

## 2013 Chevrolet Cruze

### 2013 SUSPENSION Rear Suspension - Cruze

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### Rear Suspension - Cruze

## SPECIFICATIONS

### FASTENER TIGHTENING SPECIFICATIONS

#### Fastener Tightening Specifications

| Application                                      | Specification                     |                                         |
|--------------------------------------------------|-----------------------------------|-----------------------------------------|
|                                                  | Metric                            | English                                 |
| Axle Bushing Through Bolts And Nuts              | 70 + 130 degrees (1)              | 52 lb ft + 130 degrees (1)              |
| Exhaust Front Pipe to Exhaust Muffler Flange Nut | 17                                | 13 lb ft                                |
| Equalizer Beam Link Bolt                         | 160                               | 118 lb ft                               |
| Equalizer Beam Support Bolt                      | 90 + 45 degrees - 60 degrees (1)  | 66 lb ft + 45 degrees - 60 degrees (1)  |
| Equalizer Beam Link Bolt and Nut                 | 40 + 45 degrees (1)               | 30 lb ft + 45 degrees (1)               |
| Equalizer Beam Center Link Bolt and Nut          | 70 +120 degrees - 135 degrees (1) | 52 lb ft +120 degrees - 135 degrees (1) |
| Rear Parking Brake Cable Bracket Bolts           | 10                                | 89 lb ft                                |
| Rear Suspension Trailing Arm Nut                 | 70 + 120 degrees (1)              | 52 lb ft + 120 degrees (1)              |
| Shock Absorber Bolt Upper                        | 100                               | 74 lb ft                                |
| Shock Bolt Lower                                 | 150 + 60 degrees (1)              | 111 lb ft + 60 degrees (1)              |
| Wheel Bearing/Hub Assembly Mounting Bolts        | 50 + 40 degrees (1)               | 37 lb ft + 40 degrees (1)               |
| Wheel Speed Sensor Bolt                          | 6                                 | 53 lb in                                |
| 1 = Use NEW Fastener.                            |                                   |                                         |

## COMPONENT LOCATOR

### REAR SUSPENSION COMPONENTS

#### Rear Axle without Watt Linkage

## 2013 Chevrolet Cruze

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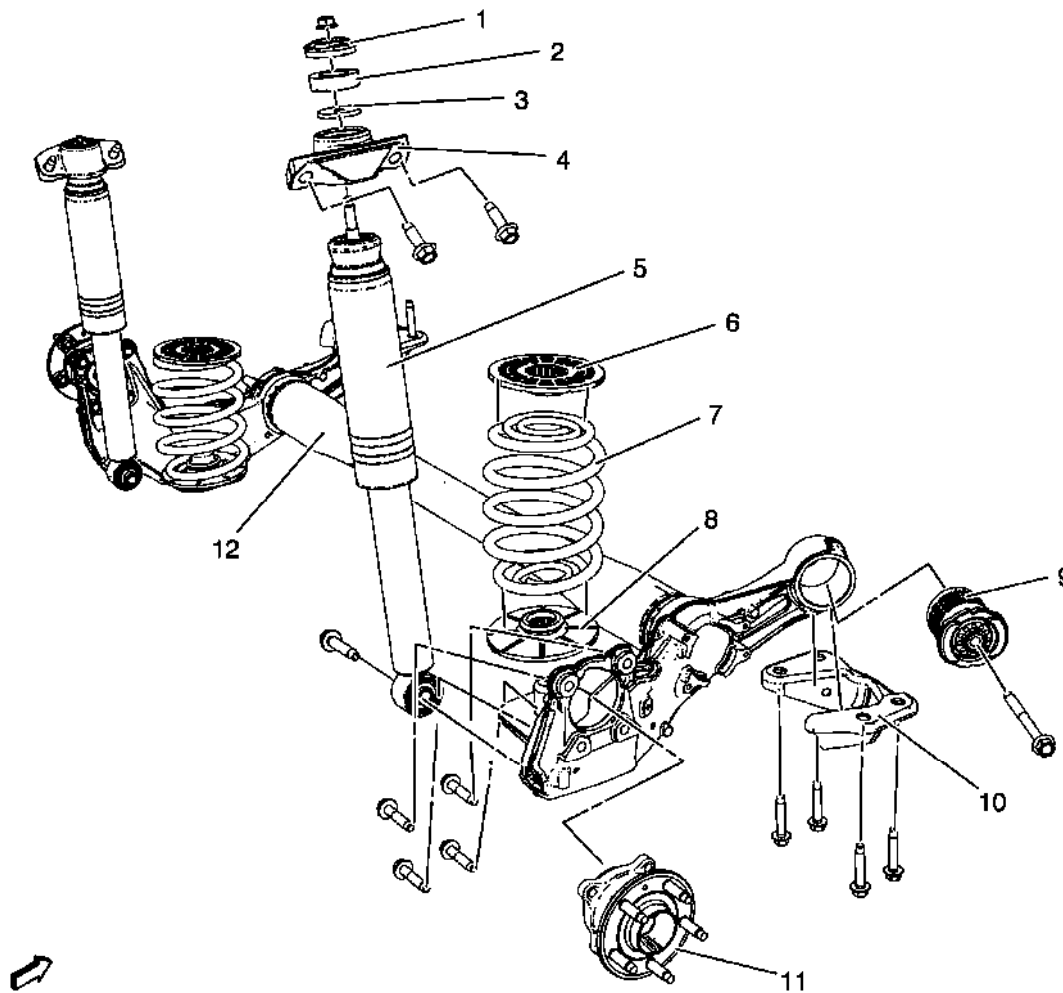


**Fig. 1: Locating Rear Suspension System Components Without Watt Linkage**  
Courtesy of GENERAL MOTORS COMPANY

| Callout | Component Name                  |
|---------|---------------------------------|
| 1       | Rear Shock Absorber Upper Mount |
| 2       | Rear Shock Absorber Upper Mount |
| 3       | Rear Shock Absorber Upper Mount |
| 4       | Rear Shock Absorber Upper Mount |
| 5       | Shock Absorber Assembly         |
| 6       | Upper Dumping Ring              |
| 7       | Rear Spring                     |
| 8       | Lower Dumping Ring              |
| 9       | Rear Axle Bushing               |
| 10      | Rear Axle Bracket               |
| 11      | Rear Wheel Bearing              |
| 12      | Rear Axle                       |

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### 2013 SUSPENSION Rear Suspension - Cruze

#### Rear Axle with Watt Linkage

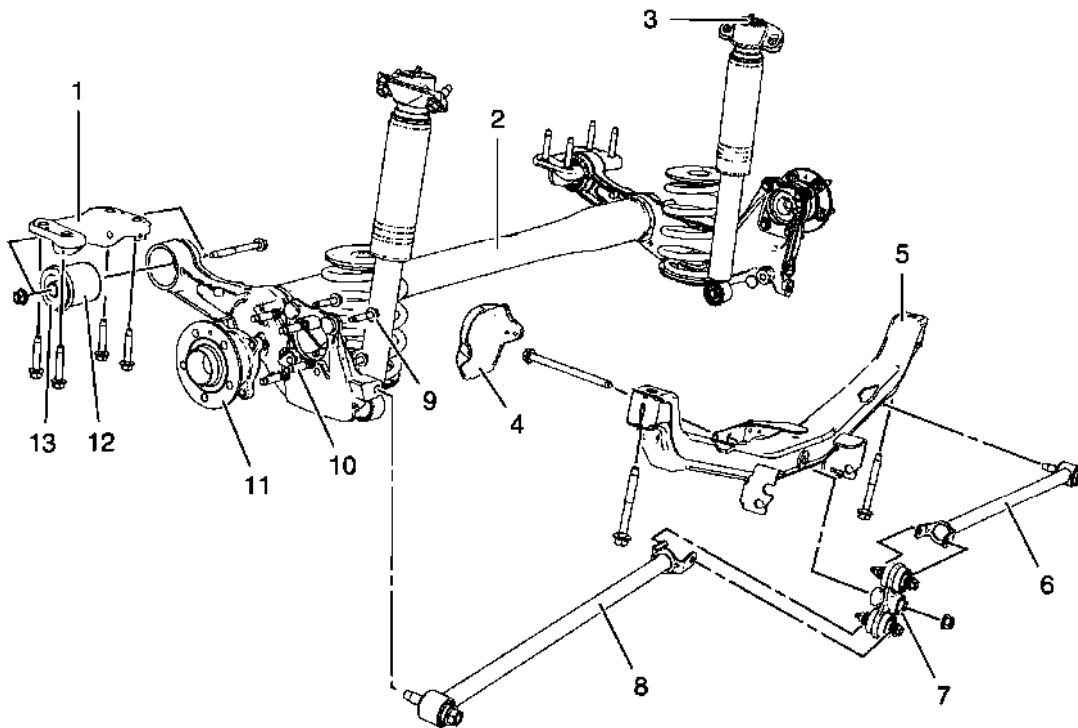


**Fig. 2: Rear Suspension System Components With Watt Linkage**  
Courtesy of GENERAL MOTORS COMPANY

| Callout | Component Name                      |
|---------|-------------------------------------|
| 1       | Rear Axle Bracket                   |
| 2       | Rear Axle                           |
| 3       | Rear Shock Absorber                 |
| 4       | Equalizer Beam Heat Shield          |
| 5       | Equalizer Beam Support              |
| 6       | Right Equalizer Beam Link           |
| 7       | Center Equalizer Beam Link          |
| 8       | Left Equalizer Beam Link            |
| 9       | Wheel Hub and Bearing Assembly Bolt |
| 10      | Wheel Stud                          |
| 11      | Wheel Hub and Bearing Assembly      |
| 12      | Rear Axle Bushing                   |
| 13      | Rear Axle Bushing Alignment Mark    |

## REPAIR INSTRUCTIONS

### REAR WHEEL BEARING AND HUB REPLACEMENT (DISC BRAKE)

**Special Tools****EN-45059** Angle Meter

For equivalent regional tools, refer to **Special Tools**.

**Removal Procedure**

1. Raise and suitably support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
3. Without disconnecting the hydraulic brake flex hose, remove and support the rear brake caliper and bracket as an assembly, and remove the rear brake rotor. Refer to **Rear Brake Rotor Replacement** .

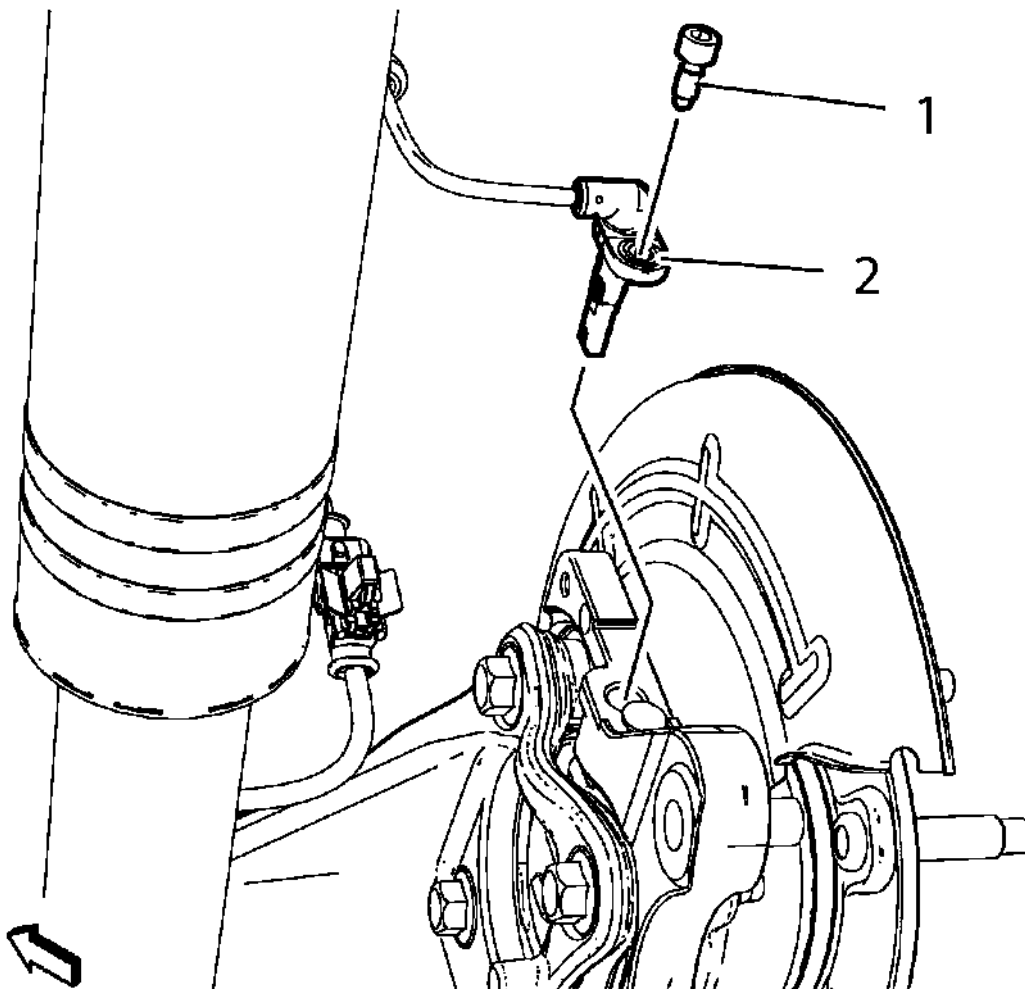


**Fig. 3: Wheel Speed Sensor And Wheel Speed Sensor Mounting Bolt**  
Courtesy of GENERAL MOTORS COMPANY

**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.

4. Remove the wheel speed sensor bolt (1).
5. Remove the wheel speed sensor (2).

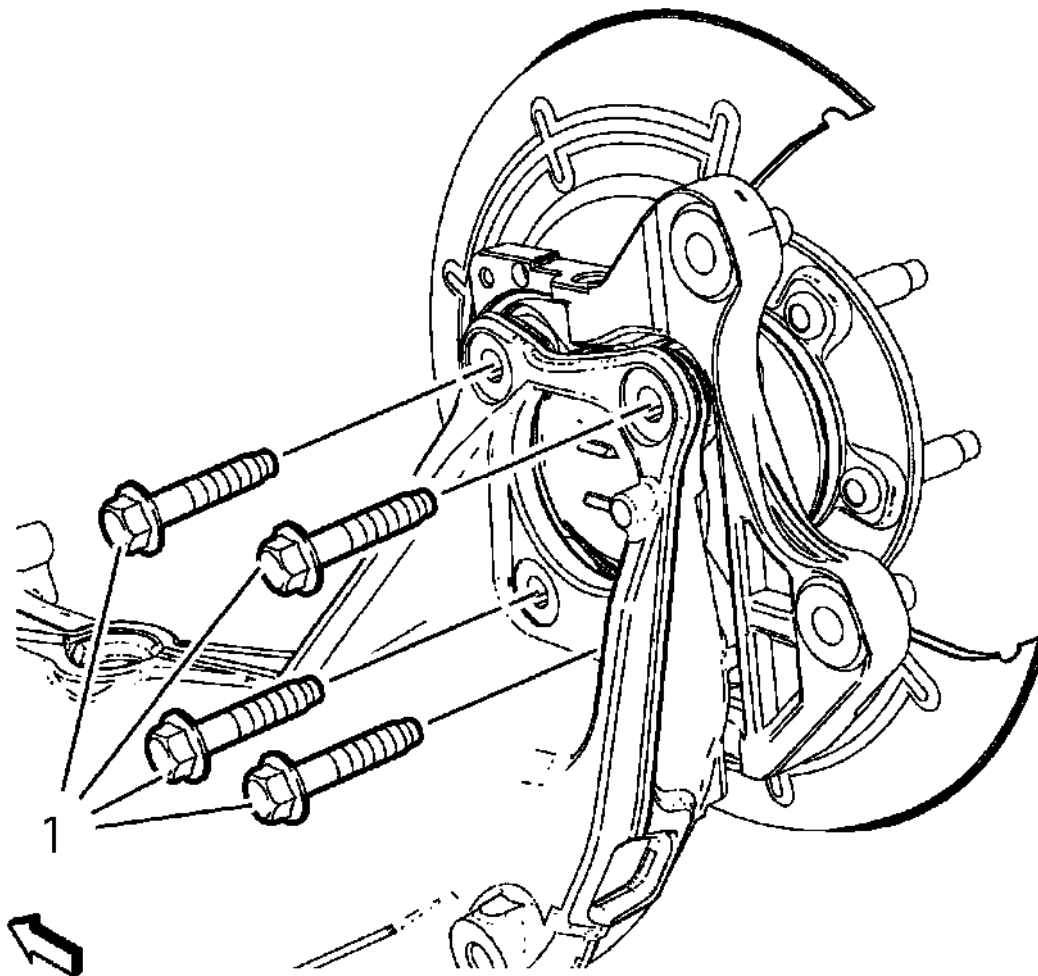


**Fig. 4: Wheel Bearing/Hub Mounting Bolts**  
Courtesy of GENERAL MOTORS COMPANY

6. Remove and DISCARD the 4 wheel bearing/hub mounting bolts (1).

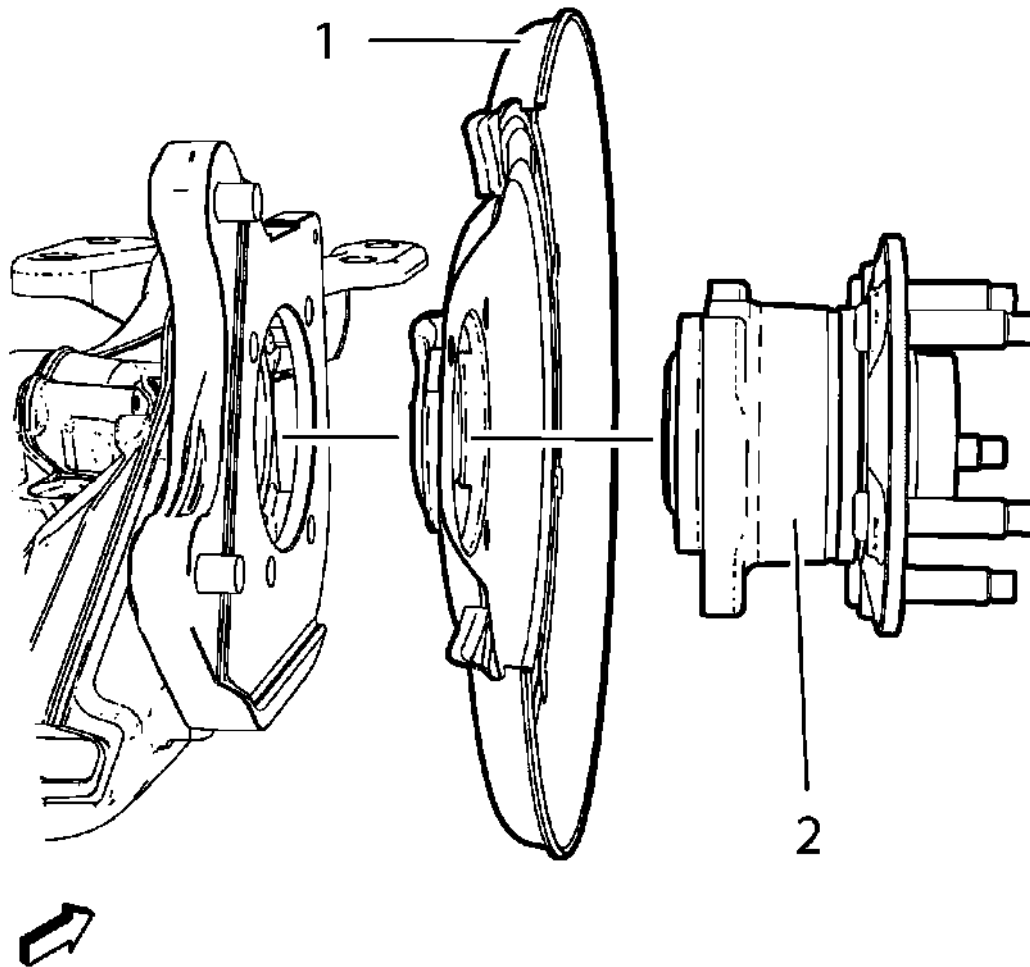


**Fig. 5: Wheel Bearing/Hub, Rear Brake Shield And Steering Knuckle**  
Courtesy of GENERAL MOTORS COMPANY

7. Remove the wheel bearing/hub assembly (2) and rear brake shield (1) from the rear axle.

**Installation Procedure**

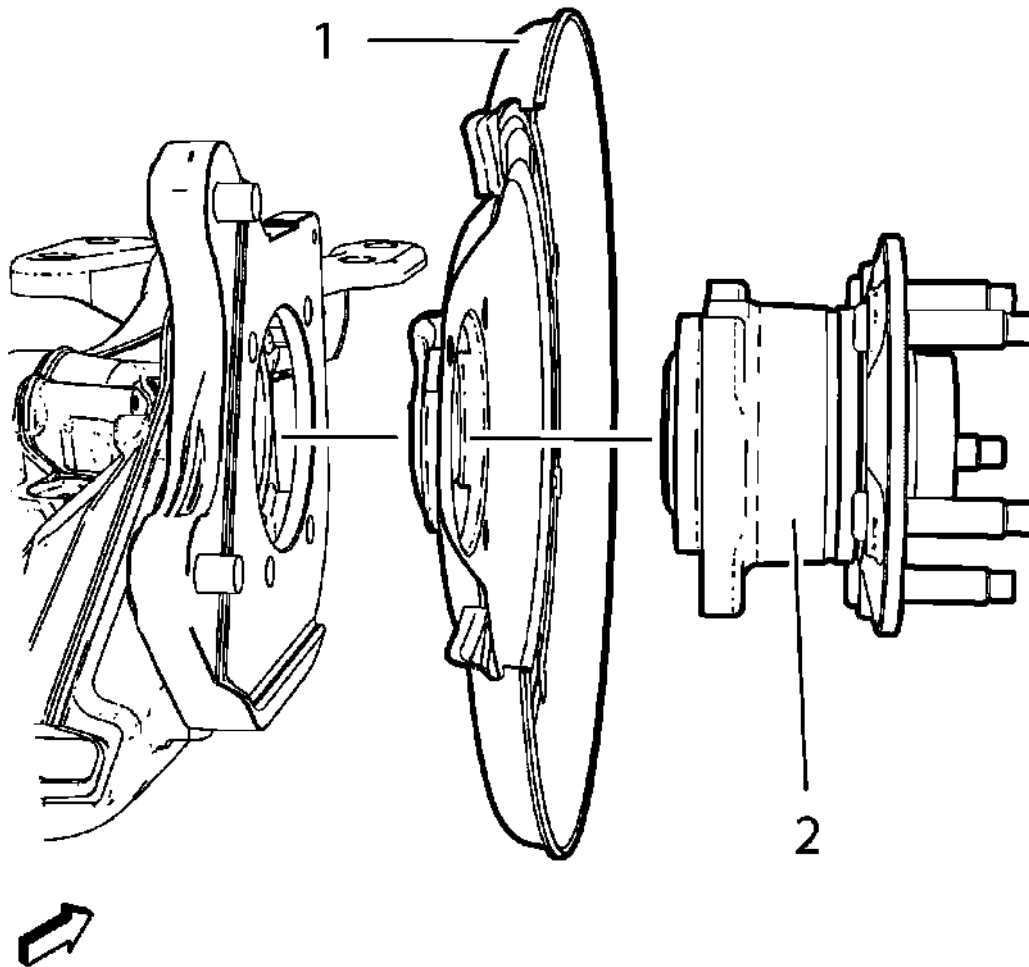


**Fig. 6: Wheel Bearing/Hub, Rear Brake Shield And Steering Knuckle**  
Courtesy of GENERAL MOTORS COMPANY

1. Position the rear brake shield (1) and wheel bearing/hub assembly (2) in the rear axle.

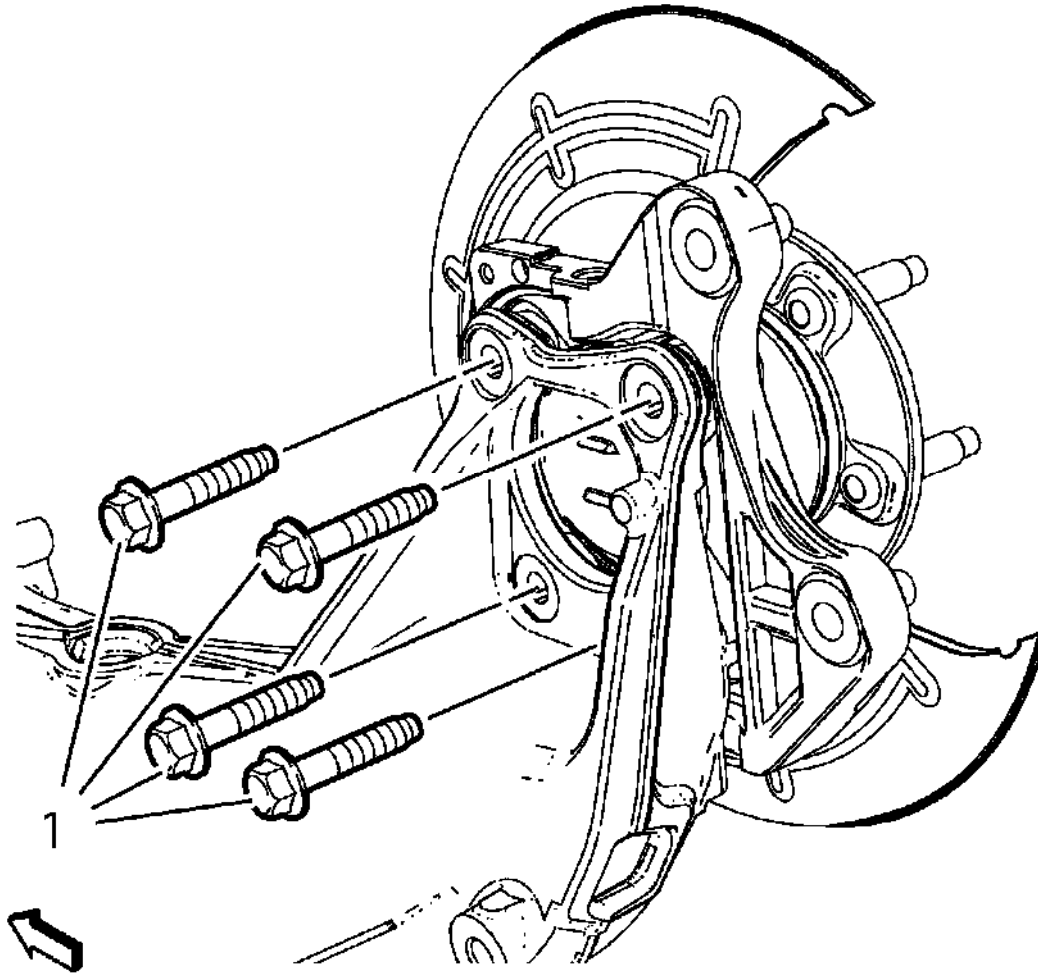


**Fig. 7: Wheel Bearing/Hub Mounting Bolts**  
Courtesy of GENERAL MOTORS COMPANY

**CAUTION:** Refer to Fastener Caution .

2. Install the 4 NEW wheel bearing/hub mounting bolts (1) and tighten a first pass to 50 N.m (37 lb ft). Tighten the bolts evenly, in a cross-pattern.

**WARNING:** Refer to Torque-to-Yield Fastener Warning .

3. Tighten the 4 NEW wheel bearing/hub mounting bolts a final pass to an additional 40 degrees, using the EN-45059 meter.

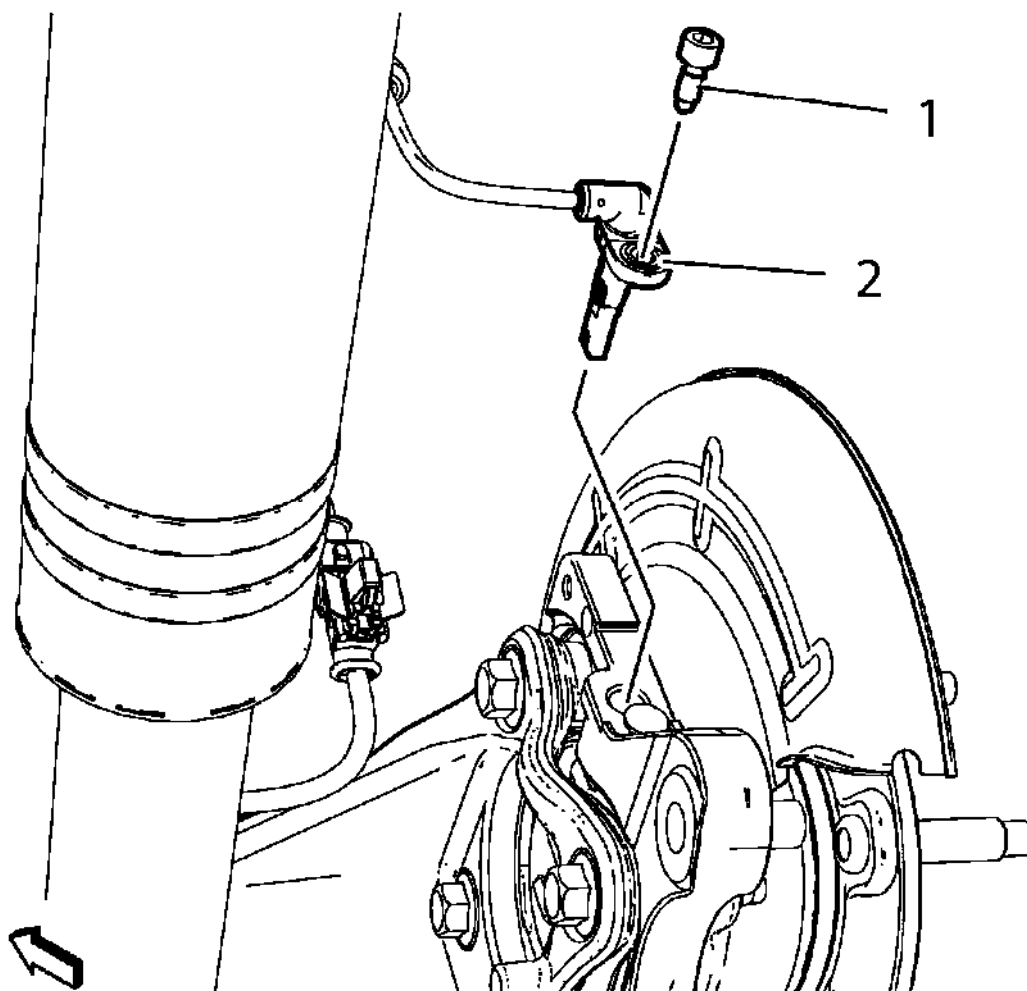


**Fig. 8: Wheel Speed Sensor And Wheel Speed Sensor Mounting Bolt**  
Courtesy of GENERAL MOTORS COMPANY

4. Install the wheel speed sensor (2).
5. Install the wheel speed sensor bolt (1) and tighten to 6 N.m (53 lb in).
6. Install the brake rotor, and install the brake caliper and bracket as an assembly. Refer to **Rear Brake Rotor Replacement** .
7. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
8. Lower the vehicle.

## REAR WHEEL BEARING AND HUB REPLACEMENT (DRUM BRAKE)

### Special Tools

EN 45059 Torque Angle Sensor Kit

For equivalent regional tools, refer to **Special Tools**.

**Removal Procedure**

1. Raise and suitably support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
3. Remove the brake drum. Refer to **Brake Drum Replacement** .

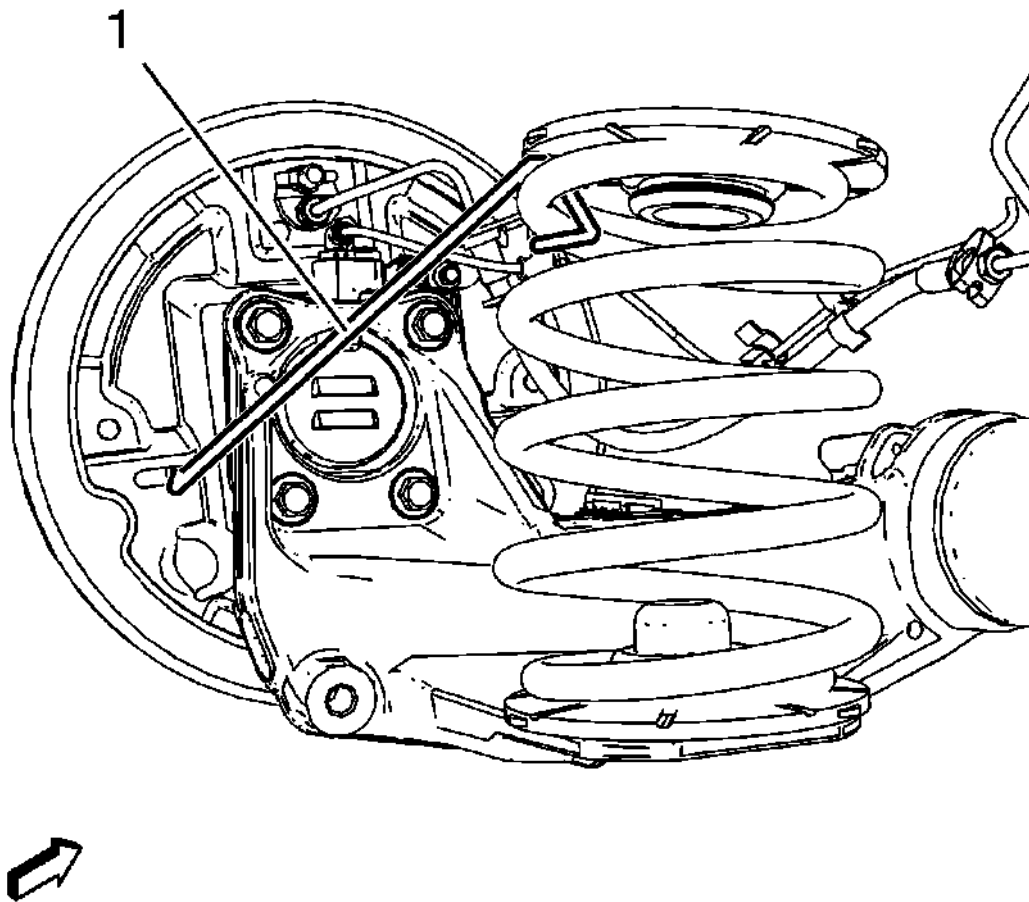


**Fig. 9: Supporting Brake Backing Plate**  
Courtesy of GENERAL MOTORS COMPANY

4. Remove the plug from the drum brake actuator access hole in the backing plate. Using the access hole, install a heavy mechanic wire (1) in order to support the brake backing plate.

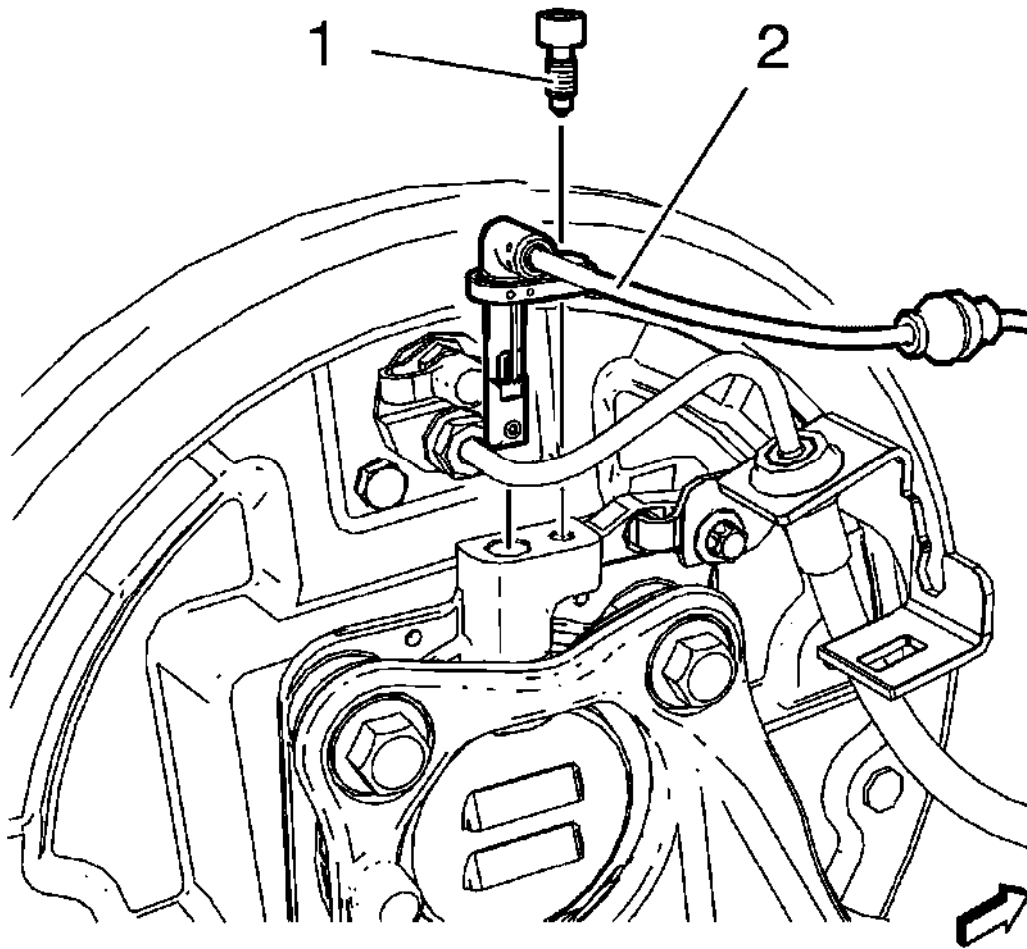


**Fig. 10: Wheel Speed Sensor And Bolt**  
**Courtesy of GENERAL MOTORS COMPANY**

5. Remove the wheel speed sensor bolt (1).
6. Remove the wheel speed sensor (2).

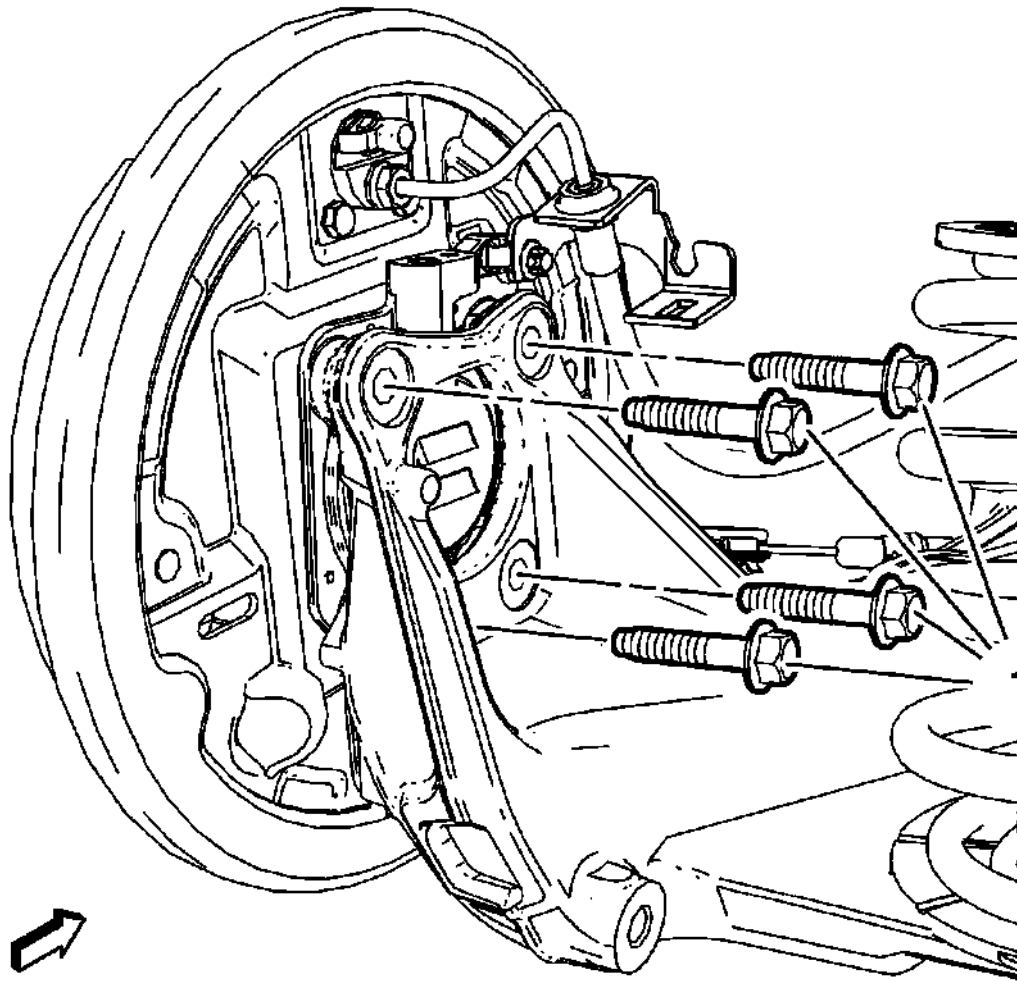


**Fig. 11: Wheel Bearing/Hub Mounting Bolts**  
Courtesy of GENERAL MOTORS COMPANY

7. Remove and DISCARD the wheel bearing/hub mounting bolts (1).

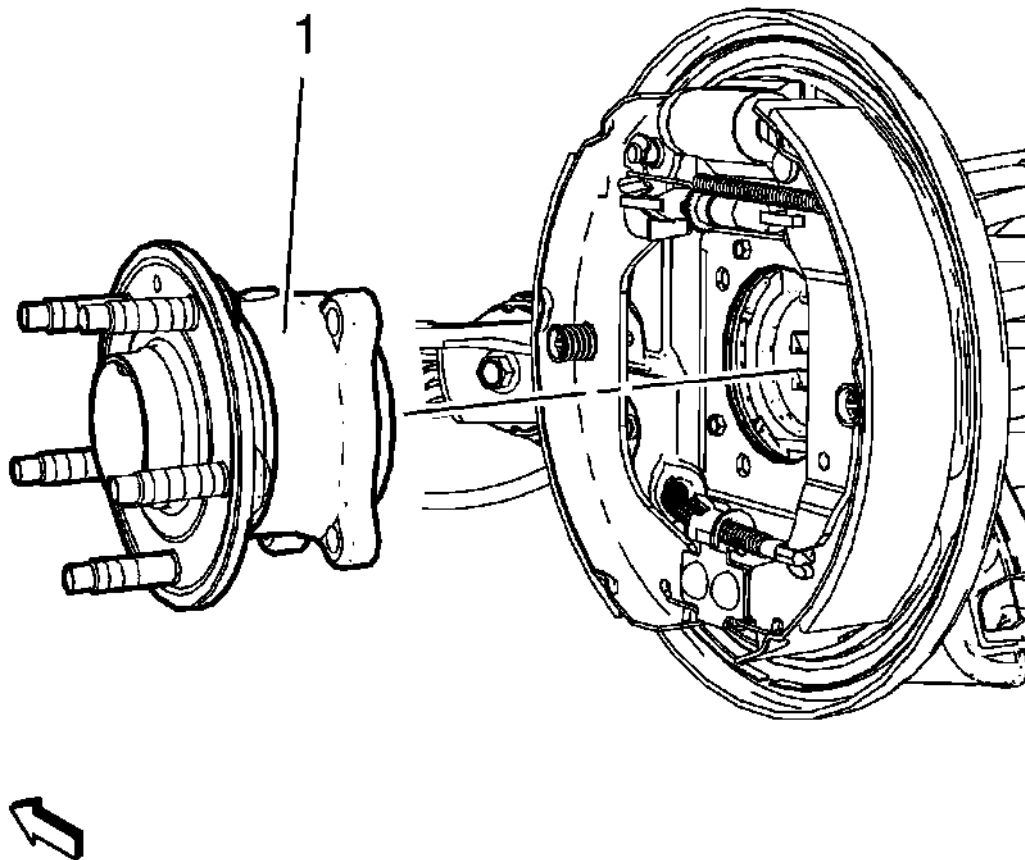


**Fig. 12: Wheel Bearing/Hub Assembly**  
**Courtesy of GENERAL MOTORS COMPANY**

8. Remove the wheel bearing/hub assembly (1) from the rear axle assembly and brake backing plate.

**Installation Procedure**

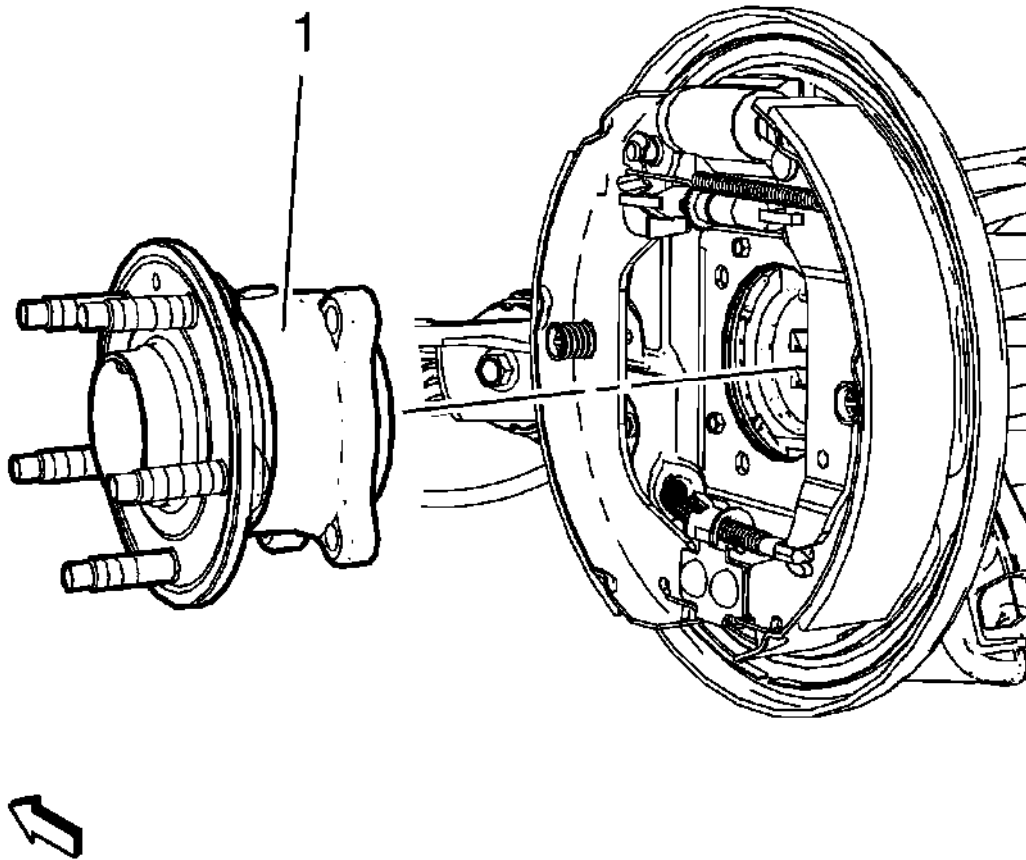


**Fig. 13: Wheel Bearing/Hub Assembly**

**Courtesy of GENERAL MOTORS COMPANY**

1. Install the wheel bearing/hub assembly (1) to the brake backing plate and the rear axle assembly.

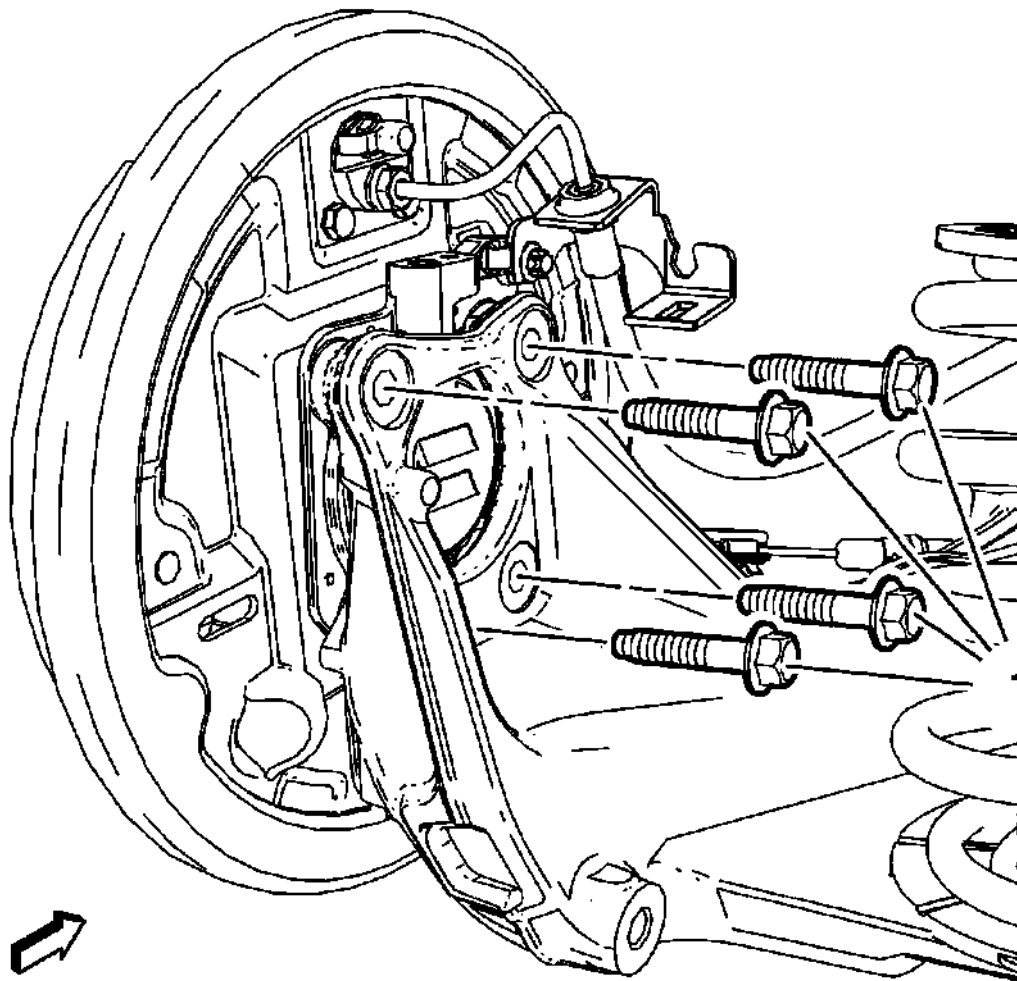


**Fig. 14: Wheel Bearing/Hub Mounting Bolts**  
Courtesy of GENERAL MOTORS COMPANY

**CAUTION:** Refer to Fastener Caution .

**CAUTION:** Refer to Torque-to-Yield Fastener Caution .

**NOTE:** Tighten the bolts evenly, in a cross-pattern.

2. Install the NEW wheel bearing/hub mounting bolts (1) and tighten to 50 N.m (37 lb ft) + 40°, using the EN 45059 kit.

Tighten the bolts evenly, in a cross-pattern.

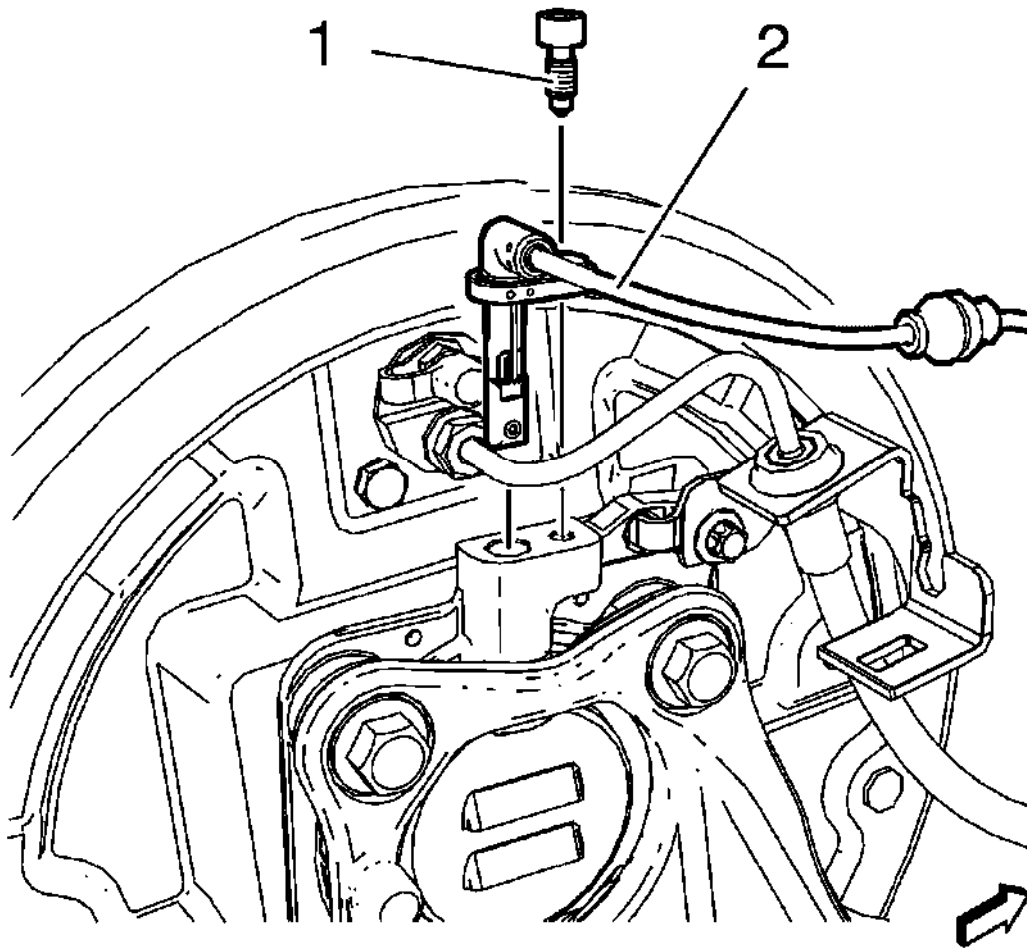


**Fig. 15: Wheel Speed Sensor And Bolt**  
Courtesy of GENERAL MOTORS COMPANY

3. Install the wheel speed sensor (2).
4. Install the wheel speed sensor bolt (1) and tighten to 6 N.m (54 lb in).

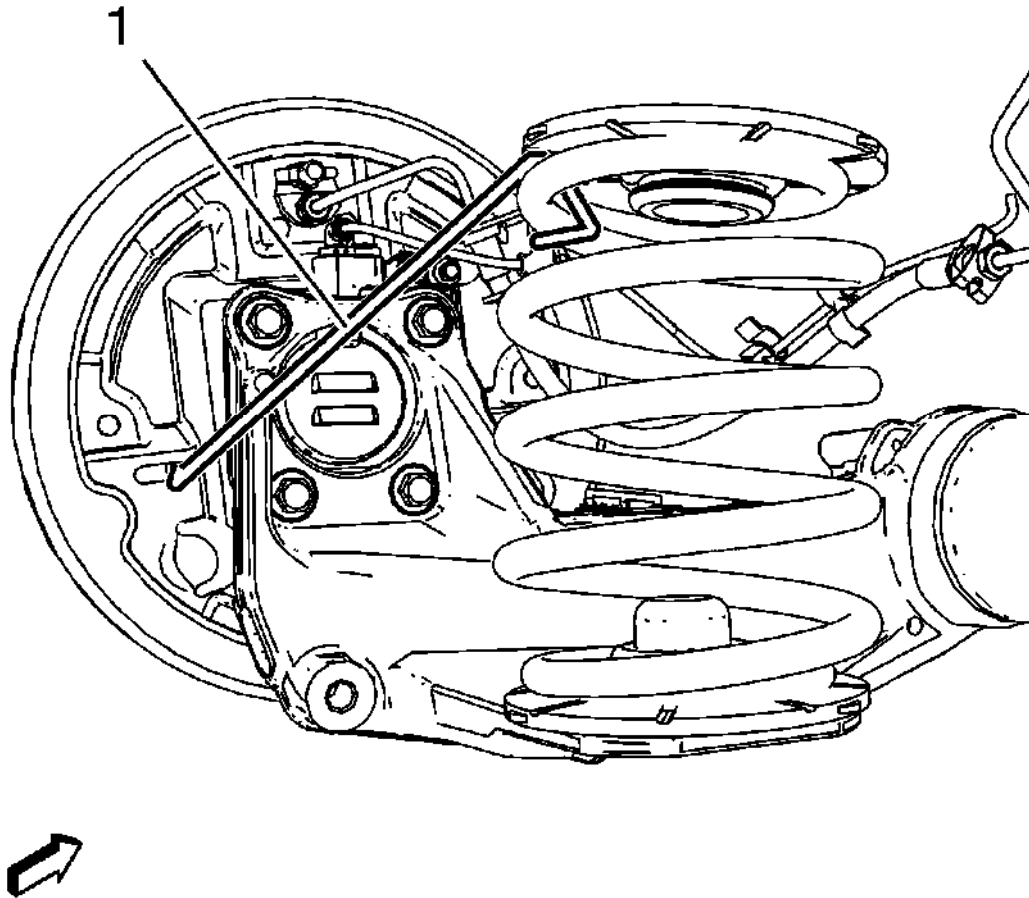


**Fig. 16: Supporting Brake Backing Plate**  
Courtesy of GENERAL MOTORS COMPANY

5. Remove the mechanic wire (1) supporting the brake backing plate.
6. Install the plug to the drum brake actuator access hole in the backing plate.
7. Install the brake drum. Refer to **Brake Drum Replacement** .
8. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
9. Remove the support and lower the vehicle.

## EQUALIZER BEAM SUPPORT REPLACEMENT

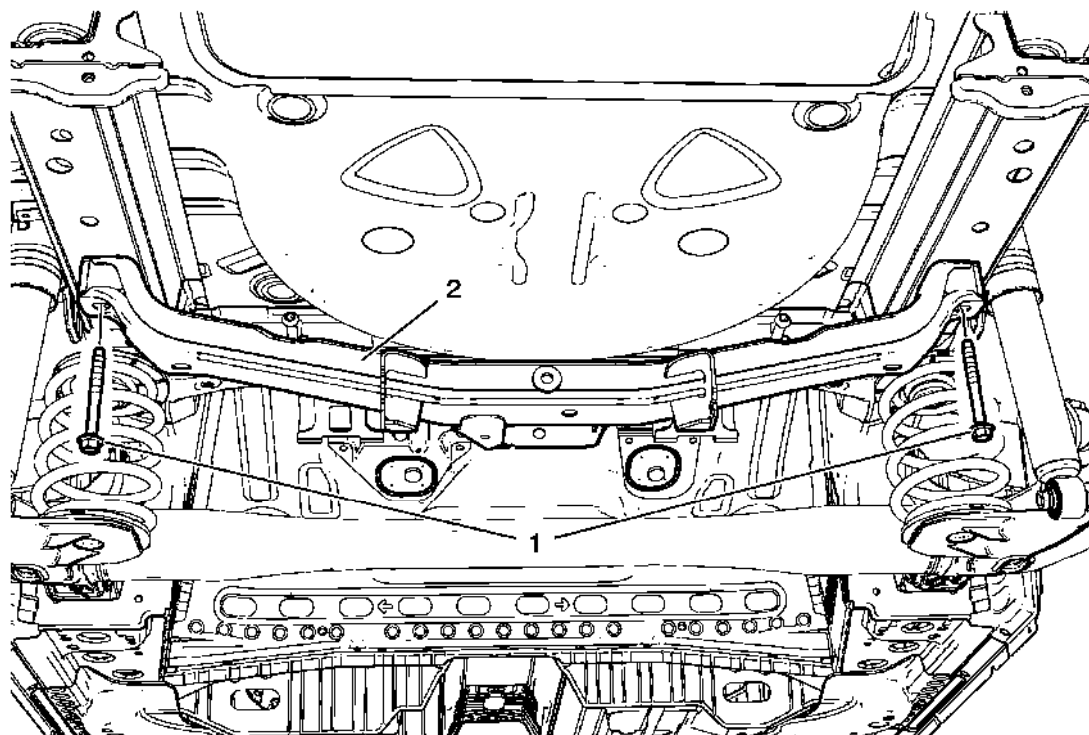


**Fig. 17: Equalizer Beam Support And Bolts**  
Courtesy of GENERAL MOTORS COMPANY

### Equalizer Beam Support Replacement

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Component Name                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                         |
| <ol style="list-style-type: none"><li>1. Raise and support the vehicle. Refer to <b><u>Lifting and Jacking the Vehicle</u></b> .</li><li>2. Remove the tire and wheel assemblies. Refer to <b><u>Tire and Wheel Removal and Installation</u></b> .</li><li>3. For vehicles with electric parking brake, remove parking brake cable from support. Refer to <b><u>Parking Brake Cable Replacement (Mechanical Parking Brake)</u></b> .</li><li>4. Remove the equalizing beam center link. Refer to <b><u>Equalizer Beam Center Link Replacement</u></b>.</li></ol> |                                                                                                                                                                                                                                                                                                                         |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>Equalizer Beam Support Bolts (Qty: 2)</p> <p><b>WARNING:</b><br/>Refer to <b><u>Torque-to-Yield Fastener Warning</u></b> .</p> <p><b>CAUTION:</b><br/>Refer to <b><u>Fastener Caution</u></b> .</p> <p><b>Procedure</b><br/>Install NEW equalizer beam support bolts. Do NOT reuse old bolts.<br/><b>Tighten</b></p> |

## 2013 Chevrolet Cruze

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|   |                               |
|---|-------------------------------|
|   | 90 (66 lb ft) + 45-60 degrees |
| 2 | Equalizer Beam Support        |

#### EQUALIZER BEAM LINK REPLACEMENT - LEFT SIDE

##### Special Tools

EN-45059 Angle Sensor Kit

For equivalent regional tools. Refer to Special Tools.

##### Removal Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle.
2. Remove the tire and wheel assemblies. Refer to Tire and Wheel Removal and Installation.

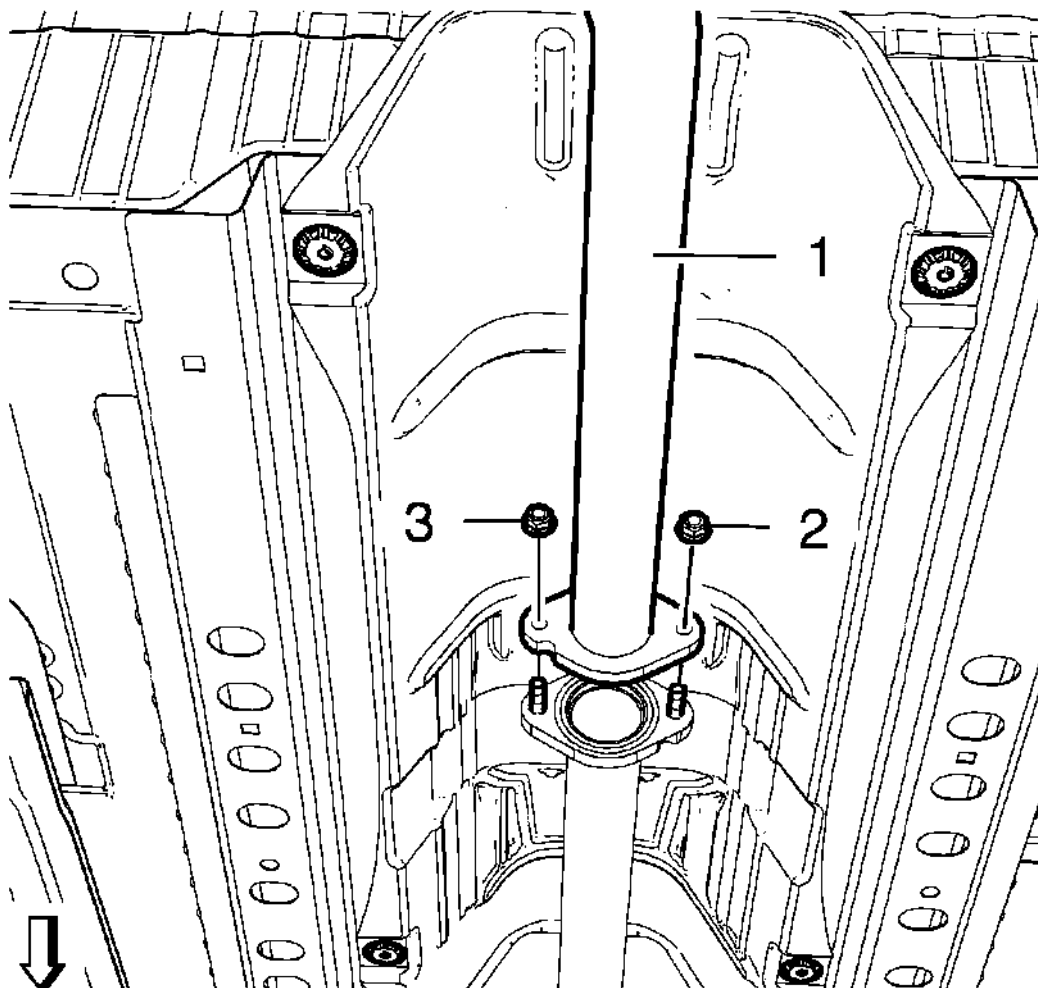


**Fig. 18: Rear Exhaust Pipe**

Courtesy of GENERAL MOTORS COMPANY

3. Remove and DISCARD exhaust front pipe to exhaust rear muffler nuts (2, 3).
4. Remove rear exhaust pipe (1) from flange.
5. DISCARD flange gasket.

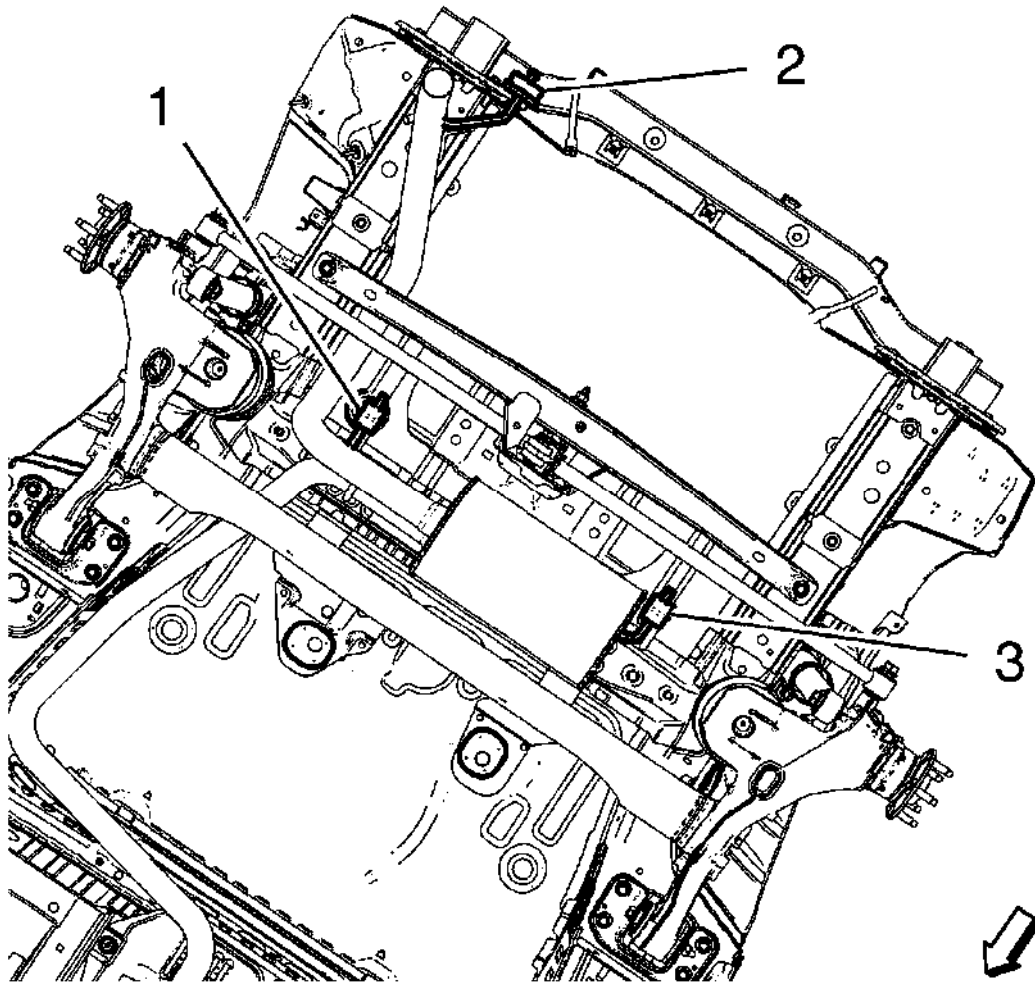


**Fig. 19: Suspension Points**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** There may be additional attachment points, depending on the powertrain in the vehicle.

6. Loosen rear exhaust muffler from suspension points (1, 2, 3).

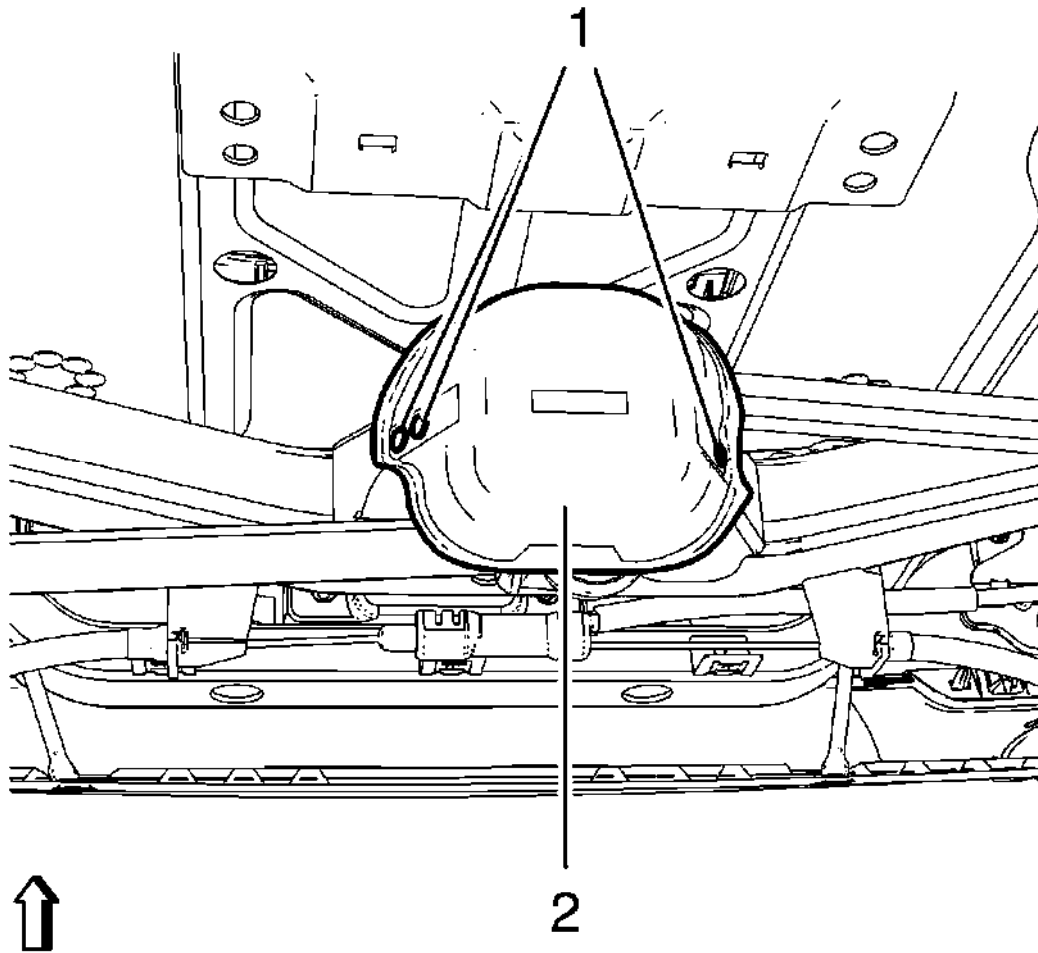


**Fig. 20: Identifying Equalizer Beam Center Link Heat Shield And Rivets**  
Courtesy of GENERAL MOTORS COMPANY

7. Remove 3 rivets (1) from equalizer beam center link heat shield (2).

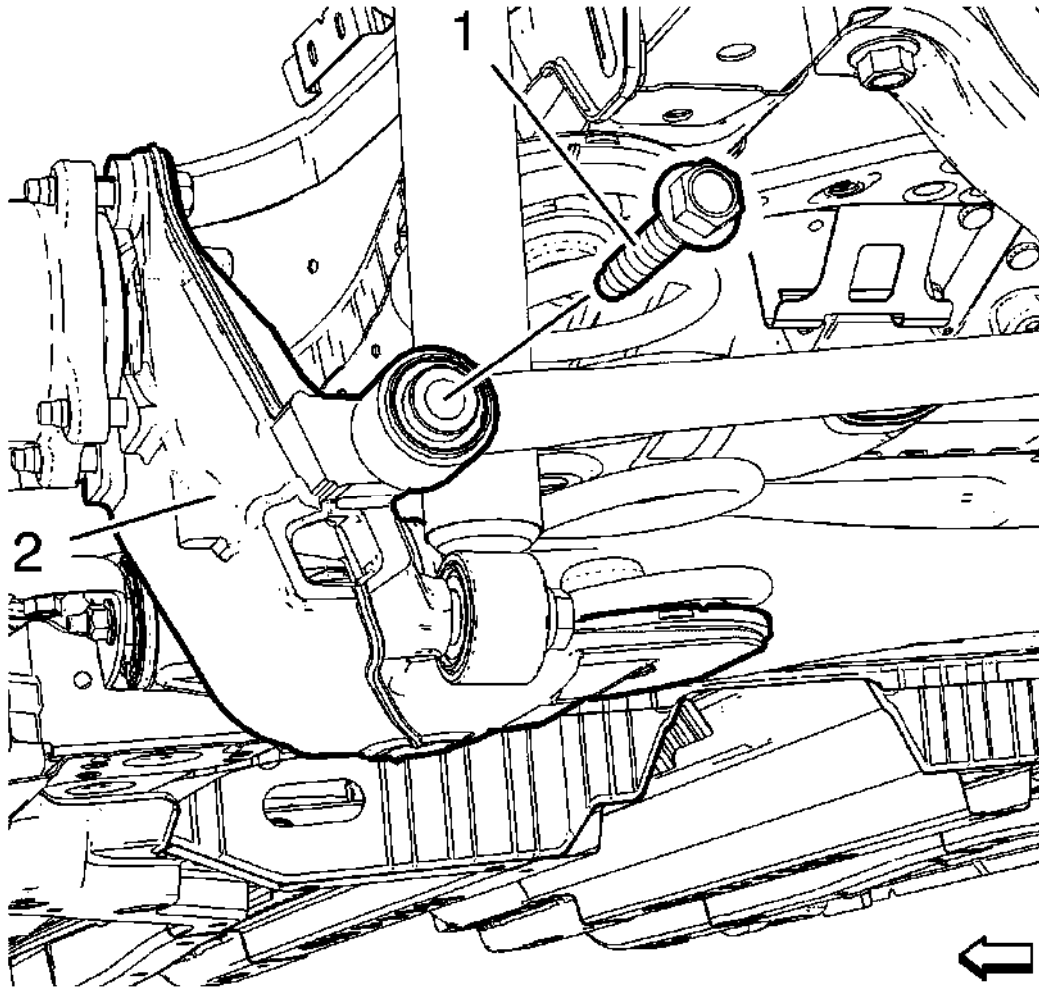


**Fig. 21: Rear Axle And Equalizer Beam Link Bolt**  
Courtesy of GENERAL MOTORS COMPANY

8. Remove the equalizer beam link bolt (1) from the rear axle (2).

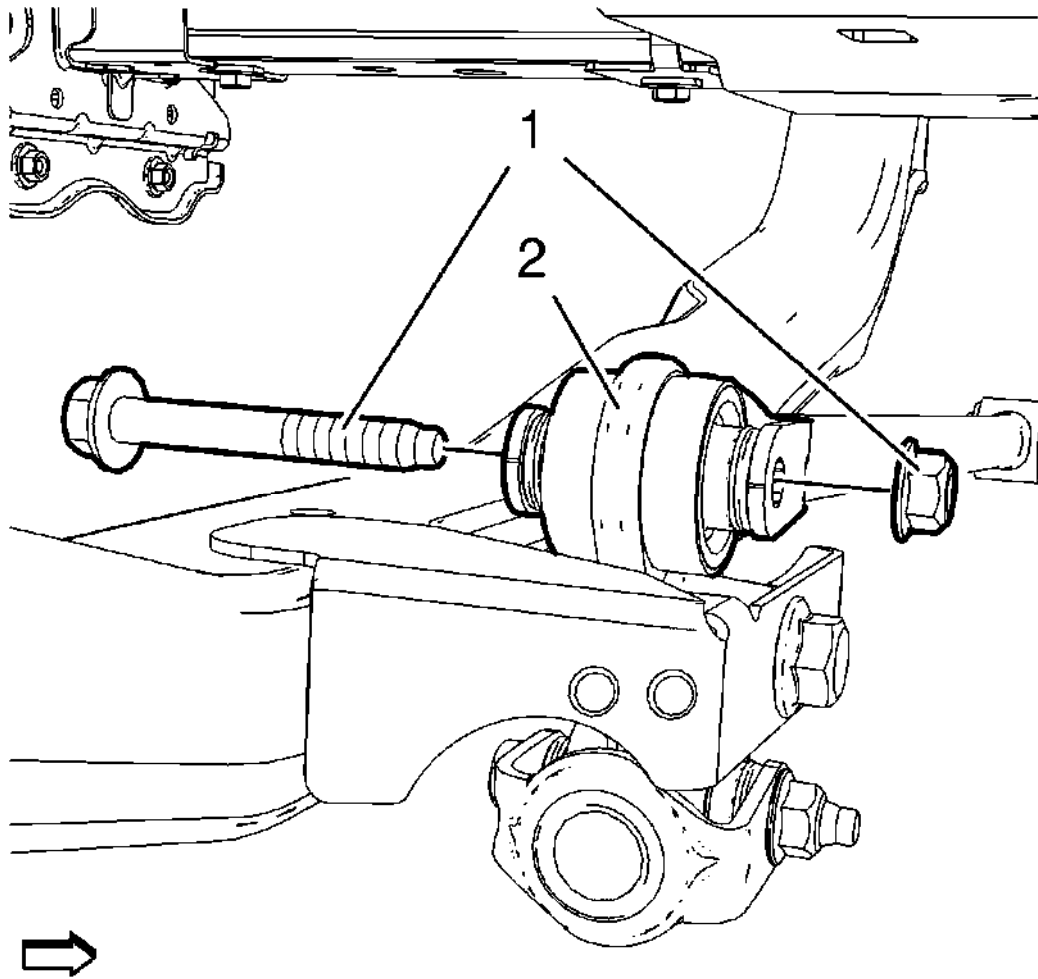


**Fig. 22: Identifying Equalizer Beam Center Link**

**Courtesy of GENERAL MOTORS COMPANY**

9. Remove and discard the equalizer beam link bolt and nut (1) from equalizer beam center link (2).
10. Remove equalizer beam link from the vehicle.

#### **Installation Procedure**

1. Insert equalizer beam link to the vehicle.

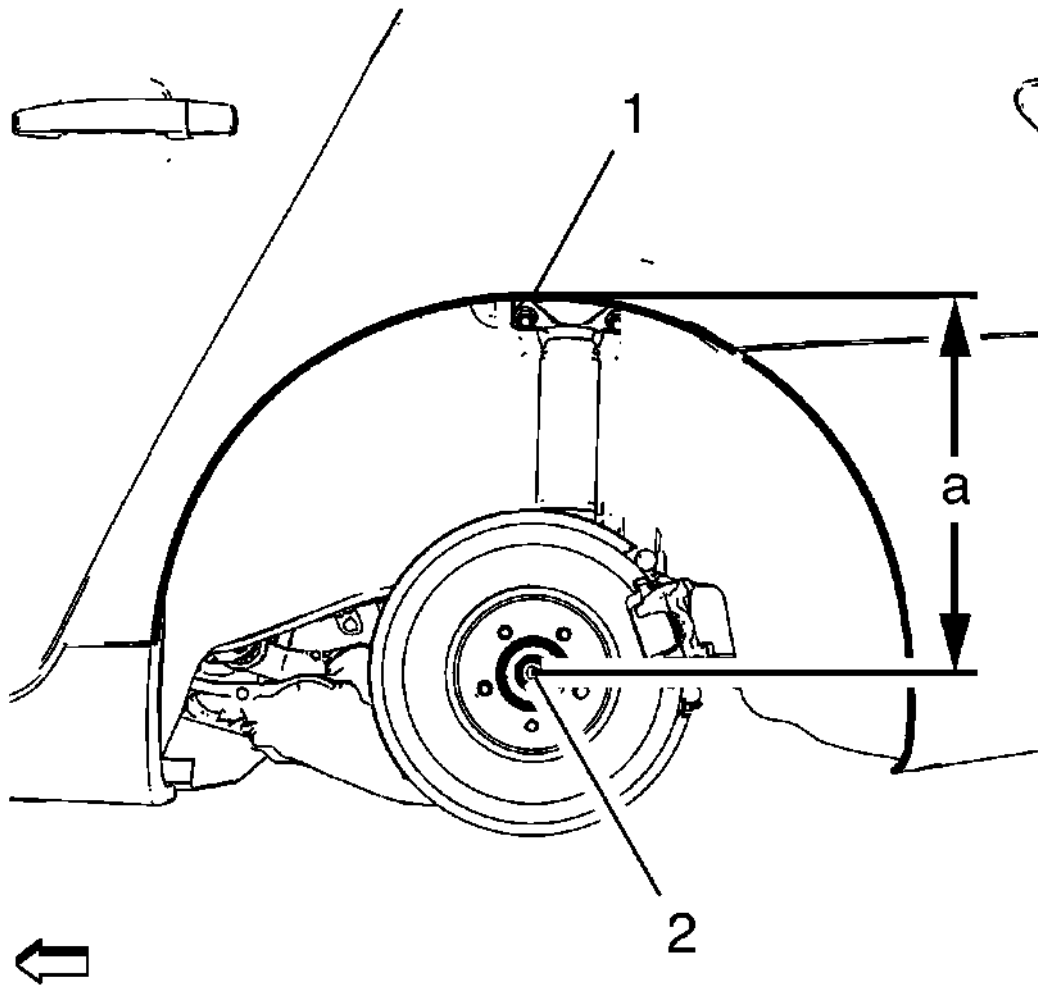


**Fig. 23: Measuring Vertical Distance Between Center Of Wheel Hub And Top Of Wheel Opening**  
Courtesy of GENERAL MOTORS COMPANY

**NOTE:** Following step must be proceed in order to achieve correct rear axle joints alignment.

2. Using the lift table, raise the axle to the proper trim height specification by measuring the vertical distance (a) between the center of the wheel hub (2) and top of the wheel opening (1).

**Specification**

Dimension (a): 385 mm (15.16 in)

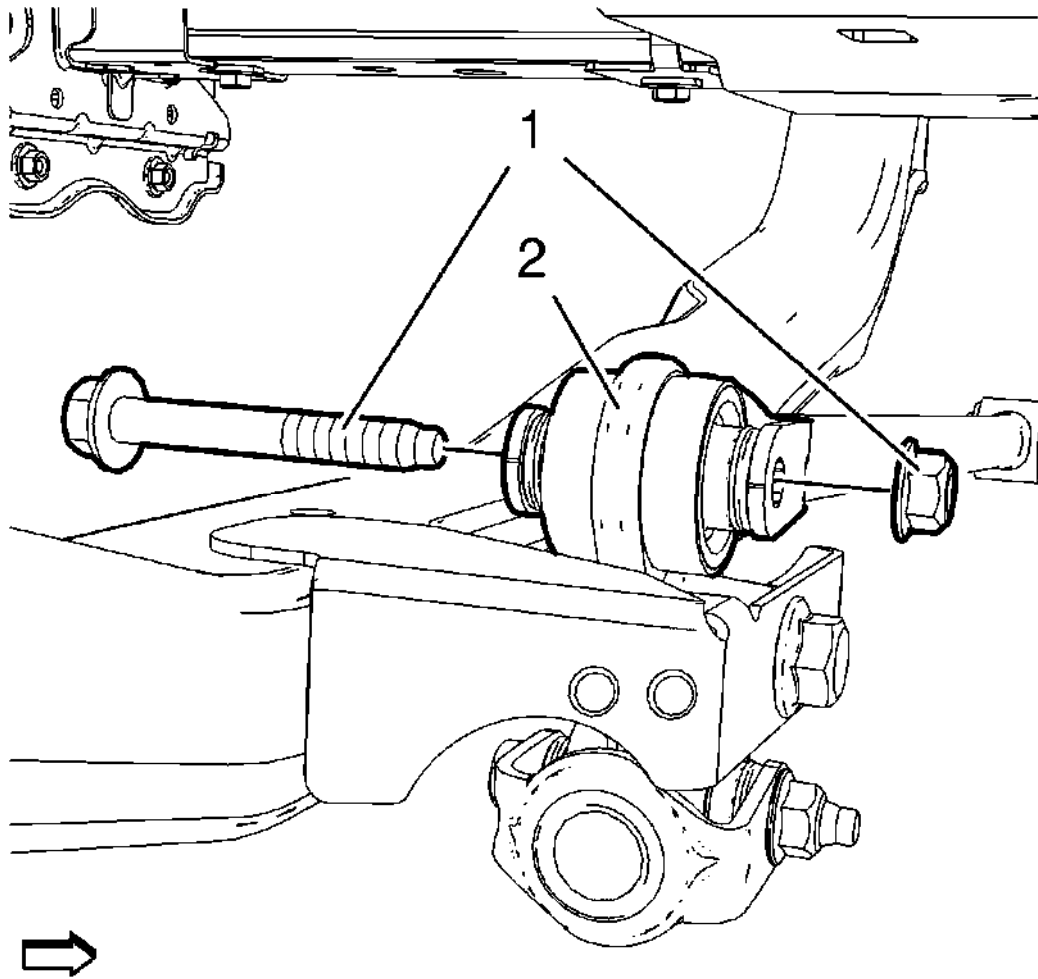


**Fig. 24: Identifying Equalizer Beam Center Link**

Courtesy of GENERAL MOTORS COMPANY

**WARNING:** Refer to Torque-to-Yield Fastener Warning .

**CAUTION:** Refer to Fastener Caution .

3. Install the NEW equalizer beam link bolt and nut (1) to equalizer beam center link (2) and tighten to 40 N.m (30 lb ft) + 60°, using the **EN-45059** angle meter.

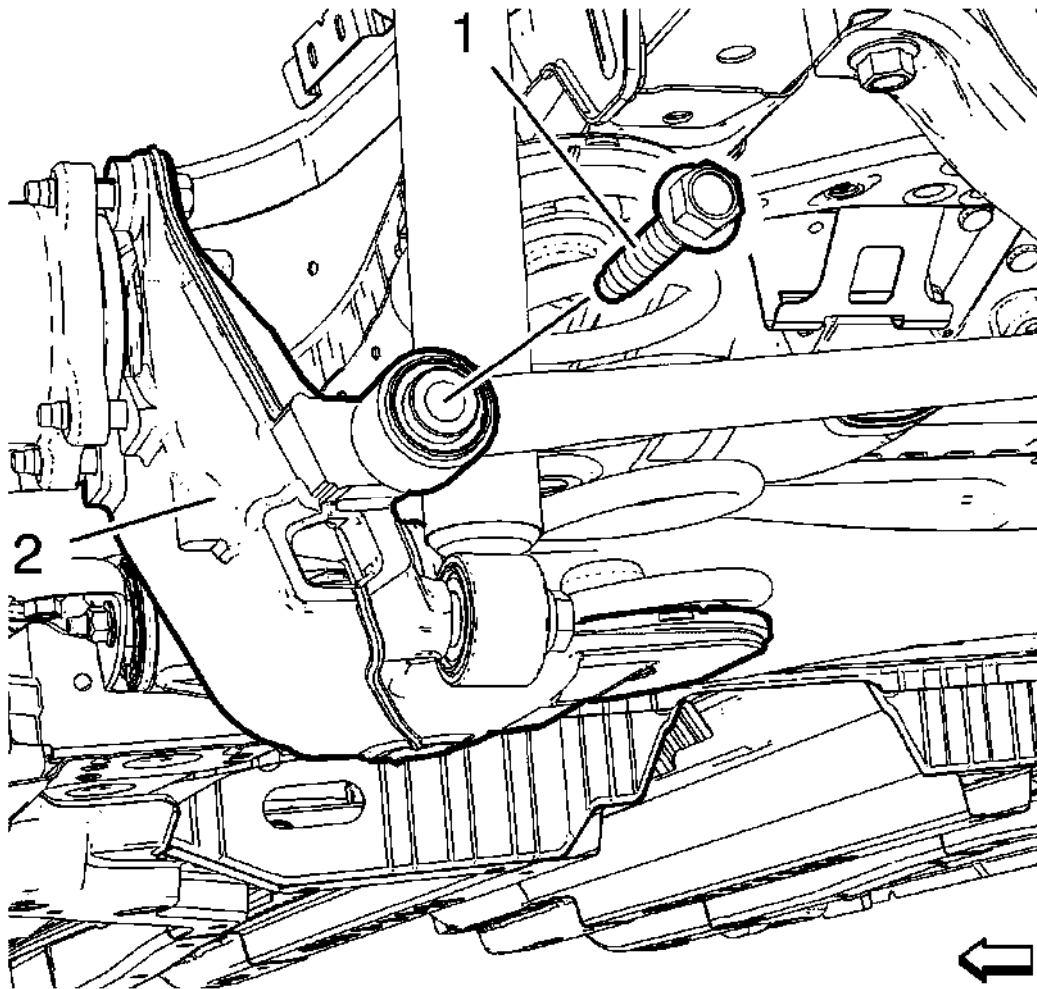


**Fig. 25: Rear Axle And Equalizer Beam Link Bolt**

Courtesy of GENERAL MOTORS COMPANY

4. Install the equalizer beam link bolt (1) to the rear axle (2) and tighten to 160 N.m (118 lb ft).
5. Install the tire and wheel assemblies. Refer to **Tire and Wheel Removal and Installation** .

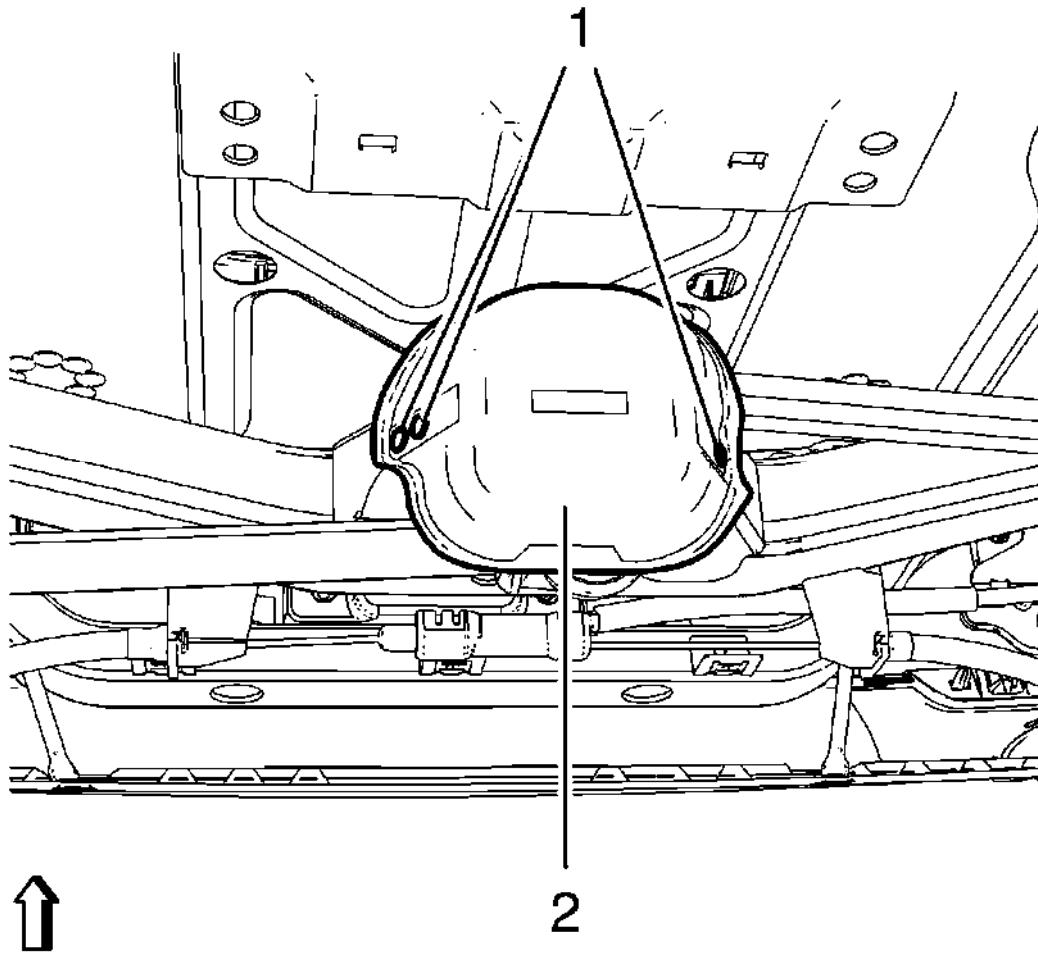


**Fig. 26: Identifying Equalizer Beam Center Link Heat Shield And Rivets**  
Courtesy of GENERAL MOTORS COMPANY

6. Install 3 rivets (1) to equalizer beam center link heat shield (2).

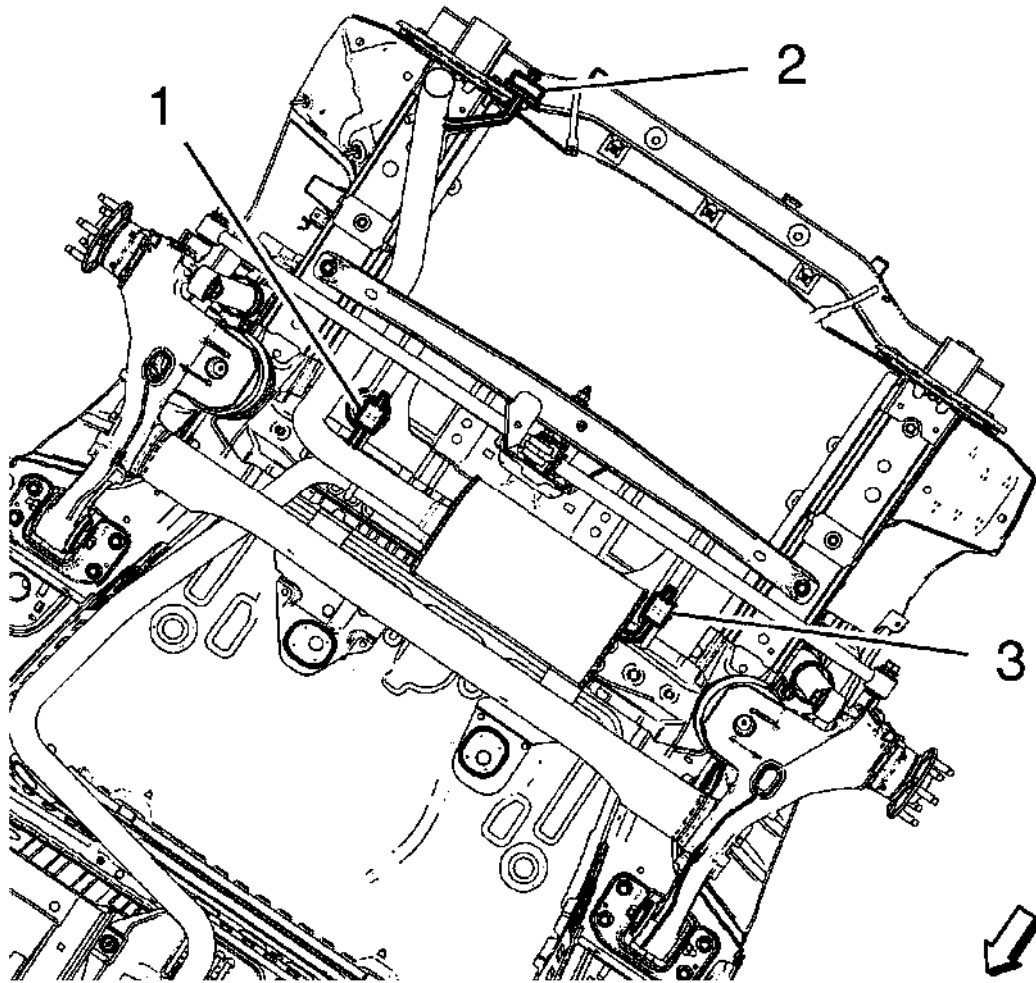


**Fig. 27: Suspension Points**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** There may be additional attachment points, depending on the powertrain in the vehicle.

7. Install rear exhaust muffler to suspension points (1, 2, 3).

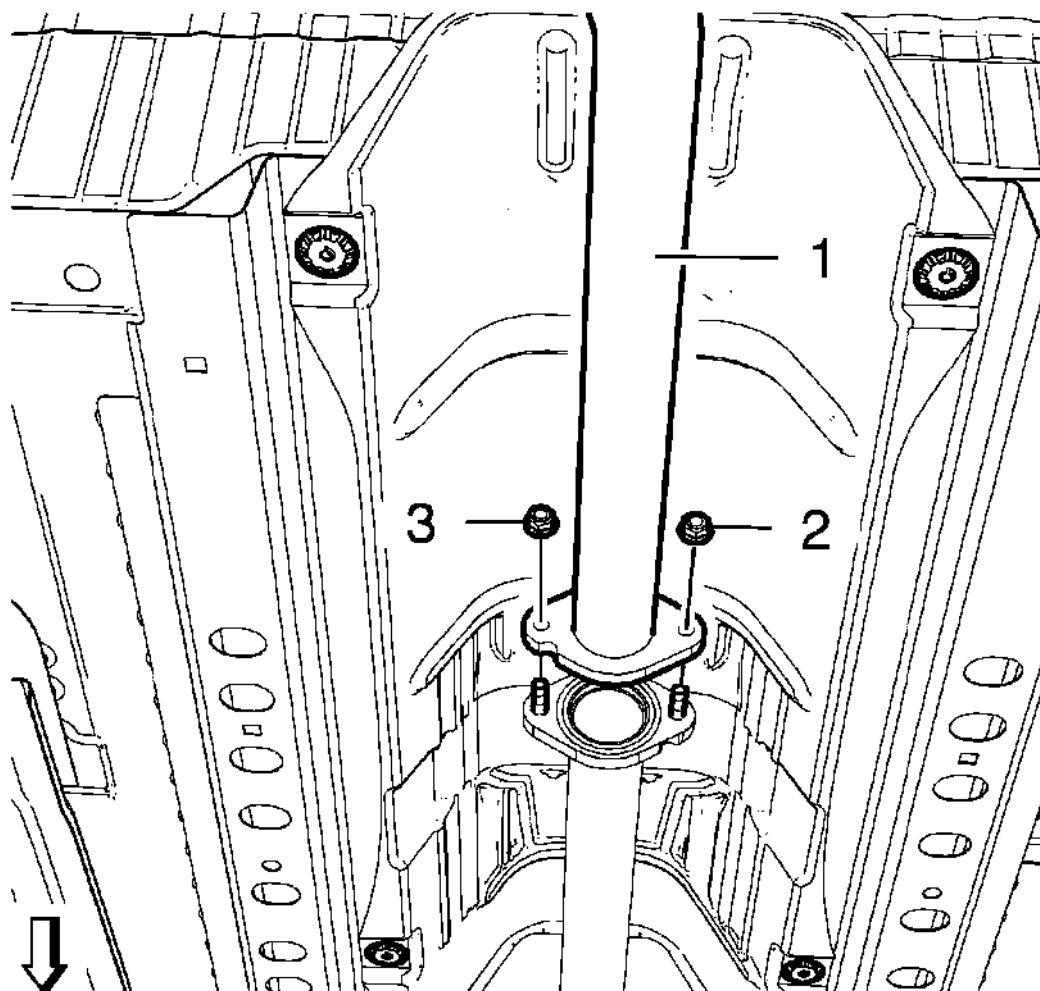


**Fig. 28: Rear Exhaust Pipe**

Courtesy of GENERAL MOTORS COMPANY

8. Install NEW flange gasket.
9. Install rear exhaust pipe (1) to flange.

**CAUTION: Refer to Torque-to-Yield Fastener Caution**

10. Install NEW exhaust front pipe to exhaust rear muffler nuts (2, 3) and tighten to 17 N.m (13 lb ft).
11. Lower the vehicle.

## **EQUALIZER BEAM LINK REPLACEMENT - RIGHT SIDE**

### **Special Tools**

**EN-45059 Angle Sensor Kit**

For equivalent regional tools. Refer to **Special Tools**.

**Removal Procedure**

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the tire and wheel assemblies. Refer to **Tire and Wheel Removal and Installation** .

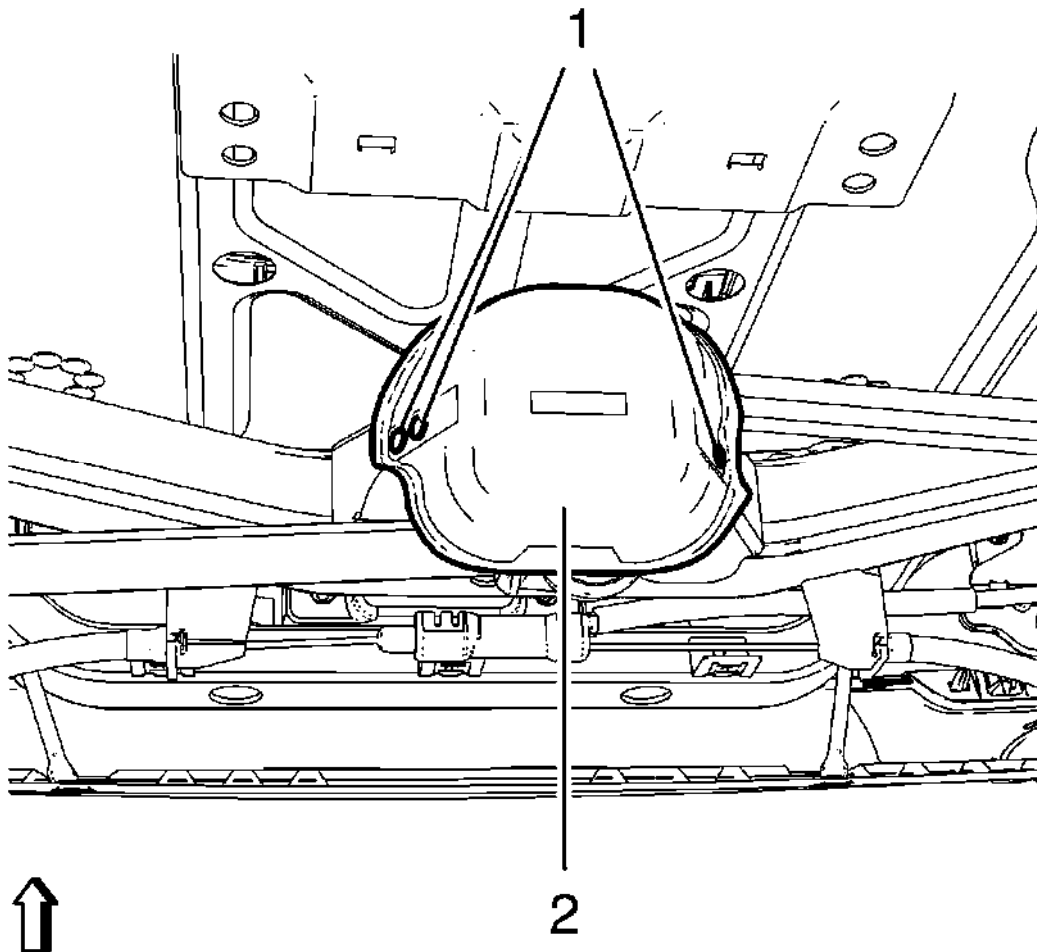


**Fig. 29: Identifying Equalizer Beam Center Link Heat Shield And Rivets**  
Courtesy of GENERAL MOTORS COMPANY

3. Remove 3 rivets (1) from equalizer beam center link heat shield (2).

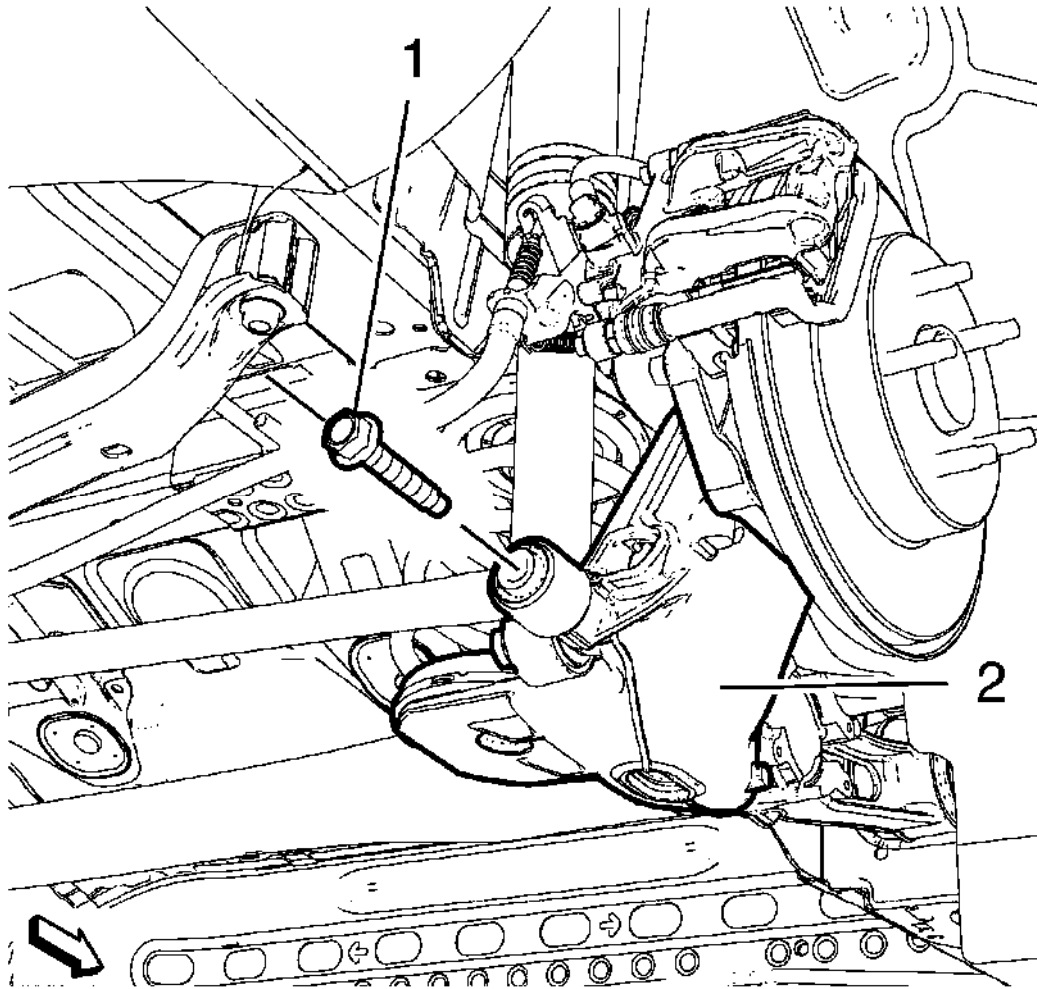


**Fig. 30: Rear Axle And Equalizer Beam Link Bolt**  
Courtesy of GENERAL MOTORS COMPANY

4. Remove the equalizer beam link bolt (1) from the rear axle (2).

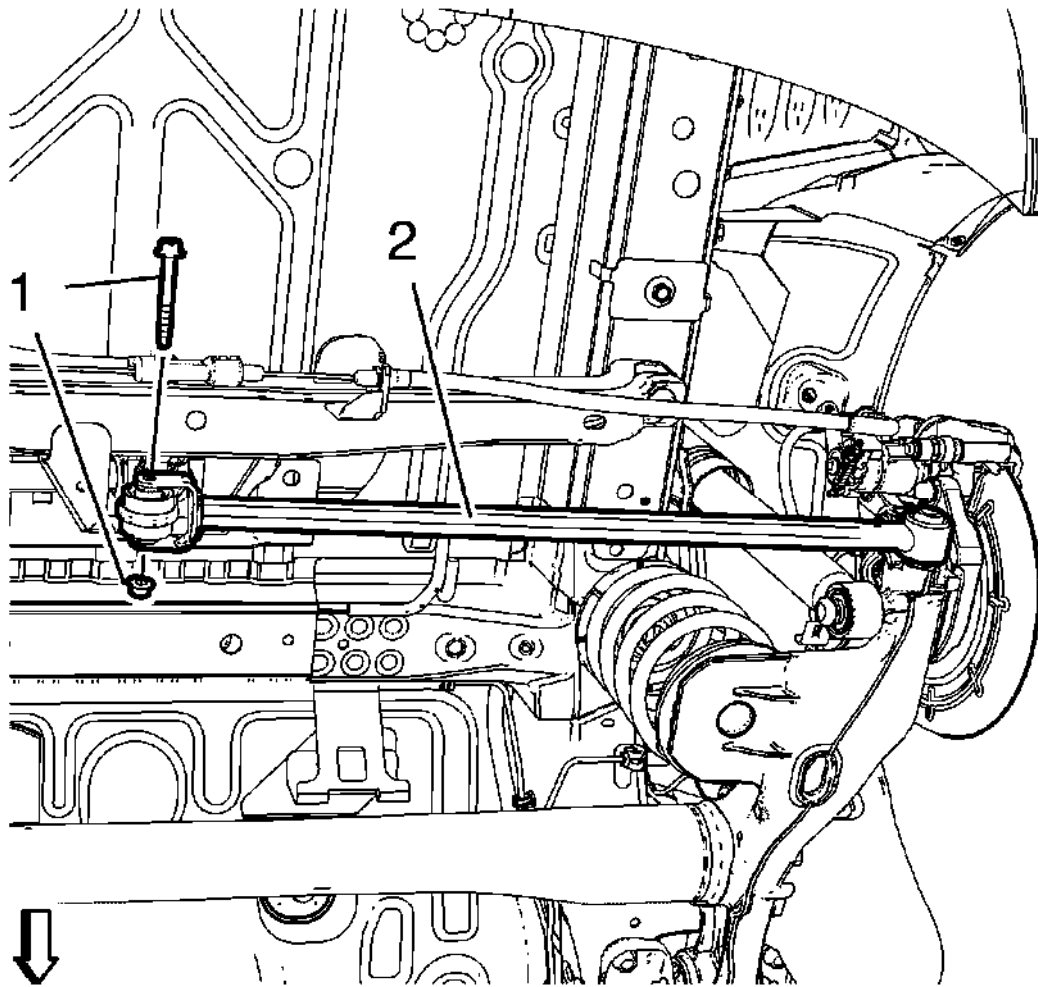


**Fig. 31: Identifying Equalizer Beam Center Link**

**Courtesy of GENERAL MOTORS COMPANY**

5. Remove and DISCARD the equalizer beam link bolt and nut (1) from equalizer beam center link (2).
6. Remove the equalizer beam link from the vehicle.

**Installation Procedure**

1. Insert equalizer beam link to the vehicle.

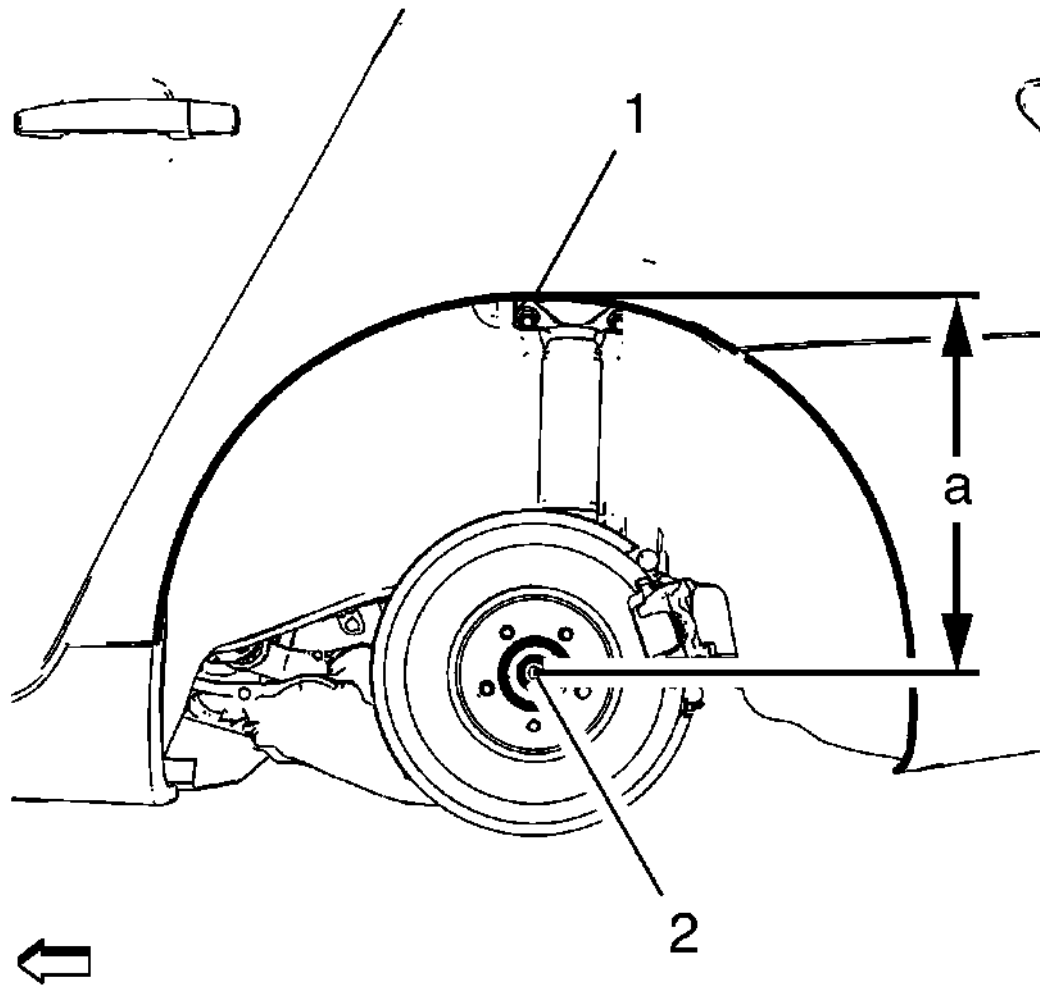


**Fig. 32: Measuring Vertical Distance Between Center Of Wheel Hub And Top Of Wheel Opening**  
Courtesy of GENERAL MOTORS COMPANY

**NOTE:** Following step must be proceed in order to achieve correct rear axle joints alignment.

2. Using the lift table, raise the axle to the proper trim height specification by measuring the vertical distance (a) between the center of the wheel hub (2) and top of the wheel opening (1).

**Specification**

Dimension (a): 385 mm (15.16 in)

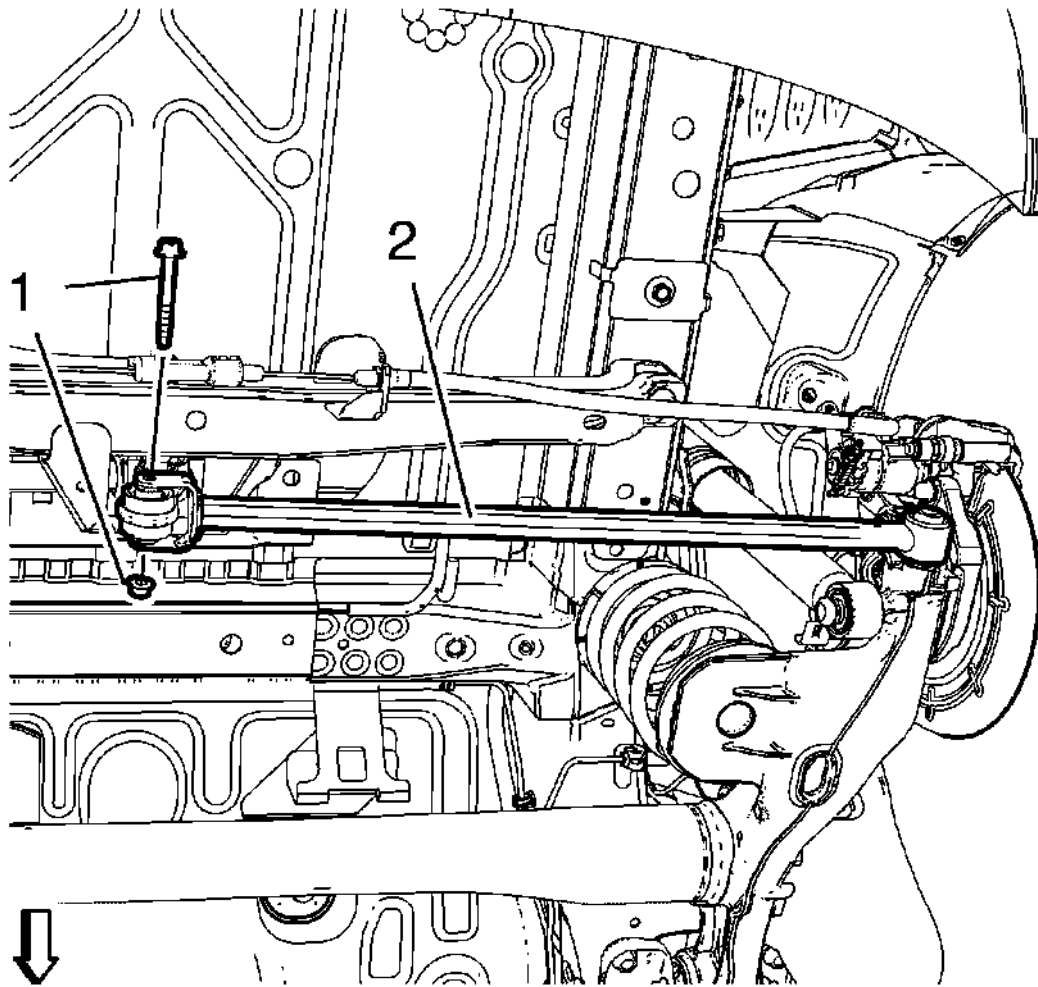


**Fig. 33: Identifying Equalizer Beam Center Link**

Courtesy of GENERAL MOTORS COMPANY

**WARNING:** Refer to Torque-to-Yield Fastener Warning .

**CAUTION:** Refer to Fastener Caution .

3. Install the NEW equalizer beam link bolt and nut (1) to equalizer beam center link (2) and tighten to 40 N.m (30 lb ft) + 60°, using the **EN-45059** angle meter.

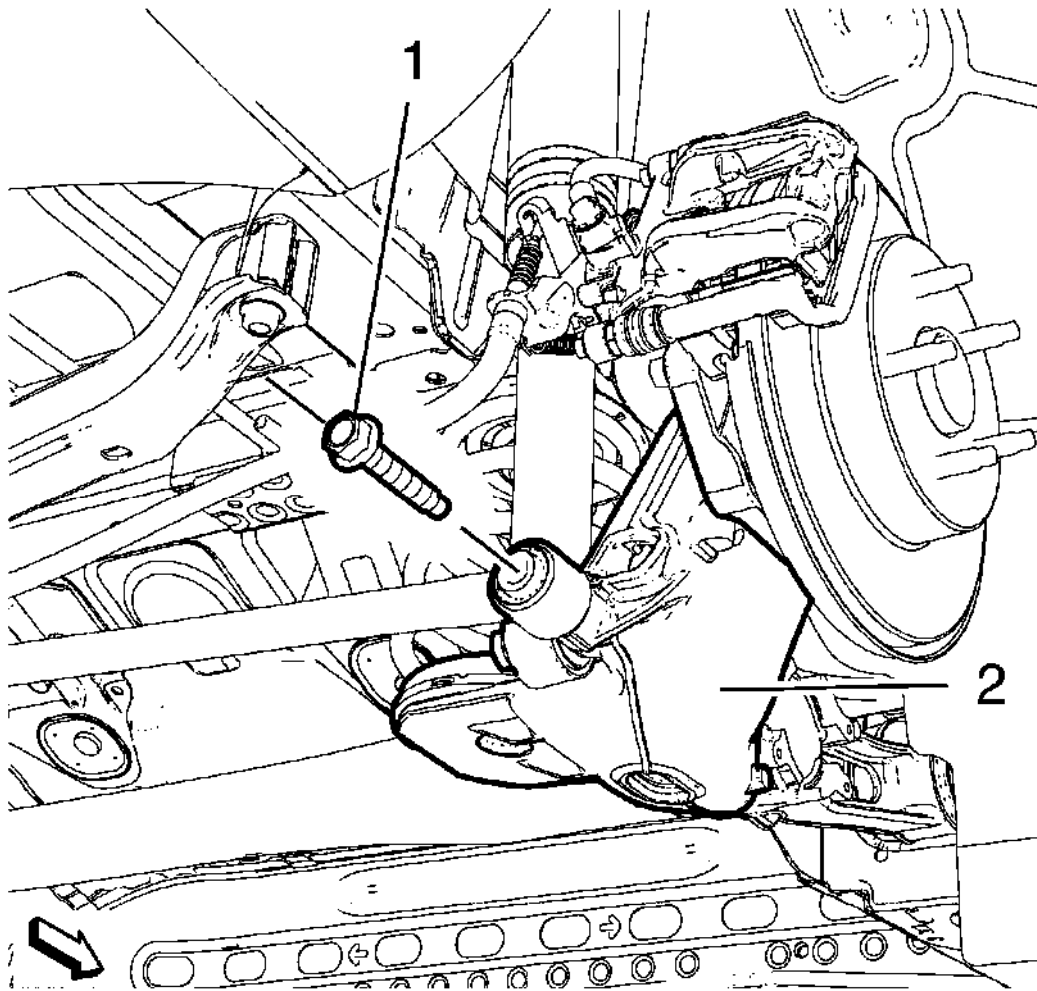


**Fig. 34: Rear Axle And Equalizer Beam Link Bolt**

**Courtesy of GENERAL MOTORS COMPANY**

4. Install and hand tighten the equalizer beam link bolt (1) to the rear axle (2) and tighten to 160 N.m (118 lb ft).
5. Install the tire and wheel assemblies. Refer to **Tire and Wheel Removal and Installation** .
6. Lower the vehicle to ground.

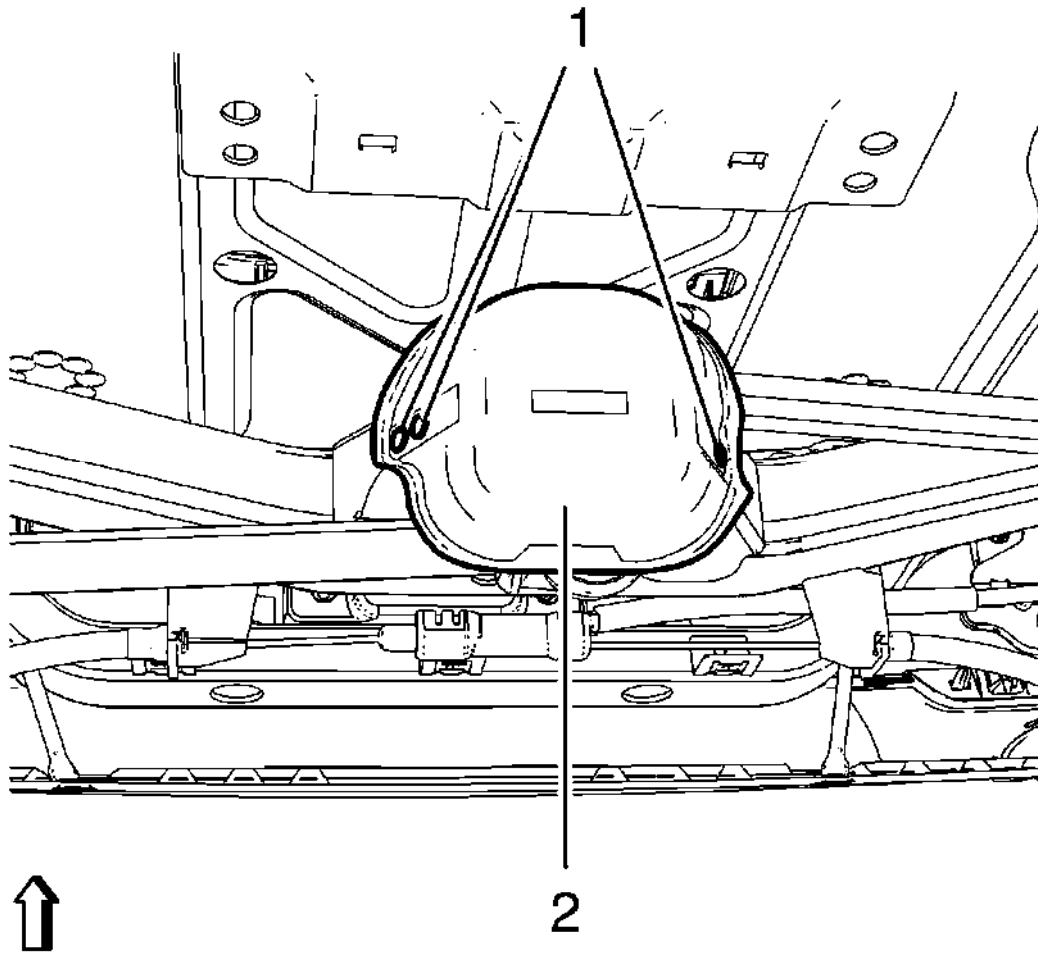


**Fig. 35: Identifying Equalizer Beam Center Link Heat Shield And Rivets**  
Courtesy of GENERAL MOTORS COMPANY

7. Install 3 rivets (1) to equalizer beam center link heat shield (2).
8. Lower the vehicle.

## **EQUALIZER BEAM CENTER LINK REPLACEMENT**

### **Special Tools**

**EN-45059** Angle Meter

For equivalent regional tools, refer to **Special Tools**.

### **Removal Procedure**

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .

2. Remove the tire and wheel assemblies. Refer to **Tire and Wheel Removal and Installation** .

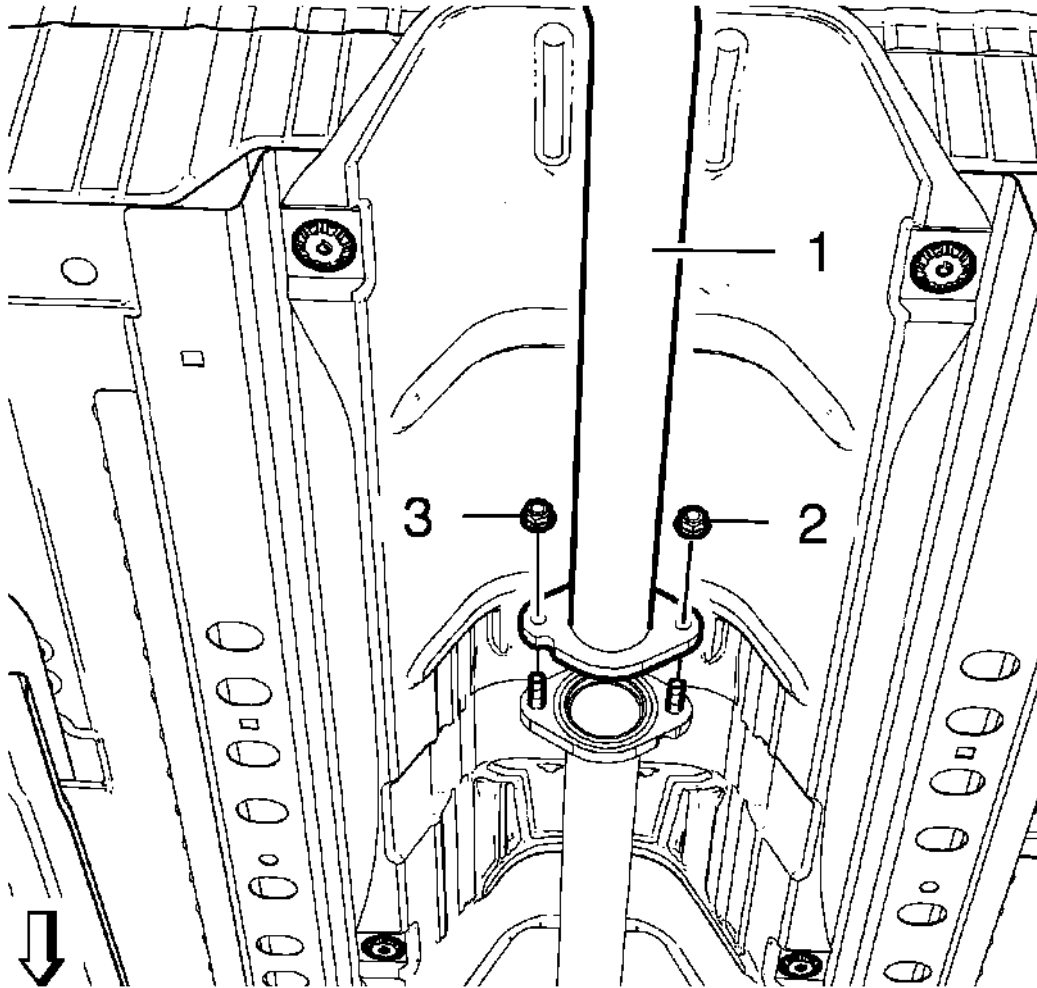


**Fig. 36: Rear Exhaust Pipe**

Courtesy of GENERAL MOTORS COMPANY

3. Remove and DISCARD the exhaust front pipe to exhaust rear muffler nuts (2, 3).
4. Remove the rear exhaust pipe (1) from the flange.
5. DISCARD the flange gasket.

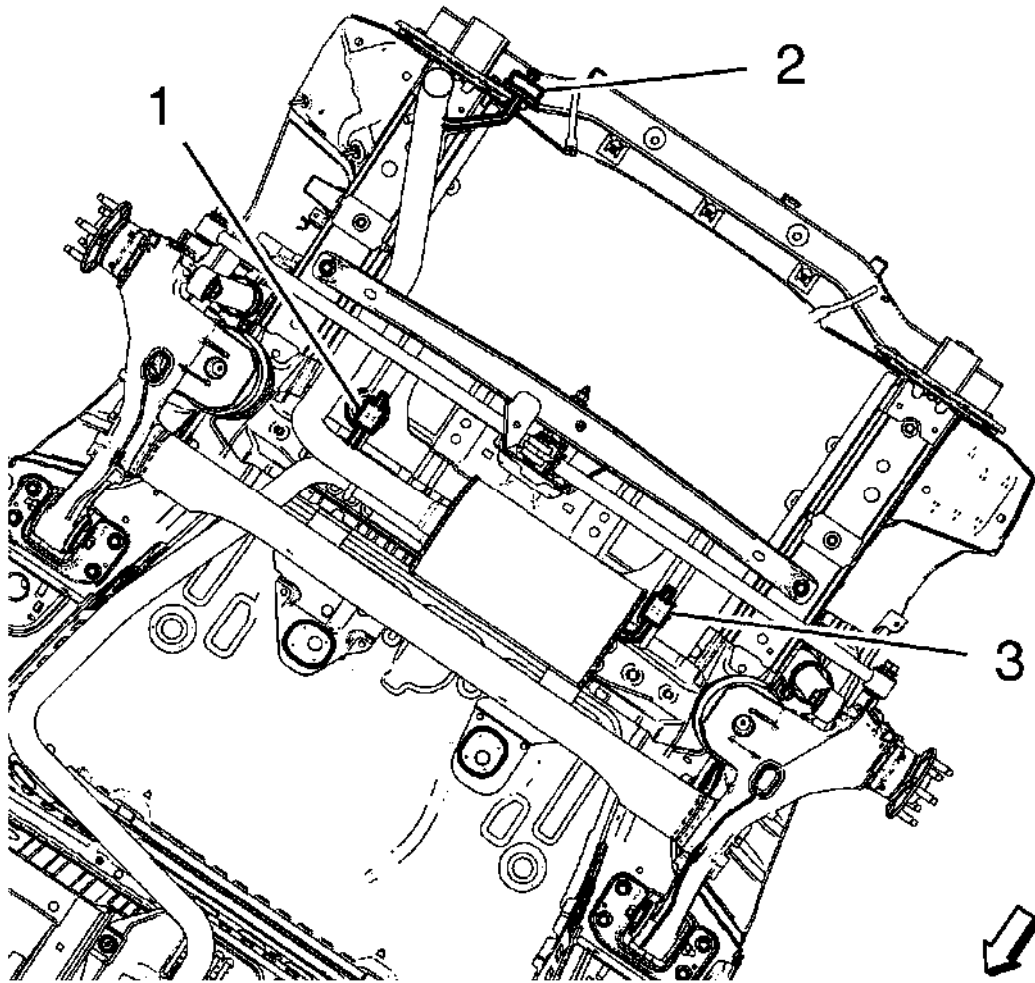


**Fig. 37: Suspension Points**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** There may be additional attachment points, depending on the powertrain in the vehicle.

6. Loosen the rear exhaust muffler from the suspension points (1, 2, 3).
7. Lower and support the exhaust as required.

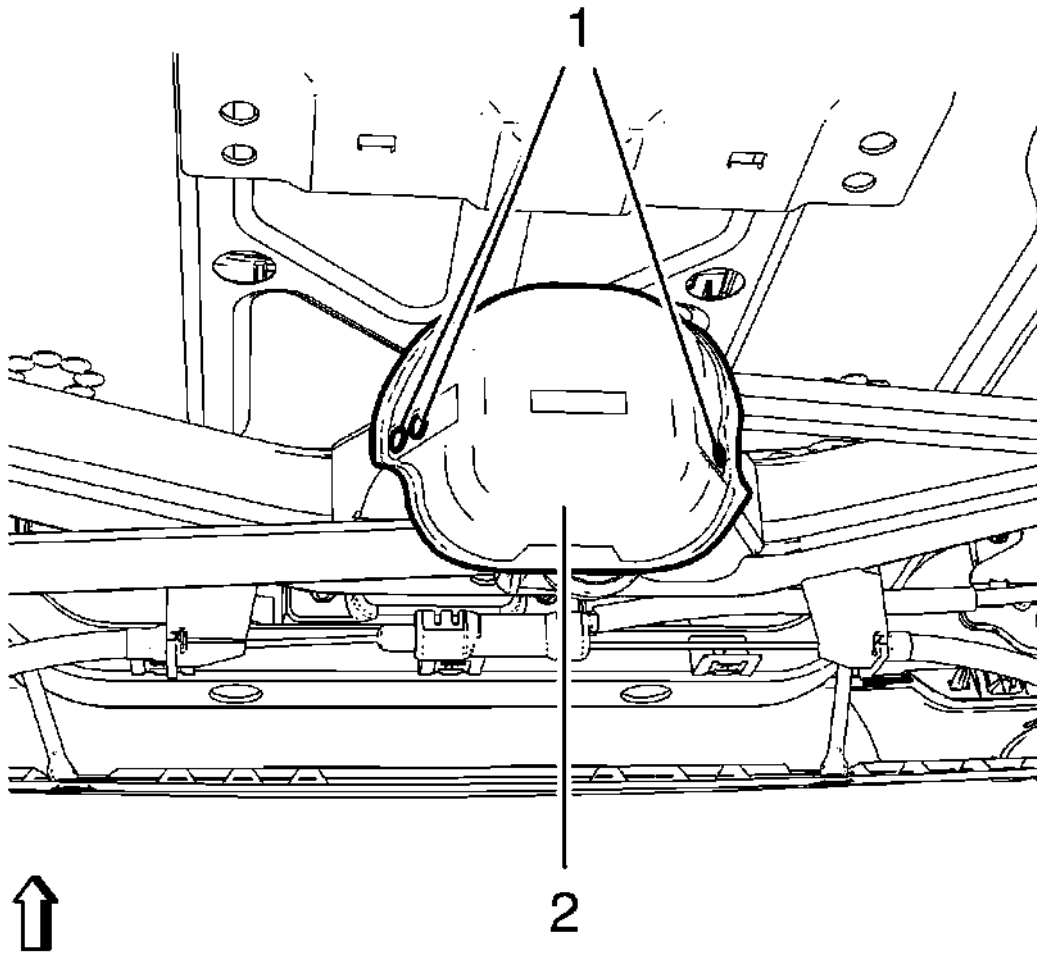


**Fig. 38: Identifying Equalizer Beam Center Link Heat Shield And Rivets**  
Courtesy of GENERAL MOTORS COMPANY

8. Remove the 3 rivets (1) from the equalizer beam center link heat shield (2).

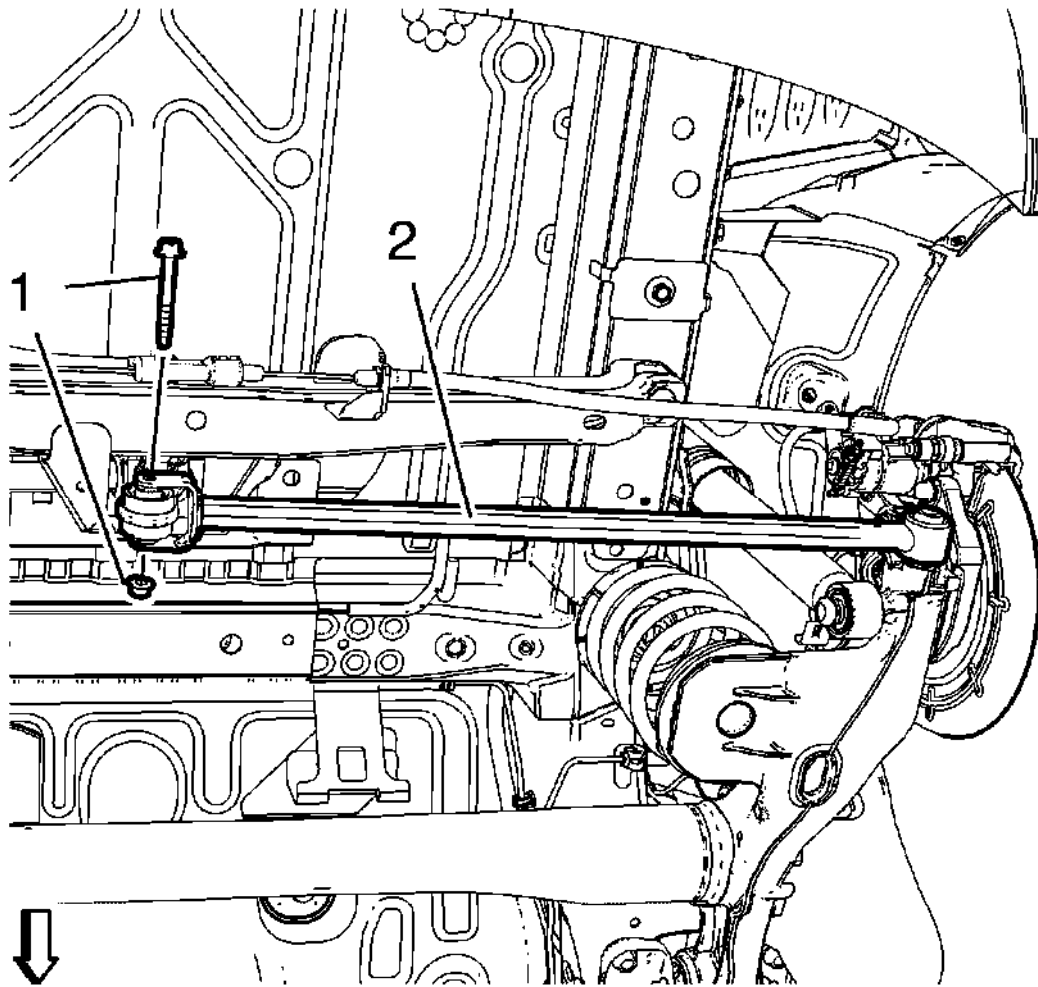


**Fig. 39: Identifying Equalizer Beam Center Link**

Courtesy of GENERAL MOTORS COMPANY

9. Remove and DISCARD the right equalizer beam link inner bolt and nut (1) from the equalizer beam center link (2).
10. Lower and support the equalizer beam link as required.

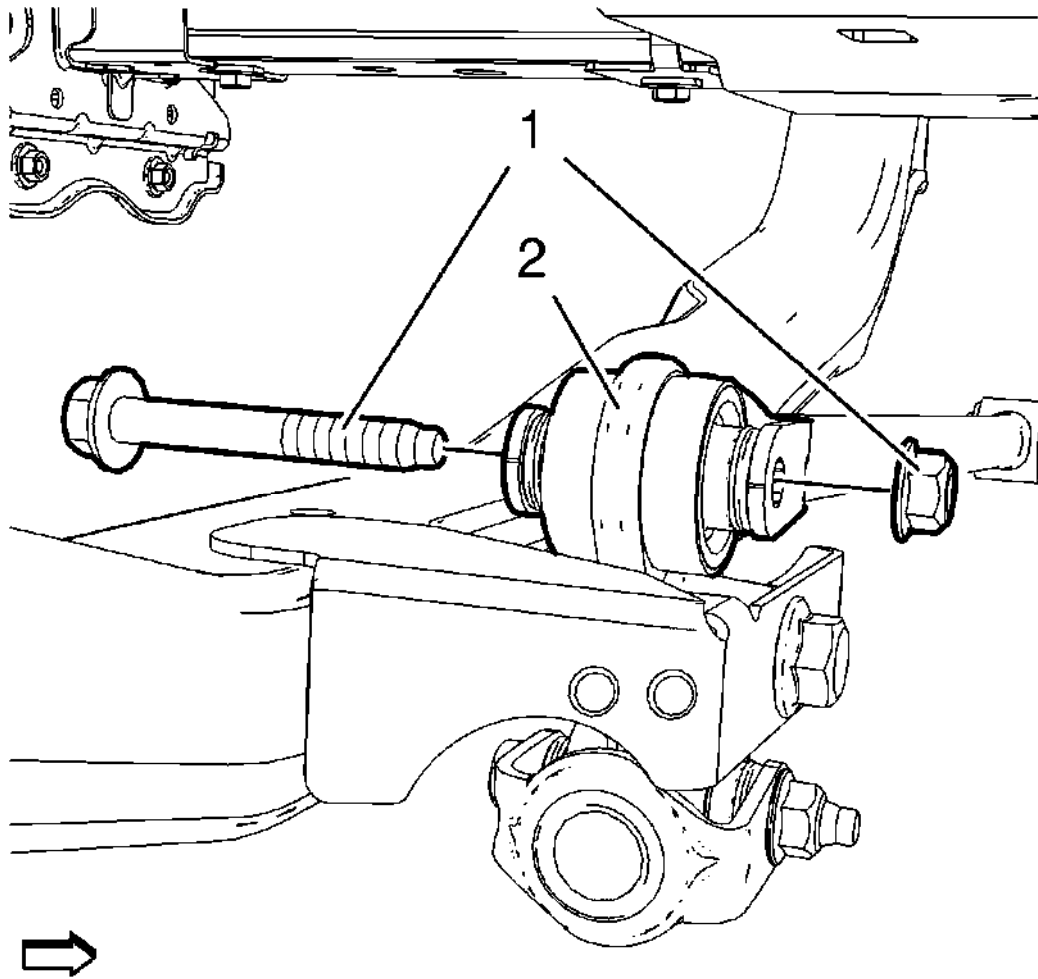


**Fig. 40: Identifying Equalizer Beam Center Link**

Courtesy of GENERAL MOTORS COMPANY

11. Remove and DISCARD the left equalizer beam link inner bolt and nut (1) from the equalizer beam center link (2).
12. Lower and support the equalizer beam link as required.

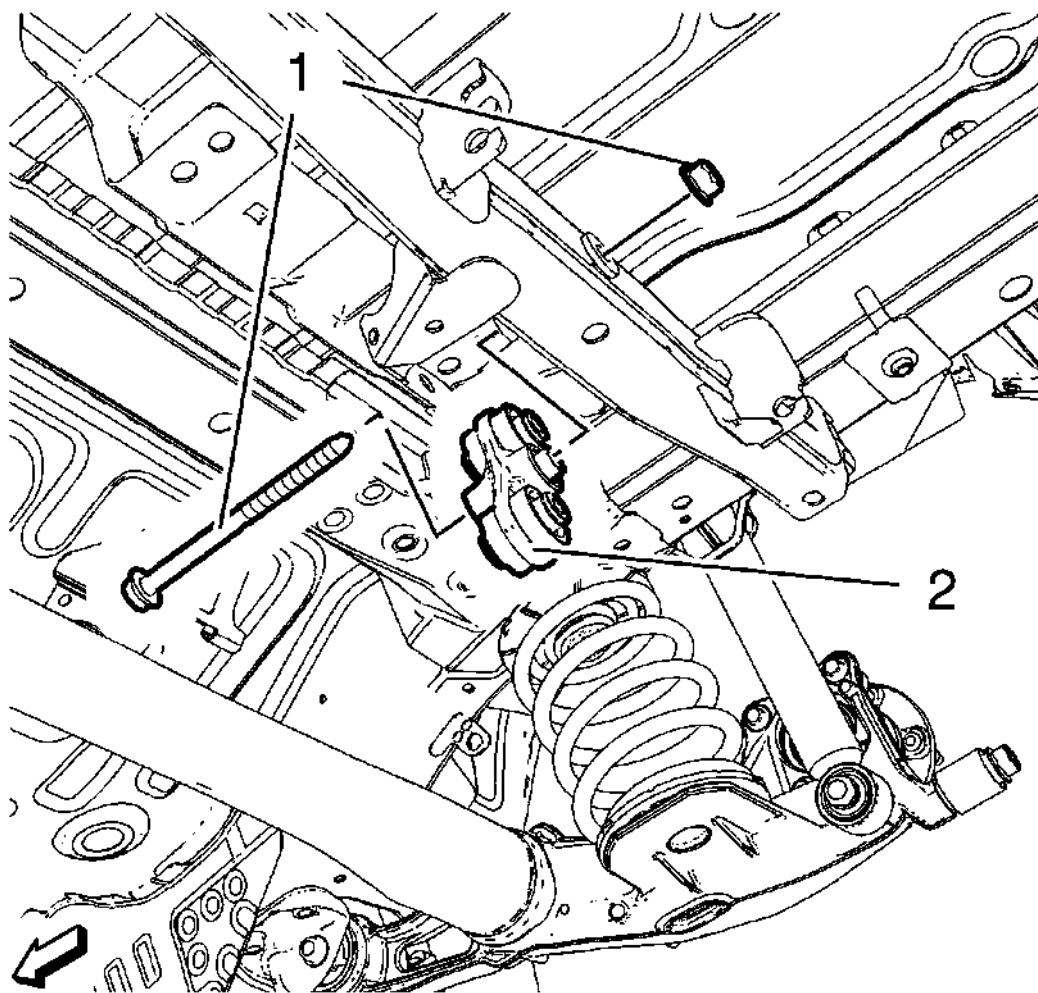


**Fig. 41: Identifying Equalizer Beam Center Link**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** Remember the correct installation position.

13. Push down rear muffler and remove and discard the equalizer beam center link bolt and nut (1) from the equalizer beam center link (2).
14. Remove the equalizer beam center link (2) from the vehicle.

**Installation Procedure**

1. Install the equalizer beam center link to the vehicle.

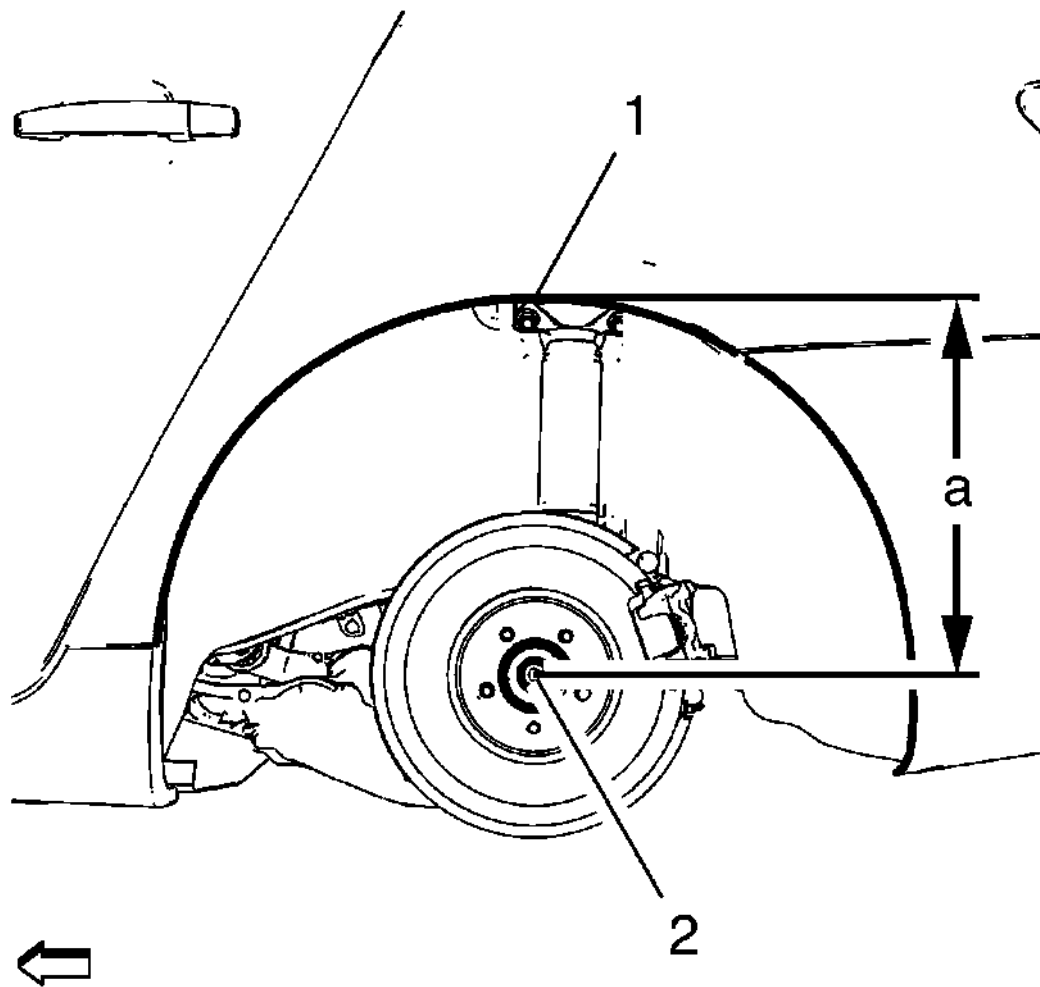


**Fig. 42: Measuring Vertical Distance Between Center Of Wheel Hub And Top Of Wheel Opening**  
Courtesy of GENERAL MOTORS COMPANY

2. Using the lift table, raise the axle to the proper trim height specification by measuring the vertical distance (a) between the center of the wheel hub (2) and top of the wheel opening (1).

### Specification

Dimension (a): 385 mm (15.16 in)

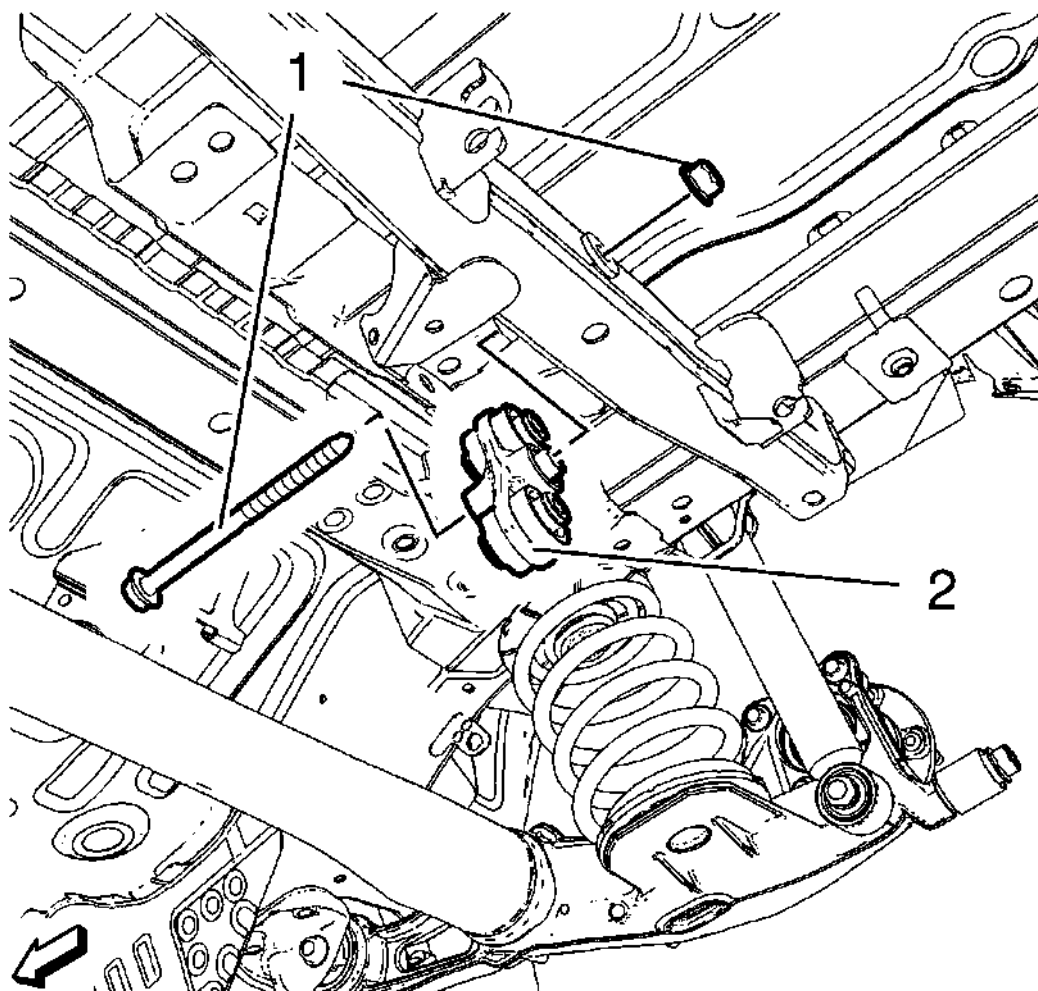


**Fig. 43: Identifying Equalizer Beam Center Link**

Courtesy of GENERAL MOTORS COMPANY

**CAUTION:** Refer to Fastener Caution .

**NOTE:** Remember the correct installation position from the removal.

3. Push down rear muffler and install the NEW equalizer beam center link bolt and nut (1) to equalizer beam center link (2) and tighten a first pass to 70 (52 lb ft).

**WARNING:** Refer to Torque-to-Yield Fastener Warning .

4. Tighten the NEW equalizer beam center link bolt and nut a final pass to an additional 120 - 135 degrees, using the **EN-45059** meter.

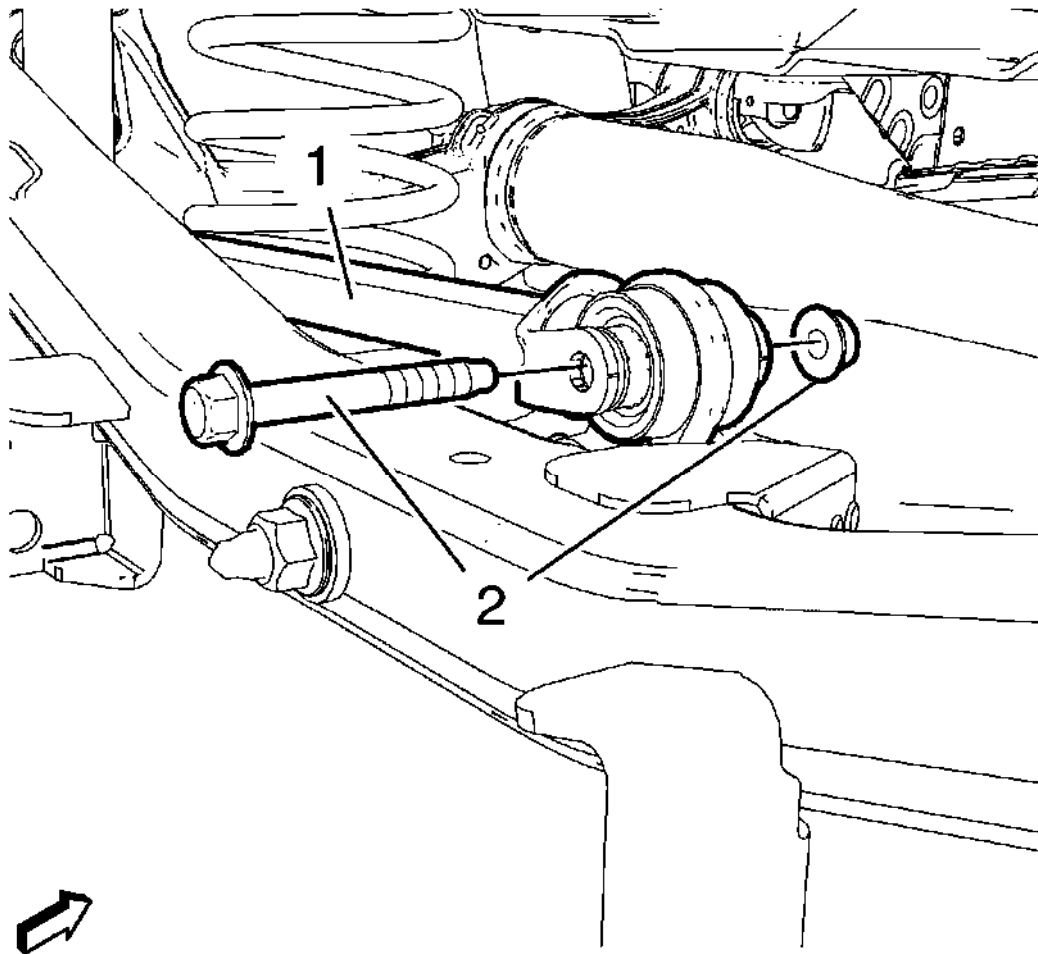


**Fig. 44: Identifying Equalizer Beam Link**  
Courtesy of GENERAL MOTORS COMPANY

5. Remove the support from equalizer beam link.

**WARNING: Refer to Torque-to-Yield Fastener Warning .**

6. Install the left NEW left equalizer beam link inner bolt and nut (2) to the equalizer beam center link (1) and tighten a first pass to 40 (30 lb ft).
7. Tighten the NEW left equalizer beam link inner bolt and nut a final pass to an additional 60 degrees, using the **EN-45059** meter.

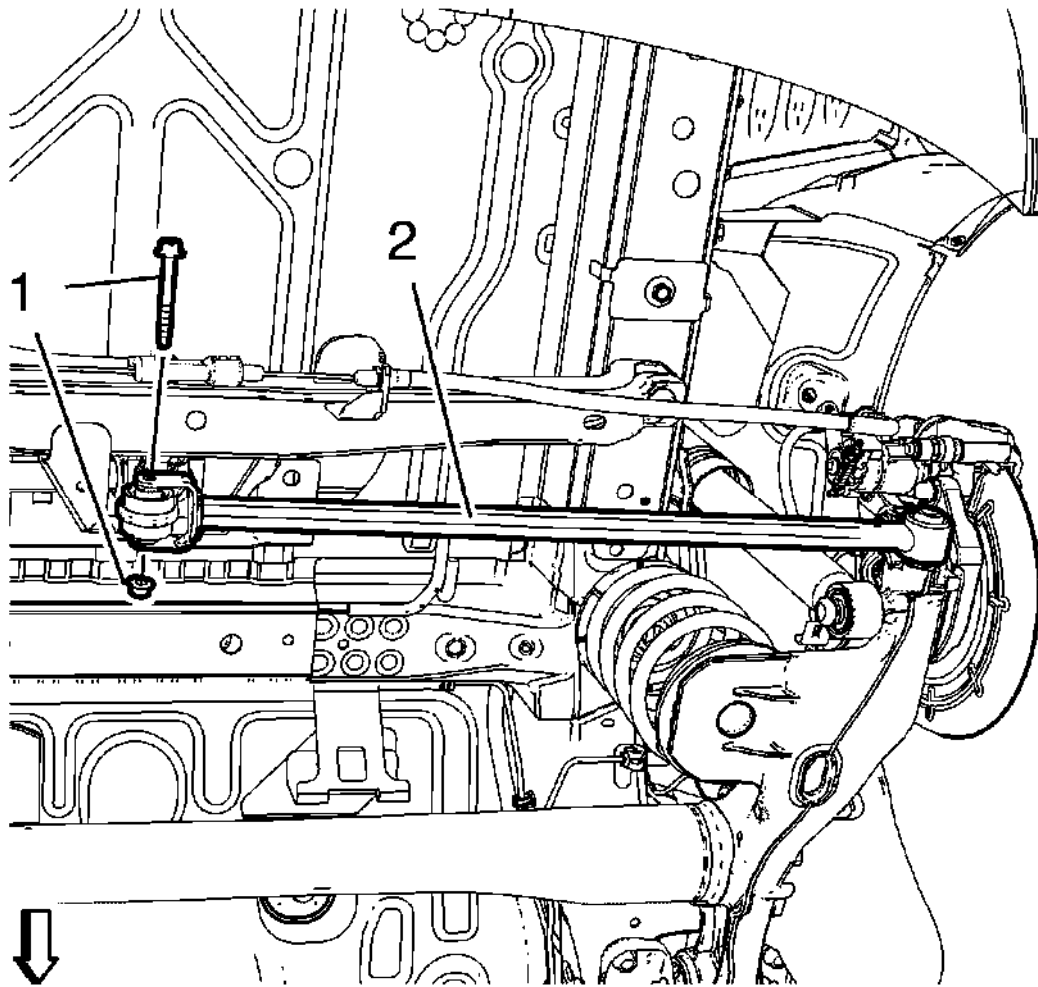


**Fig. 45: Identifying Equalizer Beam Center Link**

**Courtesy of GENERAL MOTORS COMPANY**

8. Remove the support from equalizer beam link.
9. Install the NEW right equalizer beam link inner bolt and nut (2) to the equalizer beam center link (1) and tighten a first pass to 40 (30 lb ft).

**WARNING: Refer to Torque-to-Yield Fastener Warning .**

10. Tighten the NEW right equalizer beam link inner bolt and nut a final pass to an additional 60 degrees, using the **EN-45059** meter.

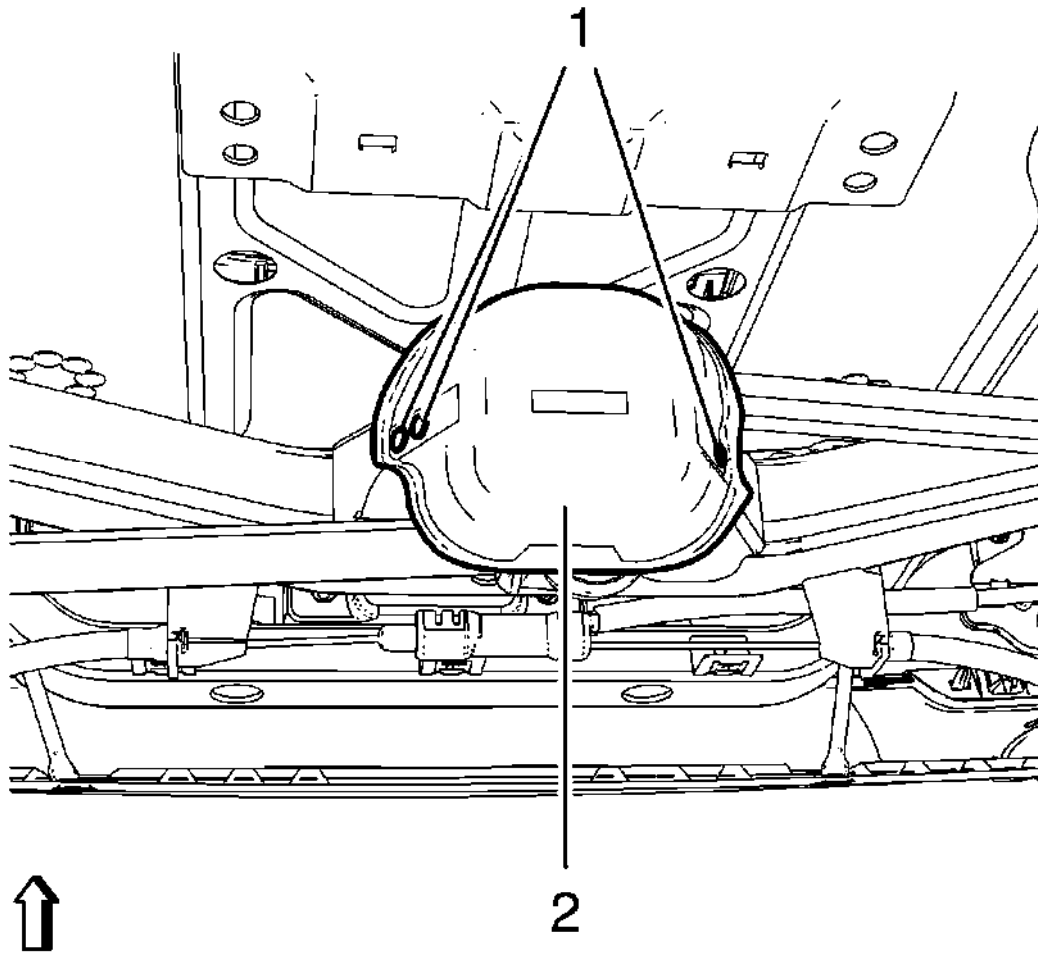


**Fig. 46: Identifying Equalizer Beam Center Link Heat Shield And Rivets**  
Courtesy of GENERAL MOTORS COMPANY

11. Install the 3 rivets (1) to equalizer beam center link heat shield (2).

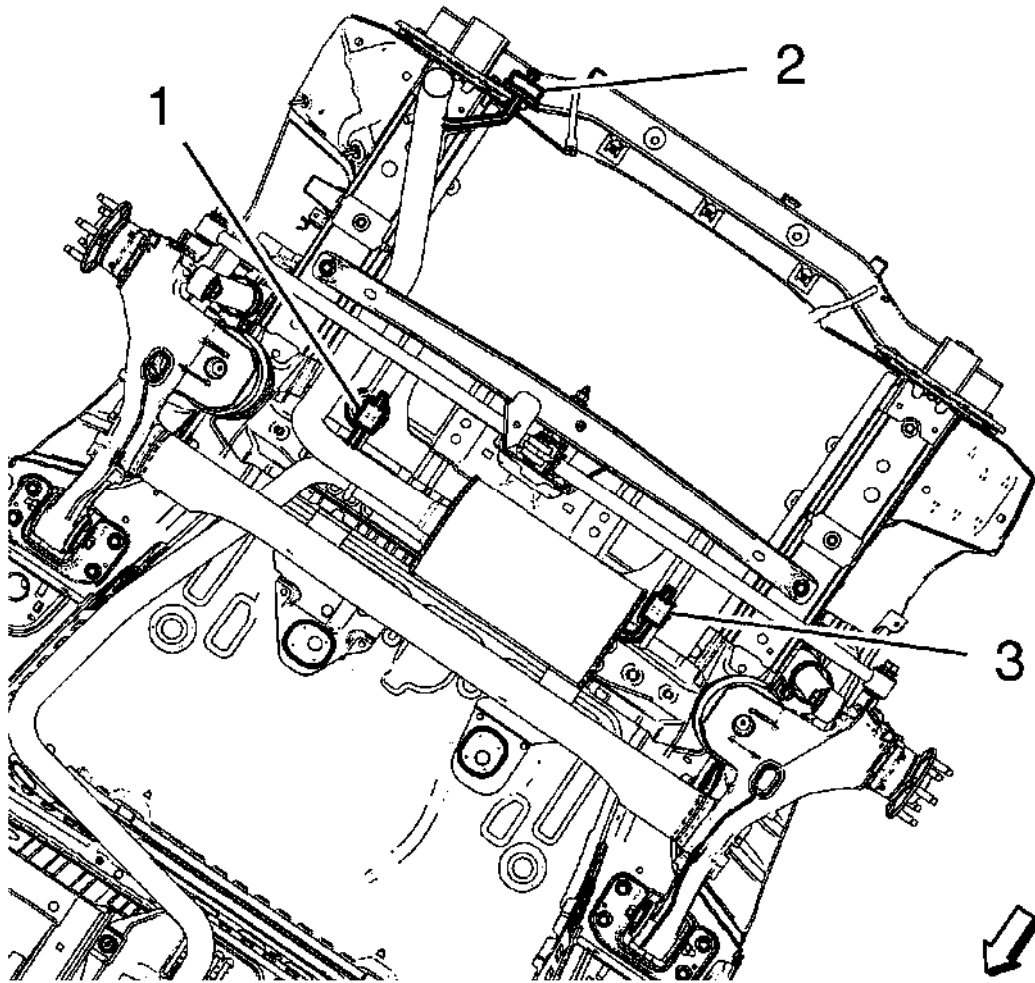


**Fig. 47: Suspension Points**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** There may be additional attachment points, depending on the powertrain in the vehicle.

12. Install the rear exhaust muffler to the suspension points (1, 2, 3).

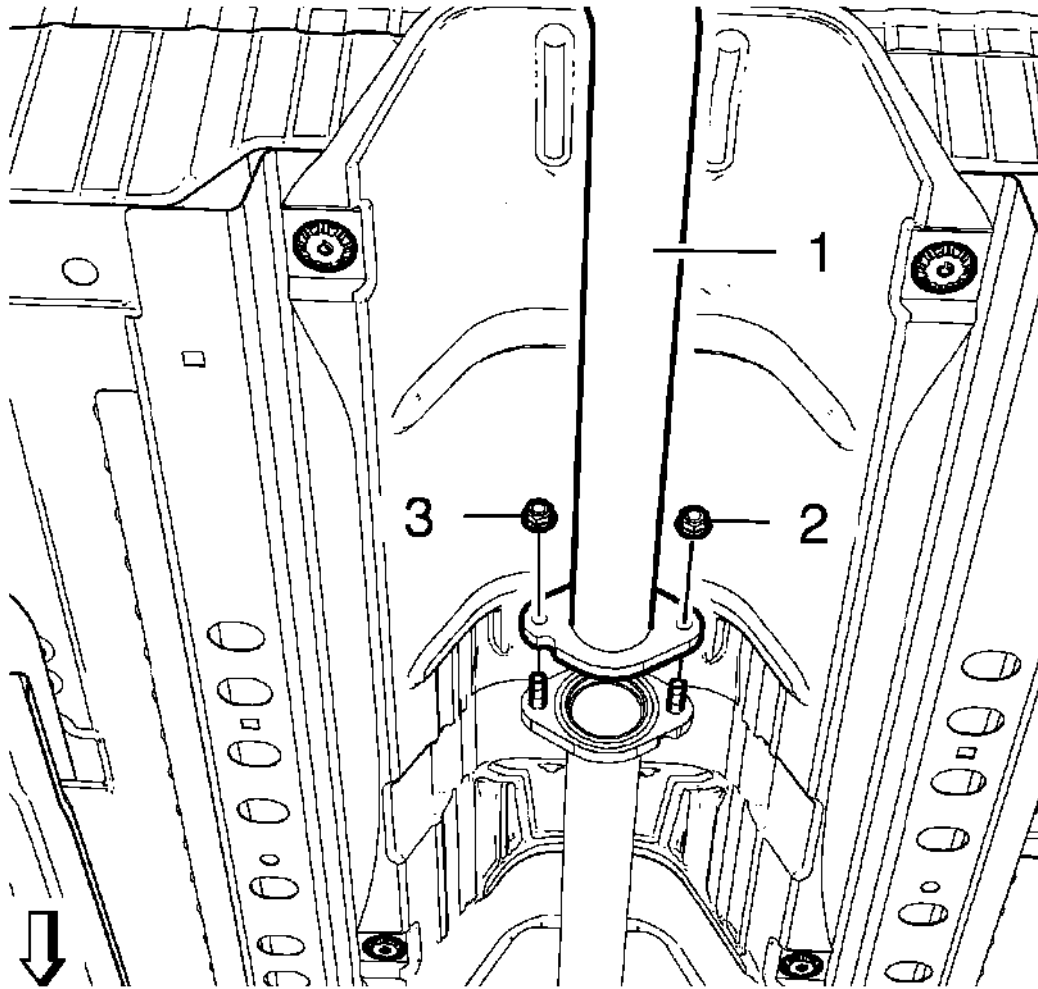


**Fig. 48: Rear Exhaust Pipe**

Courtesy of GENERAL MOTORS COMPANY

13. Install the NEW flange gasket.
14. Install the rear exhaust pipe (1) to the flange.
15. Install NEW exhaust front pipe to exhaust rear muffler nuts (2, 3) and tighten to 17 (13 lb ft).
16. Install the tire and wheel assemblies. Refer to **Tire and Wheel Removal and Installation** .
17. Lower the vehicle.

#### **EQUALIZER BEAM CENTER LINK HEAT SHIELD REPLACEMENT**

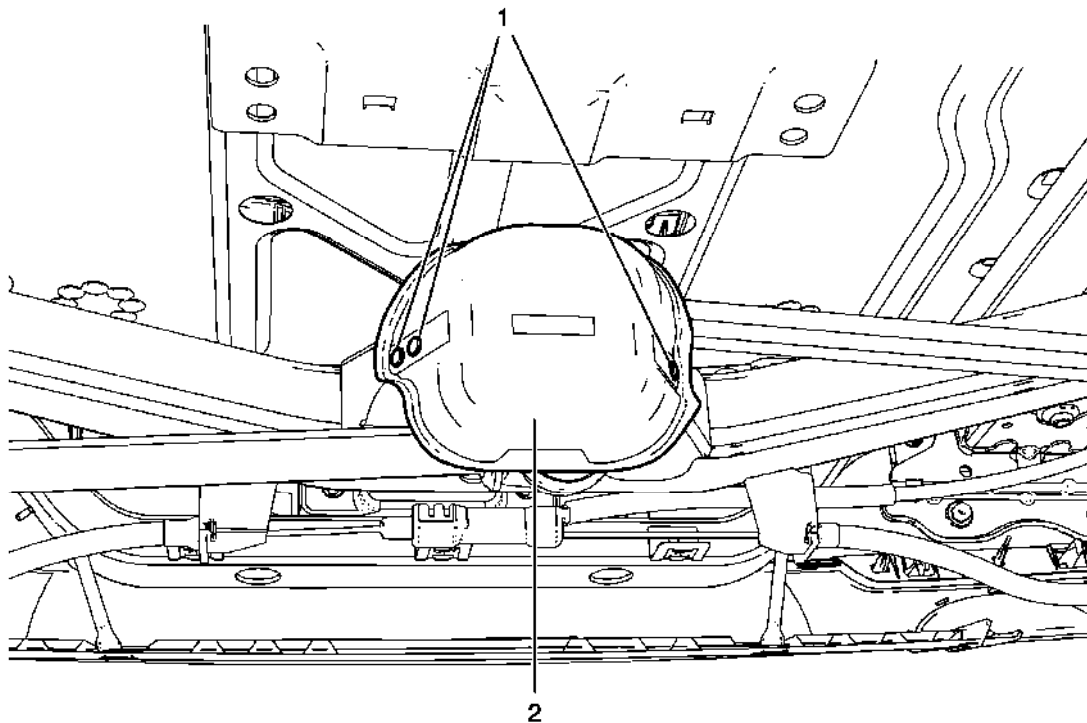


**Fig. 49: Identifying Equalizer Beam Center Link Heat Shield**

Courtesy of GENERAL MOTORS COMPANY

#### Equalizer Beam Center Link Heat Shield Replacement

| Callout                                                                                                                 | Component Name                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b><br>Raise and support the vehicle. Refer to <b><u>Lifting and Jacking the Vehicle</u></b> . |                                                                                                                                                                                                                           |
| 1                                                                                                                       | Equalizer Beam Center Link Heat Shield Rivet (Qty: 3).<br><br><b>CAUTION:</b><br>Refer to <b><u>Fastener Caution</u></b> .<br><br><b>Procedure</b><br>Drill out the rivets with suitable drill to remove the heat shield. |
| 2                                                                                                                       | Equalizer Beam Center Link Heat Shield                                                                                                                                                                                    |

#### REAR AXLE BUSHING REPLACEMENT

##### Special Tools

- CH-906-42 Adapter
- CH-49459 Adapter
- CH-50342 Threaded Rod

For equivalent regional tools. Refer to Special Tools.

### Removal Procedure

**WARNING:** Use of eye goggles is necessary to prevent personal injury.

1. Remove the rear axle. Refer to Rear Axle Replacement (Compound Crank), Rear Axle Replacement (Watt Linkage).
2. With the aid of second mechanic, place rear axle onto work bench.

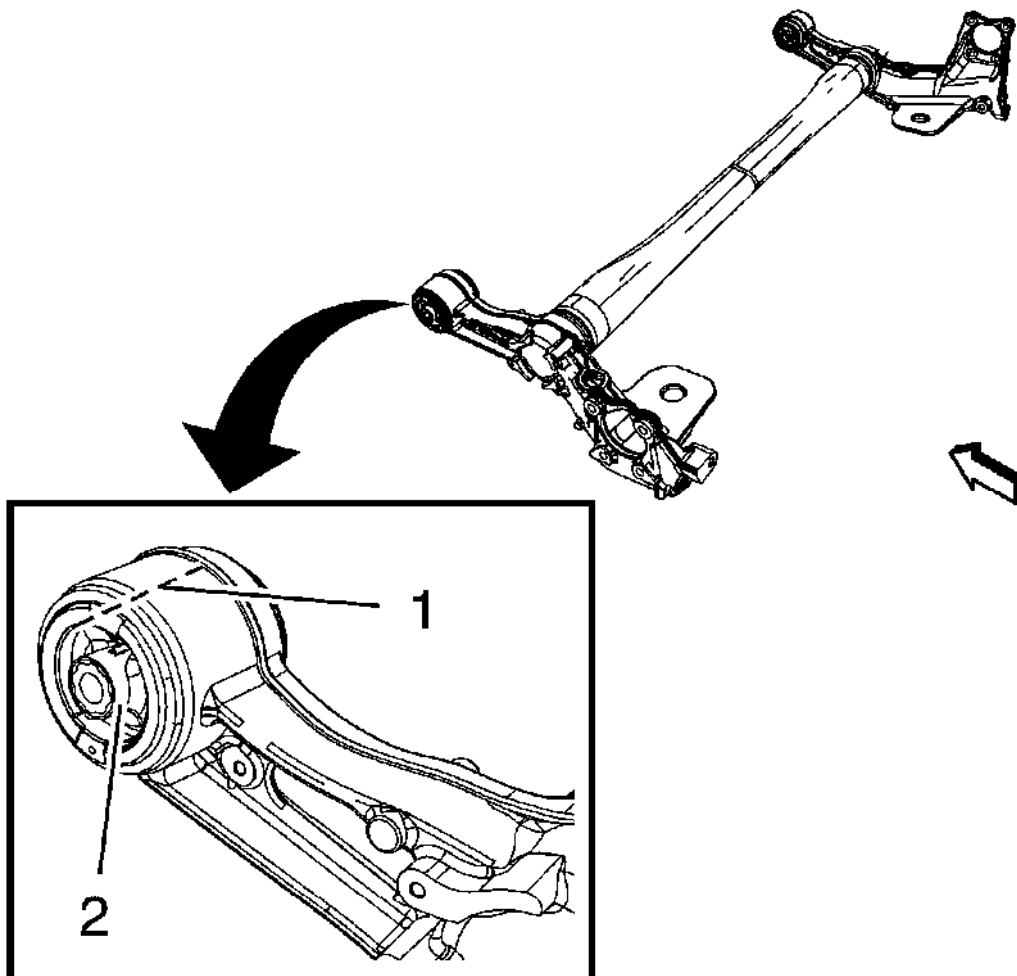


**Fig. 50: Installation Position For Rear Axle Bushing**  
Courtesy of GENERAL MOTORS COMPANY

3. Mark installation position (1) for rear axle bushing (2) on rear axle using a permanent marker.

Use upper gap of bushing for alignment.

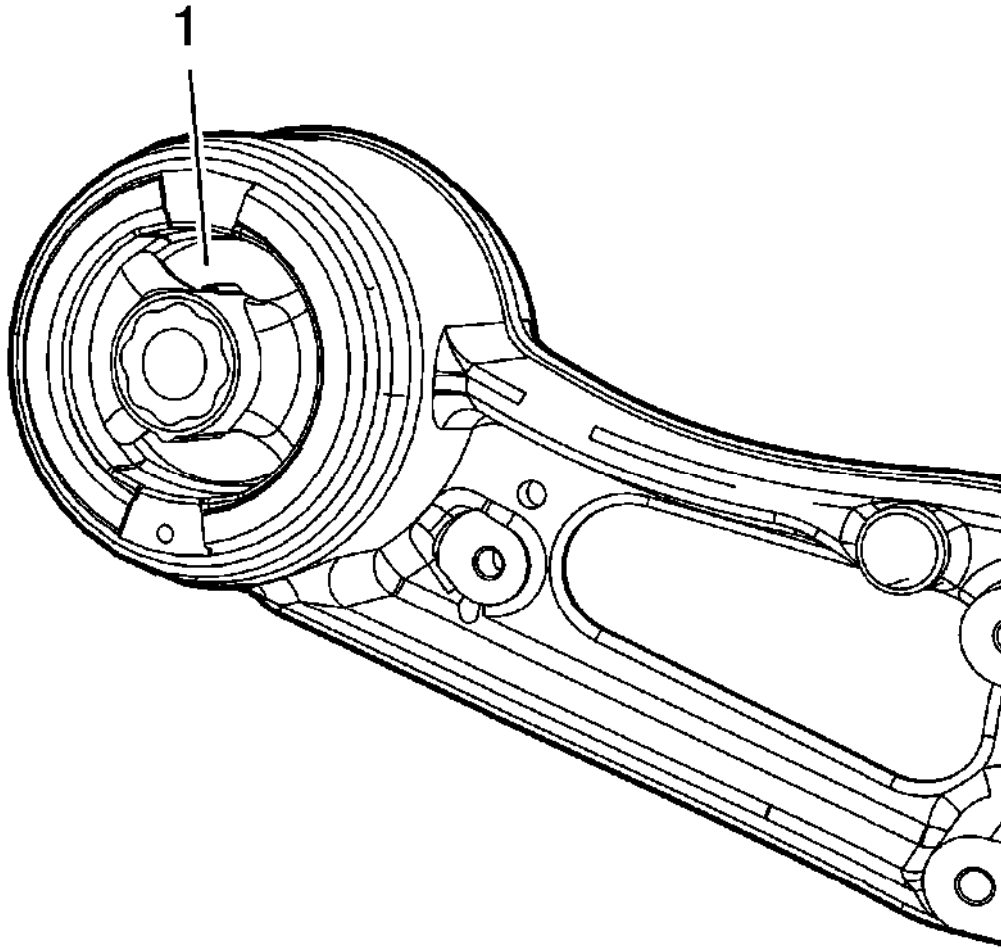


**Fig. 51: Rubber Bushing**

Courtesy of GENERAL MOTORS COMPANY

4. Drill 8 holes through the rubber bushing (1) with a 10 mm (0.4 in) drill bit.

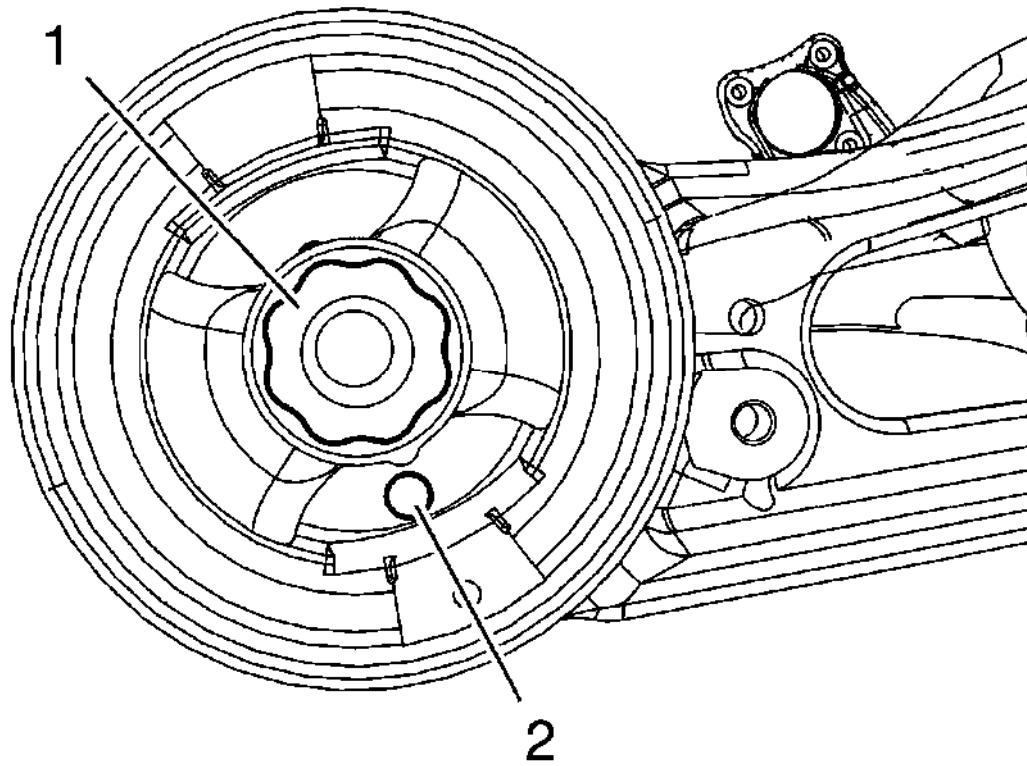


**Fig. 52: Identifying Bushing Core And Lowest Hole**  
**Courtesy of GENERAL MOTORS COMPANY**

5. Carefully cut around the bushing core (1) using a jigsaw or similar tool. Use the lowest hole (2) to insert saw.
6. Remove the bushing core from the bushing.

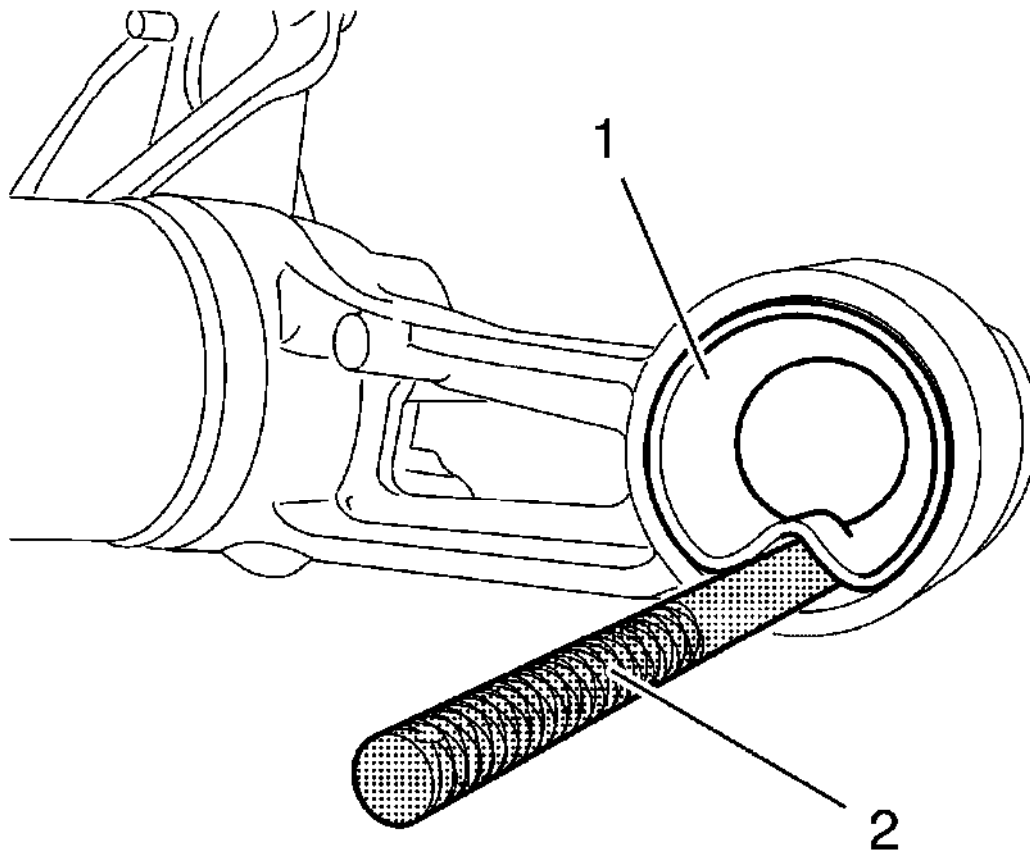


**Fig. 53: Identifying Bushing And Suitable Tool**  
Courtesy of GENERAL MOTORS COMPANY

7. Remove bushing (1), using a suitable tool (2) and a hammer.

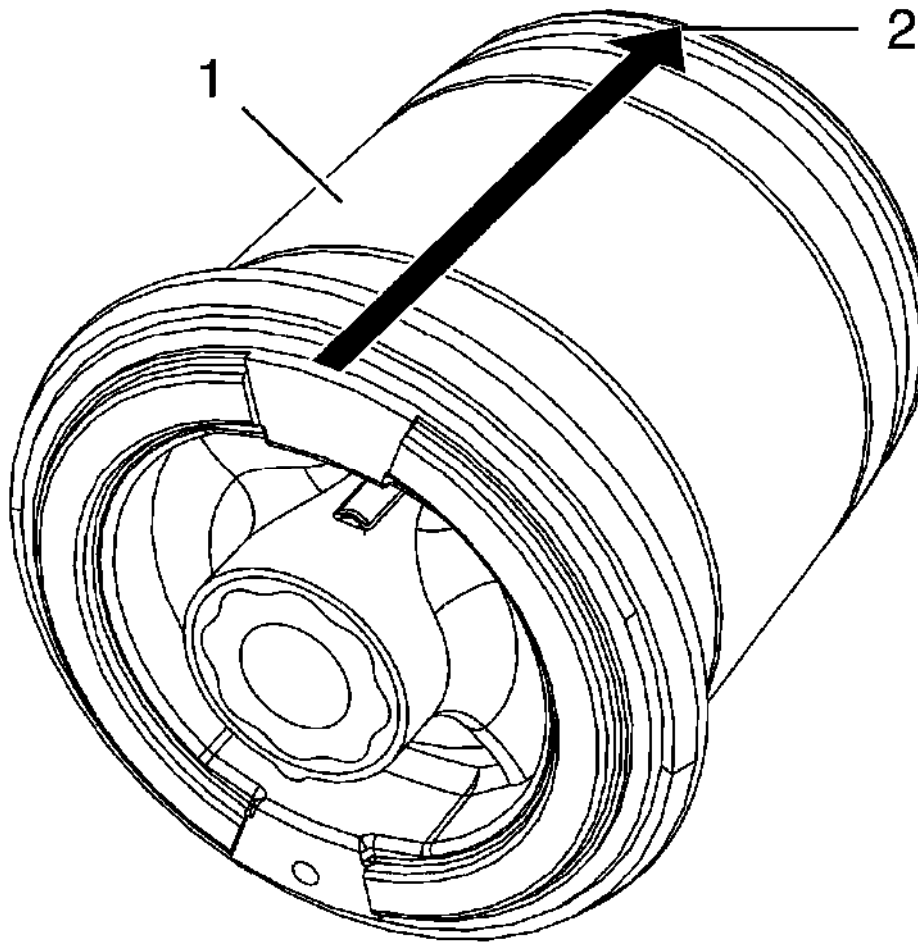


**Fig. 54: Installation Position Of New Rear Axle Bushing**  
**Courtesy of GENERAL MOTORS COMPANY**

8. Mark installation position (2) of NEW rear axle bushing (1) as shown in graphic above.

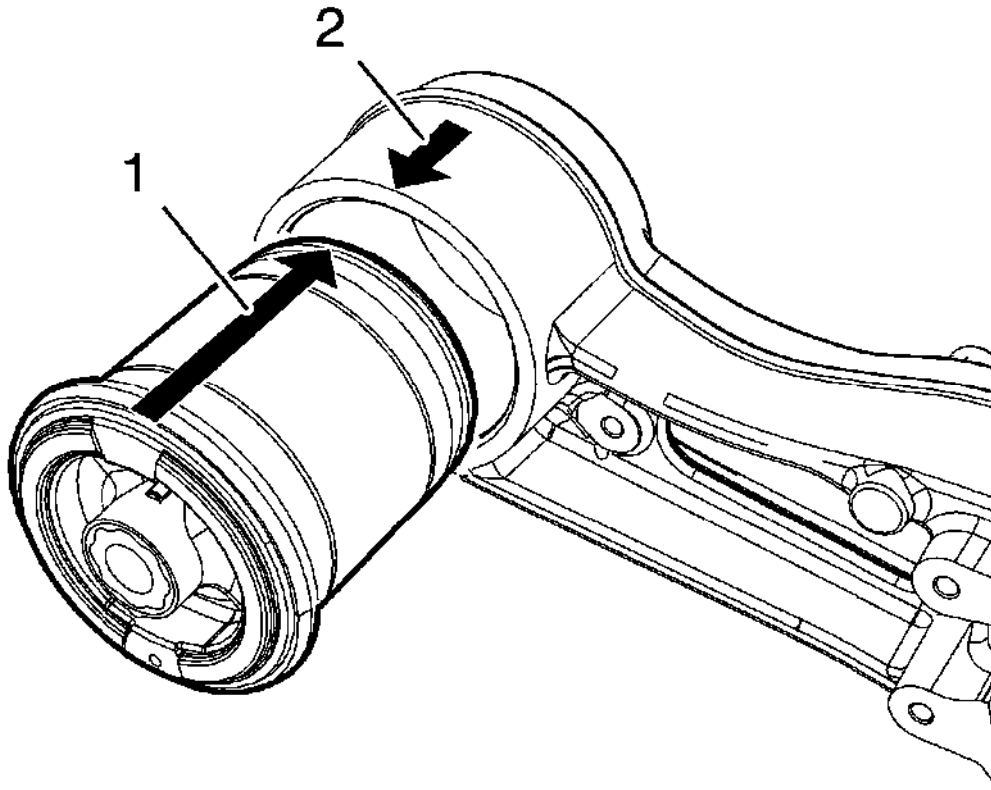


**Fig. 55: Aligning Bushing Marking To Rear Axle Marking**

Courtesy of GENERAL MOTORS COMPANY

9. Align bushing marking (1) to rear axle marking (2).
10. Install the following components to rear axle bushing and rear axle:
  - **CH-49459** adapter
  - **CH-50342** threaded rod
  - NEW rear axle bushing
  - **CH-906-42** adapter
11. Remove ALL special tools.
12. Install rear axle. Refer to **Rear Axle Replacement (Compound Crank)**, **Rear Axle Replacement (Watt Linkage)**.

## REAR AXLE BRACKET REPLACEMENT

### Special Tools

**EN-45059 Torque Angle Sensor Kit**

For equivalent regional tools. Refer to **Special Tools**

**Removal Procedure**

**WARNING:** Use of eye goggles is necessary to prevent personal injury.

1. Raise and suitably support the vehicle. Refer to **Lifting and Jacking the Vehicle** .

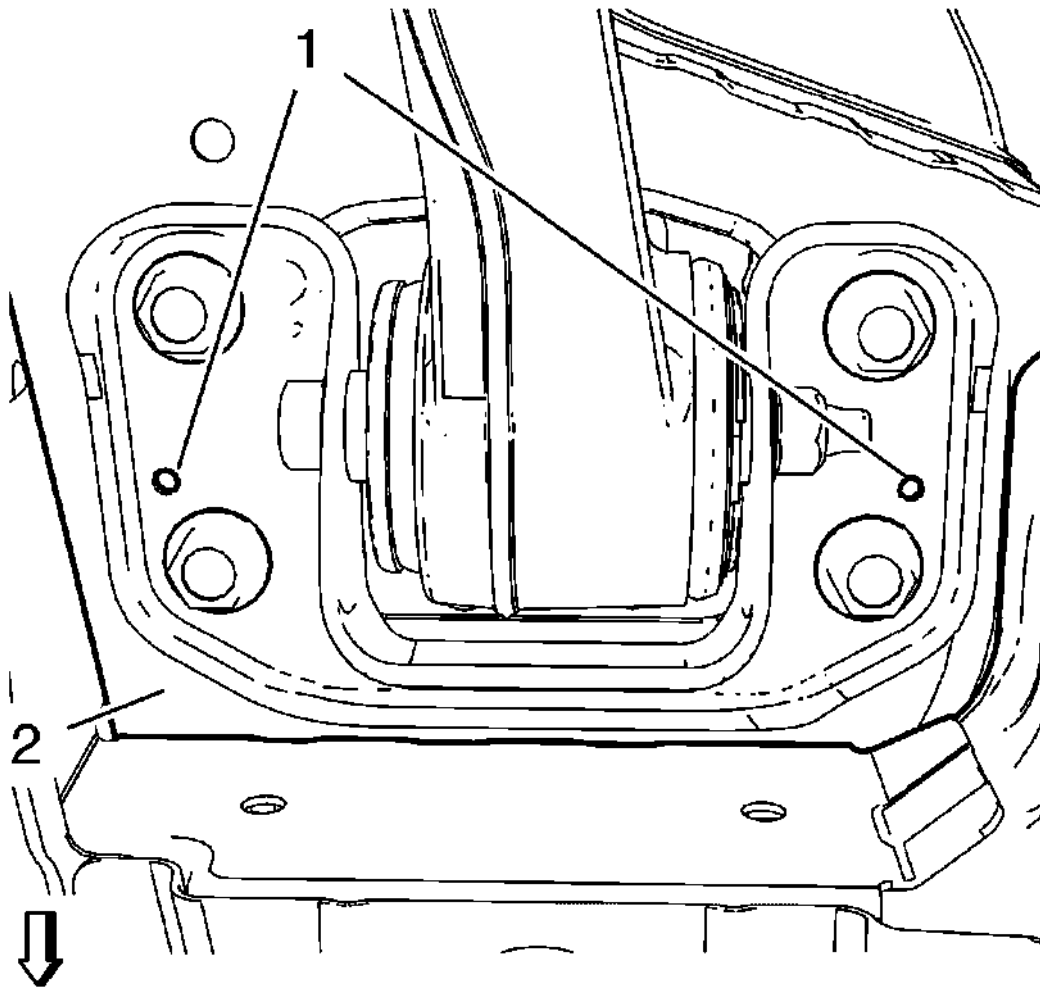


**Fig. 56: Identifying Drill Holes And Underbody**  
**Courtesy of GENERAL MOTORS COMPANY**

2. Using a drill 6 mm (0.2 in) drill bit, drill 2 holes (1) through the rear axle bracket and into the underbody (2). These holes (1) will be used by guide pins to properly align the rear axle bracket to the underbody (2).

3. Support the rear axle with a hydraulic lift table.

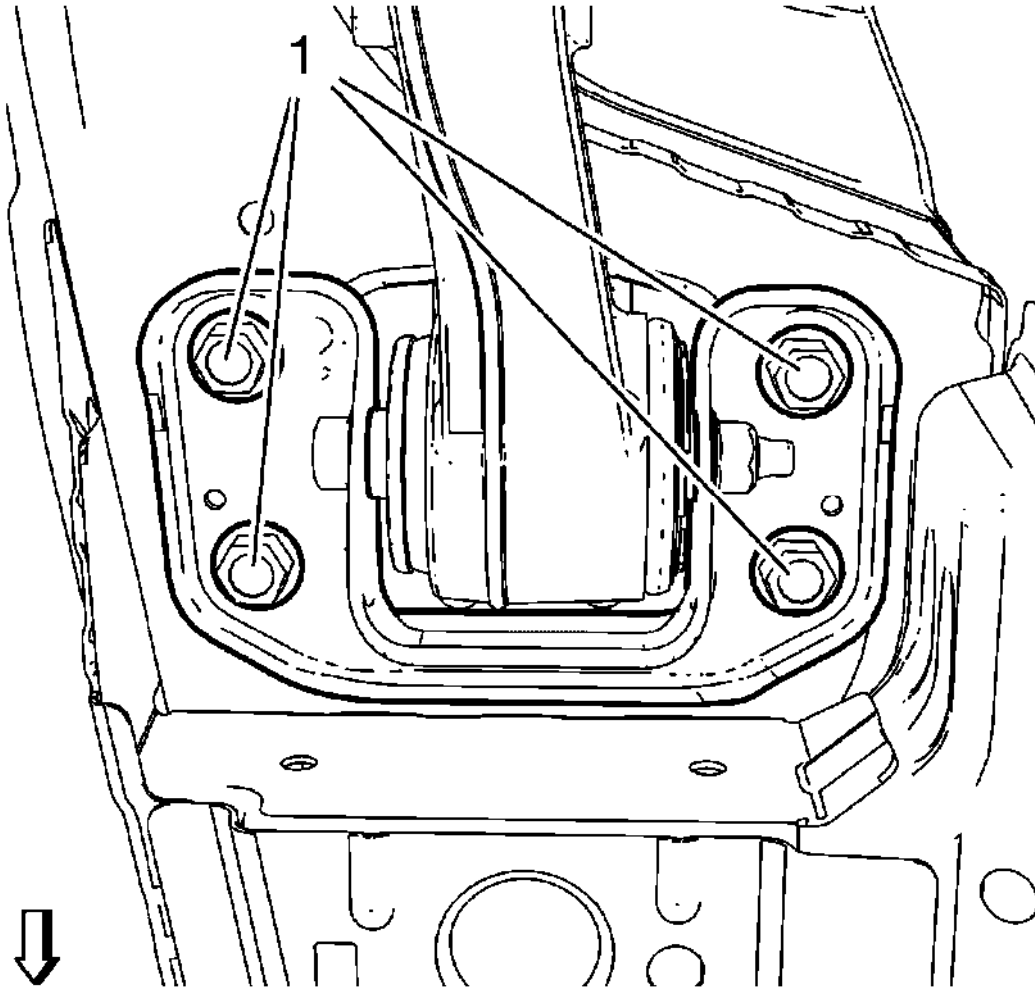


**Fig. 57: Rear Axle Bracket Bolts**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** Service one side at a time, the other side must be installed

4. Remove and DISCARD 4 rear axle bracket bolts (1).

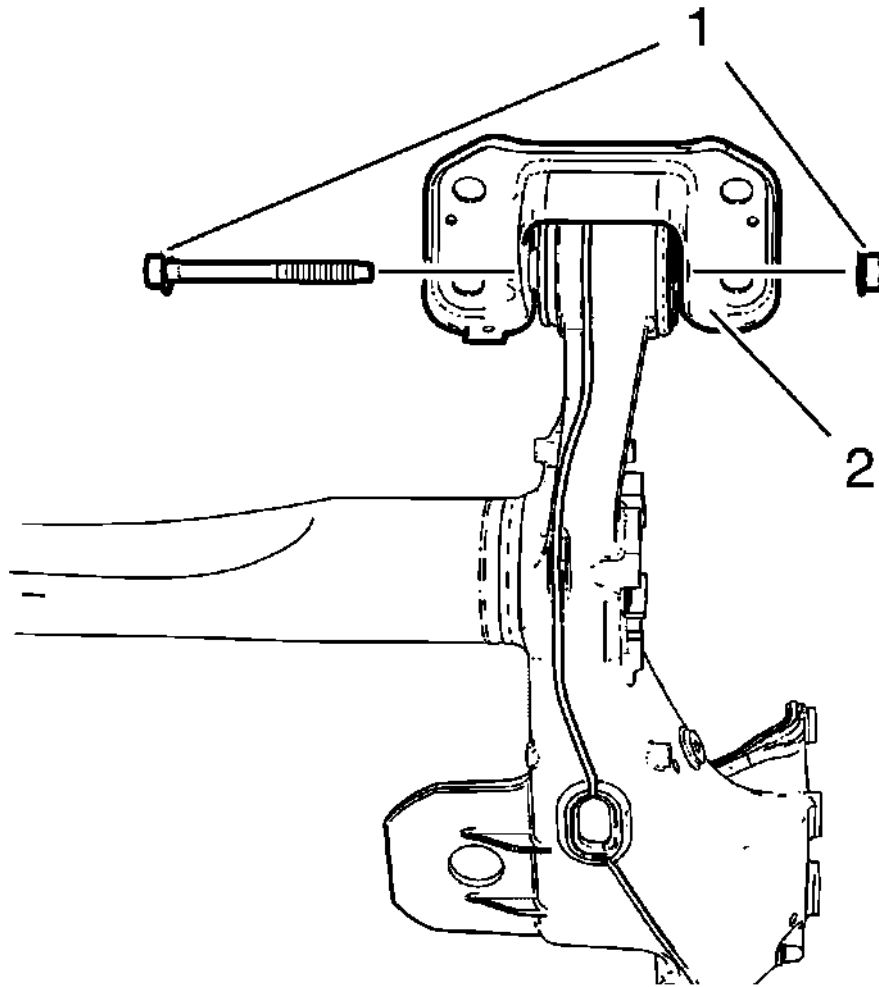


**Fig. 58: Rear Axle, Bolts And Nuts**

**Courtesy of GENERAL MOTORS COMPANY**

5. Remove and DISCARD the rear axle bushing bolts and nuts (1) from the rear axle (2).

**Installation Procedure**

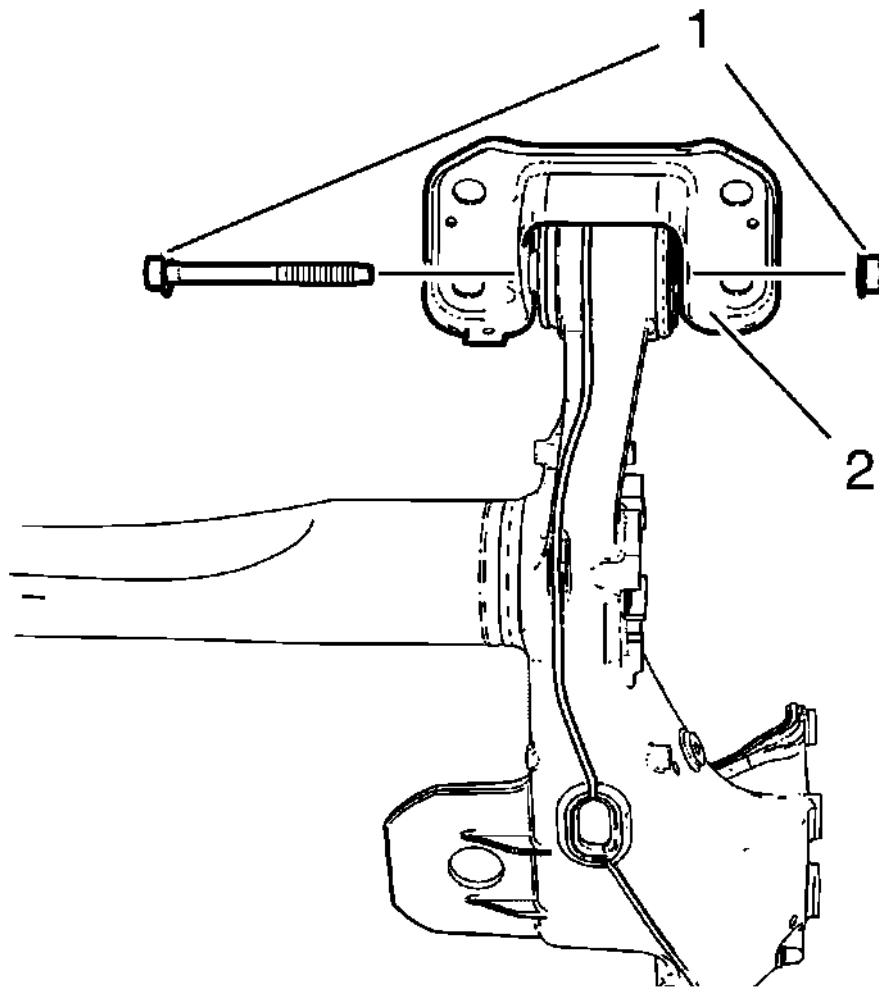


**Fig. 59: Rear Axle, Bolts And Nuts**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** The axle bushing bolts (1) and nuts must be tightened with the axle at the correct trim height.

1. Loosely install the NEW rear axle bushing bolts and nuts (1) to the rear axle (2).

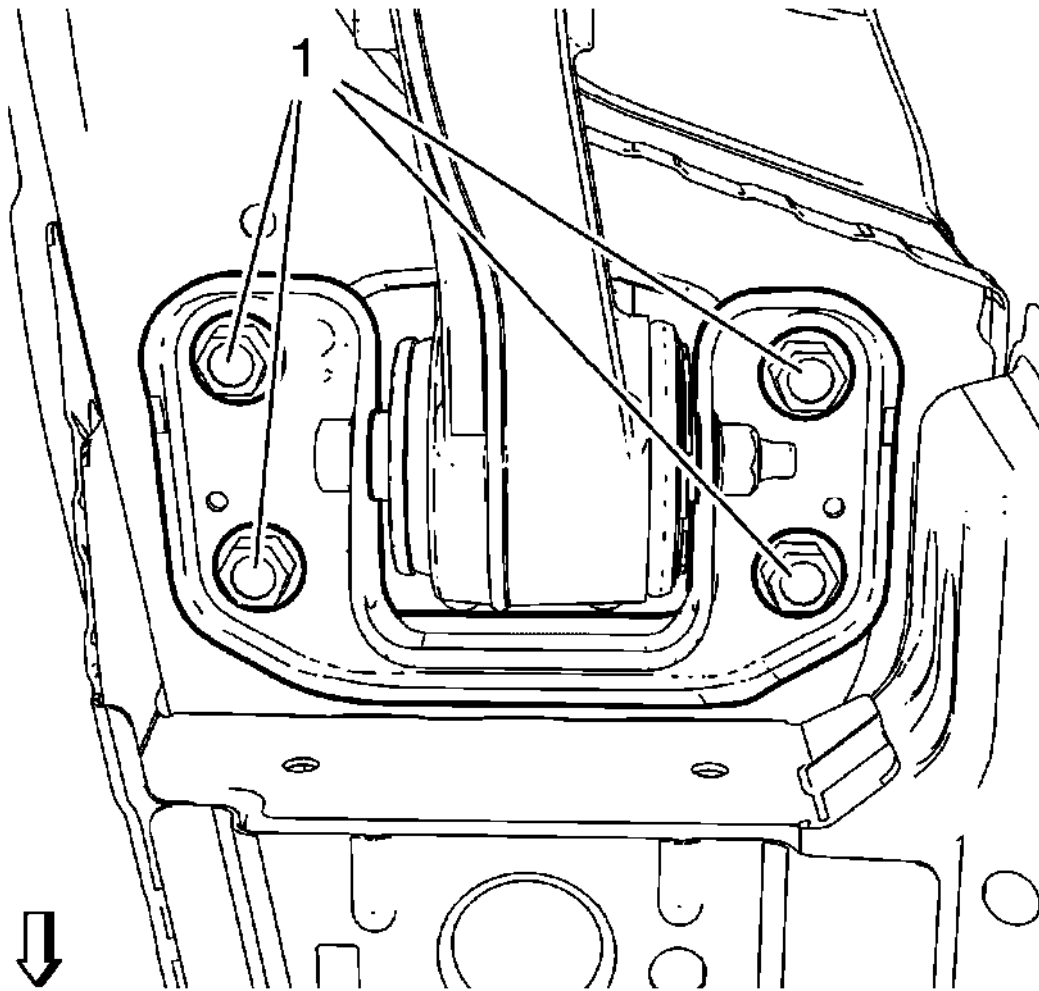


**Fig. 60: Rear Axle Bracket Bolts**

**Courtesy of GENERAL MOTORS COMPANY**

2. Loosely install the 4 NEW axle bracket bolts (1).
3. Apply anti-corrosion treatment to the guide pin holes in the underbody and rear axle bracket.

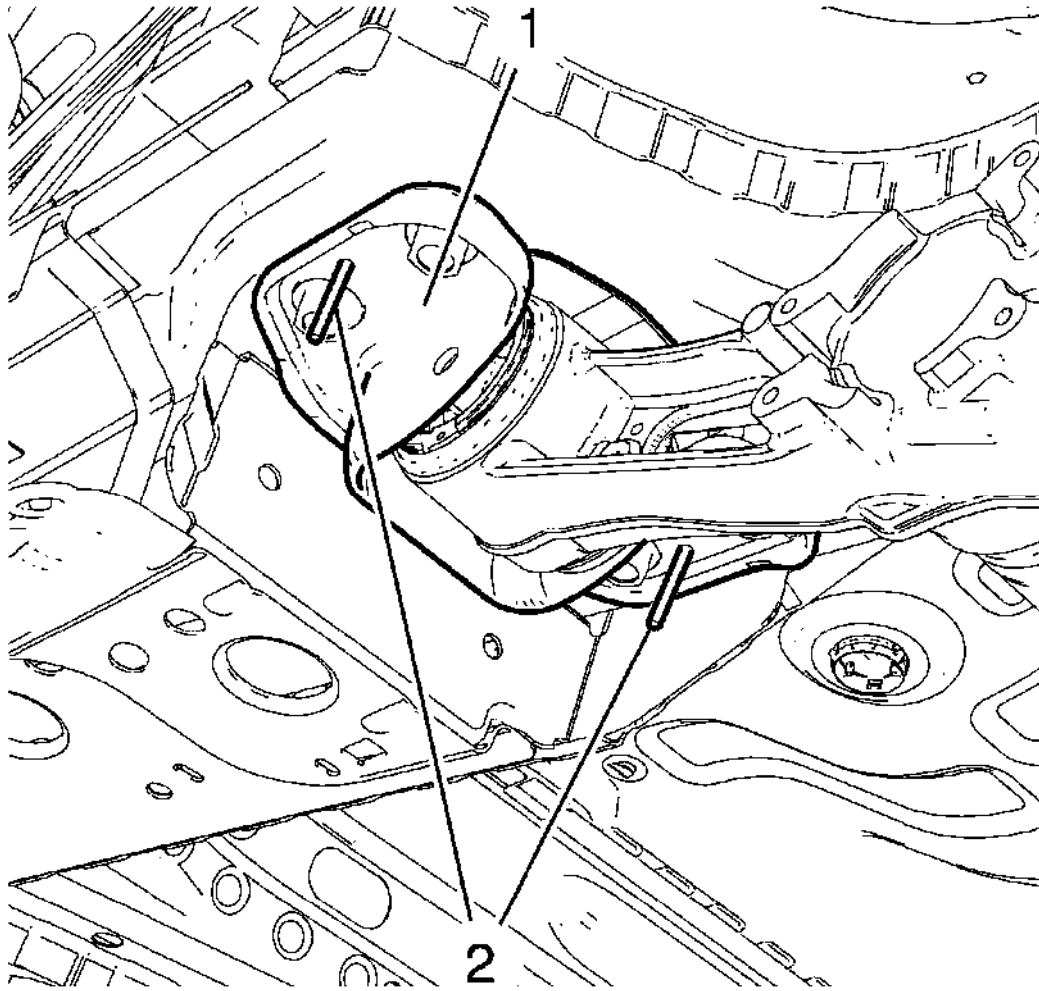


**Fig. 61: Rear Axle Bracket And Drill Bits**  
**Courtesy of GENERAL MOTORS COMPANY**

4. Using 6 mm (0.2 in) drill bits (2) as guide pins, align the rear axle bracket (1) to the underbody.

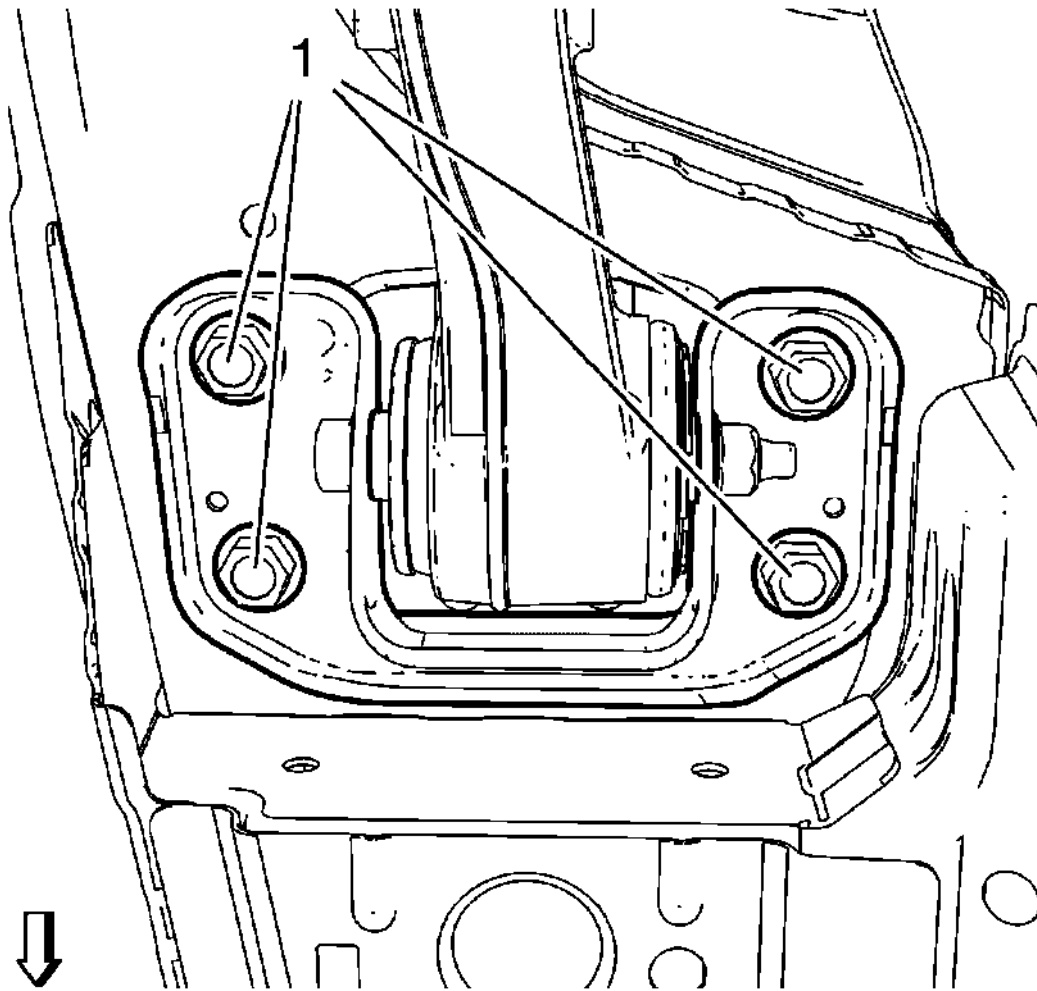


**Fig. 62: Rear Axle Bracket Bolts**

Courtesy of GENERAL MOTORS COMPANY

**WARNING:** Refer to Torque-to-Yield Fastener Warning .

**CAUTION:** Refer to Fastener Caution .

5. Tighten the axle bracket bolts (1) to 90 N.m (66 lb ft) + 45°, using **EN-45059** angle meter.

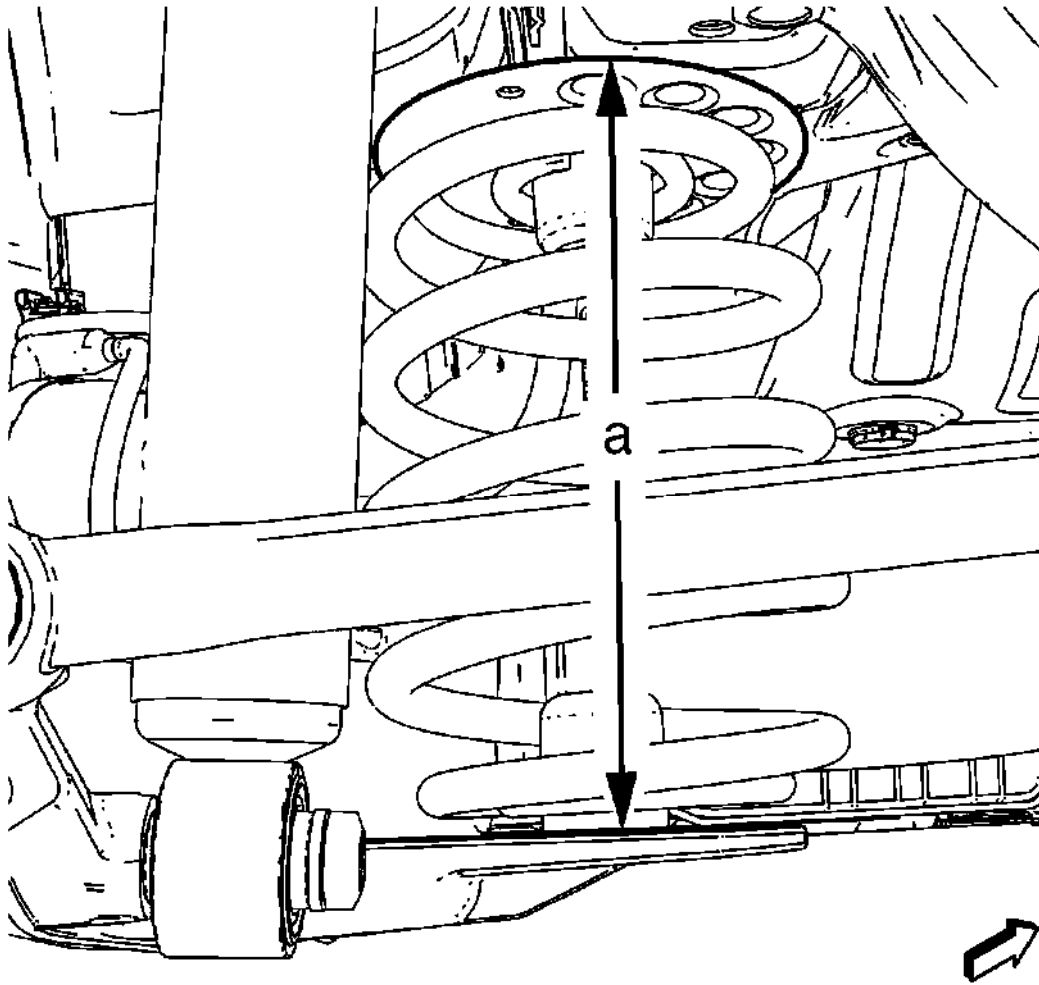


**Fig. 63: Trim Height Specification**

Courtesy of GENERAL MOTORS COMPANY

6. Using the lift table, raise the axle to the proper trim height specification by measuring the vertical distance between the bottom edge of the upper spring seat and the bottom of the notch in the lower spring seat.

### **Trim Height Specification**

Dimension (a): 217 mm (8.54 in)

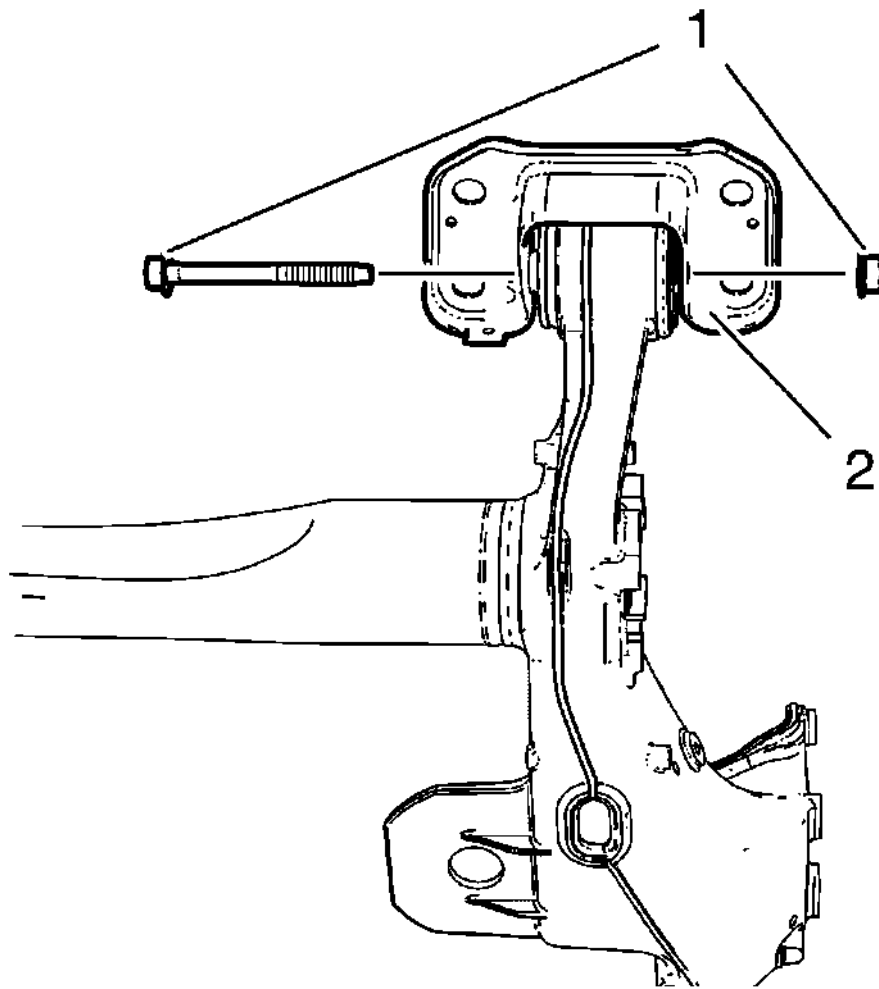


**Fig. 64: Rear Axle, Bolts And Nuts**

**Courtesy of GENERAL MOTORS COMPANY**

7. Tighten the axle bushing through bolts (1) and nuts and tighten to 70 N.m (52 lb ft) + 120°, using **EN-45059** angle meter.
8. Remove the hydraulic lift table from the rear axle.
9. Lower the vehicle.

## **SHOCK ABSORBER REPLACEMENT**

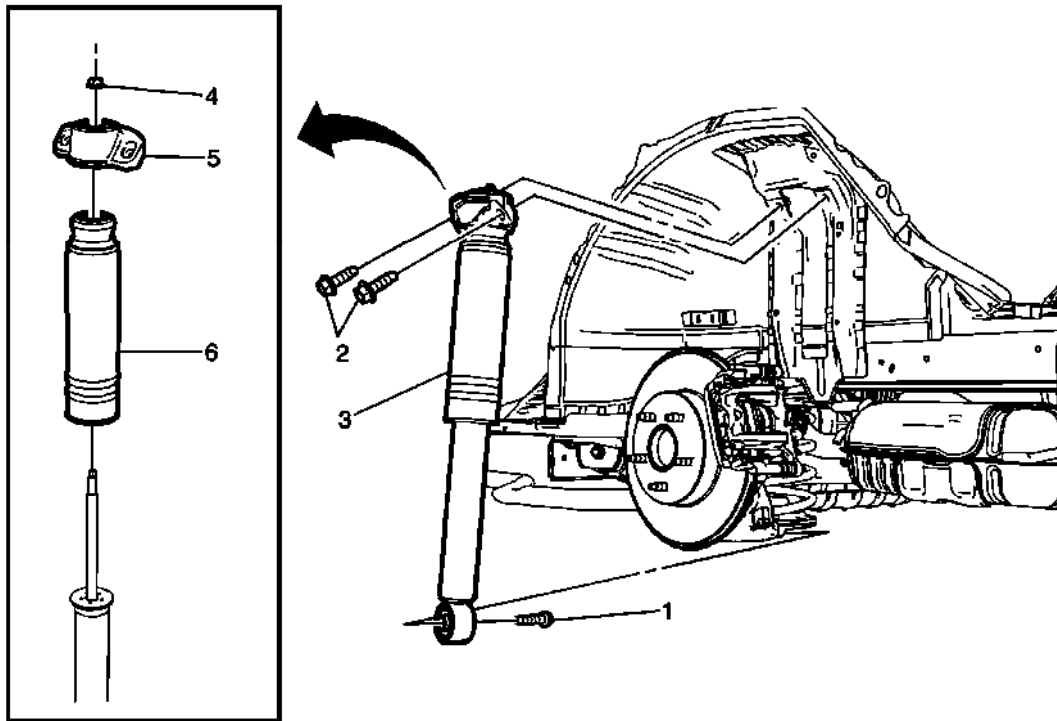


**Fig. 65: Shock Absorber Components**  
 Courtesy of GENERAL MOTORS COMPANY

### Shock Absorber Replacement

| Callout                                                                                                                                                                                               | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedures</b>                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1. Raise and support the vehicle. Refer to <b><u>Lifting and Jacking the Vehicle</u></b> .<br>2. Remove the tire and wheel assembly. Refer to <b><u>Tire and Wheel Removal and Installation</u></b> . |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1                                                                                                                                                                                                     | Rear Shock Absorber Bolt.<br><br><b>WARNING:</b><br>Refer to <b><u>Torque-to-Yield Fastener Warning</u></b> .<br><br><b>CAUTION:</b><br>Refer to <b><u>Fastener Caution</u></b> .<br><br><b>Procedure</b><br><br>1. Support the rear axle with a suitable jack stand.<br>2. Install NEW bolt. Do NOT reuse old bolt.<br>3. Support the front of the vehicle and raise the rear axle to proper r-height. Refer to <b><u>Trim Height Specifications</u></b> .<br>4. Use <b>EN-45059</b> angle meter for additional tightening. |

|   |                                                                                                                                                                                                                                                                                                |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | <p><b>Tighten</b></p> <ol style="list-style-type: none"> <li>1. First Pass: 150 N.m (111 lb ft)</li> <li>2. Final Pass: additional 60 - 70 degrees.</li> </ol> <p><b>Special Tools</b><br/> <b>EN-45059</b> Angle Meter<br/> For equivalent regional tools, refer to <b>Special Tools</b>.</p> |
| 2 | Rear Shock Absorber Bolt (Qty: 2)<br><b>Tighten</b><br>100 N.m (74 lb ft)                                                                                                                                                                                                                      |
| 3 | Rear Shock Absorber                                                                                                                                                                                                                                                                            |
| 4 | Rear Shock Absorber Nut<br><b>Procedure</b><br>Use the <b>CH-51095</b> wrench to tighten the rear shock absorber nut.<br><b>Tighten</b><br>20 N.m (15 lb ft)<br><b>Special Tools</b><br><b>CH-51095</b> Wrench<br>For equivalent regional tools, refer to <b>Special Tools</b> .               |
| 5 | Rear Shock Absorber Upper Mount                                                                                                                                                                                                                                                                |
| 6 | Rear Shock Absorber Bumper Upper                                                                                                                                                                                                                                                               |

### SHOCK ABSORBER DISPOSAL

- WARNING:** Gas charged shock absorbers contain high pressure gas. Do not remove the snap ring from inside the top of the tube. If the snap ring is removed, the contents of the shock absorber will come out with extreme force which may result in personal injury.
- WARNING:** To prevent personal injury, wear safety glasses when centerpunching and drilling the shock absorber. Use care not to puncture the shock absorber tube with the centerpunch.

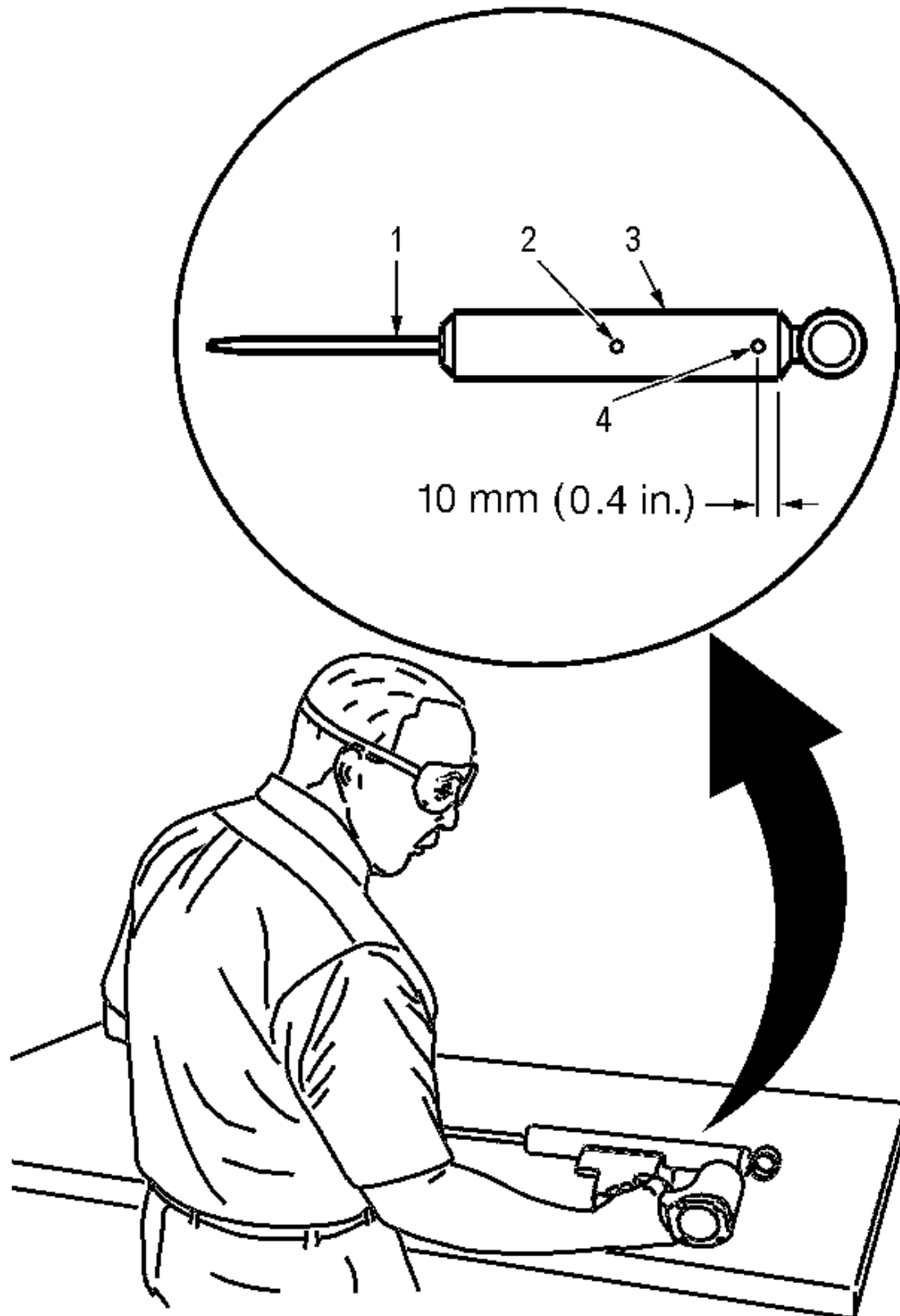


**Fig. 66: Drilling Hole In Shock Absorber At Centerpunched Locations**

**Courtesy of GENERAL MOTORS COMPANY**

1. Make an indentation 10 mm (0.4 in) from the bottom (4) of the tube (3) using a centerpunch.
2. Clamp the shock absorber in a vise horizontally with the shock absorber rod (1) completely extended.
3. Drill a hole in the shock absorber at the centerpunch (4) using a 5 mm (3/16 in) drill bit. Gas or a gas/oil mixture will exhaust when the drill bit penetrates the shock absorber. Use shop towels in order to contain the escaping oil.
4. Make an indentation in the middle (2) of the tube (3) with a centerpunch.
5. Drill a second hole in the shock absorber at the centerpunch (2) using a 5 mm (3/16 in) drill bit. Oil will exhaust when the drill bit penetrates the shock absorber. Use shop towels in order to contain the escaping oil.
6. Remove the shock absorber from the vise. Hold the shock absorber over a drain pan horizontally with the holes down. Move the rod (1) in and out of the tube (3) to completely drain the oil from the shock absorber.

**REAR SPRING INSULATOR REPLACEMENT****Removal Procedure**

1. Raise and suitably support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Support the rear axle with a tall jack stand near the shock absorber.
3. If the springs are being removed to service other components and the spring tags are missing, mark the position of the rear spring to ensure proper installation.
4. Remove the lower shock absorber bolts. Refer to **Shock Absorber Replacement**.
5. Using the tall jack stands, slowly lower the rear axle in order to remove tension from the rear springs.

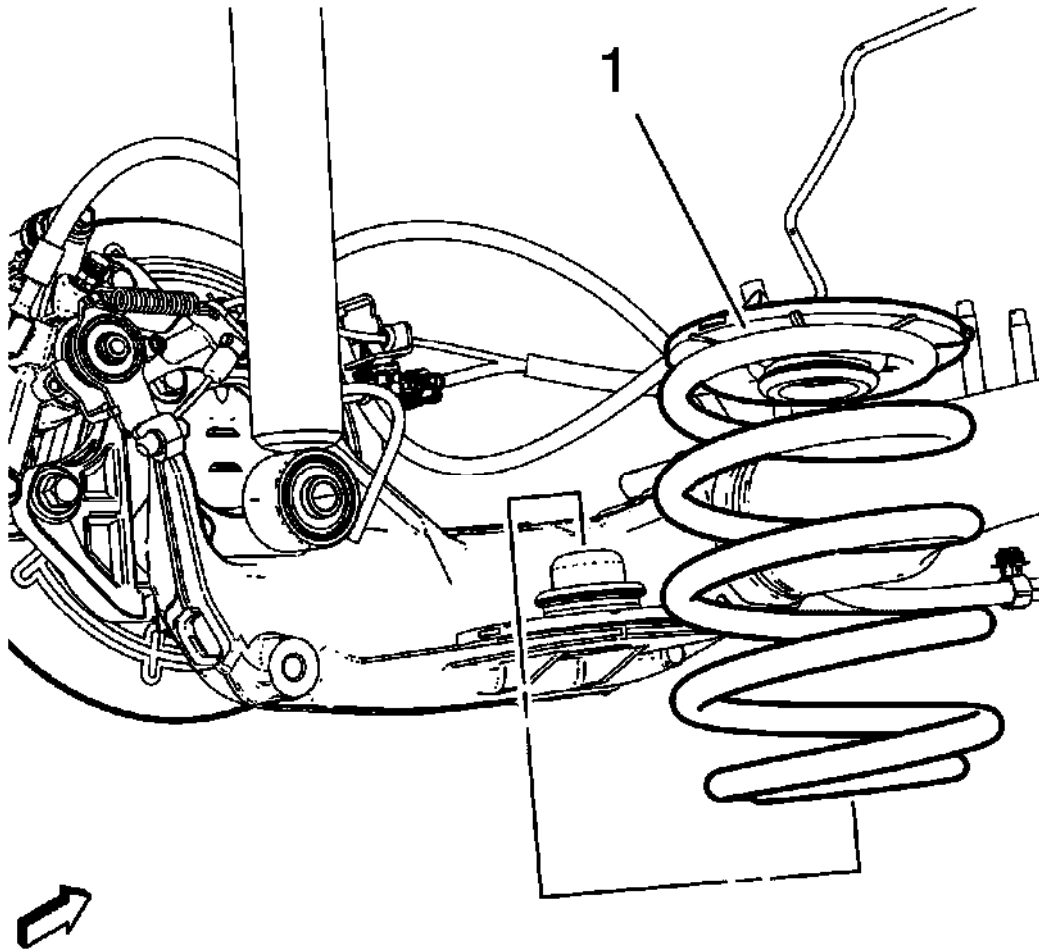


**Fig. 67: Rear Coil Spring**

Courtesy of GENERAL MOTORS COMPANY

6. Remove the spring (1).

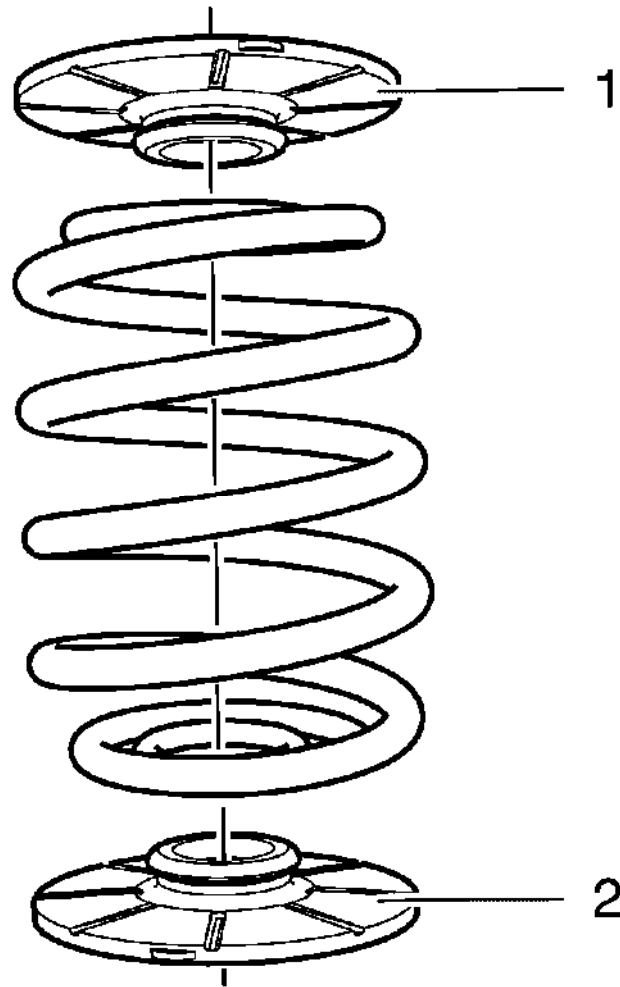


**Fig. 68: Lower And Upper Rear Spring Insulators**  
**Courtesy of GENERAL MOTORS COMPANY**

7. Remove the lower and upper rear spring insulators (1, 2).

**Installation Procedure**

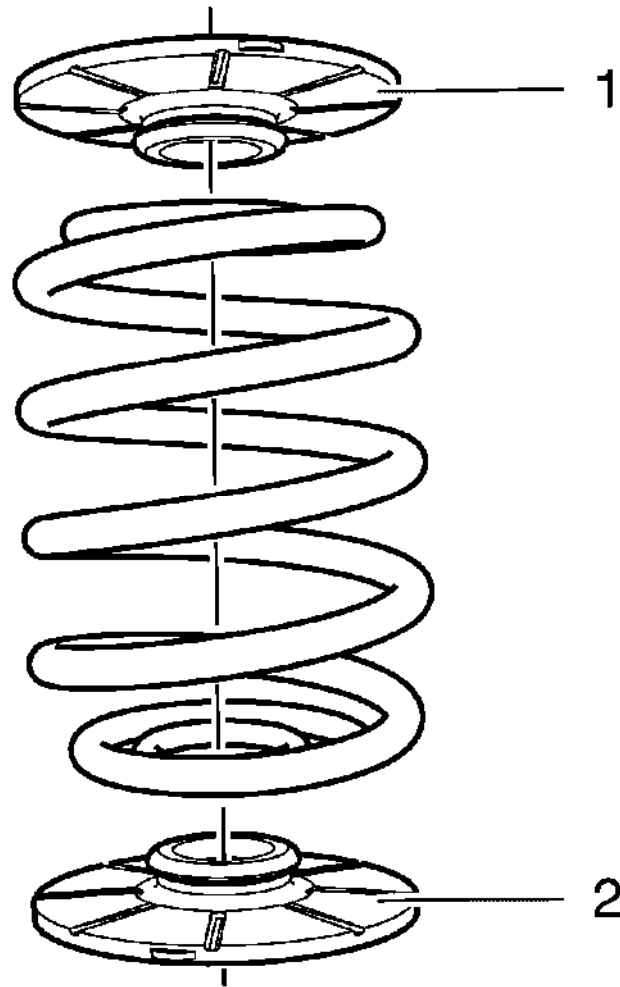


**Fig. 69: Lower And Upper Rear Spring Insulators**  
**Courtesy of GENERAL MOTORS COMPANY**

1. Install the lower and upper rear spring insulators (1, 2).

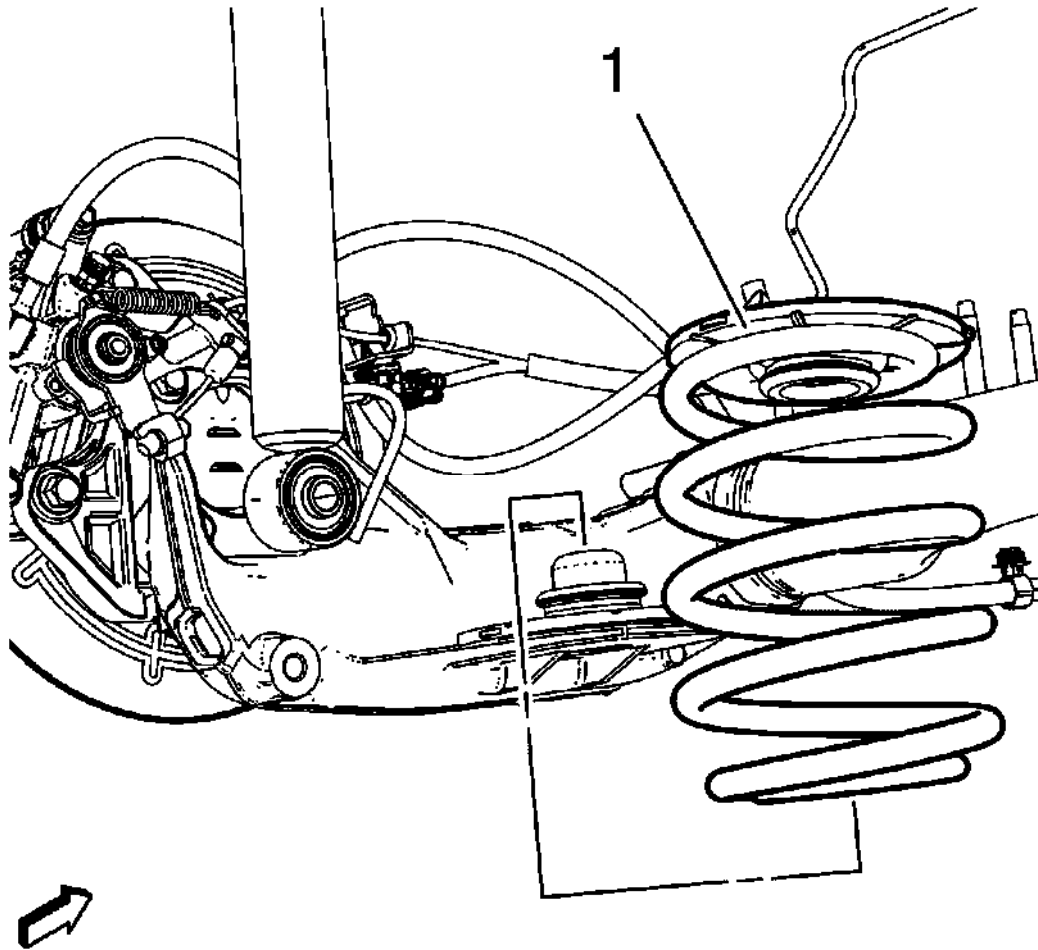


**Fig. 70: Rear Coil Spring**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** If the spring is equipped with tags, ensure that the tags are at the upper rear portion of the spring. If marks were made during removal, ensure the marks are properly aligned.

2. Install the spring (1) making sure the lower coil is seated into the lower spring seat.
3. Using the jack stands, raise the rear axle in order to compress the rear springs.
4. Install the lower shock absorber bolts. Refer to **Shock Absorber Replacement**.
5. Lower the vehicle.

## REAR SPRING REPLACEMENT

### Removal Procedure

1. Raise and suitably support the vehicle. Refer to Lifting and Jacking the Vehicle .
2. Support the rear axle with a tall jack stand near the shock absorber.
3. If the springs are being removed to service other components and the spring tags are missing, mark the position of the rear spring to ensure proper installation.
4. Remove the lower shock absorber bolts. Refer to Shock Absorber Replacement.
5. Using the tall jack stands, slowly lower the rear axle in order to remove tension from the rear springs.

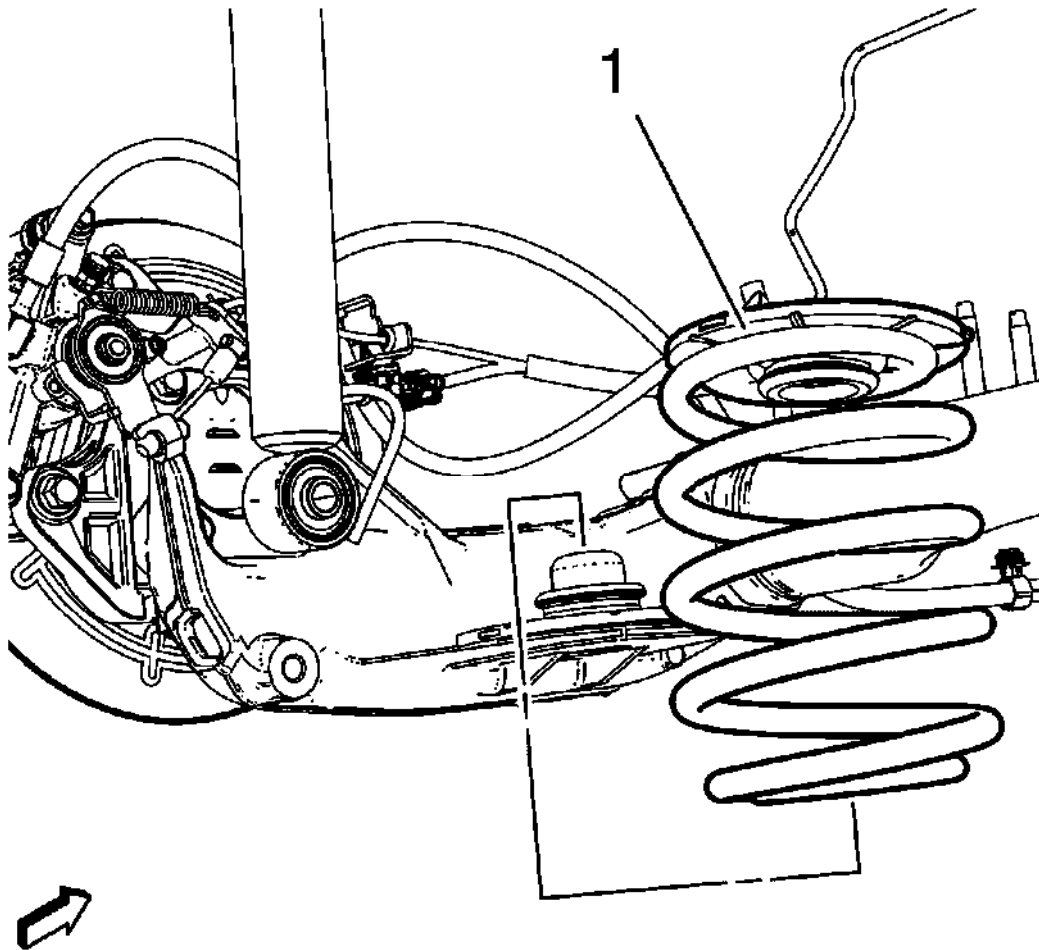


**Fig. 71: Rear Coil Spring**

Courtesy of GENERAL MOTORS COMPANY

6. Remove the spring (1).

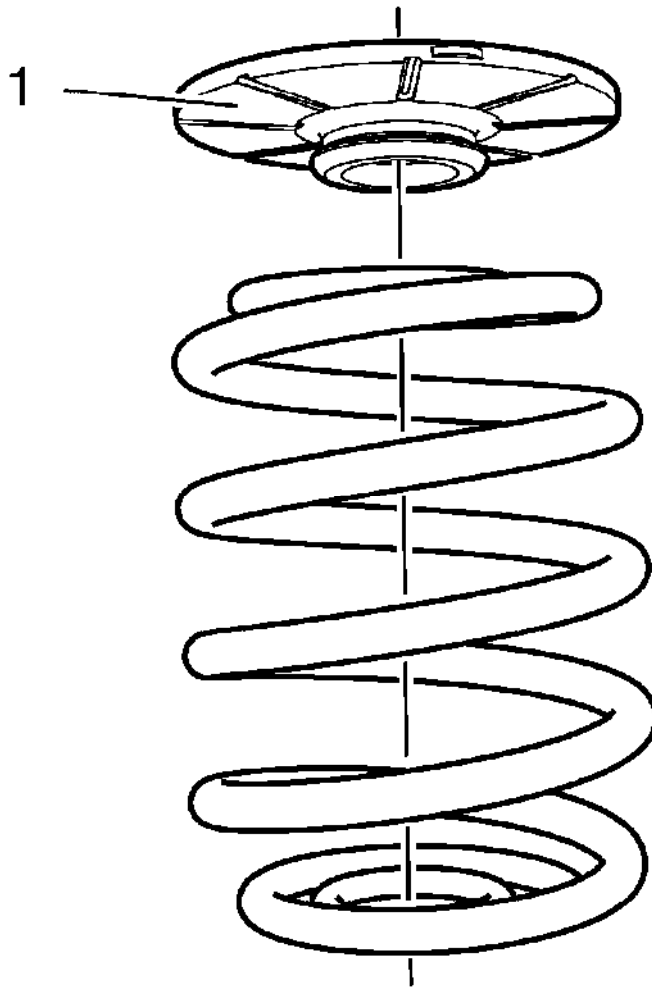


**Fig. 72: Spring Seat/Jounce Bumper**

**Courtesy of GENERAL MOTORS COMPANY**

7. Remove the upper spring seat/jounce bumper (1) from the spring, while leaving the lower spring seat on the axle.

**Installation Procedure**

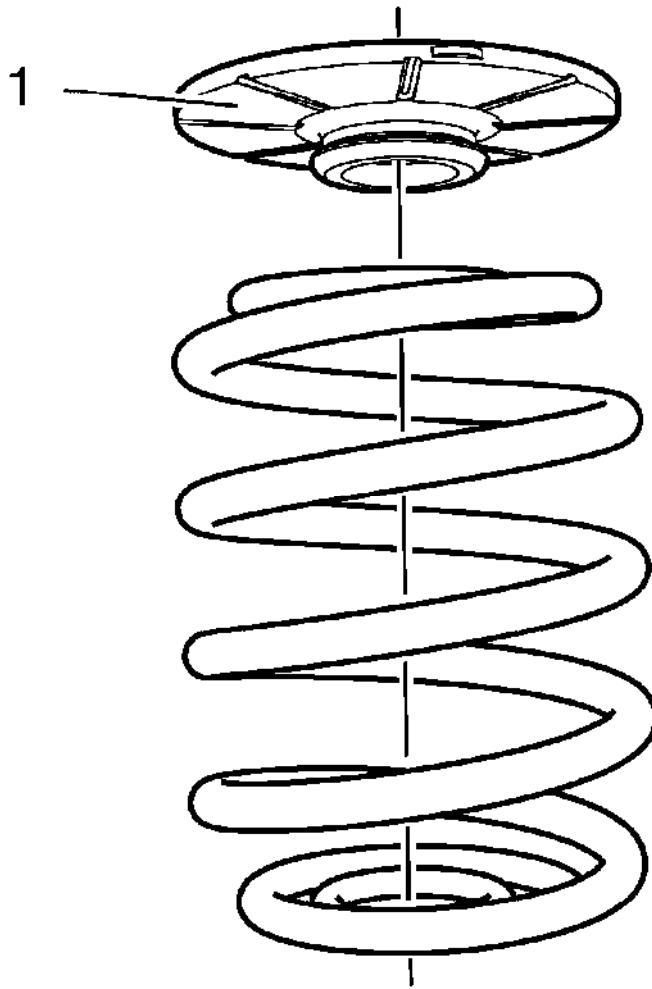


**Fig. 73: Spring Seat/Jounce Bumper**  
**Courtesy of GENERAL MOTORS COMPANY**

1. Install the upper spring seat/jounce bumper (1) on the spring.

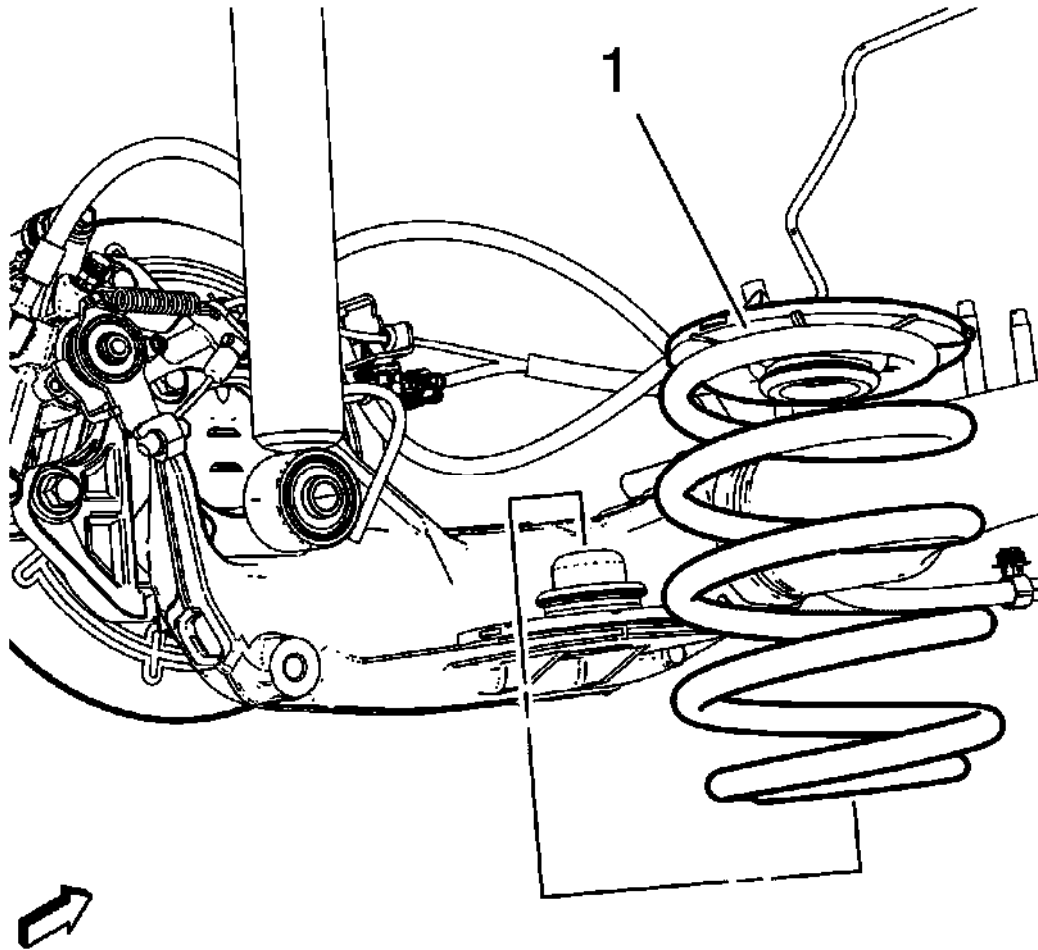


**Fig. 74: Rear Coil Spring**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** If the spring is equipped with tags, ensure that the tags are at the upper rear portion of the spring. If marks were made during removal, ensure the marks are properly aligned.

2. Install the spring (1) making sure the lower coil is seated into the lower spring seat.
3. Using the jack stands, raise the rear axle in order to compress the rear springs.
4. Install the lower shock absorber bolts. Refer to **Shock Absorber Replacement**.
5. Lower the vehicle.

## REAR AXLE REPLACEMENT (COMPOUND CRANK)

### Special Tools

**EN-45059 Angle Meter**

For equivalent regional tools, refer to **Special Tools**.

**Removal Procedure**

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

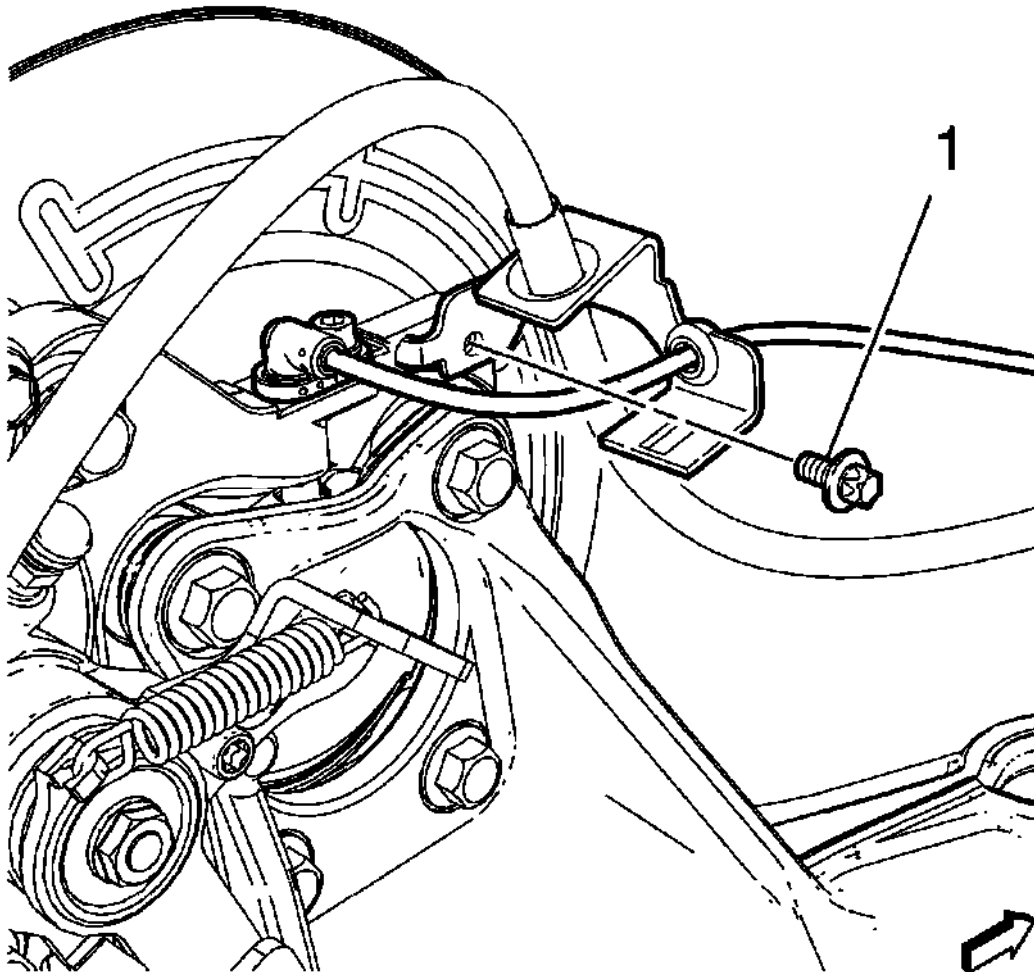


**Fig. 75: Identifying Brake Hose Bolts**  
Courtesy of GENERAL MOTORS COMPANY

3. Remove the both brake hose bolts (1) attaching the hose to the rear brake caliper bracket.

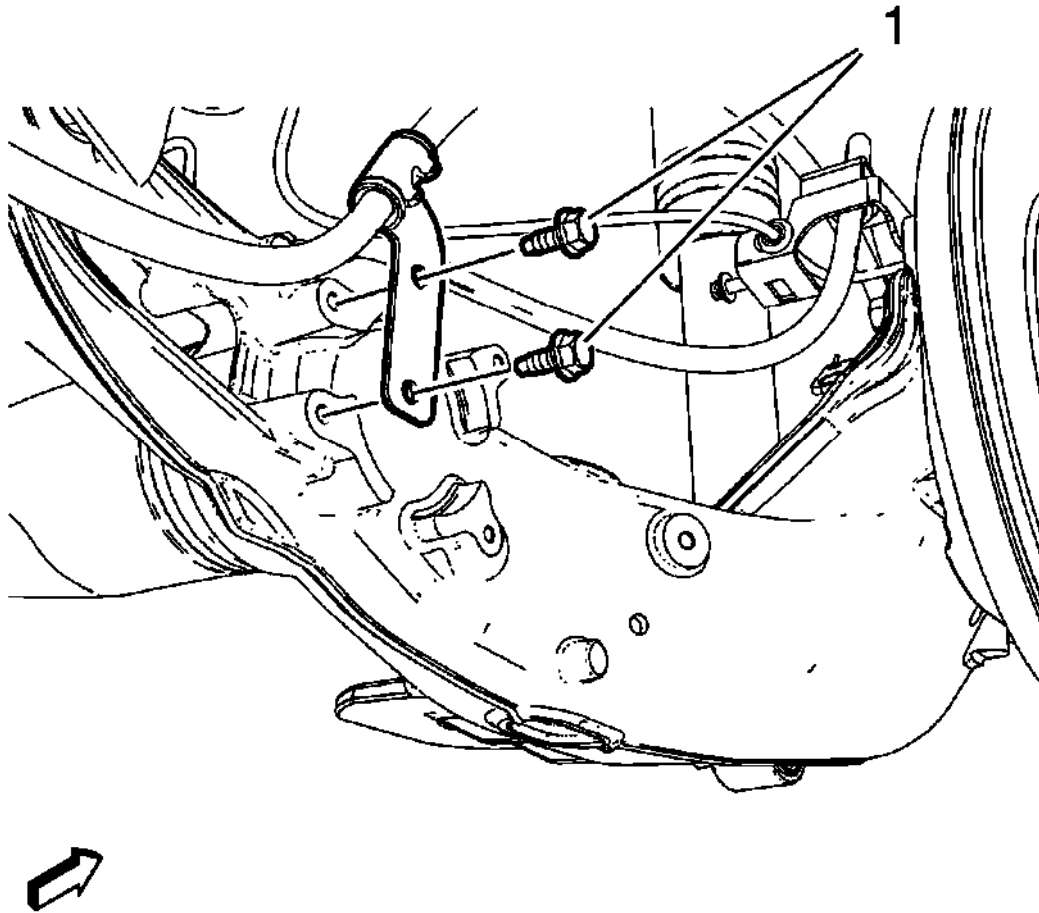


**Fig. 76: Parking Brake Cable Bracket Bolts**  
Courtesy of GENERAL MOTORS COMPANY

4. Remove the rear parking brake cable bracket bolts (1) from the rear axle.

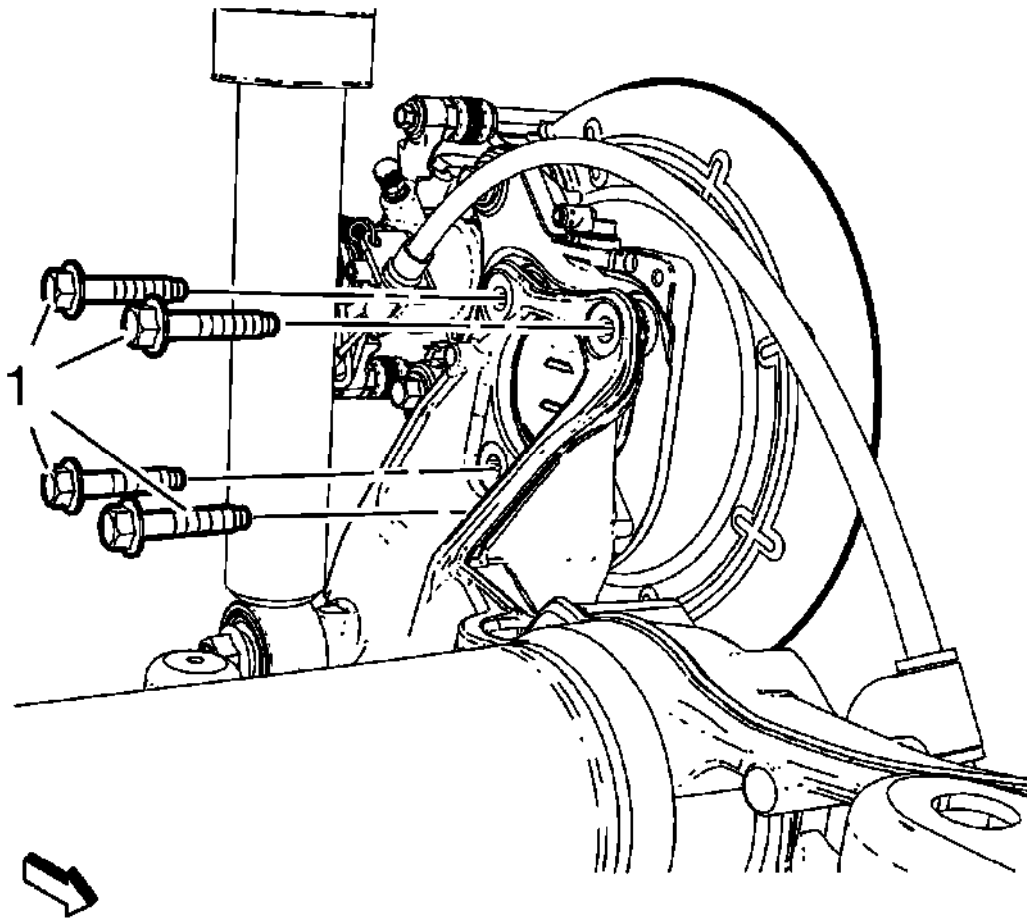


**Fig. 77: Wheel Bearing/Hub Mounting Bolts**  
Courtesy of GENERAL MOTORS COMPANY

5. Remove and DISCARD the wheel bearing/hub mounting bolts (1).

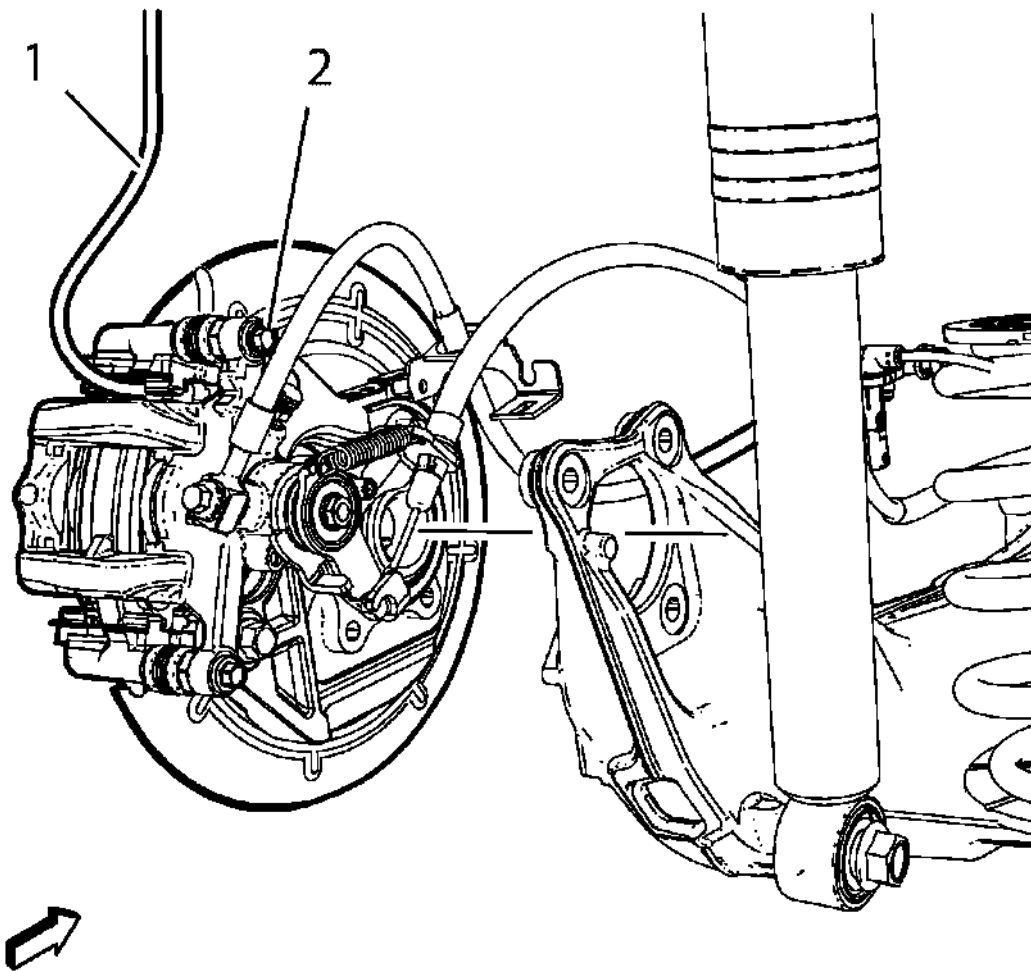


**Fig. 78: Identifying Heavy Mechanics Wire And Brake Assembly**  
 Courtesy of GENERAL MOTORS COMPANY

**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 hydraulic brake flexible hose, remove the wheel bearing/hub and the brake assembly (2) upward and secure the wheel bearing/hub and the brake assembly with heavy mechanics wire (1), or equivalent.
7. Support the rear axle with a hydraulic lift table.
8. Remove the lower shock bolts. Refer to **Shock Absorber Replacement**.
9. Lower the hydraulic lift table and remove the rear coil springs. Refer to **Rear Spring Replacement**.

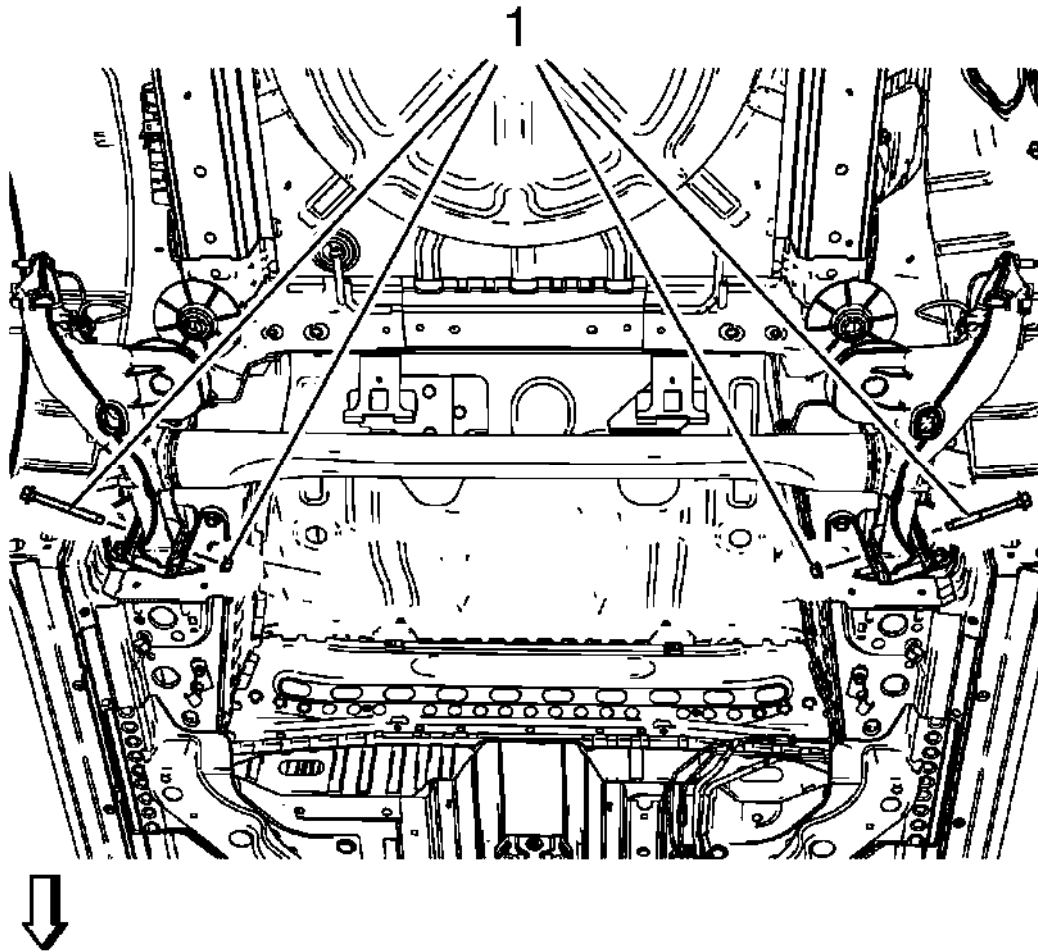


**Fig. 79: Rear Axle Bushing Bolts And Nuts**  
**Courtesy of GENERAL MOTORS COMPANY**

10. Remove and DISCARD both rear axle bushing bolts (1) and nuts.

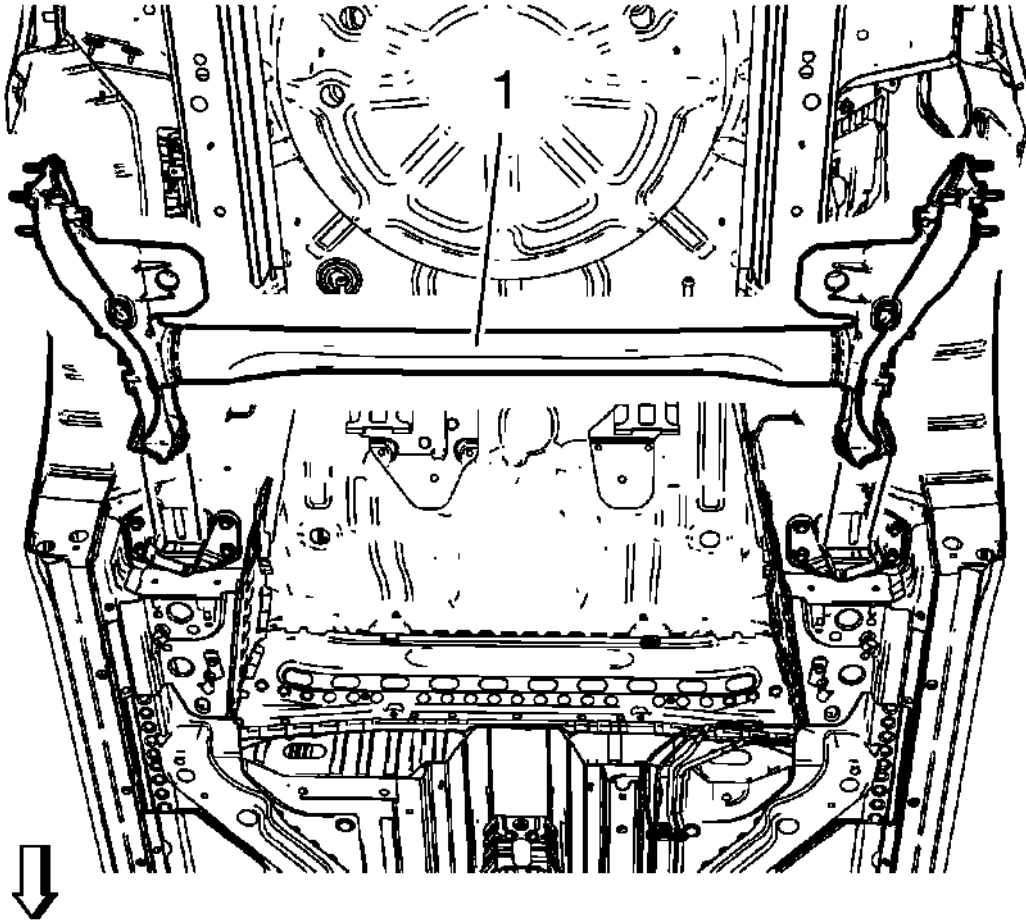


**Fig. 80: Rear Axle**

Courtesy of GENERAL MOTORS COMPANY

11. Use the hydraulic lift table to lower the rear axle (1) from the vehicle.

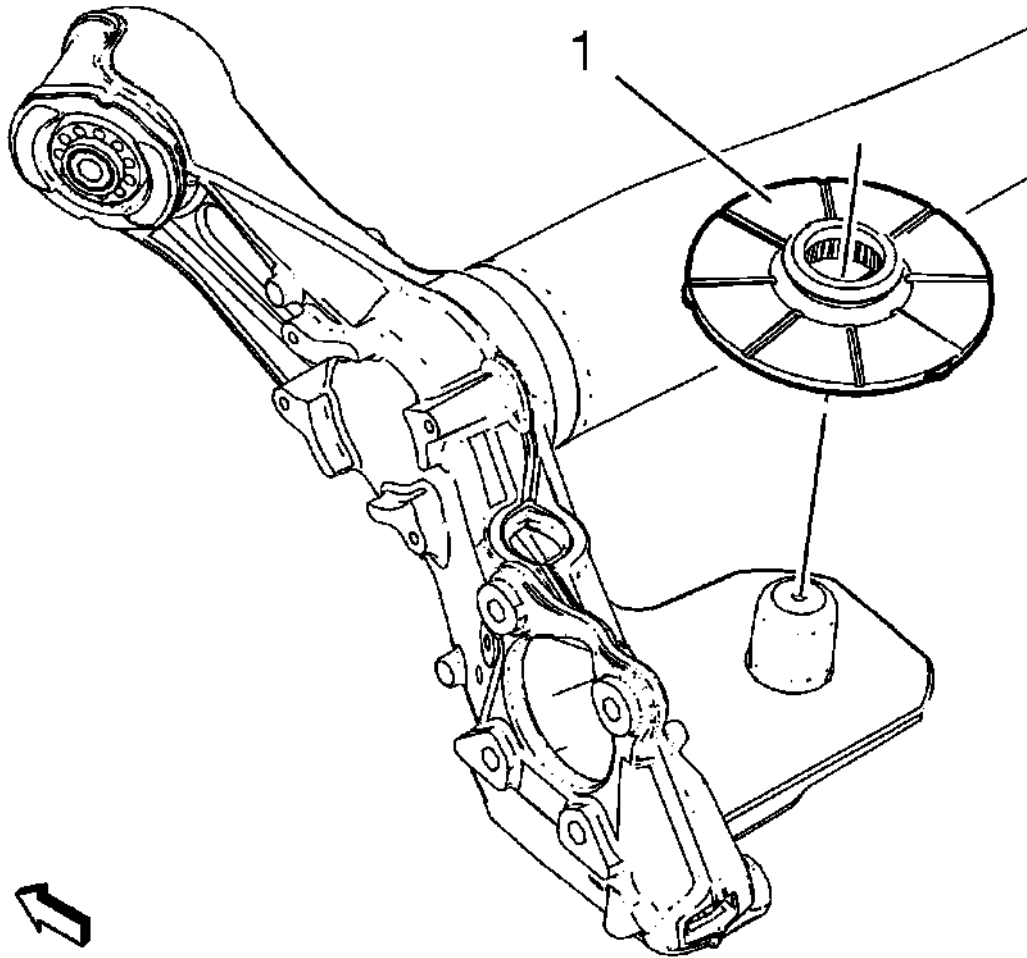


**Fig. 81: Identifying Coil Spring Lower Seat Insulators**  
Courtesy of GENERAL MOTORS COMPANY

12. Remove the rear coil spring lower seat insulators (1) from the axle.

**Installation Procedure**

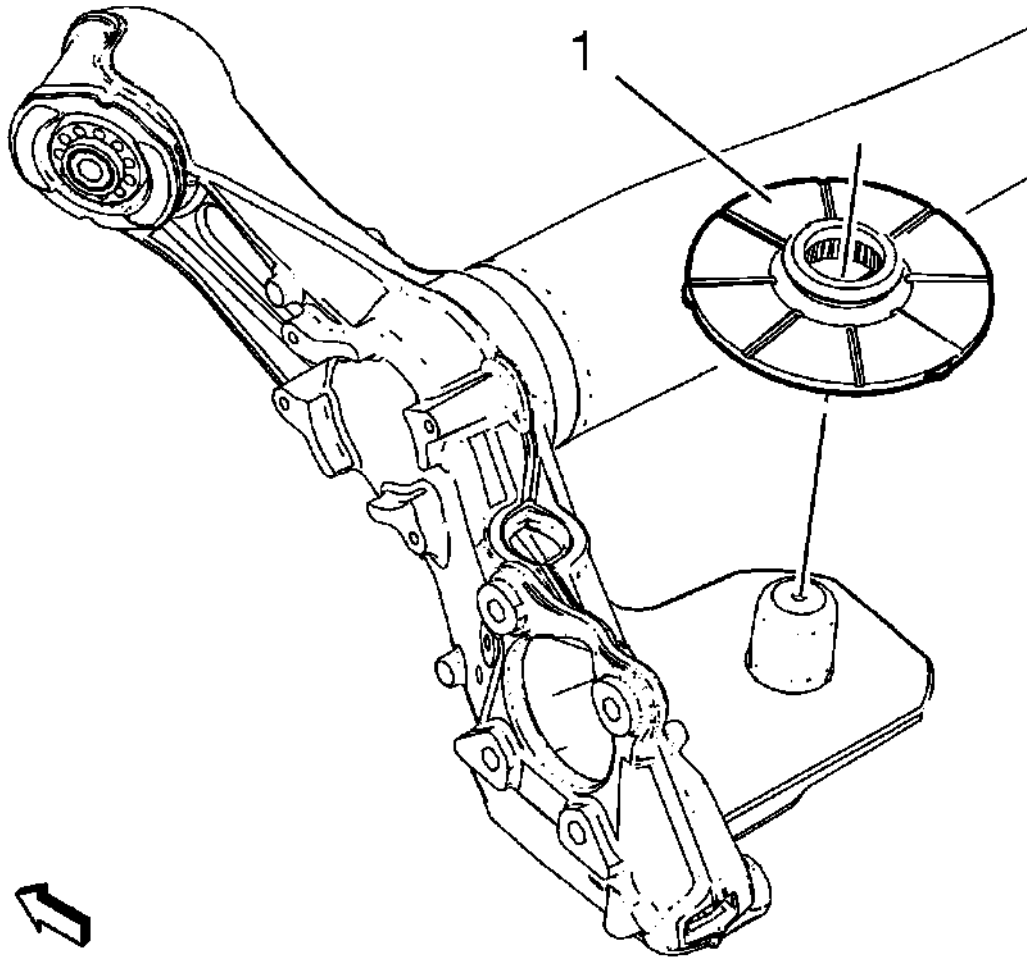


**Fig. 82: Identifying Coil Spring Lower Seat Insulators**  
Courtesy of GENERAL MOTORS COMPANY

1. Install the rear coil spring lower seat insulators (1) to the axle.

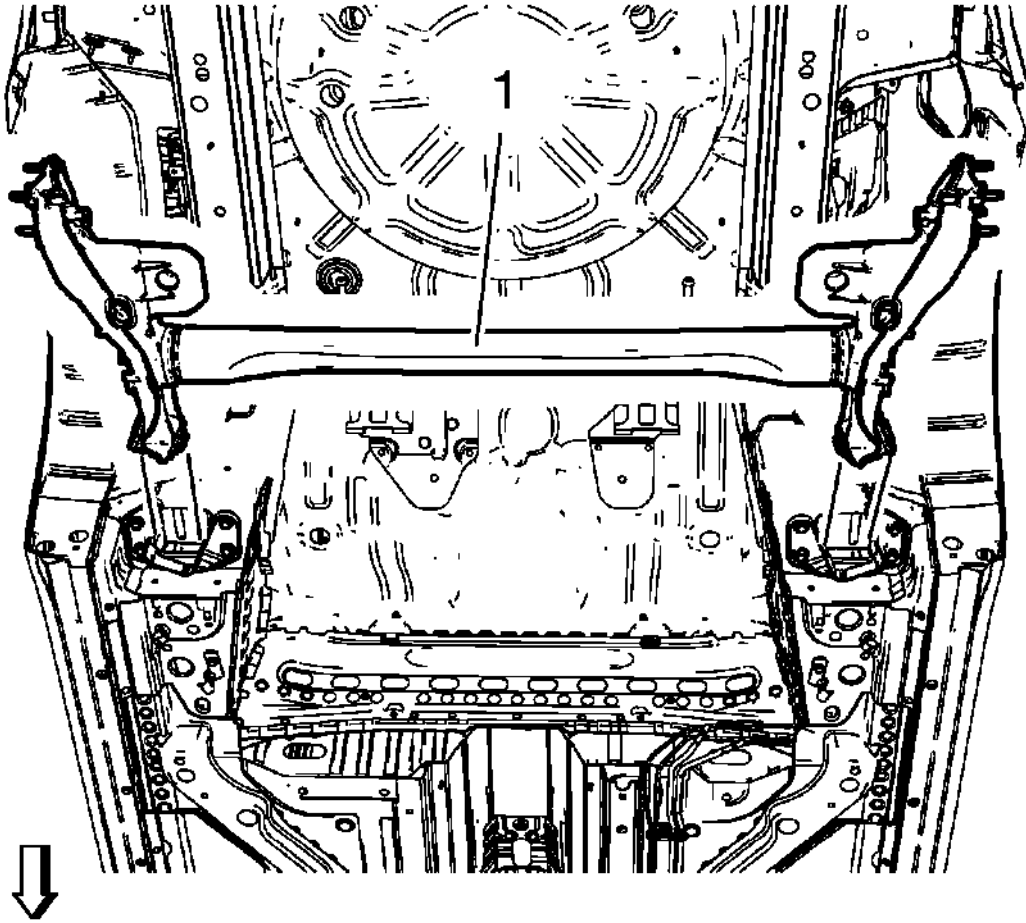


**Fig. 83: Rear Axle**

Courtesy of GENERAL MOTORS COMPANY

2. Raise the axle (1) into position.

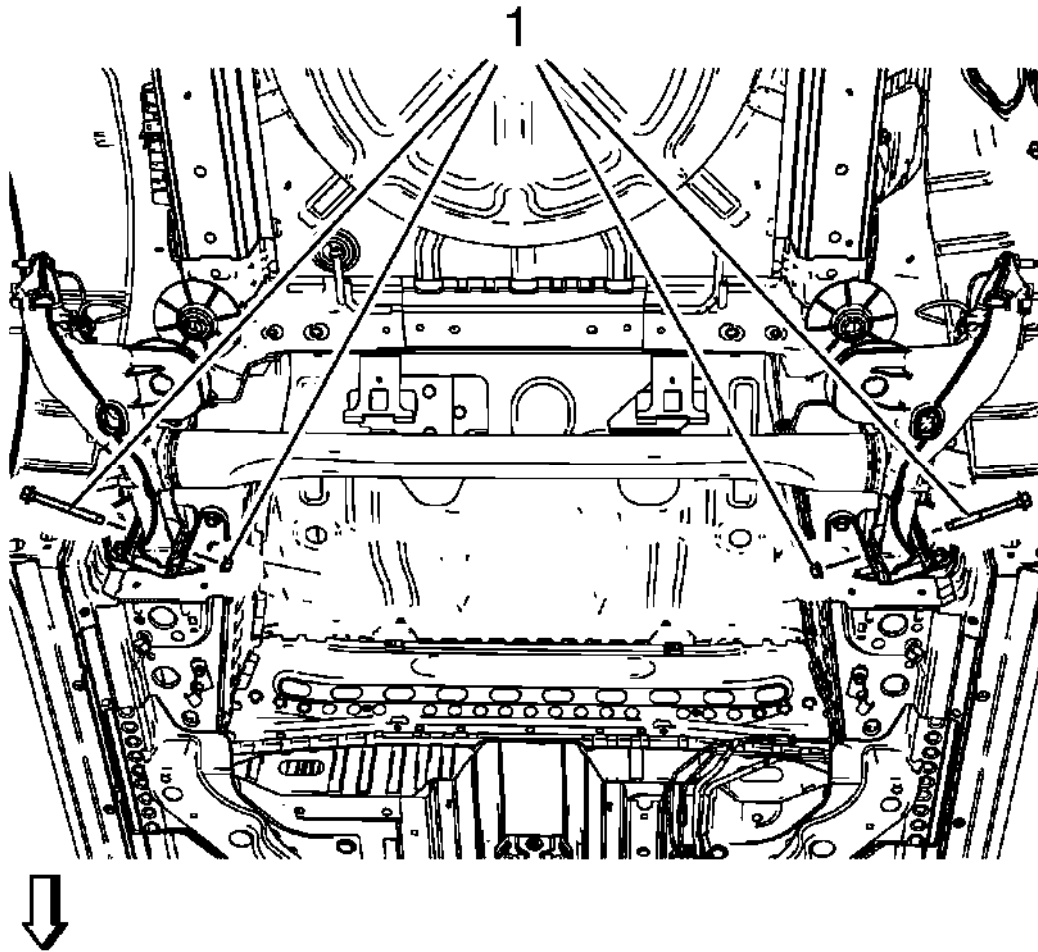


**Fig. 84: Rear Axle Bushing Bolts And Nuts**  
**Courtesy of GENERAL MOTORS COMPANY**

3. Loosely install the both axle bushing bolts (1) and nuts.

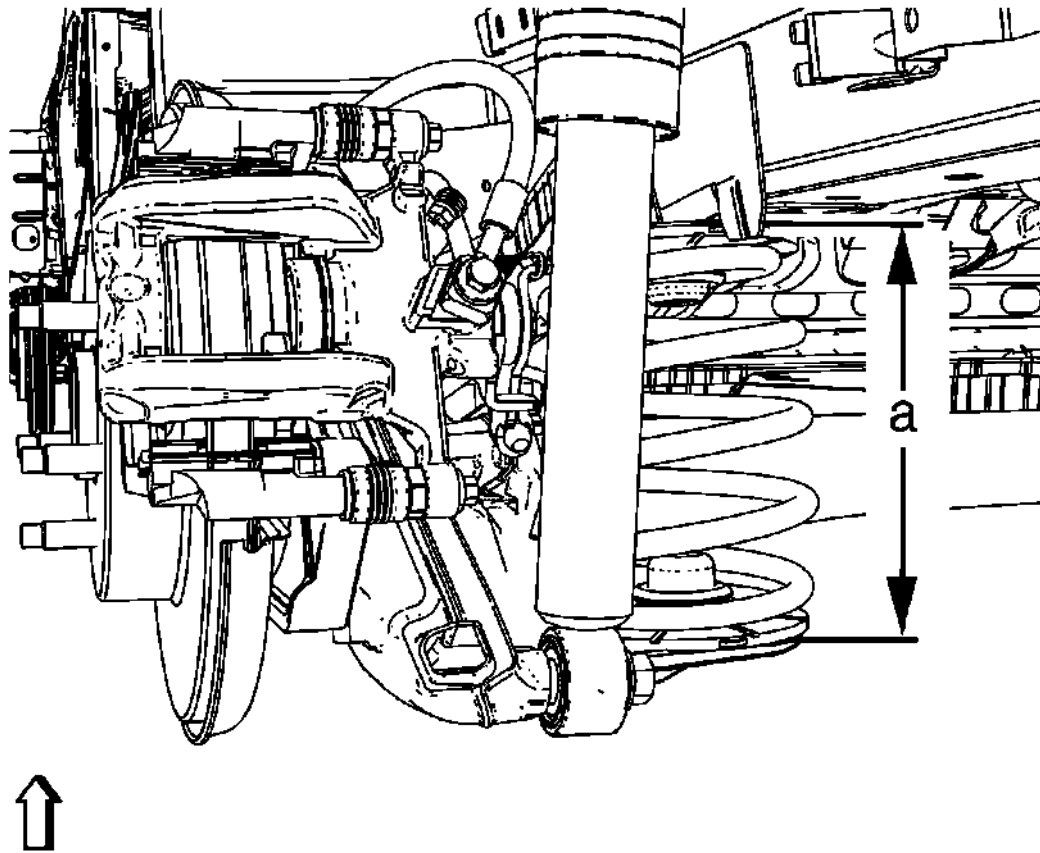


**Fig. 85: Raising Axle To Proper Trim Height**  
Courtesy of GENERAL MOTORS COMPANY

**NOTE:** The axle bushing bolts and nuts must be tightened with the axle at the correct trim height.

- Using the lift table, raise the axle to the proper trim height specification by measuring the vertical distance between the bottom edge of the upper spring seat and the bottom of the notch in the lower spring seat specification:

**Specification**

Dimension (a): 224 mm (8.82 in)

**CAUTION:** Refer to Fastener Caution .

5. Tighten the NEW axle bushing through the bolts and the NEW nuts and tighten a first pass to 70 N.m (52 lb ft).

**CAUTION:** Refer to Torque-to-Yield Fastener Caution .

6. Tighten the axle bushing though bolts and the nuts a final pass to an additional 120 - 135 degrees, using the **EN-45059** meter.
7. Install the rear coil springs. Refer to Rear Spring Replacement.
8. Install the lower shock bolts. Refer to Shock Absorber Replacement.
9. Remove the hydraulic lift table from the rear axle.
10. Install the wheel bearing/hub and the brake assembly.

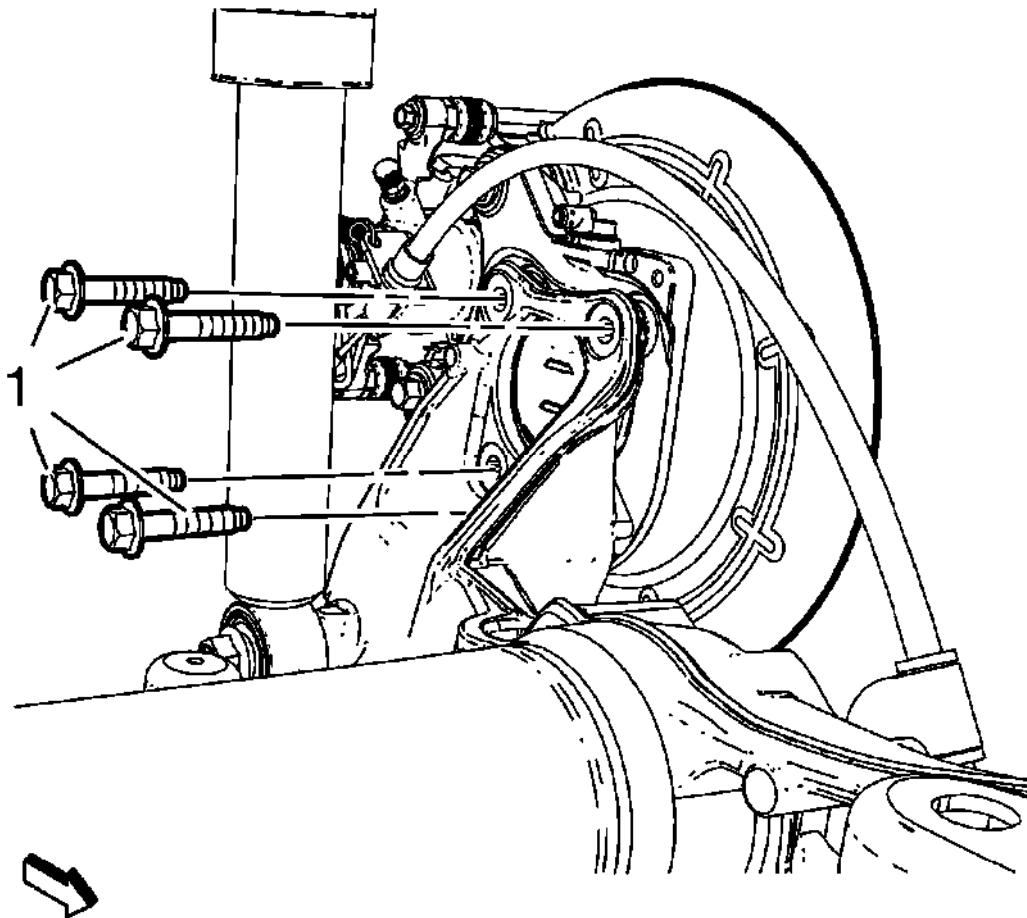


**Fig. 86: Wheel Bearing/Hub Mounting Bolts**  
Courtesy of GENERAL MOTORS COMPANY

11. Install the NEW wheel bearing/hub mounting bolts (1) and tighten a first pass to 50 N.m (37 lb ft).

**CAUTION: Refer to Torque-to-Yield Fastener Caution .**

12. Install the wheel bearing/hub mounting bolts a final pass to an additional 45 - 60 degrees, using the **EN-45059** meter.

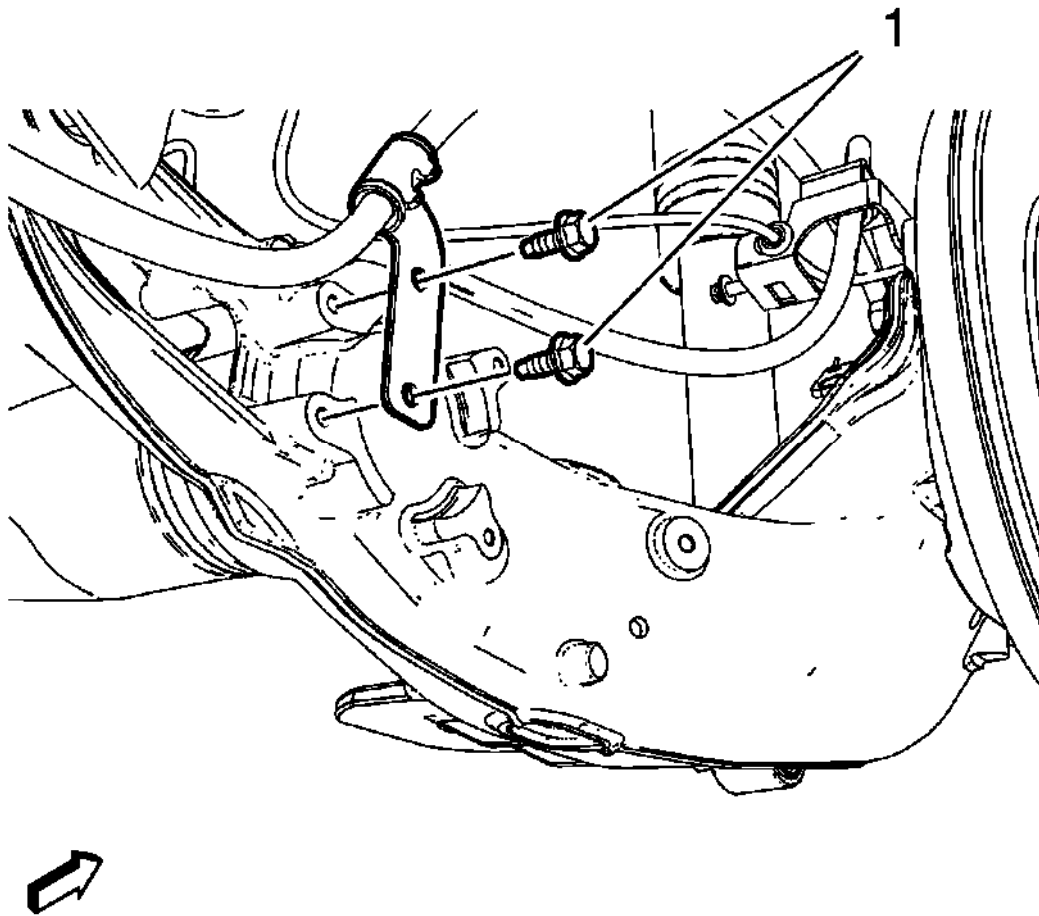


**Fig. 87: Parking Brake Cable Bracket Bolts**  
Courtesy of GENERAL MOTORS COMPANY

13. Install the rear parking brake cable bracket bolts (1) at the rear axle and tighten to 22 N.m (16 lb ft).

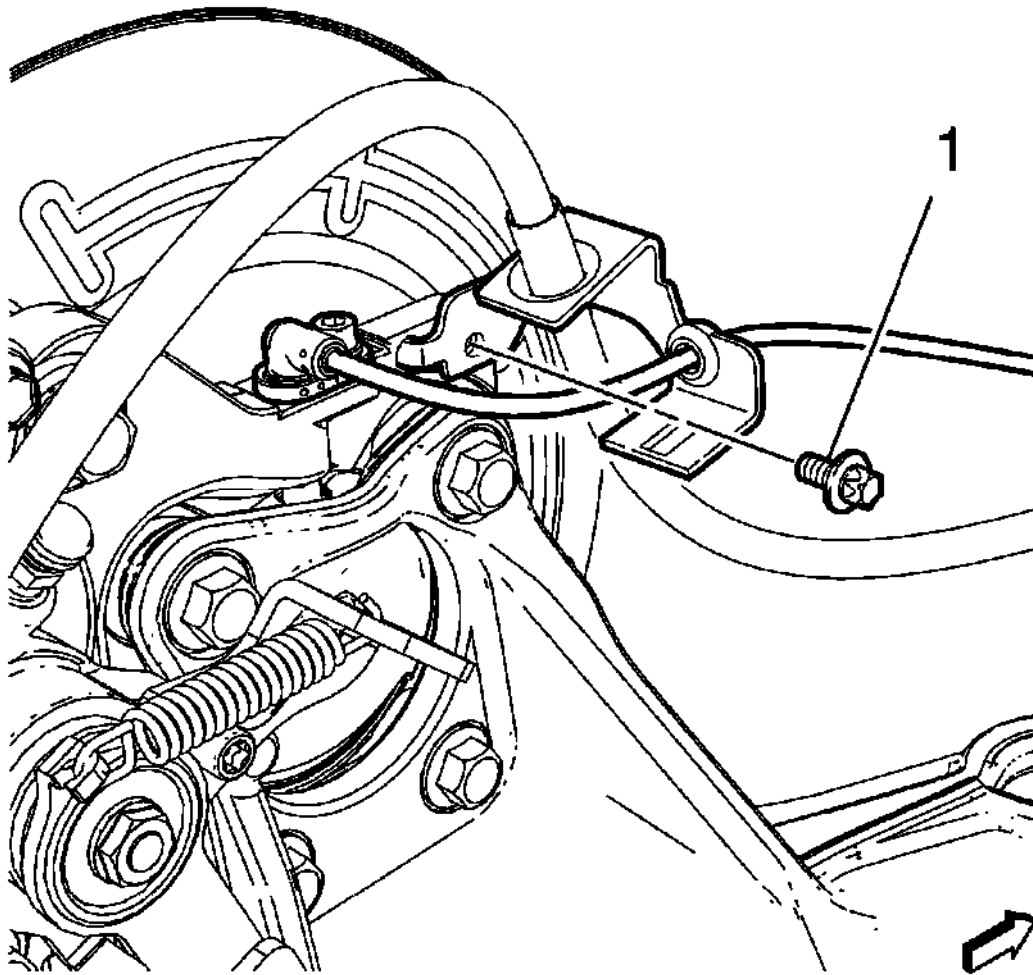


**Fig. 88: Identifying Brake Hose Bolts**  
Courtesy of GENERAL MOTORS COMPANY

14. Install the both brake hose bolts (1) attaching the hose to the rear brake caliper bracket.
15. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
16. Remove the support and lower the vehicle.

## REAR AXLE REPLACEMENT (WATT LINKAGE)

### Special Tools

EN-45059 Angle Meter

For equivalent regional tools. Refer to **Special Tools**.

### Removal Procedure

1. Raise and suitably support the vehicle. Refer to Lifting and Jacking the Vehicle .
2. Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .

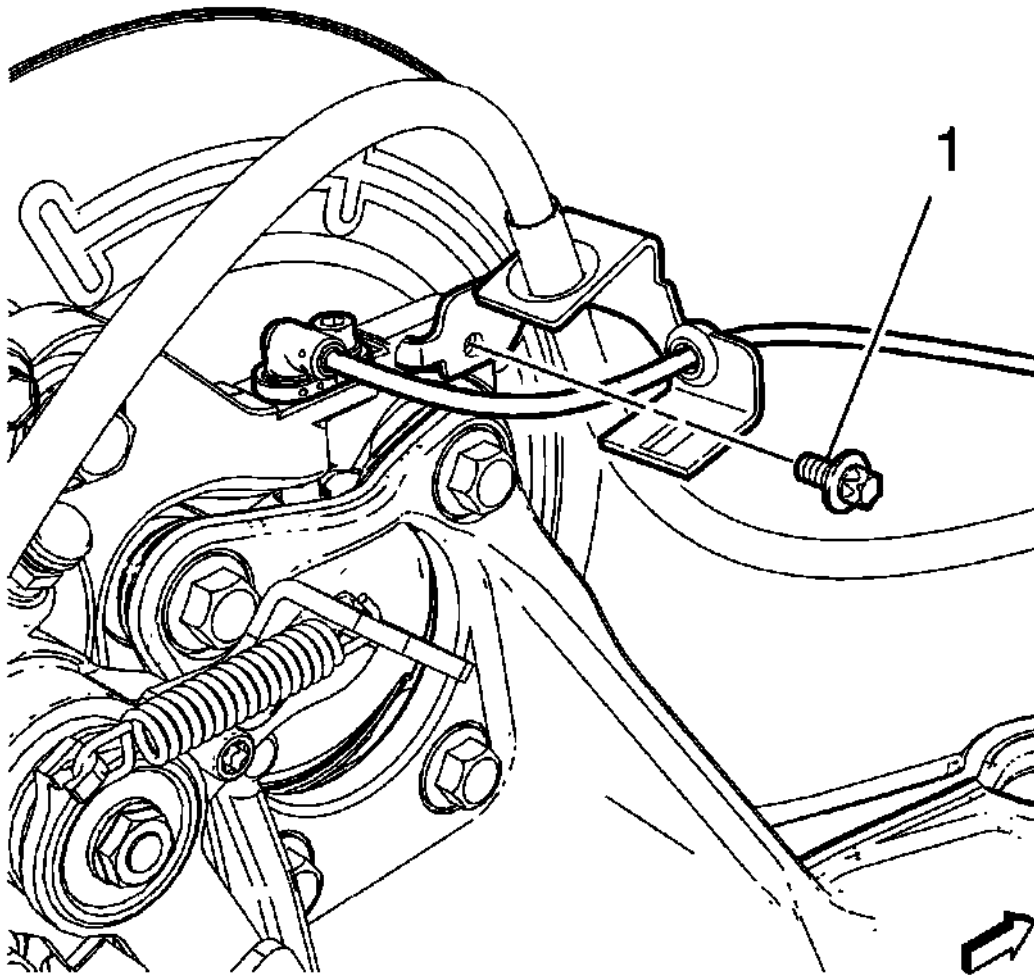


**Fig. 89: Identifying Brake Hose Bolts**  
Courtesy of GENERAL MOTORS COMPANY

3. Remove both brake hose bolts (1) attaching the hose to the rear brake caliper bracket.

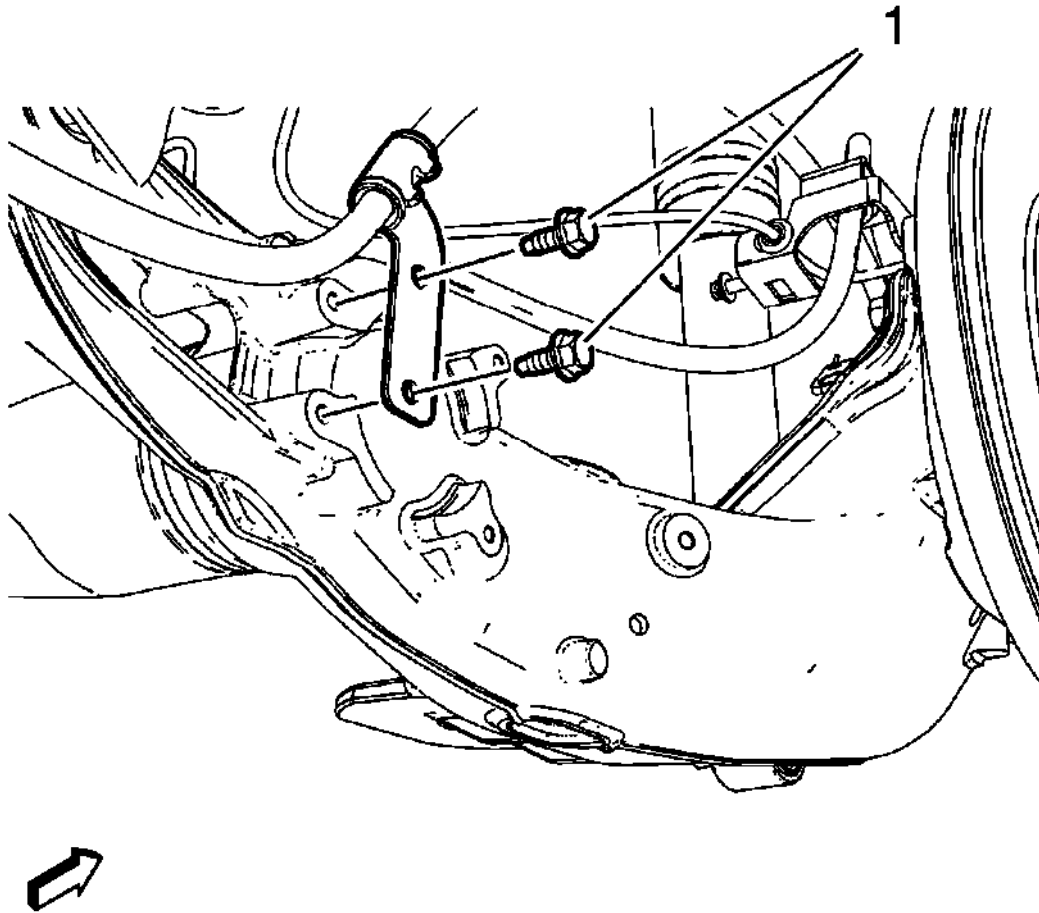


**Fig. 90: Parking Brake Cable Bracket Bolts**  
Courtesy of GENERAL MOTORS COMPANY

4. Remove rear parking brake cable bracket bolts (1) from the rear axle.

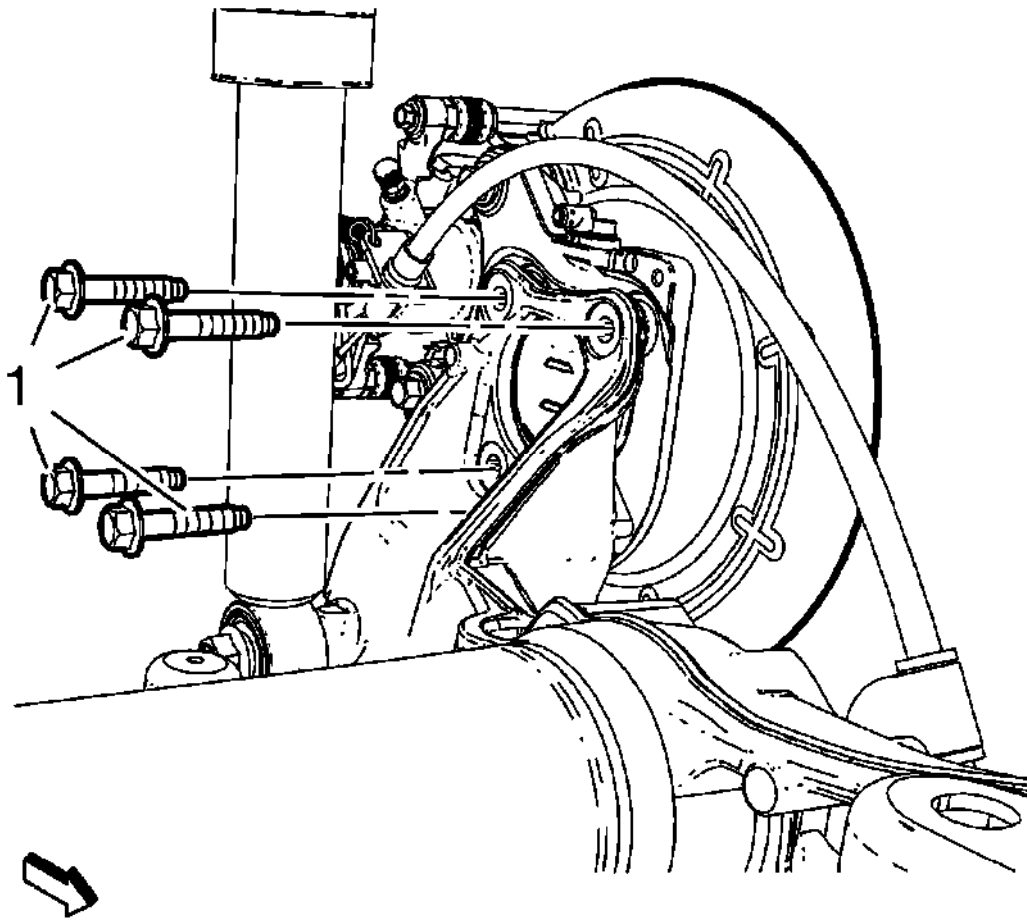


**Fig. 91: Wheel Bearing/Hub Mounting Bolts**  
Courtesy of GENERAL MOTORS COMPANY

5. Remove and DISCARD the wheel bearing/hub mounting bolts (1).

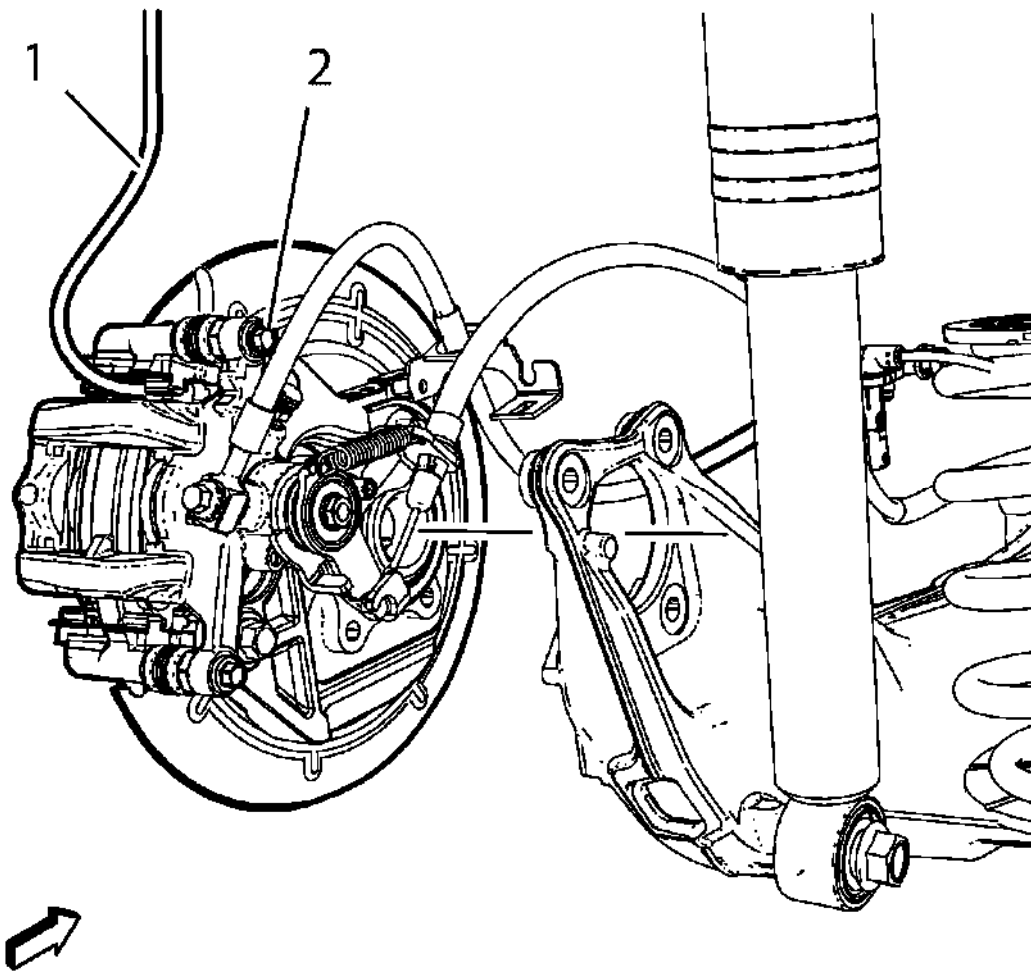


**Fig. 92: Identifying Heavy Mechanics Wire And Brake Assembly**

Courtesy of GENERAL MOTORS COMPANY

**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 hydraulic brake flexible hose, remove wheel bearing/hub and brake assembly (2) upward and secure the wheel bearing/hub and brake assembly with heavy mechanics wire (1), or equivalent.

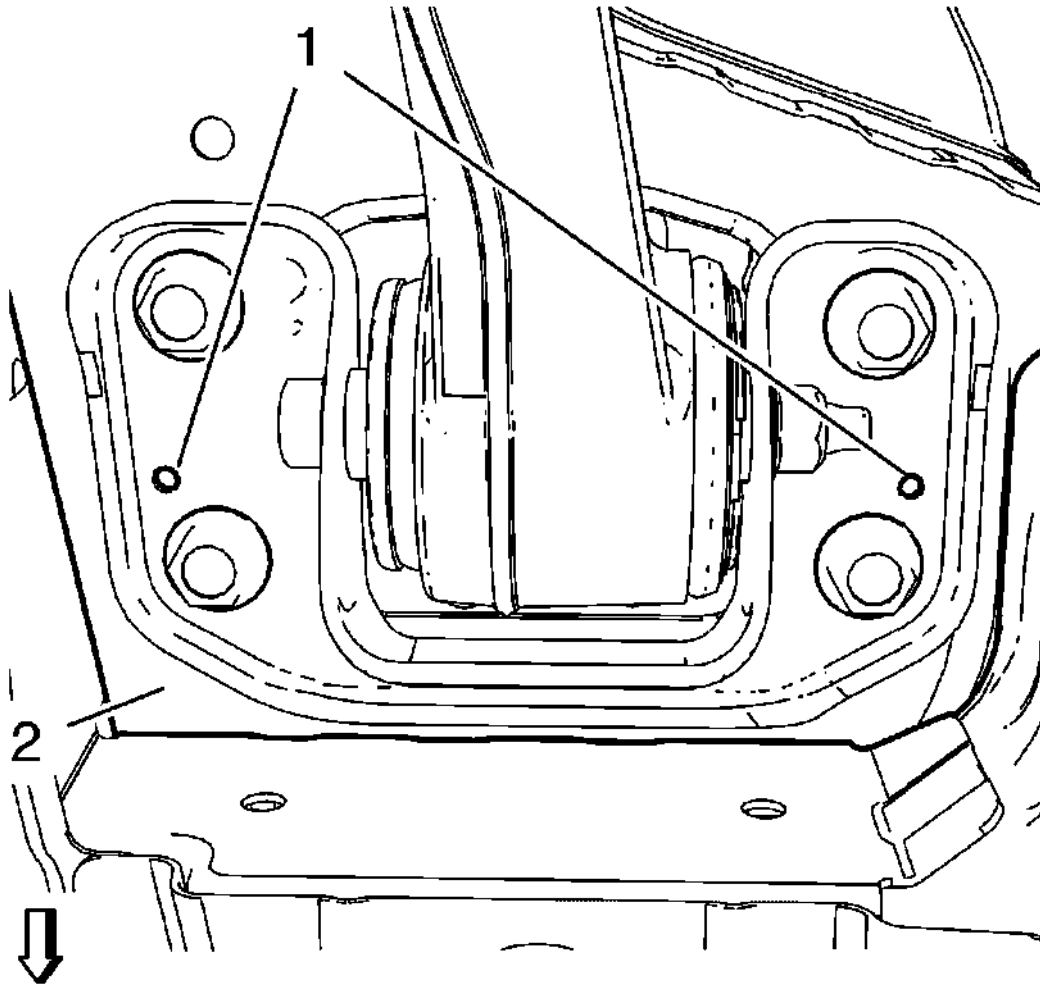


**Fig. 93: Identifying Drill Holes And Underbody**

**Courtesy of GENERAL MOTORS COMPANY**

7. Using a 6 mm (0.2 in) drill bit, drill 2 holes (1) through the right rear axle bracket and into the underbody. Repeat this step for the left rear axle bracket. These holes (1) will be used by guide pins to properly align the rear axle brackets to the underbody (2).
8. Support the rear axle with a hydraulic lift table.
9. Remove the lower shock absorber bolts. Refer to **Shock Absorber Replacement**.

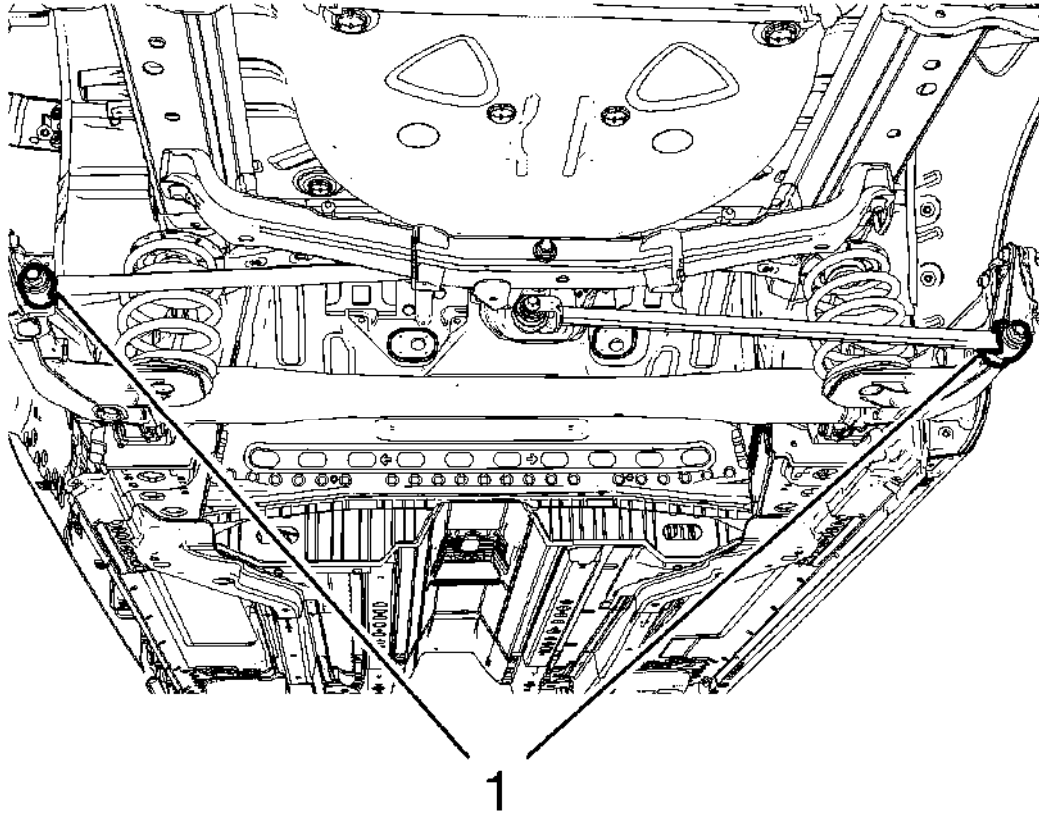


**Fig. 94: Identifying Equalizer Beam Link Bolts**  
**Courtesy of GENERAL MOTORS COMPANY**

10. Remove and DISCARD the equalizer beam link bolts (1), if equipped.
11. Lower the hydraulic lift table and remove the rear coil springs. Refer to **Rear Spring Replacement**.

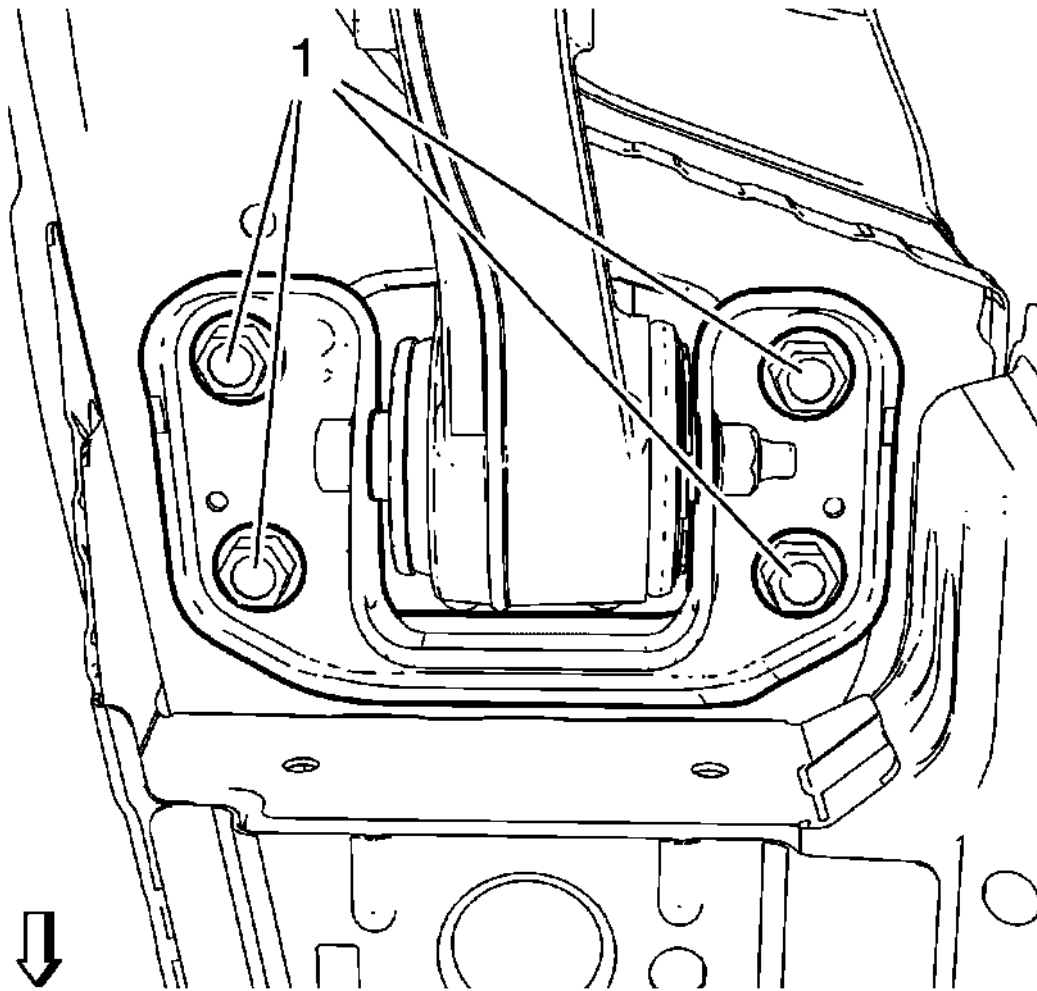


**Fig. 95: Rear Axle Bracket Bolts**

Courtesy of GENERAL MOTORS COMPANY

12. Remove and DISCARD the 8 rear axle bracket bolts (1) from the right and left rear axle brackets.

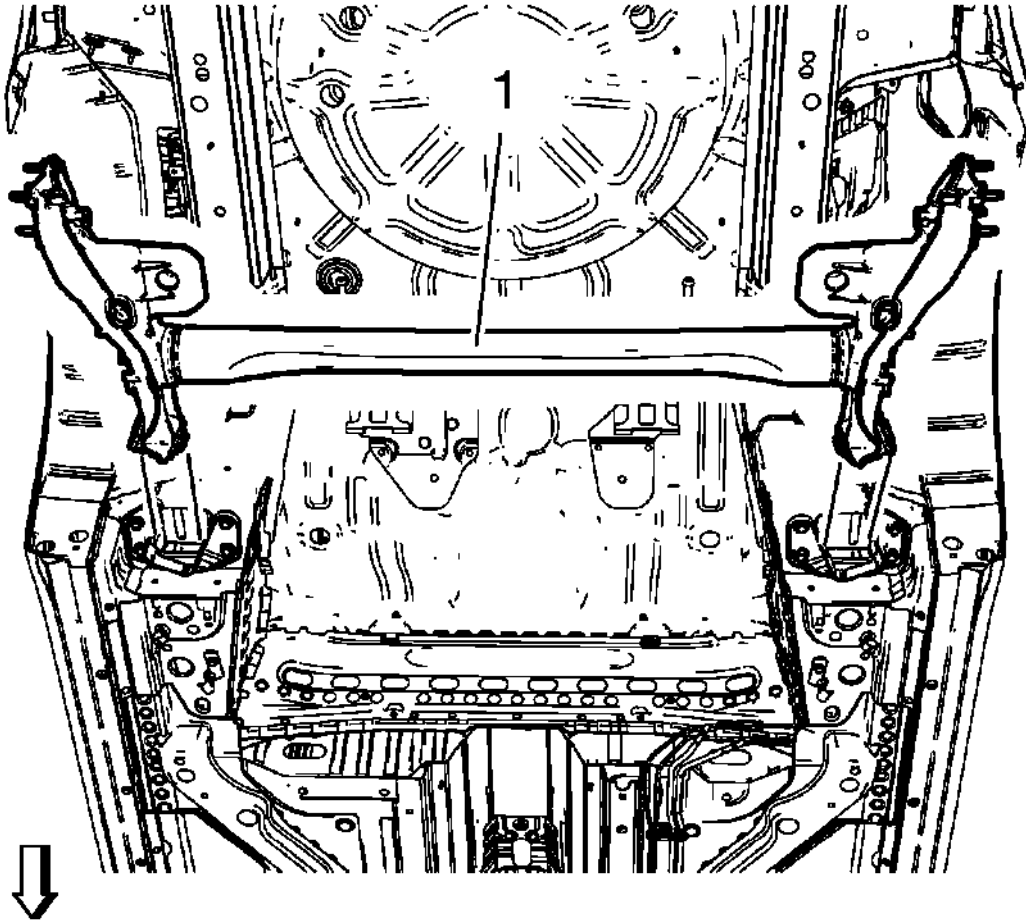


**Fig. 96: Rear Axle**

Courtesy of GENERAL MOTORS COMPANY

13. Use the hydraulic lift table to lower the rear axle (1) from the vehicle.

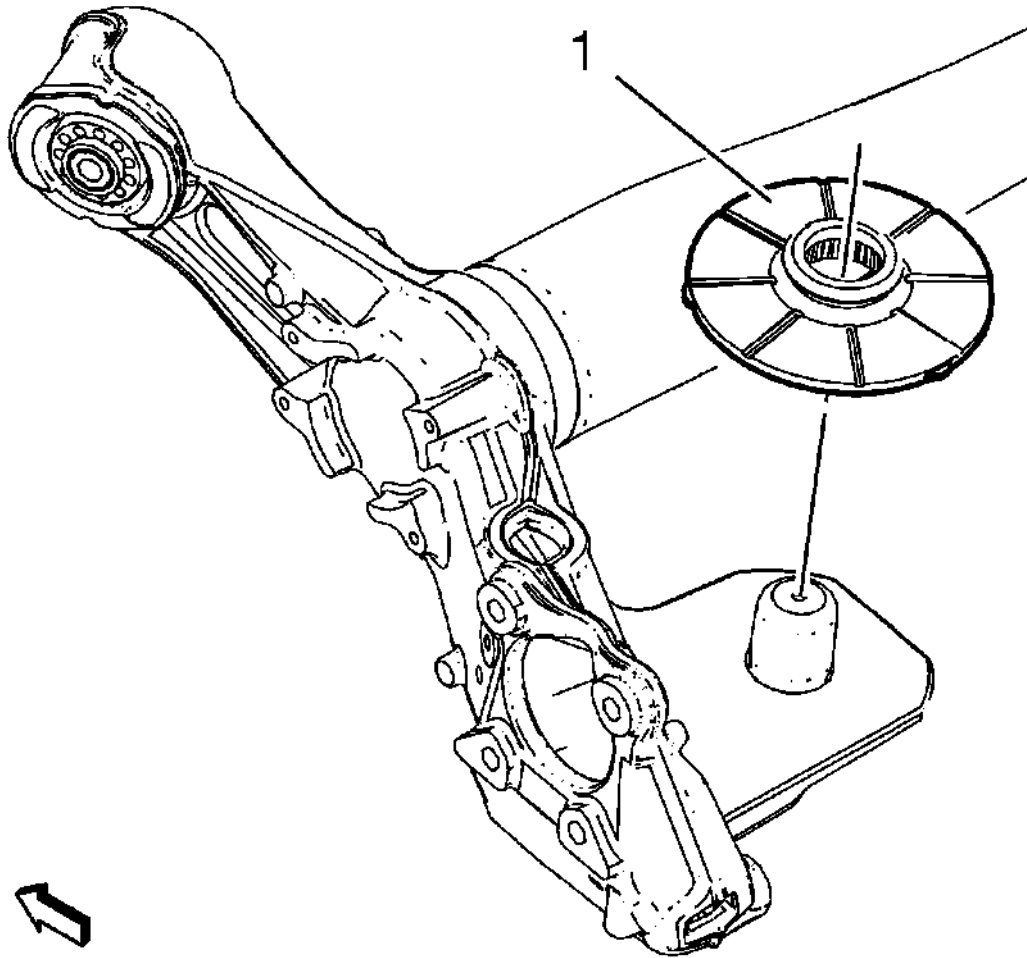


**Fig. 97: Identifying Coil Spring Lower Seat Insulators**  
Courtesy of GENERAL MOTORS COMPANY

14. Remove the rear coil spring lower seat insulators (1) from the axle.

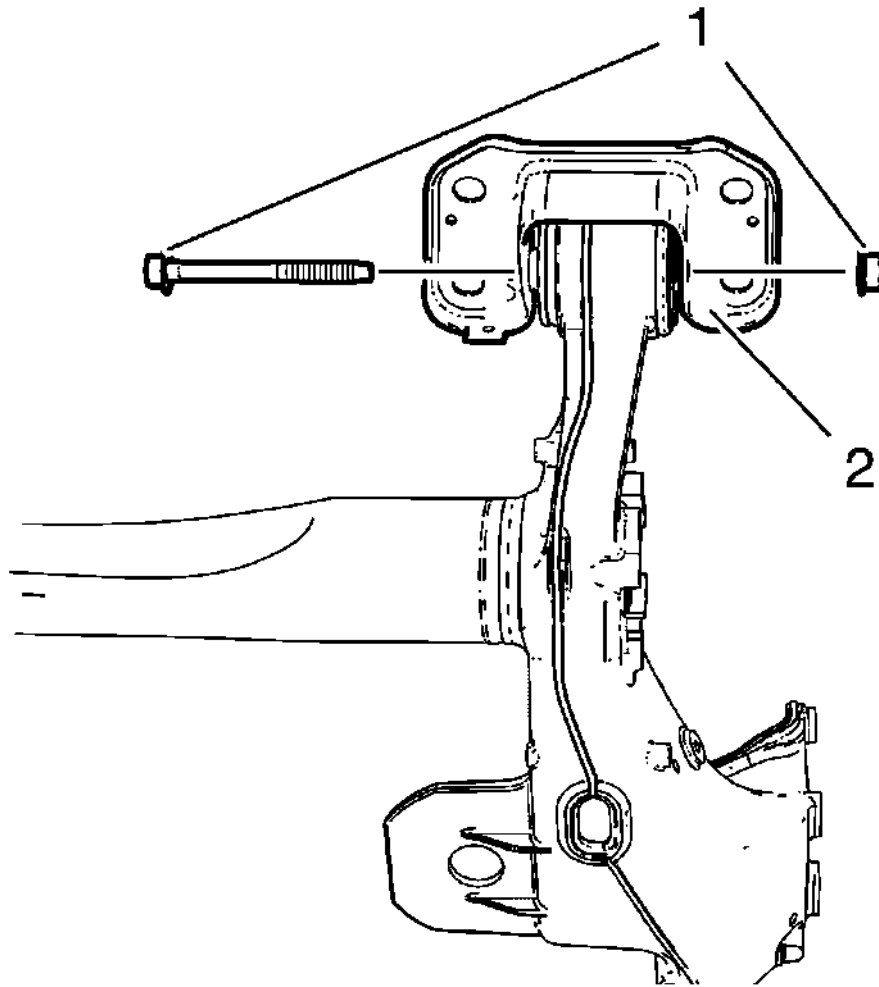


**Fig. 98: Rear Axle, Bolts And Nuts**

**Courtesy of GENERAL MOTORS COMPANY**

15. Remove and DISCARD the rear axle bushing bolts and nuts (1) from the rear axle (2).

**Installation Procedure**

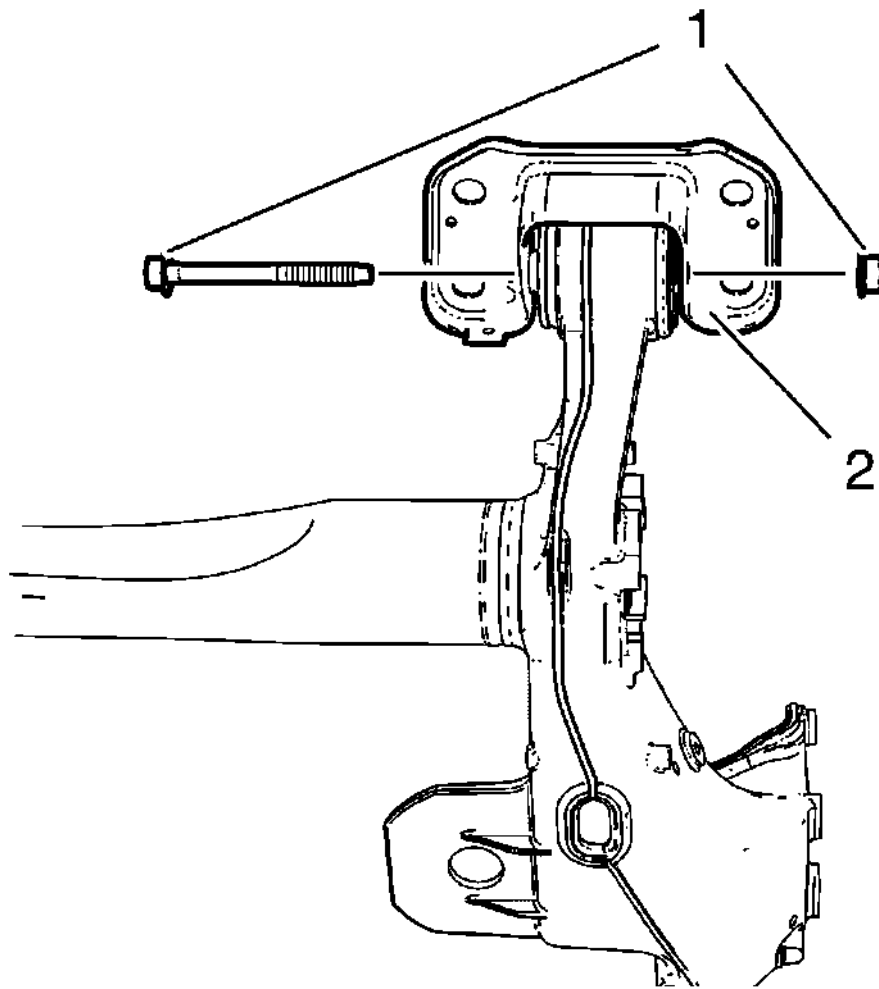


**Fig. 99: Rear Axle, Bolts And Nuts**

Courtesy of GENERAL MOTORS COMPANY

**NOTE:** The axle bushing bolts (1) and nut connection must be tightened with the axle at the correct trim height.

1. Loosely install the NEW rear axle bushing bolts and nuts (1) to the rear axle (2).

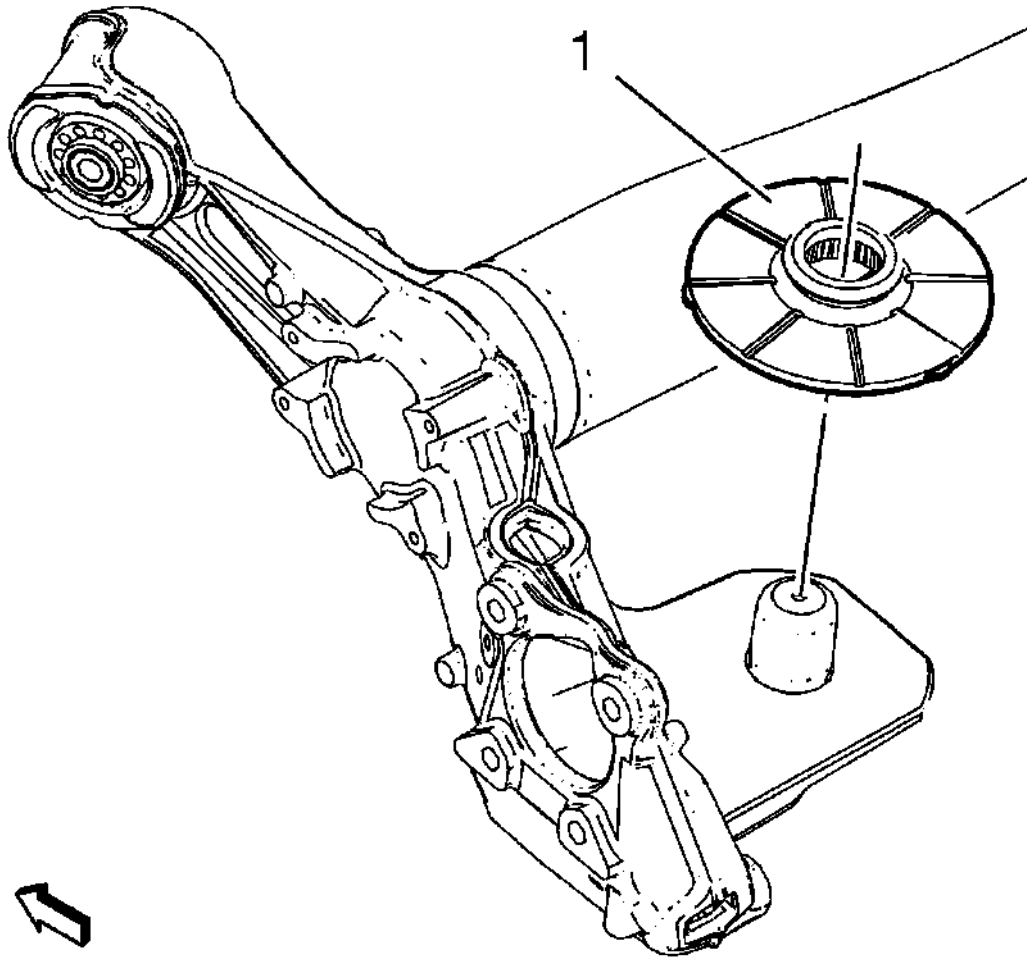


**Fig. 100: Identifying Coil Spring Lower Seat Insulators**  
Courtesy of GENERAL MOTORS COMPANY

2. Install the rear coil spring lower seat insulators (1) to the axle.

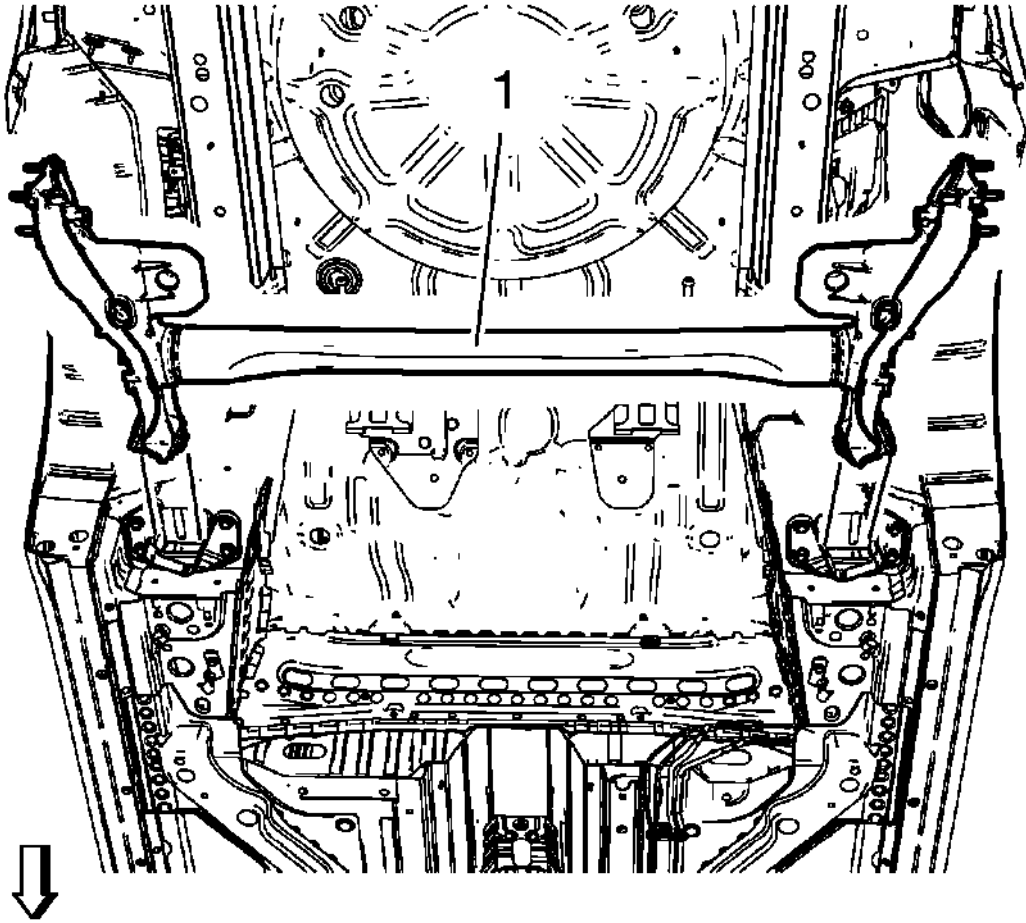


**Fig. 101: Rear Axle**

Courtesy of GENERAL MOTORS COMPANY

3. Raise the axle (1) into position.

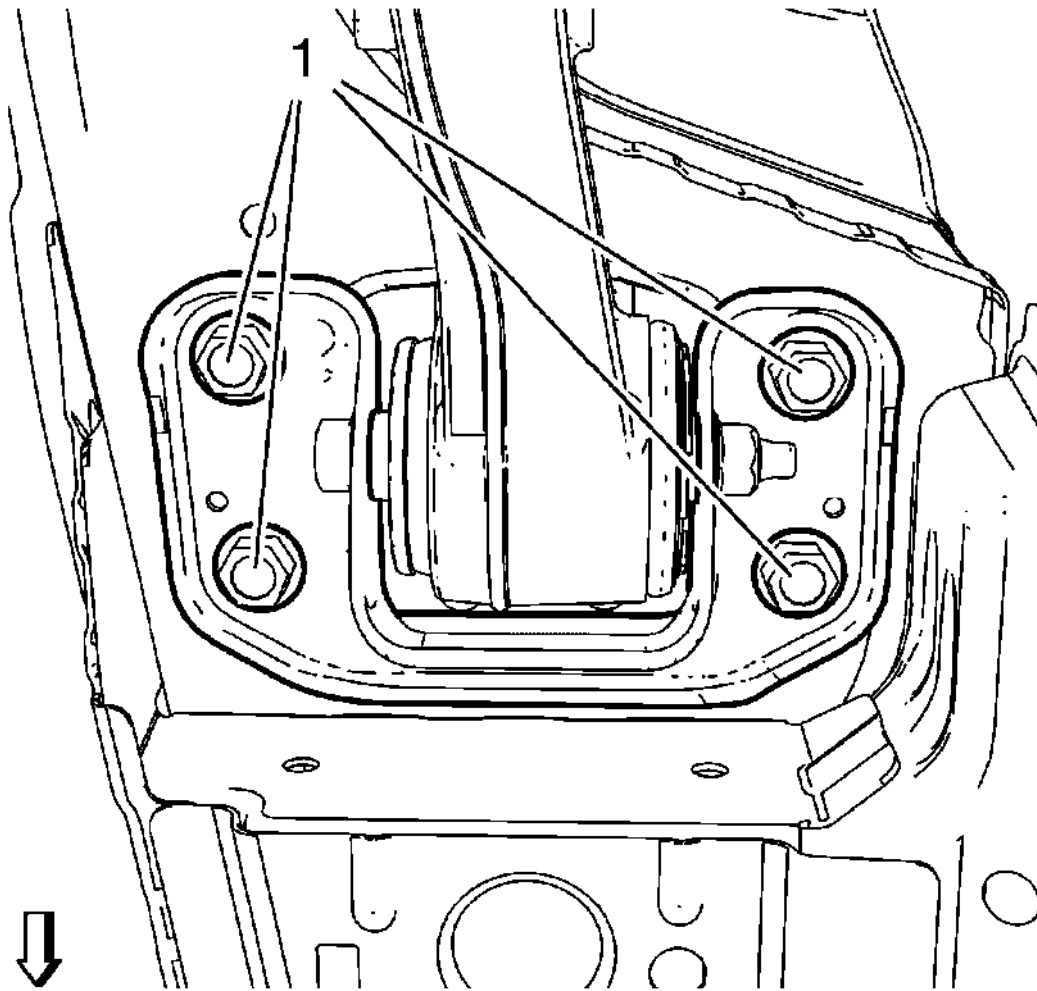


**Fig. 102: Rear Axle Bracket Bolts**

**Courtesy of GENERAL MOTORS COMPANY**

4. Loosely install the NEW axle bracket bolts (1) to the right and left rear axle brackets.
5. Apply anti-corrosion treatment to the guide pin holes in the underbody and rear axle brackets.

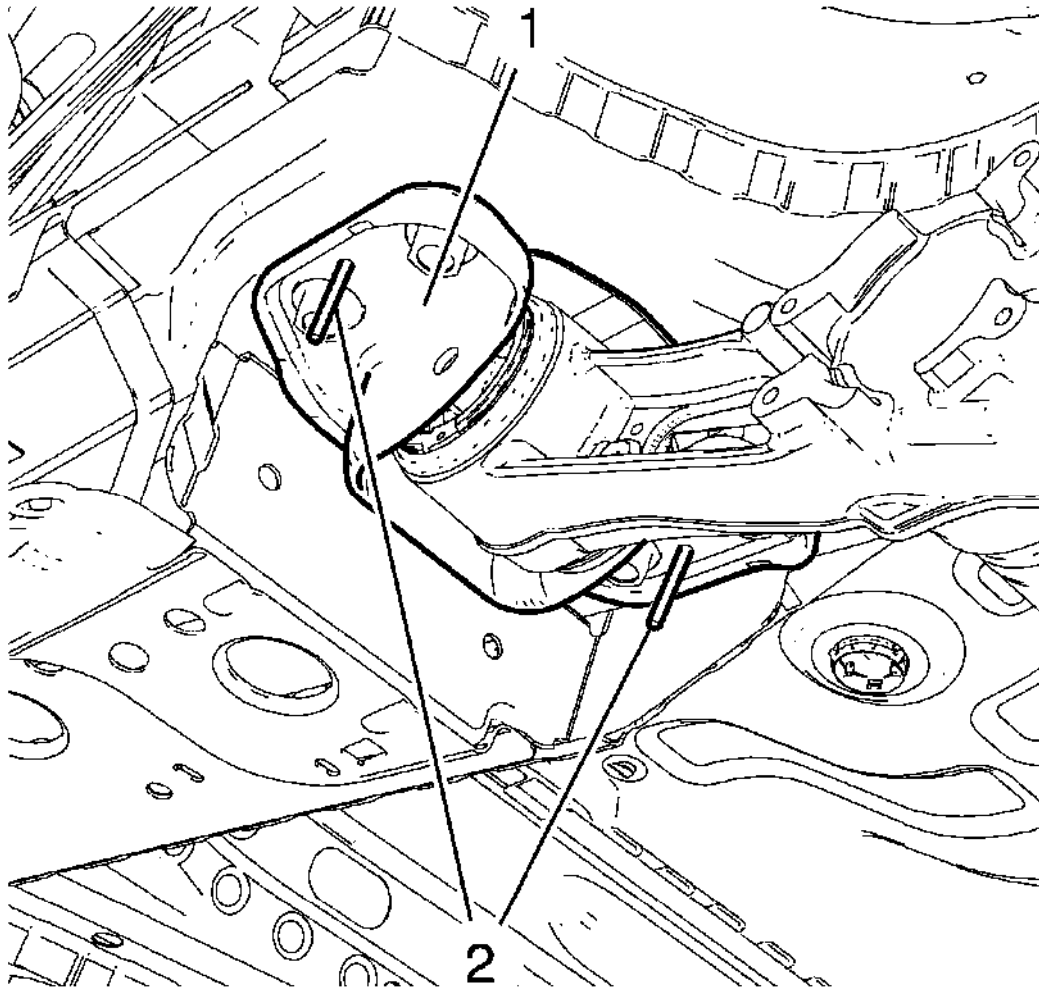


**Fig. 103: Rear Axle Bracket And Drill Bits**  
Courtesy of GENERAL MOTORS COMPANY

6. Using 6 mm (0.2 in) drill bits (2) as guide pins, align the right and left rear axle brackets to the underbody (1).

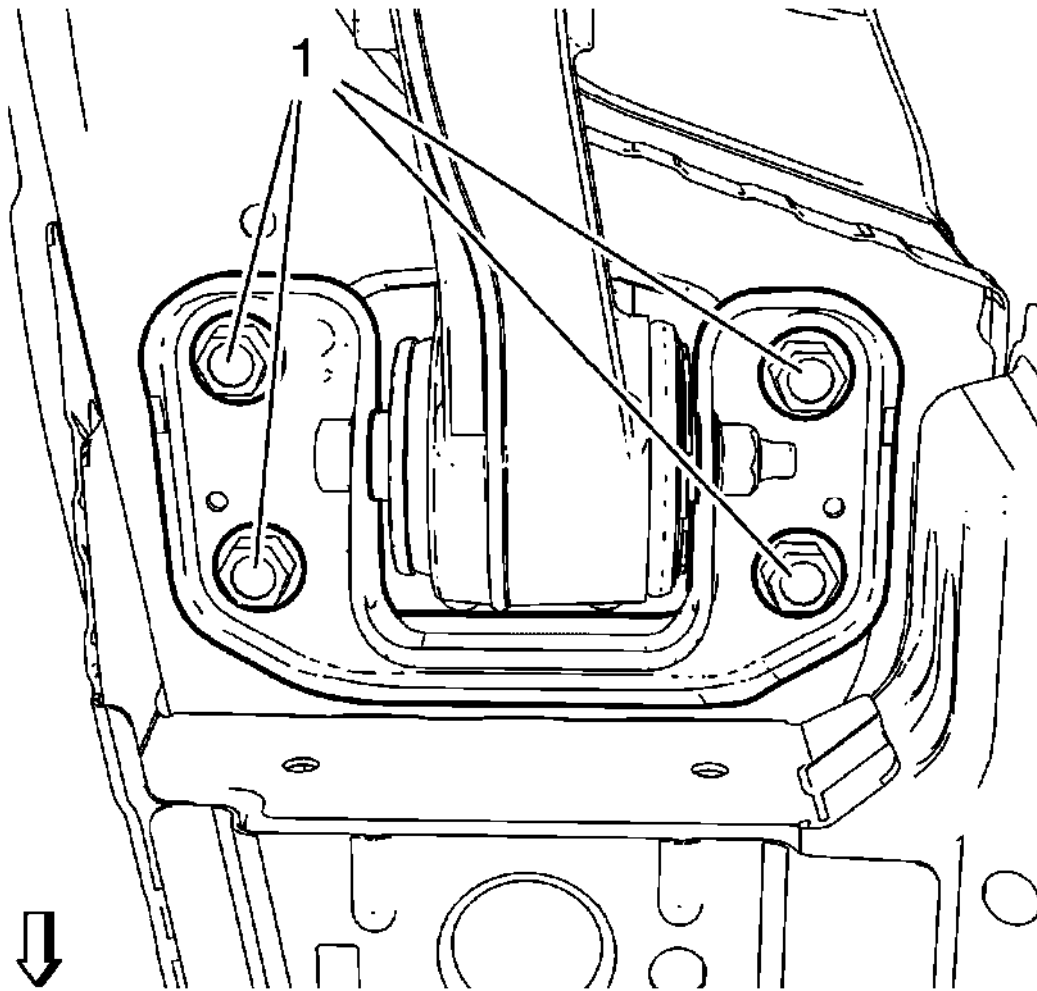


**Fig. 104: Rear Axle Bracket Bolts**

Courtesy of GENERAL MOTORS COMPANY

**CAUTION:** Refer to Fastener Caution .

7. Install the NEW axle bracket bolts (1) and tighten a first pass to 90 N.m (66 lb ft).

**WARNING:** Refer to Torque-to-Yield Fastener Warning .

8. Tighten the NEW axle bracket bolts a final pass to an additional 45 degrees, using the **EN-45059** meter.

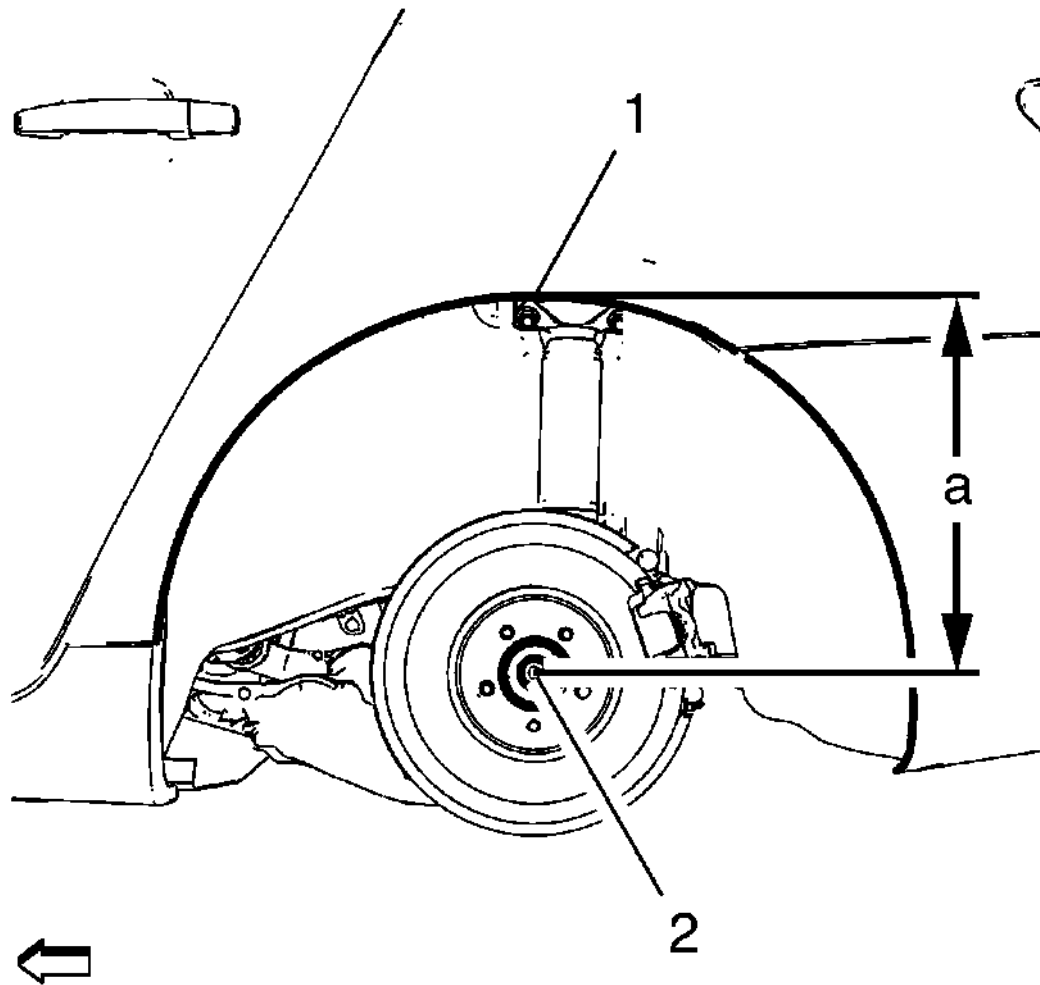


**Fig. 105: Measuring Vertical Distance Between Center Of Wheel Hub And Top Of Wheel Opening**  
Courtesy of GENERAL MOTORS COMPANY

9. Using the lift table, raise the axle to the proper trim height specification by measuring the vertical distance (a) between the center of the wheel hub (2) and top of the wheel opening (1).

### **Trim Height Specification**

Dimension (a): 385 mm (15.16 in)

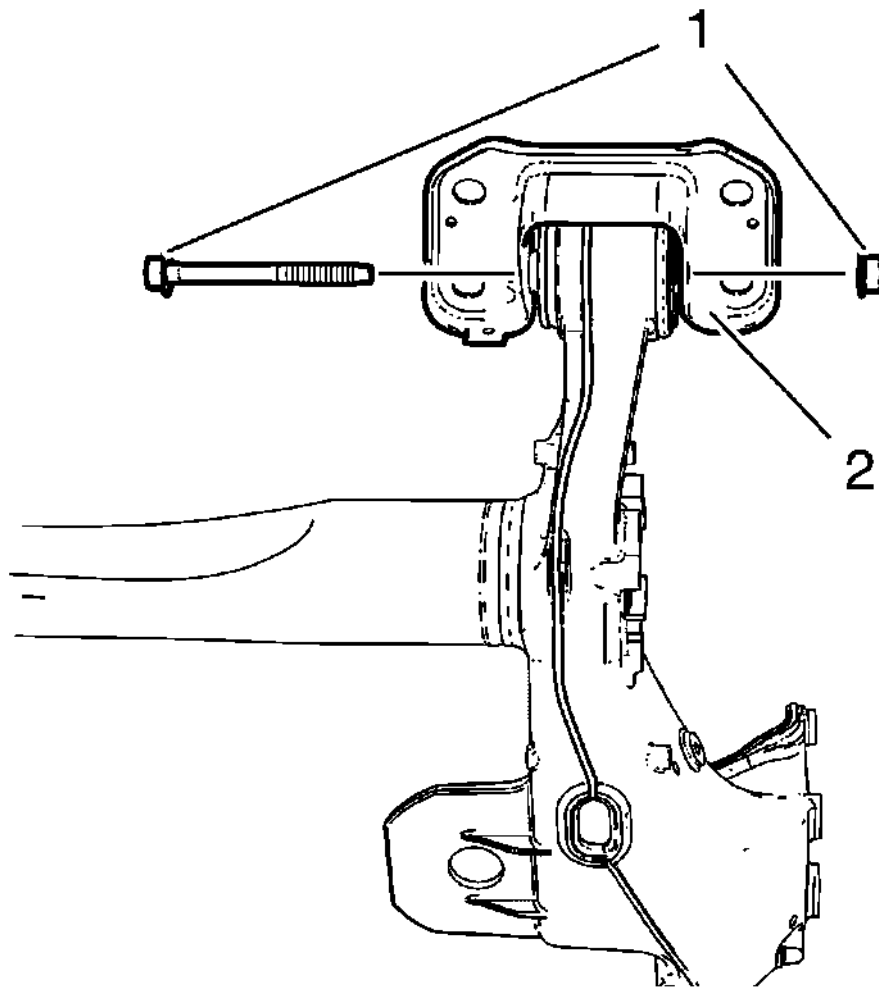


**Fig. 106: Rear Axle, Bolts And Nuts**

Courtesy of GENERAL MOTORS COMPANY

10. Install the NEW axle bushing through bolts and nuts (1) and tighten a first pass to 70 N.m (52 lb ft).

**WARNING: Refer to Torque-to-Yield Fastener Warning .**

11. Tighten the NEW axle bushing through bolts and nuts a final pass to an additional 120 degrees, using the **EN-45059** meter.
12. Install the rear coil springs. Refer to **Rear Spring Replacement**.
13. Install the lower shock absorber bolts. Refer to **Shock Absorber Replacement**.

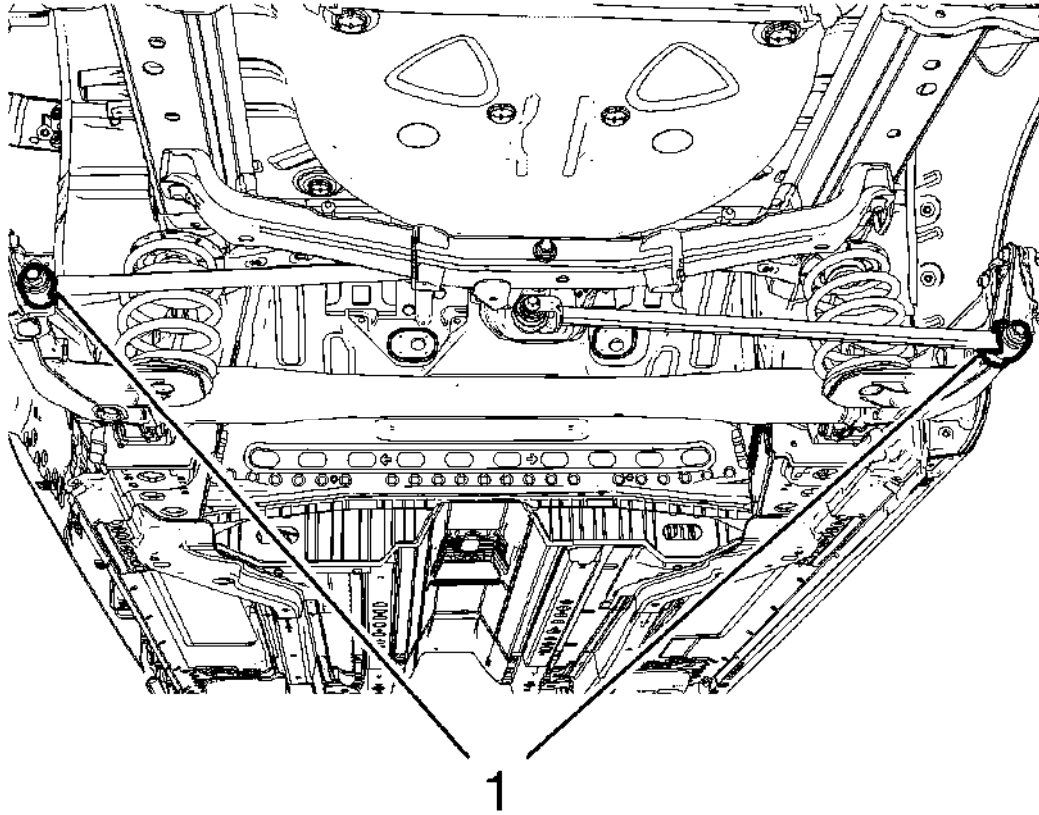


**Fig. 107: Identifying Equalizer Beam Link Bolts**  
**Courtesy of GENERAL MOTORS COMPANY**

14. Install the equalizer beam link bolts (1) and tighten to 160 N.m (118 lb ft), if equipped.
15. Remove the hydraulic lift table from the rear axle.
16. Install the wheel bearing/hub and brake assembly.

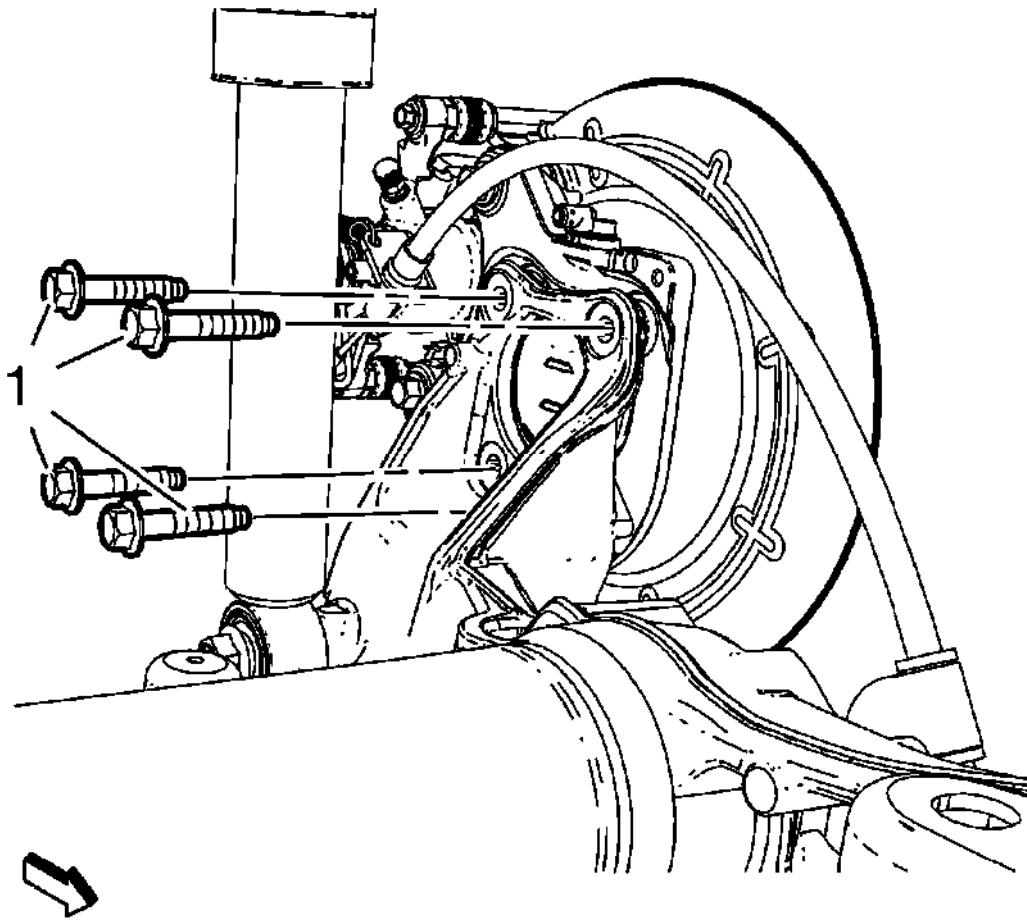


**Fig. 108: Wheel Bearing/Hub Mounting Bolts**  
Courtesy of GENERAL MOTORS COMPANY

17. Install the NEW wheel bearing/hub mounting bolts (1) and tighten to 50 N.m (37 lb ft).

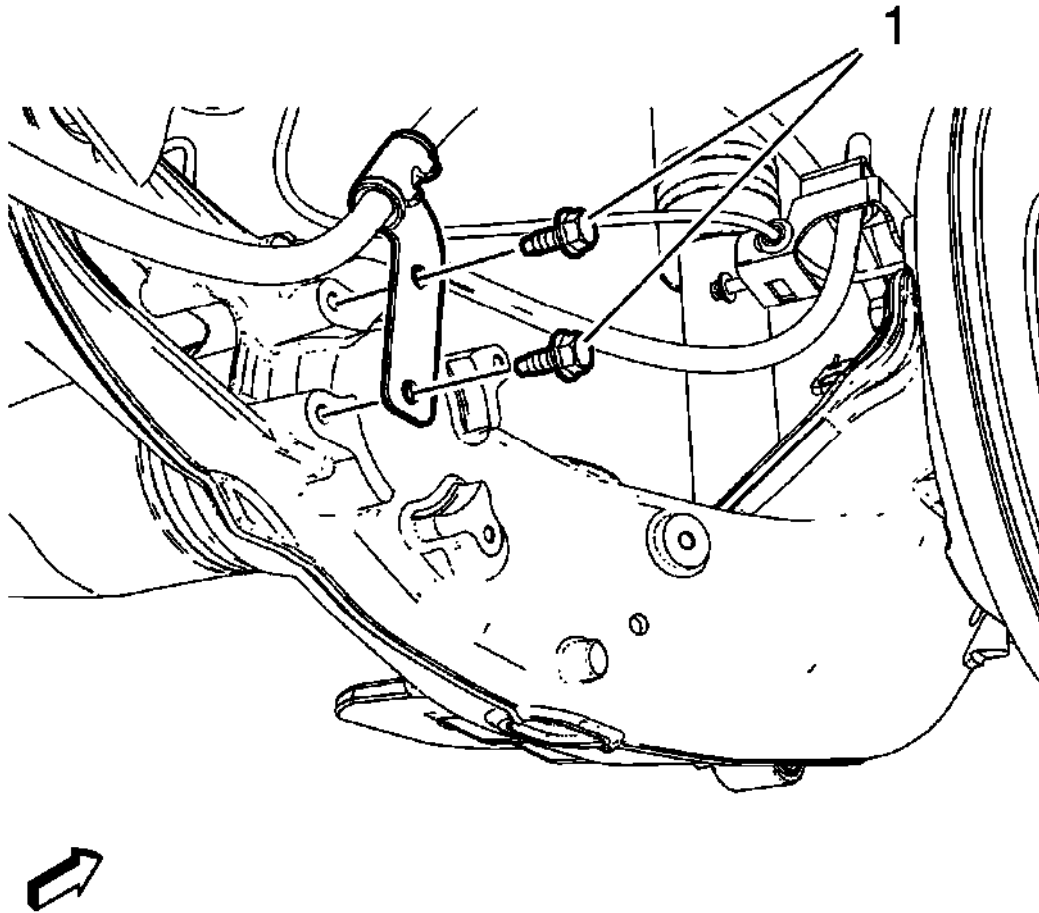


**Fig. 109: Parking Brake Cable Bracket Bolts**  
Courtesy of GENERAL MOTORS COMPANY

18. Install rear parking brake cable bracket bolts (1) at the rear axle and tighten to 10 N.m (89 lb in).

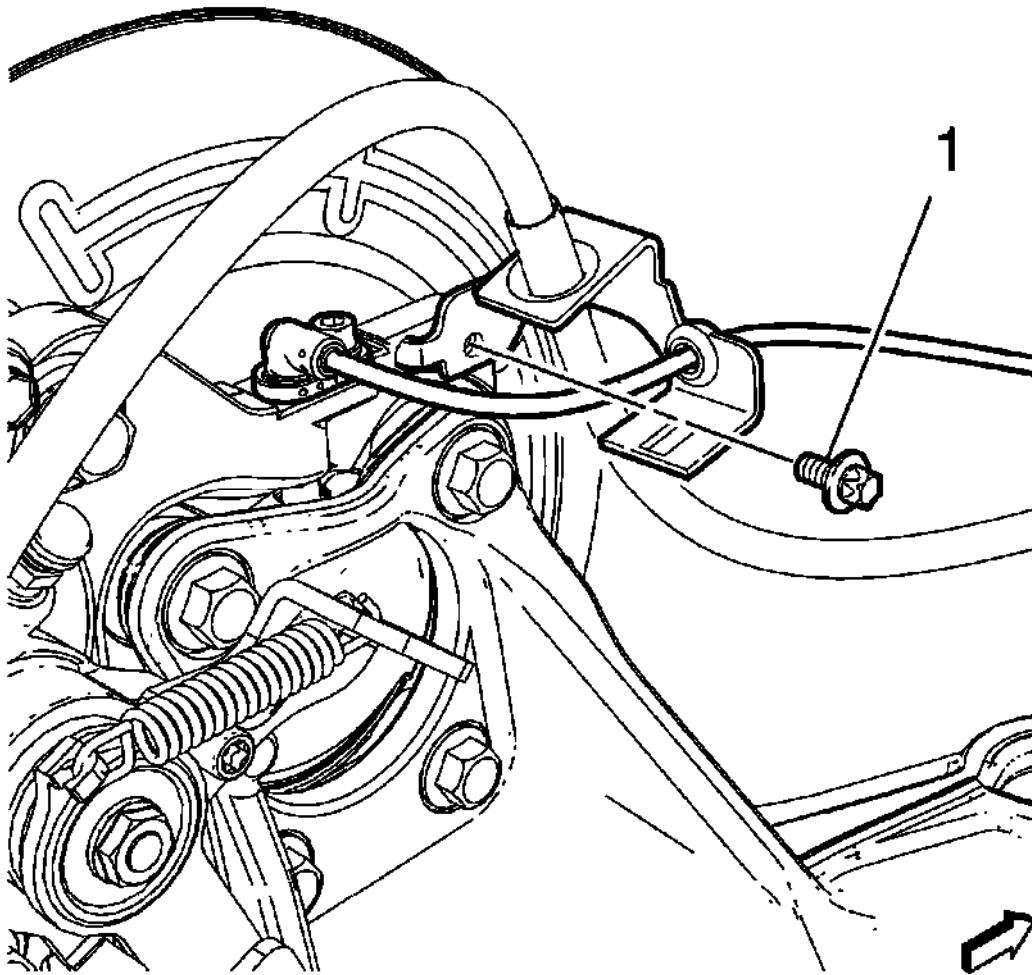
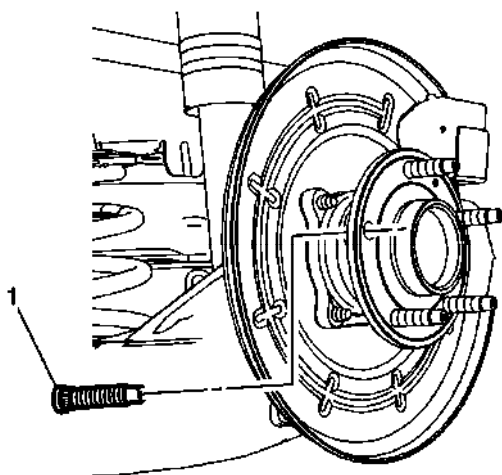


**Fig. 110: Identifying Brake Hose Bolts**  
Courtesy of GENERAL MOTORS COMPANY

19. Install both brake hose bolts (1) attaching the hose to the rear brake caliper bracket and tighten.
20. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
21. Remove the support and lower the vehicle.

## WHEEL STUD REPLACEMENT

**Fig. 111: Wheel Stud**

Courtesy of GENERAL MOTORS COMPANY

**Wheel Stud Replacement**

| Callout                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Component Name                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Preliminary Procedure</b> <ol style="list-style-type: none"><li>1. Raise and support the vehicle. Refer to <b><u>Lifting and Jacking the Vehicle</u></b> .</li><li>2. Remove the tire and wheel assembly. Refer to <b><u>Tire and Wheel Removal and Installation</u></b> .</li><li>3. Remove the rear brake rotor, if equipped or remove the brake drum, if equipped. Refer to <b><u>Rear Brake Rotor Replacement</u></b> , or <b><u>Brake Drum Replacement</u></b> .</li></ol> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>Wheel Stud (Qty: 5)</p> <p><b>Procedure</b></p> <ol style="list-style-type: none"><li>1. Rotate the wheel hub to gain enough worker area to remove the wheel stud.</li><li>2. Using the <b>CH 43631</b> remover, remove and discard the wheel stud from the wheel hub. Replace with new only.</li><li>3. When installing the wheel stud, use the proper amount of washers to allow the wheel stud to be fully seated against the wheel hub flange.</li><li>4. Use a wheel nut with the flat side of the wheel nut facing the washers to fully seat the wheel stud.</li></ol> <p><b>Special Tools</b><br/><b>CH 43631</b> Ball Joint Remover<br/>For equivalent regional tools, refer to <b><u>Special Tools</u></b>.</p> |

**DESCRIPTION AND OPERATION**

## REAR SUSPENSION DESCRIPTION AND OPERATION (COMPOUND CRANK)

This vehicle has a semi-independent twist-beam rear suspension system consisting of the following components:

- An axle with integral trailing arms
- A V shaped twisting cross beam
- Two coil springs
- Two shock absorbers

### Axle Assembly

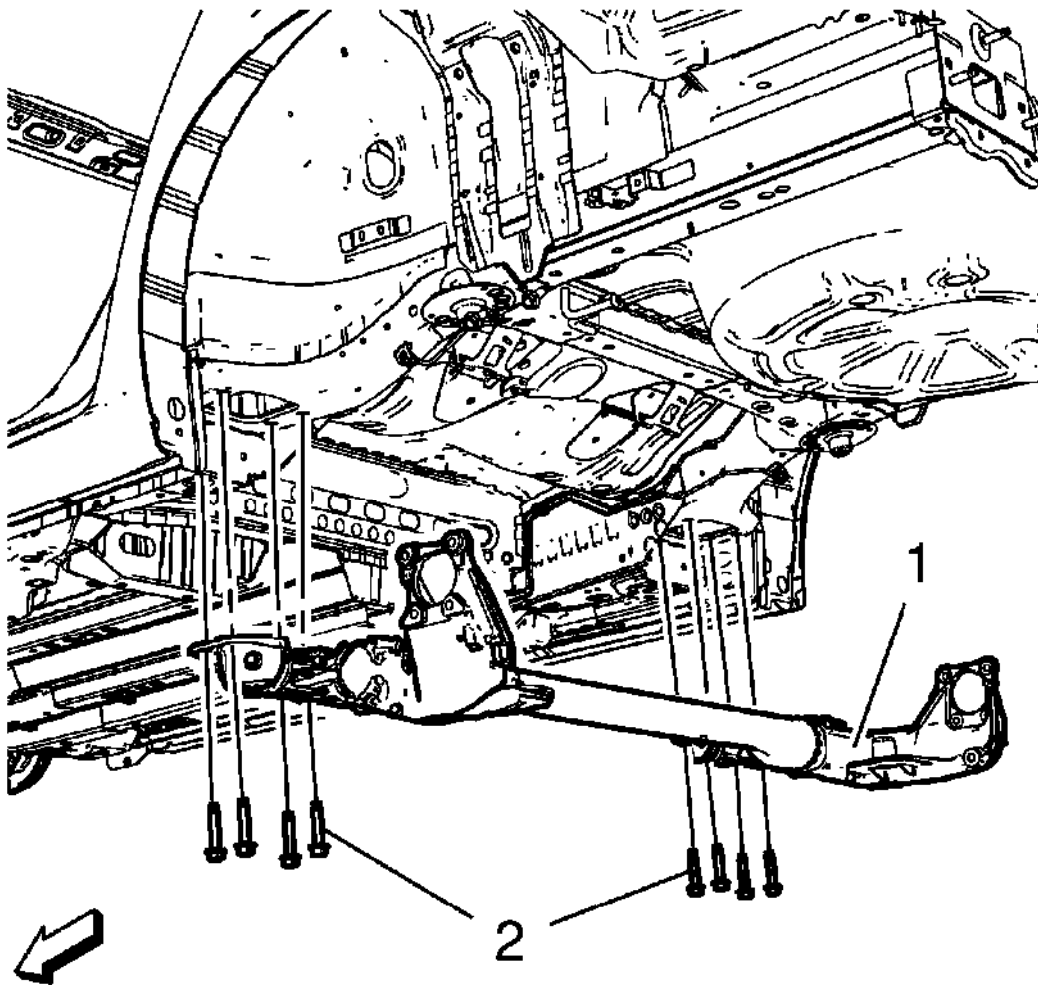


**Fig. 112: Rear Axle Assembly, Bushings And Bolts**  
Courtesy of GENERAL MOTORS COMPANY

The axle assembly (1) attaches to the underbody through a rubber bushing and bracket located at the front of each integral trailing arm. The brackets are attached to the underbody side rails with bolts (2). The axle structure

itself maintains the geometrical relationship of the wheels relative to the centerline of the body.

REAR SUSPENSION DESCRIPTION AND OPERATION (WATT LINKAGE)

This vehicle has a semi-independent twist-beam rear suspension system consisting of the following components:

- An axle with integral trailing arms
- A "V" shaped twisting cross beam
- Two coil springs
- Two shock absorbers
- Two equalizer beam links
- An equalizer center beam link
- An equalizer beam support

Axle Assembly

The axle assembly attaches to the underbody through a rubber bushing and bracket located at the front of each integral trailing arm. The brackets are bolted to the underbody side rails. The axle structure itself maintains the geometrical relationship of the wheels relative to the centerline of the body.

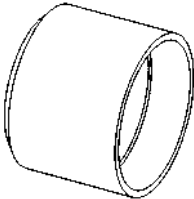
Watt Linkage

The watt linkage is used in the rear axle of the suspension as a performance improvement. This method is intended to prevent relative sideways motion between the axle and body of the vehicle. Watt's linkage approximates a vertical straight line motion more closely, and does so while locating the centre of the axle rather than toward one side of the vehicle, as more commonly used when fitting a long Panhard rod.

It consists of two horizontal equalizer beam links of equal length mounted at each side of the chassis. In between these two links, a short center link is connected. The center of this center link - the point which is constrained in a straight line motion - is mounted to the center of the equalizer beam support. All pivoting points are free to rotate in a vertical plane. Watt's linkage can also be used to prevent axle movement in the longitudinal direction of the vehicle.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

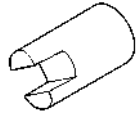
| Illustration                                                                        | Tool Number / Description         |
|-------------------------------------------------------------------------------------|-----------------------------------|
|  | CH-906-42<br>KM-906-42<br>Adapter |
|                                                                                     |                                   |

## 2013 Chevrolet Cruze

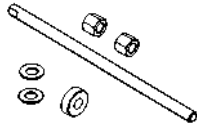
### 2013 SUSPENSION Rear Suspension - Cruze



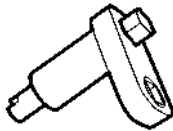
CH 43631  
J-43461  
Ball Joint Remover



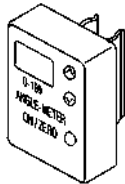
CH-49459  
Adapter



CH-50342  
Threaded Rod



CH-51095  
Wrench



EN-45059  
J-45059  
Torque Angle Sensor Kit