

2008 SUSPENSION

Front Suspension - LaCrosse

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	Specification	
	Metric	English
¹ Front Lower Control Arm Ball Stud to Steering Knuckle Nut	20 N.m + 120 degrees	15 lb ft + 120 degrees
Front Lower Control Arm Mounting Nuts	125 N.m	92 lb ft
Front Lower Control Ball Stud Nuts to Control Arm	68 N.m	50 lb ft
Front Stabilizer Shaft Bracket Bolt	42 N.m	31 lb ft
Front Stabilizer Shaft Link Nut	23 N.m	17 lb ft
Front Suspension Strut Shaft Nut	75 N.m	55 lb ft
Front Suspension Strut Upper Mounting Nuts	33 N.m	24 lb ft
Front Suspension Strut to Steering Knuckle Nuts	120 N.m	89 lb ft
Wheel Bearing/Hub Bolts	130 N.m	96 lb ft
¹ Tighten the nut in order to align the cotter pin hole with the front lower control arm ball stud. Do NOT loosen the nut in order to align the cotter pin hole.		

REPAIR INSTRUCTIONS

STABILIZER SHAFT REPLACEMENT

Removal Procedure

CAUTION: Failure to disconnect intermediate shaft from rack and pinion stub shaft can result in damage to steering gear and/or intermediate shaft. This damage can cause loss of steering control which could result in personal injury.

1. Raise and suitably support the vehicle. Refer to Lifting and Jacking the Vehicle .
2. Remove the left tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
3. Remove the pinch bolt from the lower intermediate steering shaft. Refer to Intermediate Steering Shaft Replacement .

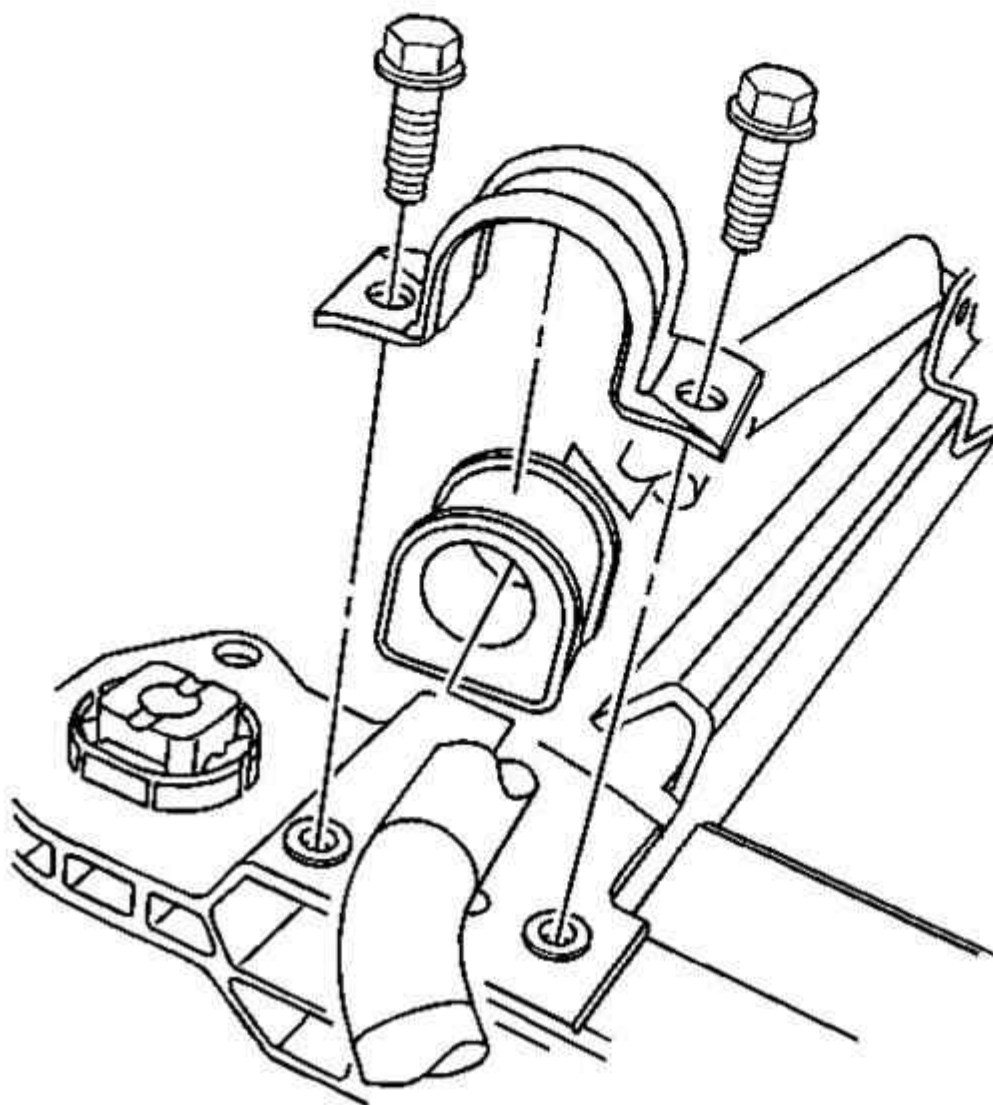


Fig. 1: Identifying Left & Right Side Stabilizer Shaft Insulator Clamp Bolts
Courtesy of GENERAL MOTORS CORP.

4. Loosen all the insulator clamp bolts from the frame.
5. Place a jackstand under the center of the powertrain frame rear crossmember.
6. Remove the 2 rear frame to body bolts.
7. Lower the rear of the frame enough to gain access to the stabilizer shaft.
8. Remove the insulator clamp bolts from the frame.

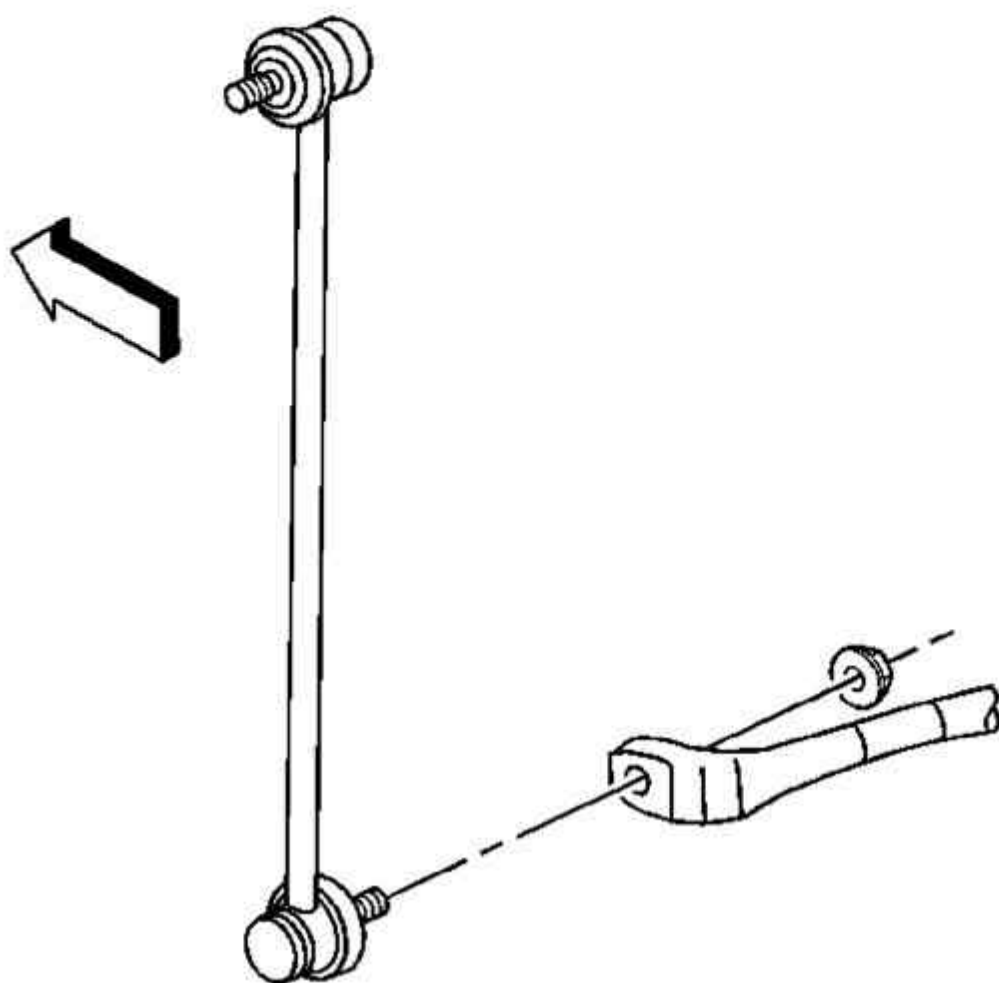


Fig. 2: View Of Stabilizer Shaft Links
Courtesy of GENERAL MOTORS CORP.

9. Disconnect the stabilizer shaft links from the stabilizer shaft.
10. Remove the stabilizer shaft from the left side of the vehicle.

Installation Procedure

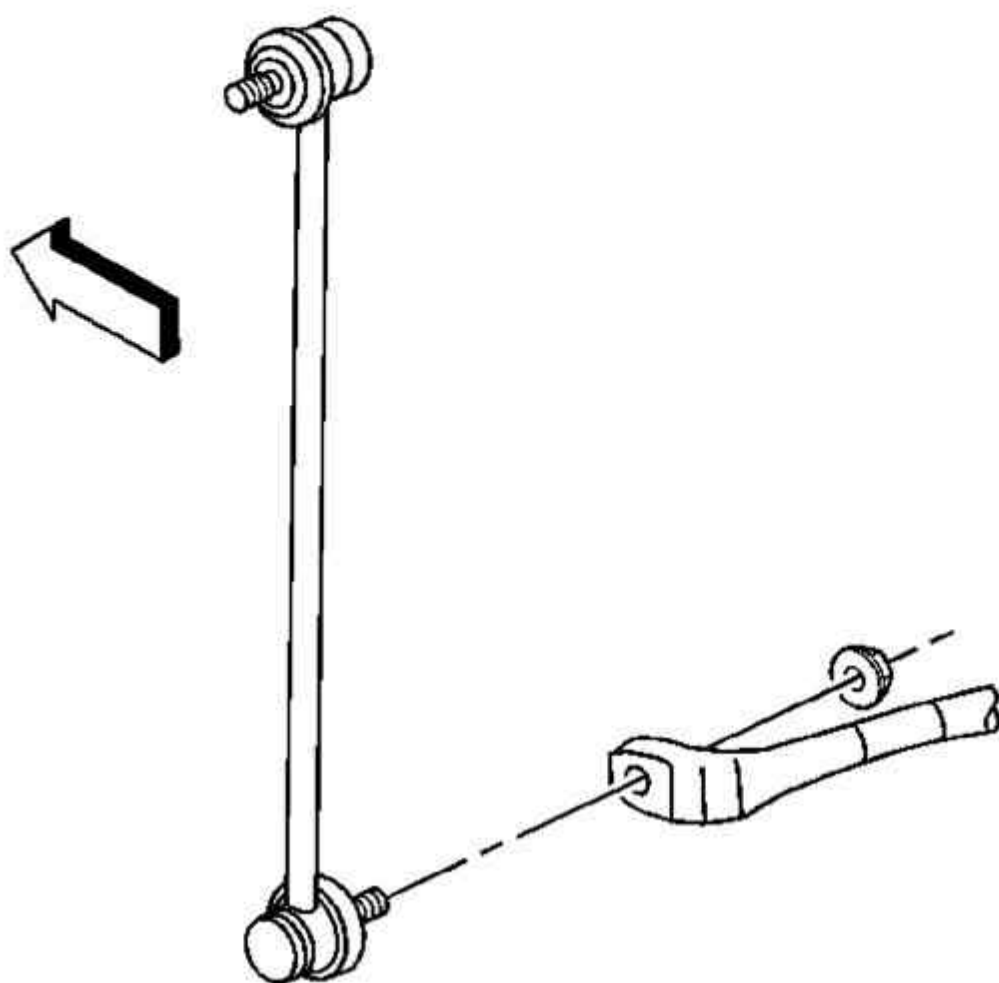


Fig. 3: View Of Stabilizer Shaft Links
Courtesy of GENERAL MOTORS CORP.

1. Loosely install the stabilizer shaft to the vehicle.
2. Connect the stabilizer shaft links to the stabilizer shaft. Do not tighten at this time.

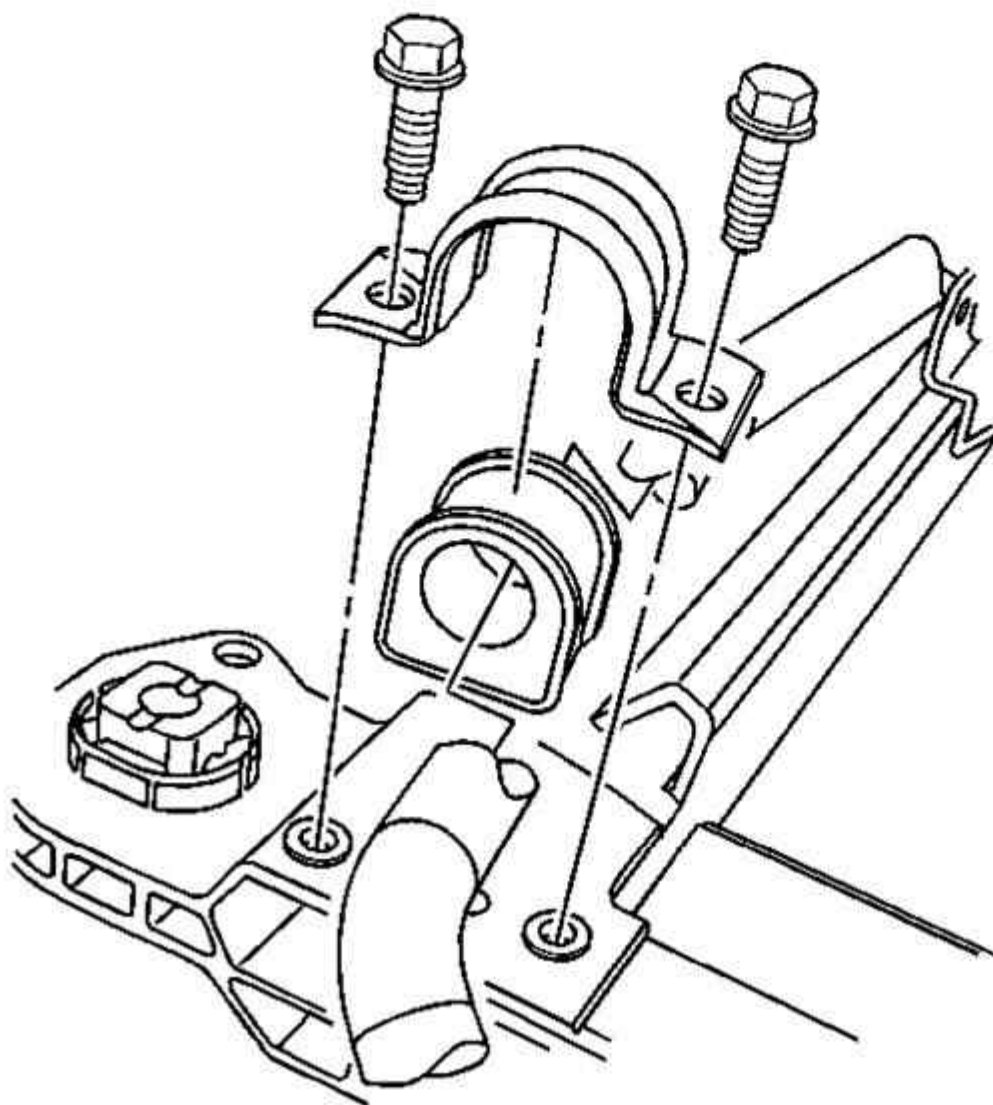


Fig. 4: Identifying Left & Right Side Stabilizer Shaft Insulator Clamp Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

3. Install the insulator clamps and bolts to the frame.

Tighten: Tighten the stabilizer shaft clamp bolts to 42 N.m (31 lb ft).

4. Raise the frame into position while guiding the steering shaft onto the steering gear.
5. Install the rear powertrain frame bolts.

Tighten: Tighten the bolts to 160 N.m (118 lb ft).

6. Remove the jackstand.
7. Install the pinch bolt to the steering shaft and tighten. Refer to Intermediate Steering Shaft Replacement .
8. Tighten the stabilizer link nuts.

Tighten: Tighten the stabilizer shaft link nut to 60 N.m (44 lb ft).

9. Install the left tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation**.
10. Lower the vehicle.

STABILIZER SHAFT LINK REPLACEMENT

Removal Procedure

1. Raise the vehicle 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**.

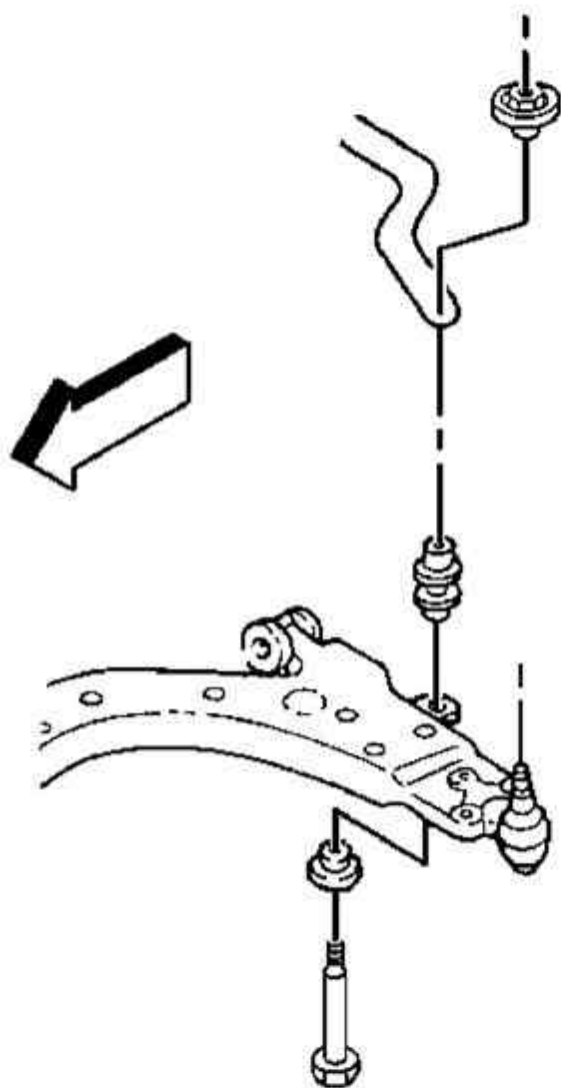


Fig. 5: View Of Stabilizer Shaft Link
Courtesy of GENERAL MOTORS CORP.

3. Remove the stabilizer shaft link bolt and nut.
4. Remove the stabilizer shaft link from the vehicle.

Installation Procedure

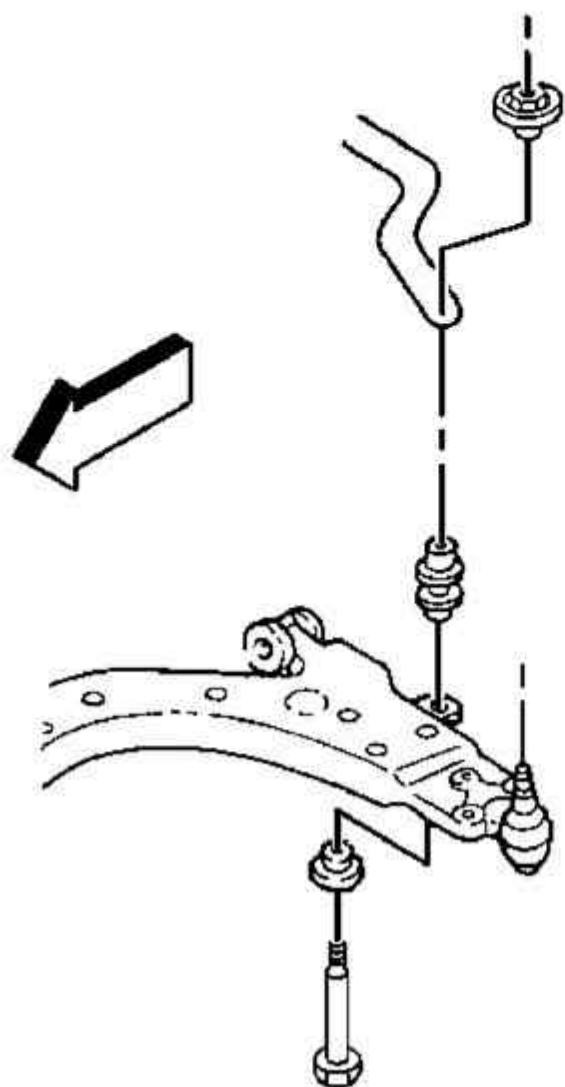


Fig. 6: View Of Stabilizer Shaft Link
Courtesy of GENERAL MOTORS CORP.

1. Install the stabilizer link into the vehicle.

NOTE: Refer to Fastener Notice .

2. Install the stabilizer shaft link bolt and nut.

Tighten: Tighten the stabilizer shaft link nut to 23 N.m (17 lb ft).

3. Install the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
4. Lower the vehicle.

STABILIZER SHAFT INSULATOR REPLACEMENT

Removal Procedure

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

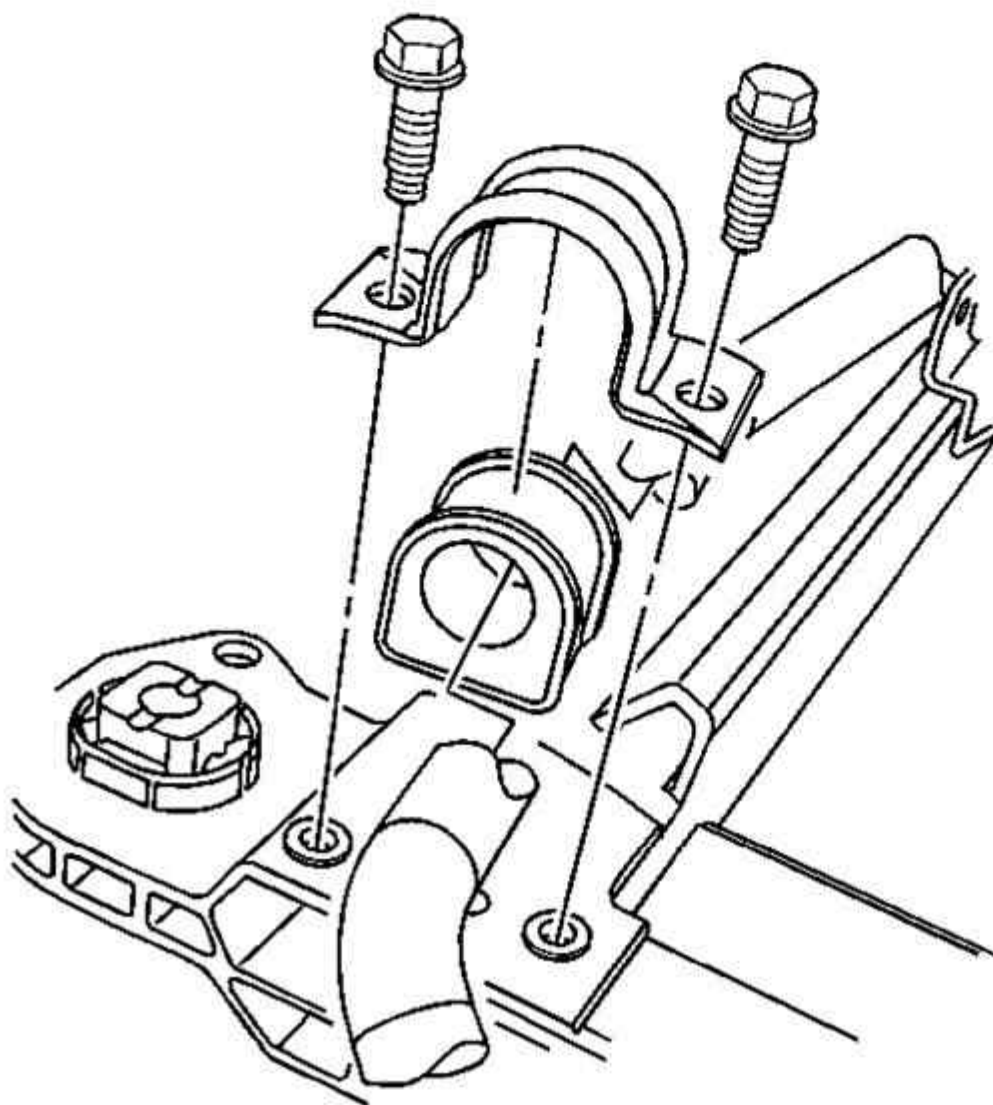


Fig. 7: Identifying Left & Right Side Stabilizer Shaft Insulator Clamp Bolts
Courtesy of GENERAL MOTORS CORP.

2. Remove the left and right side stabilizer shaft insulator clamp bolts.
3. Remove the left and right side stabilizer shaft insulator clamp.

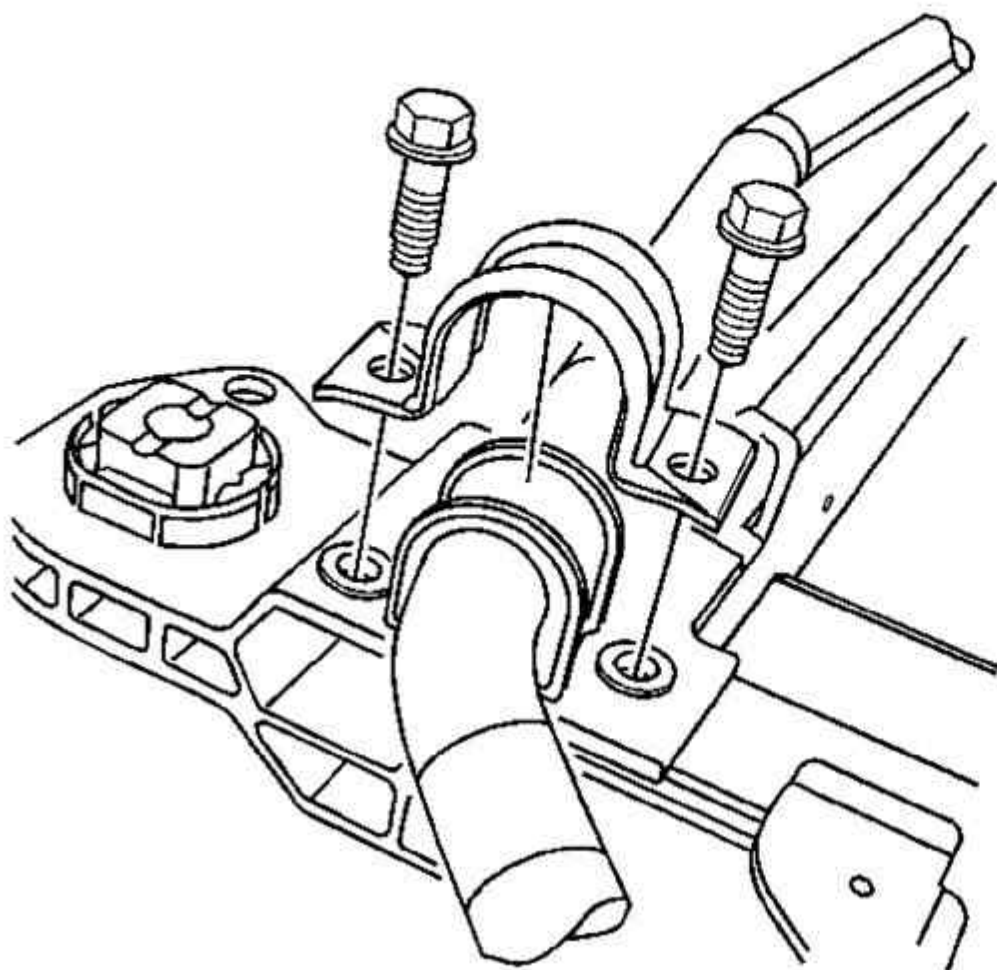


Fig. 8: View Of Left & Right Side Stabilizer Shaft Insulators
Courtesy of GENERAL MOTORS CORP.

4. Remove the left and right side stabilizer shaft insulators from the stabilizer shaft.

Installation Procedure

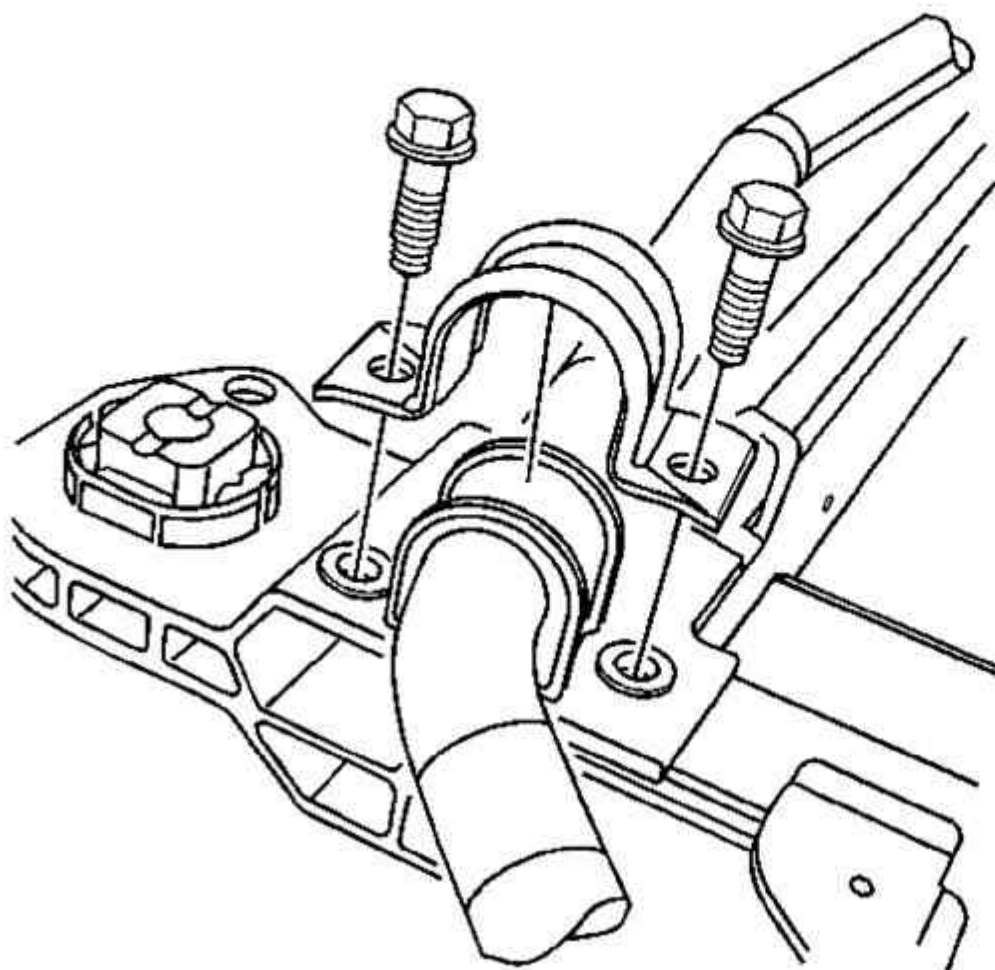


Fig. 9: View Of Left & Right Side Stabilizer Shaft Insulators
Courtesy of GENERAL MOTORS CORP.

1. Install the left and right side stabilizer shaft insulators to the stabilizer shaft.

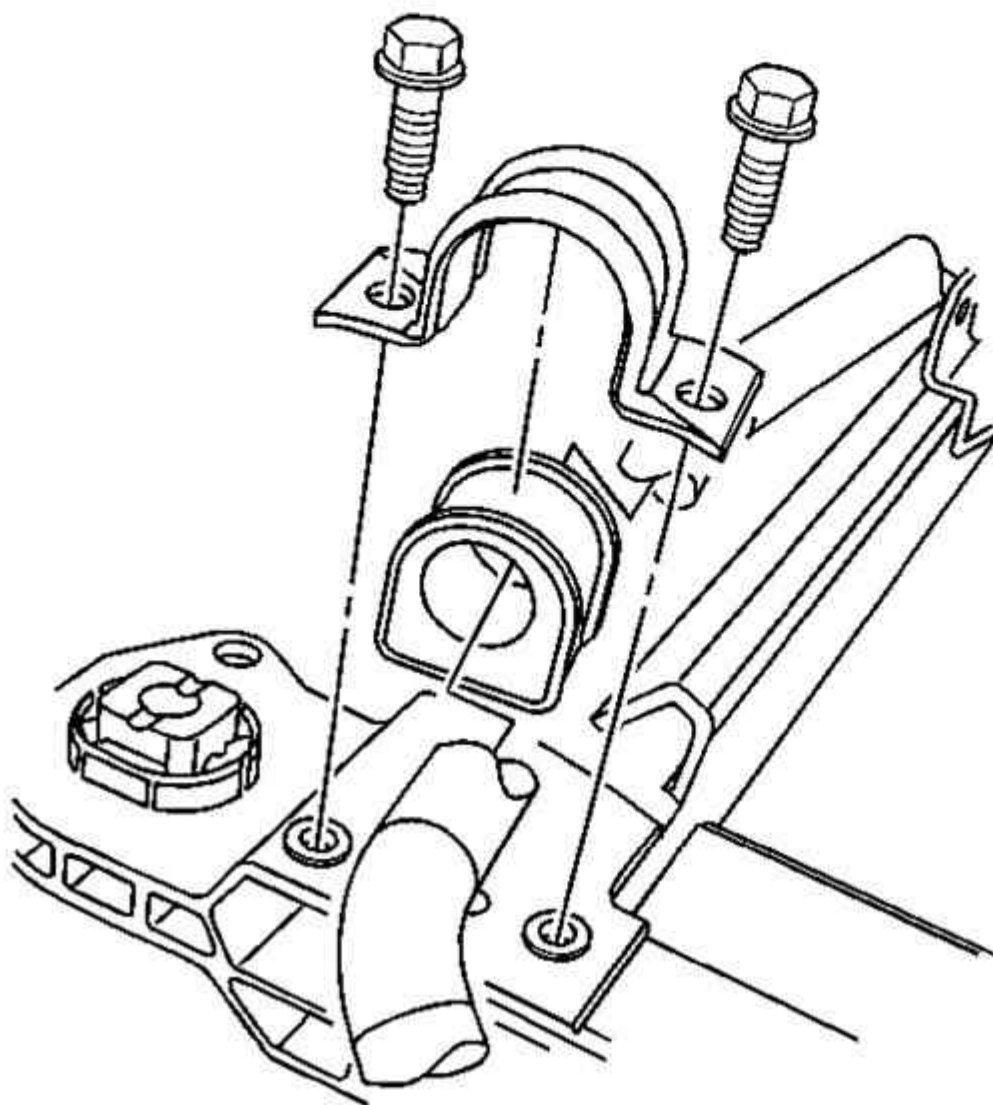


Fig. 10: Identifying Left & Right Side Stabilizer Shaft Insulator Clamp Bolts
Courtesy of GENERAL MOTORS CORP.

2. Install the left and right side stabilizer shaft insulator clamps.

NOTE: Refer to Fastener Notice .

3. Install the left and right side stabilizer shaft insulator clamp bolts.

Tighten: Tighten the bolts to 42 N.m (31 lb ft).

4. Lower the vehicle.

LOWER CONTROL ARM BALL JOINT REPLACEMENT

Tools Required

J 41820 Ball Joint/Stud Separator. See Special Tools.

Removal Procedure

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

2. Remove the tire and wheel. Refer to **Tire and Wheel Removal and Installation**.
3. Drill a pilot hole through the rivets.
4. Drill the remainder of the rivets.
5. Use a hammer and a chisel in order to remove the remainder of the rivet heads.
6. Remove the cotter pin from the ball stud.
7. Loosen the ball stud nut.

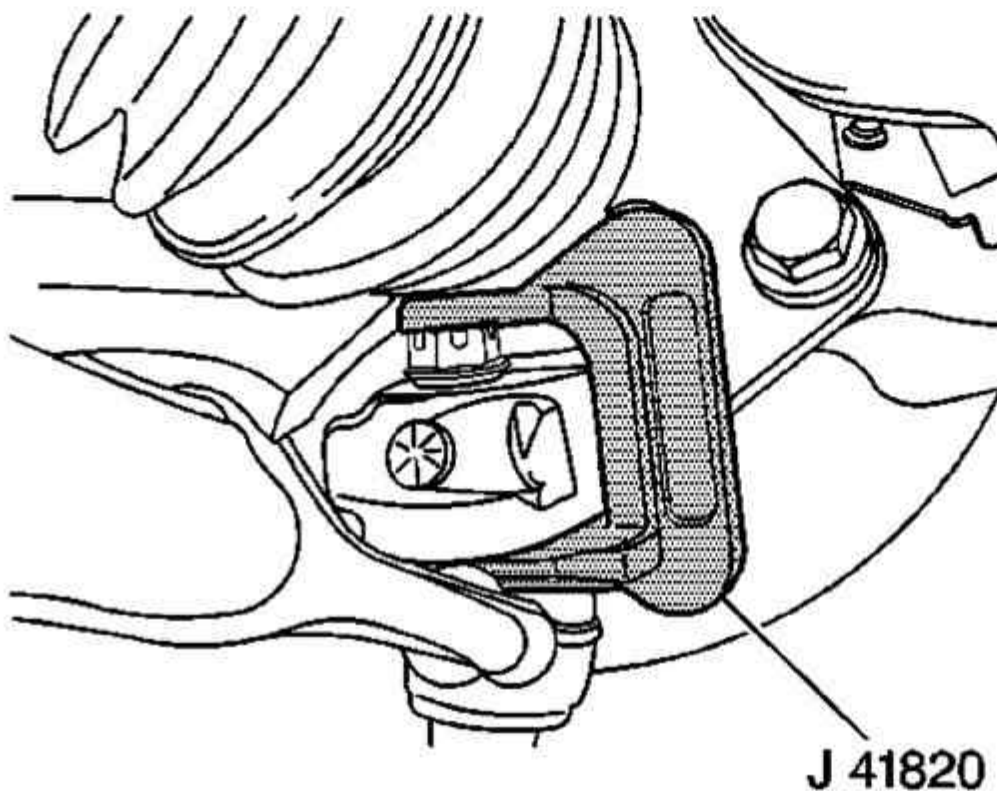


Fig. 11: Separating Ball Stud From Steering Knuckle
Courtesy of GENERAL MOTORS CORP.

8. Install the **J 41820** over the ball stud and lower control arm. See **Special Tools**.
9. Rotate the ball stud nut counterclockwise in order to separate the ball stud from the steering knuckle.
10. Remove the **J 41820**. See **Special Tools**.
11. Remove the ball stud nut.

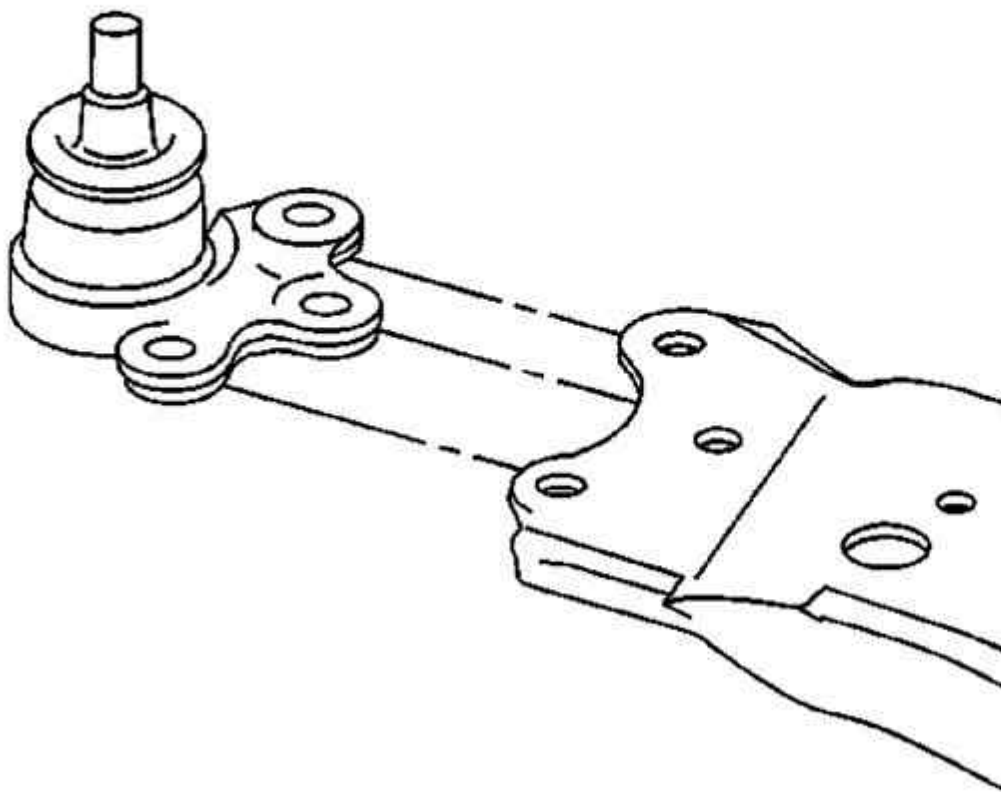


Fig. 12: View Of Lower Ball Joint
Courtesy of GENERAL MOTORS CORP.

12. Remove the ball stud from the lower control arm.

Installation Procedure

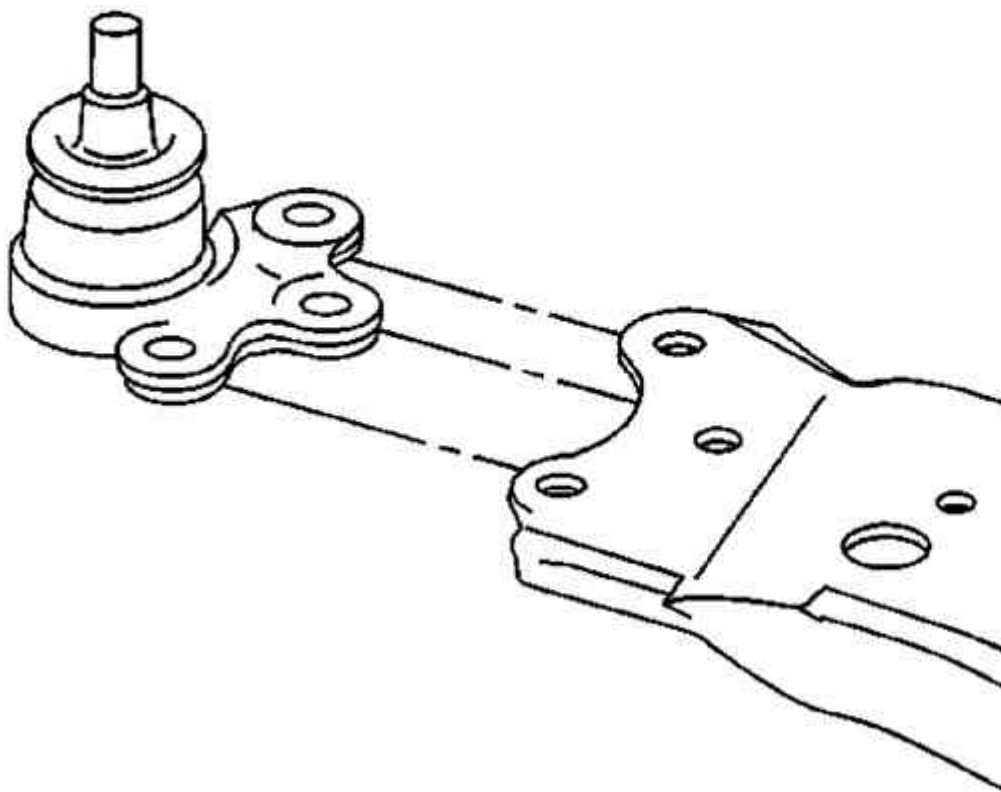
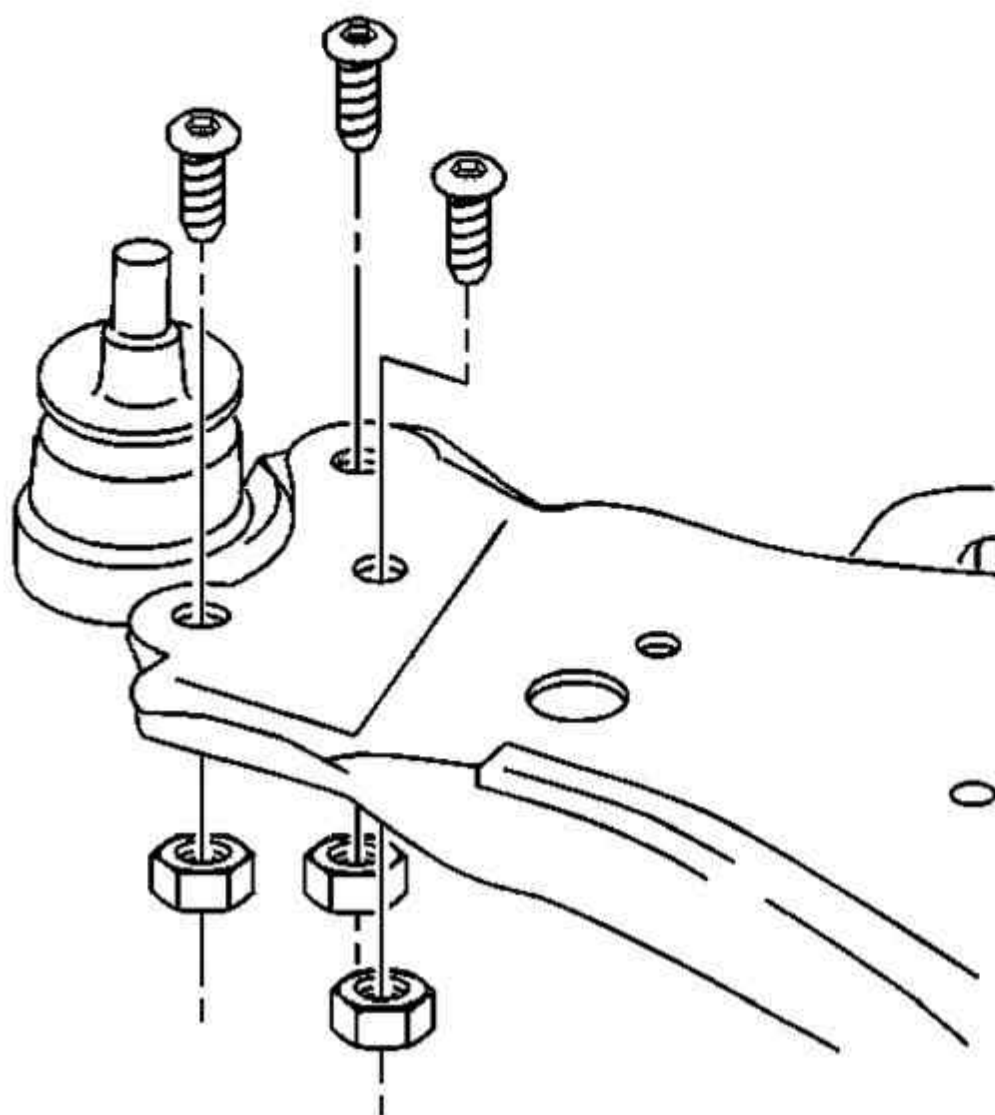


Fig. 13: View Of Lower Ball Joint
Courtesy of GENERAL MOTORS CORP.

1. Install the ball stud to the lower control arm.



- NOTE:** Refer to Fastener Notice .

- Tighten:** Tighten the NEW ball stud nuts to 68 N.m (50 lb ft).

- Tighten:** Tighten the nut to 20 N.m (15 lb ft) plus an additional 120 degrees.

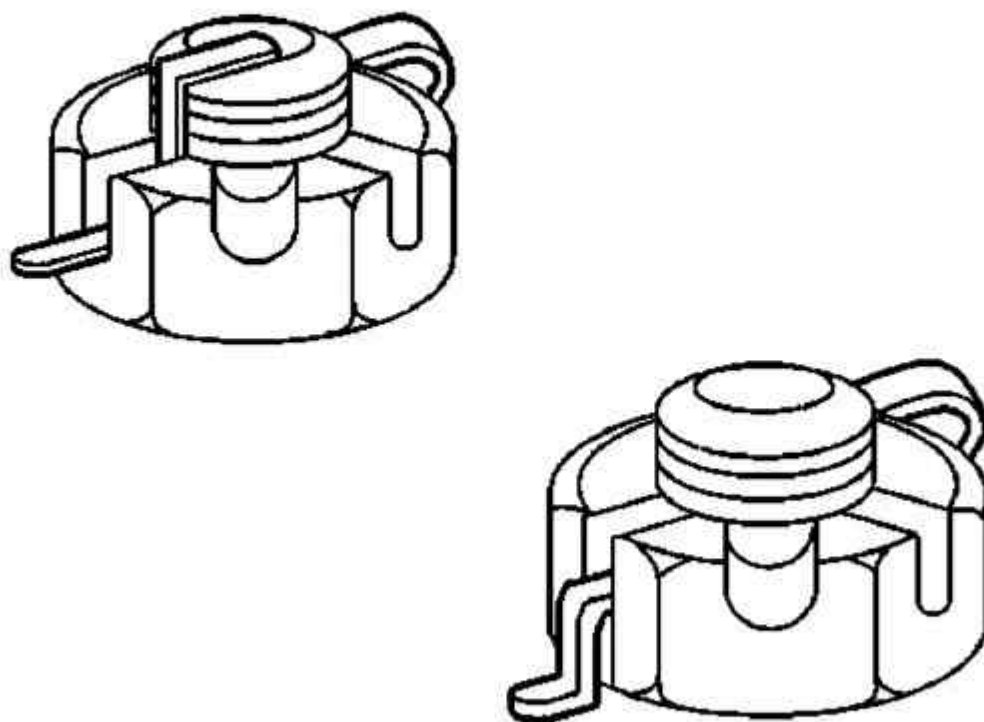


Fig. 15: Securing Cotter Pin In Ball Joint Castle Nut
Courtesy of GENERAL MOTORS CORP.

6. Install a new cotter pin and bend the ends.
7. Install the tire and wheels. Refer to **Tire and Wheel Removal and Installation** .
8. Lower the vehicle.
9. Check the wheel alignment. Refer to **Wheel Alignment Measurement** .

FRONT WHEEL BEARING AND HUB REPLACEMENT

Tools Required

J 42129 Wheel Hub Remover

Removal Procedure

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

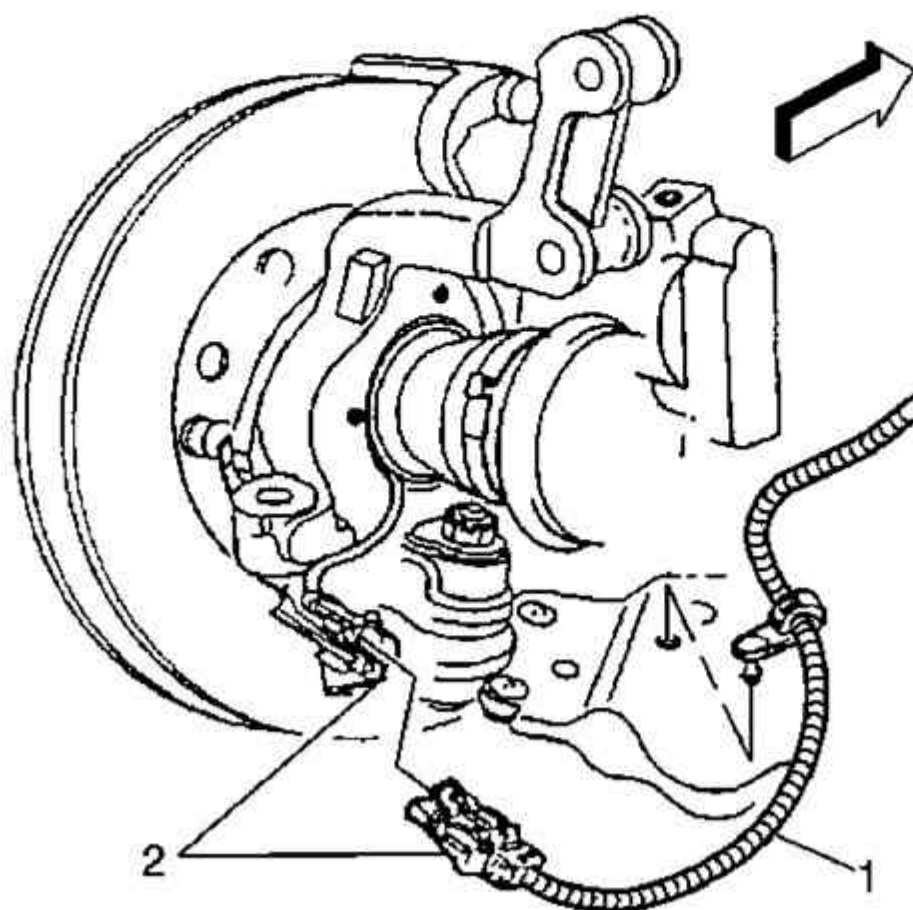


Fig. 16: View Of Wheel Speed Sensor, Connector And Harness
Courtesy of GENERAL MOTORS CORP.

3. Disconnect the wheel speed sensor electrical connector (2), if equipped.

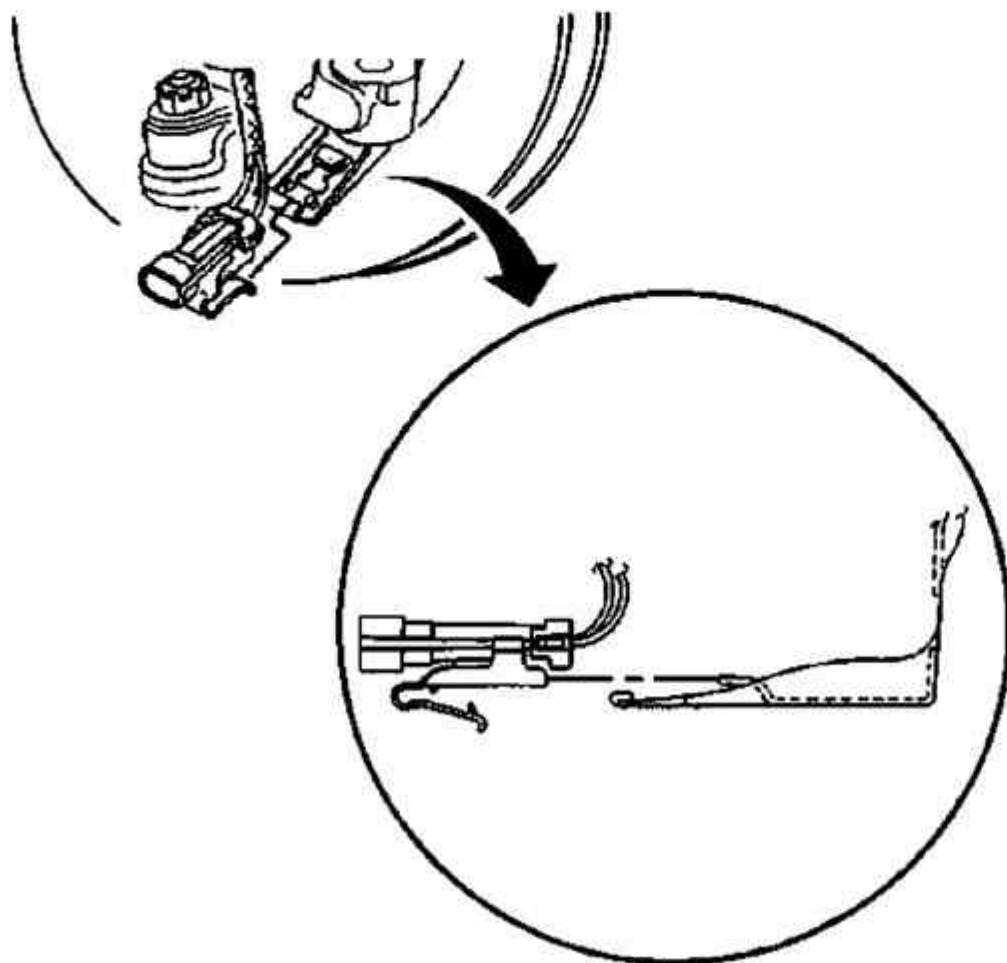


Fig. 17: View Of Wheel Speed Sensor Electrical Connector & Bracket
Courtesy of GENERAL MOTORS CORP.

4. Remove the wheel speed sensor electrical connector from the bracket, if equipped.

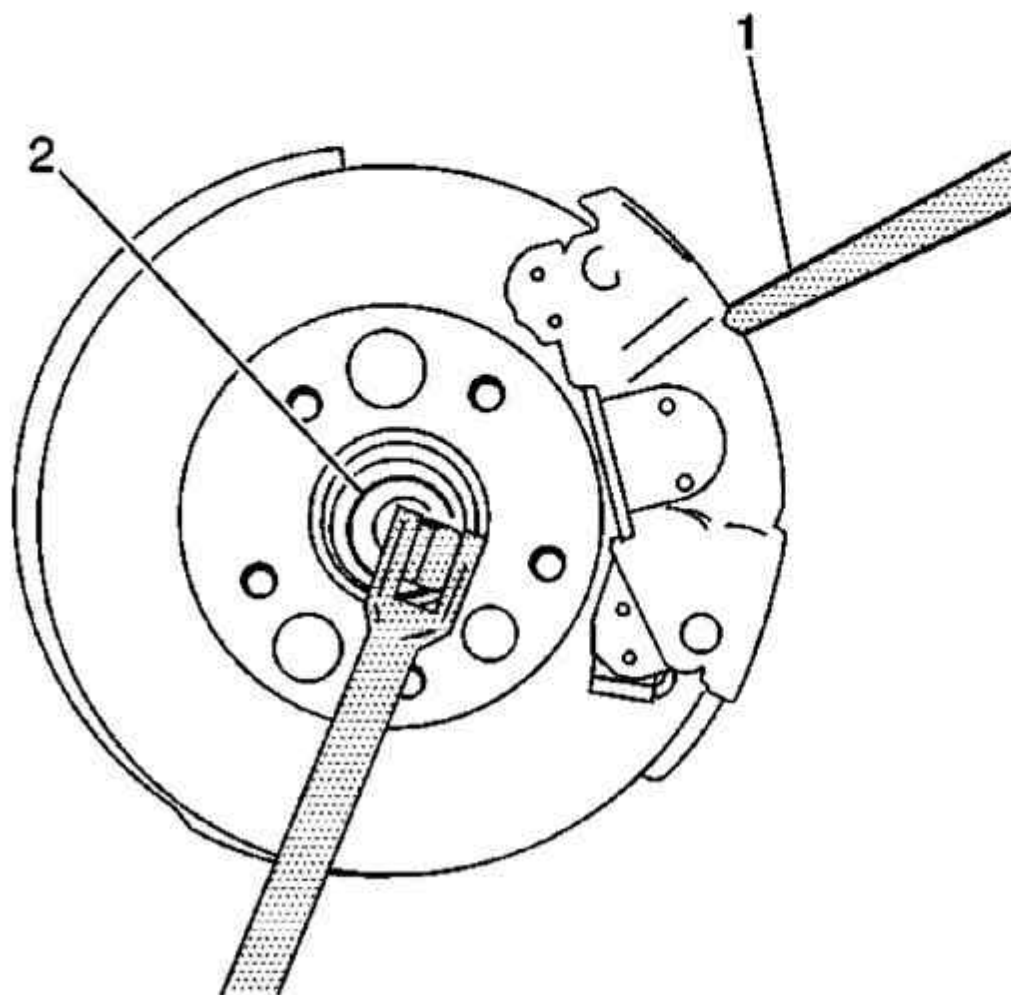


Fig. 18: Preventing Rotor Turning Using Drift Or Punch
Courtesy of GENERAL MOTORS CORP.

5. Remove the front wheel drive shaft nut (2). Insert a drift or flat-bladed tool (1) into the caliper and rotor to prevent from turning.
6. Remove the brake rotor. Refer to **Front Brake Rotor Replacement**.

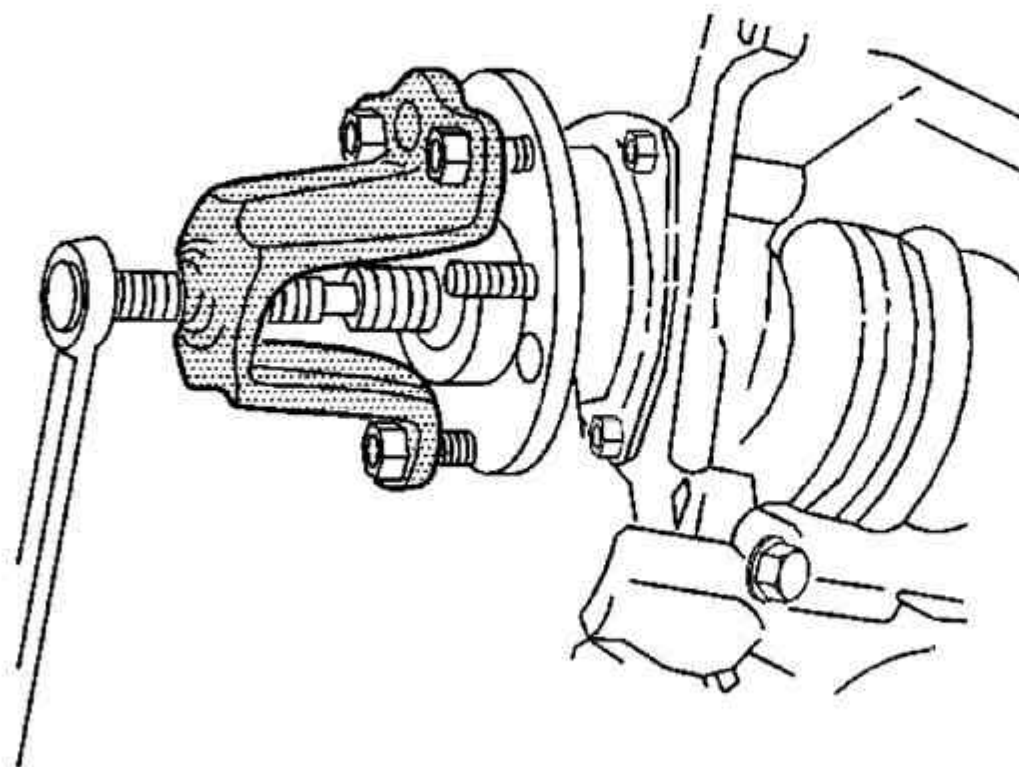


Fig. 19: View Of Front Hub Spindle Remover
Courtesy of GENERAL MOTORS CORP.

7. Use 3 wheel nuts in order to attach the **J 42129** to the wheel bearing/hub.
8. Use the **J 42129** in order to push the wheel drive shaft out of the wheel bearing/hub.

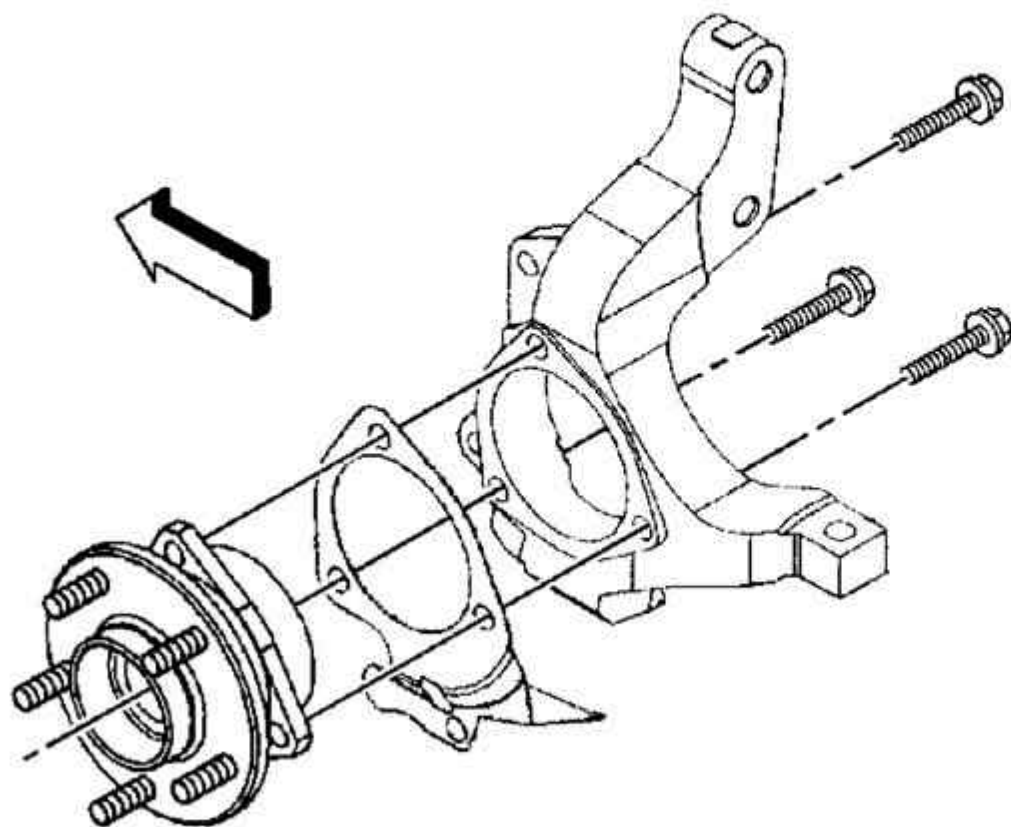


Fig. 20: View Of Wheel Bearing/Hub & Splash Shield
Courtesy of GENERAL MOTORS CORP.

9. Remove and DISCARD the wheel bearing/hub bolts. Remove the **J 42129** from the hub.

IMPORTANT: Ensure that the wheel drive shaft outer seal/boot is not damaged.

10. Remove the wheel bearing/hub and splash shield-noting the position of the shield for re-installation.

Installation Procedure

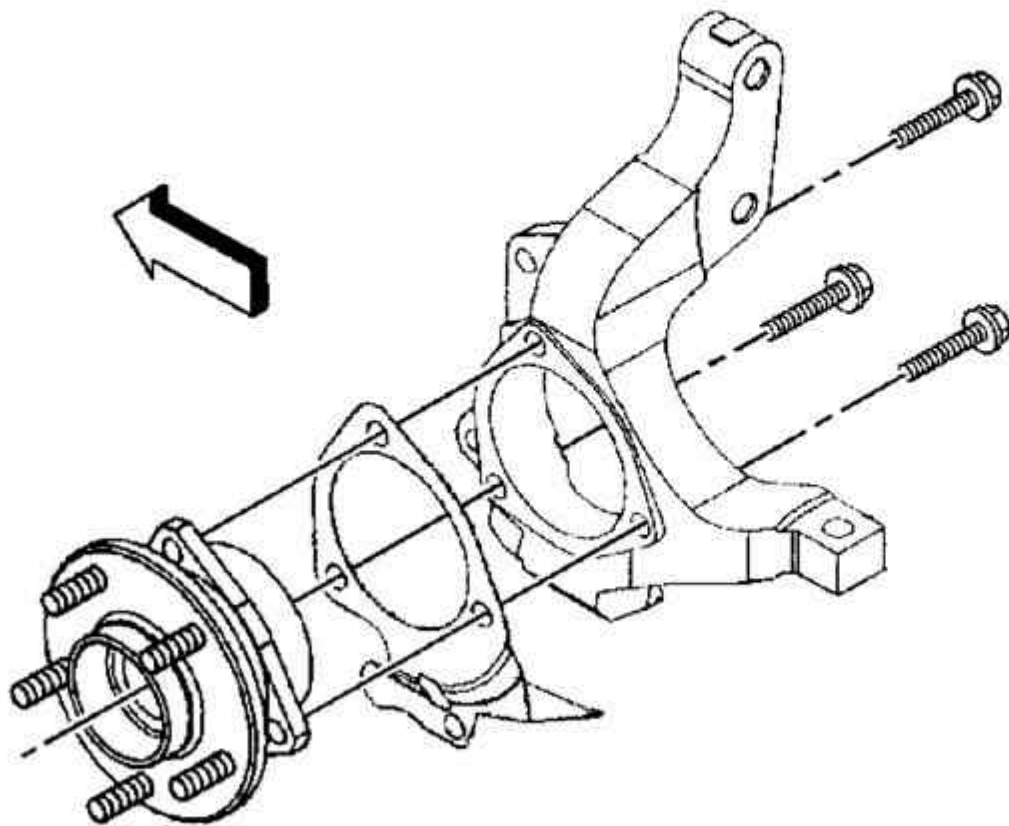


Fig. 21: View Of Wheel Bearing/Hub & Splash Shield
Courtesy of GENERAL MOTORS CORP.

1. Install the wheel bearing/hub with the splash shield as noted during removal.

CAUTION: These fasteners **MUST** be replaced with new fasteners anytime they become loose or are removed. Failure to replace these fasteners after they become loose or are removed may cause loss of vehicle control and personal injury.

NOTE: Refer to Fastener Notice .

2. Install NEW wheel bearing/hub bolts.

Tighten: Tighten the NEW wheel bearing/hub bolts to 130 N.m (96 lb ft).

3. Install the brake rotor and caliper. Refer to Front Brake Rotor Replacement .
4. Install the front wheel drive shaft nut. Insert a drift on a flat-bladed tool into caliper and rotor to prevent the rotor from turning.

Tighten: Tighten the front wheel drive shaft nut to 160 N.m (118 lb ft).

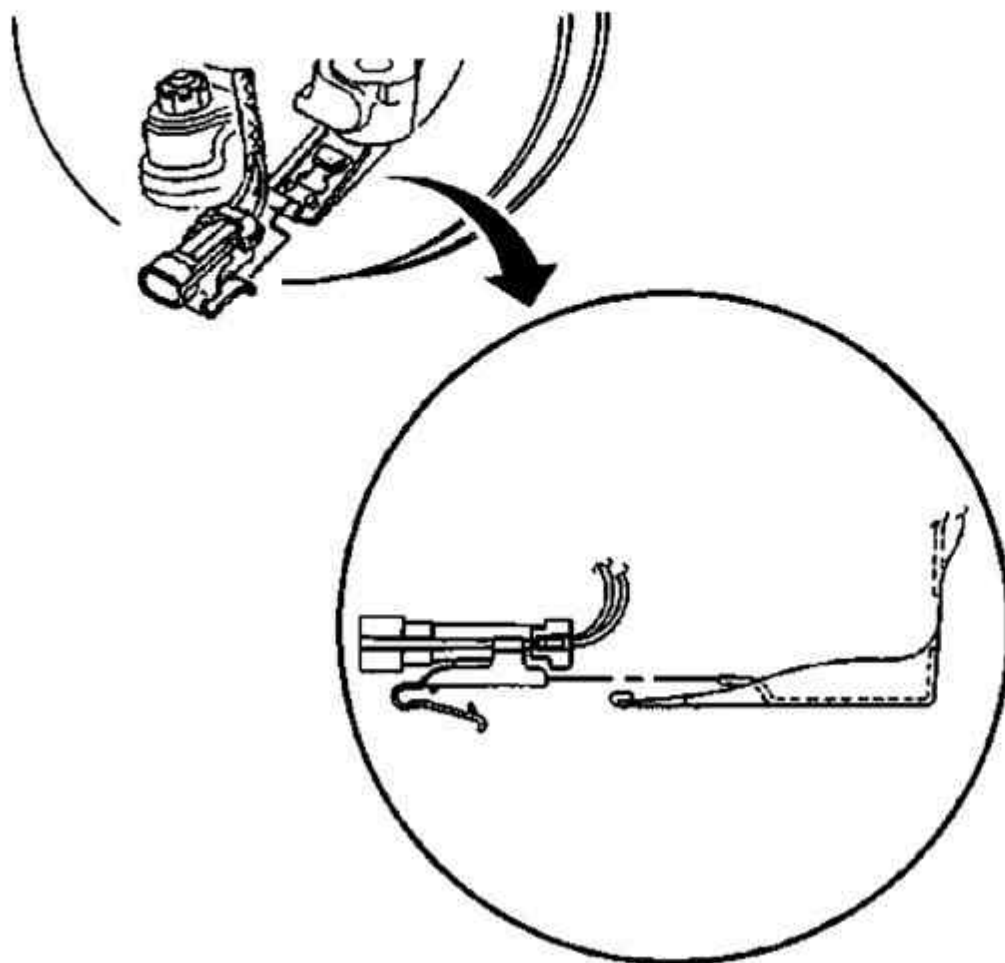


Fig. 22: View Of Wheel Speed Sensor Electrical Connector & Bracket
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Ensure that the connector clip engages the bracket properly.

5. Install the wheel speed sensor electrical connector to the bracket, if equipped.

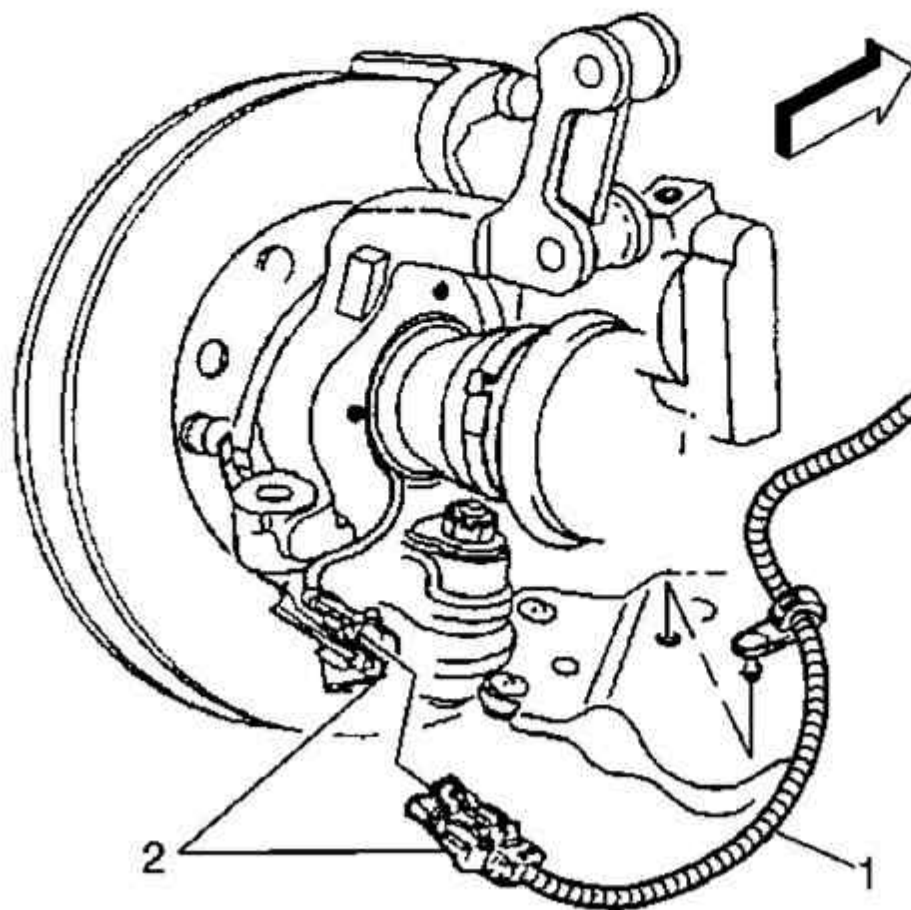


Fig. 23: View Of Wheel Speed Sensor, Connector And Harness
Courtesy of GENERAL MOTORS CORP.

6. Connect the wheel speed sensor electrical connector (2), if equipped.
7. Install the tire and wheel. Refer to **Tire and Wheel Removal and Installation**.
8. Lower the vehicle.

STEERING KNUCKLE REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle**.
2. Remove the bearing/hub assembly. Refer to **Front Wheel Bearing and Hub Replacement**.
3. Disconnect the front lower control arm ball stud. Refer to **Lower Control Arm Replacement**.
4. Disconnect the outer tie rod end from the steering knuckle. Refer to **Rack and Pinion Outer Tie Rod End Replacement**.

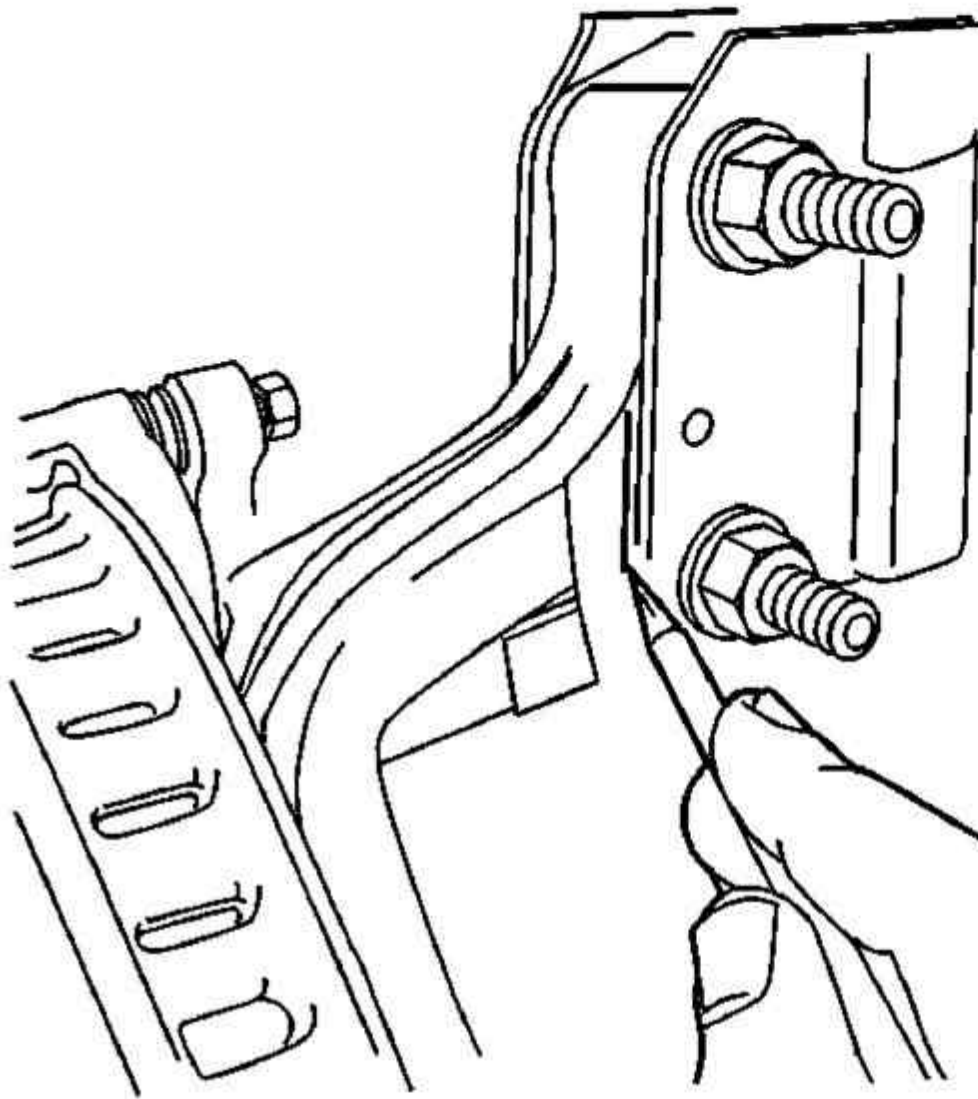


Fig. 24: Scribing Strut To Knuckle
Courtesy of GENERAL MOTORS CORP.

5. Scribe the strut to the knuckle.

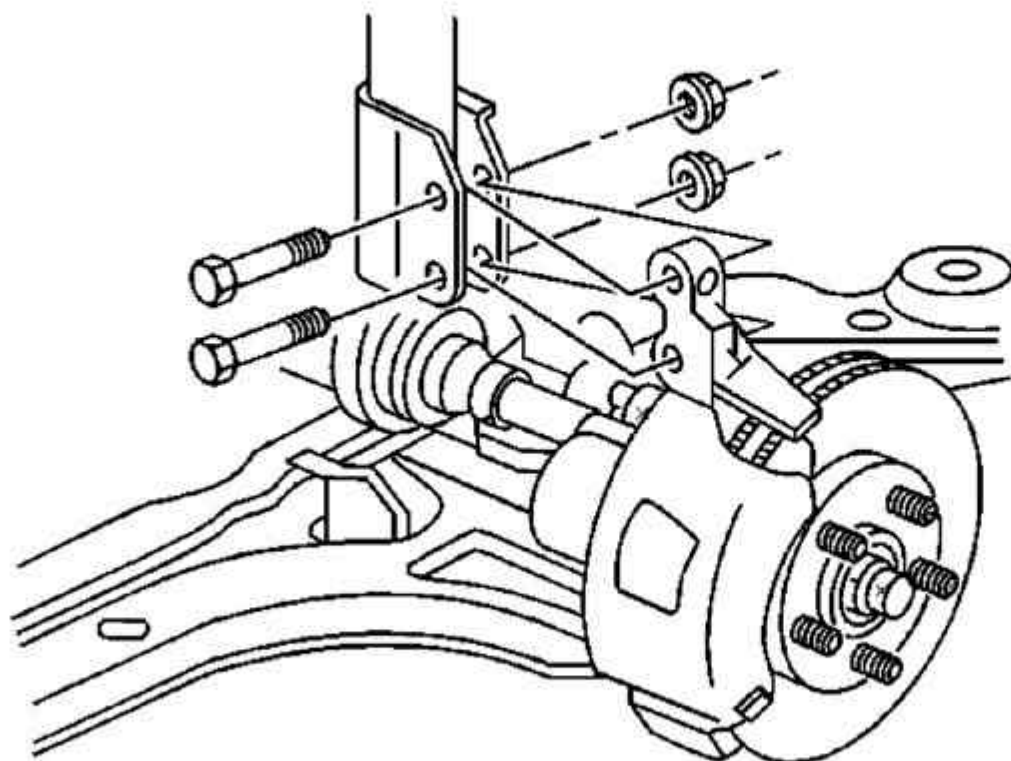


Fig. 25: View Of Steering Knuckle To Strut Bolts
Courtesy of GENERAL MOTORS CORP.

6. Remove the bolts and nuts attaching the strut to the knuckle.
7. Remove the knuckle from the vehicle.

Installation Procedure

1. Install the knuckle to the vehicle.

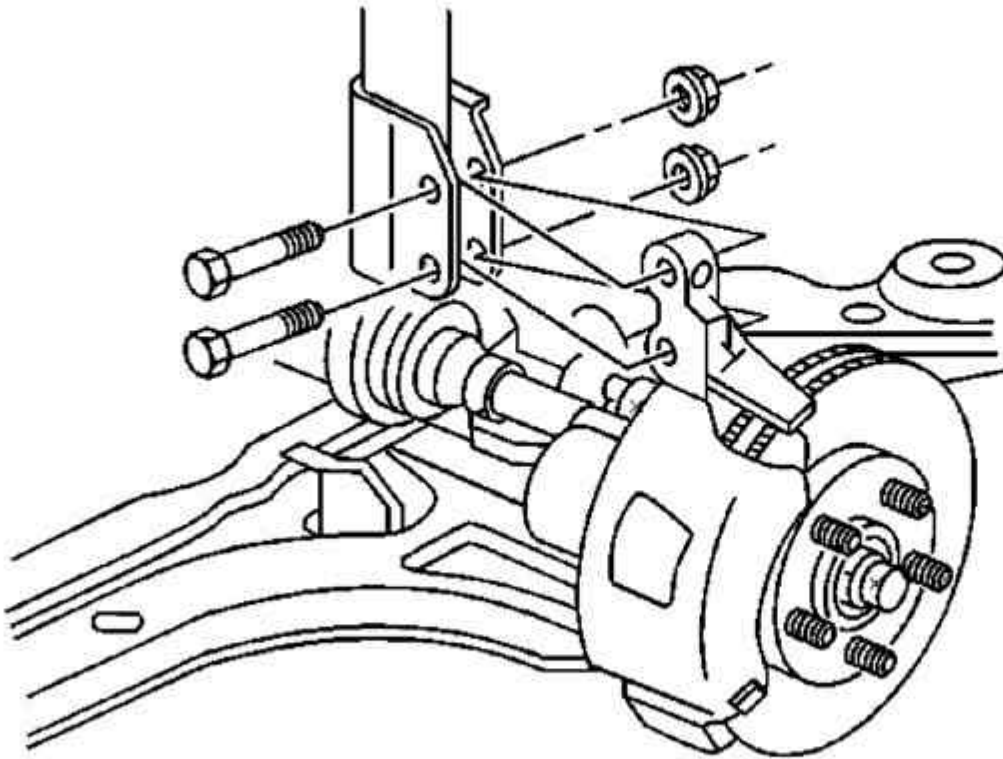


Fig. 26: View Of Steering Knuckle To Strut Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

2. Install the through bolts and nuts attaching the strut to the knuckle.

Tighten: Tighten the through bolts and nuts to 120 N.m (89 lb ft).

3. Connect the outer tie rod to the steering knuckle. Refer to Rack and Pinion Outer Tie Rod End Replacement .
4. Connect the front lower control arm ball stud to the knuckle. Refer to Lower Control Arm Replacement.
5. Install the front wheel drive shaft bearing. Refer to Front Wheel Bearing and Hub Replacement.
6. Lower the vehicle.
7. Inspect the front wheel alignment and adjust if necessary. Refer to Wheel Alignment Measurement .

LOWER CONTROL ARM REPLACEMENT

Tools Required

J 41820 Ball Joint/Stud Separator. See Special Tools.

Removal Procedure

NOTE: Use only the recommended tools for separating the ball joint from the knuckle. Do NOT hammer or pry the ball joint from the knuckle. Failure to use the recommended tools may cause damage to the ball joint and seal.

IMPORTANT: Use the ignition key in order to unlock the steering column.

1. Turn the steering wheel in order to move the front of the applicable wheel to the outboard most position.

IMPORTANT: Use **ONLY** a frame-contact type vehicle lift or a floor jack at the recommended lift points. Do **NOT** use a suspension-contact type vehicle lift. Do **NOT** lift the vehicle by the lower control arms.

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

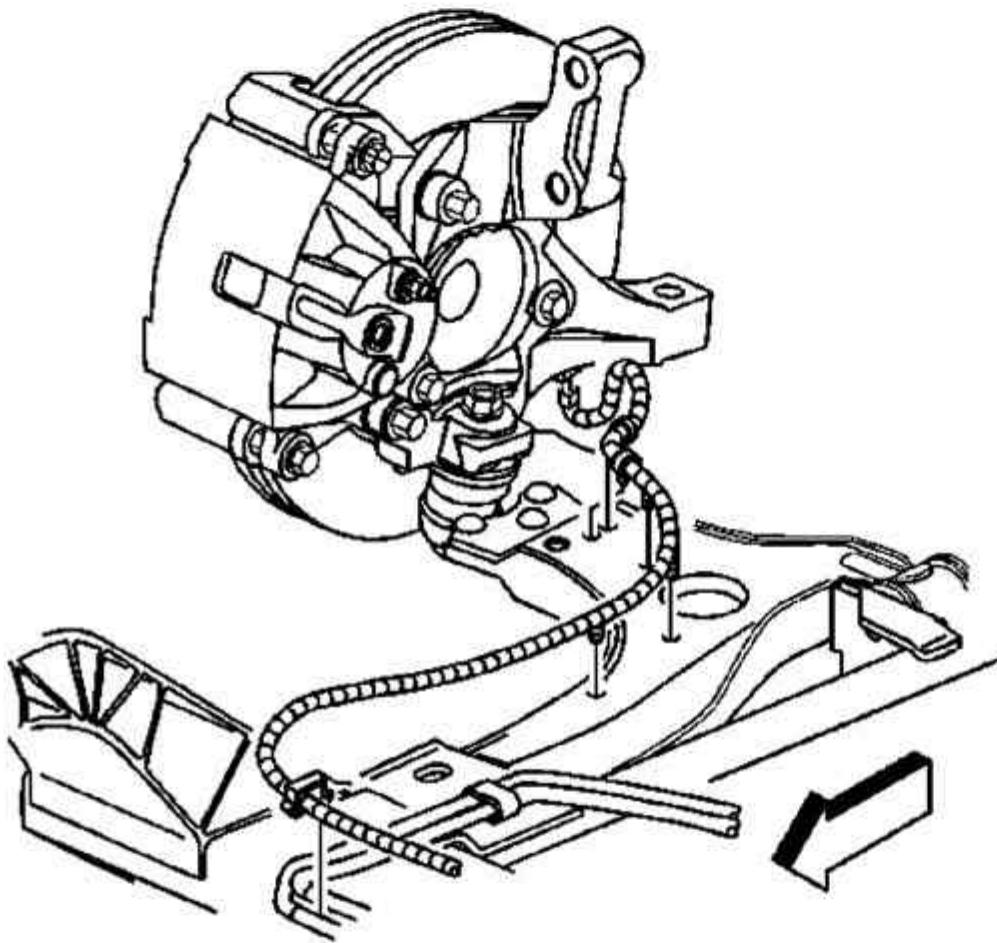


Fig. 27: View Of Front Wheel Speed Sensor Harness Connectors
Courtesy of GENERAL MOTORS CORP.

4. If applicable, disconnect the ABS wheel speed sensor connector.
5. If applicable, disconnect the ABS wheel speed sensor jumper harness from the harness retainer clips.

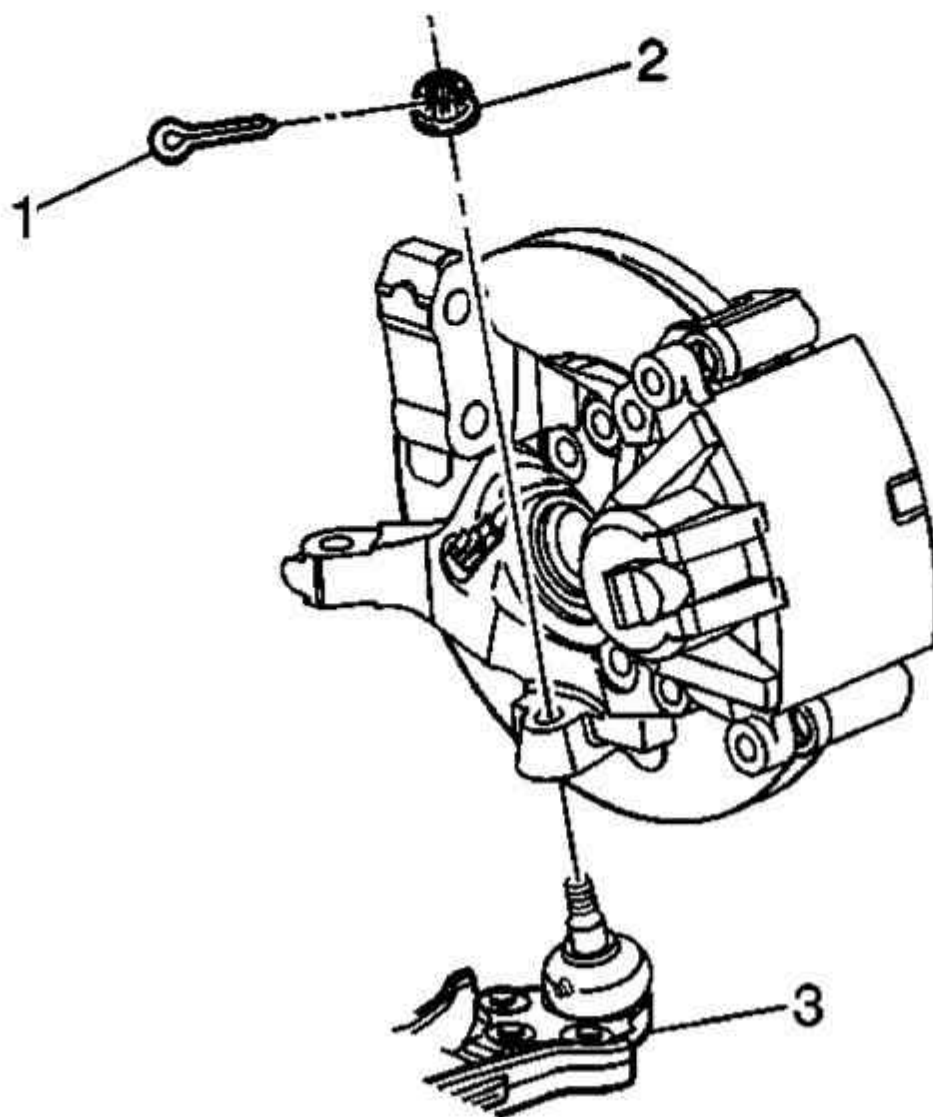


Fig. 28: Identifying Ball Stud Cotter Pin
Courtesy of GENERAL MOTORS CORP.

6. Remove the cotter pin (1) from the ball stud (3).
7. Loosen the ball stud nut (2).

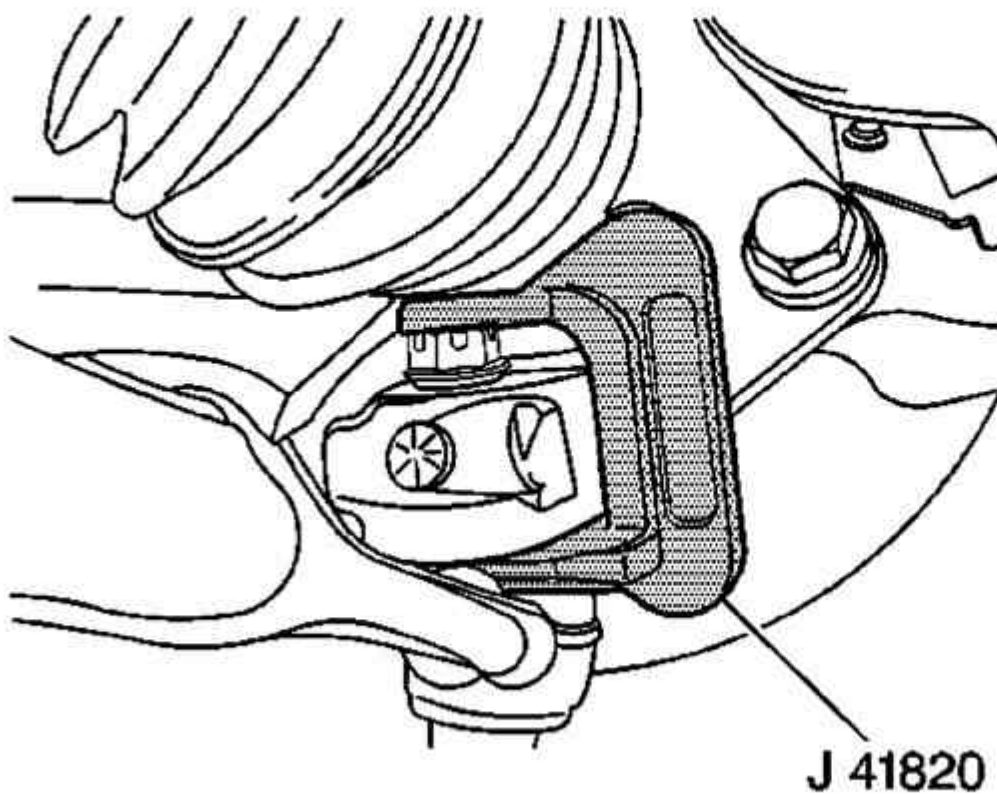


Fig. 29: Separating Ball Stud From Steering Knuckle
Courtesy of GENERAL MOTORS CORP.

8. Install the **J 41820** over the ball stud and lower control arm as shown. See **Special Tools**.
9. Rotate the ball stud nut counterclockwise in order to separate the ball stud from the steering knuckle.
10. Remove the **J 41820** . See **Special Tools**.
11. Remove the ball stud nut.

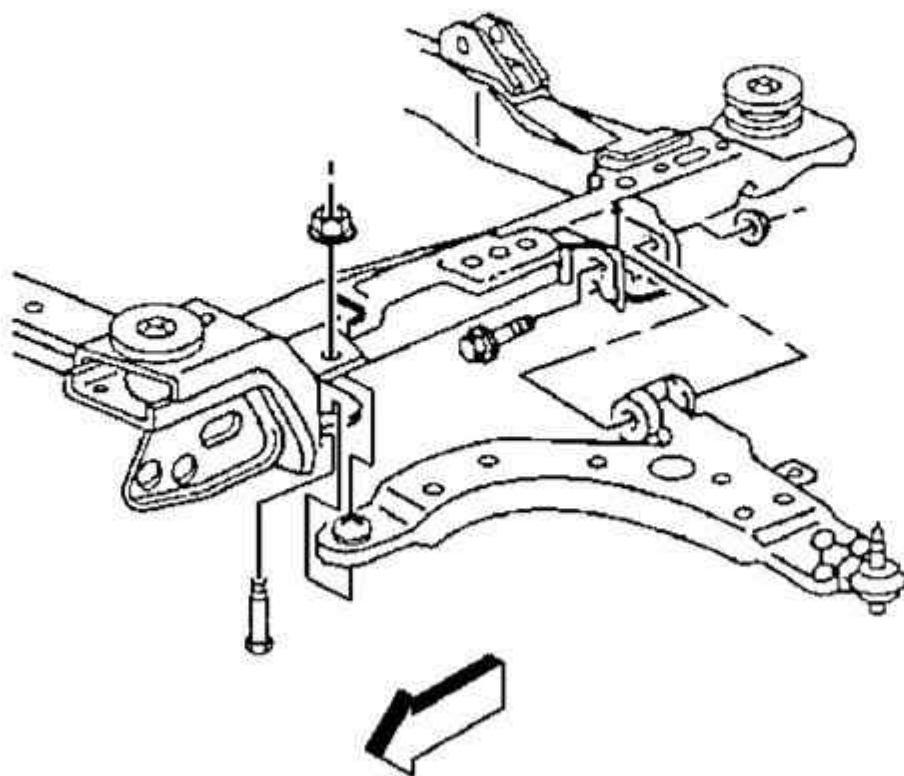


Fig. 30: View Of Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

12. Remove the lower control arm bolts and nuts.
13. Remove the lower control arm.

Installation Procedure

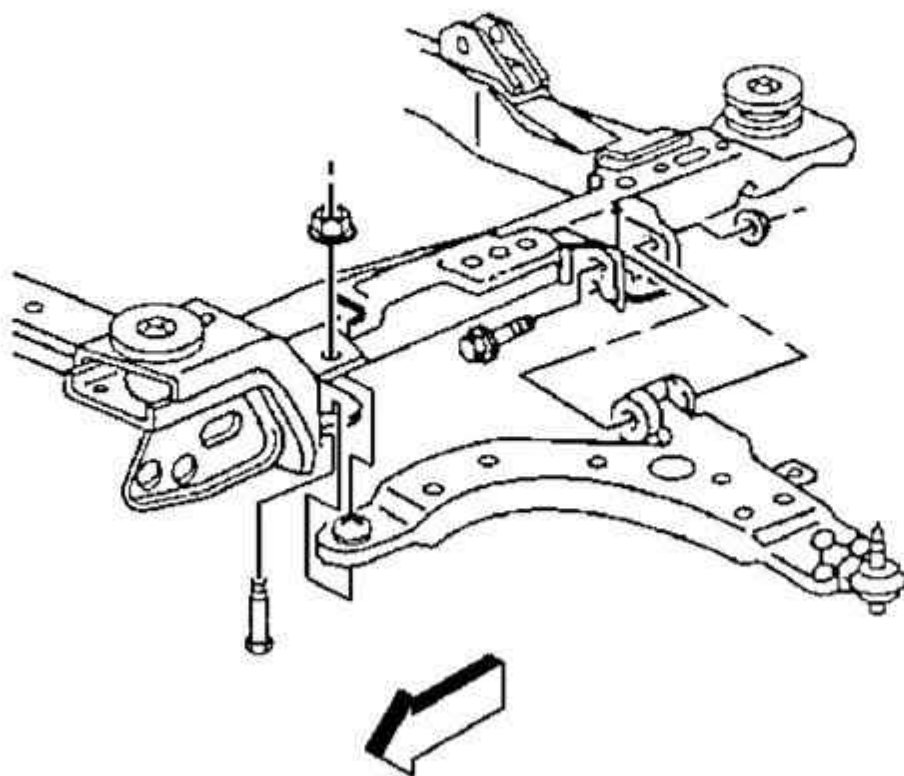


Fig. 31: View Of Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

1. Install the lower control arm.
2. Install the control arm bolts and nuts. Do not tighten at this time.

IMPORTANT: Align the ball stud cotter pin hole parallel to the knuckle in order to ease the cotter pin installation.

3. Install the ball stud to the knuckle.

NOTE: Refer to Fastener Notice .

4. Install the ball stud castle nut.

Tighten: Tighten the nut to 20 N.m plus 120 degrees (15 lb ft plus 120 degrees).

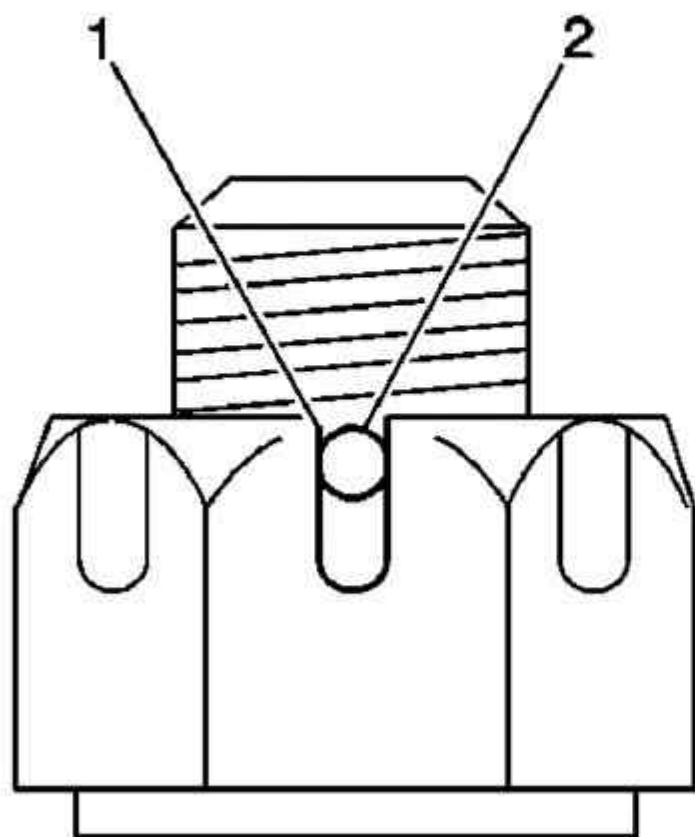


Fig. 32: Aligning Ball Stud Castle Nut Slot To The Ball Stud Cotter Pin Hole
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Do NOT loosen the ball stud nut in order to align the ball stud nut slots to the ball stud cotter pin hole.

5. If necessary, tighten the ball stud castle nut in order to align the ball stud castle nut slot (1) to the ball stud cotter pin hole (2) as shown.

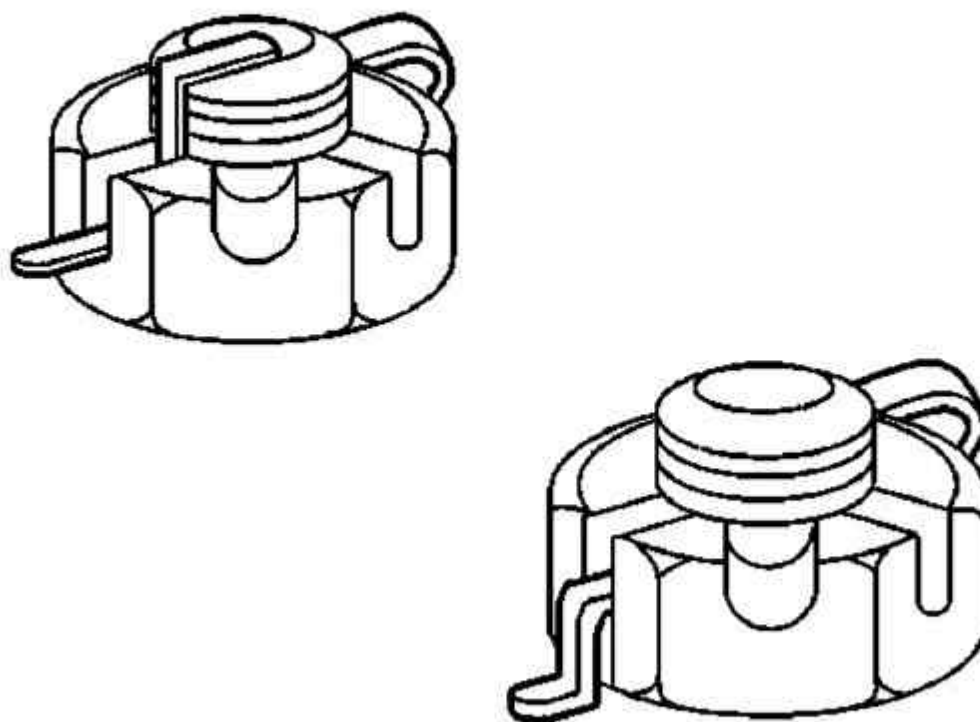


Fig. 33: Securing Cotter Pin In Ball Joint Castle Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: If applicable, ensure that the cotter pin ends do NOT contact the ABS wheel speed sensor, the ABS sensor connector or the drive axle.

6. Install a NEW cotter pin and bend the ends as shown in either example.
7. If applicable, connect the ABS wheel speed sensor jumper harness to the harness retainer clips.

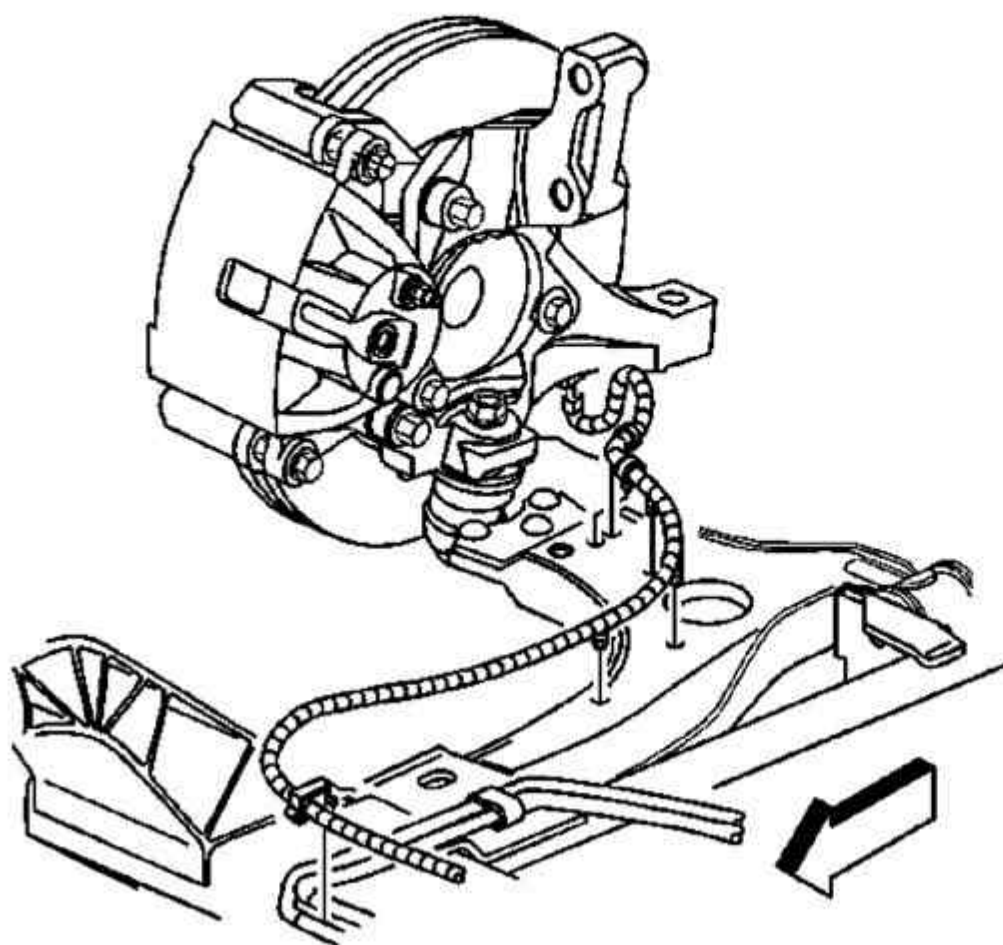


Fig. 34: View Of Front Wheel Speed Sensor Harness Connectors
Courtesy of GENERAL MOTORS CORP.

8. If applicable, connect the ABS wheel speed sensor connector.

IMPORTANT: This is a prevailing torque type fastener. This fastener may be reused **ONLY** if:

- The fastener and its counterpart are clean and free from rust.
- The fastener develops 3 N.m (27 lb in) of torque against its counterpart prior to the fastener seating.

If the fastener does not meet these criteria, **REPLACE** the fastener.

9. Install the lower control arm nuts.

Tighten: Tighten the lower control arm nuts to 125 N.m (92 lb ft).

10. Install the tire and wheel. Refer to **Tire and Wheel Removal and Installation** .
11. Lower the vehicle.

FRONT LOWER CONTROL ARM BUSHING REPLACEMENT (VERTICAL)

Tools Required

- **J 21474-01** Control Arm Bushing Set. See Special Tools.
 - **J 21474-27** 1/2 Inch Puller Bolt Thrust Bearing
 - **J 21474-2** Bushing Installer Remover. See Special Tools.
 - **J 21474-4** Nut
 - **J 21474-13** Control Arm Bushing Installer. See Special Tools.
- **J 23444-A** High Pressure Lubricant. See Special Tools.
- **J 34126** Driven Sprocket Support Bearing Installer. See Special Tools.
- **J 35379** Front Knuckle Support. See Special Tools.

Removal Procedure

1. Remove the lower control arm. Refer to Lower Control Arm Replacement.
2. Secure the lower control arm in a vice.

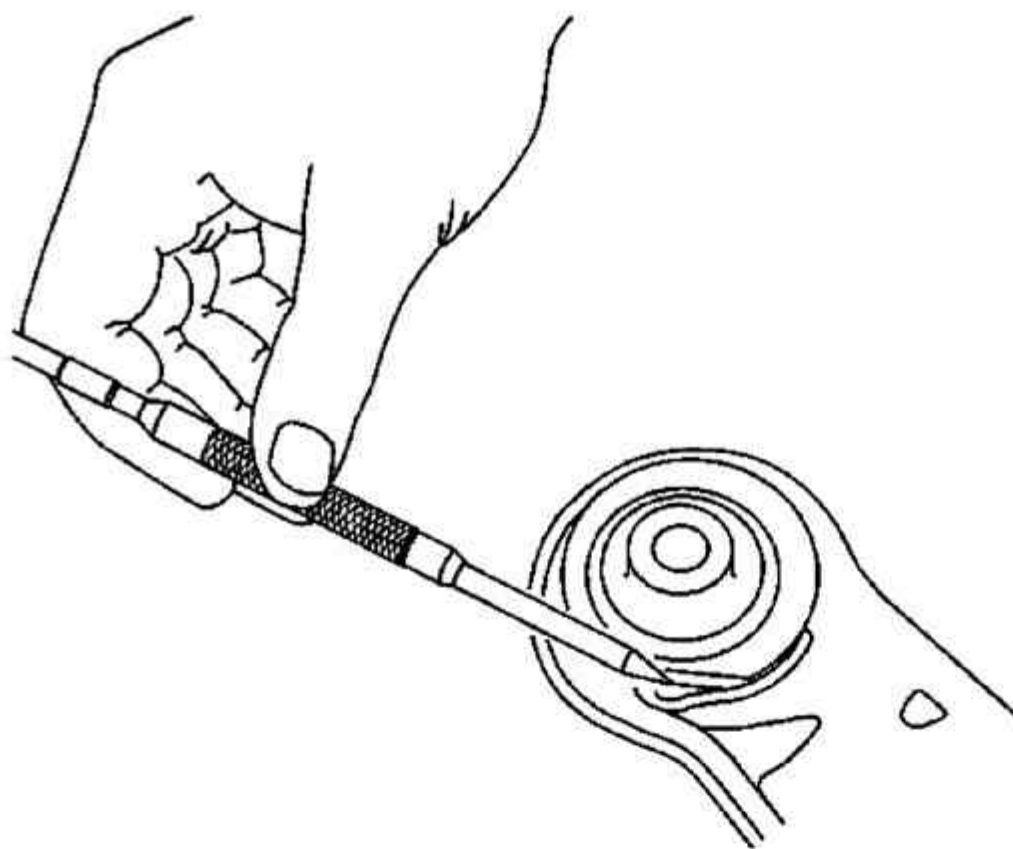


Fig. 35: Scribing Orientation Of Control Arm Bushing On Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

3. Mark the lower control arm along the flat edge of the bushing flange.

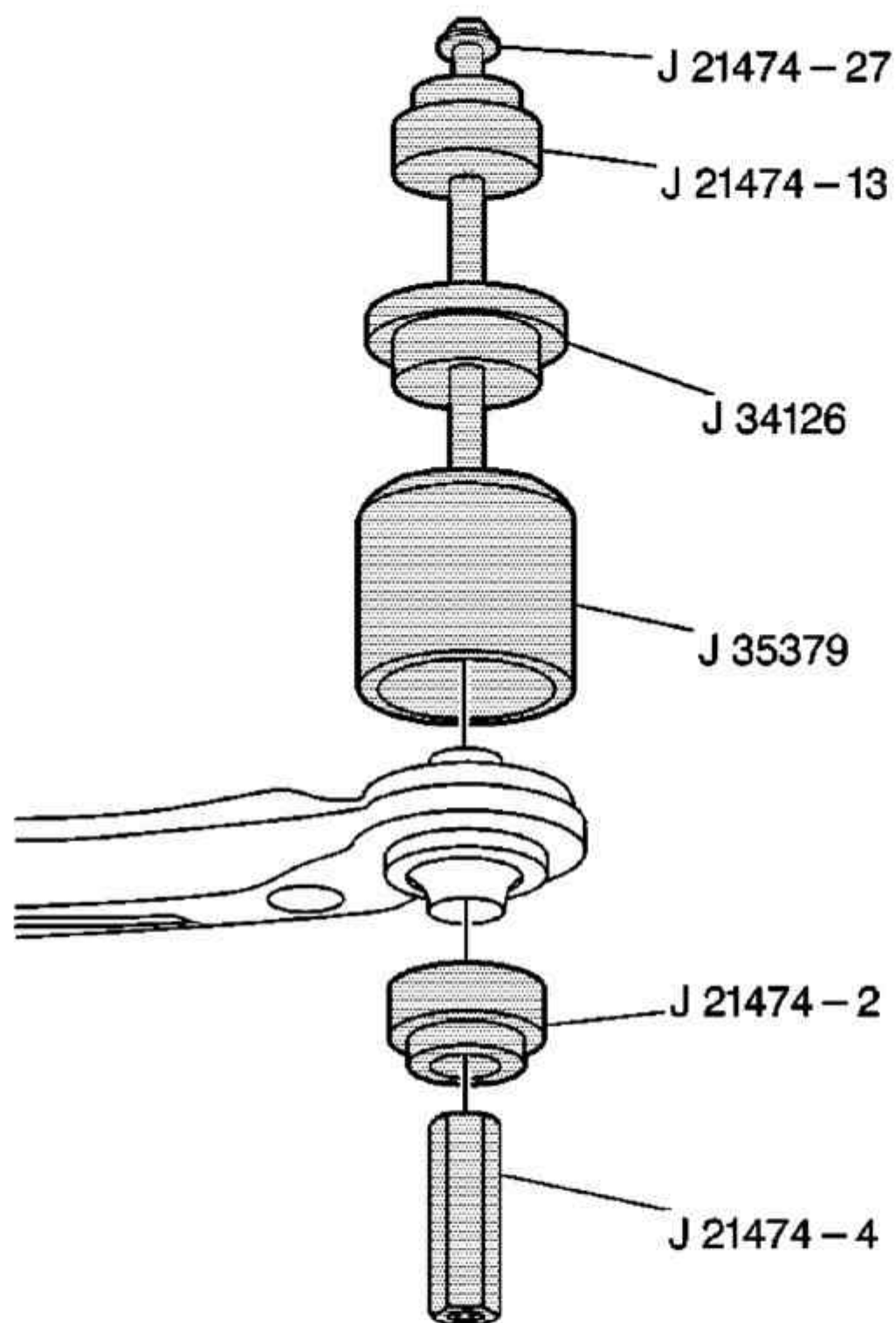


Fig. 36: Assembling Bushing Removal Tools
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Apply J 23444-A or equivalent to the threads of J 21474-27 . See Special Tools.

4. Assemble the following bushing removal tools as shown:

1. J 21474-27
2. J 21474-13 . See Special Tools.
3. J 34126 . See Special Tools.

4. J 35379 . See Special Tools.
5. J 21474-2 . See Special Tools.
6. J 21474-4
5. Tighten J 21474-4 .
6. Disassemble the bushing removal tools.

Installation Procedure

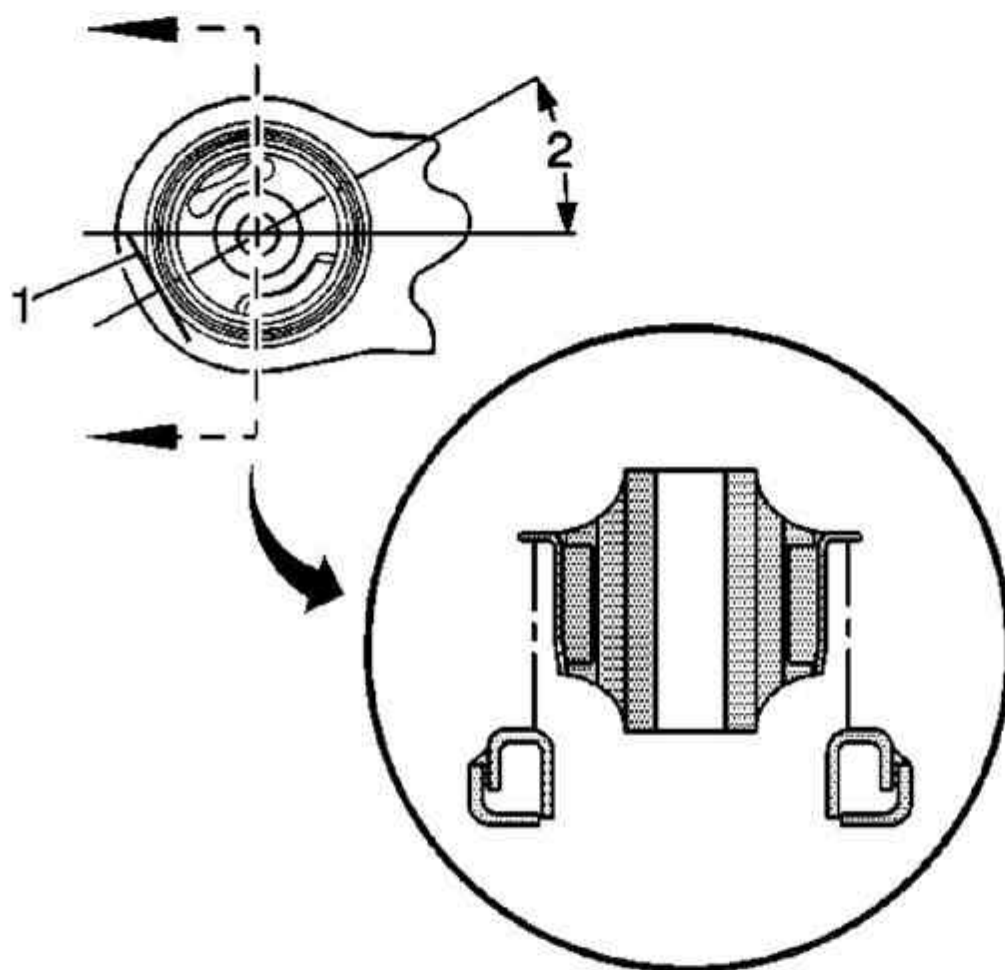


Fig. 37: Aligning Flat Edge Of Bushing Flange To Mark In Control Arm
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: You **MUST** install the lower control arm vertical bushing in the same position in order to maintain the original vehicle ride, handling, and road feel.

1. Align the flat edge of the bushing flange to the mark in the control arm (1). Ensure that the flat edge of the bushing flange is 30 degrees (2) from the centerline of the lower control arm. Ensure that the thin slot in the bushing is facing outboard.
2. Insert the bushing into the control arm.

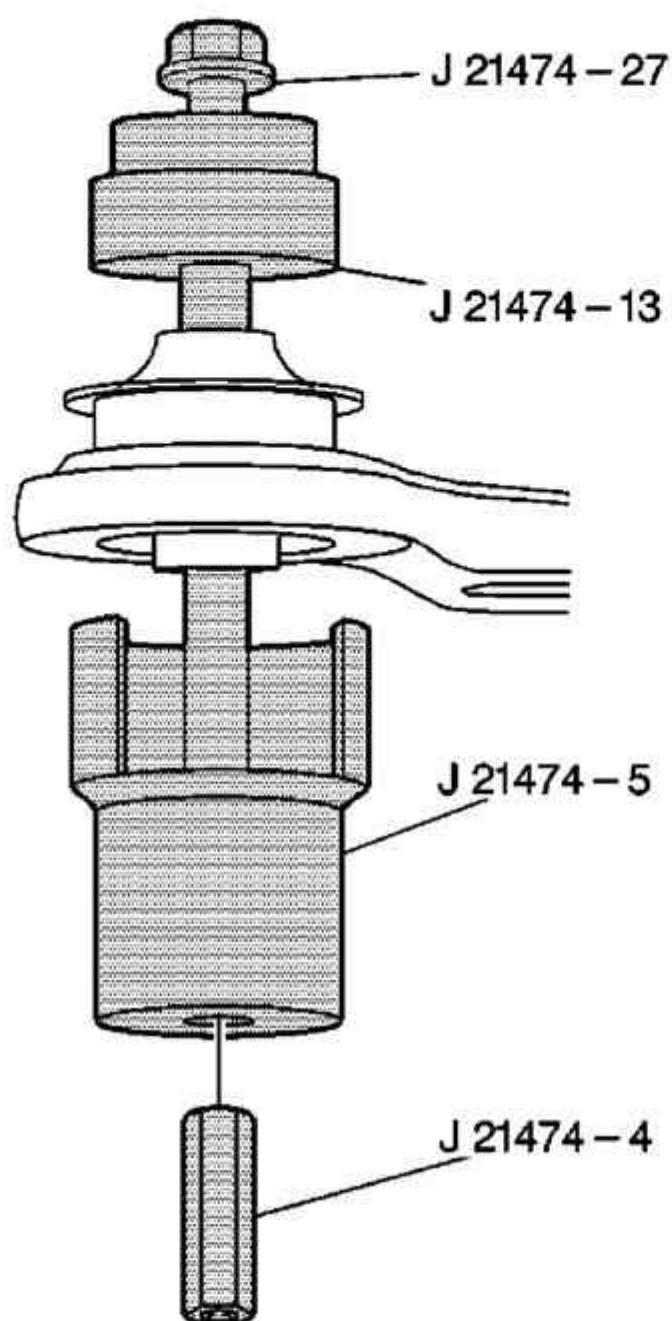


Fig. 38: Illustrating Proper Installation Of Bushing Tools
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Apply J 23444-A or equivalent to the threads of J 21474-27 . See Special Tools.

3. Assemble the following bushing installation tools as shown:
 1. J 21474-27
 2. J 21474-13 . See Special Tools.
 3. J 21474-5 . See Special Tools.
 4. J 21474-4
4. Tighten J 21474-4 .
5. Disassemble the bushing installation tools.
6. Install the lower control arm. Refer to Lower Control Arm Replacement.

FRONT LOWER CONTROL ARM BUSHING REPLACEMENT (HORIZONTAL)**Tools Required**

- **J 21474-01** Control Arm Bushing Service Set. See Special Tools.
- **J 21474-5** Control Arm Bushing Receiver. See Special Tools.

Removal Procedure

1. Remove the lower control arm. Refer to Lower Control Arm Replacement.
2. Secure the lower control arm in a vise.

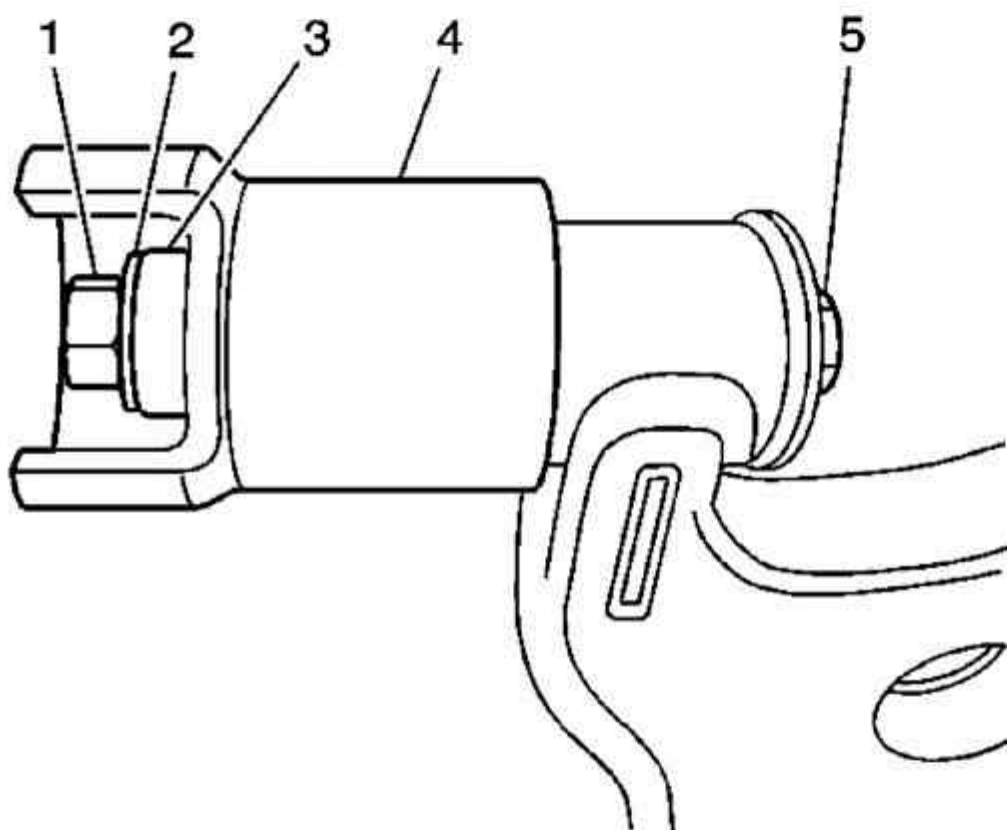


Fig. 39: Assembling Bushing Removal Tools
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Use a 1/2 x 20 in standard thread nut with the puller bolt.

3. Assemble the bushing removal tools as indicated:
 1. The nut (1)
 2. The **J 21474-01** washer (2). See Special Tools.
 3. The **J 21474-01** bearing (3). See Special Tools.
 4. The **J 21474-5** (4). See Special Tools.
 5. The **J 21474-01** puller bolt (5). See Special Tools.
4. Tighten the puller bolt (5) until the bushing is removed.
5. Disassemble the **J 21474-01** and **J 21474-5**. See Special Tools.

Installation Procedure

1. Lubricate the bushing with liquid hand soap or equivalent.

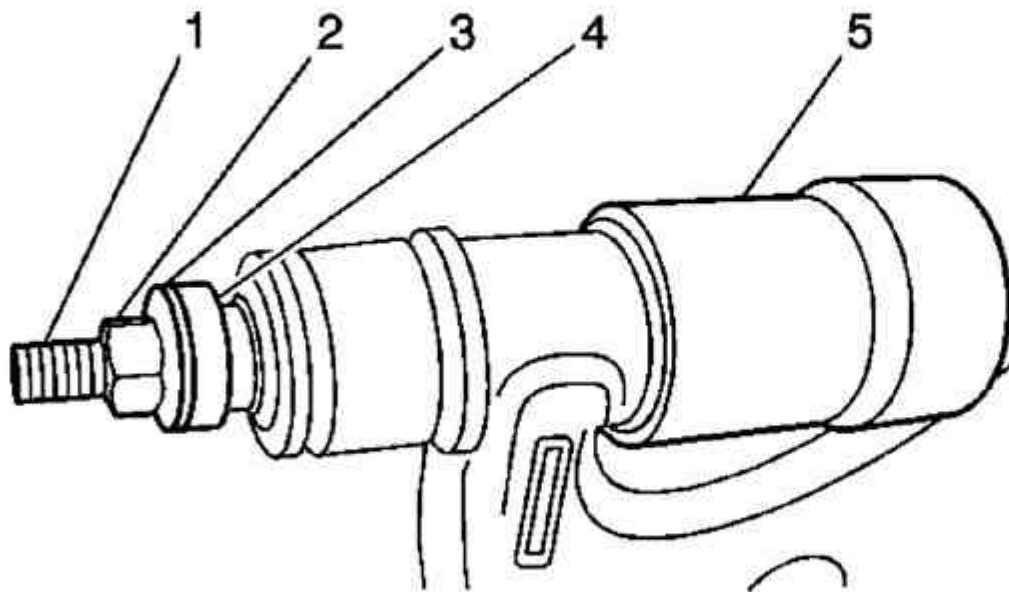


Fig. 40: Assembling Bushing Installation Tools
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Use a 1/2 x 20 in standard thread nut with the puller bolt.

2. Assemble the following bushing installation tools as indicated :
 1. The nut (1)
 2. The J 21474-01 washer (2). See Special Tools.
 3. The J 21474-01 bearing (3). See Special Tools.
 4. The J 21474-5 (4). See Special Tools.
 5. The J 21474-01 puller bolt (5). See Special Tools.
3. Tighten the puller bolt (5) until the bushing is installed into the control arm.
4. Disassemble the J 21474-01 and J 21474-5 . See Special Tools.
5. Remove the control arm from the vice.
6. Install the lower control arm. Refer to Lower Control Arm Replacement.

WHEEL STUD REPLACEMENT

Tools Required

J 6627-A Tie Rod Puller. See Special Tools.

Removal Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .
2. Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
3. Remove the brake caliper and bracket. Hang the caliper and the bracket from the vehicle. DO NOT allow the caliper and the bracket to hang by the brake hose. Refer to Front Brake Caliper Replacement .
4. Remove the brake rotor. Refer to Front Brake Rotor Replacement .

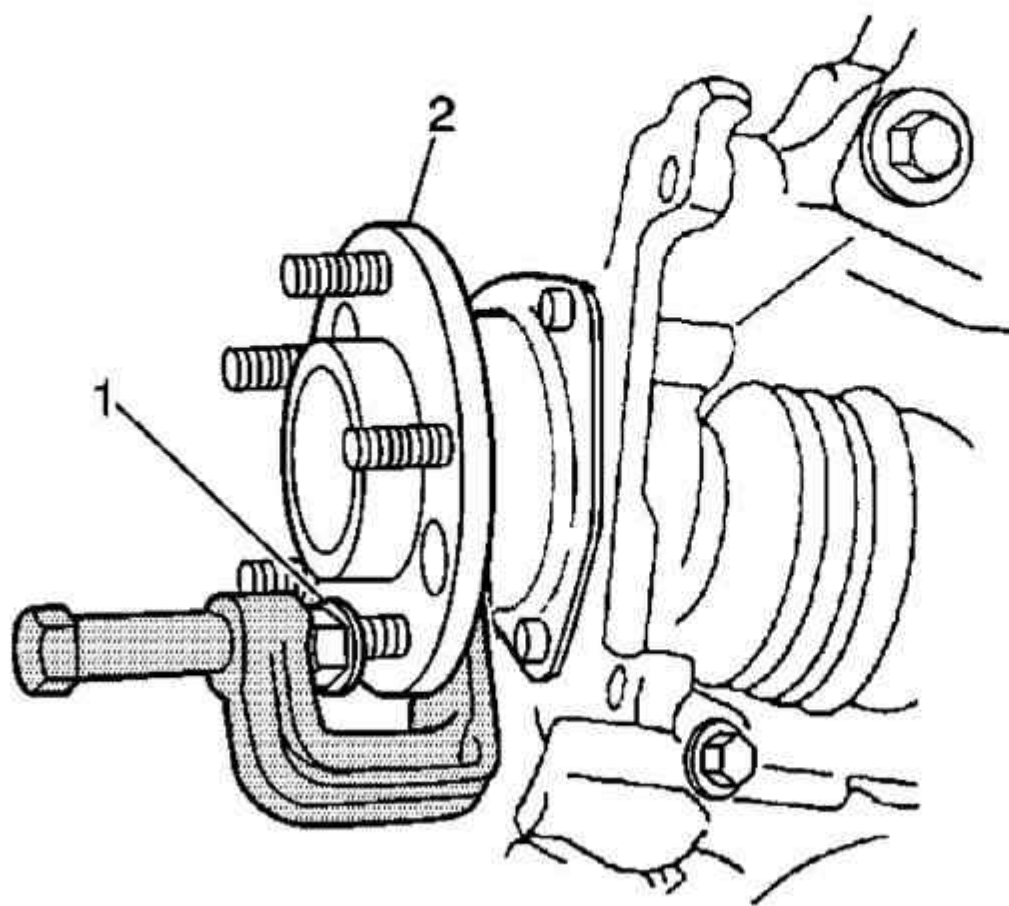


Fig. 41: Extracting Stud From Hub
Courtesy of GENERAL MOTORS CORP.

5. Use the **J 6627-A** in order to extract the stud (1) from the hub (2). See **Special Tools**.

Installation Procedure

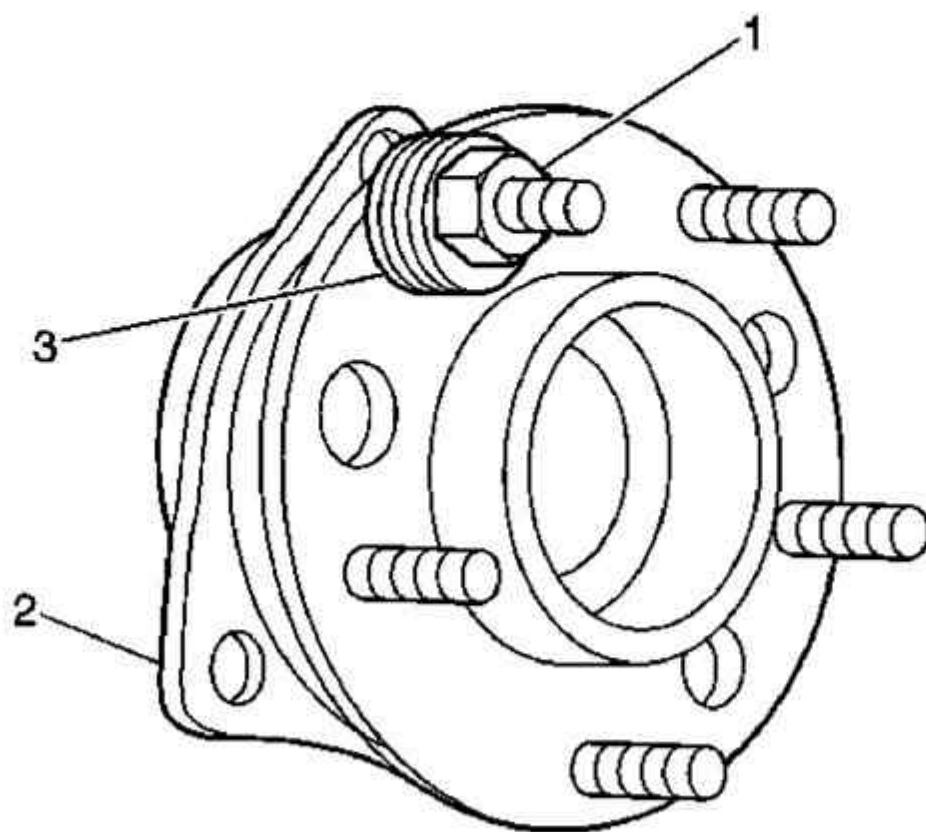


Fig. 42: Installing Wheel Stud

Courtesy of GENERAL MOTORS CORP.

1. Install a replacement stud in the wheel hub.
2. Add enough washers (3) in order to draw the stud into the hub (2).
3. Install the wheel nut (1) with the flat side against the washers (3).

IMPORTANT: Fully seat the wheel stud against the hub flange (2).

4. Tighten the wheel nut (1) until the wheel stud is fully seated against the hub flange.
5. Back off the wheel nut (1) and remove the washers (3).
6. Install the brake rotor. Refer to Front Brake Rotor Replacement.
7. Install the brake caliper and bracket. Refer to Front Brake Caliper Replacement.
8. Install the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation.
9. Lower the vehicle.

STRUT ASSEMBLY REPLACEMENT

Removal Procedure

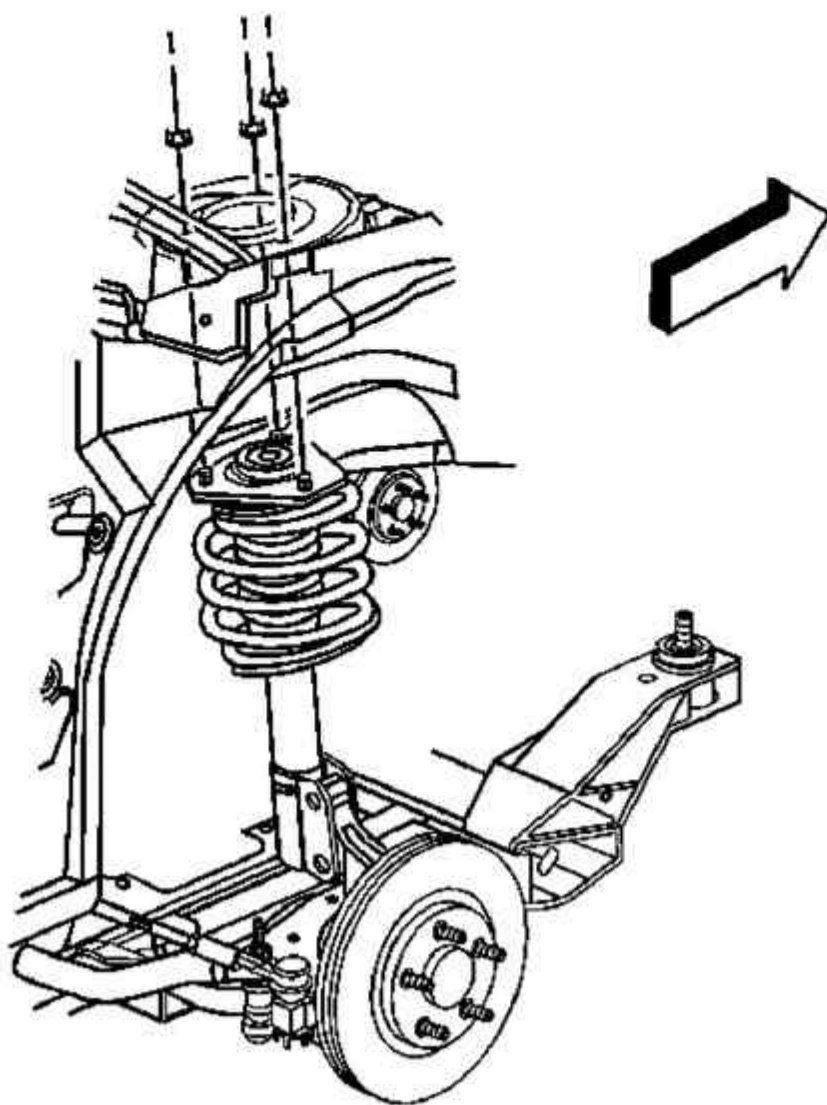


Fig. 43: Identifying Strut Upper Mounting Nuts
Courtesy of GENERAL MOTORS CORP.

1. Remove the strut upper mounting nuts.

IMPORTANT: Lift the vehicle using **ONLY** a frame-contact vehicle lift. Do NOT lift the vehicle using a suspension-contact vehicle lift.

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

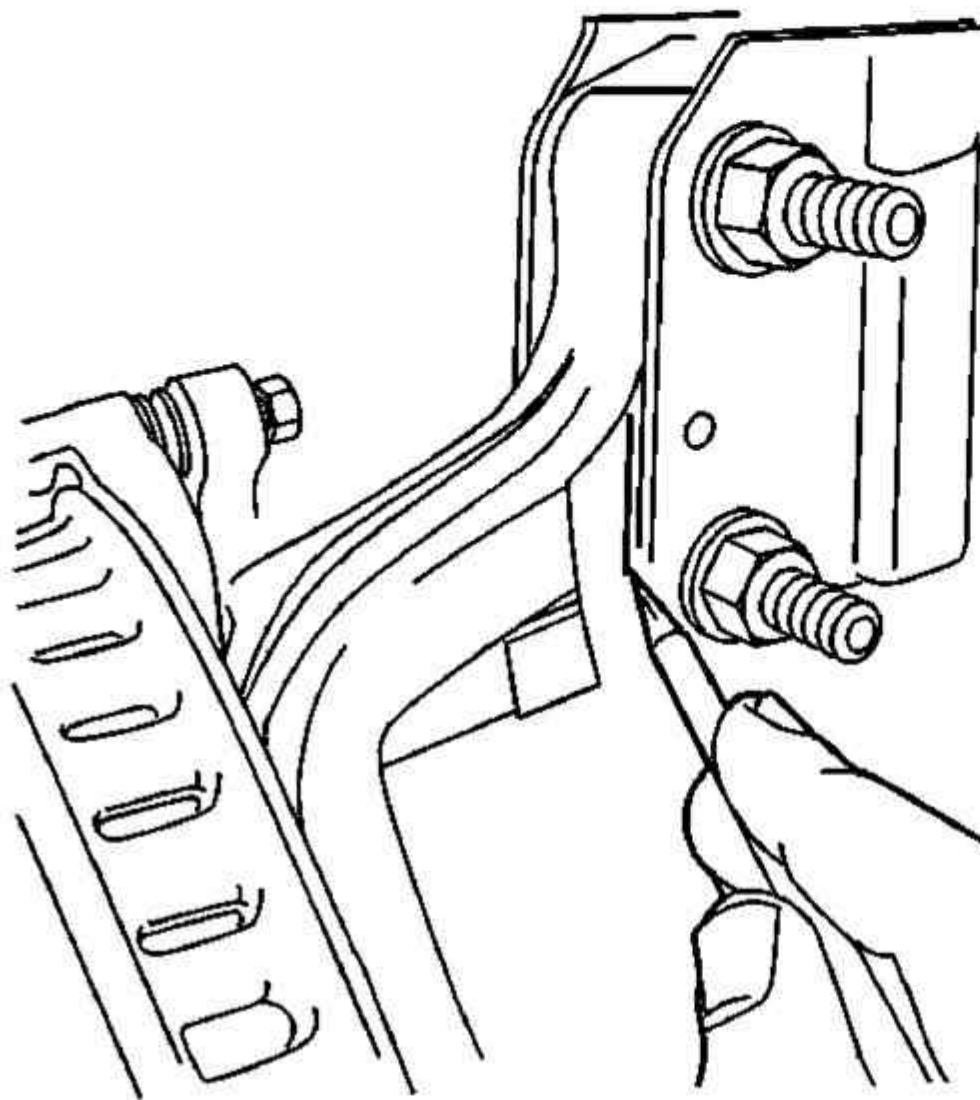


Fig. 44: Scribing Strut To Knuckle
Courtesy of GENERAL MOTORS CORP.

4. Scribe the strut to the knuckle.

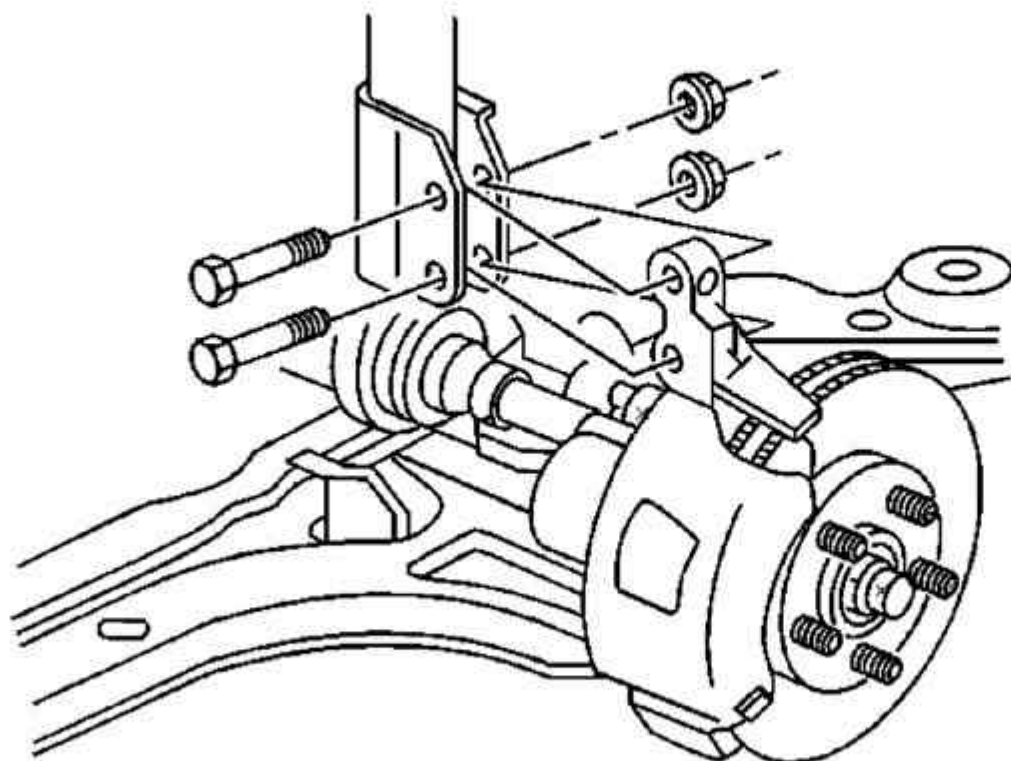


Fig. 45: View Of Steering Knuckle To Strut Bolts
Courtesy of GENERAL MOTORS CORP.

5. Remove the strut lower bolts and nuts.
6. Remove the strut.

Installation Procedure

1. Install the strut.

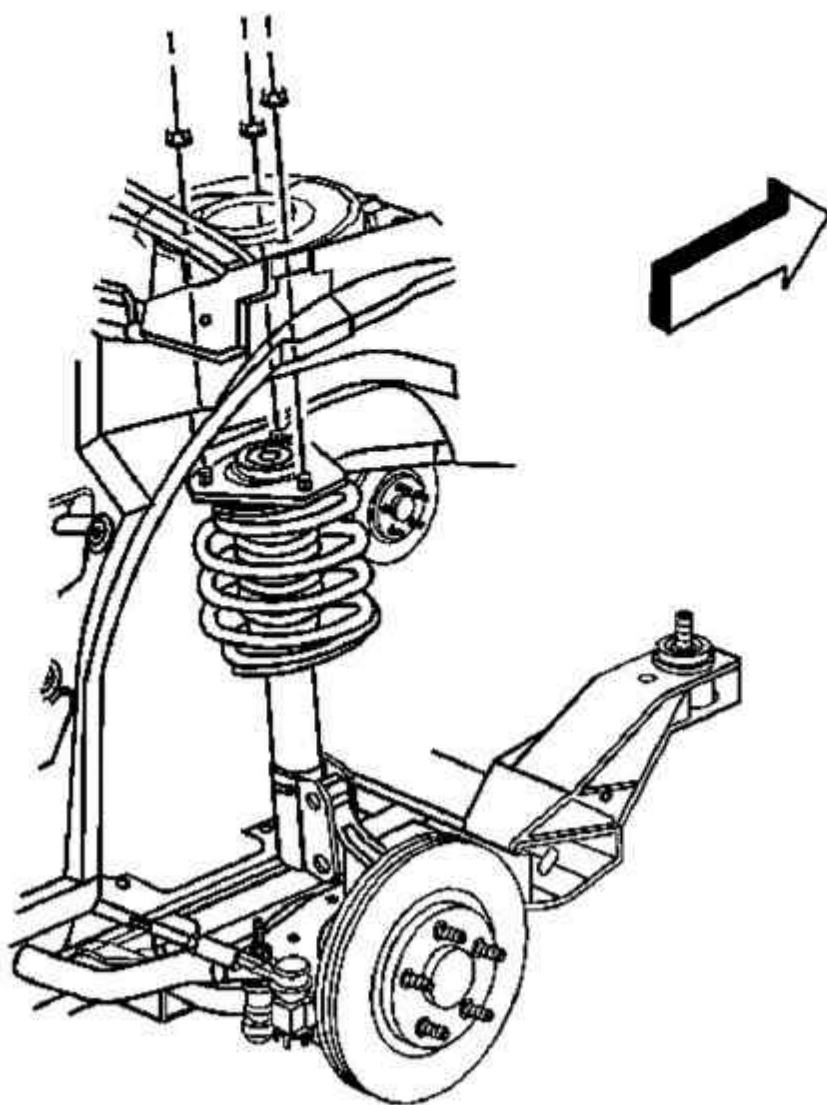


Fig. 46: Identifying Strut Upper Mounting Nuts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

2. Install the strut upper mounting nuts.

Tighten: Tighten the nuts to 33 N.m (24 lb ft).

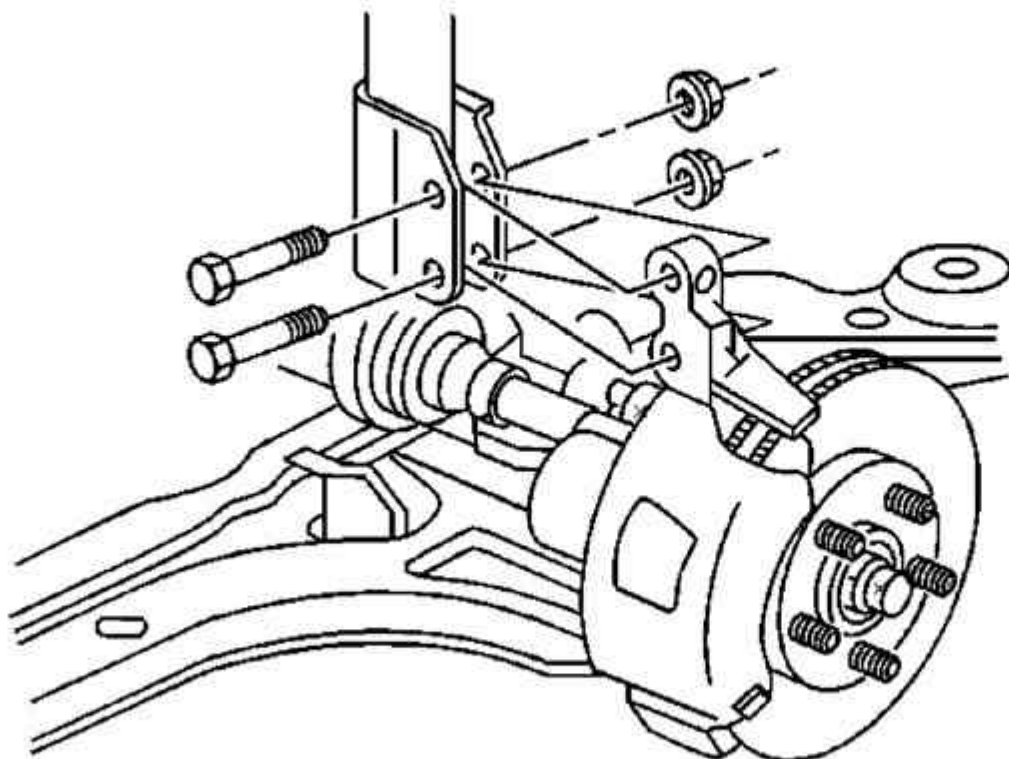


Fig. 47: View Of Steering Knuckle To Strut Bolts
Courtesy of GENERAL MOTORS CORP.

3. Install the strut lower bolts and nuts.

IMPORTANT: This is a prevailing torque type fastener. This fastener may be reused **ONLY** if:

- The fastener and its counterpart are clean and free from rust.
- The fastener develops 3 N.m (27 lb in) of torque/drag against its counterpart prior to the fastener seating.

If the fastener does not meet these criteria, **REPLACE** the fastener.

4. Align the strut to the mark on the knuckle.

Tighten: Tighten the strut lower nuts to 120 N.m (89 lb ft).

5. Install the tire and wheel. Refer to **Tire and Wheel Removal and Installation**.
6. Lower the vehicle.
7. Align the front wheels. Refer to **Wheel Alignment Measurement**.

SUSPENSION STRUT DISPOSAL

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

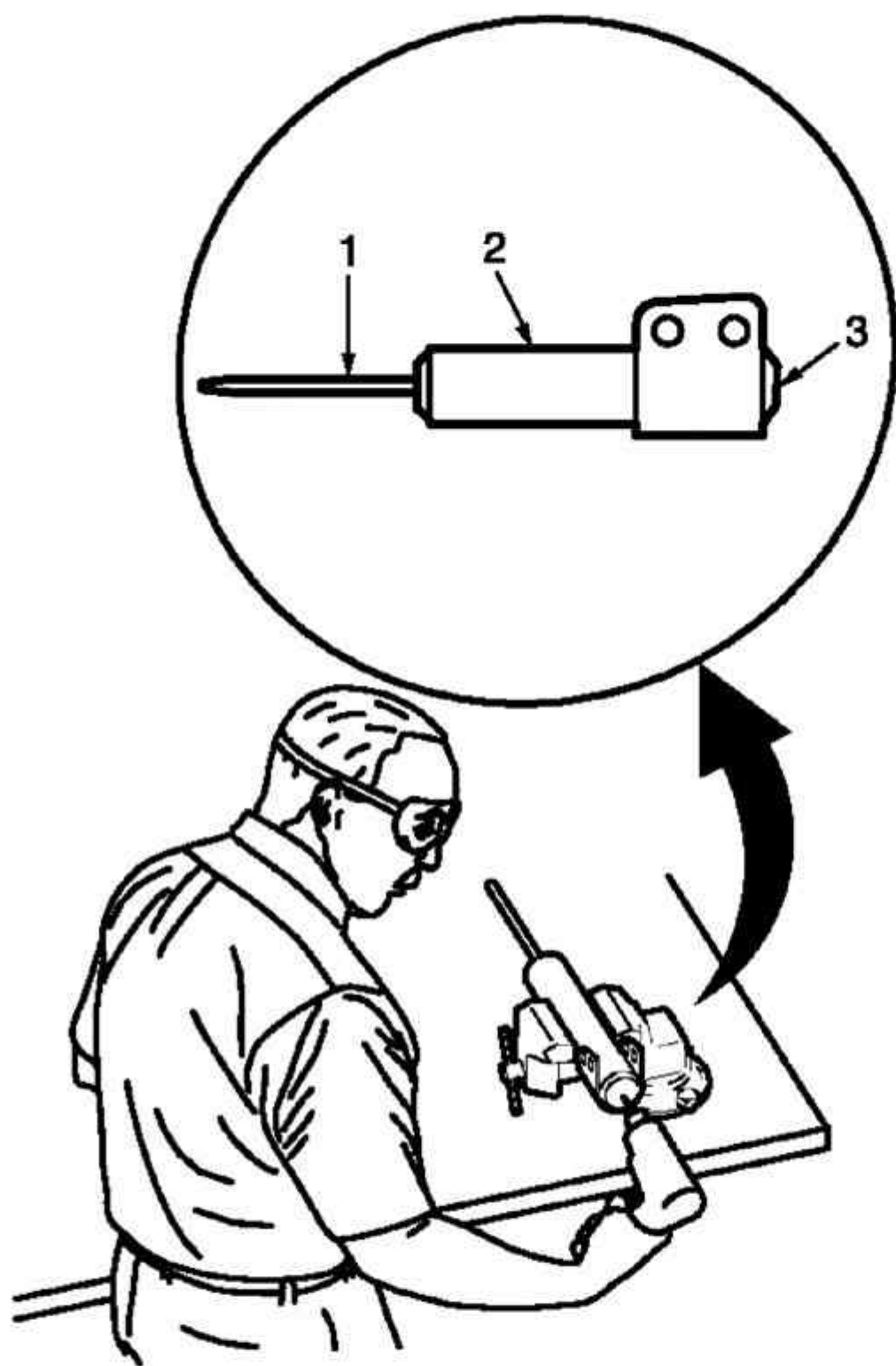


Fig. 48: Drilling Hole In Strut At Center Of End Cap
Courtesy of GENERAL MOTORS CORP.

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

STRUT, STRUT COMPONENT, AND SPRING REPLACEMENT**Tools Required**

- **J 42991** Strut Rod Nut Socket. See Special Tools.
- **J 45400** Strut Spring Compressor. See Special Tools.

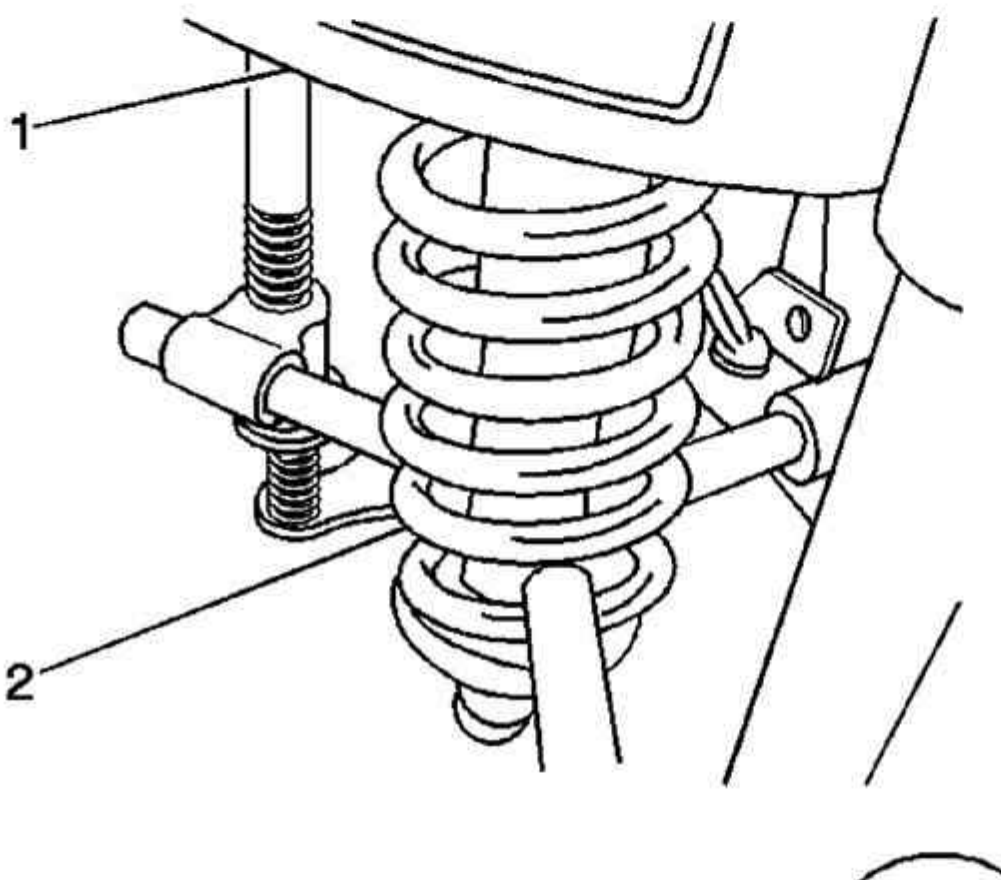
Disassembly Procedure

Fig. 49: Compressing/Releasing Lower Part Of Shock Spring
Courtesy of GENERAL MOTORS CORP.

1. Remove the strut from the vehicle. Refer to Strut Assembly Replacement.
2. Install the strut (2) in the **J 45400** (1). See Special Tools.

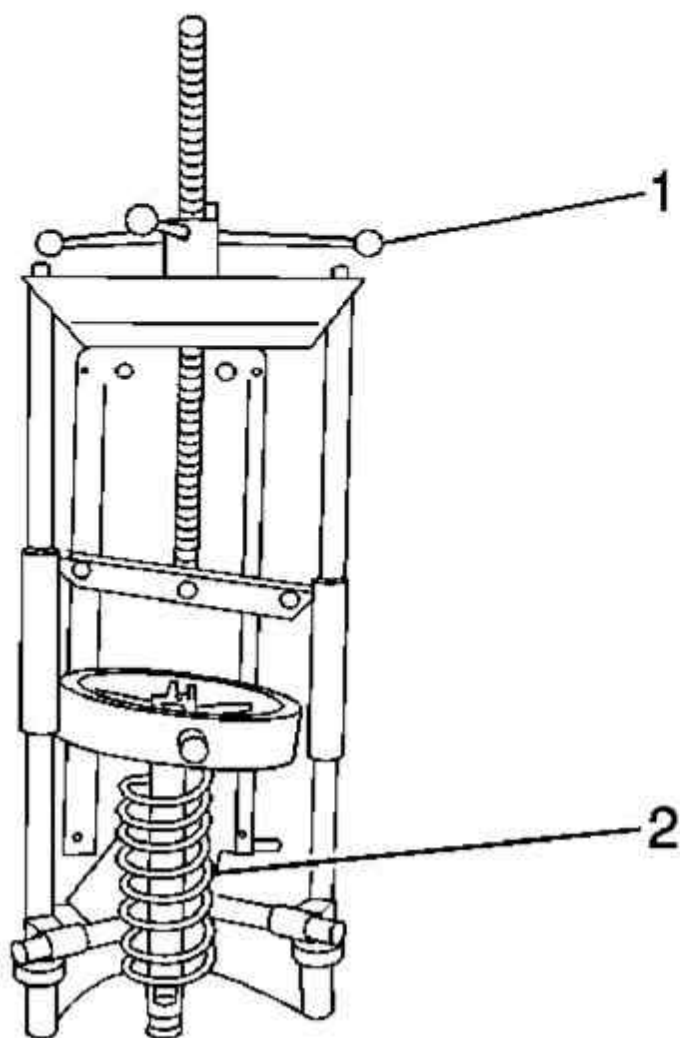


Fig. 50: View Of Compressor Forcing Screw & Coil Spring
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The spring is compressed when the strut moves freely.

3. Turn the spring compressor forcing screw (1) until the coil spring (2) is compressed.

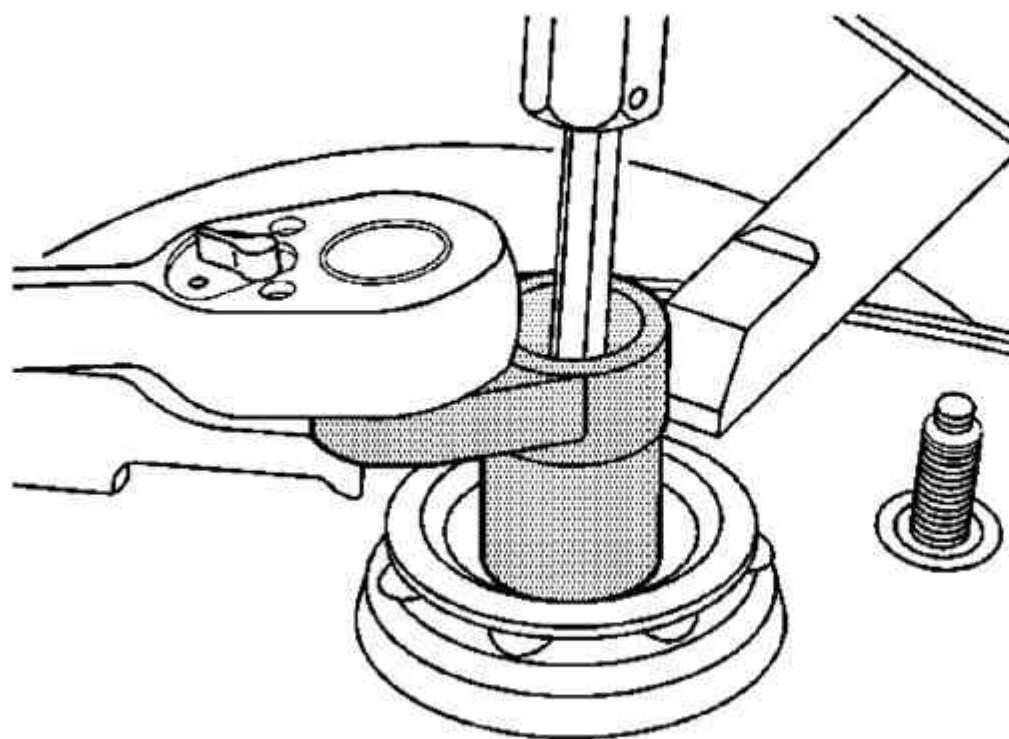


Fig. 51: View Of Special Tools & Strut Shaft
Courtesy of GENERAL MOTORS CORP.

4. Use a 45 TORX® socket in order to hold the strut shaft. Remove the upper strut mount nut by turning with **J 42991** . See Special Tools.
5. Remove the strut from the **J 45400** . See Special Tools.

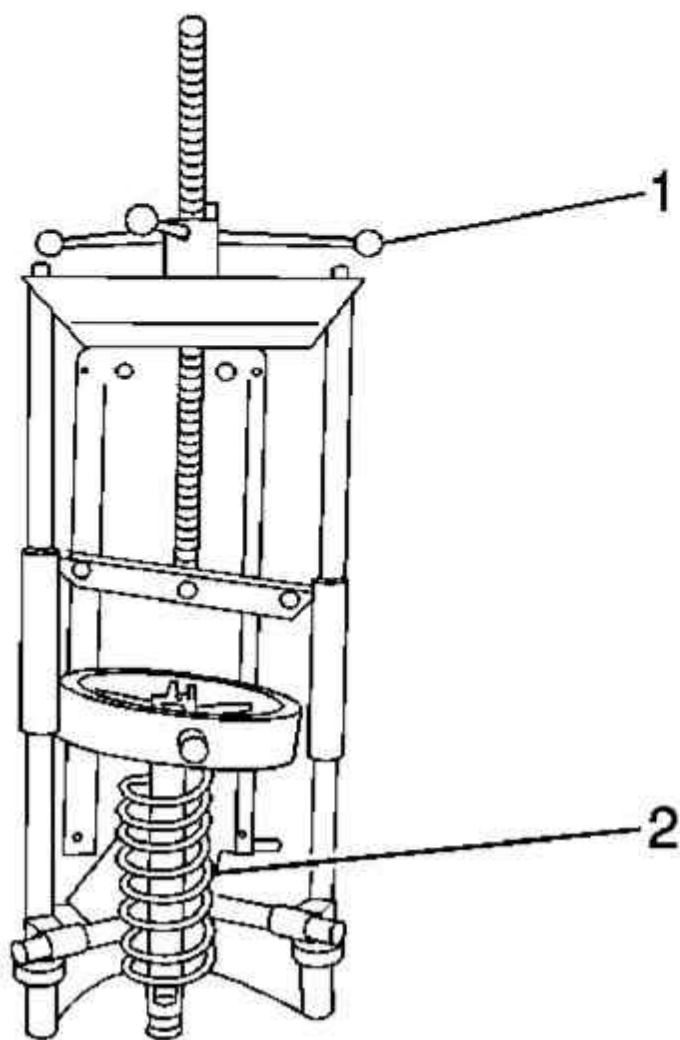


Fig. 52: View Of Compressor Forcing Screw & Coil Spring
Courtesy of GENERAL MOTORS CORP.

6. Loosen the compressor forcing screw (1) until the upper strut mount and coil spring (2) may be removed.
7. Remove the upper strut mount and the coil spring from the **J 45400** . See **Special Tools**.

Assembly Procedure

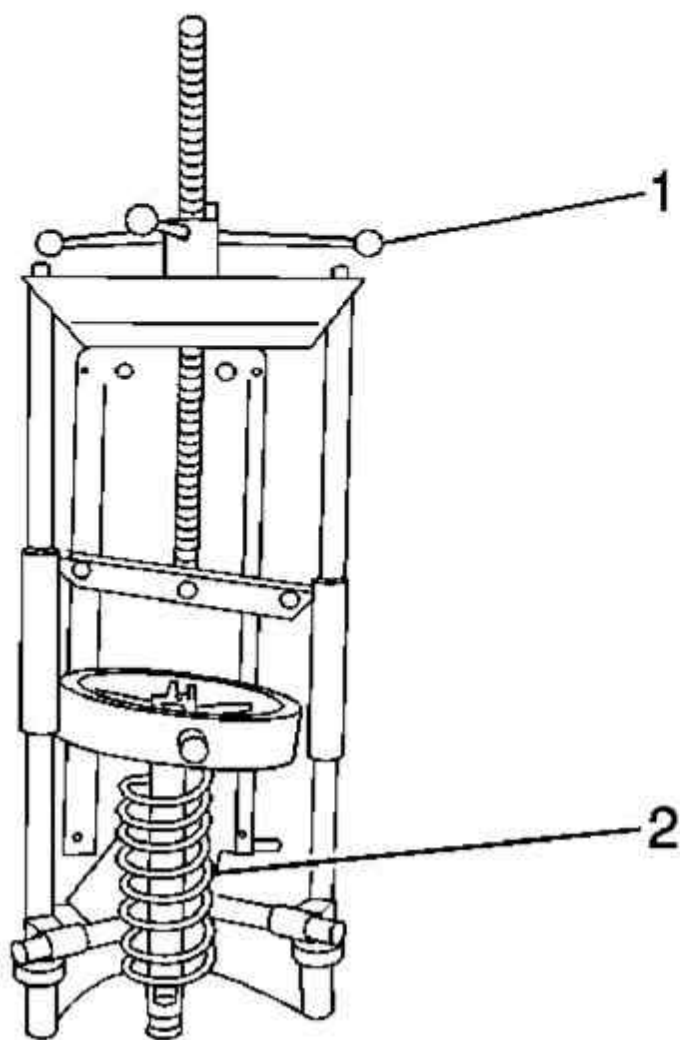


Fig. 53: View Of Compressor Forcing Screw & Coil Spring
Courtesy of GENERAL MOTORS CORP.

1. Install the coil spring and upper strut mount to the **J 45400** . See **Special Tools**.
2. Turn the spring compressor forcing screw (1) until the coil spring is compressed.
3. Install the strut to the coil spring and upper strut mount.

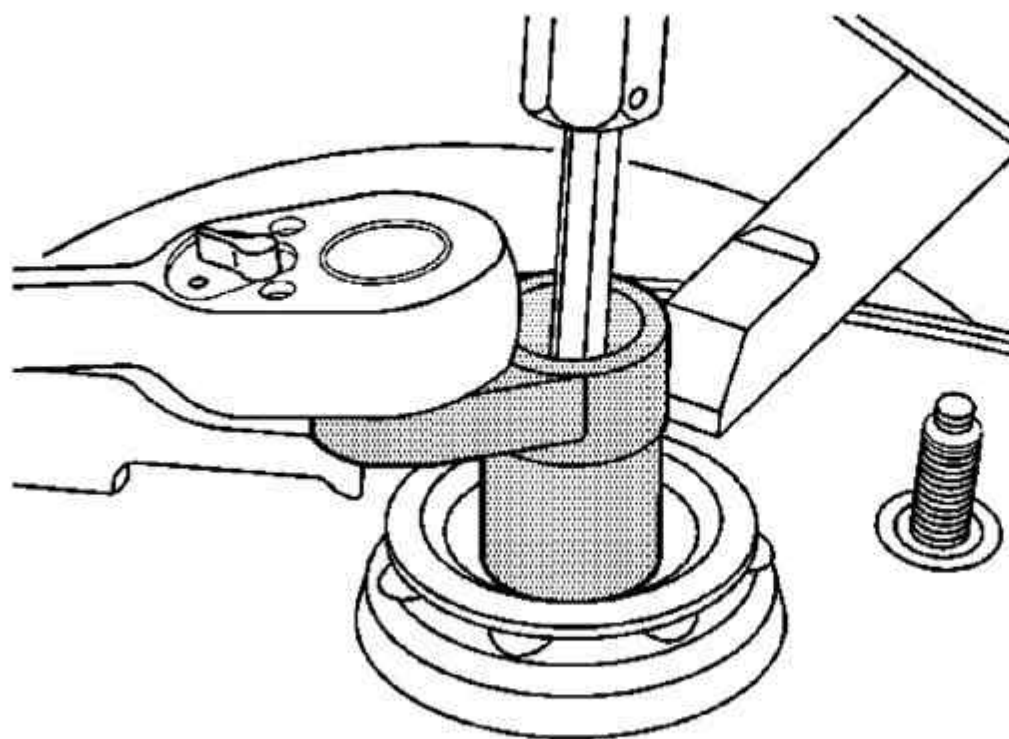


Fig. 54: View Of Special Tools & Strut Shaft
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice .

4. Install the strut retaining nut.

Using the **J 42991** and a 45 TORX® socket, install the strut mount nut. See Special Tools.

Tighten: Tighten the strut mount nut to 75 N.m (55 lb ft).

5. Remove the strut from the **J 45400** . See Special Tools.
6. Install the strut to the vehicle. Refer to Strut Assembly Replacement.

DESCRIPTION AND OPERATION

GENERAL DESCRIPTION

The front suspension has 2 primary purposes:

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

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

relationship to the road.

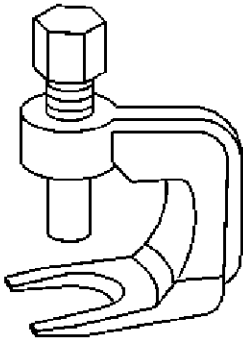
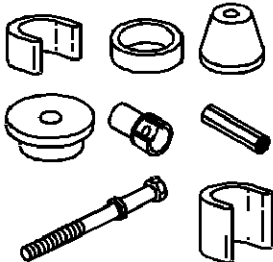
This requires that the steering knuckle be suspended between a lower control arm and a strut assembly. The lower control arm attaches from the steering knuckle at the outermost point of the control arm. The attachment is through a ball and socket type joint. The innermost end of the control arm attached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

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

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

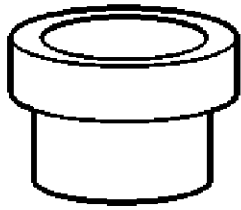
SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

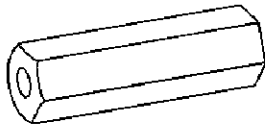
Illustration	Tool Number/Description
	J 6627-A Tie Rod Puller
	J 21474-01 Control Arm Bushing Set

2008 Buick LaCrosse CXL

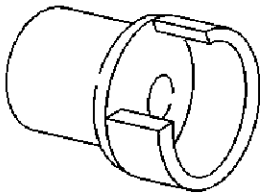
2008 SUSPENSION Front Suspension - LaCrosse



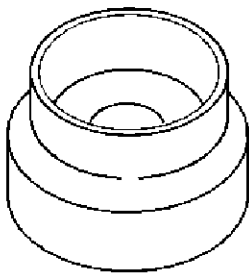
J 21474-2
Bushings Installer Remover



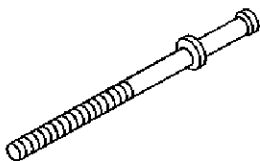
J 21474-4
1/2 Inch Nut



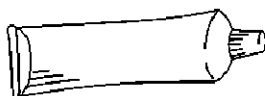
J 21474-5
Bushings Receiver



J 21474-13
Control Arm Bushing Installer



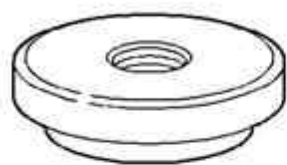
J 21474-27
1/2 Inch Puller Bolt Thrust Bearing



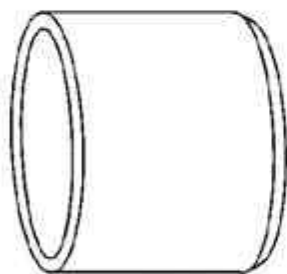
J 23444-A
Extreme Press Lubricant - 1/4 Ounce Tube

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2008 SUSPENSION Front Suspension - LaCrosse



J 34126
Sprocket Support Bearing Installer



J 35379
Front Knuckle Support



J 41820
Ball Joint Separator



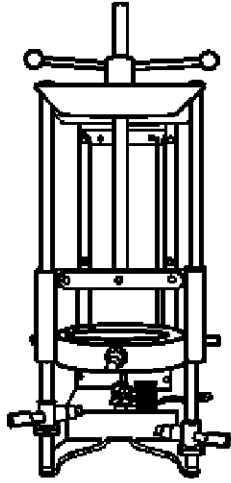
J 42129
Wheel Hub Remover



J 42991
Strut Rod Nut Socket

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J 45400
Strut Spring Compressor

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