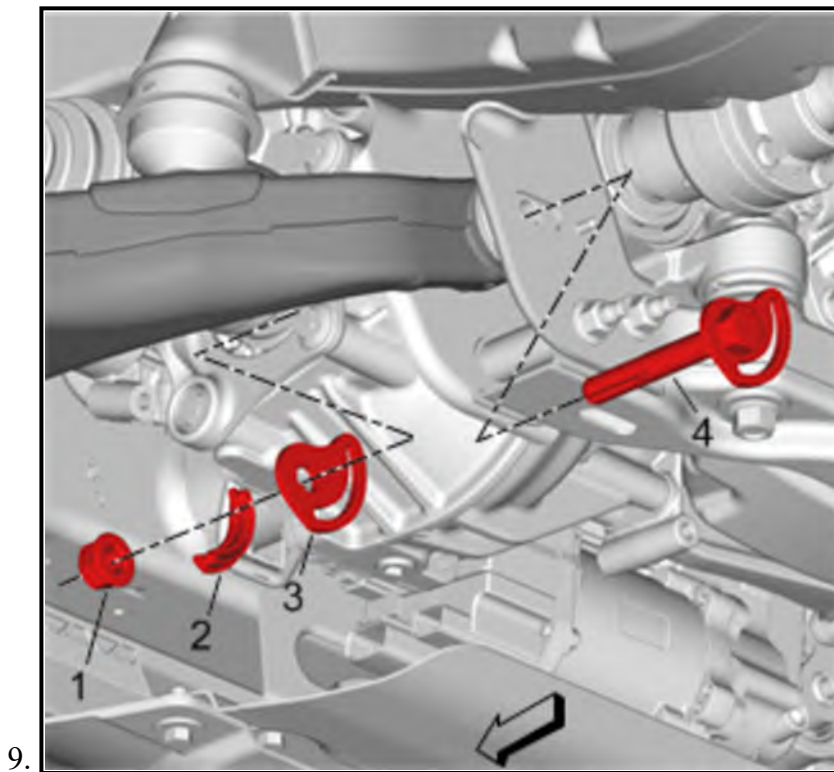


8.

NOTE: The front lower control arm adjust cam insert is installed in the factory to aid in alignment. Once removed, the insert should **NOT** be reused.

Remove the front lower control arm nut (1), front lower control arm adjust cam insert (2), front lower control arm adjust cam (3), and front lower control arm adjust bolt (4).

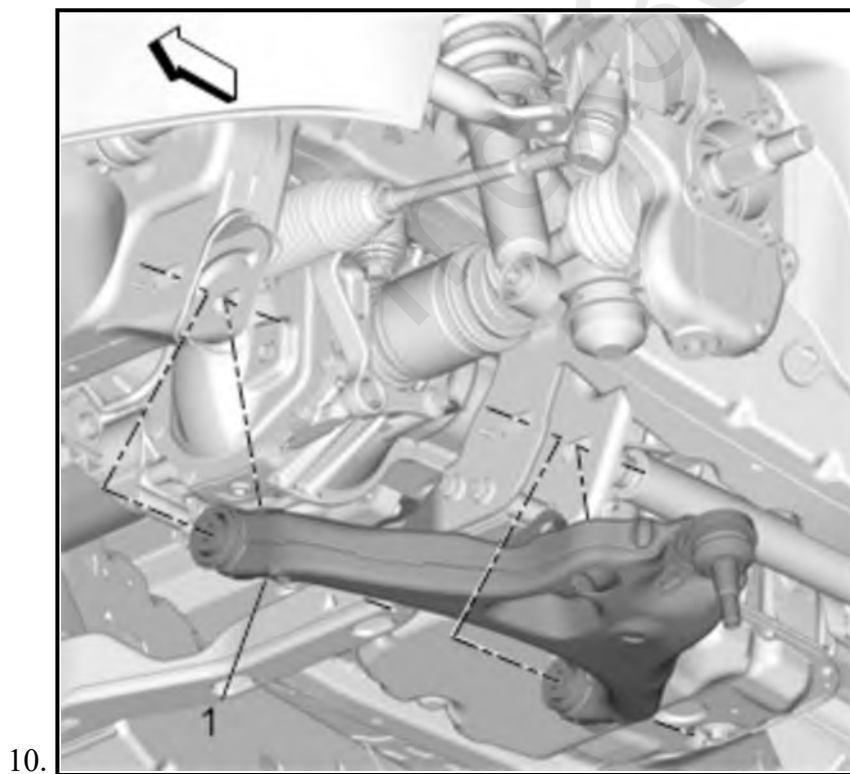
DISCARD the insert.



NOTE: The front lower control arm adjust cam insert is installed in the factory to aid in alignment. Once removed, the insert should **NOT** be reused.

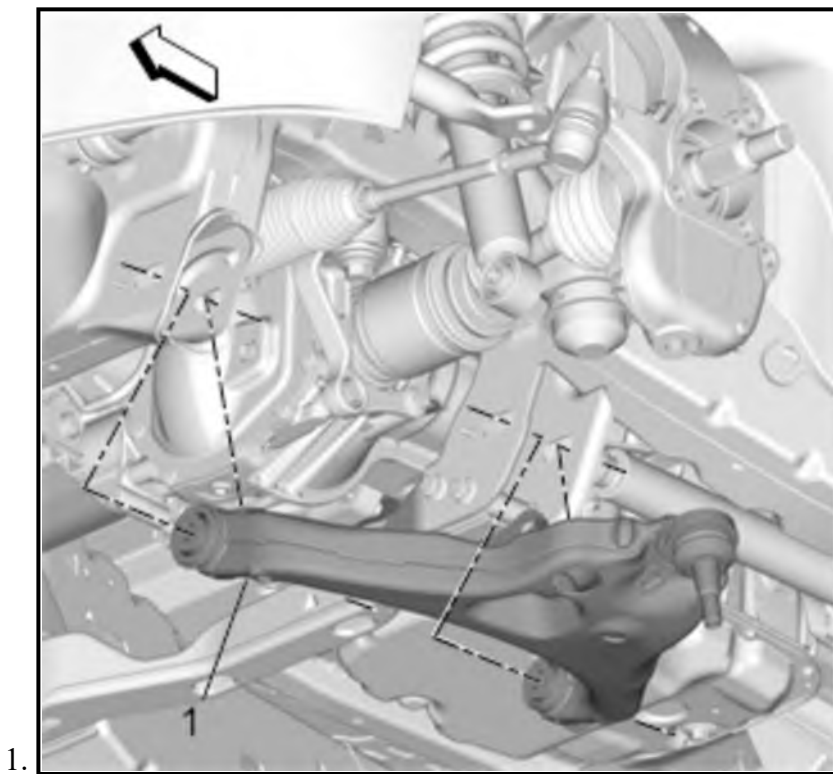
Remove the front lower control arm nut (1), front lower control arm adjust cam insert (2), front lower control arm adjust cam (3), and front lower control arm adjust bolt (4).

DISCARD the insert.

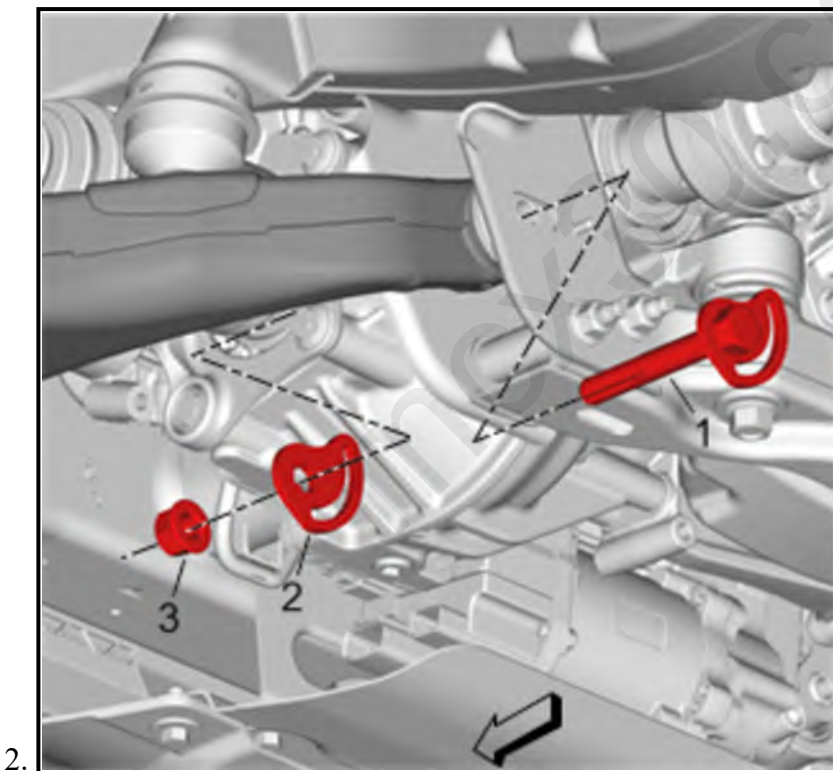


Remove the front lower control arm (1) from the vehicle.

Installation Procedure



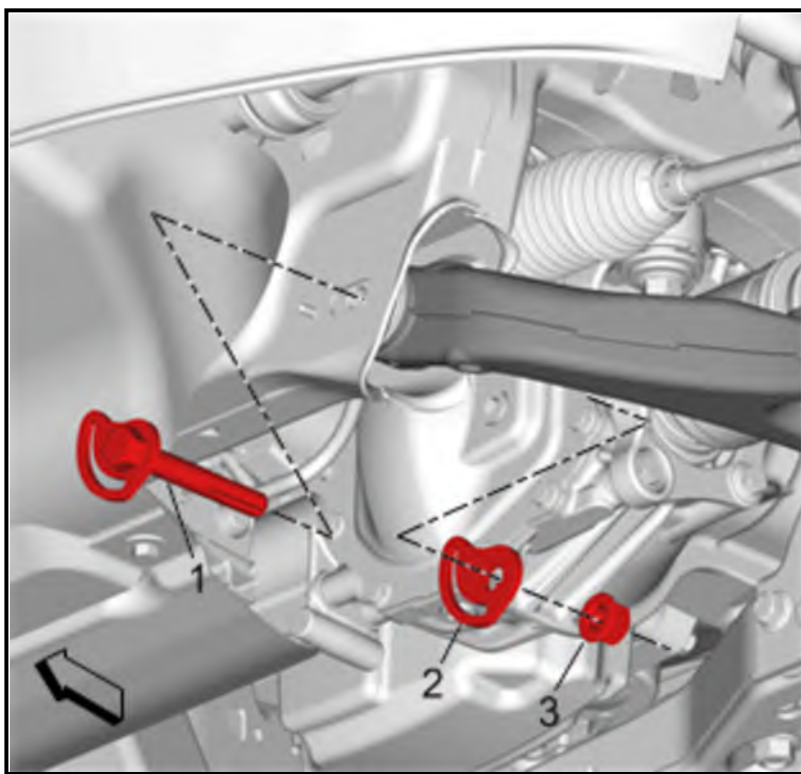
1.
Position the front lower control arm (1) on the vehicle.



2.
Install the front lower control arm adjust bolt (1), front lower control arm adjust cam (2), and front lower control arm nut (3).

Lightly tighten the fastener but do NOT tighten to specification.

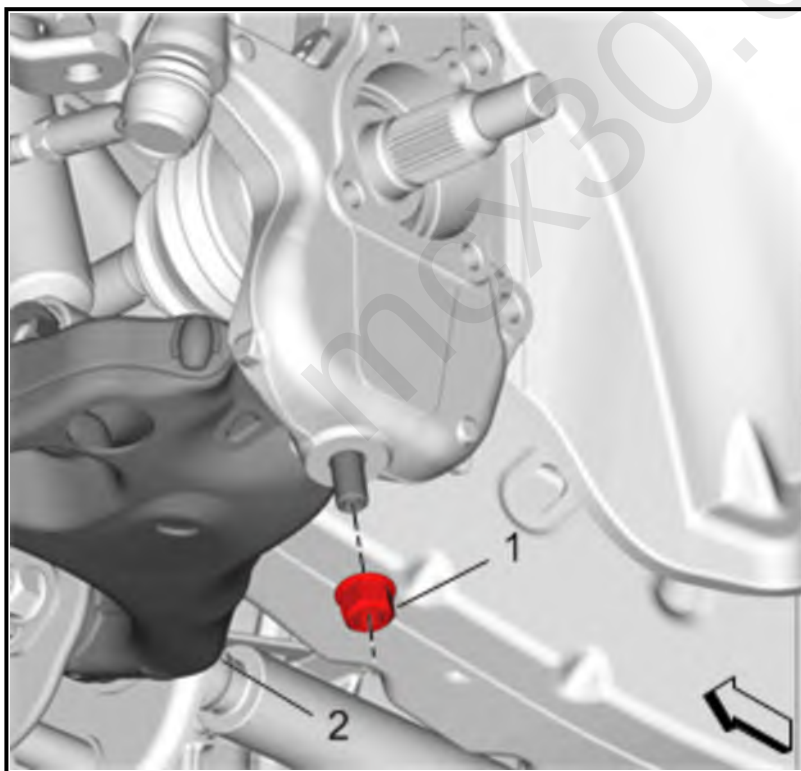
3.



Install the front lower control arm adjust bolt (1), front lower control arm adjust cam (2), and front lower control arm nut (3).

Lightly tighten the fastener but do NOT tighten to specification.

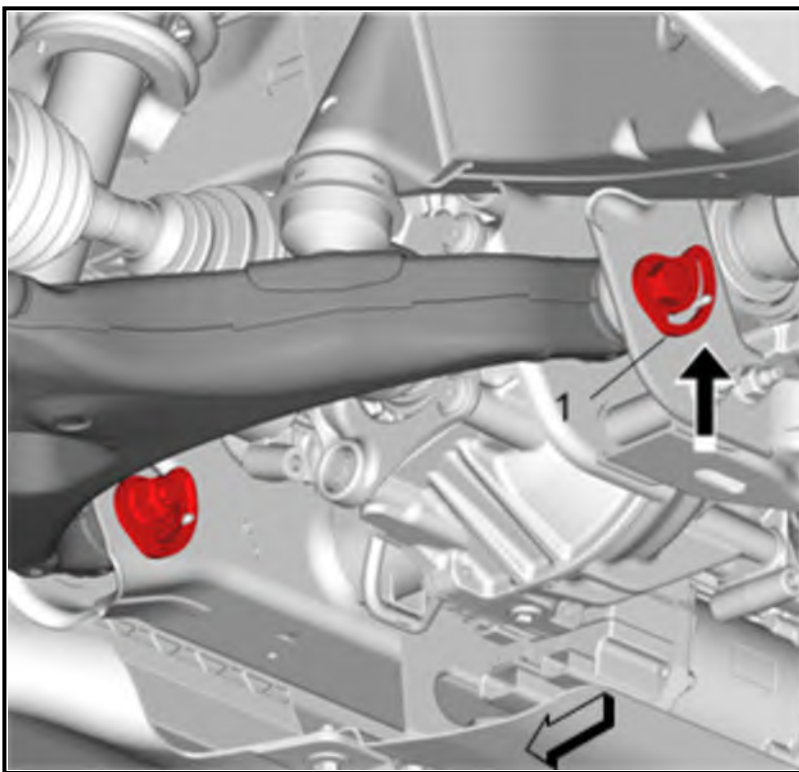
4.



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

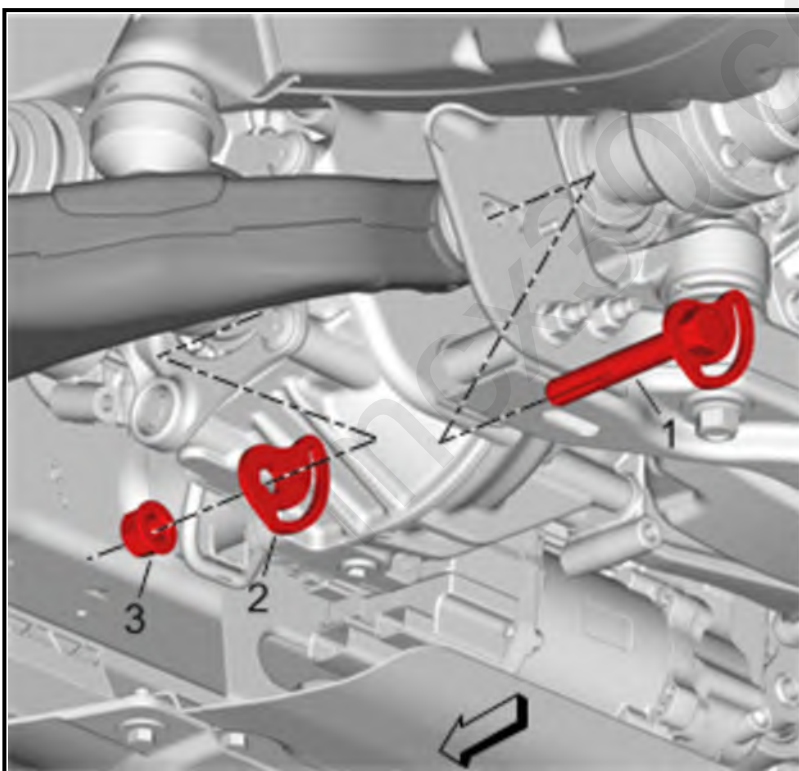
Lightly tighten the fastener but do NOT tighten to specification.

5.



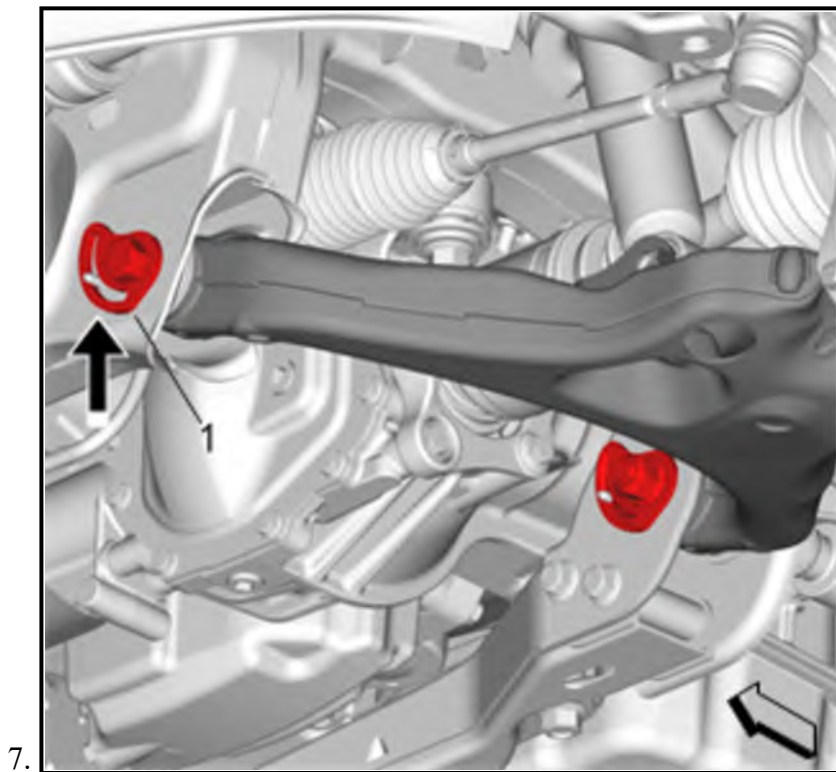
Align the front lower control arm rear adjust cam (1) to the position previously marked.

6.

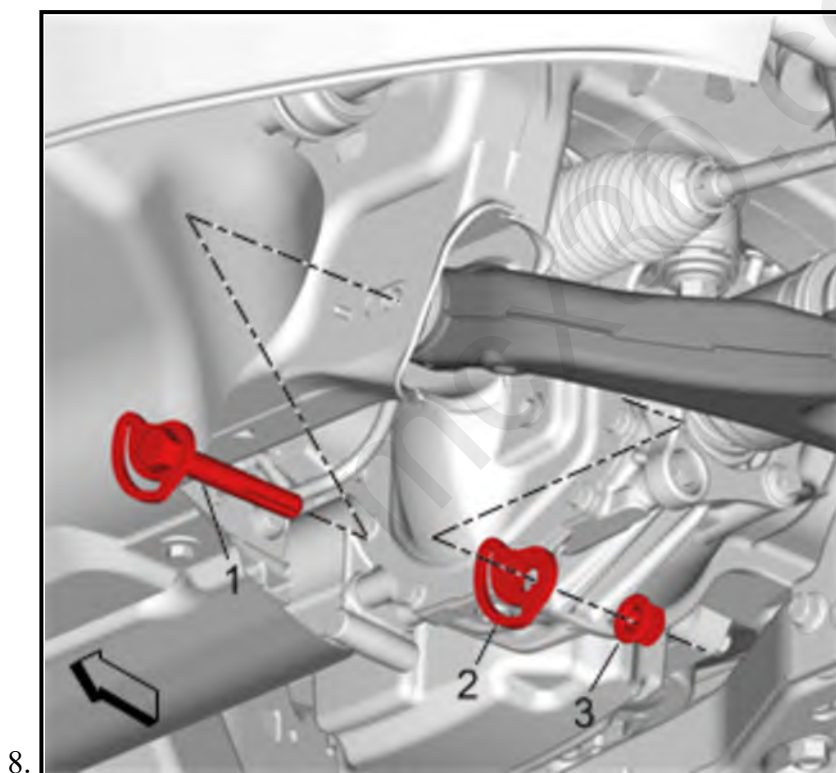


CAUTION: Refer to [Fastener Caution](#) .

Tighten the front lower control arm nut (3) to 260 N.m (192 lb ft).

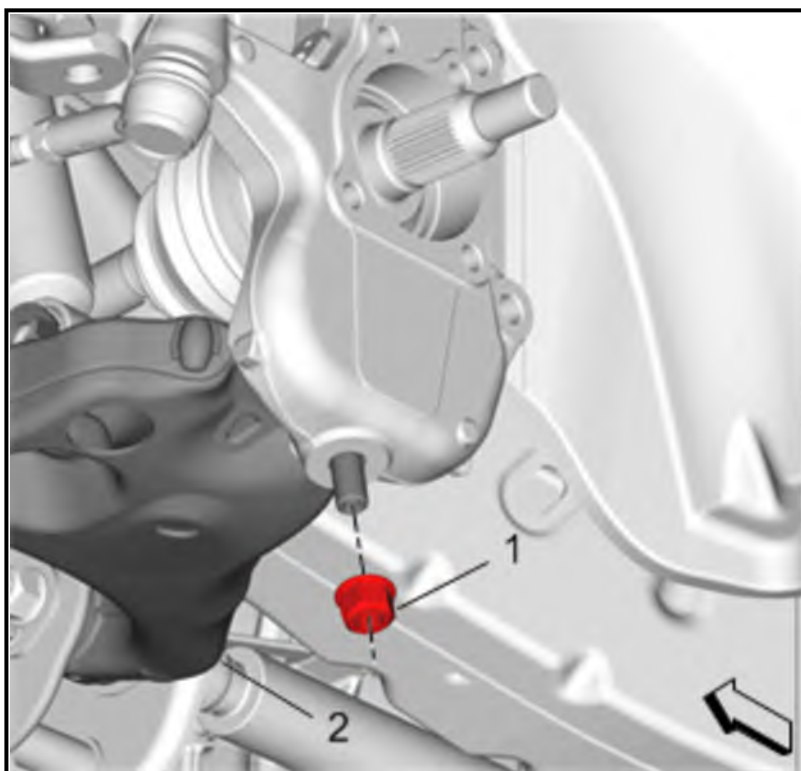


Align the front lower control arm front adjust cam (1) to the position previously marked.



Tighten the front lower control arm nut (3) to 260 N.m (192 lb ft).

9.

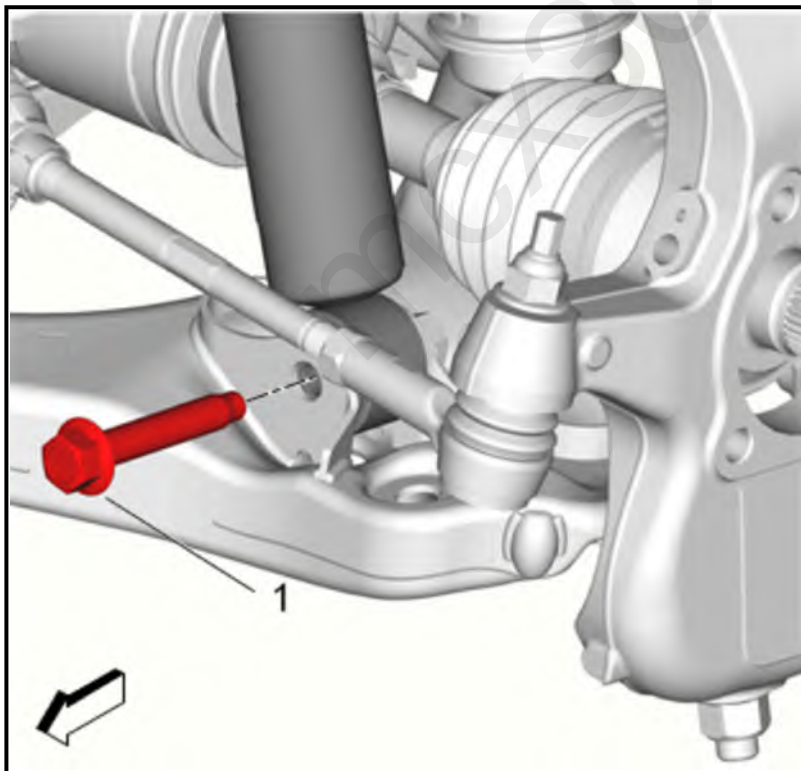


Use the **EN-45059** meter to tighten the front lower control arm ball stud nut (1).

Tighten

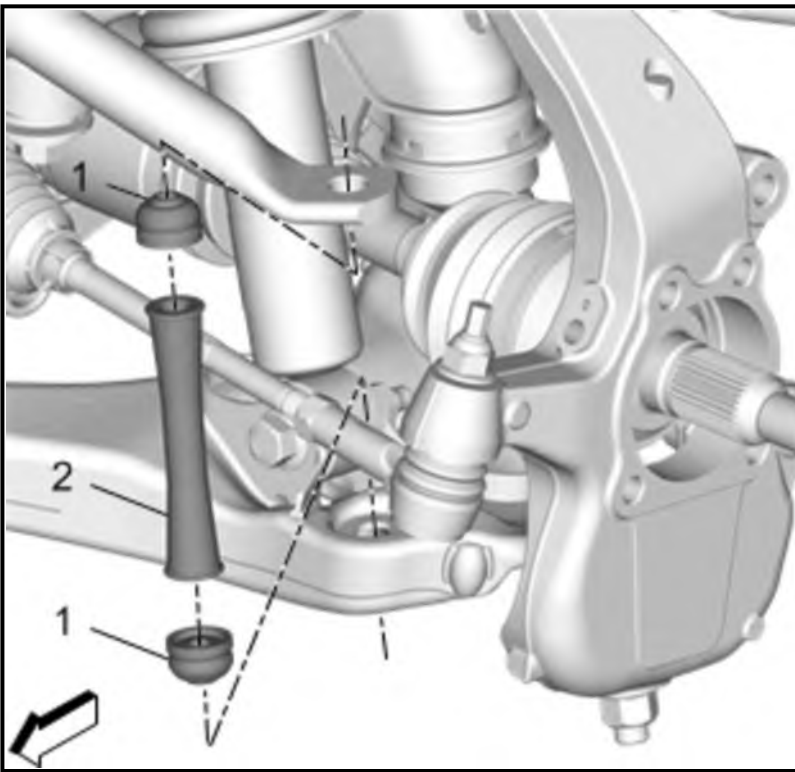
1. First Pass: 65 N.m (48 lb ft)
2. Final Pass: (60 - 75 degrees)

10.



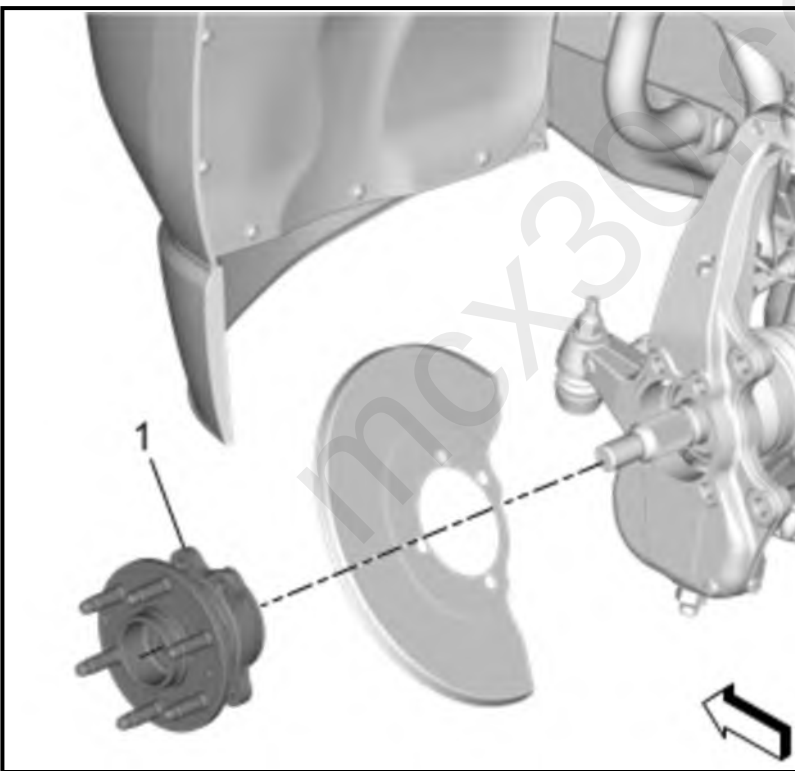
Install the front shock absorber lower bracket bolt (1). [Shock Absorber and Spring Removal and Installation \(Without ZR2\)](#)

11.



Front Stabilizer Shaft Link (2) - Install - [Stabilizer Shaft Link Replacement \(Without ZR2\)](#)

12.



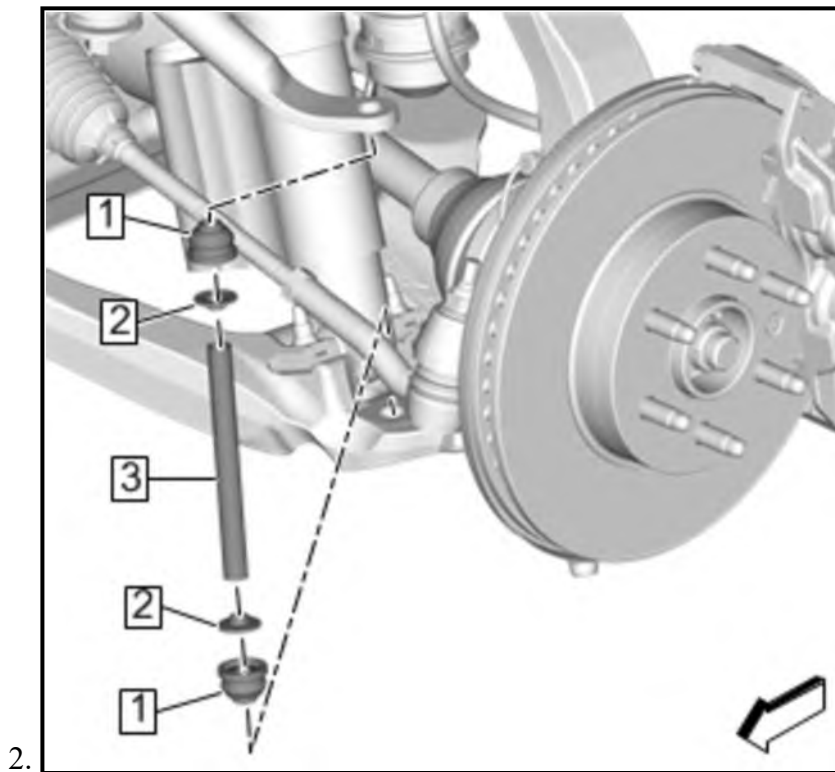
Front Wheel Bearing and Hub Assembly (1) - Install - [Front Wheel Bearing and Hub Replacement \(4WD, Without ZR2\)](#)

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

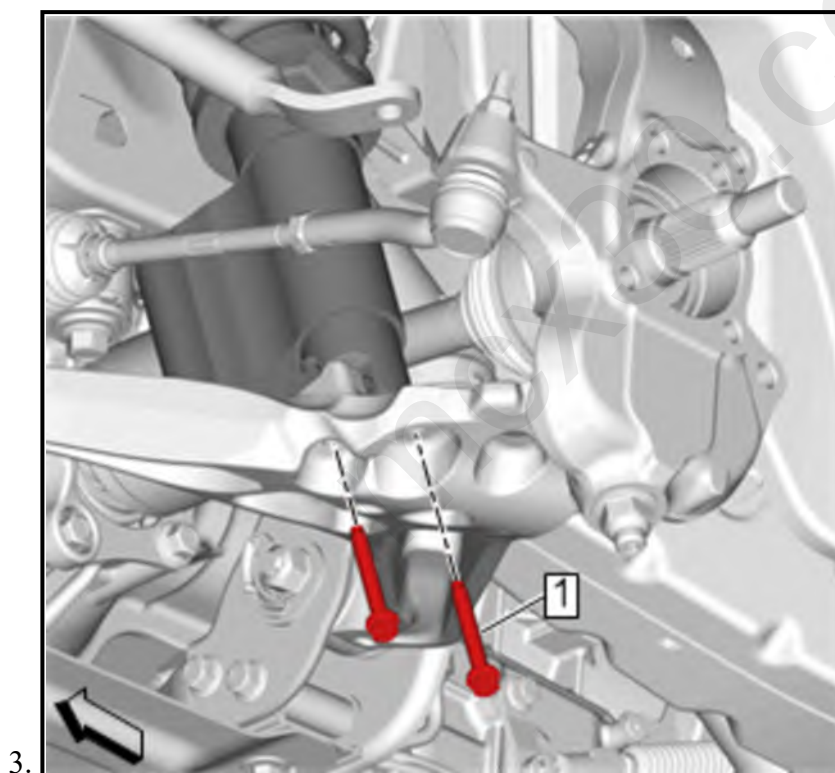
LOWER CONTROL ARM REPLACEMENT (4WD, WITH ZR2)

Removal Procedure

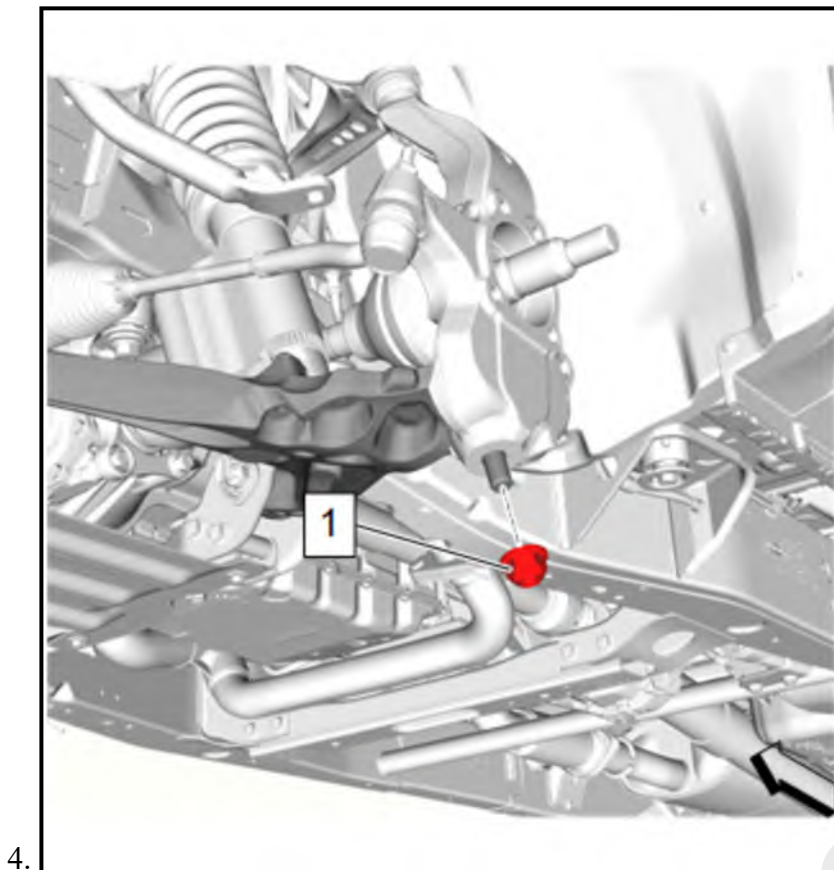
1. Remove the tire and wheel assembly. [Tire and Wheel Removal and Installation](#)



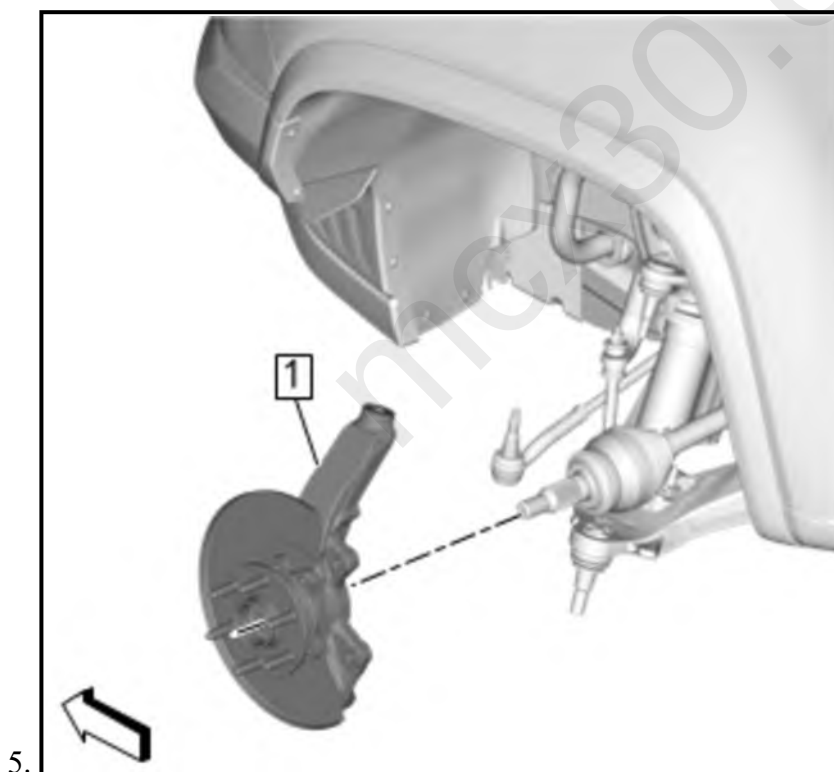
Front Stabilizer Shaft Link (3) - Remove - [Stabilizer Shaft Link Replacement \(With ZR2\)](#).



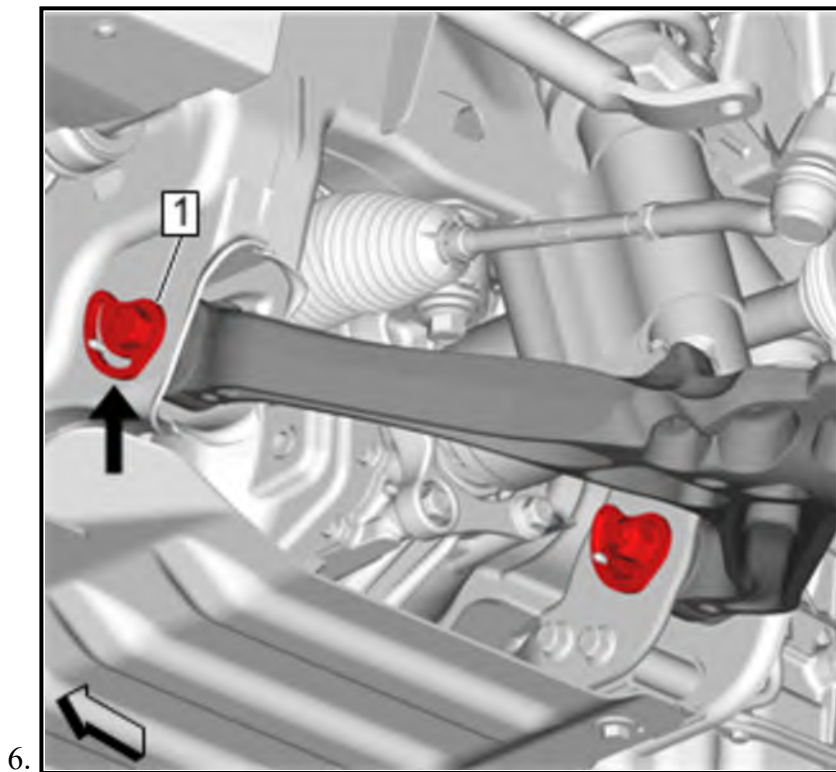
Remove the front shock absorber bolts (1).



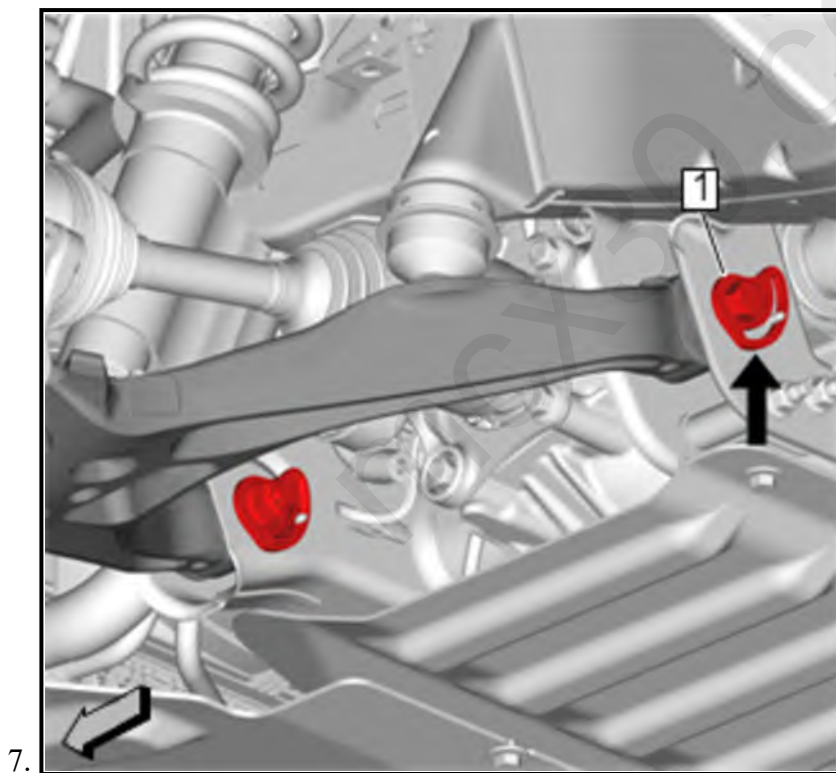
Front Lower Control Arm Ball Stud Nut (1) - Remove



Steering Knuckle (1) - Remove - [Steering Knuckle Replacement \(4WD with ZR2\)](#)

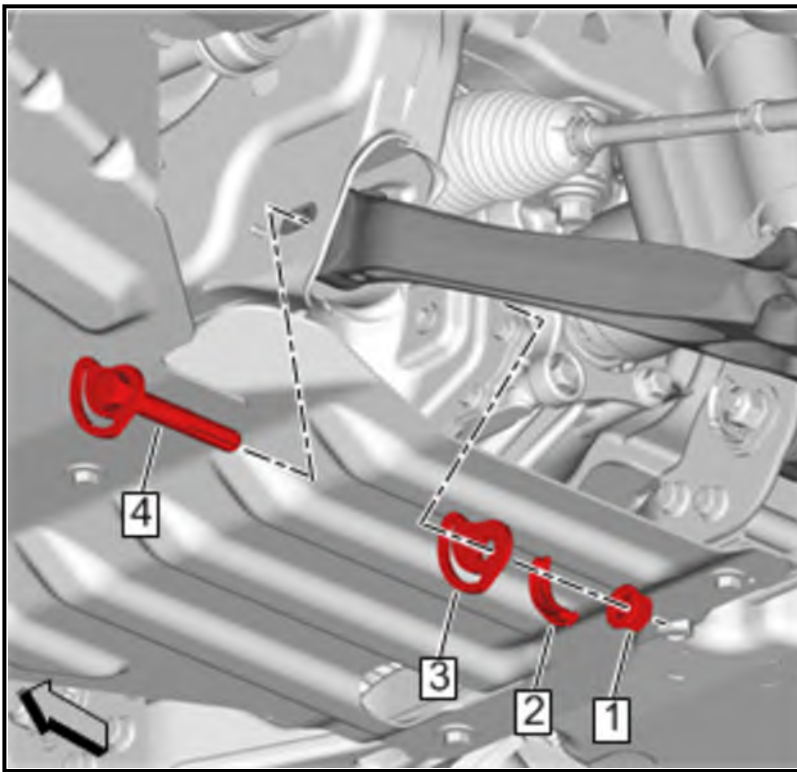


Mark the position of the front lower control arm front adjust cam (1).



Mark the position of the front lower control arm rear adjust cam (1).

8.



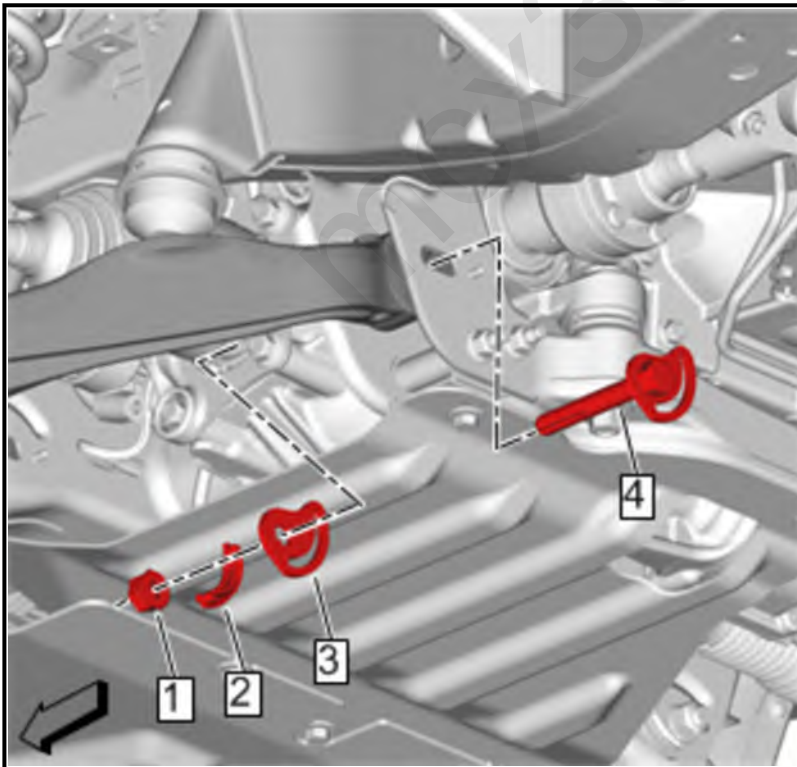
NOTE:

The front lower control arm adjust cam insert is installed in the factory to aid in alignment. Once removed, the insert should NOT be reused.

Remove the front lower control arm nut (1), front lower control arm adjust cam insert (2), front lower control arm adjust cam (3), and front lower control arm adjust bolt (4).

DISCARD the insert.

9.

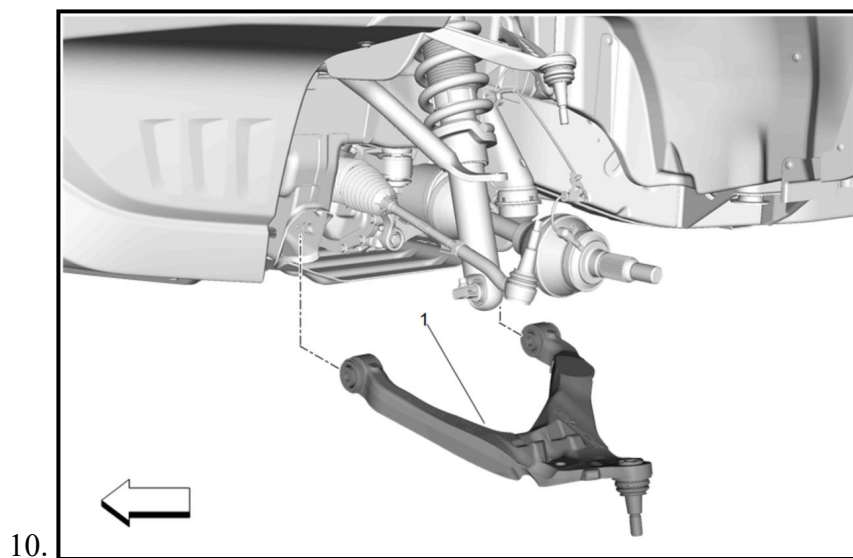


NOTE:

The front lower control arm adjust cam insert is installed in the factory to aid in alignment. Once removed, the insert should NOT be reused.

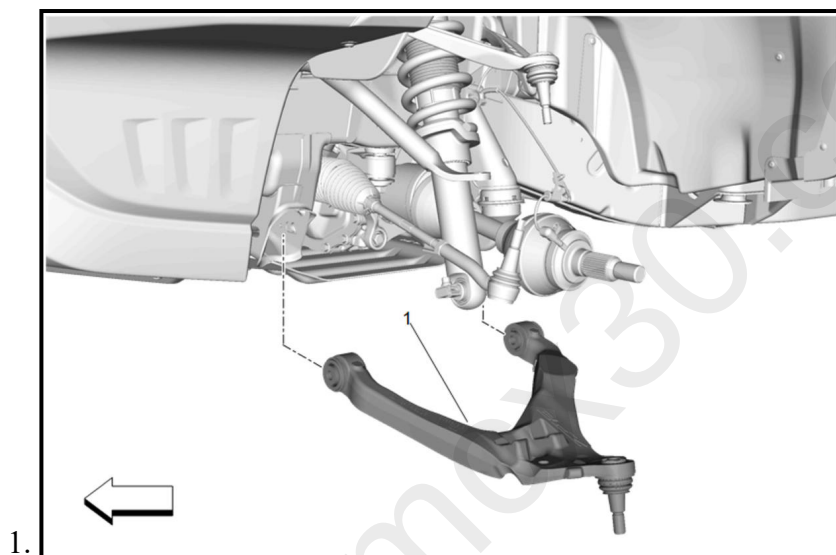
Remove the front lower control arm nut (1), front lower control arm adjust cam insert (2), front lower control arm adjust cam (3), and front lower control arm adjust bolt (4).

DISCARD the insert.

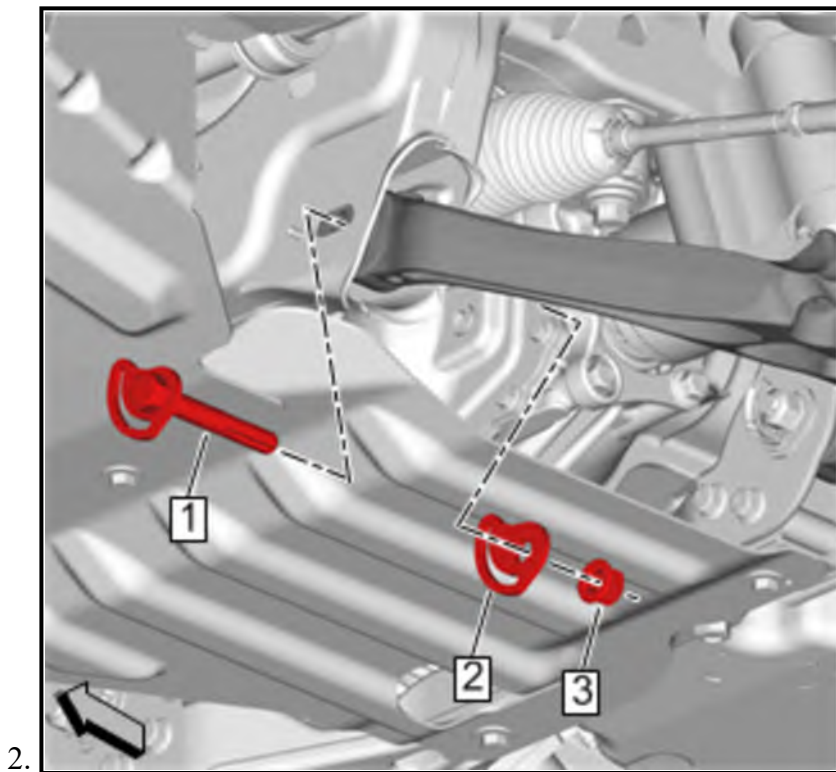


Remove the front lower control arm (1) from the vehicle.

Installation Procedure

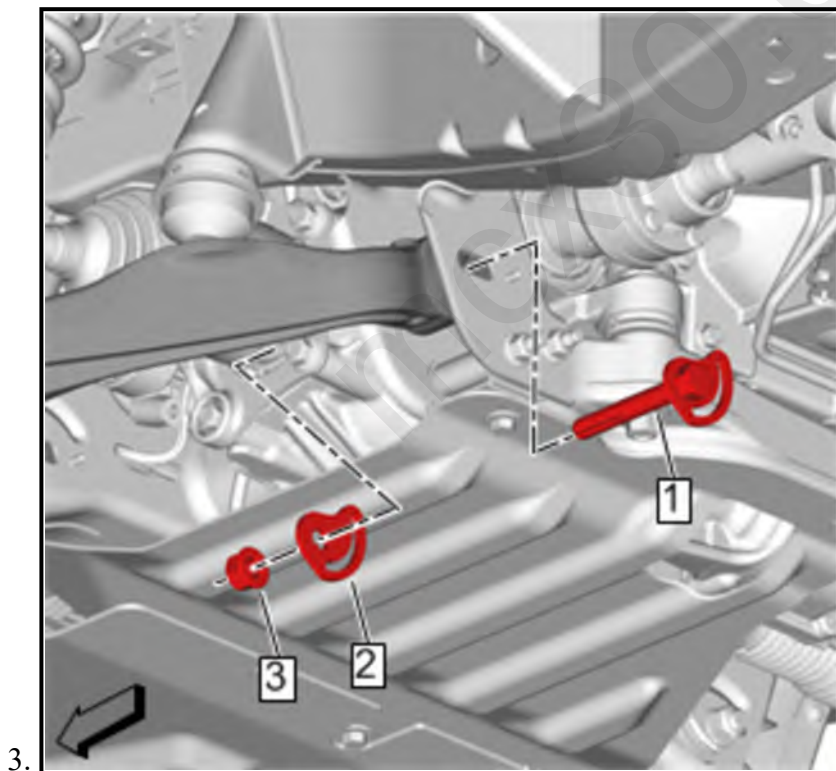


Position the front lower control arm (1) on the vehicle.



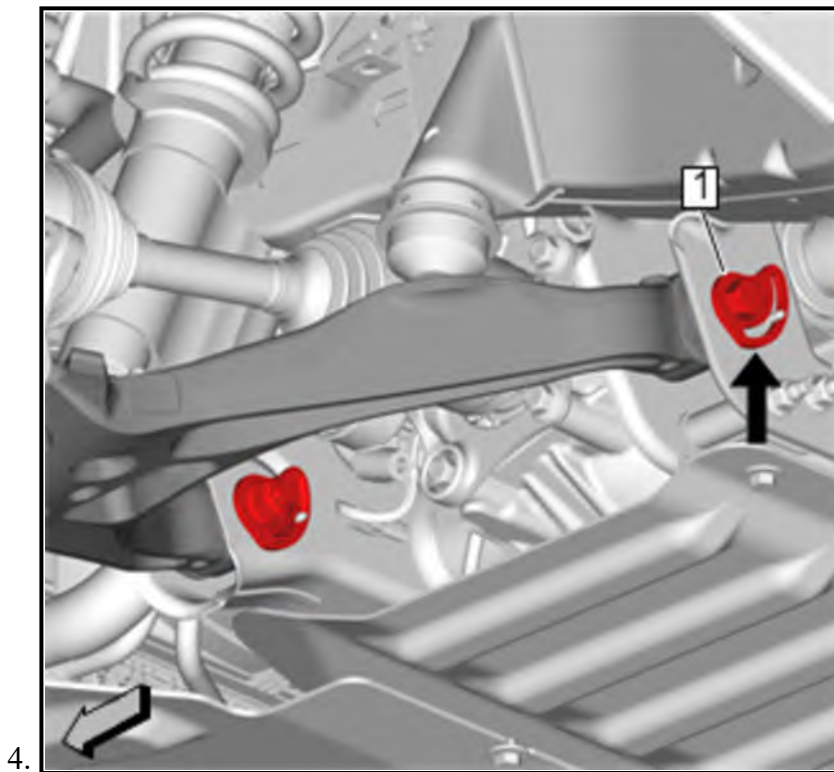
2. Install the front lower control arm adjust bolt (1), front lower control arm adjust cam (2), and front lower control arm nut (3).

Lightly tighten the fastener but do NOT tighten to specification.

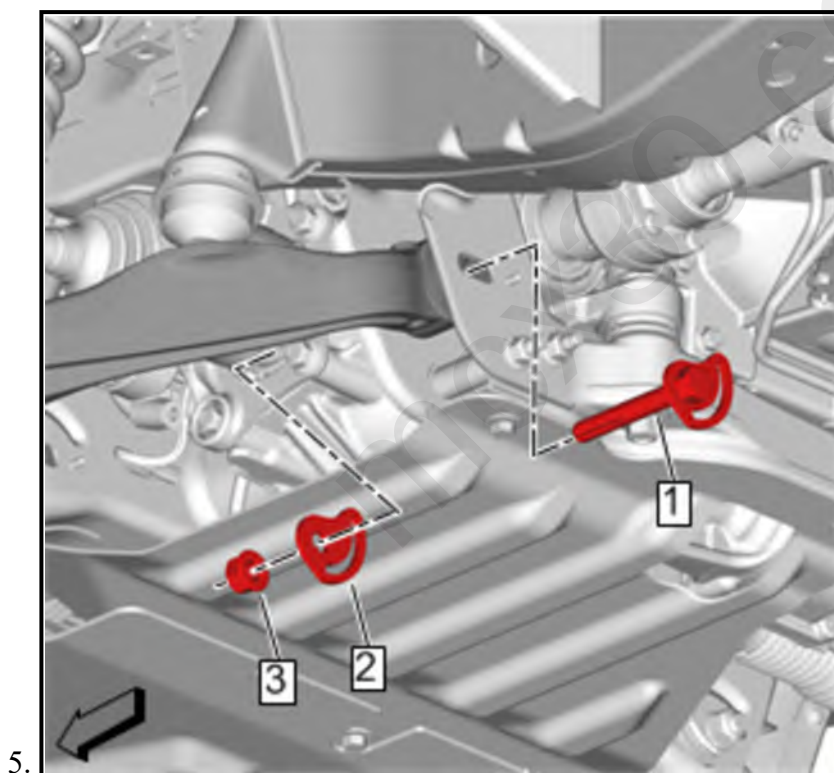


3. Install the front lower control arm adjust bolt (1), front lower control arm adjust cam (2), and front lower control arm nut (3).

Lightly tighten the fastener but do NOT tighten to specification.

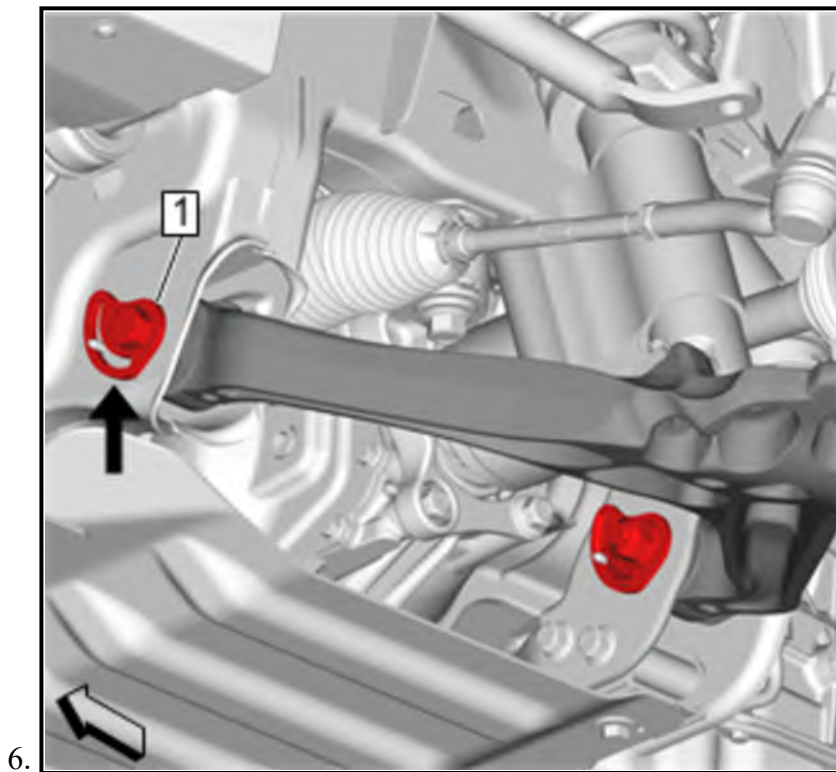


Align the front lower control arm rear adjust cam (1) to the position previously marked.

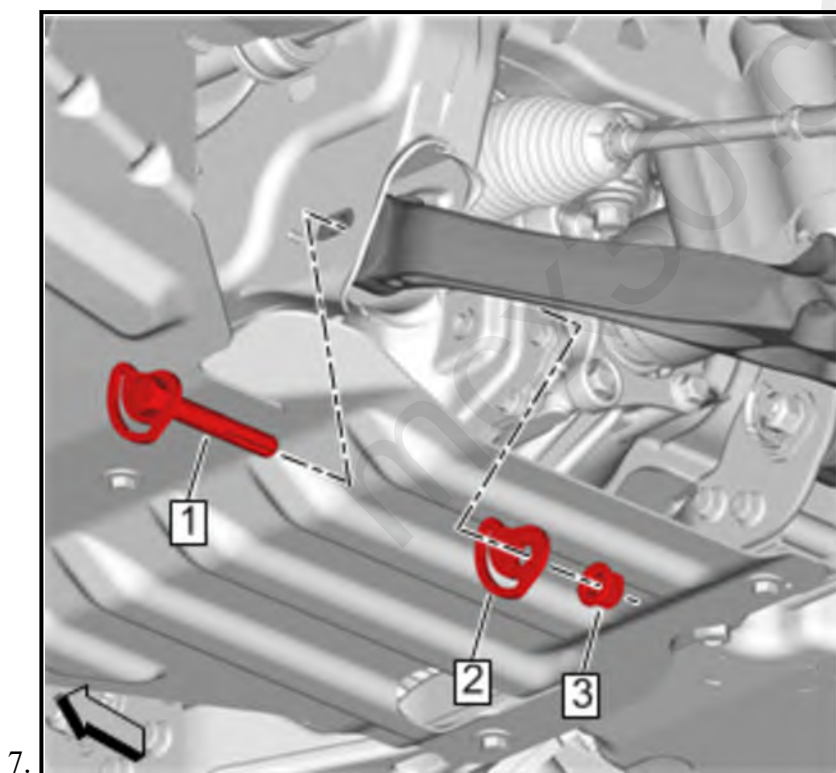


CAUTION: Refer to [Fastener Caution](#) .

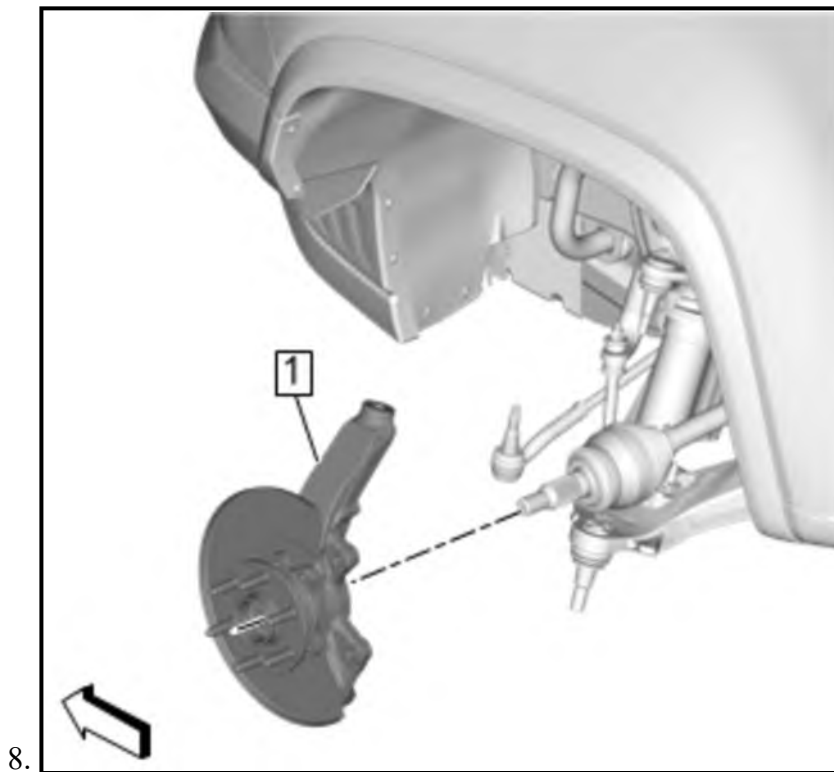
Tighten the front lower control arm nut (3) to 260 N.m (192 lb ft).



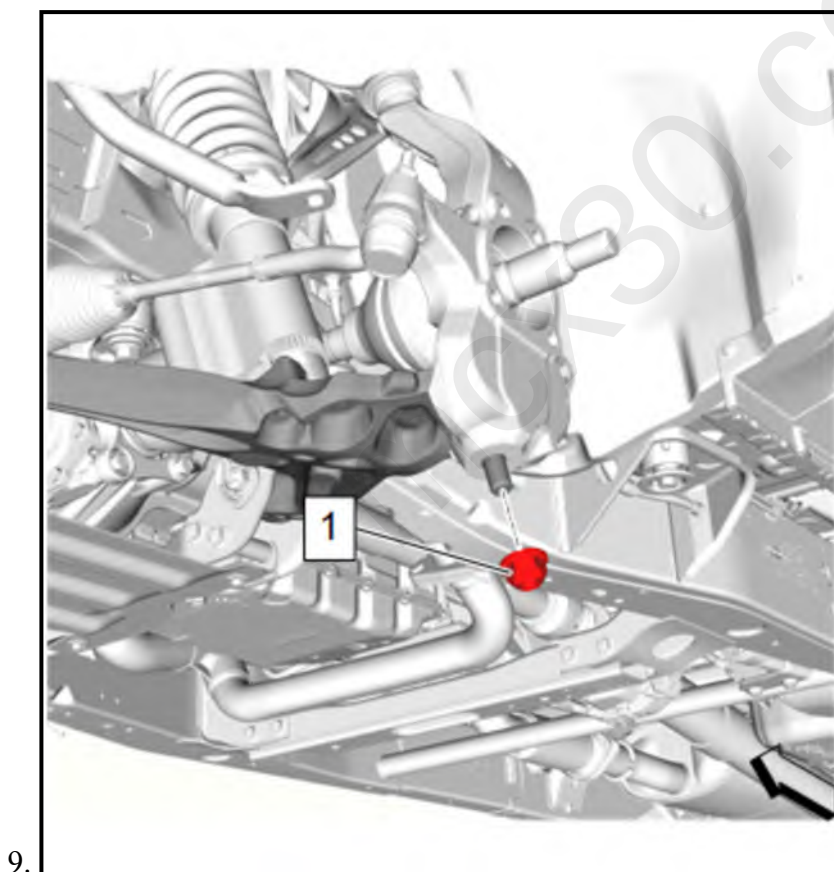
Align the front lower control arm front adjust cam (1) to the position previously marked.



Tighten the front lower control arm nut (3) to 260 N.m (192 lb ft).



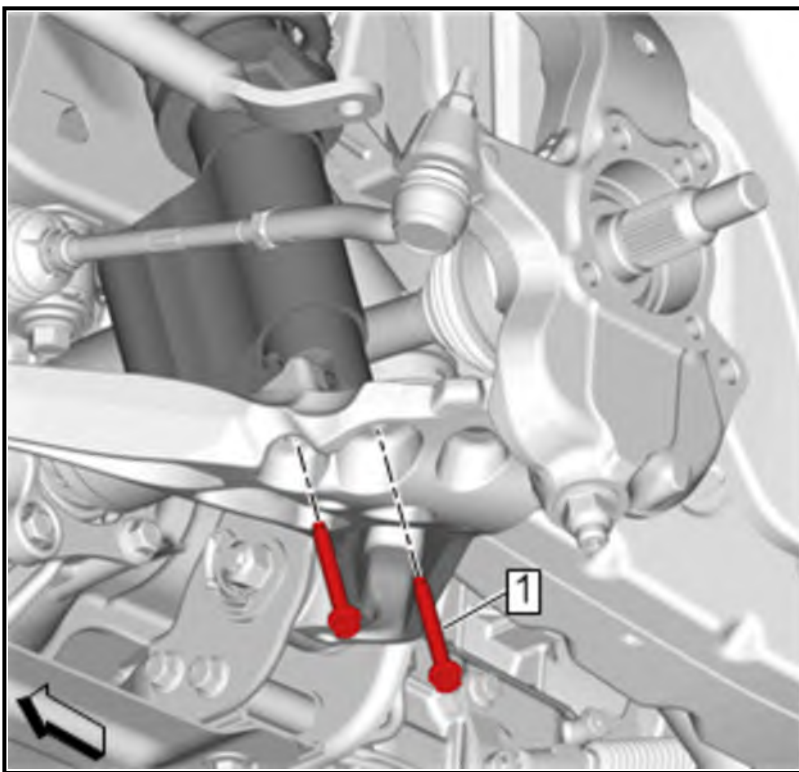
Steering Knuckle (1) - Install - [Steering Knuckle Replacement \(4WD with ZR2\)](#)



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

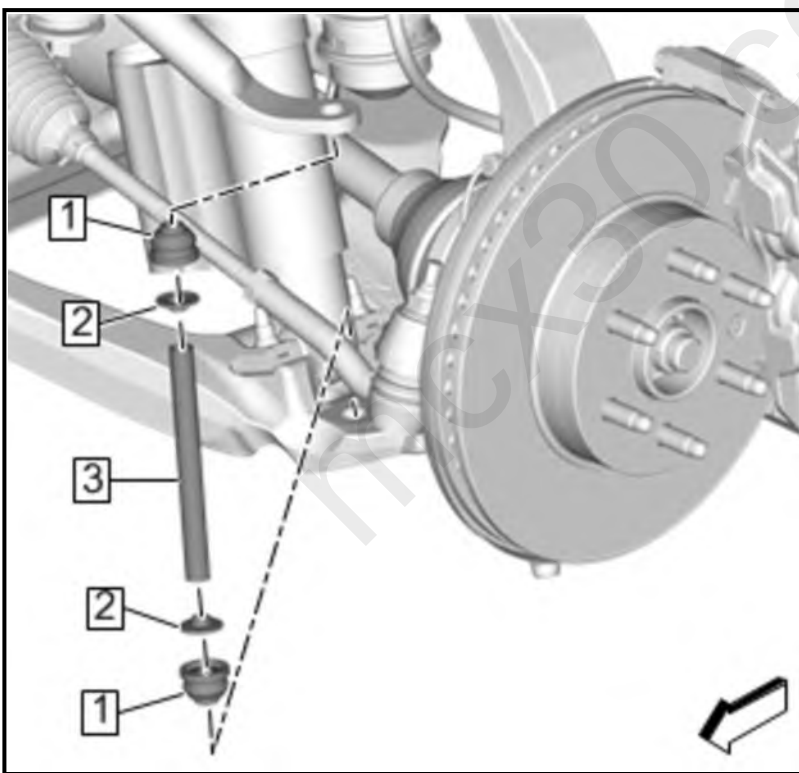
1. First Pass: 75 N.m (55 lb ft)
2. Final Pass: 90 - 105 degrees

10.



Install the front shock absorber bolts (1) and tighten to 50 N.m (37 lb ft).

11.



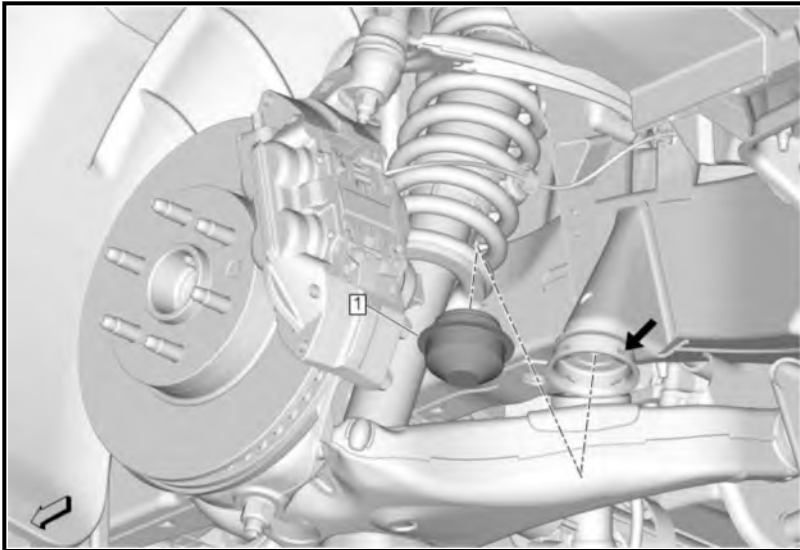
Front Stabilizer Shaft Link (3) - Install - [Stabilizer Shaft Link Replacement \(With ZR2\)](#)

12. Install the tire and wheel assembly. [Tire and Wheel Removal and Installation](#)

13. Remove the support and lower the vehicle.

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

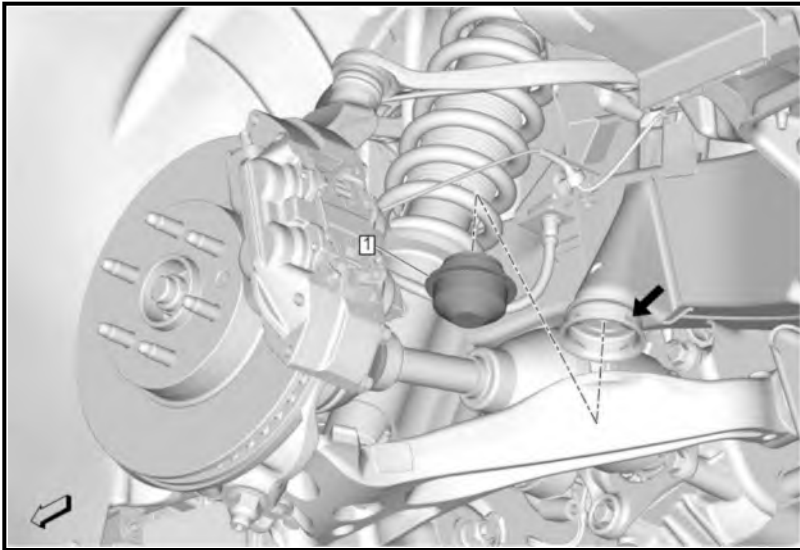
FRONT LOWER CONTROL ARM BUMPER REPLACEMENT (WITHOUT ZR2)



NOTE: Callouts in the following chart represent components shown in graphic above.

Callout	Component Name
Preliminary Procedure Remove the front tire and wheel assembly. <u>Tire and Wheel Removal and Installation</u>	
1	Front Lower Control Arm Bumper Procedure Use an appropriate tool to disengage the front lower control arm bumper from the front frame mount cup. NOTE: Use a small amount of grease to help install the front lower control arm bumper in the front frame mount cup.

FRONT LOWER CONTROL ARM BUMPER REPLACEMENT (WITH ZR2)



NOTE: Callouts in the following chart represent components shown in graphic above.

Callout	Component Name
Preliminary Procedure Remove the front tire and wheel assembly. <u>Tire and Wheel Removal and Installation</u>	
1	Front Lower Control Arm Bumper Procedure Use an appropriate tool to disengage the front lower control arm bumper from the front frame mount cup. NOTE: Use a small amount of grease to help install the front lower control arm bumper in the front frame mount cup.

WHEEL STUD REPLACEMENT

Special Tools

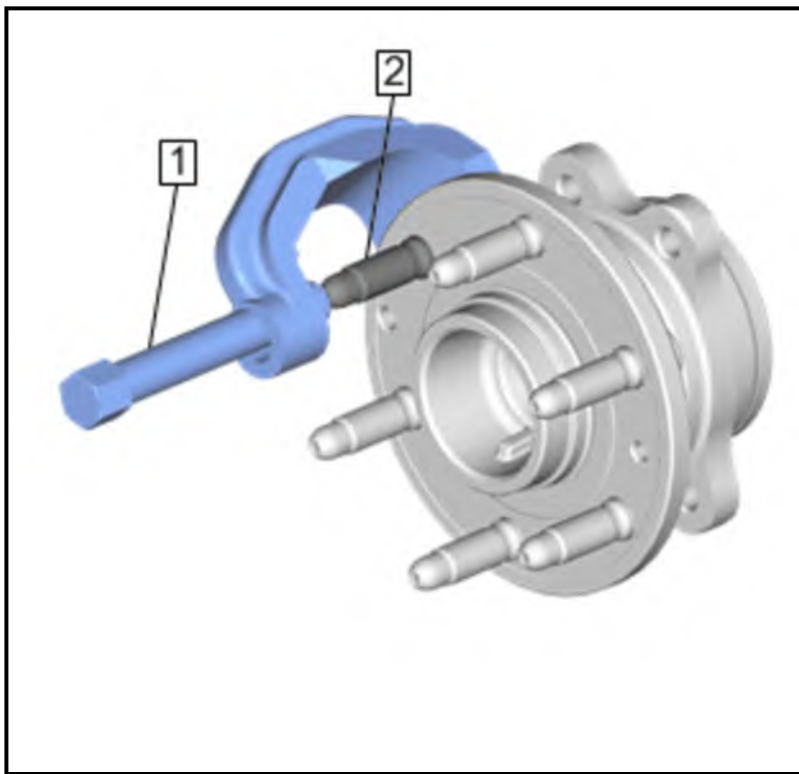
CH-43631 Ball Joint Separator

Equivalent regional tools: [Special Tools](#)

Removal Procedure

1. Front Wheel Bearing and Hub Assembly - Remove - [Front Wheel Bearing and Hub Replacement \(4WD, Without ZR2\)](#), or [Front Wheel Bearing and Hub Replacement \(2WD, Without ZR2\)](#), or [Front Wheel Bearing and Hub Replacement \(4WD, With ZR2\)](#).

2.

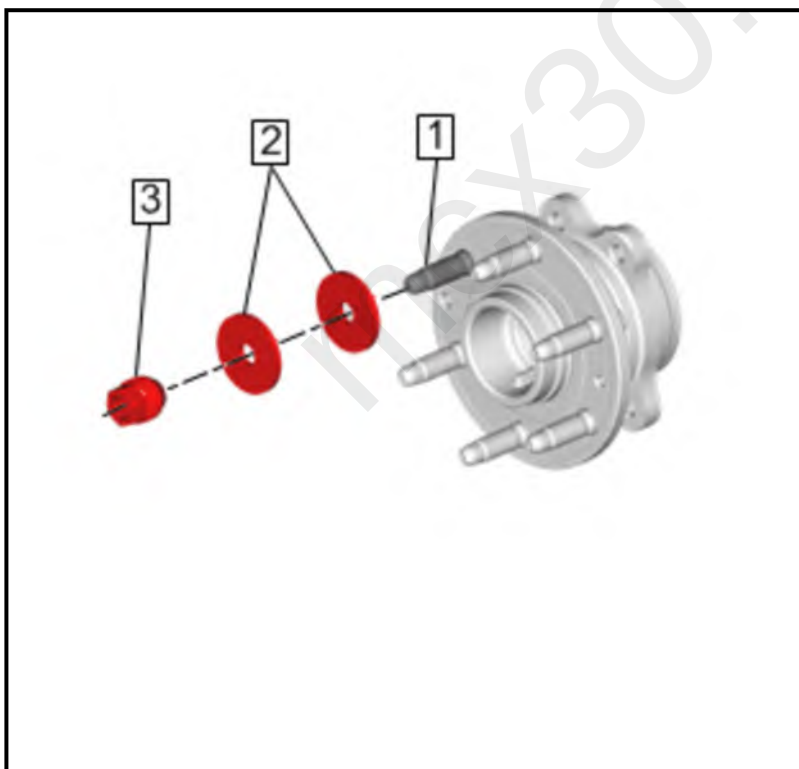


Use the **CH-43631** separator (1) to remove the wheel stud (2) from the flange on the hub assembly.

DISCARD the stud.

Installation Procedure

1.



Position the NEW wheel stud (1) in the flange on 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.

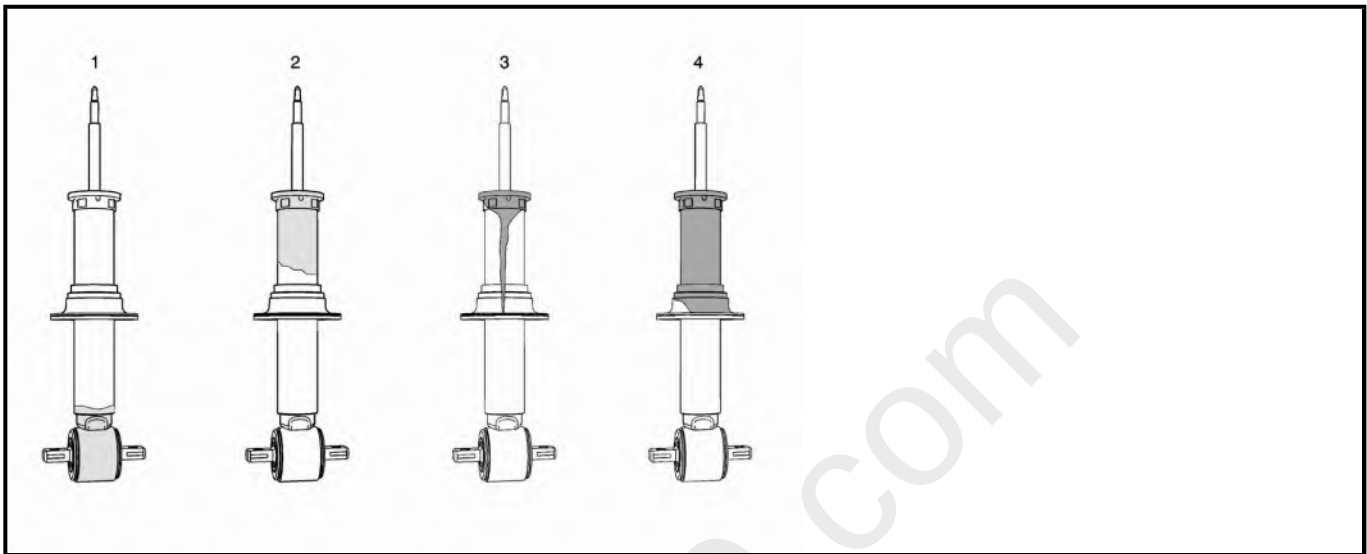
5. Remove the wheel nut and flat washers.

6. Front Wheel Bearing and Hub Assembly - Install - [Front Wheel Bearing and Hub Replacement \(4WD, Without ZR2\)](#), or [Front Wheel Bearing and Hub Replacement \(2WD, Without ZR2\)](#), or [Front Wheel Bearing and Hub Replacement \(4WD, With ZR2\)](#).

STRUT AND SHOCK ABSORBER INSPECTION

NOTE: The coil over shock 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 shock absorber tube is normal. DO NOT replace the shock absorber for this condition.



Condition 1

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

Condition 2

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

Condition 3

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

Condition 4

An extreme wet film of oil covering the shock absorber tube and pooling in the spring seat and originating from the shaft seal, is an ABNORMAL condition. Replace the shock absorber.

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 shock 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 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 shock absorber. Refer to Shock Absorber 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 shock absorber. If the shock absorber does not exceed 2 cycles, NO repair is necessary.

SHOCK ABSORBER AND SPRING REMOVAL AND INSTALLATION (WITHOUT ZR2)

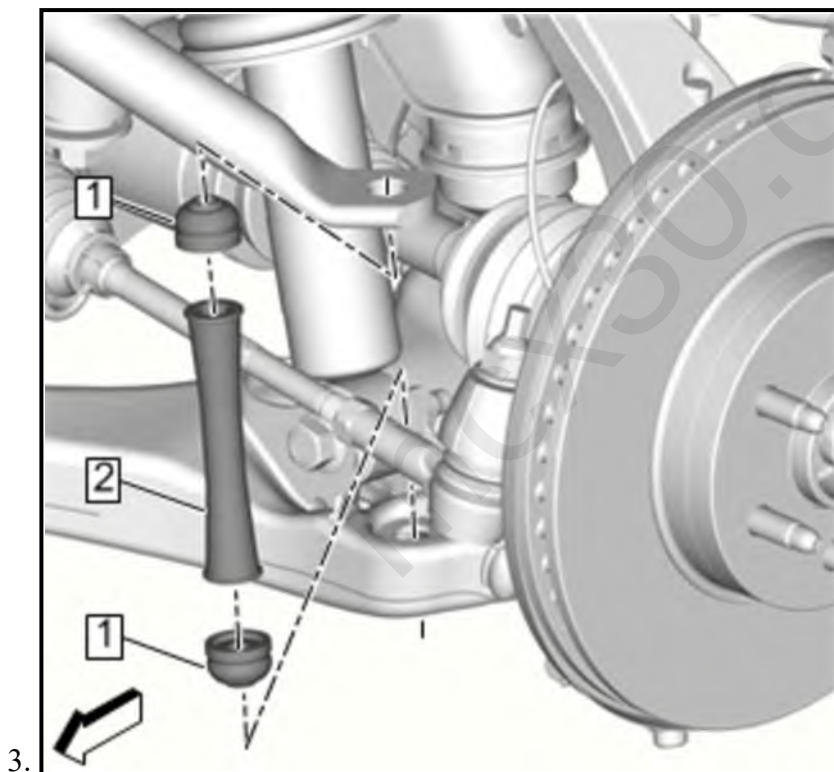
Special Tools

EN-45059 Torque Angle Meter

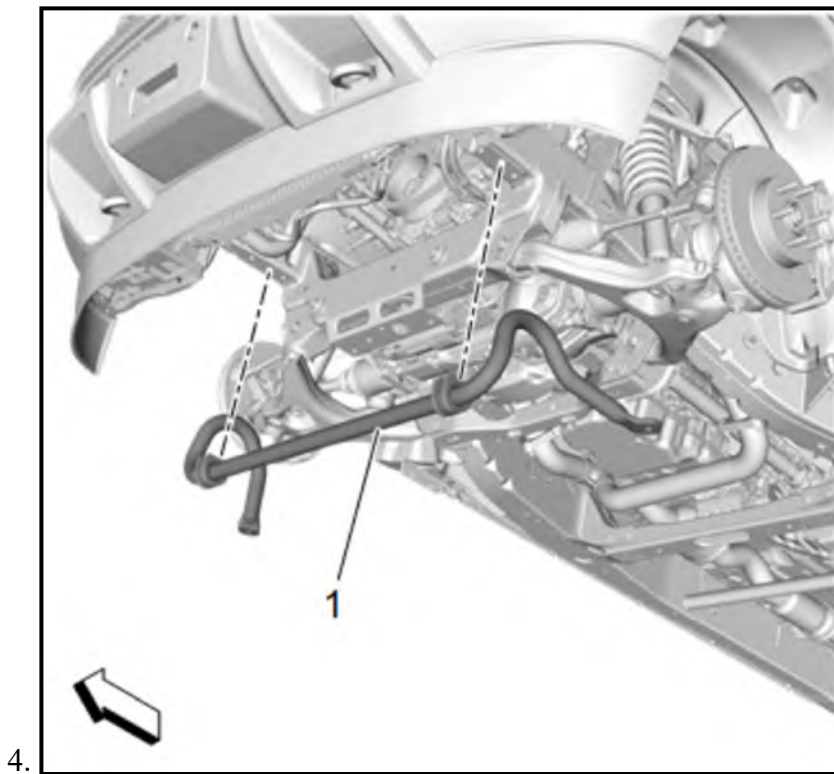
Equivalent regional tools: **Special Tools**

Removal Procedure

1. Raise and support the vehicle. **Lifting and Jacking the Vehicle**
2. Remove the front tire and wheel assembly. **Tire and Wheel Removal and Installation**

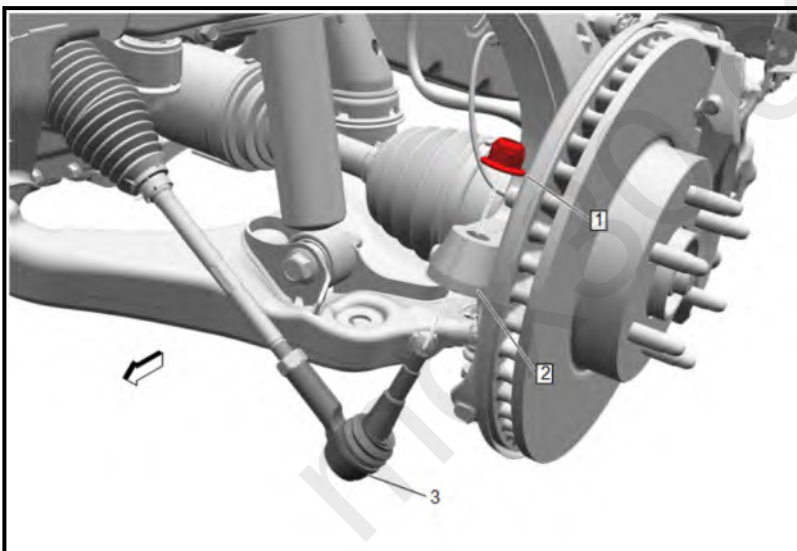


Front Stabilizer Shaft Link (2) - Remove [2x] - **Stabilizer Shaft Link Replacement (Without ZR2)**



4.

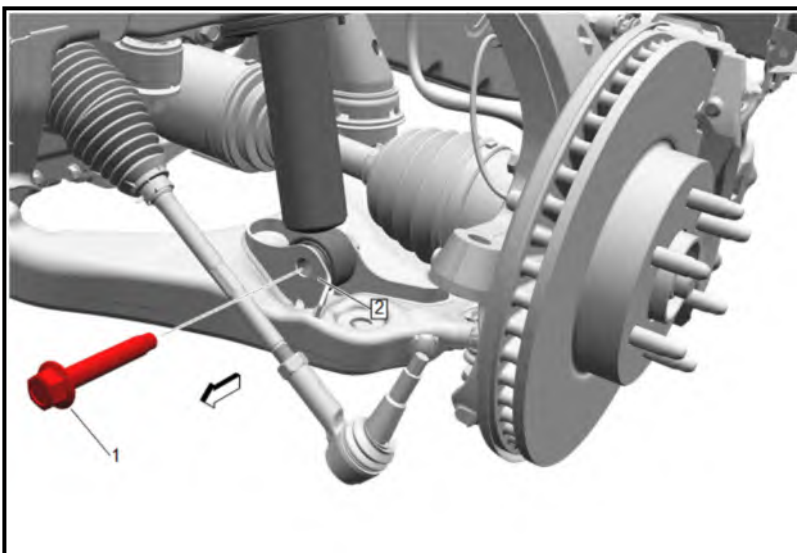
Front Stabilizer Shaft (1) - Remove - [Stabilizer Shaft Replacement \(Without ZR2\)](#).



5.

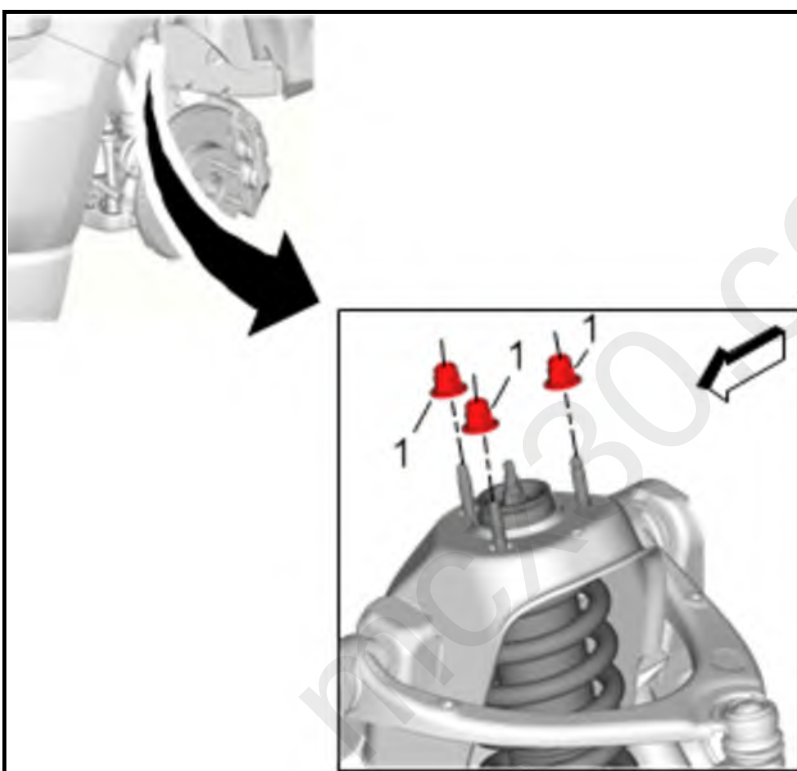
Remove the outer tie rod nut (1) and separate the outer tie rod (3) from steering knuckle (2). [Steering Linkage Outer Tie Rod Replacement \(Without ZR2\)](#).

6.



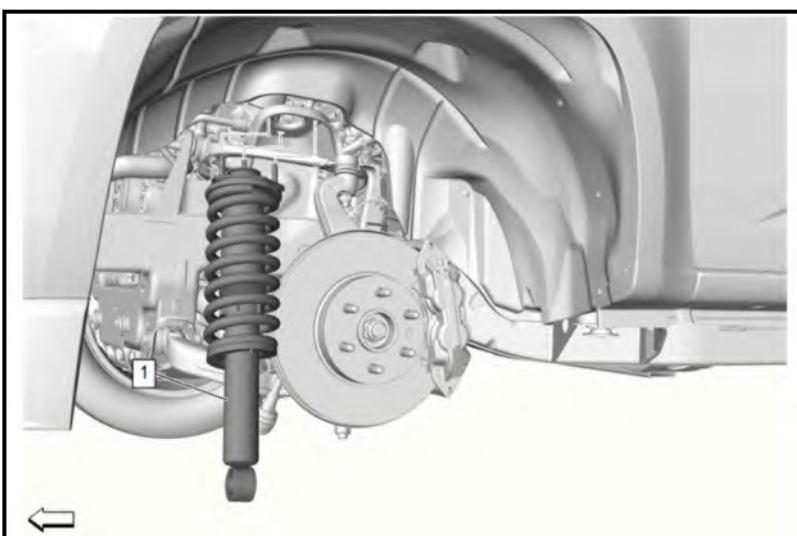
Remove the front shock absorber lower bracket bolt (1).

7.



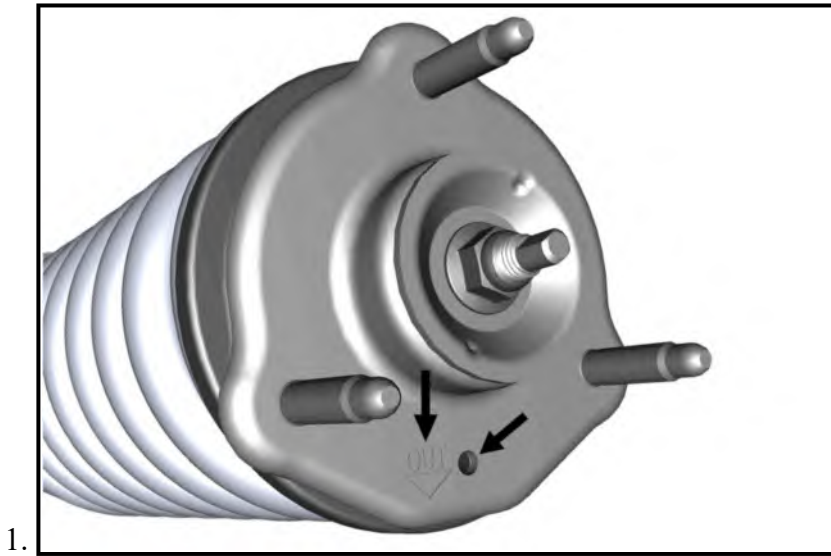
Front Shock Absorber Nut (1) - Remove [3x]

8.

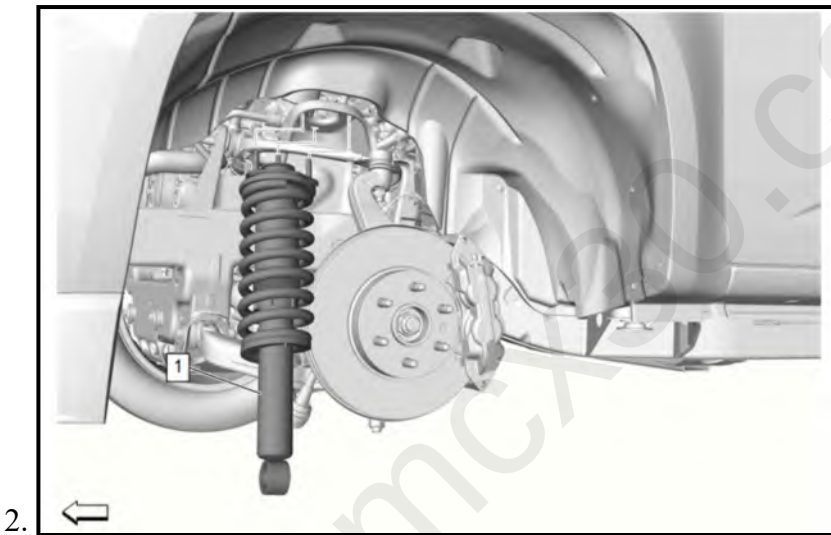


Remove the front shock absorber and spring assembly (1) from the vehicle.

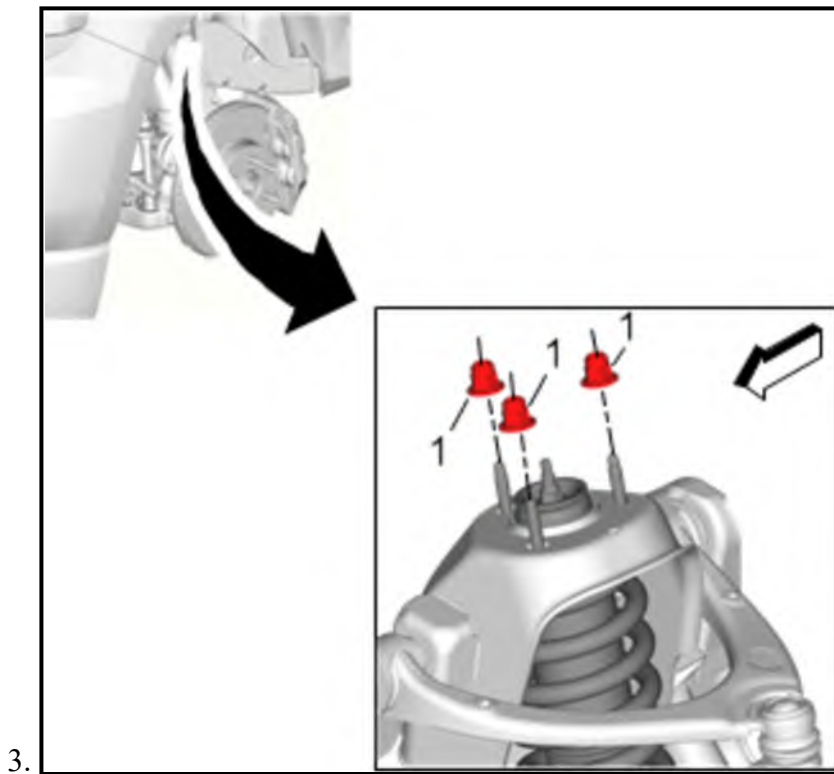
Installation Procedure



Ensure the shock assembly is installed in the correct position. The shock assembly upper mount is marked by a hole and/or the word OUT. These markings must be installed in the outboard position.

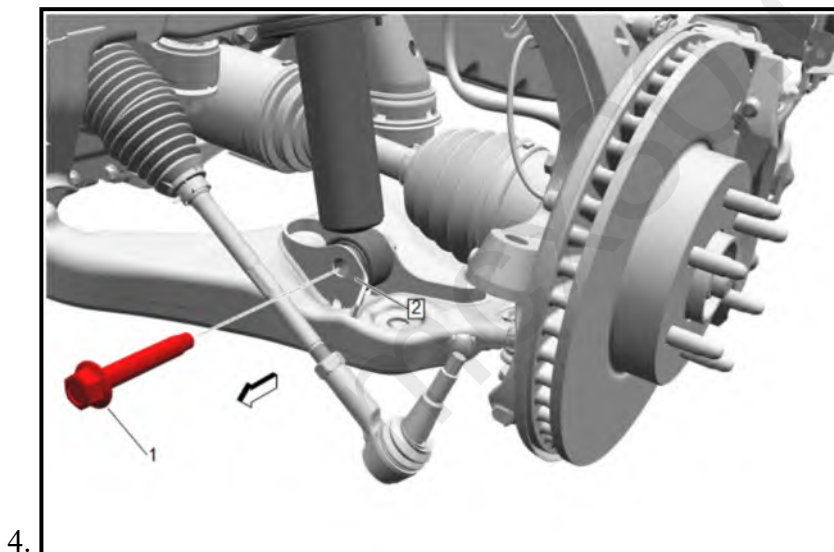


Position the front shock absorber and spring assembly (1) on the vehicle.



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

Front Shock Absorber Nut (1) - Install and tighten [3x] 58 N.m (43 lb ft)



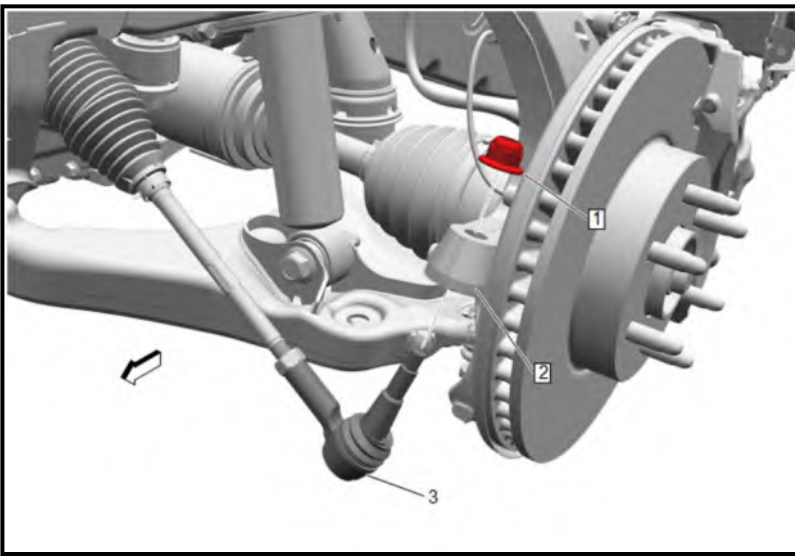
Install the front shock absorber lower bracket bolt (1).

5. Use the **EN-45059** Torque Angle Meter to tighten the front shock absorber lower bracket bolt (1).

Tighten

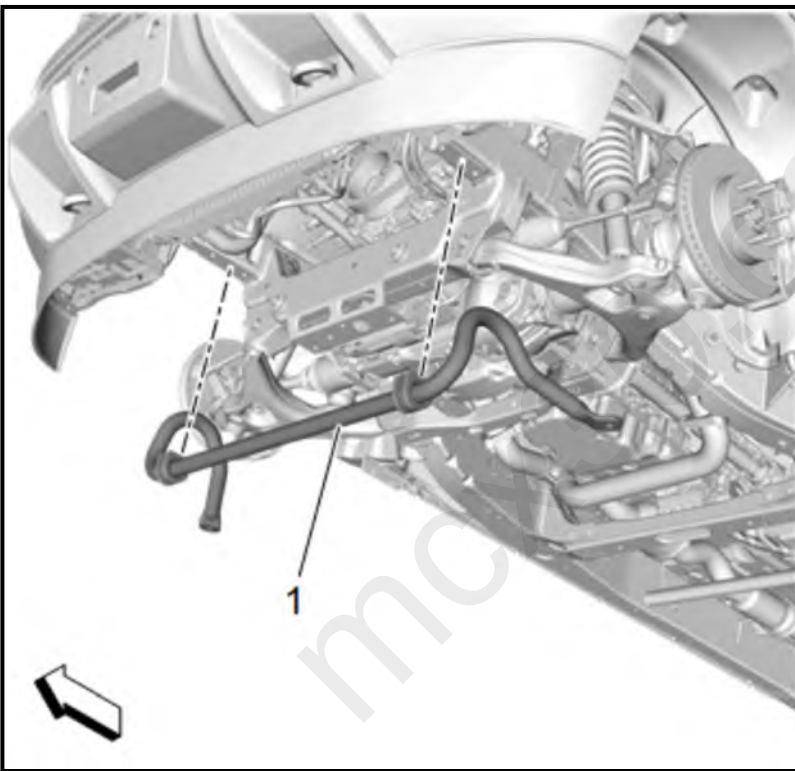
1. First Pass: 100 N.m (74 lb ft)
2. Final Pass: 25 - 35 degrees

6.

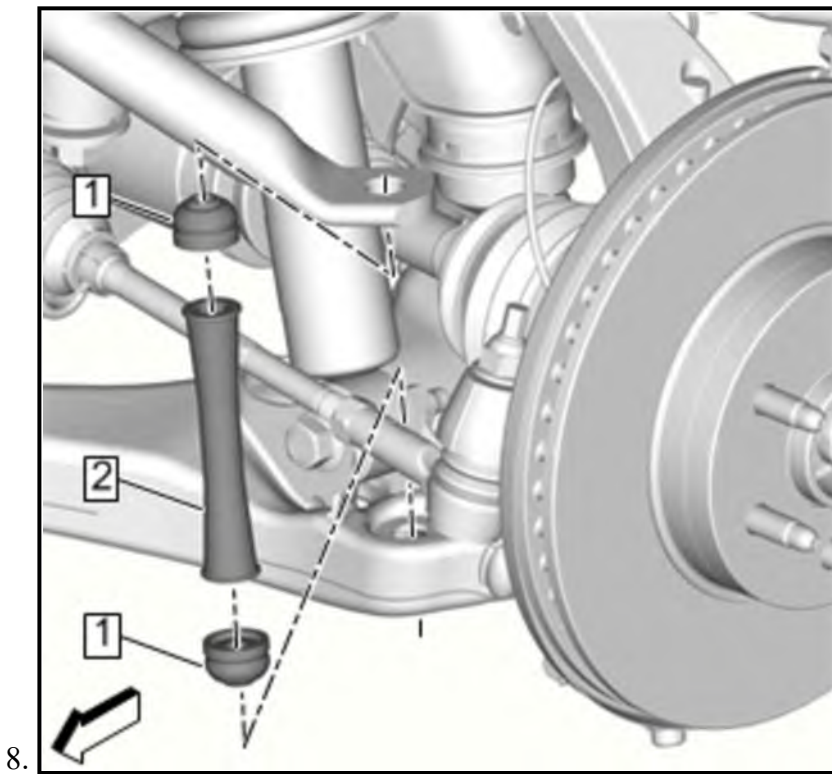


Install the outer tie rod (3) and the outer tie rod nut (1) to the steering knuckle (2). [Steering Linkage Outer Tie Rod Replacement \(Without ZR2\)](#)

7.



Front Stabilizer Shaft (1) - Install - [Stabilizer Shaft Replacement \(Without ZR2\)](#)



8. Front Stabilizer Shaft Link (2) - Install [2x] - [Stabilizer Shaft Link Replacement \(Without ZR2\)](#).

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

10. Remove the support and lower the vehicle.

SHOCK ABSORBER AND SPRING REMOVAL AND INSTALLATION (WITH ZR2)

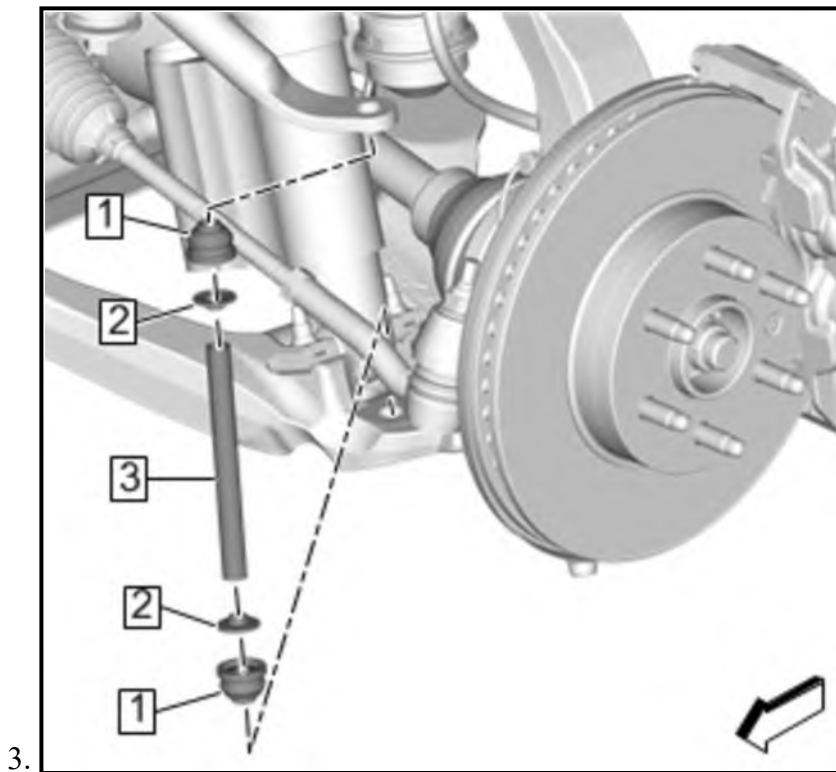
Special Tools

CH-43631 Ball Joint Separator

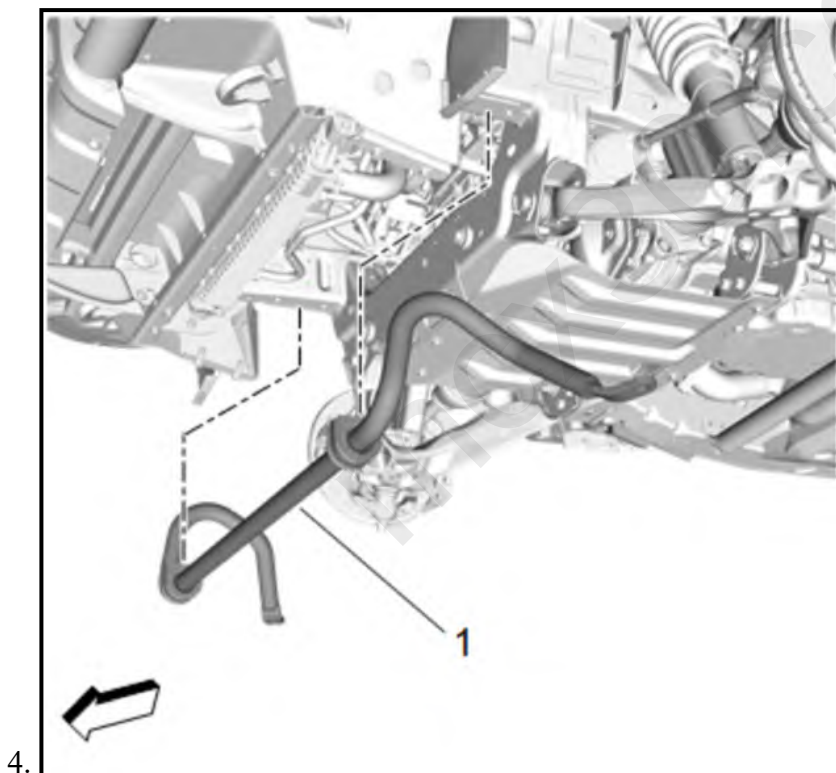
Equivalent regional tools: [Special Tools](#)

Removal Procedure

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

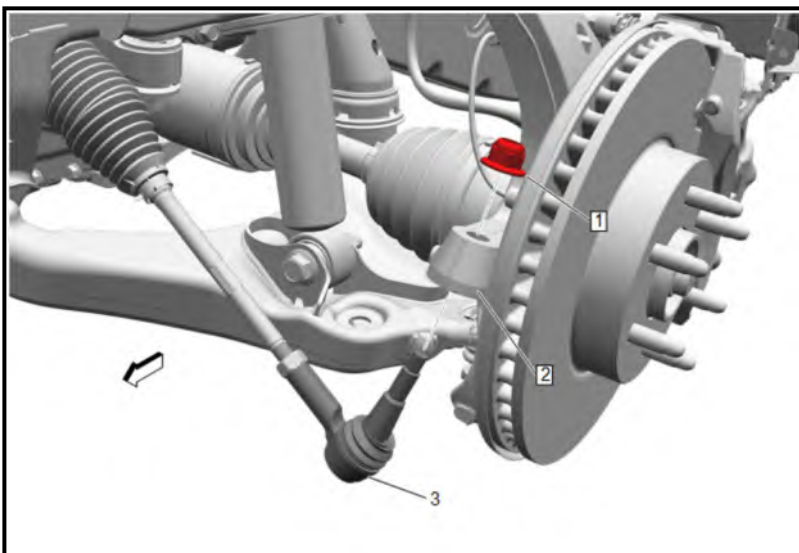


Front Stabilizer Shaft Link (3) - Remove [2x] - [Stabilizer Shaft Link Replacement \(With ZR2\)](#).



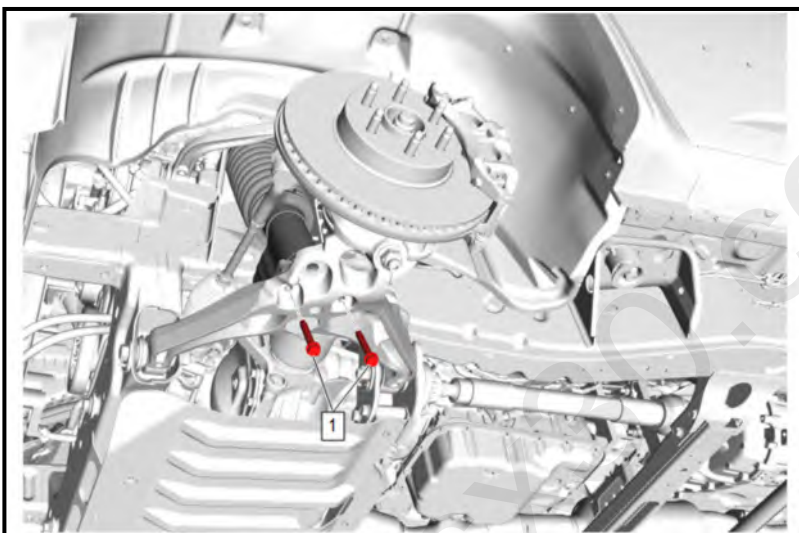
Front Stabilizer Shaft (1) - Remove - [Stabilizer Shaft Replacement \(With ZR2\)](#).

5.



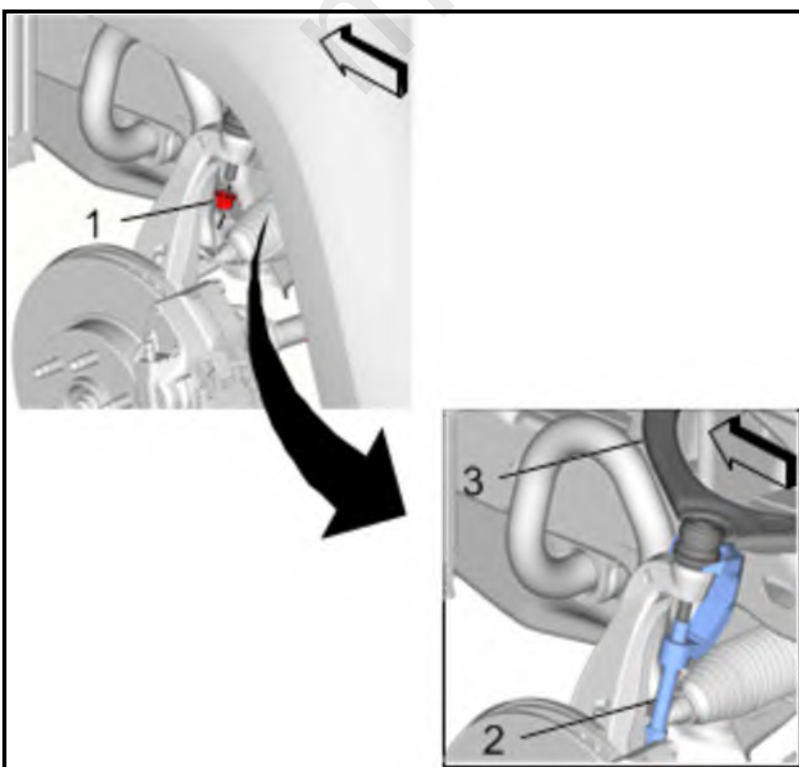
Remove the outer tie rod nut (1) and separate the outer tie rod (3) from steering knuckle (2). [Steering Linkage Outer Tie Rod Replacement \(With ZR2\)](#)

6.



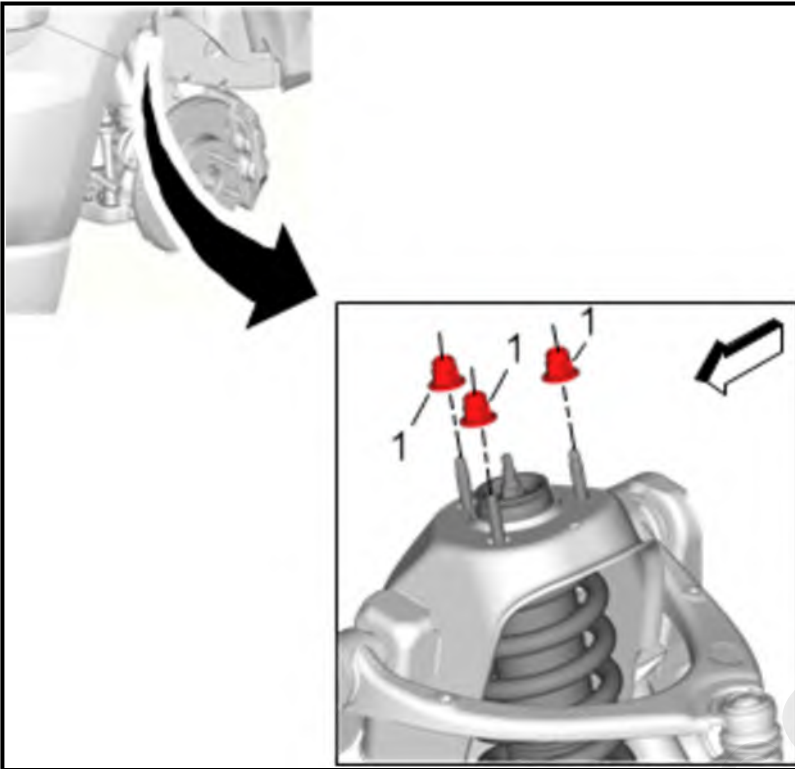
Front Shock Absorber Bolt (1) - Remove [2x]

7.



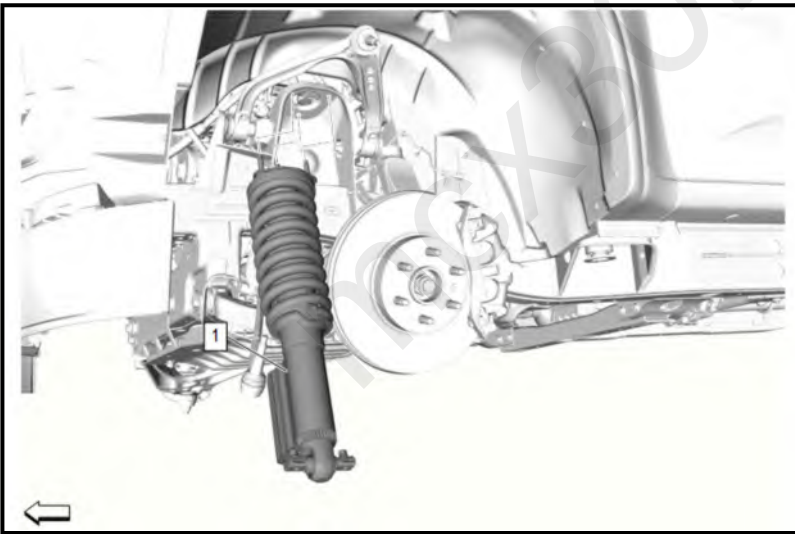
Front Upper Control Arm Ball Stud Nut (1) - Remove

8. Use the **CH-43631** Ball Joint Separator (2) to separate the front upper control arm (3) from the steering knuckle.



9.

Front Shock Absorber Nut (1) - Remove [3x]

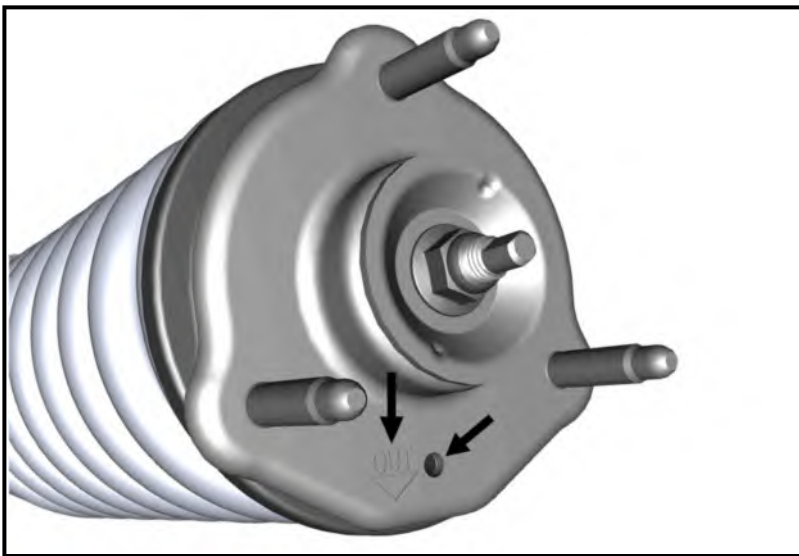


10.

Remove the front shock absorber and spring assembly (1) from the vehicle.

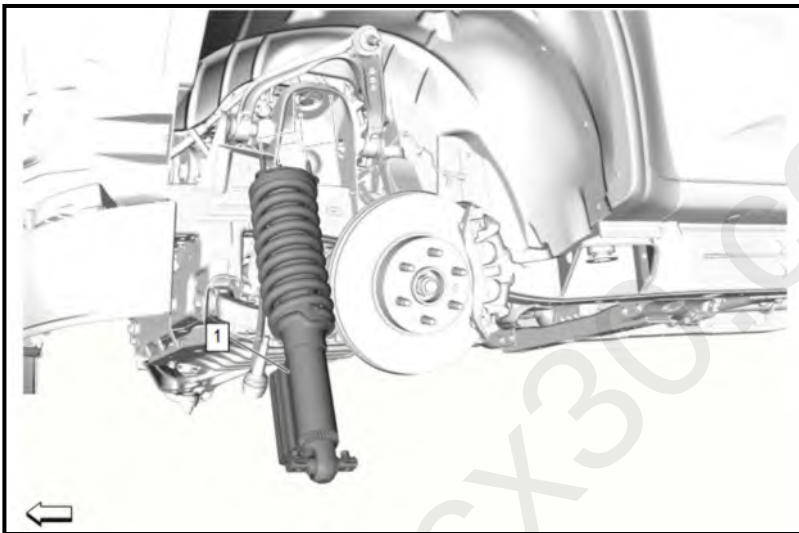
Installation Procedure

1.



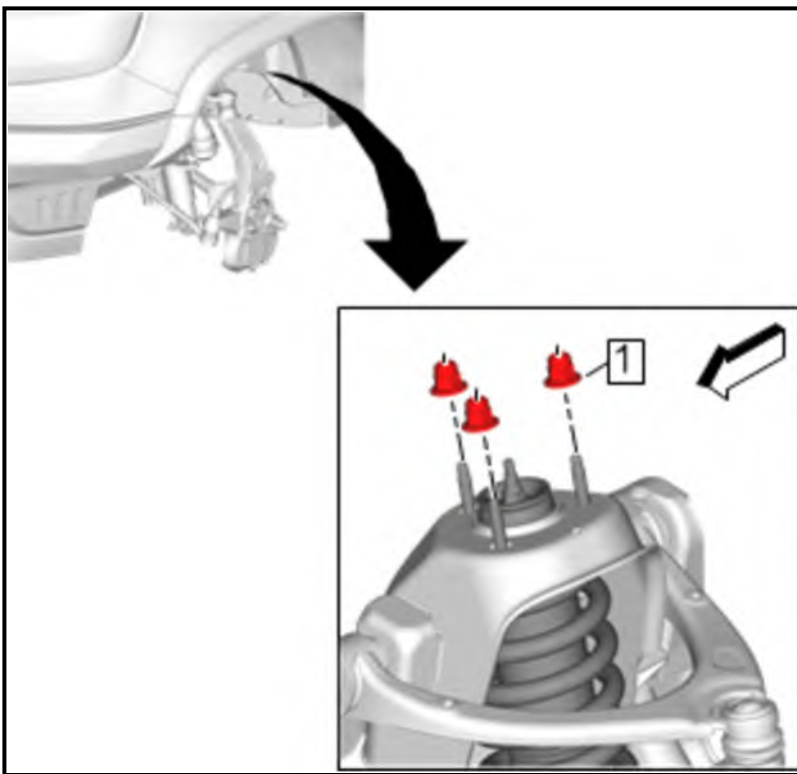
Ensure the shock assembly is installed in the correct position. The shock assembly upper mount is marked by a hole and/or the word OUT. These markings must be installed in the outboard position.

2.



Position the front shock absorber and spring assembly (1) on the vehicle.

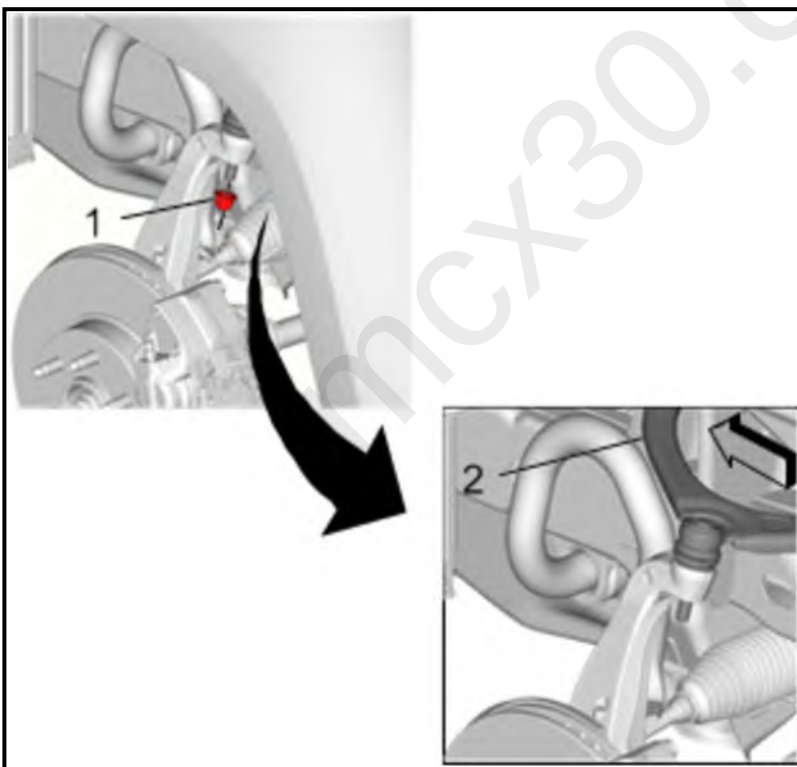
3.



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

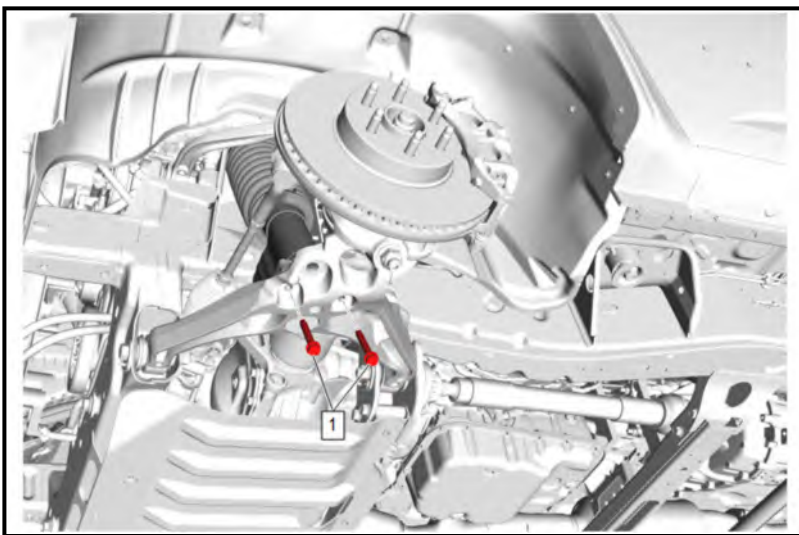
Front Shock Absorber Nut (1) - Install and tighten [3x] 58 N.m (43 lb ft)

4.



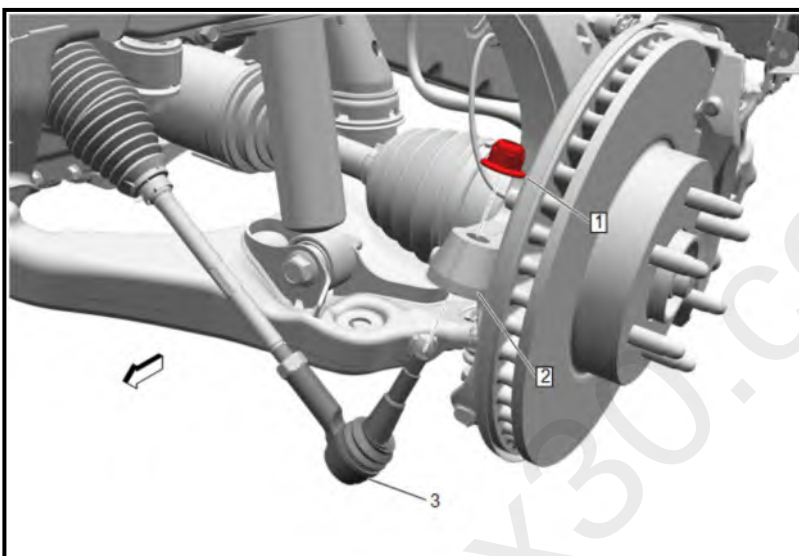
Front Upper Control Arm Ball Stud Nut (1) - Install - [Upper Control Arm Replacement \(With ZR2\)](#).

5.



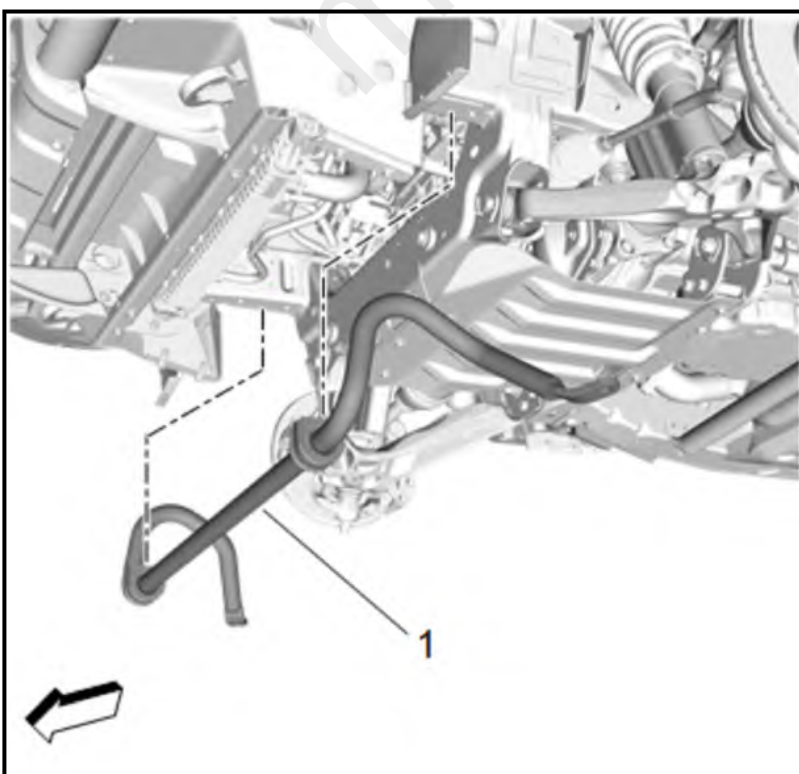
Front Shock Absorber Bolt (1) - Install and tighten [2x] 50 N.m (37 lb ft)

6.

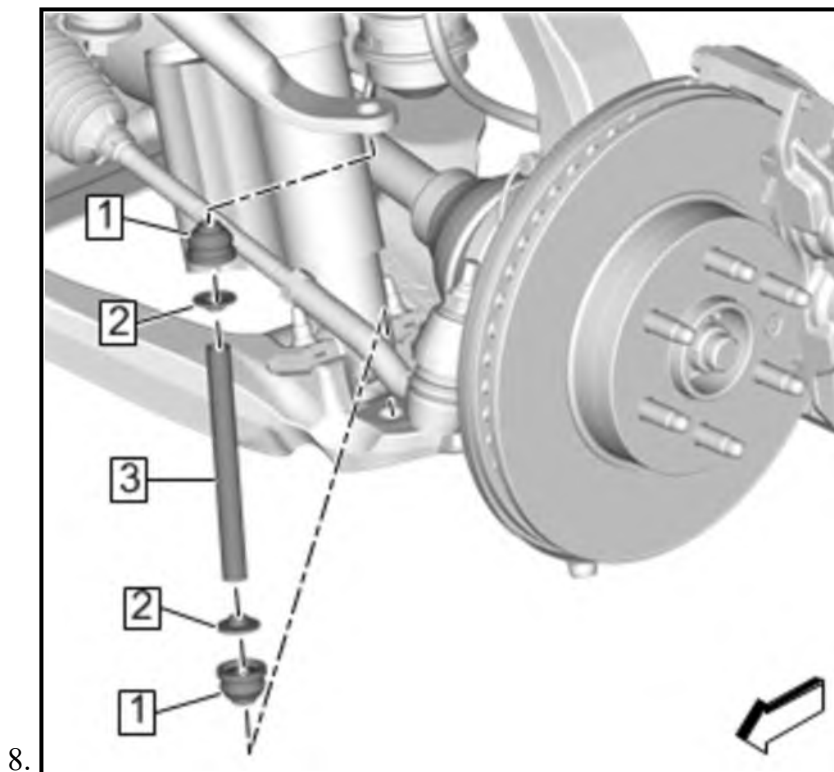


Install the outer tie rod (3) and the outer tie rod nut (1) to the steering knuckle (2). **Steering Linkage**
Outer Tie Rod Replacement (With ZR2).

7.



Front Stabilizer Shaft (1) - Install - [Stabilizer Shaft Replacement \(With ZR2\)](#).



Front Stabilizer Shaft Link (3) - Install [2x] - [Stabilizer Shaft Link Replacement \(With ZR2\)](#).

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

10. Remove the support and lower the vehicle.

SHOCK ABSORBER, SHOCK ABSORBER COMPONENT, OR SPRING REPLACEMENT (WITHOUT ZR2)

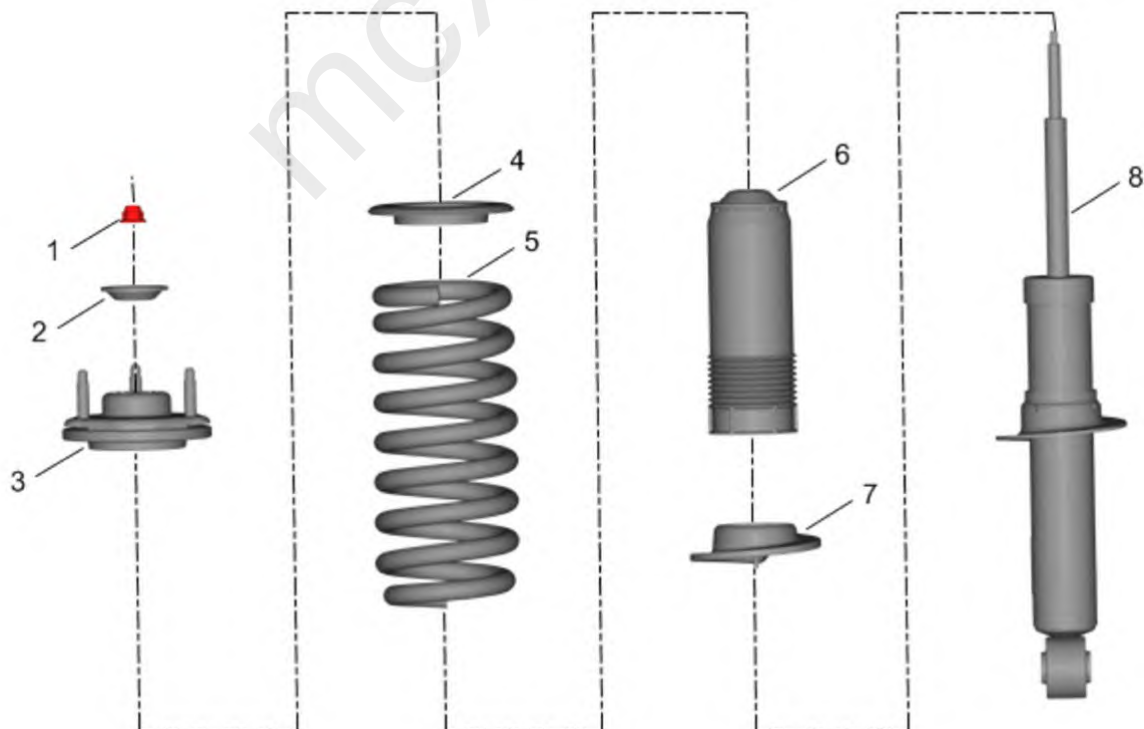


Fig. 1: Exploded View Of Shock Absorber, Spring And Shock Absorber Component (Without ZR2)

Courtesy of GENERAL MOTORS COMPANY

NOTE: Callouts in the following chart represent components shown in graphic above.

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 Shock Absorber and Spring Removal and Installation (Without ZR2)	
1	Front Shock Absorber Nut CAUTION: Refer to Fastener Caution . Procedure Use the CH - 48845 compressor to compress the front shock absorber and spring assembly. Tighten 38 N.m (28 lb ft) Special Tools CH - 48845 Strut Spring Compressor Equivalent regional tools: Special Tools
2	Front Shock Absorber Upper Washer
3	Front Shock Absorber Upper Mount

Callout	Component Name
4	Front Shock Absorber Spring Upper Insulator
5	Front Shock Absorber Spring
6	Front Shock Absorber Dust Shield
7	Front Shock Absorber Spring Lower Insulator
8	Front Shock Absorber

SHOCK ABSORBER, SHOCK ABSORBER COMPONENT, OR SPRING REPLACEMENT (WITH ZR2)

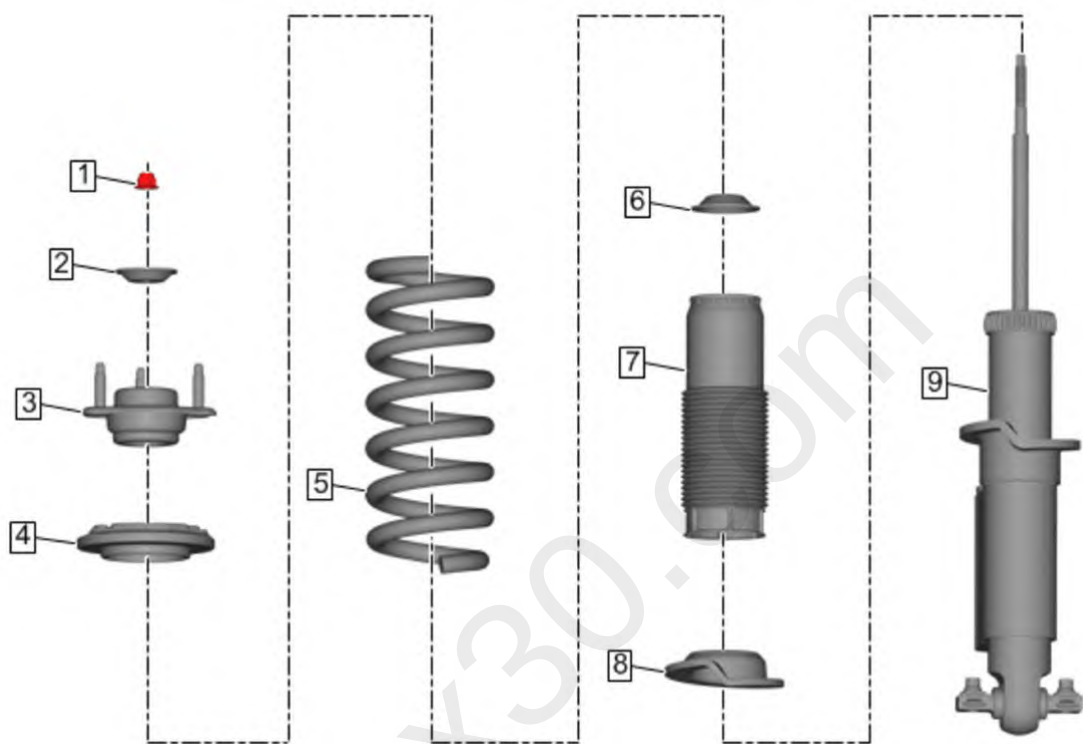


Fig. 2: Exploded View Of Shock Absorber, Spring And Shock Absorber Component (With ZR2).
 Courtesy of GENERAL MOTORS COMPANY

NOTE: Callouts in the following chart represent components shown in graphic above.

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	

Callout	Component Name
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 Shock Absorber and Spring Removal and Installation (With ZR2)	
1	Front Shock Absorber Nut CAUTION: Refer to Fastener Caution . Procedure Use the CH - 48845 compressor to compress the front shock absorber and spring assembly. Tighten 38 N.m (28 lb ft) Special Tools CH - 48845 Strut Spring Compressor Equivalent regional tools: Special Tools
2	Front Shock Absorber Upper Washer
3	Front Shock Absorber Upper Mount
4	Front Shock Absorber Spring Upper Insulator
5	Front Shock Absorber Spring
6	Front Shock Absorber Lower Washer
7	Front Shock Absorber Dust Shield
8	Front Shock Absorber Spring Lower Insulator
9	Front Shock Absorber

DESCRIPTION AND OPERATION

FRONT SUSPENSION DESCRIPTION AND OPERATION

The front suspension allows each wheel to compensate for changes in the road surface without affecting the opposite wheel. Each wheel independently connects to the frame with a steering knuckle, ball joint assemblies, and upper and lower control arms.

Two tie rods connect to the steering arms on the knuckles and to a steering gear.

The front suspension consists of the following components:

- Control arms
- Stabilizer shaft
- Shock/Coil spring modules

The upper part of each Shock/Coil spring module bolts to the frame. Three insulators, a mounting plate and a nut secure the coil spring to the shock housing. A through bolt and nut secures the lower part of the shock module to the lower control arm.

A spring steel stabilizer shaft controls the side roll of the front suspension. This shaft is mounted in rubber insulators that are held by clamps to the frame side rails. The ends of the stabilizer shaft connect to the lower control arms with link assemblies.

The upper ball joint assembly is bolted to the upper control arm. The assembly attaches to the steering knuckle with a prevailing torque nut.

The lower ball joint assembly is bolted to the lower control arm. The assembly attaches to the steering knuckle with a prevailing torque nut.

The upper control arms have pressed-in bushings. The bolts pass through the bushings and join the arms to the frame.

Ball joint assemblies have rubber grease seals. These seals prevent the entry of moisture and dirt. This prevents damage to the bearing surfaces.

Four-wheel drive models have a front suspension that consists of the following components:

- Control arms
- Stabilizer shaft
- Shock module/Shock absorbers

The upper part of each shock module attaches to the frame by 3 nuts. The lower part of the shock module attaches to the lower control arm by a through bolt and nut.

A spring steel stabilizer shaft controls the side roll of the front suspension. This shaft is mounted in rubber insulators that are held by clamps to the frame side rails. The ends of the stabilizer shaft connect to the lower control arms with link assemblies.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

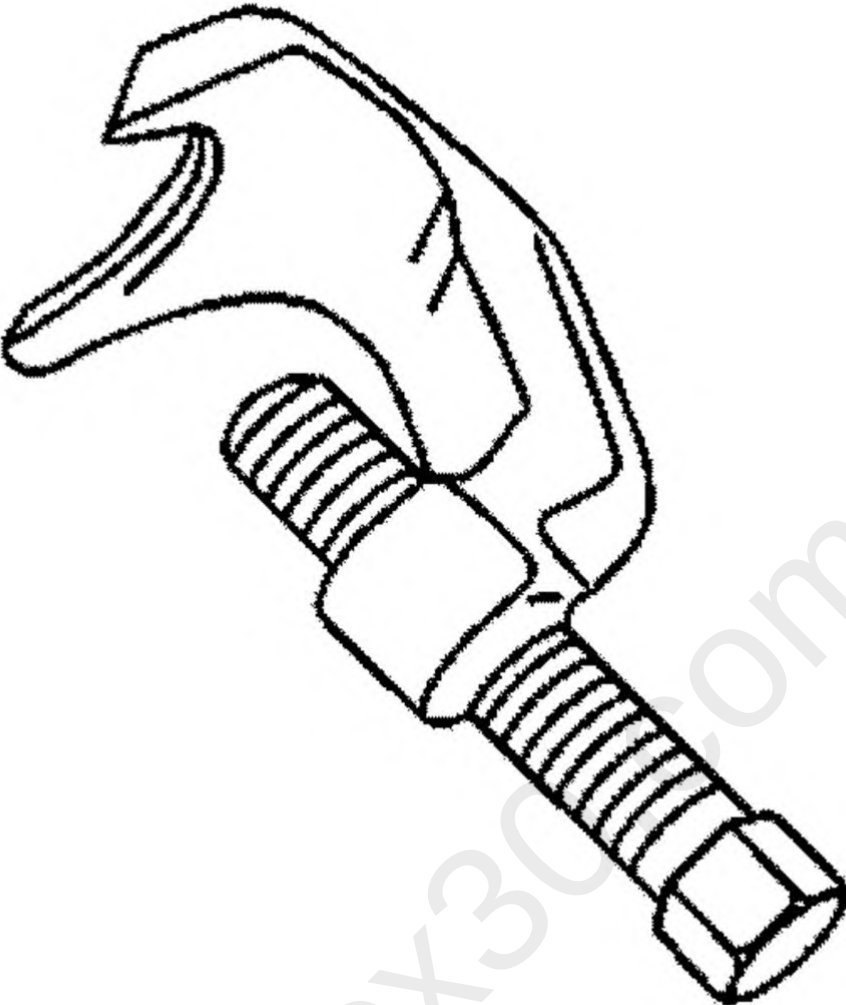
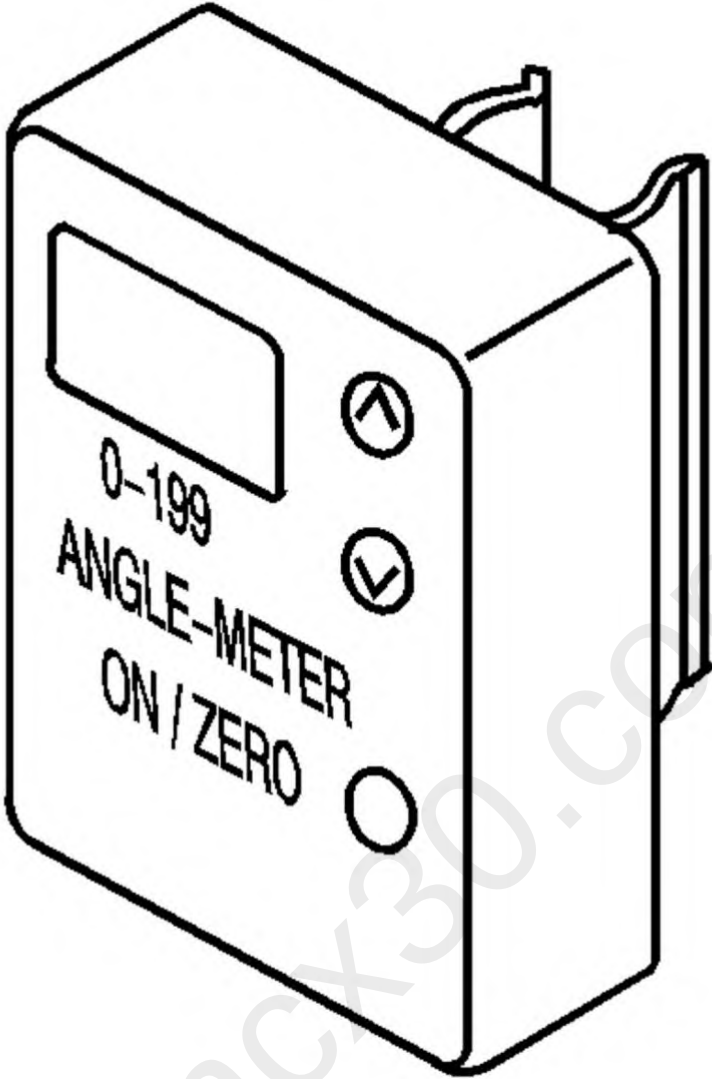
Illustration	Tool Number/ Description
	CH-43631 KM-507 - C J-43631 Ball Joint Separator

Illustration	Tool Number/ Description
	CH-48845 Strut Spring Compressor

Illustration	Tool Number/ Description
	EN-45059 J-45059 Torque Angle Meter