

2004 SUSPENSION

Rear Suspension - Vue

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Drive Module Bracket to Drive Module Bolts and Nuts	105 N.m	77 lb ft
Drive Module Bracket to Support Assembly Bolts and Nuts	105 N.m	77 lb ft
Jounce Bumper to Lower Control Arm Nut	63 N.m	46 lb ft
Knuckle to Lower Control Arm Bolt	110 N.m	81 lb ft
Knuckle to Toe Link Bolt	160 N.m	118 lb ft
Knuckle to Trailing Arm Bolt	135 N.m	100 lb ft
Knuckle to Upper Control Arm Bolt	160 N.m	118 lb ft
Lower Control Arm to Support Assembly Bolt	110 N.m	81 lb ft
Lower Shock Bolt	110 N.m	81 lb ft
Park Brake Cable Clip	25 N.m	18 lb ft
Stabilizer Link to Lower Control Arm Nut	15 N.m	11 lb ft
Stabilizer Link to Stabilizer Shaft Nut	63 N.m	46 lb ft
Stabilizer Shaft Clamp Bolt	70 N.m	52 lb ft
Support to Body Bolts	170 N.m	125 lb ft
Toe Link to Support Bolts (black bolt with 15 mm head)	145 N.m	107 lb ft
Toe Link to Support Bolts (silver bolt with 21 mm head)	160 N.m	118 lb ft
Trailing Arm Bracket to Body Bolts	110 N.m	81 lb ft
Trailing Arm Bushing to Bracket Bolt (M14)	160 N.m	118 lb ft
Trailing Arm Bushing to Bracket Bolt (M12)	110 N.m	81 lb ft
Upper Control Arm to Support Bolts (M12)	110 N.m	81 lb ft
Upper Control Arm to Support Bolts (M14)	160 N.m	118 lb ft
Upper Shock Bolts	110 N.m	81 lb ft
Wheel Bearing/Hub Mounting Bolts - Rear	84 N.m	62 lb ft
Wheel Bearing/Hub to Steering Knuckle Bolts	130 N.m	96 lb ft
Wheel Drive Shaft Spindle Nut	125 N.m	92 lb ft

REPAIR INSTRUCTIONS

WHEEL BEARING/HUB REPLACEMENT - REAR

Removal Procedure

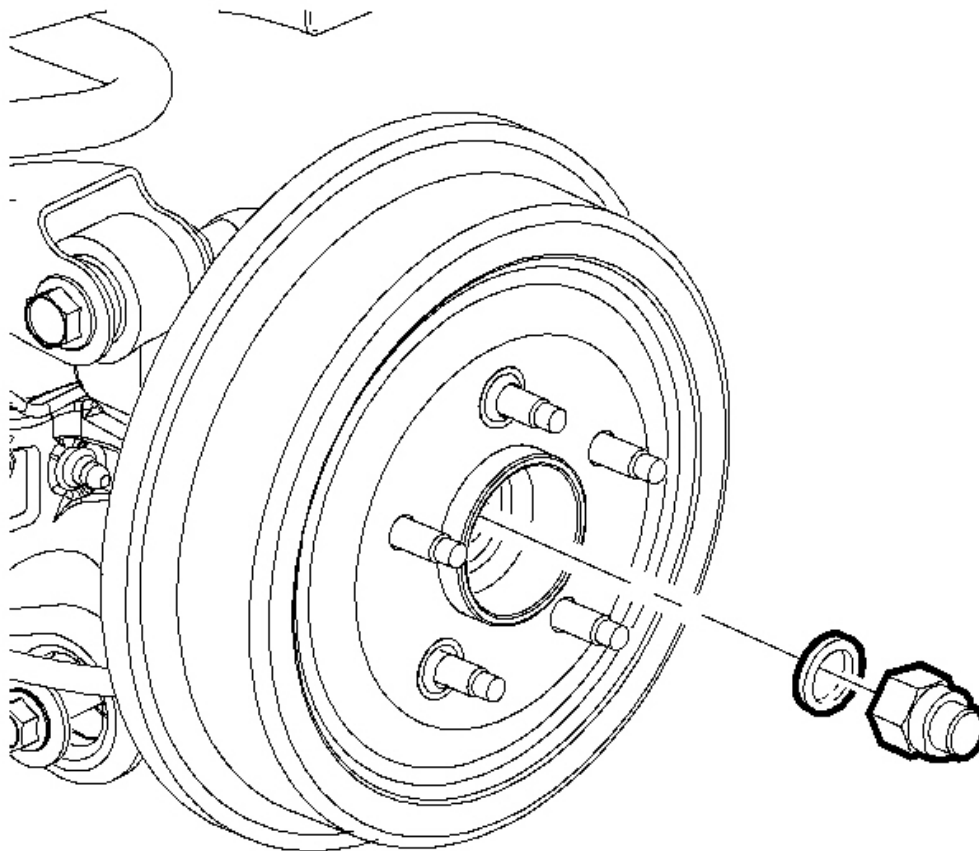


Fig. 1: Rear Brake Drum & Wheel Drive Shaft Spindle Nut
Courtesy of GENERAL MOTORS CORP.

1. Remove the rear brake drum. Refer to **Brake Drum Replacement** in Drum Brakes.
2. On vehicles with all-wheel drive, remove the wheel drive shaft spindle nut.

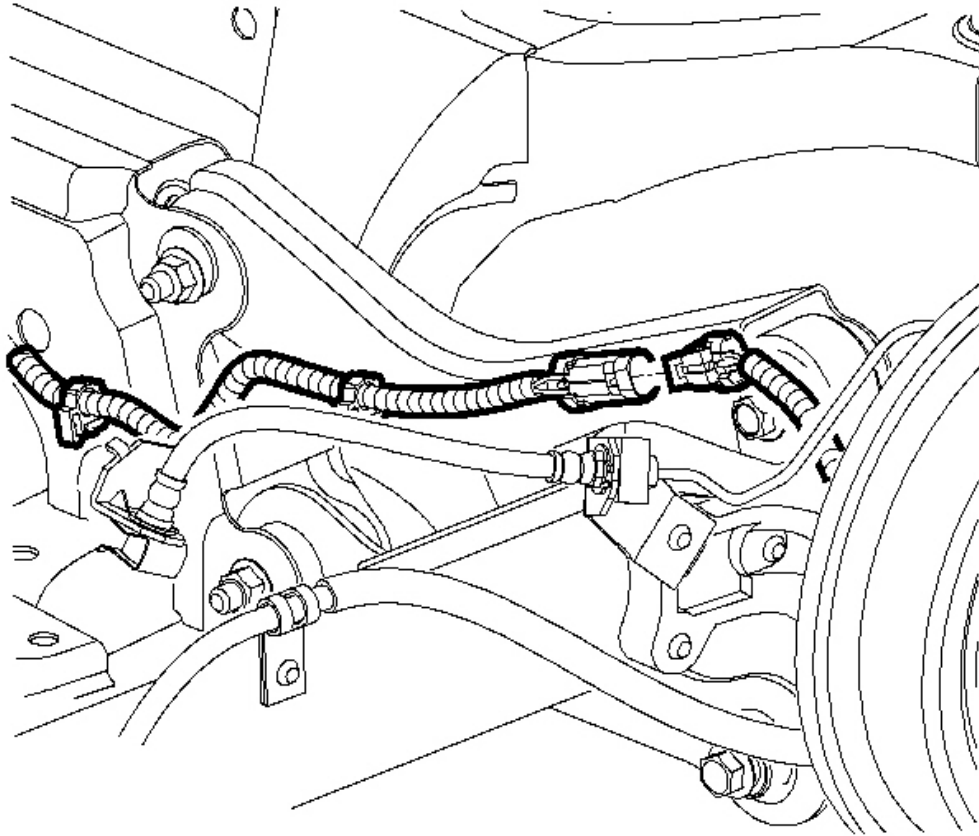


Fig. 2: Wheel Speed Sensor Electrical Connector
Courtesy of GENERAL MOTORS CORP.

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

IMPORTANT: Do not damage the wheel drive shaft joint seal.

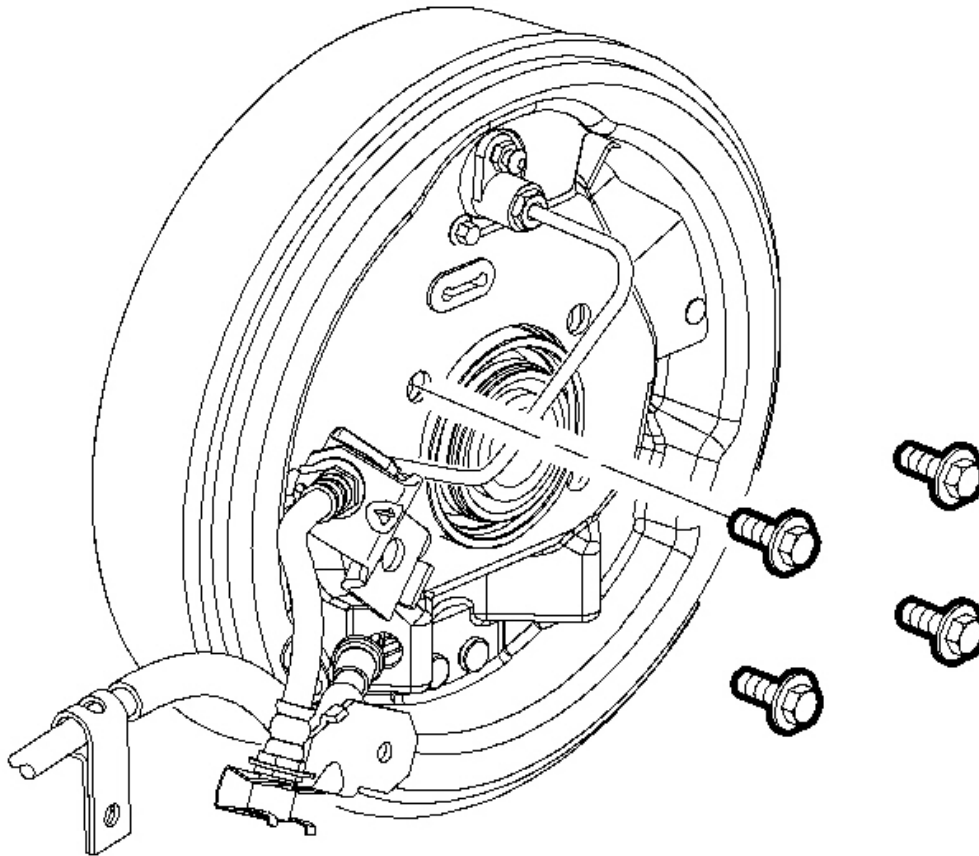


Fig. 3: Wheel Bearing/Hub & Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

4. Support the wheel drive shaft with heavy mechanic's wire, or equivalent.
5. Remove the wheel bearing/hub mounting bolts.
6. Remove the wheel bearing/hub assembly from the suspension knuckle.

Installation Procedure

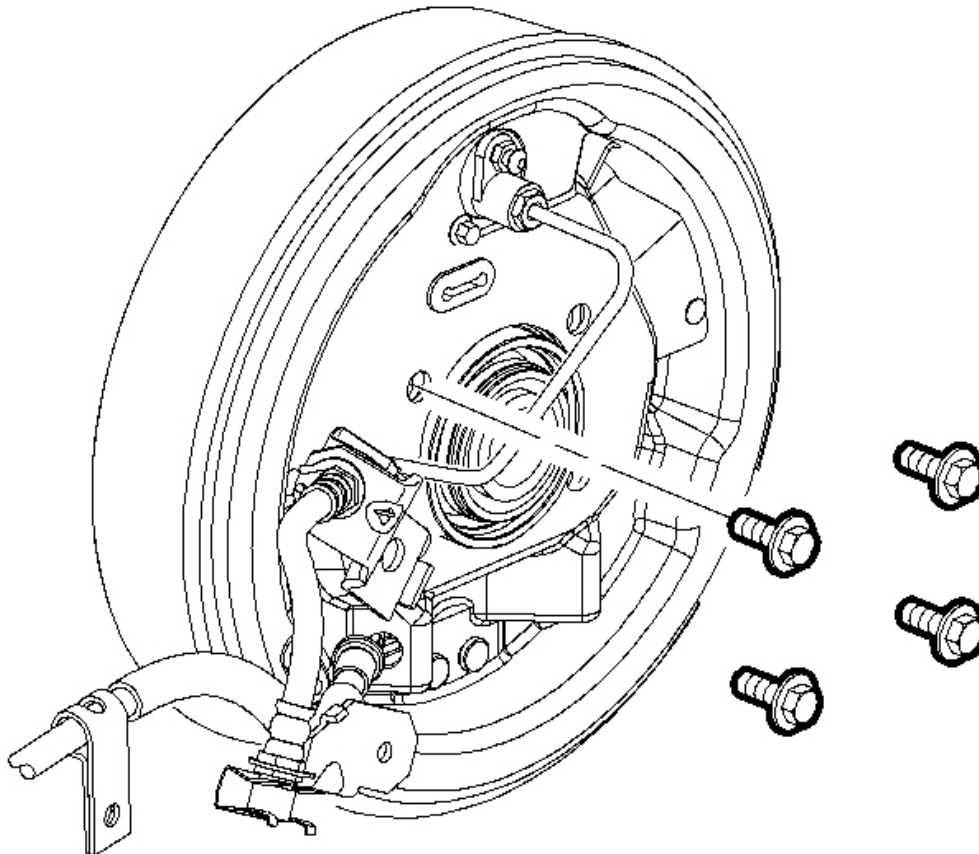


Fig. 4: Wheel Bearing/Hub & Mounting Bolts
Courtesy of GENERAL MOTORS CORP.

1. Install the wheel bearing/hub assembly to the steering knuckle.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the wheel bearing/hub mounting bolts.

Tighten: Tighten the bolts to 84 N.m (62 lb ft).

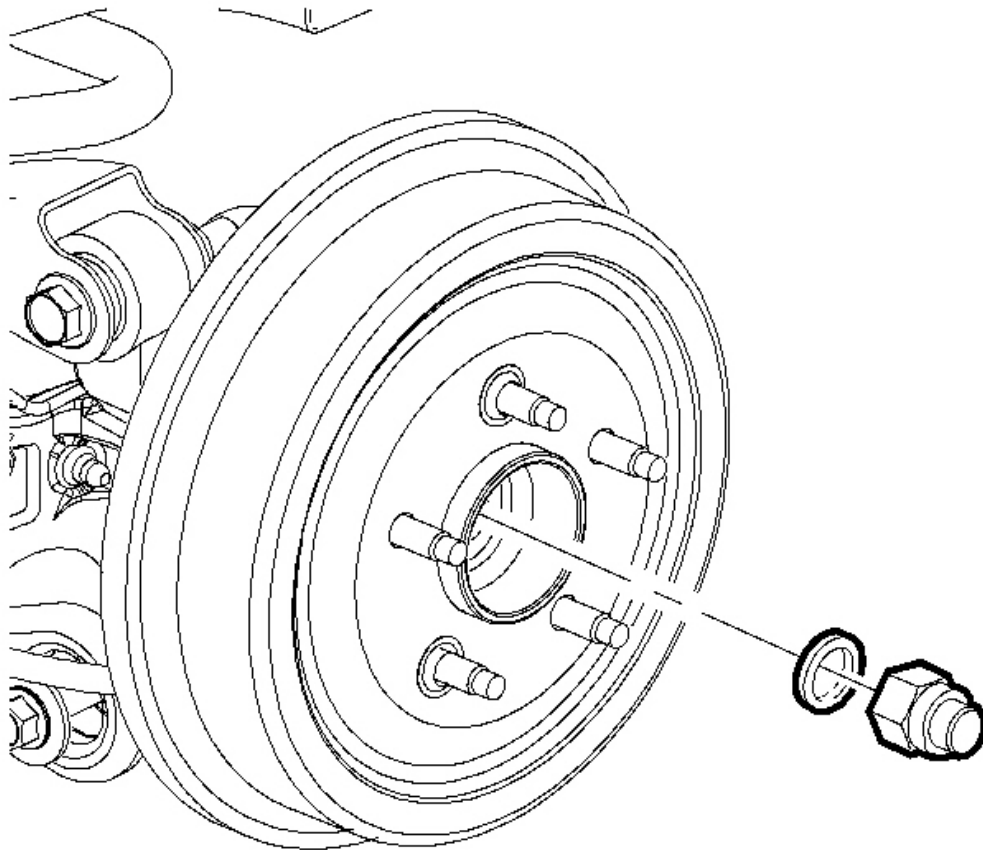


Fig. 5: Rear Brake Drum & Wheel Drive Shaft Spindle Nut
Courtesy of GENERAL MOTORS CORP.

3. On all-wheel drive vehicles, install the wheel drive shaft spindle nut.

Tighten: Tighten the nut to 125 N.m (92 lb ft).

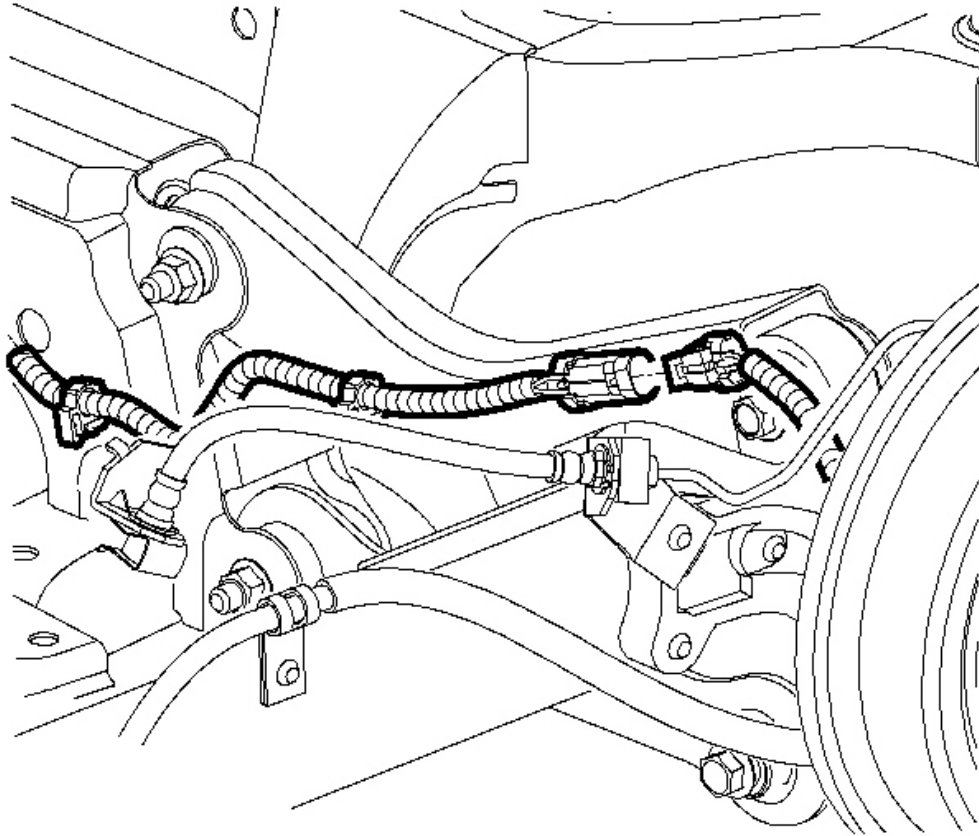


Fig. 6: Wheel Speed Sensor Electrical Connector
Courtesy of GENERAL MOTORS CORP.

4. If equipped, route the wheel speed sensor electrical harness through the backing plate and seat the grommet.
5. Connect the wheel speed sensor electrical connector.
6. Install the rear brake drum. Refer to **Brake Drum Replacement** in Drum Brakes.

SUPPORT REPLACEMENT

Removal Procedure

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

2. Remove the tires and wheels. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.

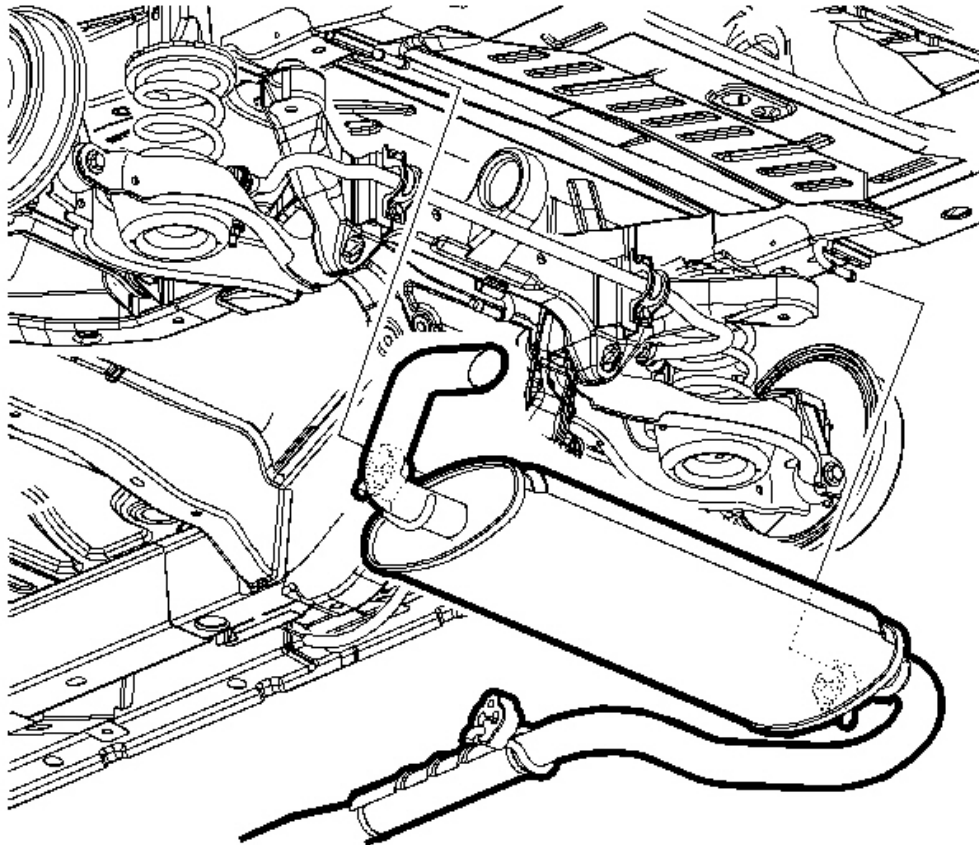


Fig. 7: Exhaust Muffler & Resonator Assembly
Courtesy of GENERAL MOTORS CORP.

3. Remove the exhaust muffler and resonator assembly. Refer to **Muffler Replacement (Production Assembly)** or **Muffler Replacement (Service Part)** in Engine Exhaust.
4. If equipped with all wheel drive, remove the rear drive axle. Refer to **Differential Replacement** in Rear Drive Axle.
5. Remove the stabilizer shaft. Refer to **Stabilizer Shaft Replacement** .
6. Remove the lower control arm from the support assembly. Refer to **Rear Axle Lower Control Arm Bushing Replacement** .

7. Disconnect the upper control arm from the support assembly. Refer to **Rear Axle Upper Control Arm Replacement** .
8. Disconnect the toe link from the support assembly. Refer to **Toe Link Replacement** .

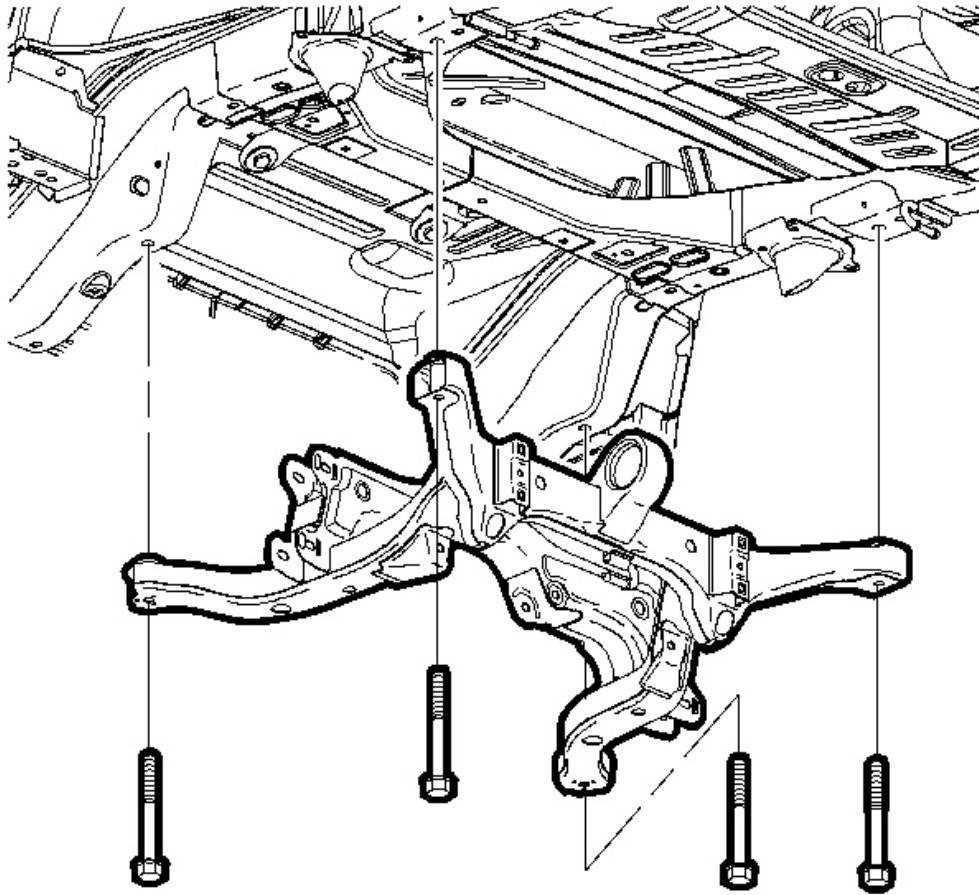


Fig. 8: Body Bolts & Support Assembly
Courtesy of GENERAL MOTORS CORP.

9. Remove the support to body bolts and remove the support assembly from the vehicle.

Installation Procedure

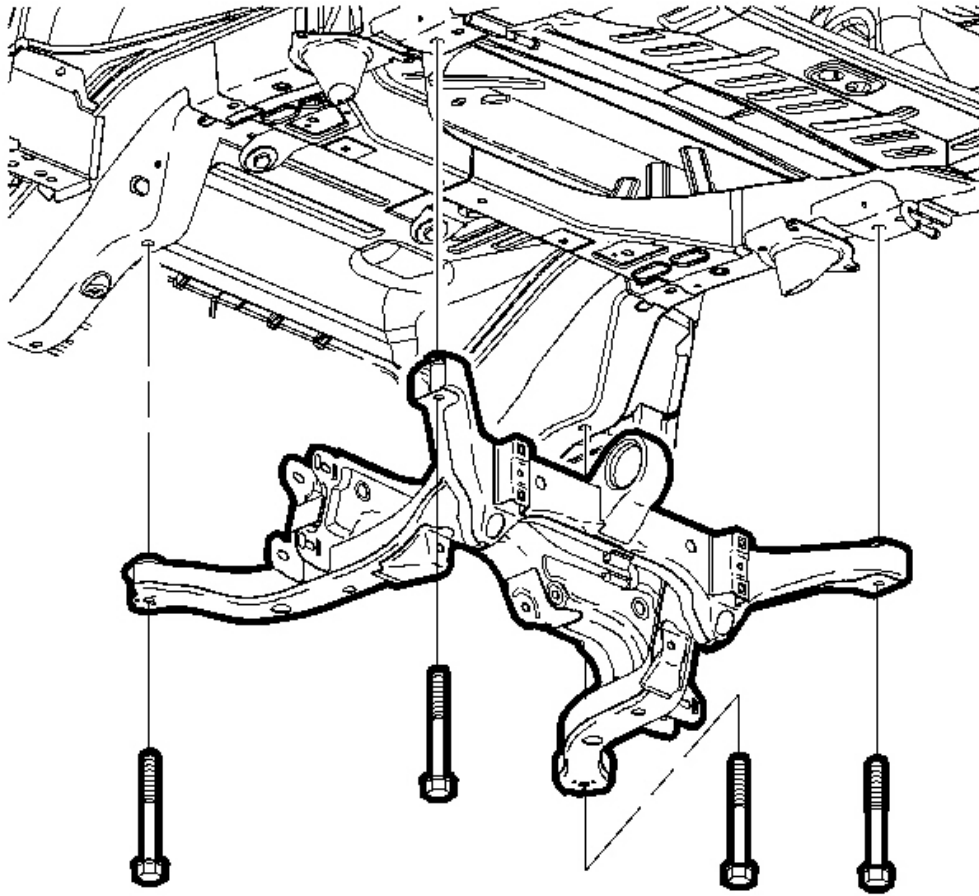


Fig. 9: Body Bolts & Support Assembly
Courtesy of GENERAL MOTORS CORP.

1. Position the support assembly to the vehicle.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the support to body bolts.

Tighten: Tighten the support to body bolts to 170 N.m (125 lb ft).

3. Connect the toe link to the support assembly. Refer to Toe Link Replacement .

4. Connect the upper control arm to the support assembly. Refer to **Rear Axle Upper Control Arm Replacement** .
5. Install the lower control arm to the support assembly. Refer to **Rear Axle Lower Control Arm Bushing Replacement** .
6. Install the stabilizer shaft. Refer to **Stabilizer Shaft Replacement** .
7. If equipped with all wheel drive, install the rear drive axle. Refer to **Differential Replacement** in Rear Drive Axle.

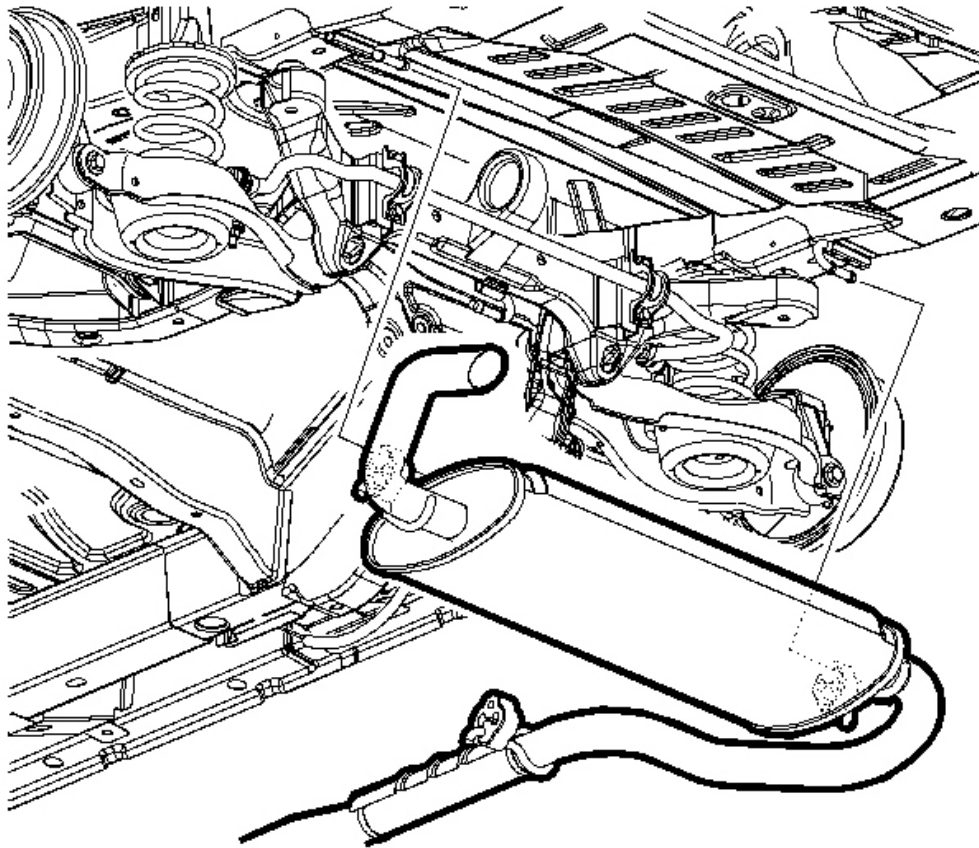


Fig. 10: Exhaust Muffler & Resonator Assembly
Courtesy of GENERAL MOTORS CORP.

8. Install the exhaust muffler and resonator assembly. Refer to **Muffler Replacement (Production**

Assembly or **Muffler Replacement (Service Part)** in Engine Exhaust.

9. Install the tires and wheels. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
10. Lower the vehicle.
11. Check the rear alignment. Refer to **Measuring Wheel Alignment** in Wheel Alignment.

SUPPORT REAR DRIVE MODULE MOUNTING BUSHING REPLACEMENT

Tools Required

J 44866 Support Bushing Remover and Installer

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the production muffler and resonator as an assembly. Refer to **Muffler Replacement (Production Assembly)** or **Muffler Replacement (Service Part)** in Engine Exhaust.
3. Remove the rear stabilizer shaft. Refer to **Stabilizer Shaft Replacement** .

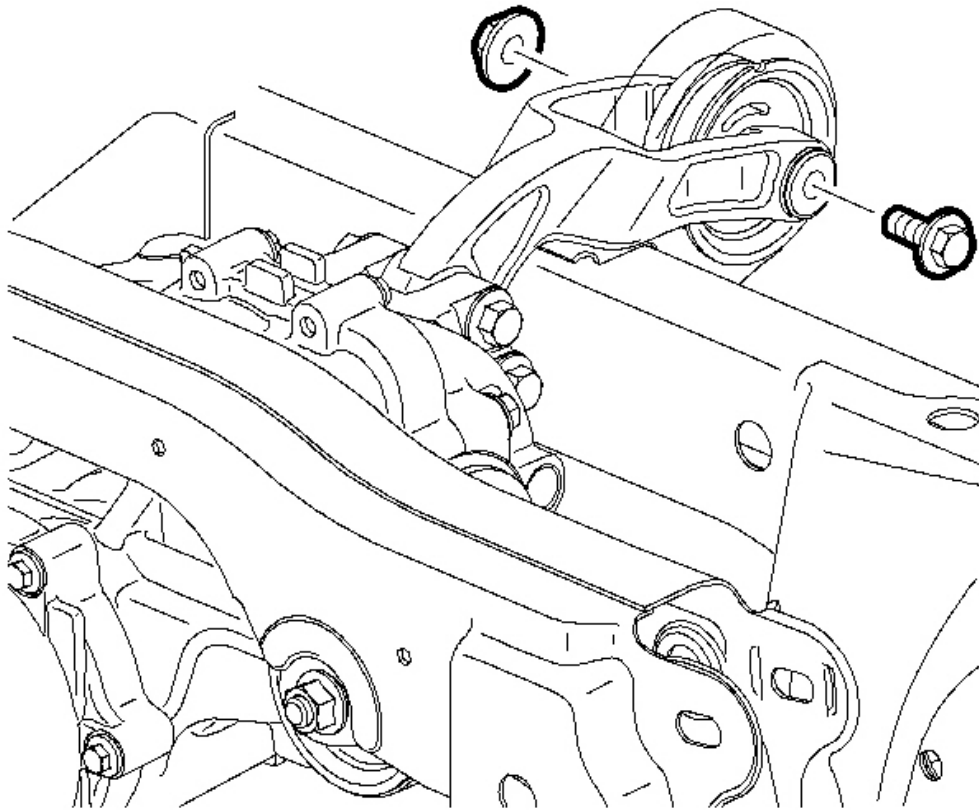


Fig. 11: Rear Drive Module, Bracket, Bolts & Nuts
Courtesy of GENERAL MOTORS CORP.

4. Remove the rear drive module bracket to support bolt and nut. Discard the nut.
5. Remove the rear drive module to rear drive module bolts and nuts. Discard the nuts.
6. Remove the rear drive module bracket from the vehicle.

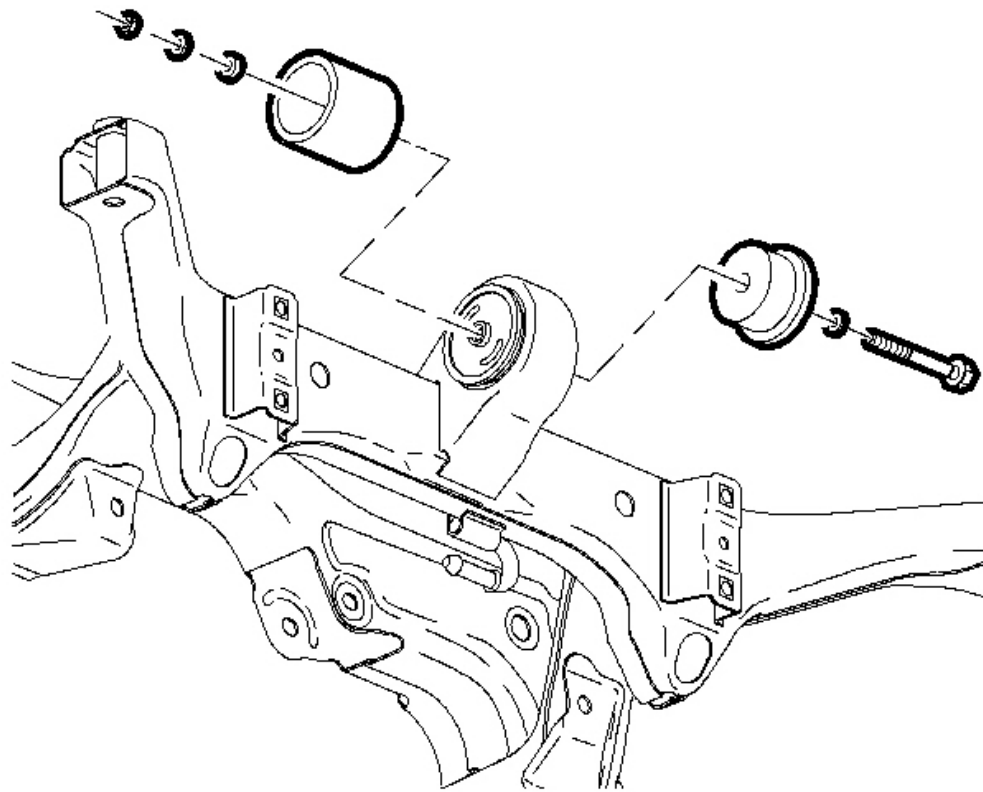


Fig. 12: Removing The Bushing From Support Assembly
Courtesy of GENERAL MOTORS CORP.

7. Install the **J 44866** to the support assembly in the following procedure.
 1. Position the large part of the tool over the bushing flange and against the frame.
 2. Install the bolt and washer.
 3. Install the small part of the tool against the bushing.
 4. Lube the threads of the **J 44866** with extreme pressure (EP) lube.

IMPORTANT: Ensure the small end of the tool is aligned with the bushing.

5. Install the bearing, washer and nut.

6. Tighten the **J 44866** in order to remove the bushing from the support assembly.

Installation Procedure

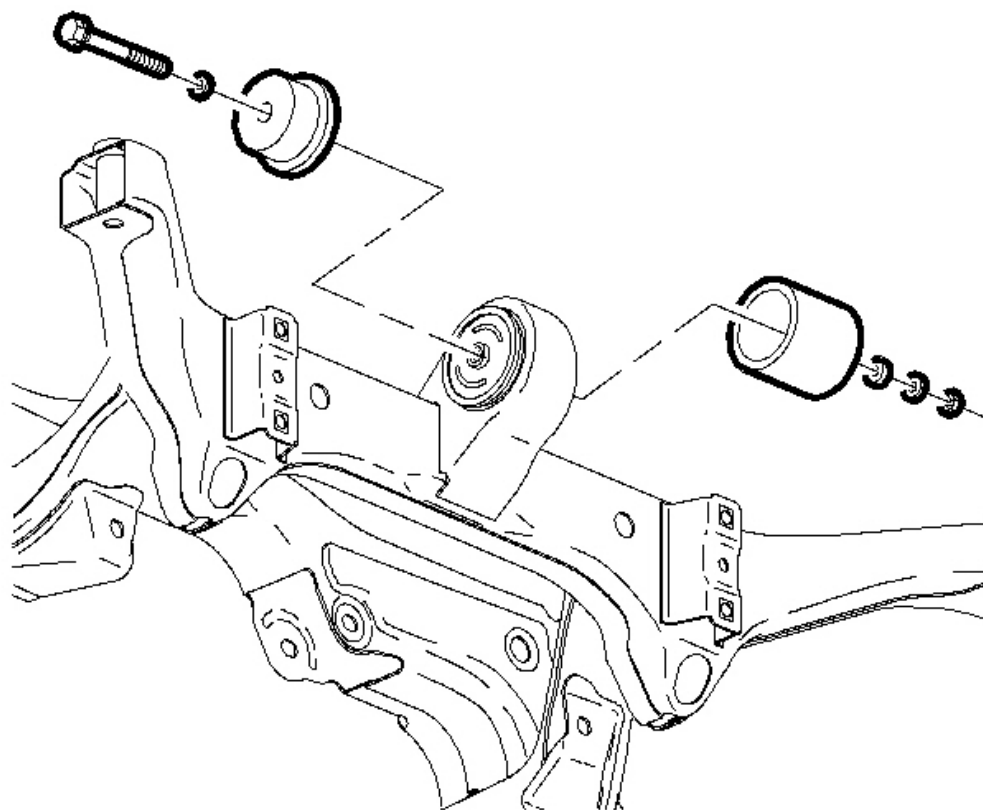


Fig. 13: Installing The Bushing From Support Assembly
Courtesy of GENERAL MOTORS CORP.

1. Install the **J 44866** to the support assembly in the following procedure.
 1. Place the bolt washer and large portion of the **J 44866** against the frame.
 2. Position the bushing against the support assembly. Align the bushing with the slots in the rubber portion straight up and down.
 3. Position the small part of the **J 44866** against the bushing flange area.

4. Lube the threads of the **J 44866** with EP lube.
5. Install the bearing, washer and nut.

IMPORTANT: The bushing must be fully seated.

6. Tighten the **J 44866** in order to install the bushing into the support assembly.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the rear drive module bracket to the rear drive module, using new nuts.

Tighten: Tighten the drive module bracket to drive module bolts and nuts to 105 N.m (77 lb ft).

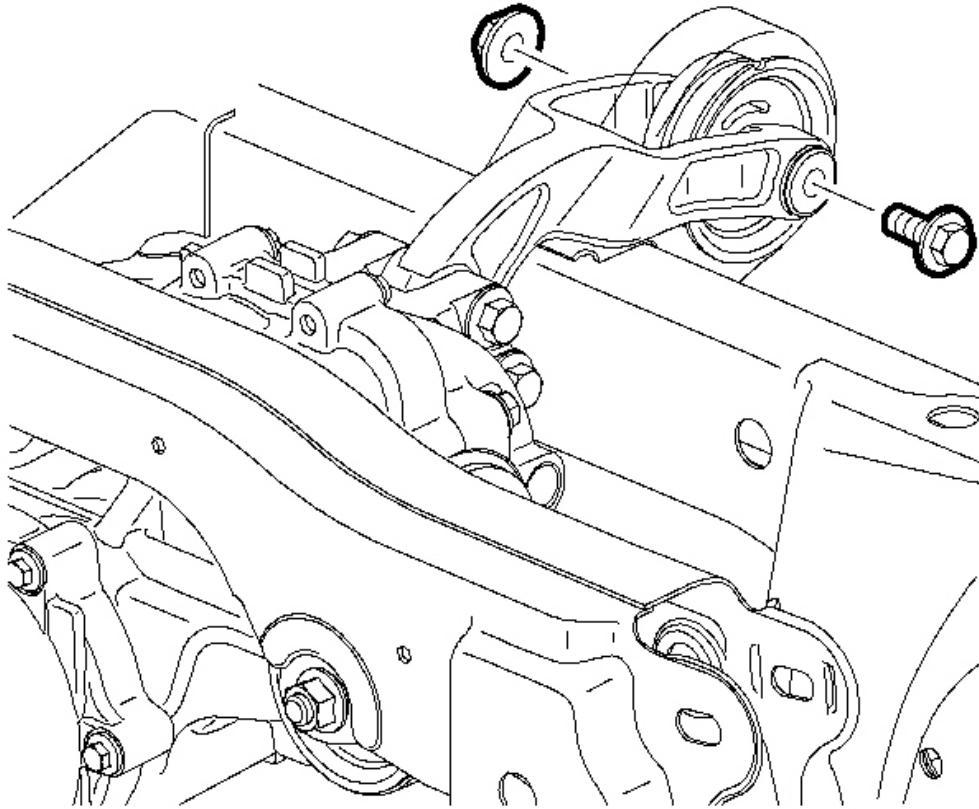


Fig. 14: Rear Drive Module, Bracket, Bolts & Nuts
Courtesy of GENERAL MOTORS CORP.

3. Install the rear bracket to support bolt, using a new nut.

Tighten: Tighten the drive module bracket to support assembly bolt and nut to 105 N.m (77 lb ft).

4. Install the rear stabilizer shaft. Refer to **Stabilizer Shaft Replacement** .
5. Install the production muffler and resonator as an assembly. Refer to **Muffler Replacement (Production Assembly)** or **Muffler Replacement (Service Part)** in Engine Exhaust.
6. Lower the vehicle.

KNUCKLE REPLACEMENT

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the tire and wheel. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
3. Remove the wheel bearing/hub assembly. Refer to **Wheel Bearing/Hub Replacement - Rear** .

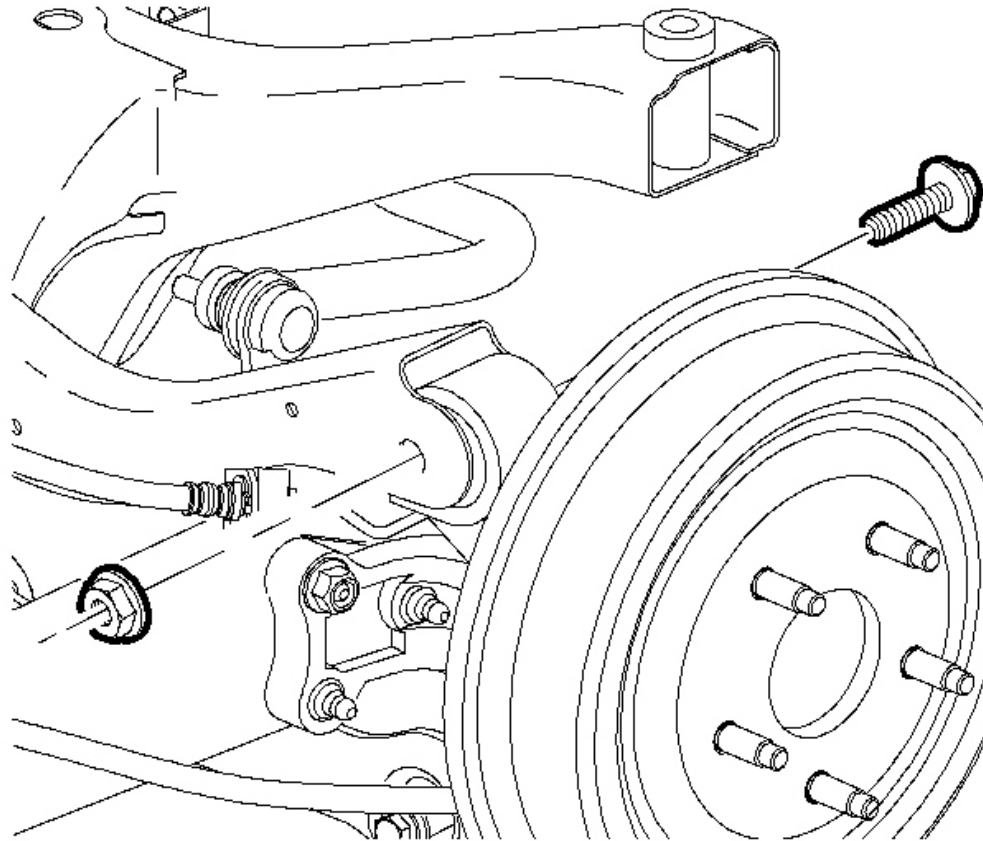


Fig. 15: Upper Control Arm, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

4. Remove the upper control arm to knuckle bolt and nut.

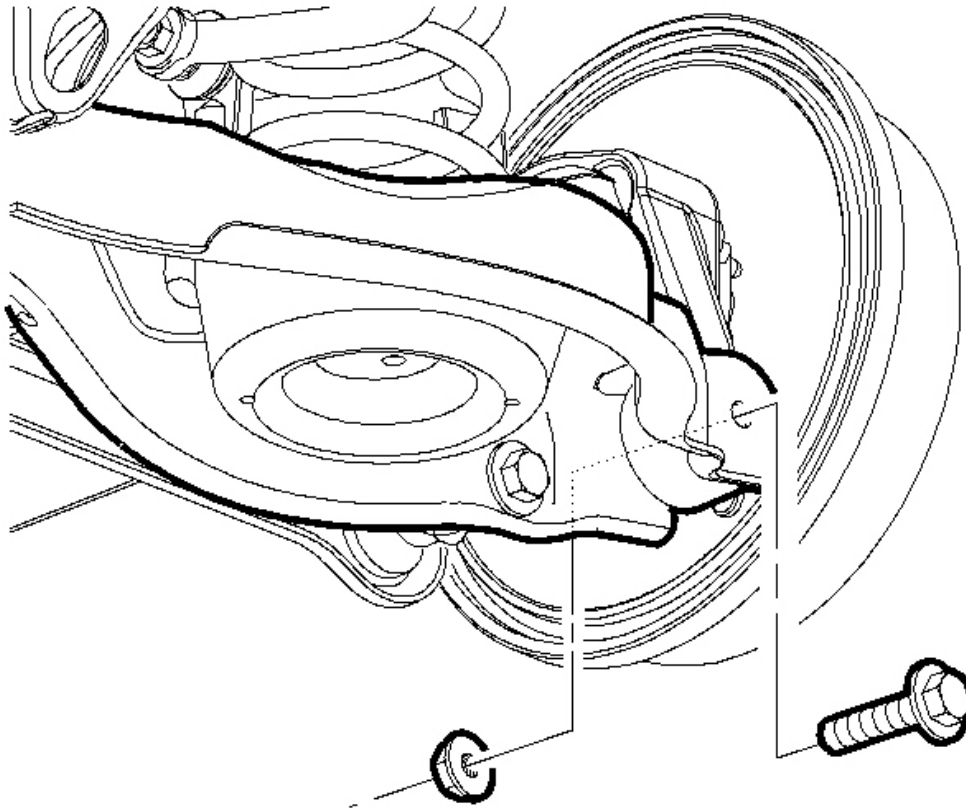


Fig. 16: Lower Control Arm, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

5. Remove the lower control arm to knuckle bolt and nut.

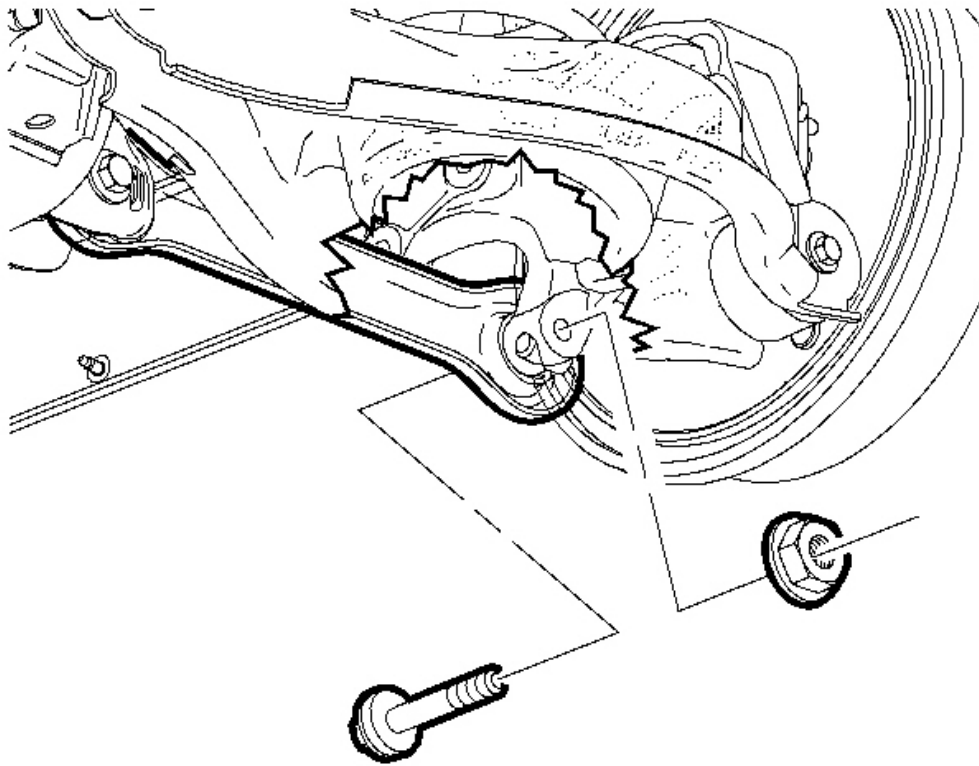


Fig. 17: Toe Link, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

6. Remove the toe link to knuckle bolt and nut.

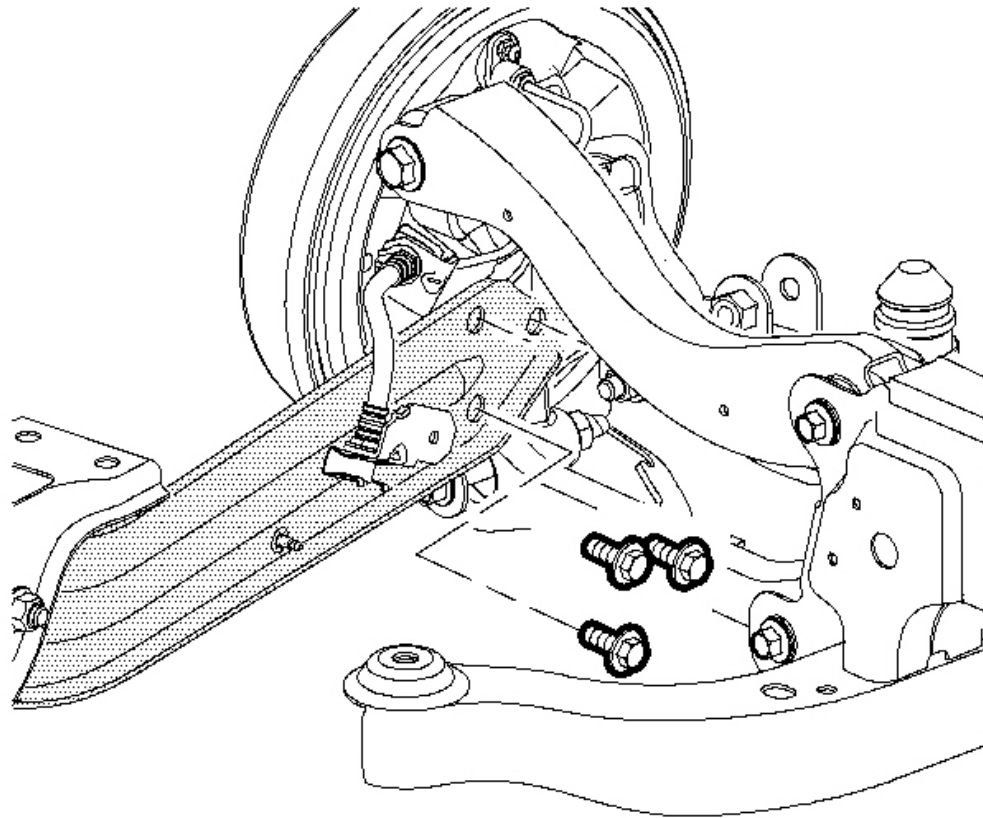


Fig. 18: Trailing Blade & Knuckle Bolts
Courtesy of GENERAL MOTORS CORP.

7. Remove the trailing blade to knuckle bolts.
8. Remove the knuckle from the vehicle.

Installation Procedure

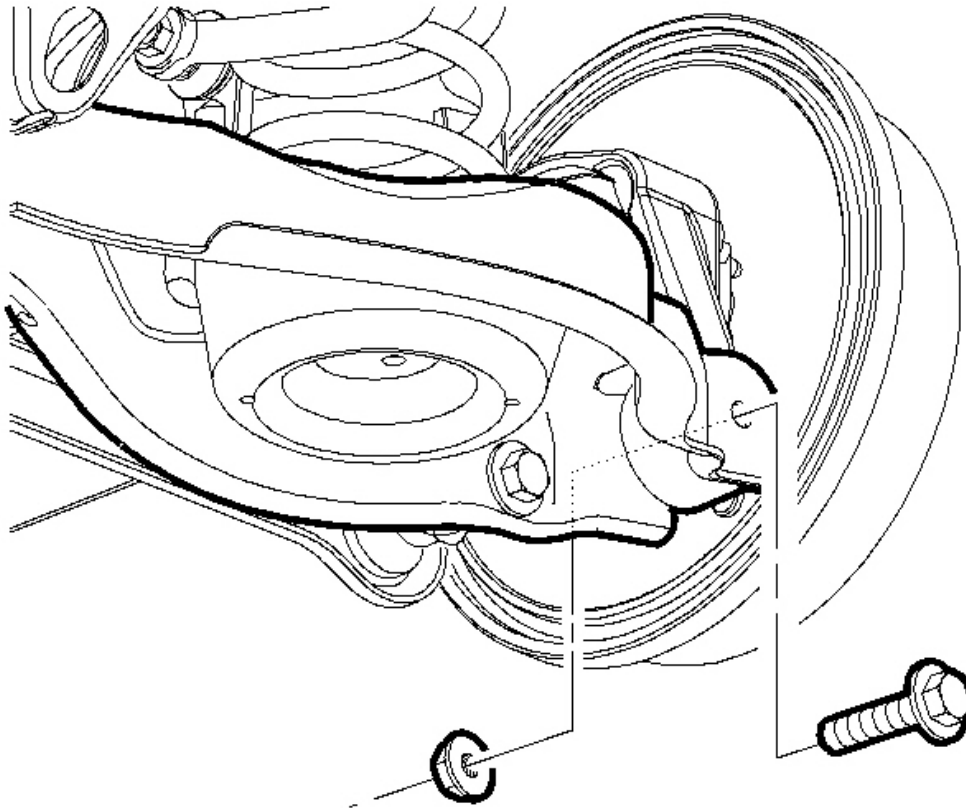


Fig. 19: Lower Control Arm, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

1. Install the knuckle to the lower control arm. Loosely install the bolt and nut.

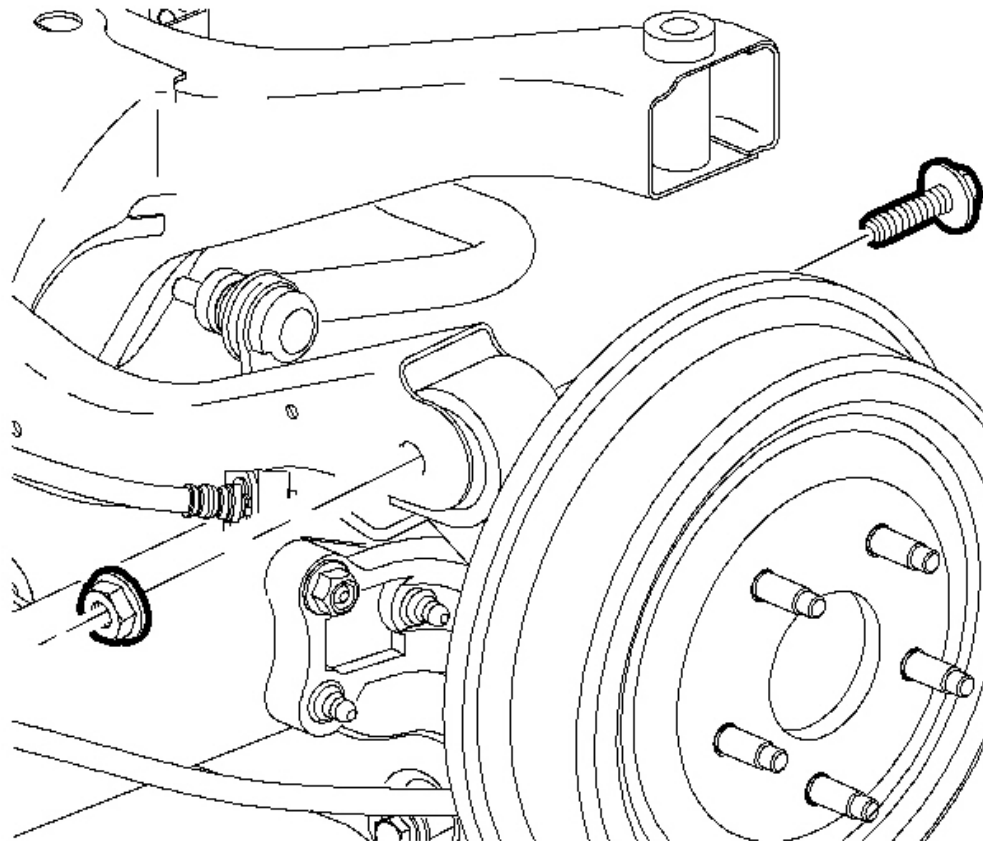


Fig. 20: Upper Control Arm, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

2. Install the knuckle to the upper control arm. Loosely install the bolt and nut.

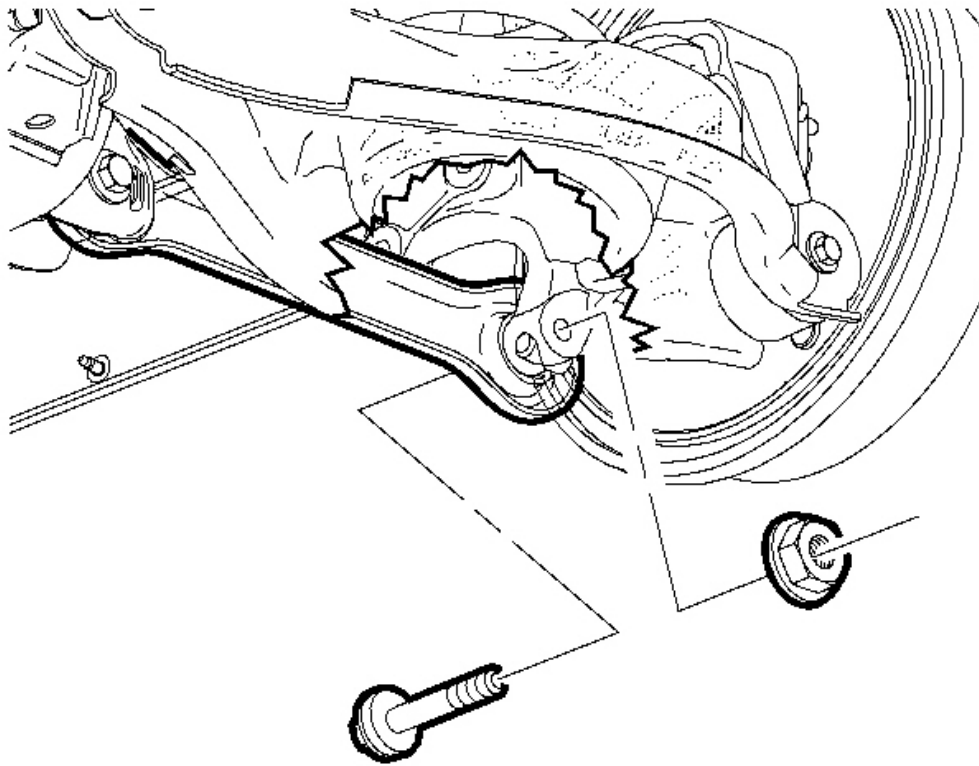


Fig. 21: Toe Link, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

3. Install the knuckle to the toe link. Loosely install the bolt and nut.

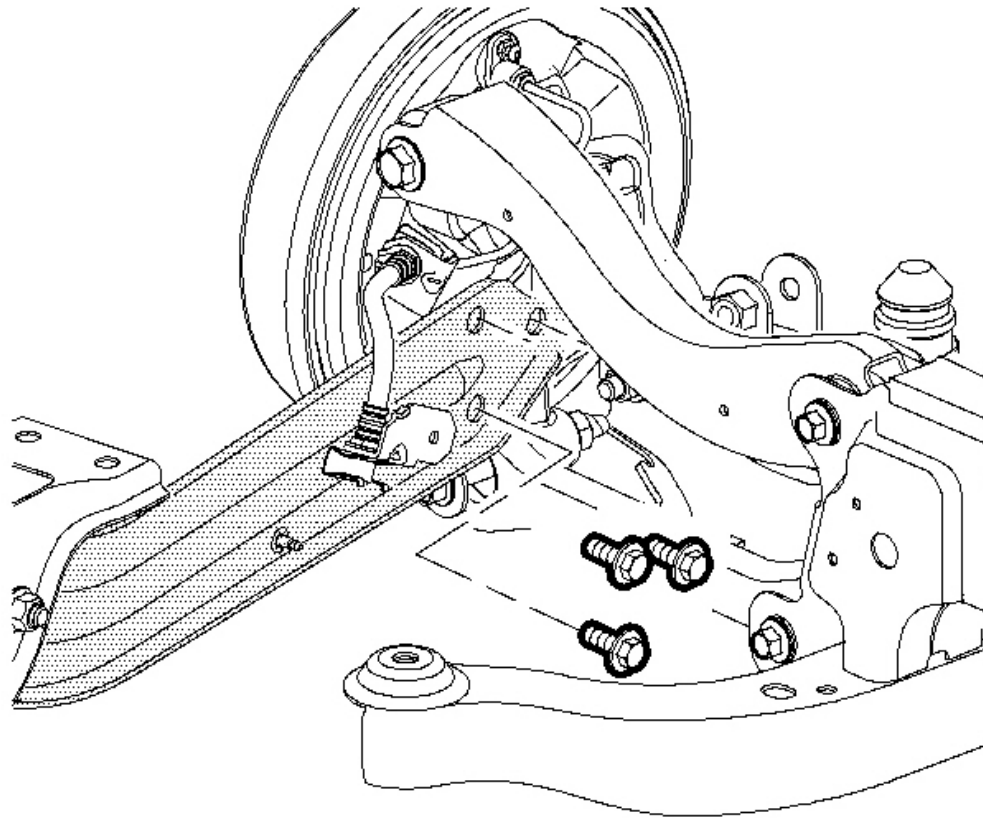


Fig. 22: Trailing Blade & Knuckle Bolts
Courtesy of GENERAL MOTORS CORP.

4. Install the knuckle to trailing blade. Loosely install the bolt and nut.

NOTE: Refer to Fastener Notice in Cautions and Notices.

5. Tighten the bolts and nuts in the following sequence.

Tighten:

1. Tighten the knuckle to lower control arm bolt to 110 N.m (81 lb ft).
2. Tighten the knuckle to upper control arm bolt to 160 N.m (118 lb ft).

3. Tighten the knuckle to toe link bolt to 160 N.m (118 lb ft).
4. Tighten the knuckle to trailing blade bolts to 135 N.m (100 lb ft).

6. Install the wheel bearing/hub assembly. Refer to **Wheel Bearing/Hub Replacement - Rear** .
7. Install the tire and wheel. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
8. Lower the vehicle.
9. Perform a vehicle wheel alignment. Refer to **Measuring Wheel Alignment** in Wheel Alignment.

KNUCKLE BUSHING REPLACEMENT - UPPER

Tools Required

J 45265 Bushing Remover/Installer. See **Special Tools and Equipment** .

Removal Procedure

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

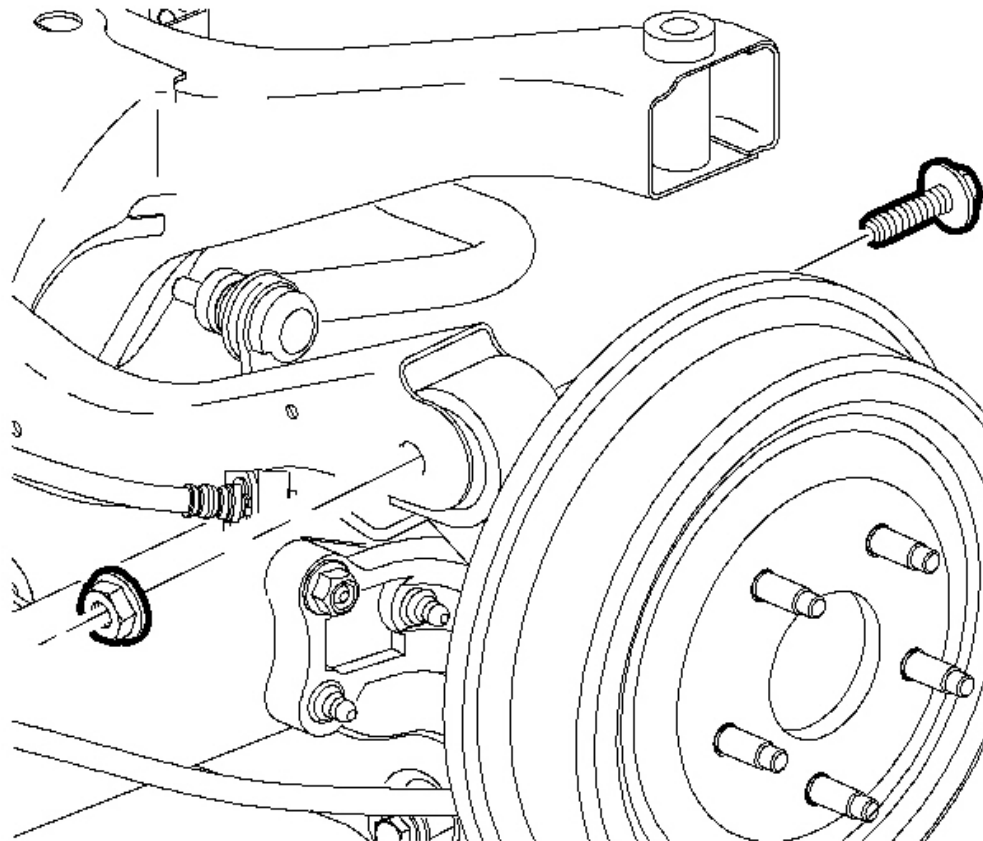


Fig. 23: Upper Control Arm, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

3. Remove the upper control arm to knuckle nut and bolt.
4. Separate the upper control arm from the knuckle.

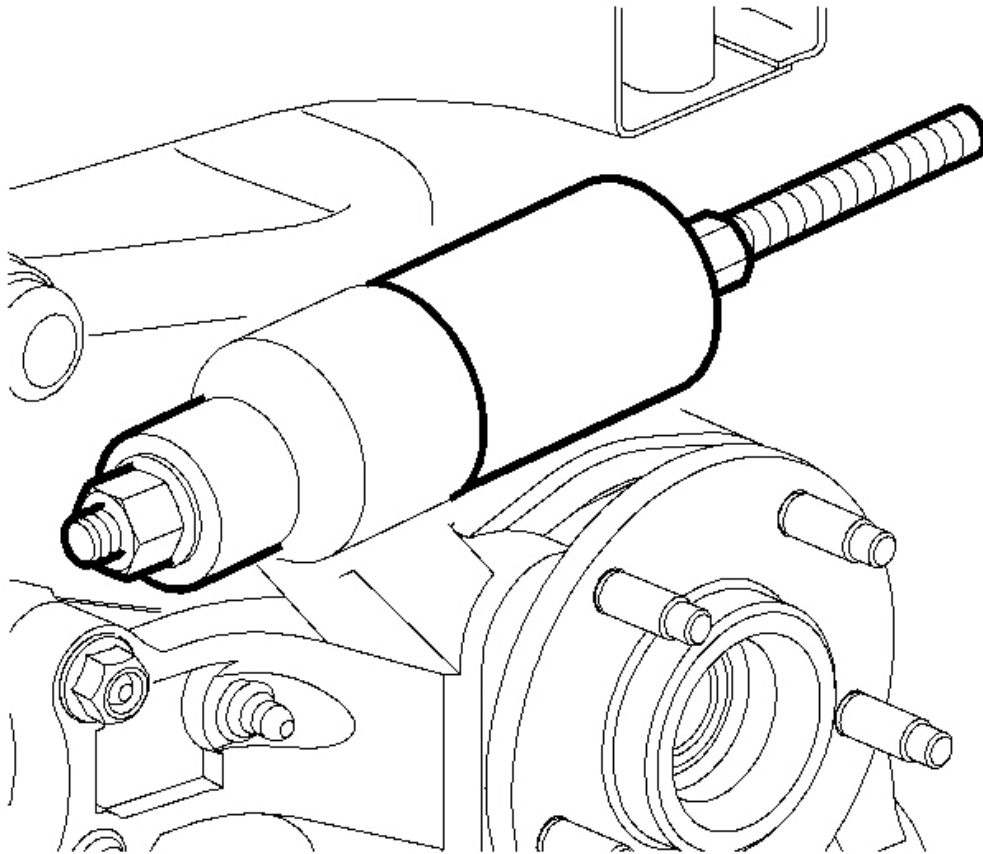


Fig. 24: Upper Control Arm Bushing & Knuckle Assembly
Courtesy of GENERAL MOTORS CORP.

5. Using the **J 45265** , remove the upper control arm bushing from the knuckle assembly. See **Special Tools and Equipment** .

Installation Procedure

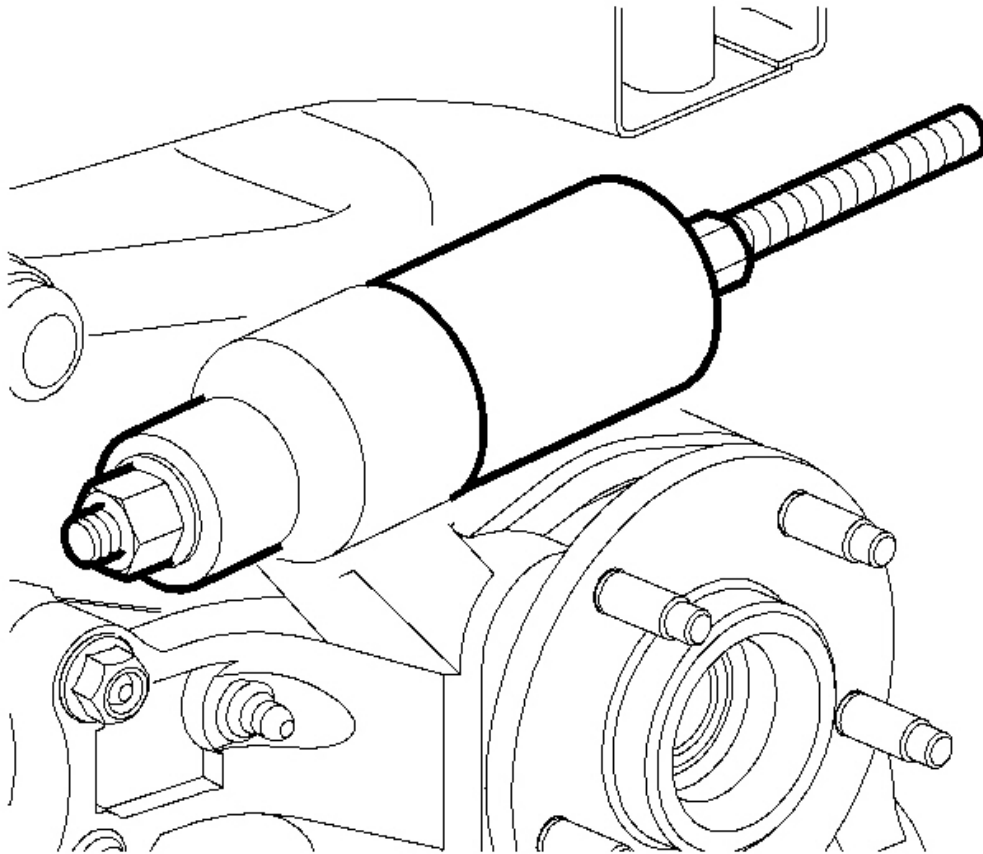


Fig. 25: Upper Control Arm Bushing & Knuckle Assembly
Courtesy of GENERAL MOTORS CORP.

1. Using the **J 45265** , install the upper control arm bushing into the knuckle assembly. See **Special Tools and Equipment** .

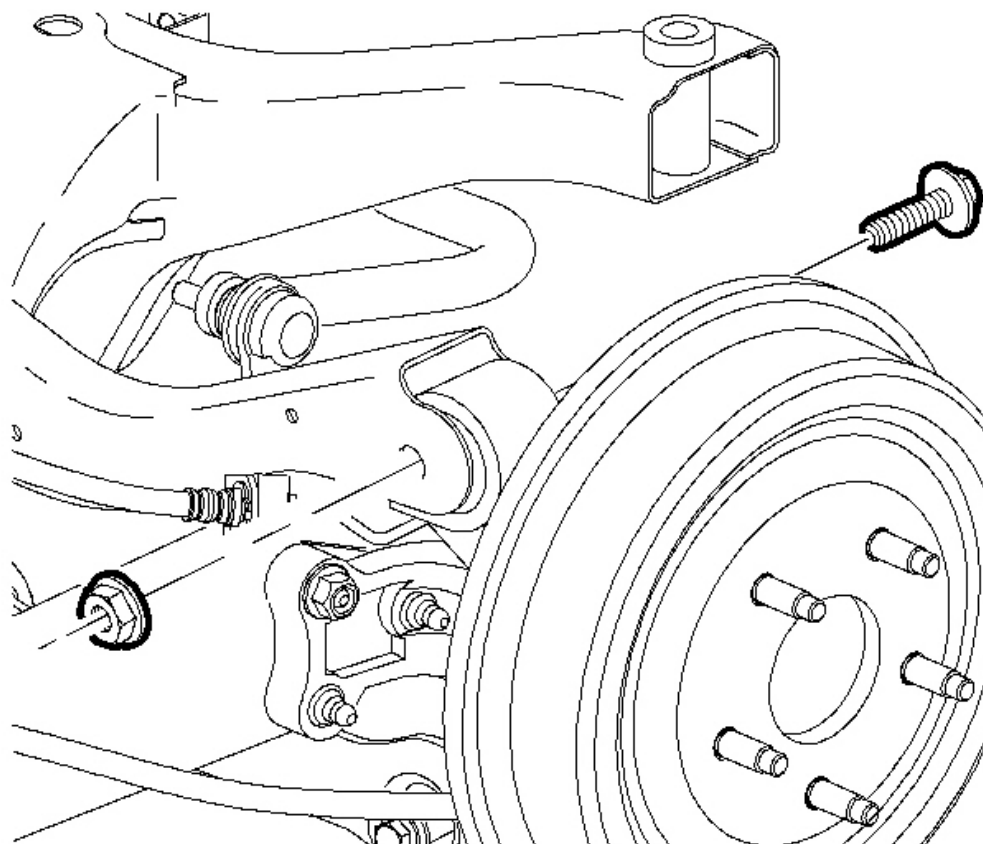


Fig. 26: Upper Control Arm, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the knuckle assembly into the upper control arm.

Tighten: Tighten the upper control arm to knuckle bolt to 160 N.m (118 lb ft).

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

KNUCKLE BUSHING REPLACEMENT - LOWER

Tools Required

J 45265 Bushing Remover/Installer. See **Special Tools and Equipment** .

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the tire and wheel. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
3. Loosen, do not remove the upper control arm to knuckle nut and bolt.

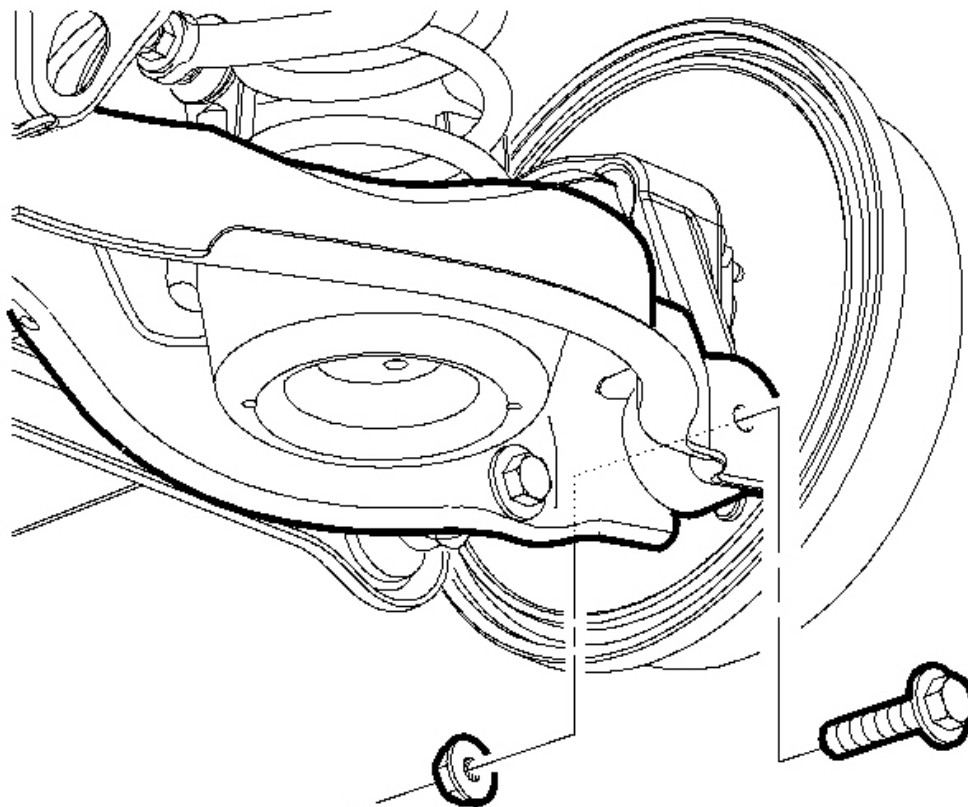


Fig. 27: Lower Control Arm, Knuckle Bolt & Nut

Courtesy of GENERAL MOTORS CORP.

4. Remove the lower control arm to knuckle nut and bolt.
5. Separate the knuckle from the lower control arm.

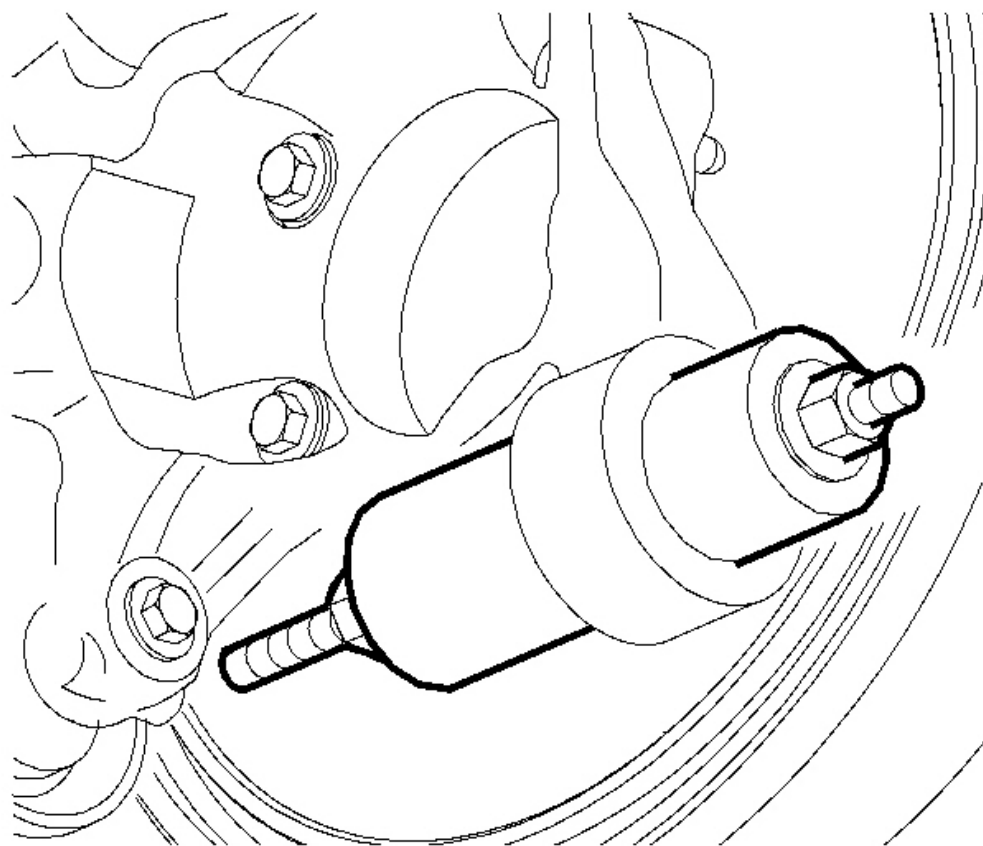


Fig. 28: Lower Control Arm Bushing & Knuckle Assembly
Courtesy of GENERAL MOTORS CORP.

6. Using the **J 45265** , remove the lower control arm bushing from the knuckle assembly. See **Special Tools and Equipment** .

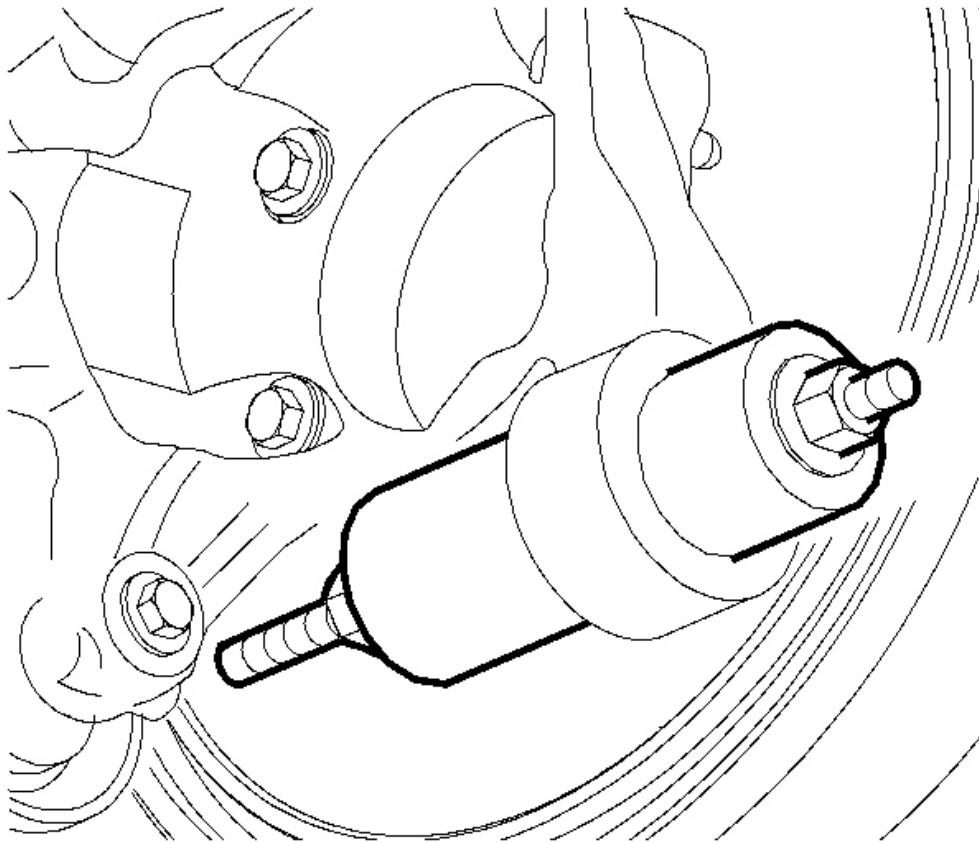


Fig. 29: Lower Control Arm Bushing & Knuckle Assembly
Courtesy of GENERAL MOTORS CORP.

1. Using the **J 45265** , install the lower control arm bushing into the knuckle assembly. See **Special Tools and Equipment** .

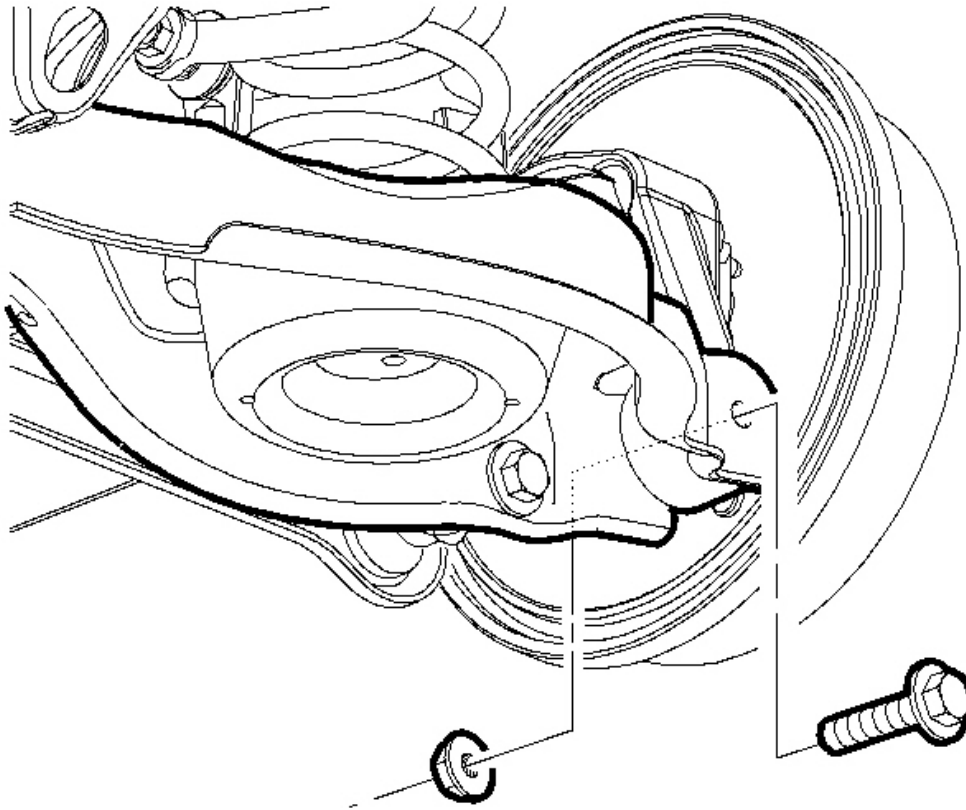


Fig. 30: Lower Control Arm, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the knuckle assembly into the lower control arm.

Tighten:

1. Tighten the lower control arm to knuckle bolt to 110 N.m (81 lb ft).
2. Tighten the upper control arm to knuckle bolt to 160 N.m (118 lb ft).
3. Install the tire and wheel. Refer to Tire and Wheel Removal and Installation in Tires and Wheels.

4. Lower the vehicle.

REAR AXLE UPPER CONTROL ARM REPLACEMENT

Removal Procedure

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

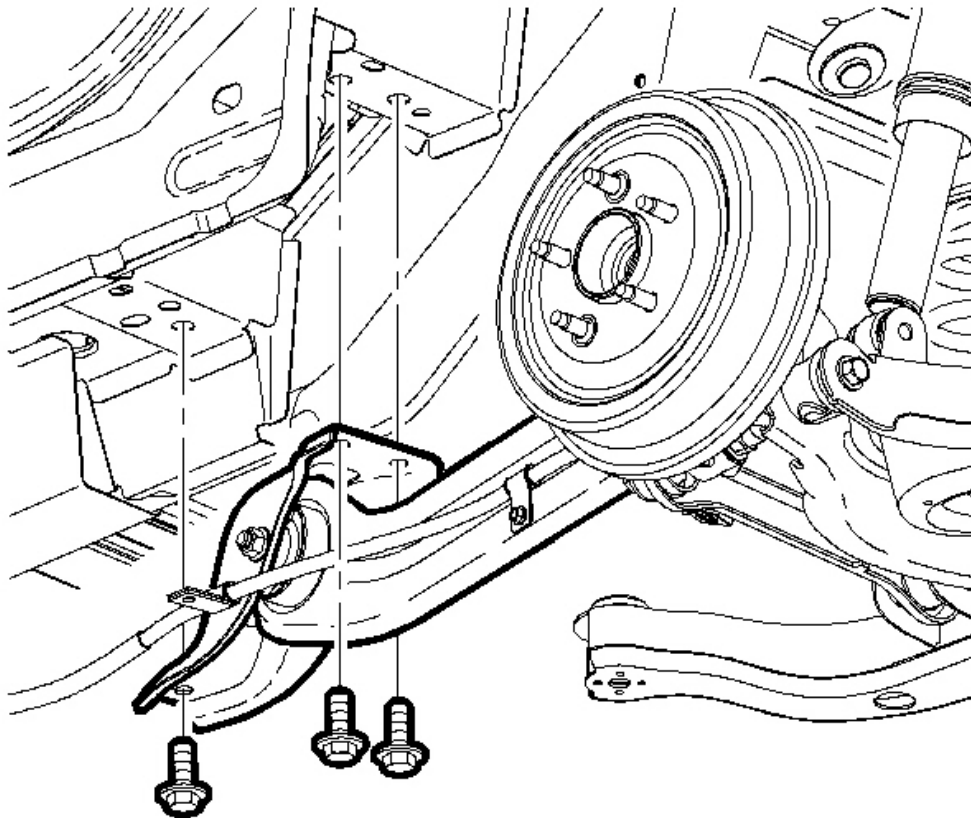


Fig. 31: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

2. Remove the trailing arm bracket to body bolts.

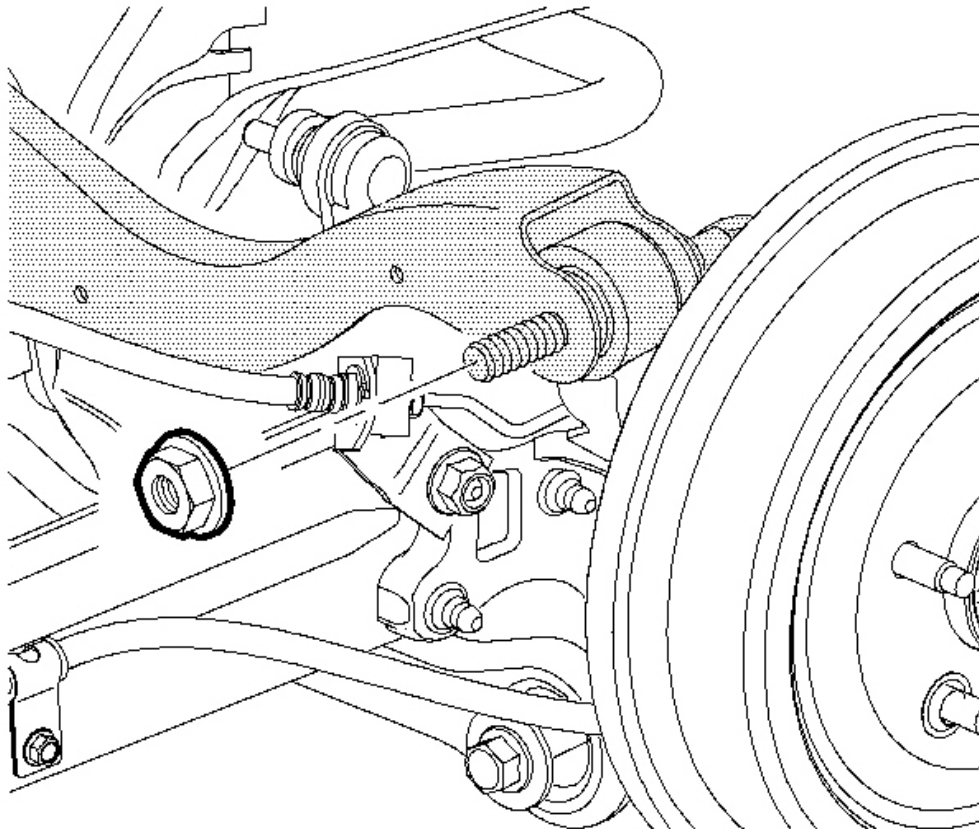


Fig. 32: ABS Brake Harness, Upper Control Arm, Knuckle Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

3. If applicable, remove the ABS brake harness from the upper control arm.
4. Remove the upper control arm to knuckle nut and bolt.

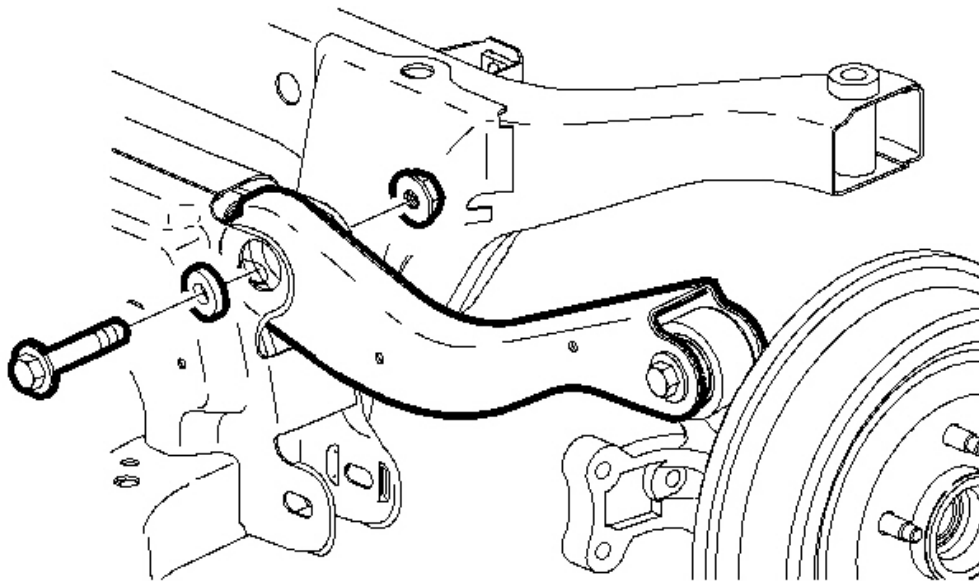


Fig. 33: Rear Axle Upper Control Arm, Support Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

5. Remove the upper control to support nut and bolt.
6. Remove the upper control arm.

Installation Procedure

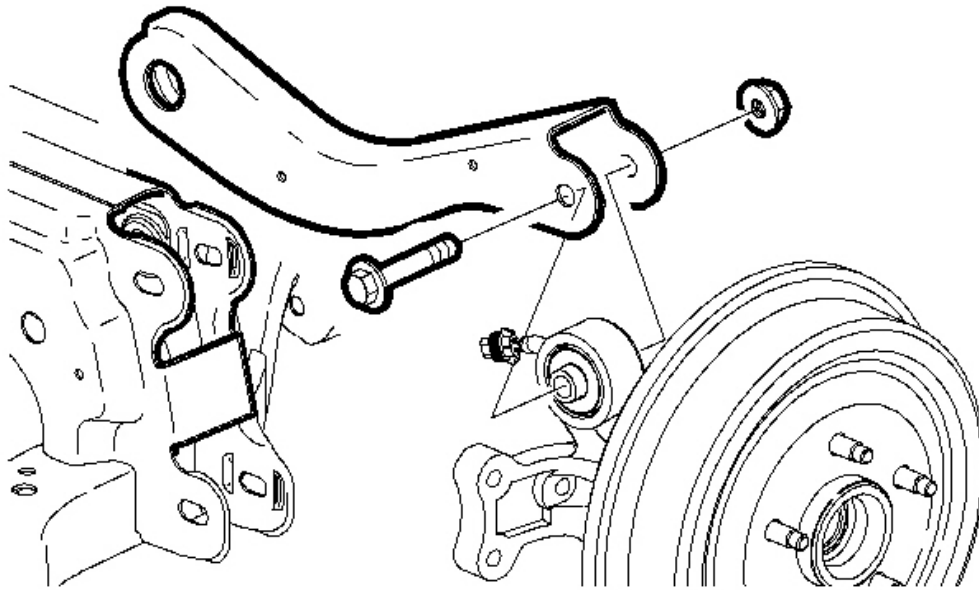


Fig. 34: Rear Axle Upper Control Arm, Knuckle Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

1. Install the upper control arm to the knuckle.
2. Loosely install the upper control arm to knuckle nut and bolt.

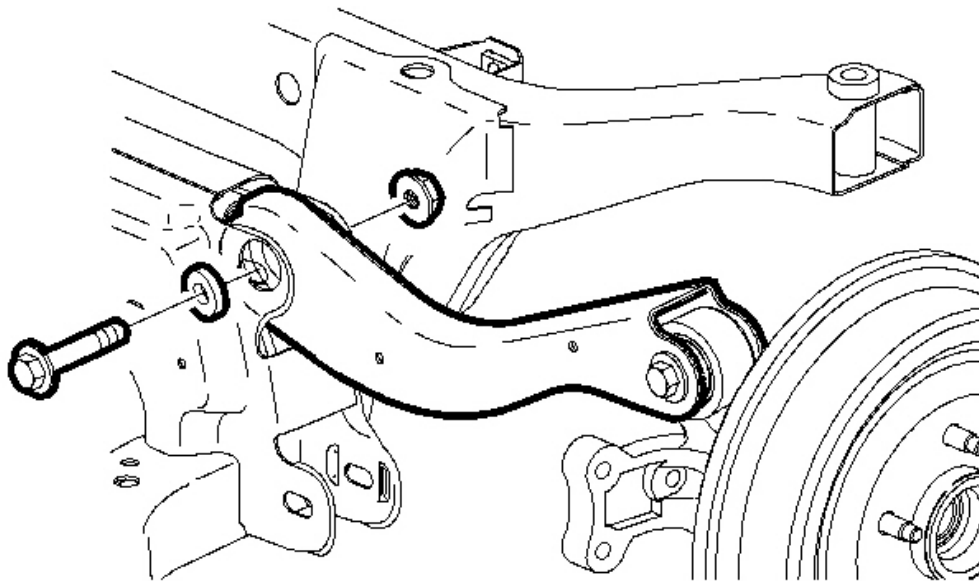


Fig. 35: Rear Axle Upper Control Arm, Support Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

3. Install the upper control to support bolt and cam nut.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Tighten the upper control arm to knuckle nut and bolt.

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

IMPORTANT: There are two different upper control arms and upper control arm bolts

used on this vehicle. You must identify which is on the vehicle and use the corresponding torque value.

5. Tighten the upper control arm to support bolt.

Tighten:

- If the bolt is a M12 bolt, tighten the bolt to 110 N.m (81 lb ft).
- If the bolt is a M14 bolt, tighten the bolt to 160 N.m (118 lb ft).

6. If applicable, install the ABS harness to the upper control arm.

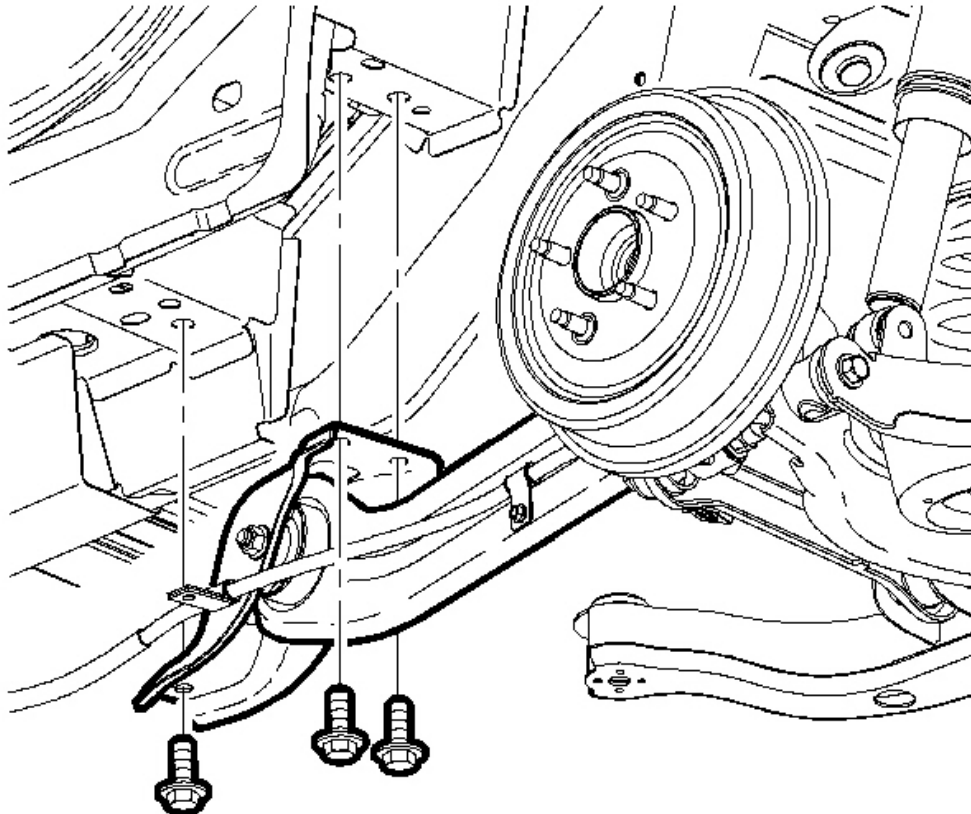


Fig. 36: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts

Courtesy of GENERAL MOTORS CORP.

7. Push upward on the trailing arm and loosely install the front bolt.
8. Use a drift to align the remaining bolts.

Tighten: Tighten the trailing arm bracket to body bolts to 110 N.m (81 lb ft).

9. Lower the vehicle.
10. Check the rear alignment. Refer to **Measuring Wheel Alignment** in Wheel Alignment.

REAR AXLE LOWER CONTROL ARM REPLACEMENT

Removal Procedure

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

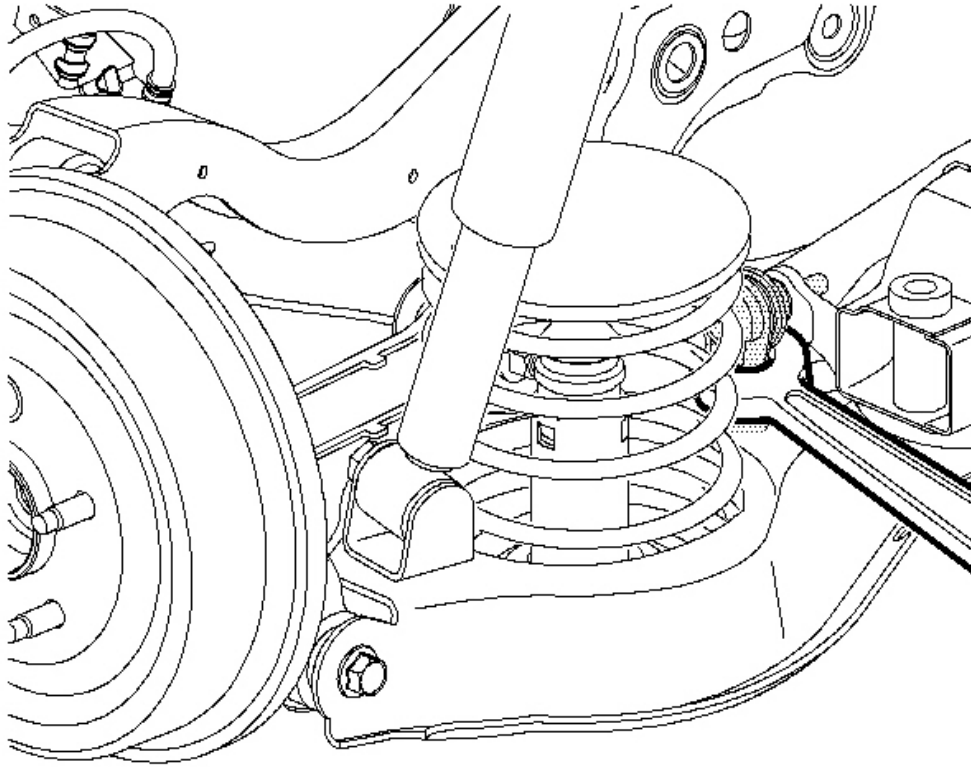


Fig. 37: Stabilizer Link & Lower Control Arm Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Hold the link with a wrench during nut removal.

3. Remove the stabilizer link to lower control arm nut.

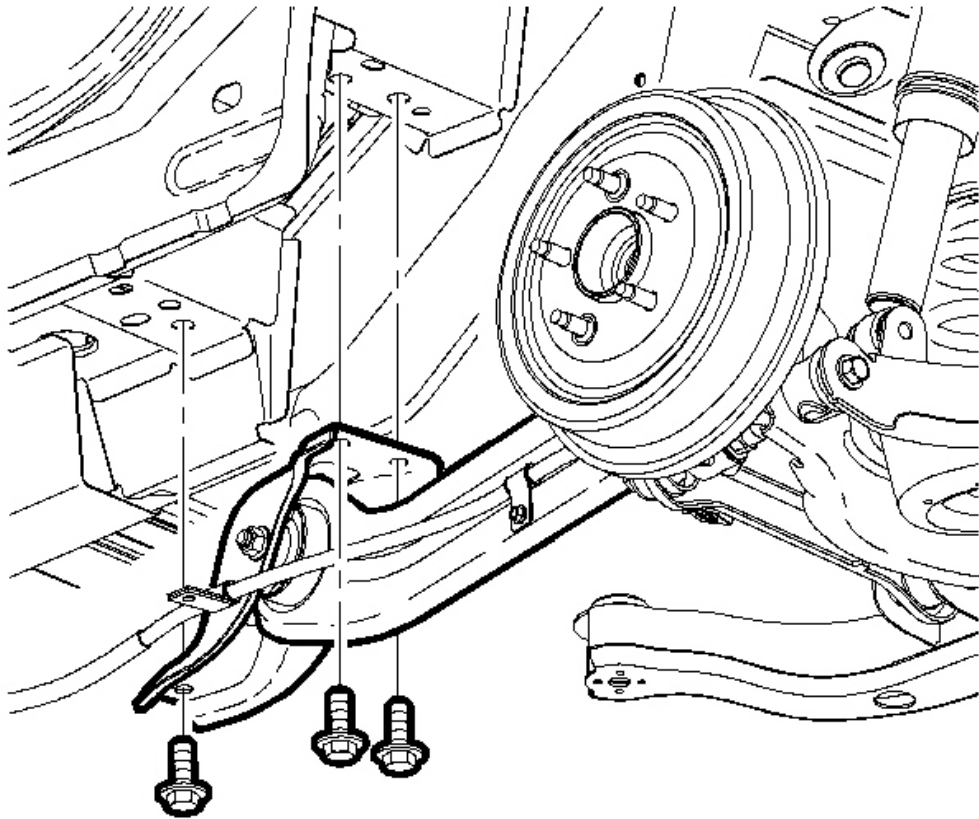


Fig. 38: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

4. Remove the trailing arm bracket to underbody bolts.

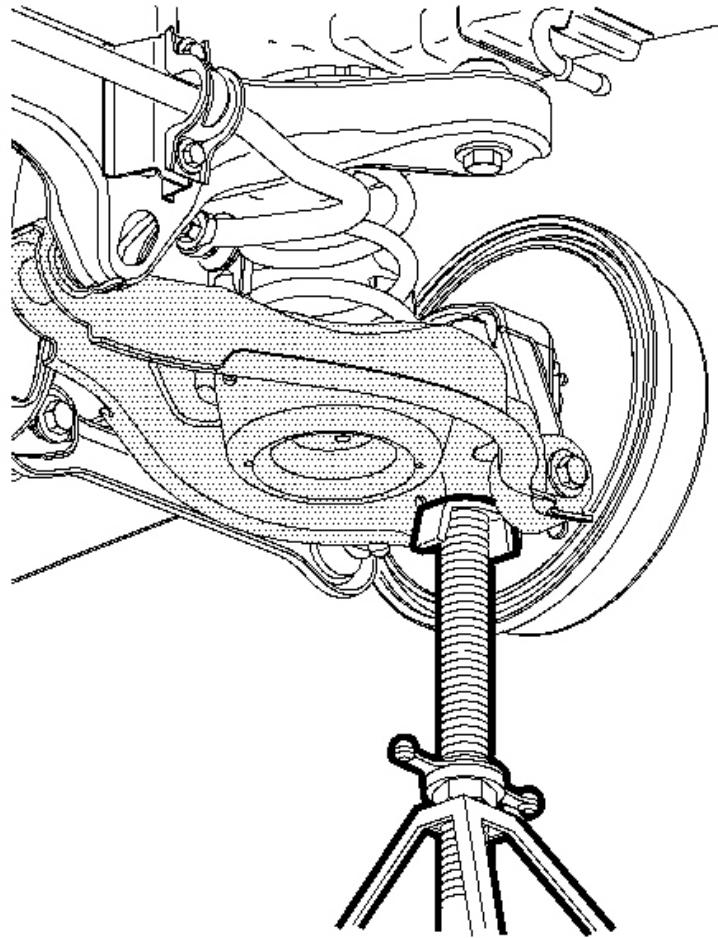


Fig. 39: Jackstand Supporting The Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

5. Place a screw type jack stand under the lower control arm.
6. Using the jackstand, compress the coil spring.

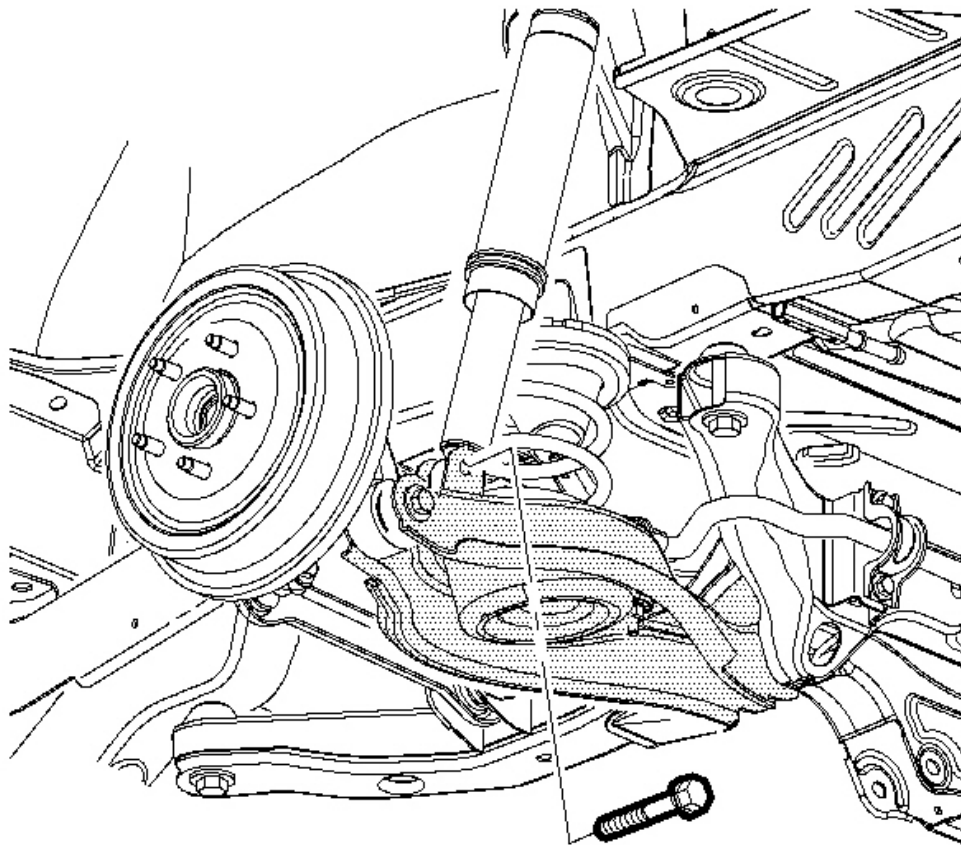


Fig. 40: Lower Shock Bolt
Courtesy of GENERAL MOTORS CORP.

7. Remove the lower shock bolt.

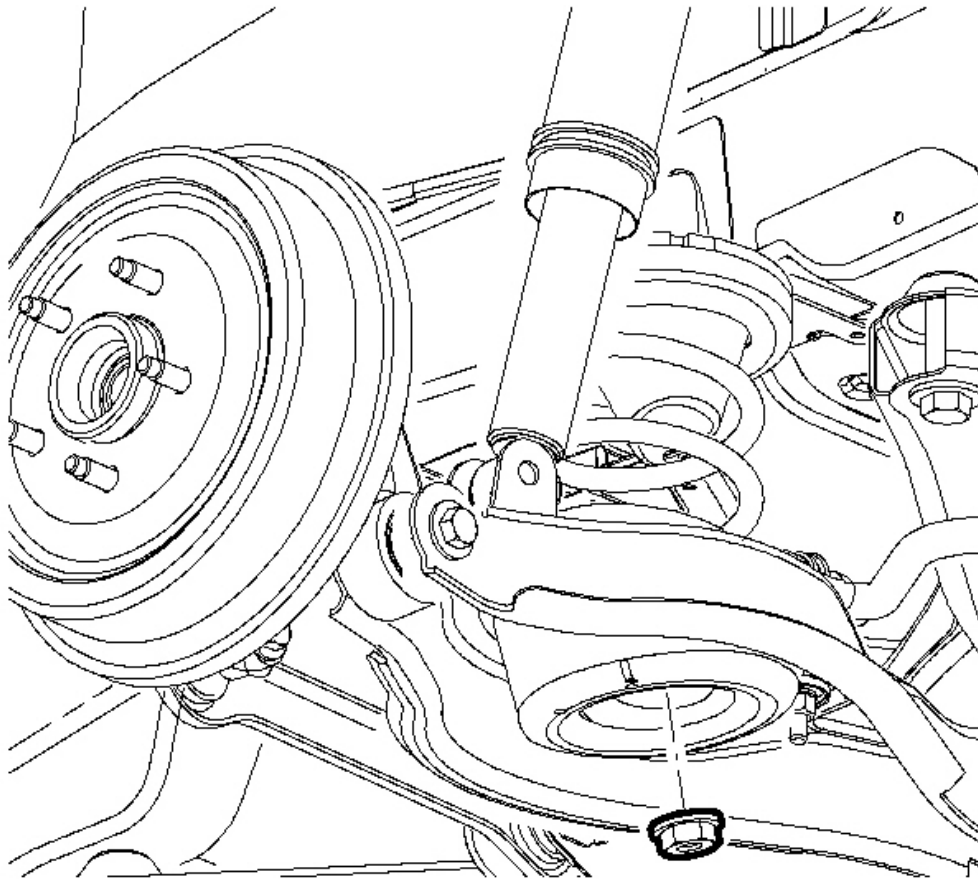


Fig. 41: Jounce Bumper Nut & Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

8. Remove the jounce bumper nut at the lower control arm.

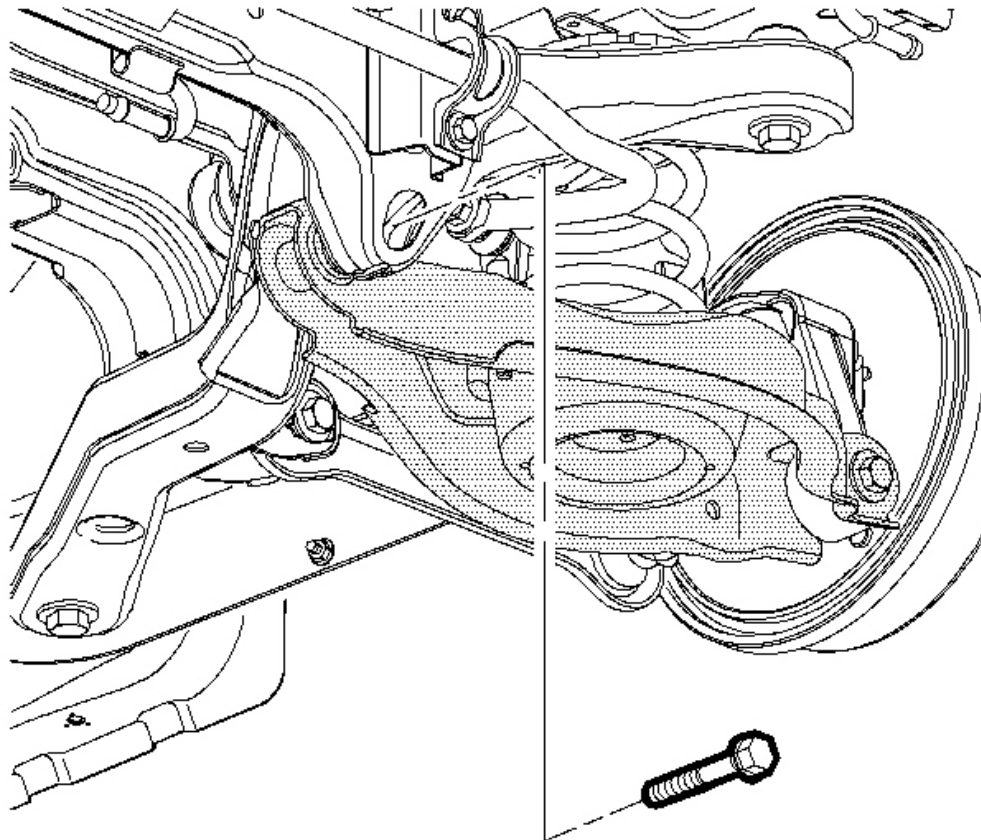


Fig. 42: Lower Control Arm & Frame Bolt
Courtesy of GENERAL MOTORS CORP.

9. Loosen the lower control arm to support the frame bolt.

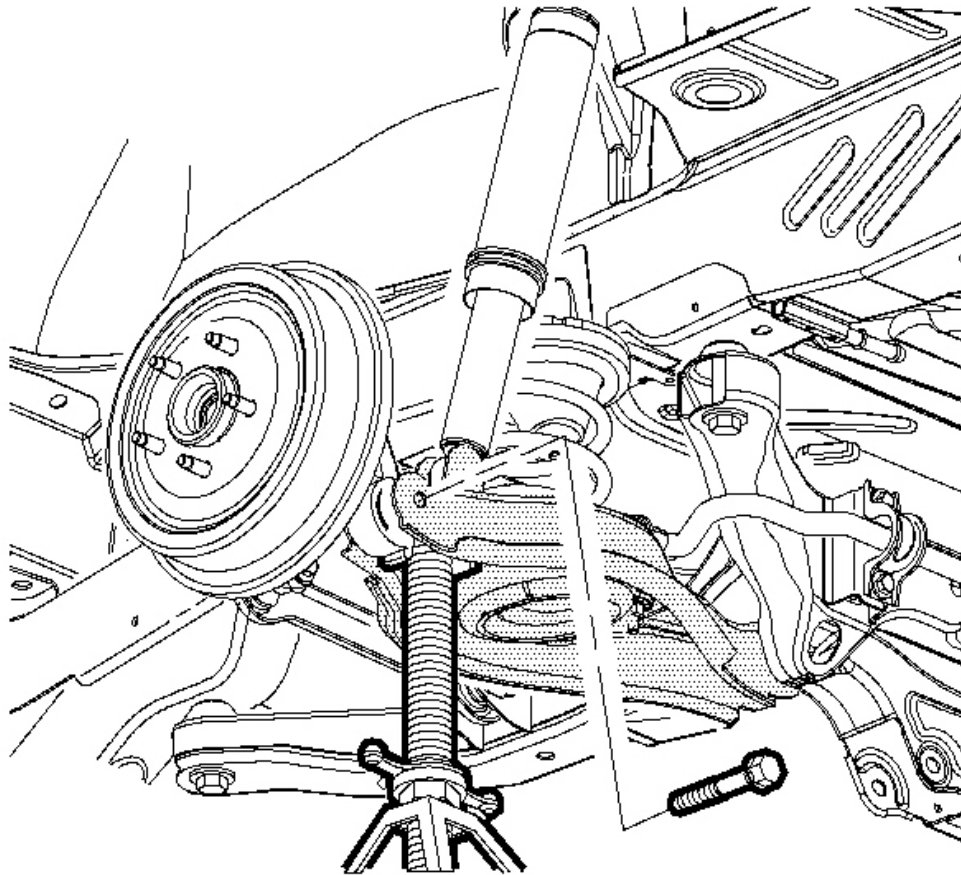


Fig. 43: Lower Control Arm, Knuckle Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

10. Remove the lower control arm to knuckle nut and bolt.

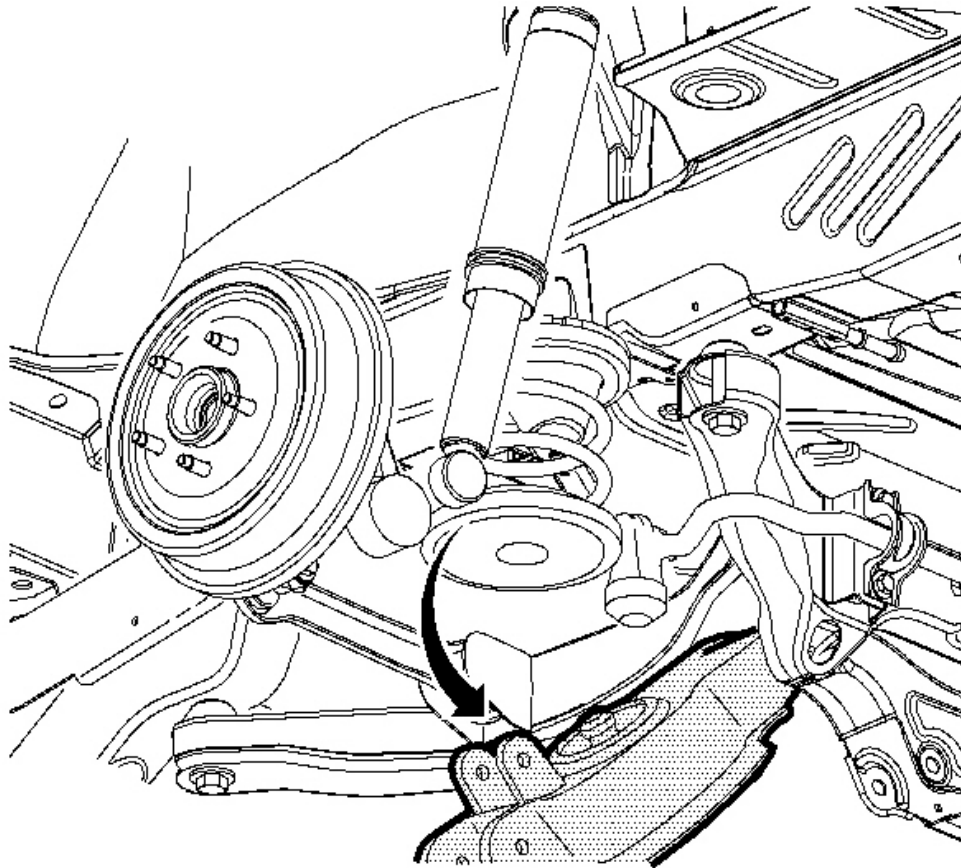


Fig. 44: Control Arm & Coil Spring
Courtesy of GENERAL MOTORS CORP.

11. Lower the control arm in order to unload the coil spring.
12. Remove the coil spring.
13. Remove the jounce bumper.
14. Remove the control arm support nut and bolt.
15. Remove the lower control arm.

Installation Procedure

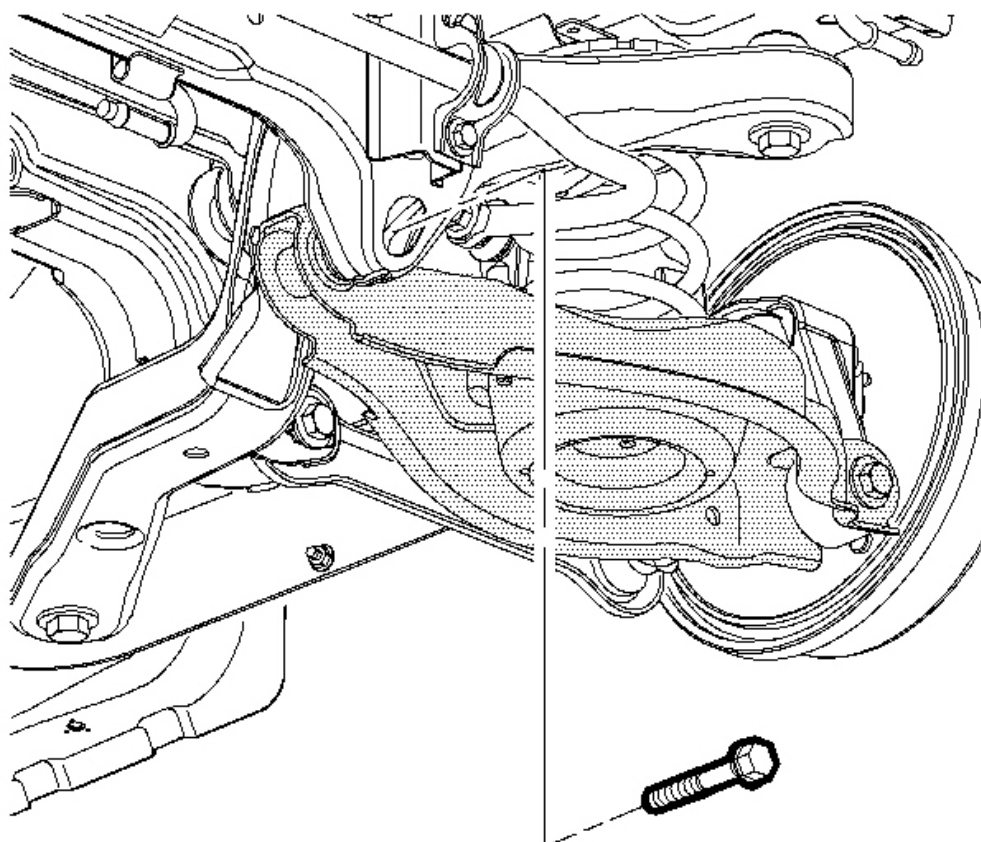


Fig. 45: Lower Control Arm & Frame Bolt
Courtesy of GENERAL MOTORS CORP.

1. Position the lower control to the support and hand tighten the bolt and nut.

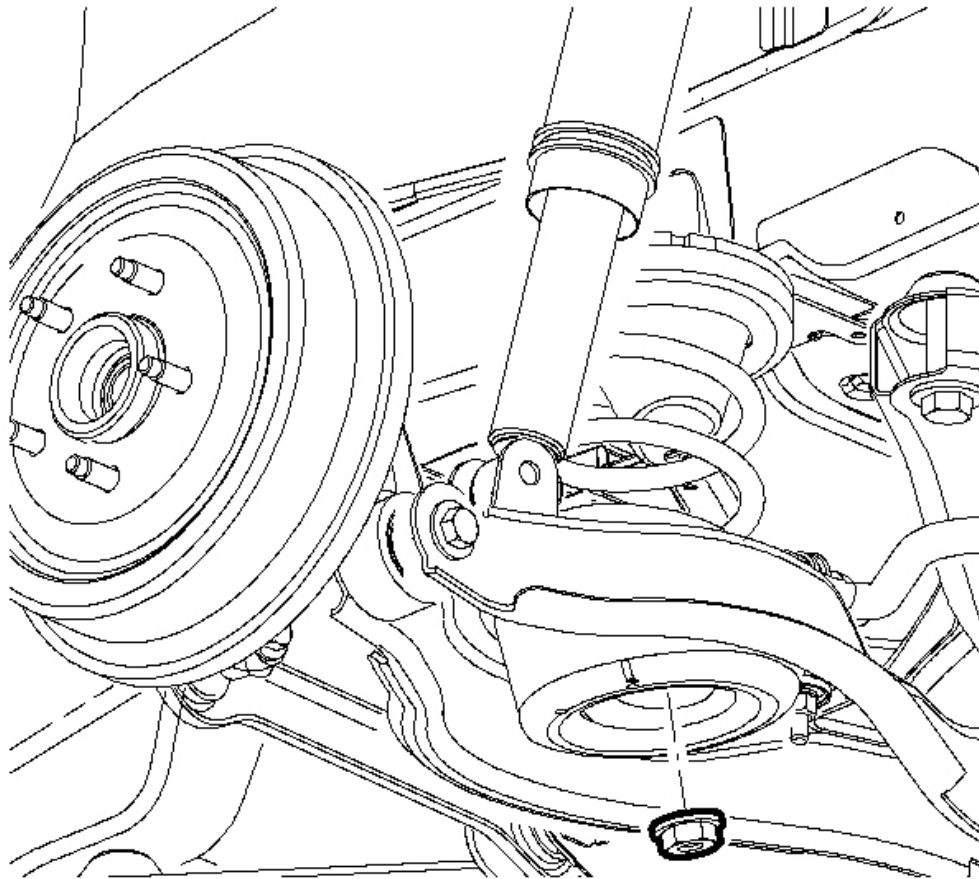


Fig. 46: Jounce Bumper Nut & Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

2. Install the spring and jounce bumper to the lower control arm; then hand tighten the jounce bumper nut.

IMPORTANT:

- **Spray silicon lubricant on the insulators to aid in installation.**
- **Ensure the spring is properly seated.**

3. Position the spring with the rubber insulators into the vehicle.
4. Use a screw type jack stand to compress the spring.

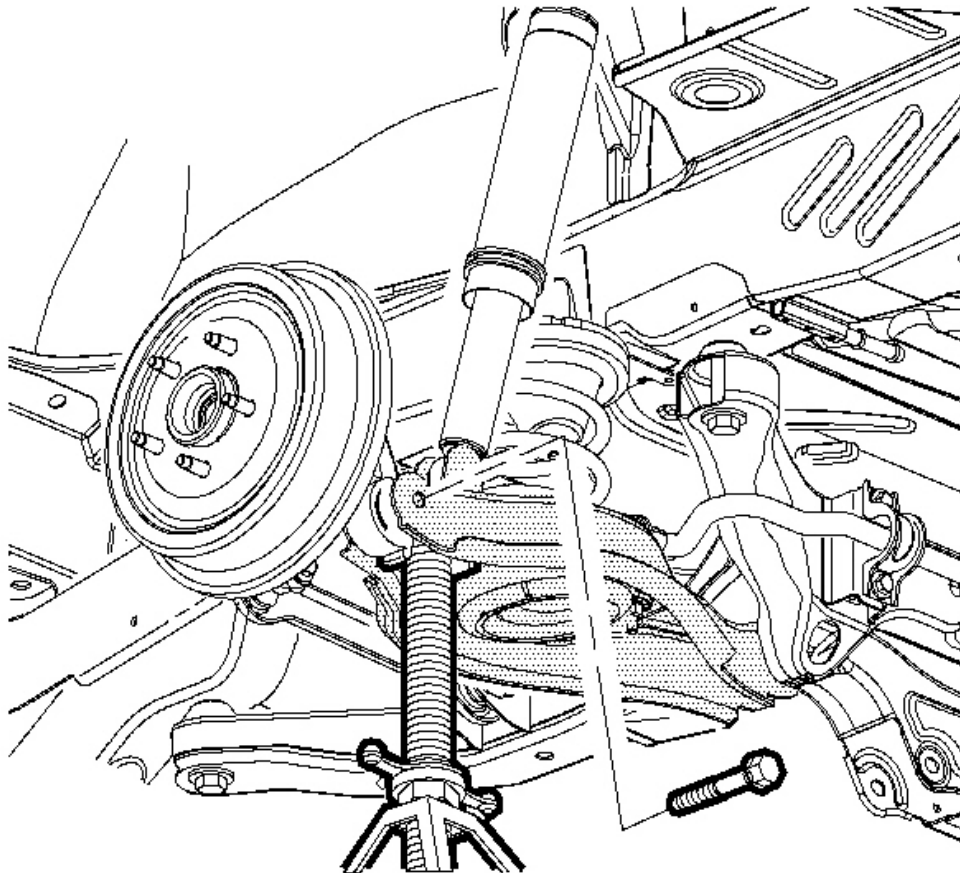


Fig. 47: Lower Control Arm, Knuckle Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

5. Install the knuckle to the lower control arm.

Tighten: Tighten the lower control arm to knuckle bolt to 110 N.m (81 lb ft).

6. Tighten the lower control arm to support nut and bolt.

Tighten: Tighten the bolt to 110 N.m (81 lb ft).

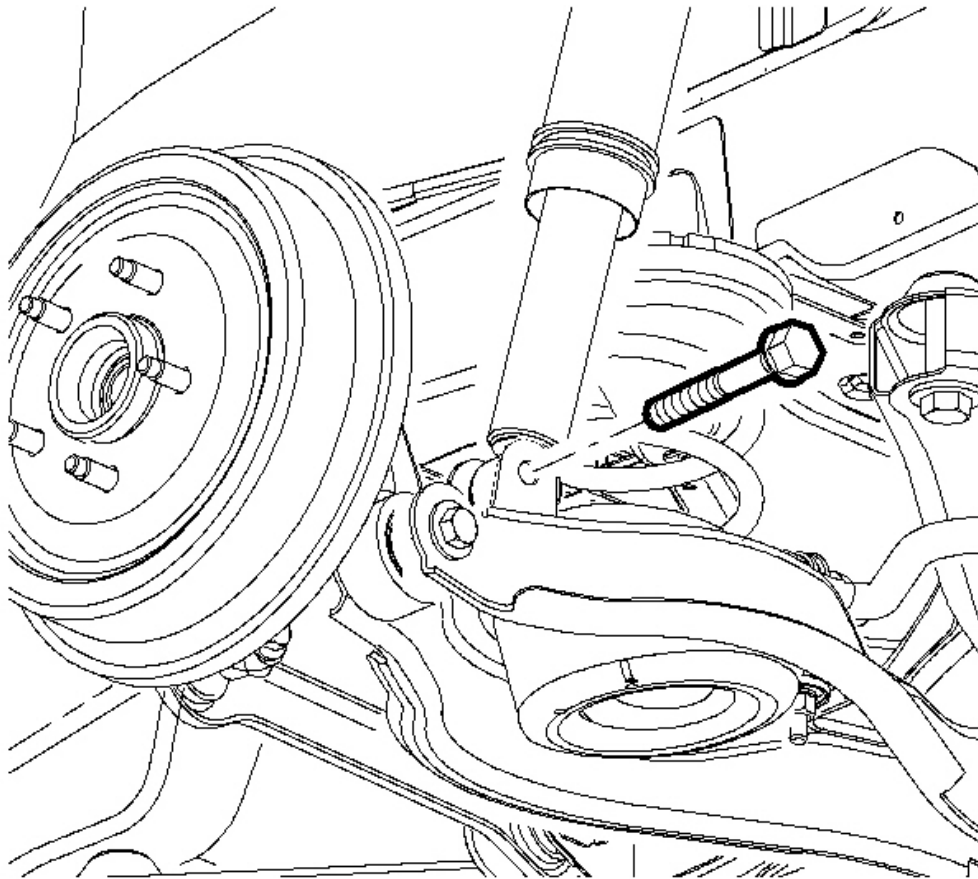


Fig. 48: Shock & Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

7. Install the shock to the lower control arm.

Tighten: Tighten the lower shock bolt to 110 N.m (81 lb ft).

8. Remove the jack stand.

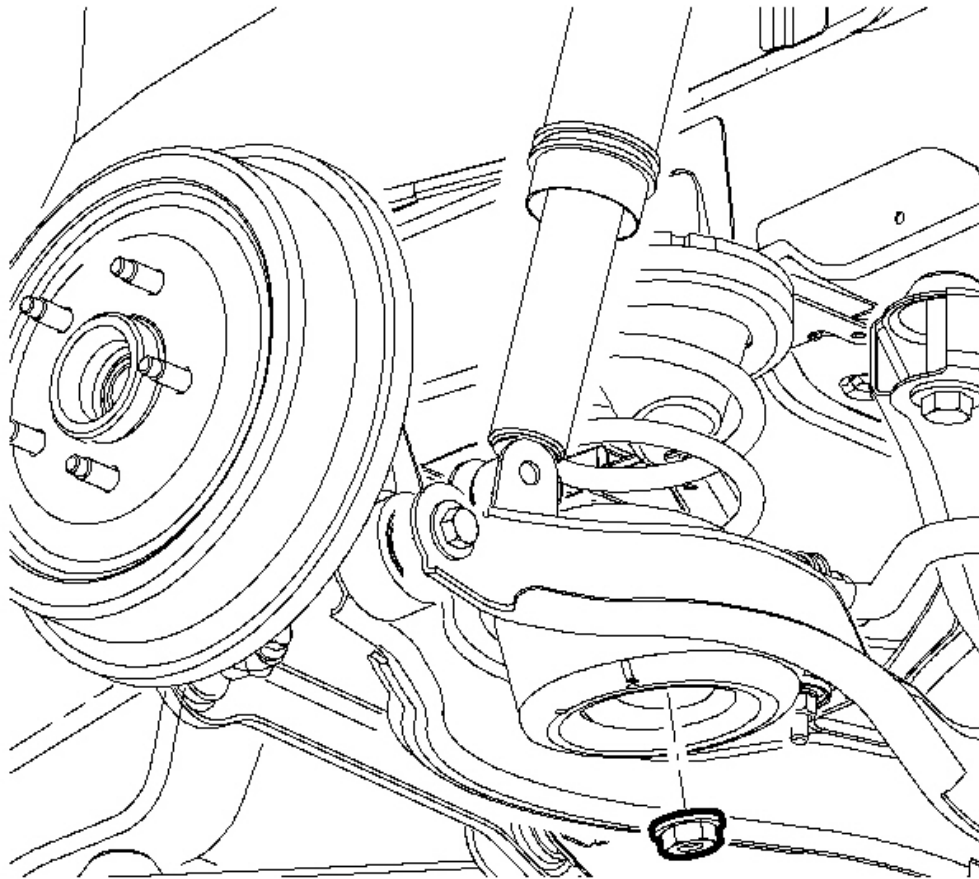


Fig. 49: Jounce Bumper Nut & Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

9. Tighten the jounce bumper to the lower control arm nut.

Tighten: Tighten the nut to 63 N.m (46 lb ft).

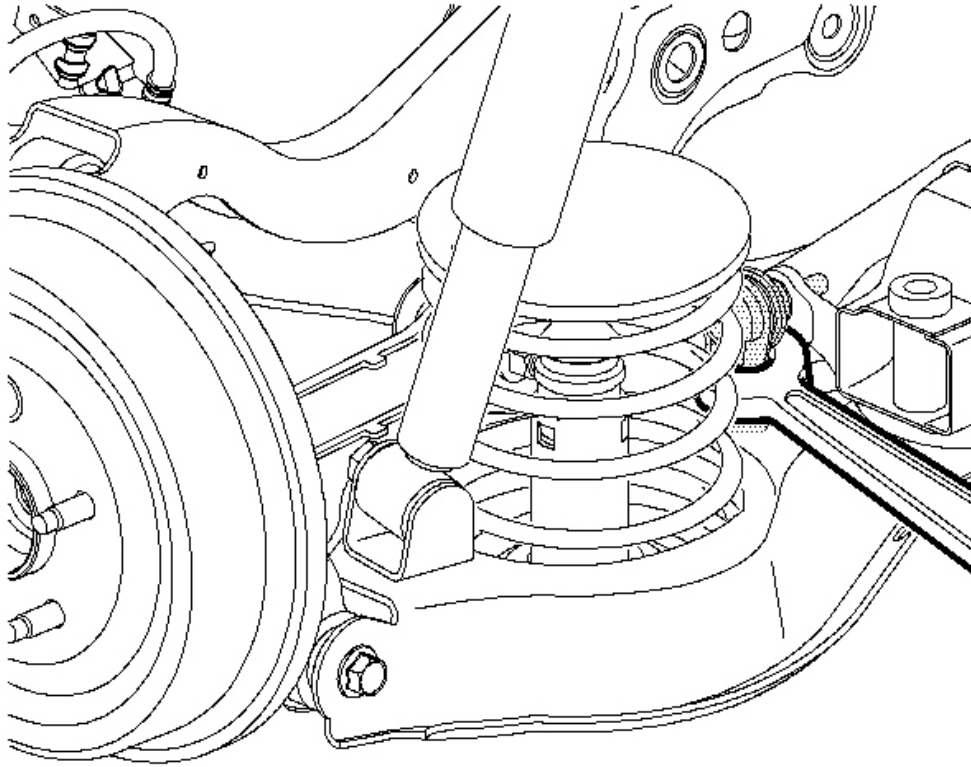


Fig. 50: Stabilizer Link & Lower Control Arm Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Hold the link with a wrench during nut installation.

10. Install the stabilizer link to the lower control arm.

Tighten: Tighten the nut to 15 N.m (11 lb ft).

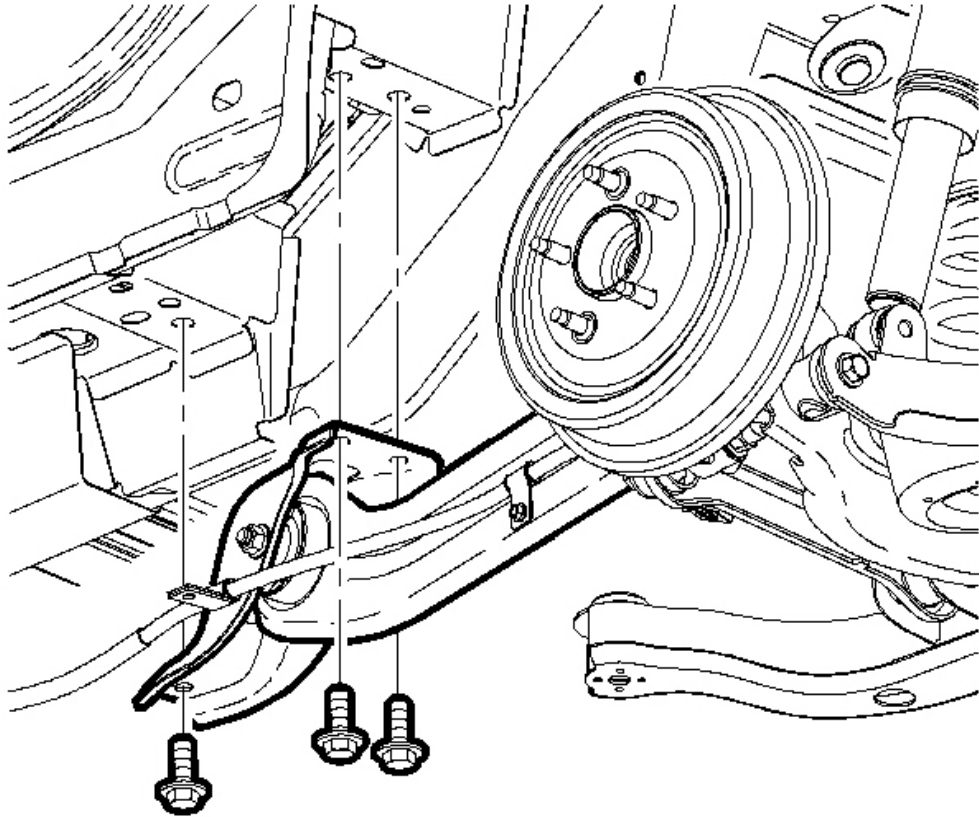


Fig. 51: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

11. Push the trailing arm upward to align the front bracket to the body bolt.
12. Use a drift to aid in bracket alignment and install the remaining bolts.

Tighten: Tighten the bracket to body bolts to 110 N.m (81 lb ft).

13. Install the tire and wheel. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
14. Lower the vehicle.
15. Check the rear alignment. Refer to **Measuring Wheel Alignment** in Wheel Alignment.

REAR AXLE LOWER CONTROL ARM BUSHING REPLACEMENT

Tools Required

J 45097 Rear Control Arm Bushing Remover. See **Special Tools and Equipment** .

Removal Procedure

1. Remove the lower control arm. Refer to **Rear Axle Lower Control Arm Replacement** .

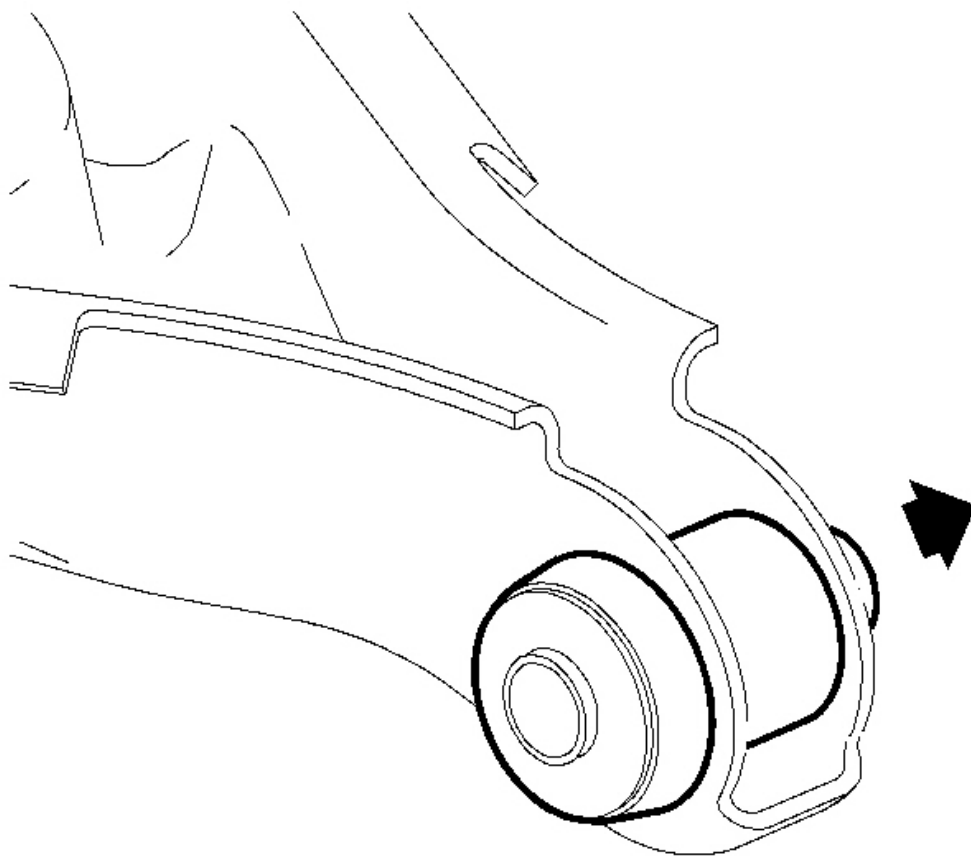


Fig. 52: Bushing & J 45097
Courtesy of GENERAL MOTORS CORP.

2. Using the **J 45097** , remove the bushing in the direction of the arrow. See **Special Tools and Equipment** .

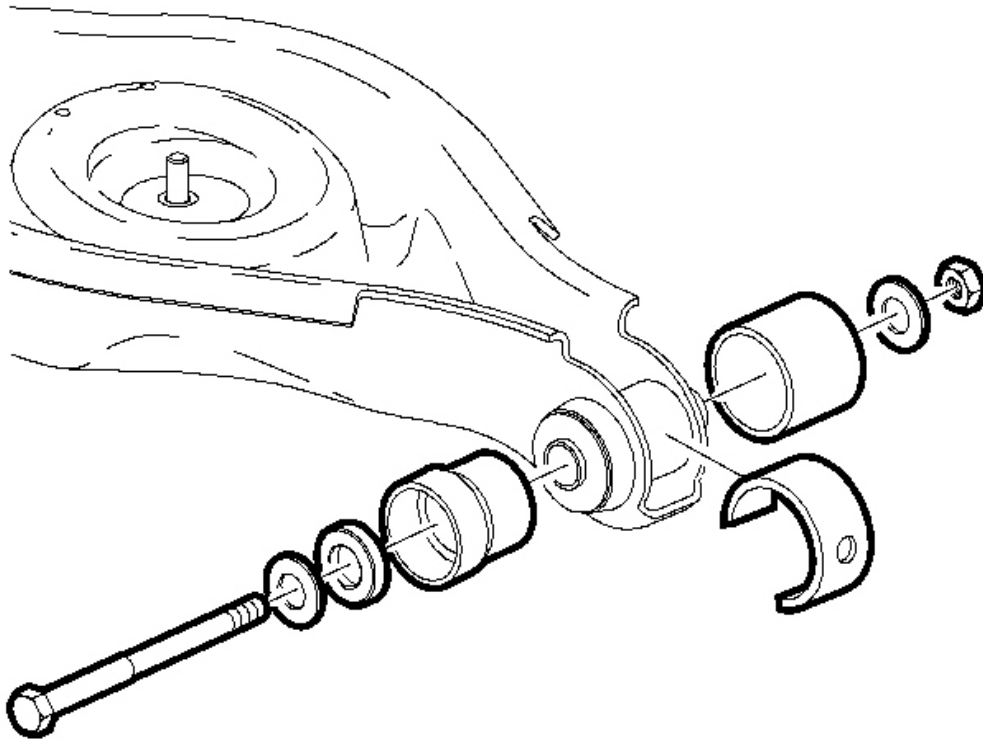


Fig. 53: Push Out Socket & Control Arm
Courtesy of GENERAL MOTORS CORP.

3. Install the push out socket against the bushing from the flanged side of the control arm.
4. Install the through bolt with the washer and bearing against the push out socket.
5. Install a backing socket against the control arm, opposite of the flange.
6. Install the stabilizer between the control arm ears.
7. Install flat washer and nut.

IMPORTANT: Apply high pressure lube to the threads of the tool.

8. Tighten the nut until the bushing is removed.

Installation Procedure

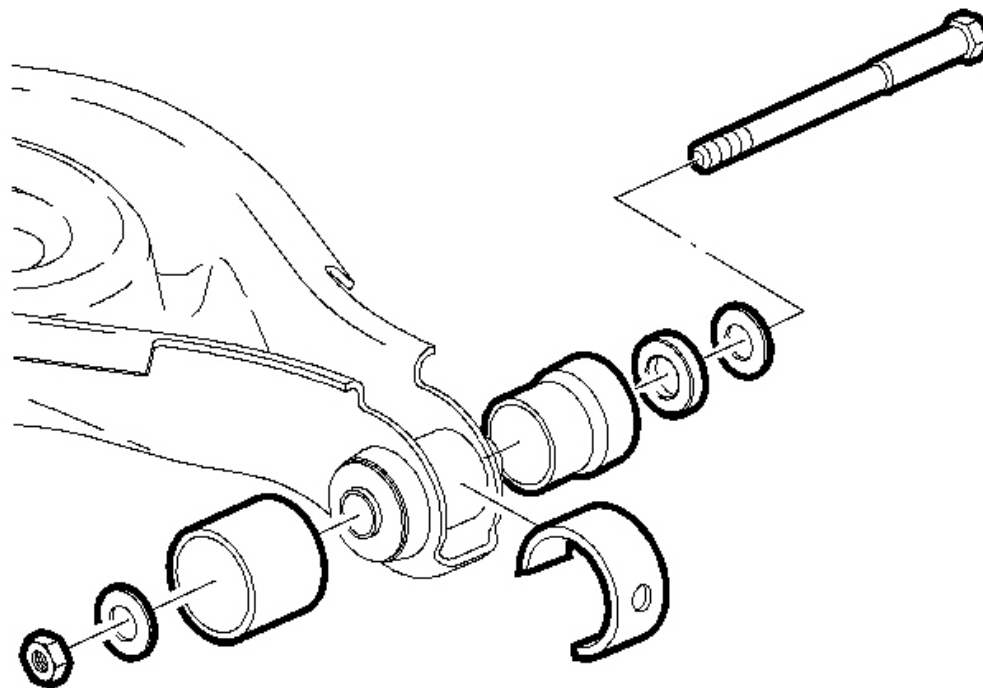


Fig. 54: Bushing, Lower Control Arm, Nut & J 45097
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Apply high pressure lube to the threads of the tool.

1. Install a new bushing from the opposite direction.

2. Using the **J 45097** , reverse the tool layout from the removal procedure. See **Special Tools and Equipment** .
3. Tighten the nut until the bushing is fully installed.
4. Install the lower control arm. Refer to **Rear Axle Lower Control Arm Replacement** .

STABILIZER SHAFT REPLACEMENT

Removal Procedure

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

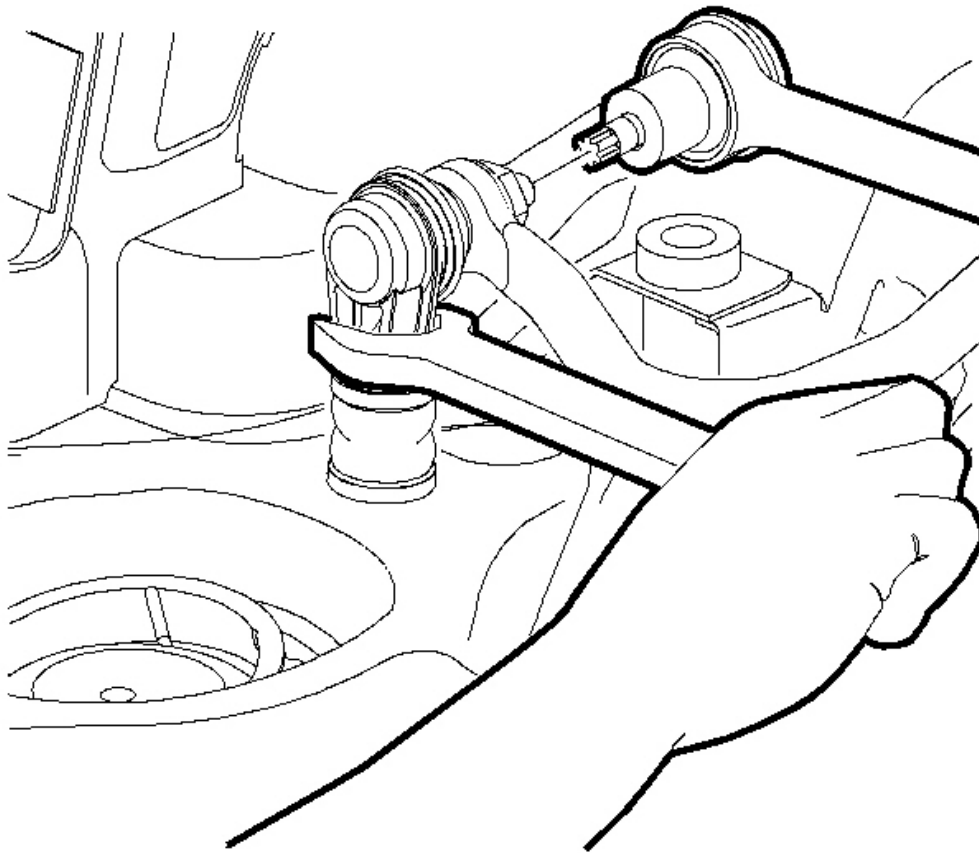


Fig. 55: Stabilizer Link & Stabilizer Bar Nut

Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Hold the ball shaft secure with a TORX(R) bit, when removing the nut.

2. Remove the stabilizer link to stabilizer bar nut.

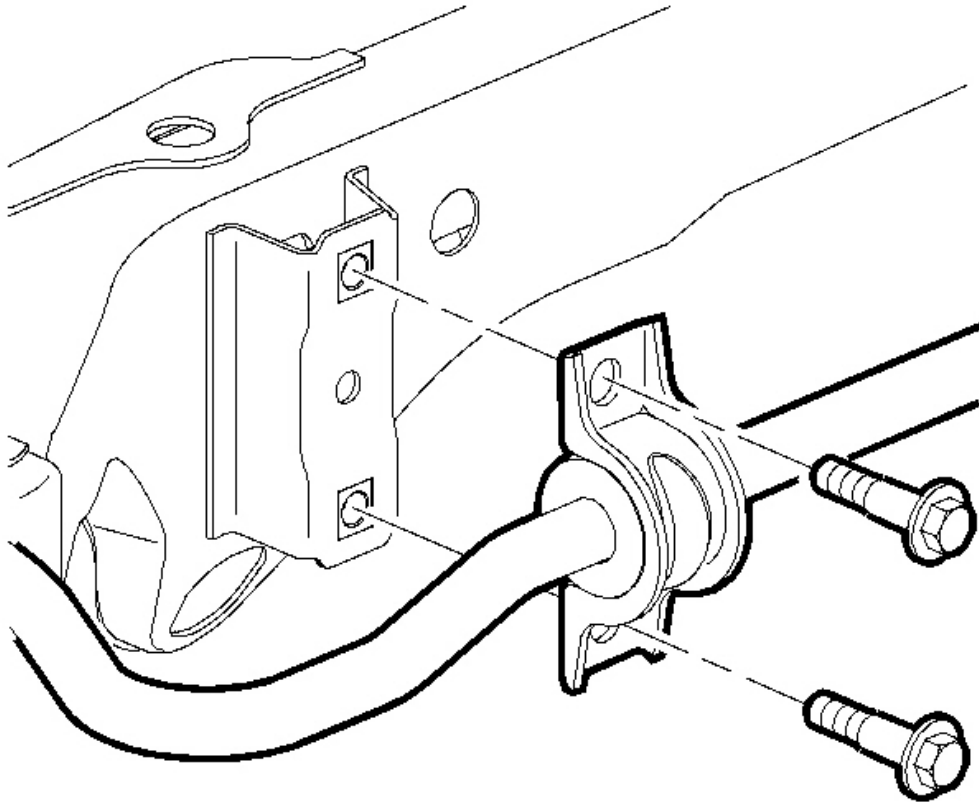


Fig. 56: Stabilizer Bar Clamp & Bolts
Courtesy of GENERAL MOTORS CORP.

3. Remove the stabilizer bar clamp bolts.
4. Disengage the stabilizer bar from the stabilizer link ball studs, while removing the stabilizer bar from the vehicle.

Installation Procedure

1. Position the stabilizer in the vehicle, while positioning the links to the stabilizer bar.

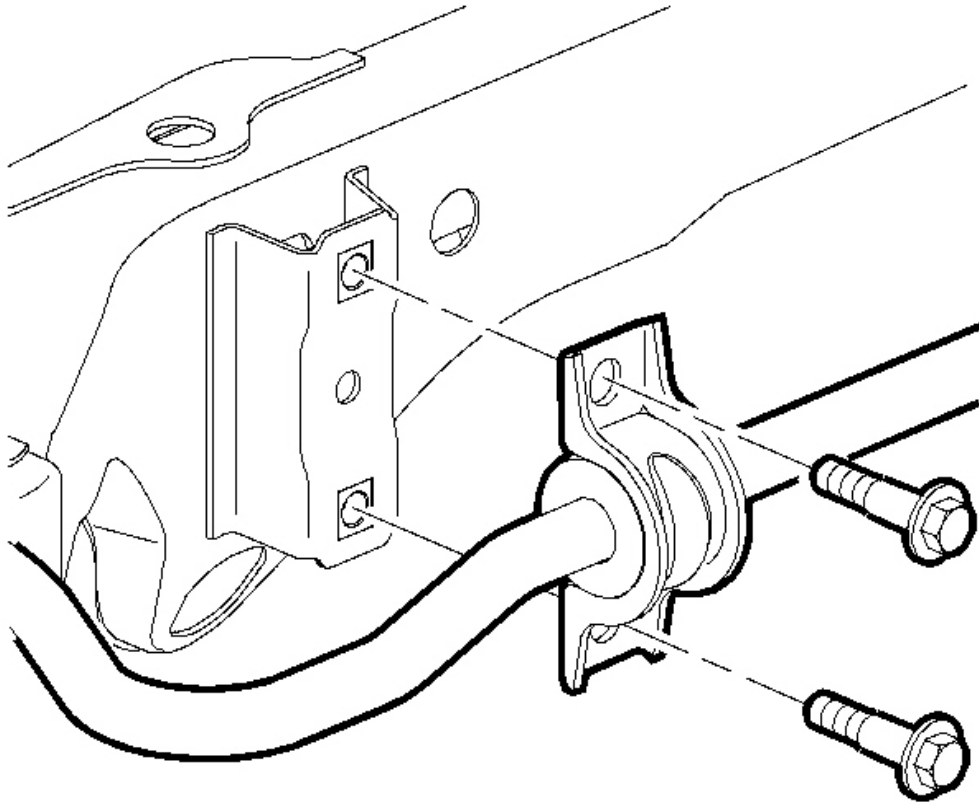


Fig. 57: Stabilizer Bar Clamp & Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the stabilizer bar clamp bolts.

Tighten: Tighten the bolts to 70 N.m (52 lb ft).

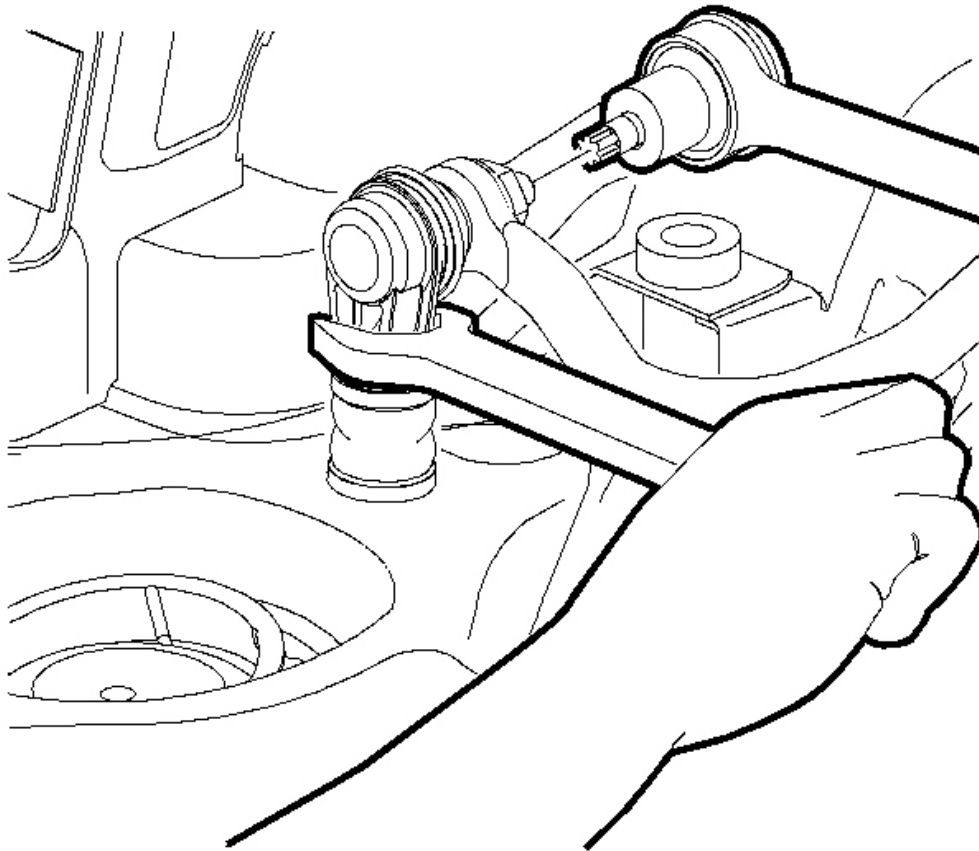


Fig. 58: Stabilizer Link & Stabilizer Bar Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Hold the ball shaft secure with a TORX(R) bit, when installing the nut.

3. Install the stabilizer link to stabilizer bar nut.

Tighten: Tighten the nut to 63 N.m (46 lb ft).

4. Lower the vehicle.

STABILIZER SHAFT INSULATOR REPLACEMENT

Removal Procedure

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

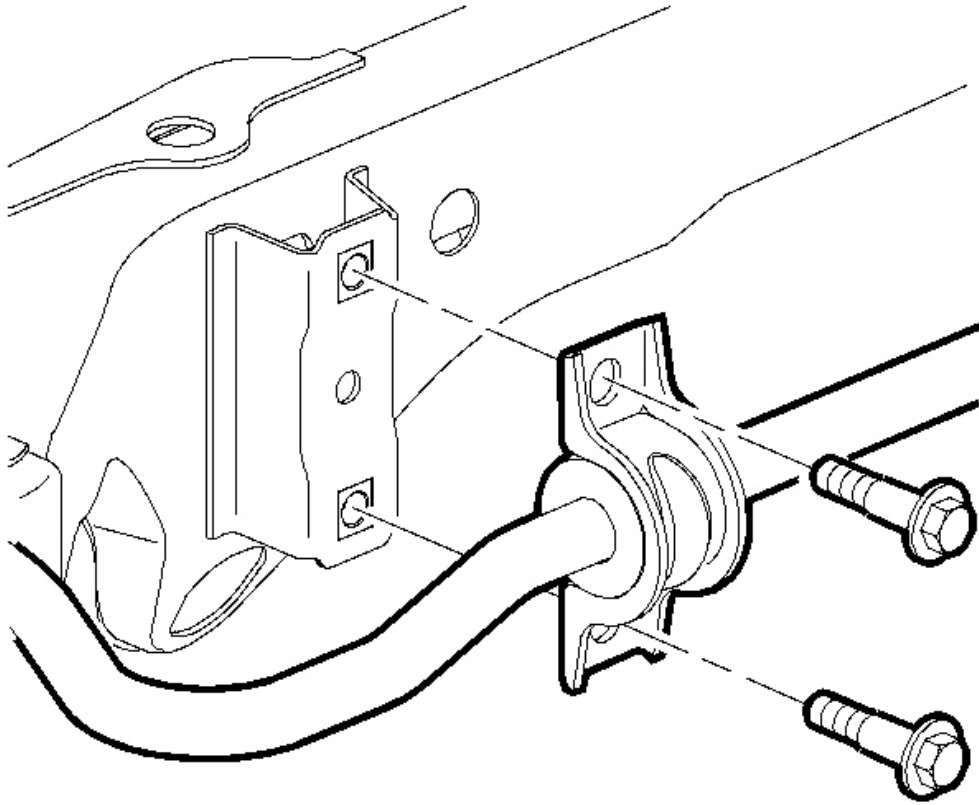


Fig. 59: Stabilizer Bar Clamp & Bolts
Courtesy of GENERAL MOTORS CORP.

2. Remove the stabilizer bar clamp bolts.
3. Remove the insulators from the stabilizer bar.

Installation Procedure

1. Install the insulators the stabilizer bar.

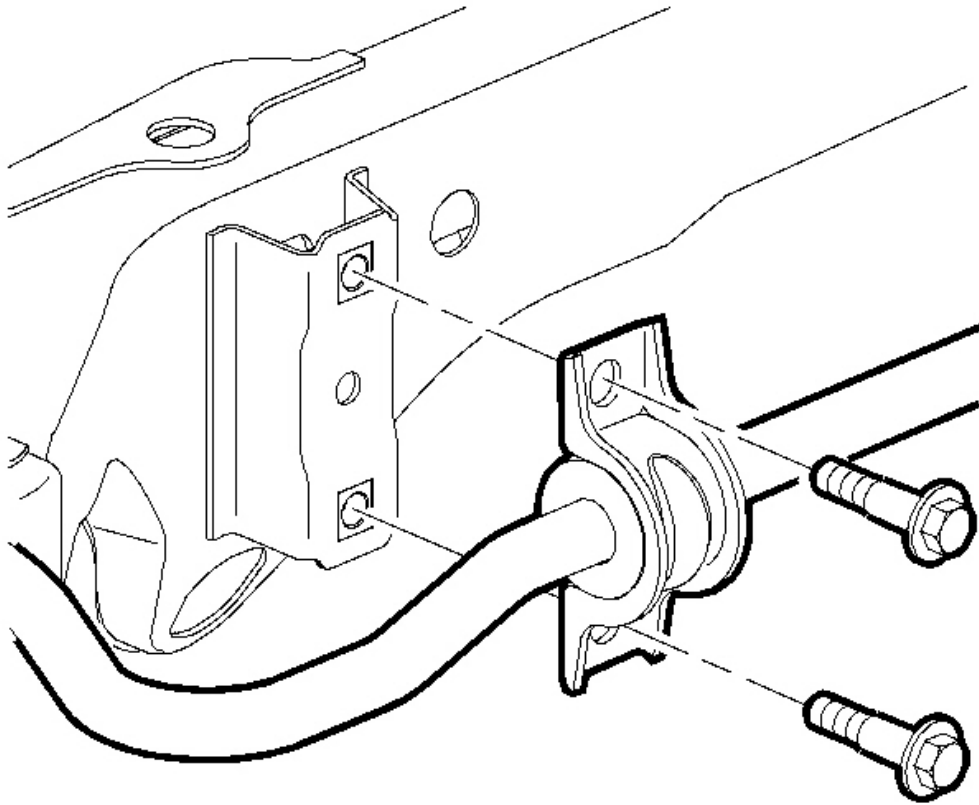


Fig. 60: Stabilizer Bar Clamp & Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the stabilizer bar clamp bolts.

Tighten: Tighten the bolts to 70 N.m (52 lb ft).

3. Lower the vehicle. Refer to Lifting and Jacking the Vehicle in General Information.

STABILIZER SHAFT LINK REPLACEMENT

Removal Procedure

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

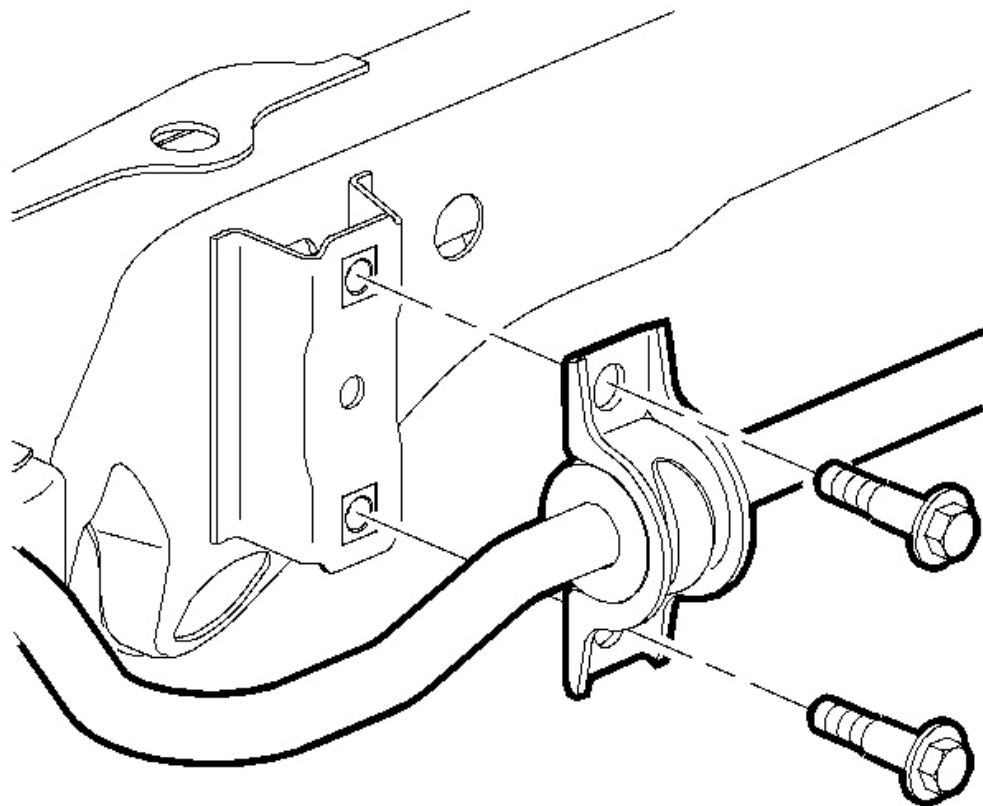


Fig. 61: Stabilizer Bar Clamp & Bolts
Courtesy of GENERAL MOTORS CORP.

2. Loosen the stabilizer bar clamp bolts.

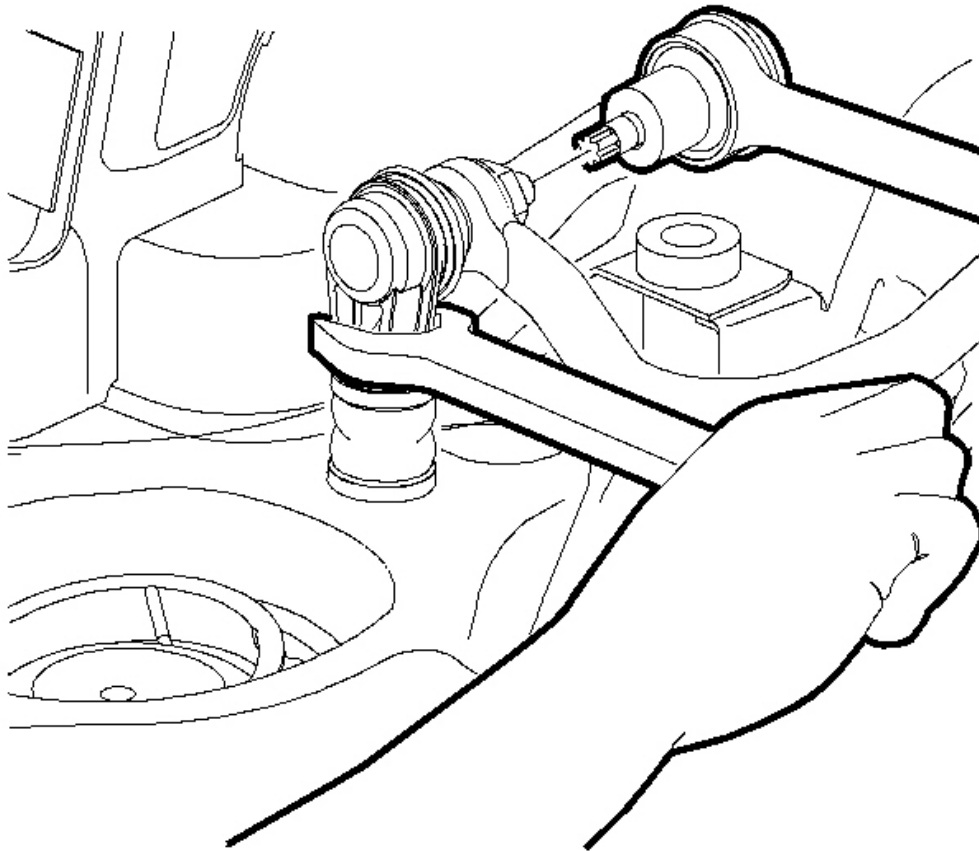


Fig. 62: Stabilizer Link & Stabilizer Bar Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Hold the ball shaft secure with a TORX(R) bit, when removing the nut.

3. Remove the stabilizer link to stabilizer bar nut.

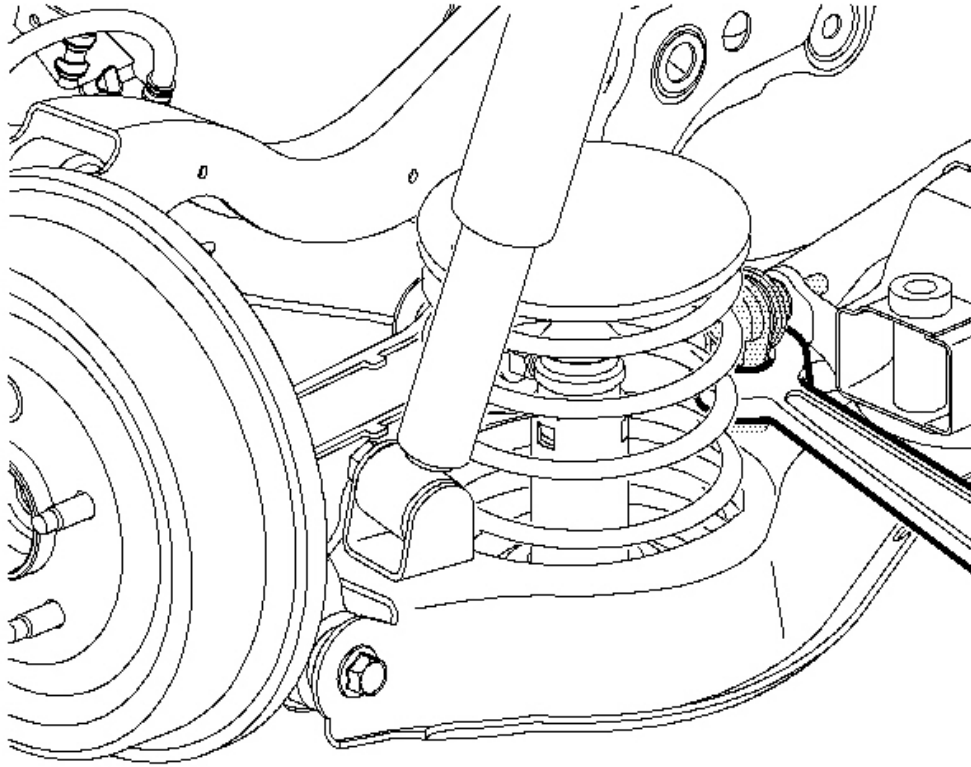


Fig. 63: Stabilizer Link & Lower Control Arm Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: When disconnecting the stabilizer link, hold the link with a wrench to prevent turning.

4. Remove the stabilizer link to control arm nut.
5. Remove the stabilizer link from the vehicle.

Installation Procedure

1. Position the stabilizer link through the control arm.

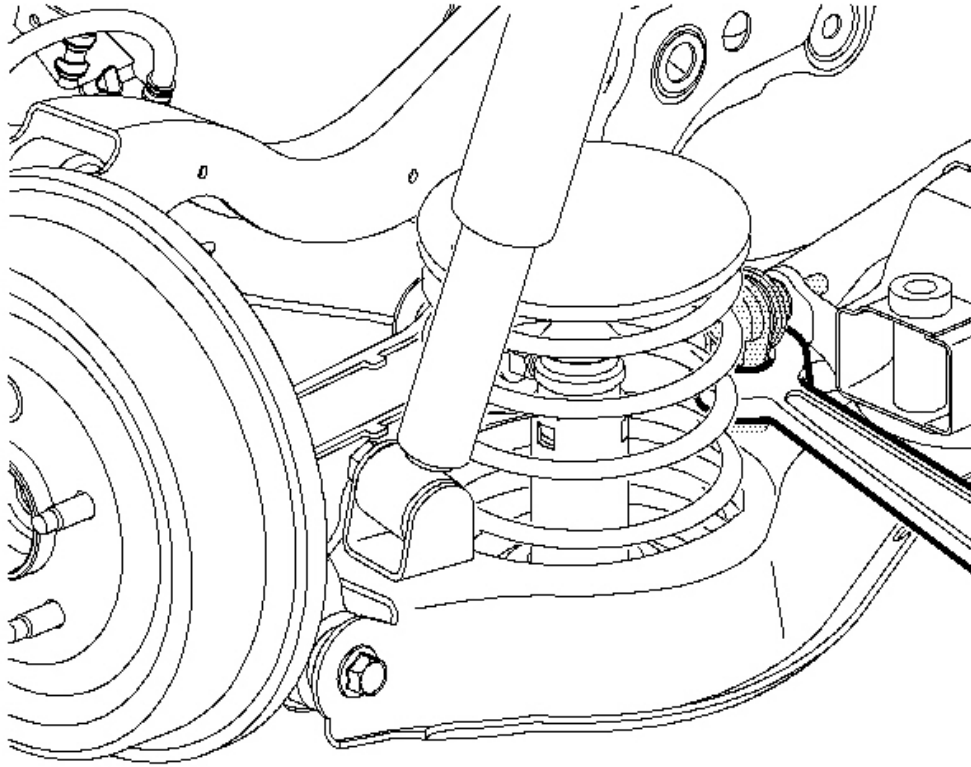


Fig. 64: Stabilizer Link & Lower Control Arm Nut
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

IMPORTANT: When connecting the stabilizer link, hold the link with a wrench to prevent turning.

2. Install the stabilizer link to control arm nut.

Tighten: Tighten the nut to 15 N.m (11 lb ft).

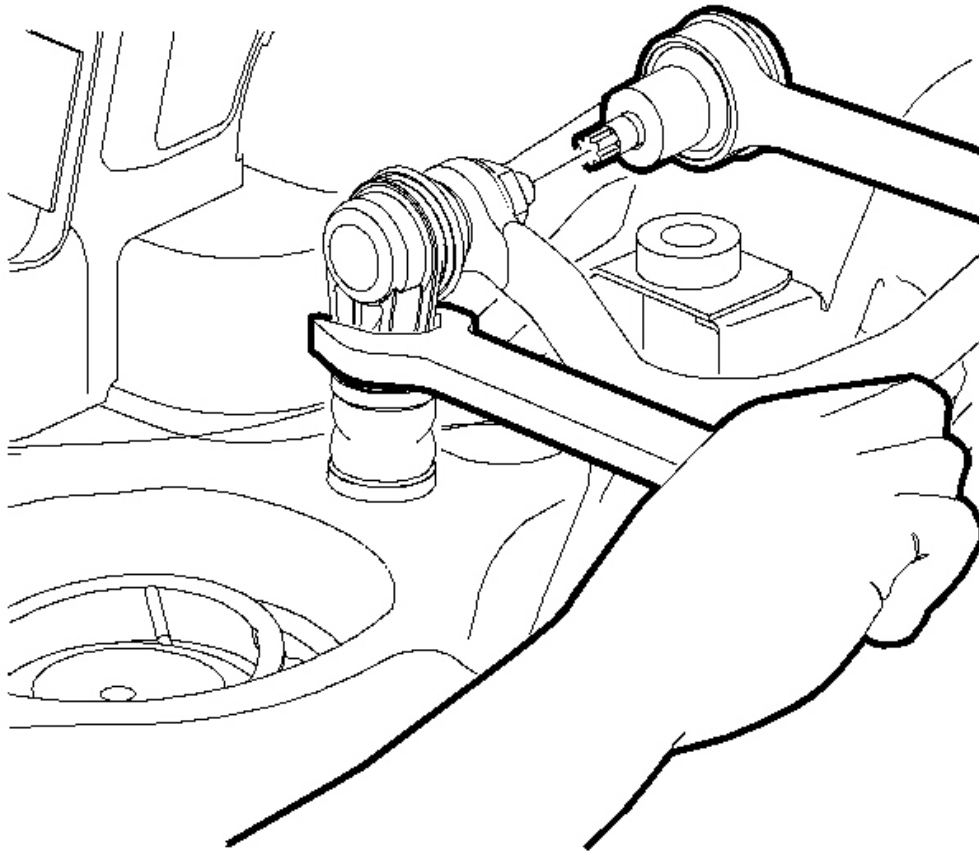


Fig. 65: Stabilizer Link & Stabilizer Bar Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Hold the ball shaft secure with a TORX(R) bit, when installing the nut.

3. Install the stabilizer link to stabilizer bar nut.

Tighten: Tighten the nut to 63 N.m (46 lb ft).

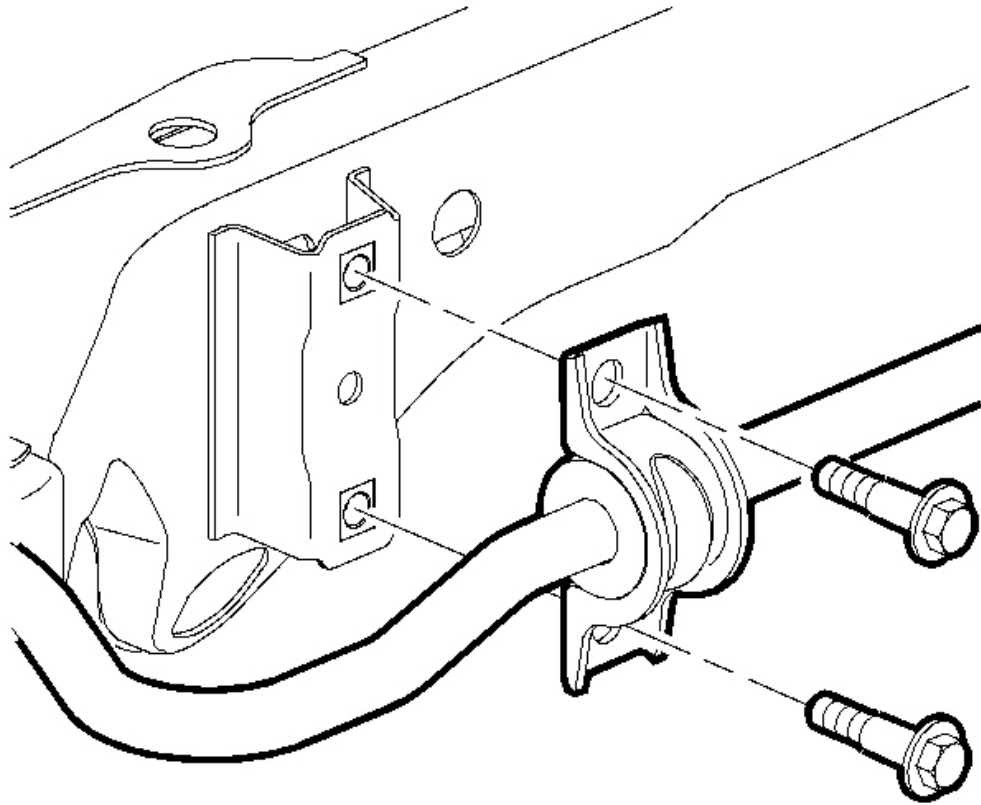


Fig. 66: Stabilizer Bar Clamp & Bolts
Courtesy of GENERAL MOTORS CORP.

4. Install the stabilizer bar clamp bolts.

Tighten: Tighten the bolts to 70 N.m (52 lb ft).

5. Lower the vehicle.

SHOCK ABSORBER REPLACEMENT

Removal Procedure

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

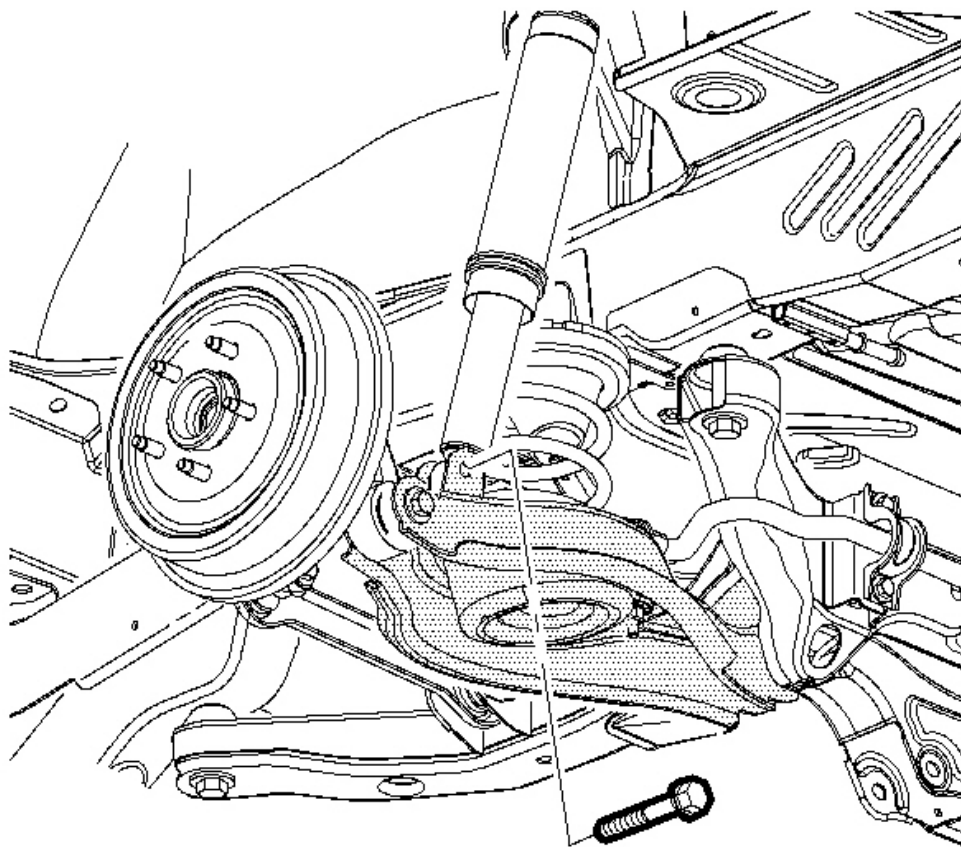


Fig. 67: Lower Shock Bolt
Courtesy of GENERAL MOTORS CORP.

2. Remove the lower shock bolt.
3. Remove the wheelhouse liner. Refer to **Wheelhouse Liner Panel Replacement - Rear** in Body Rear End.

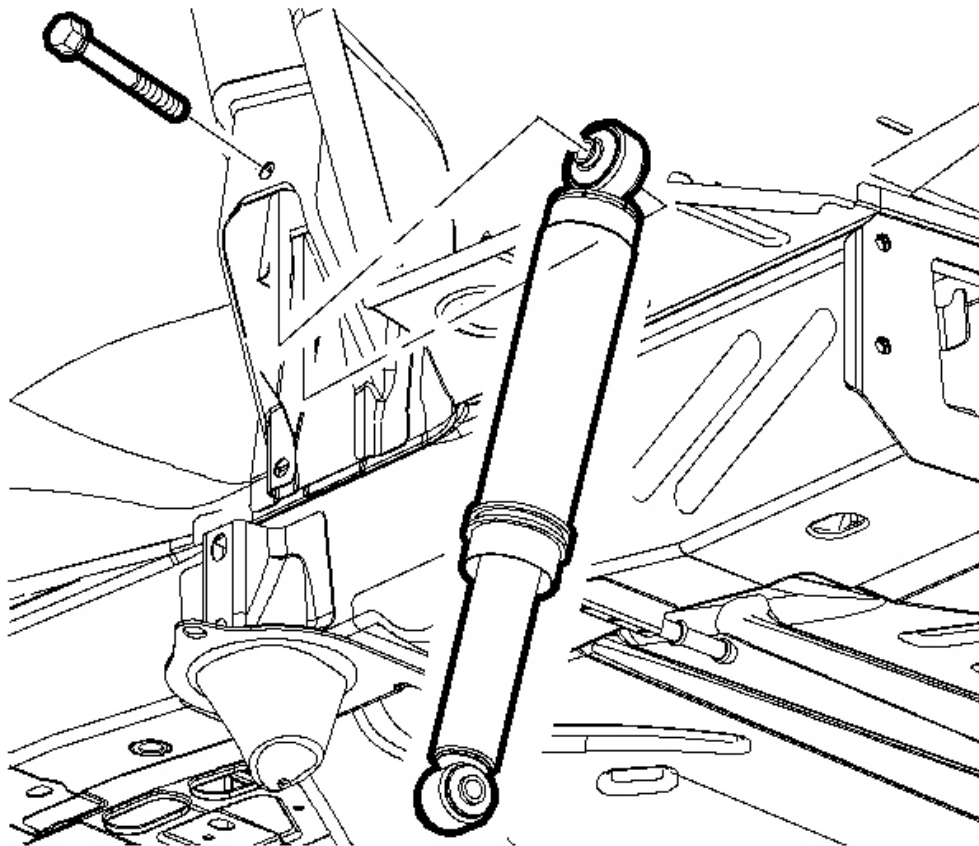


Fig. 68: Upper Shock & Bolt
Courtesy of GENERAL MOTORS CORP.

4. Remove the upper shock bolt.
5. Remove the shock from the vehicle.

Installation Procedure

1. Install the shock to the vehicle.

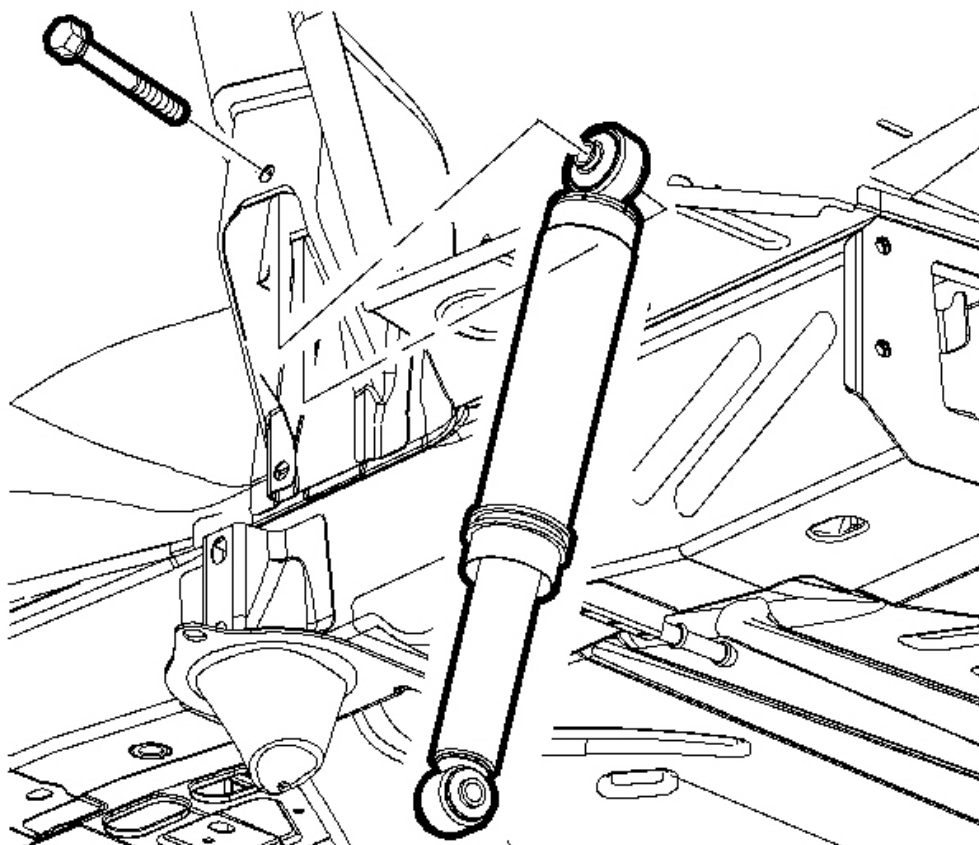


Fig. 69: Upper Shock & Bolt
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

2. Install the upper shock bolt.

Tighten: Tighten the bolt to 110 N.m (81 lb ft).

3. Install the wheelhouse liner. Refer to Wheelhouse Liner Panel Replacement - Rear in Body Rear End.

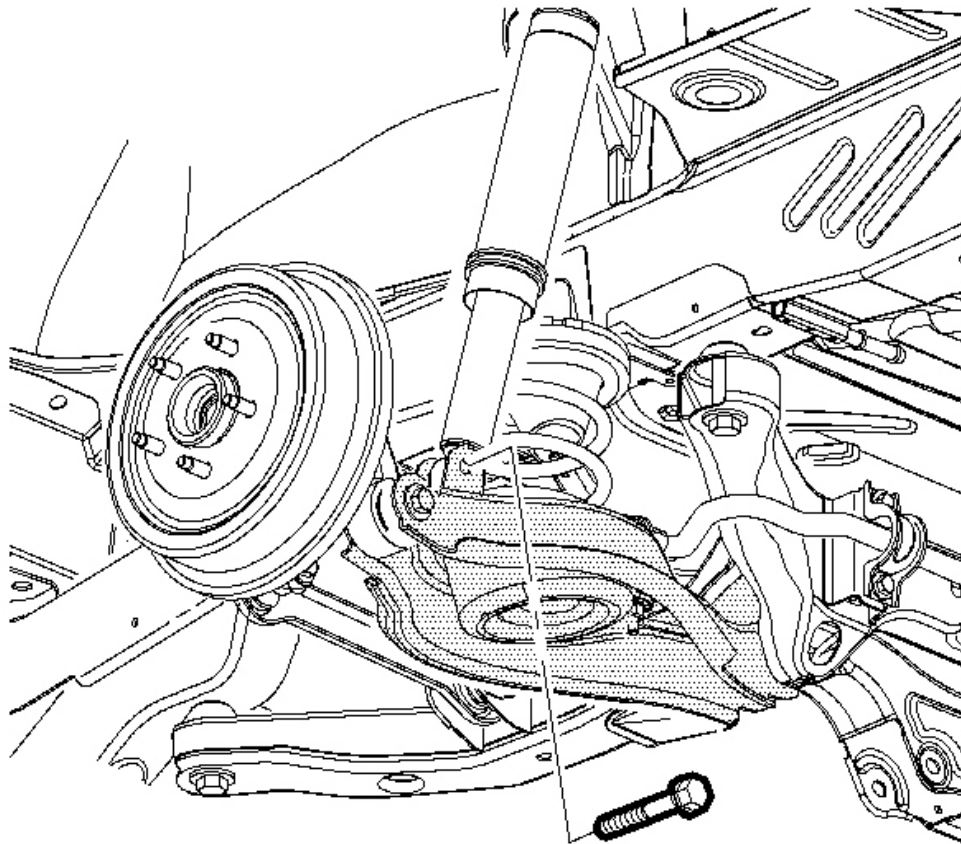


Fig. 70: Lower Shock Bolt
Courtesy of GENERAL MOTORS CORP.

4. Install the lower shock bolt.

Tighten: Tighten the bolt to 110 N.m (81 lb ft).

5. Lower the vehicle.

SHOCK ABSORBER DISPOSAL

CAUTION: 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.

CAUTION: 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.

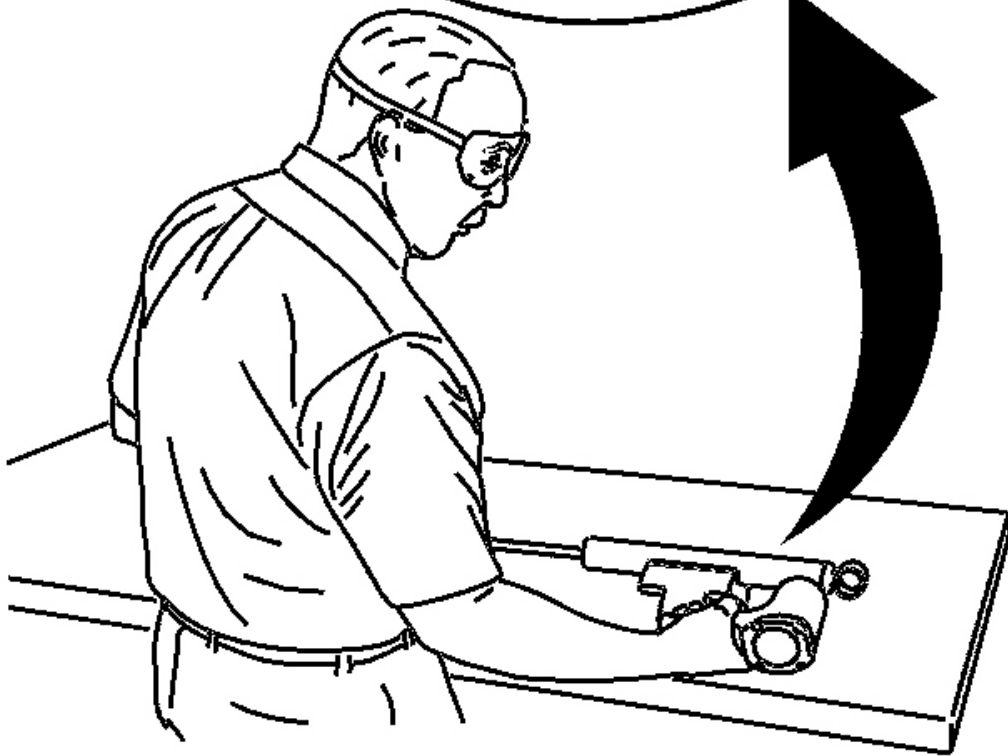
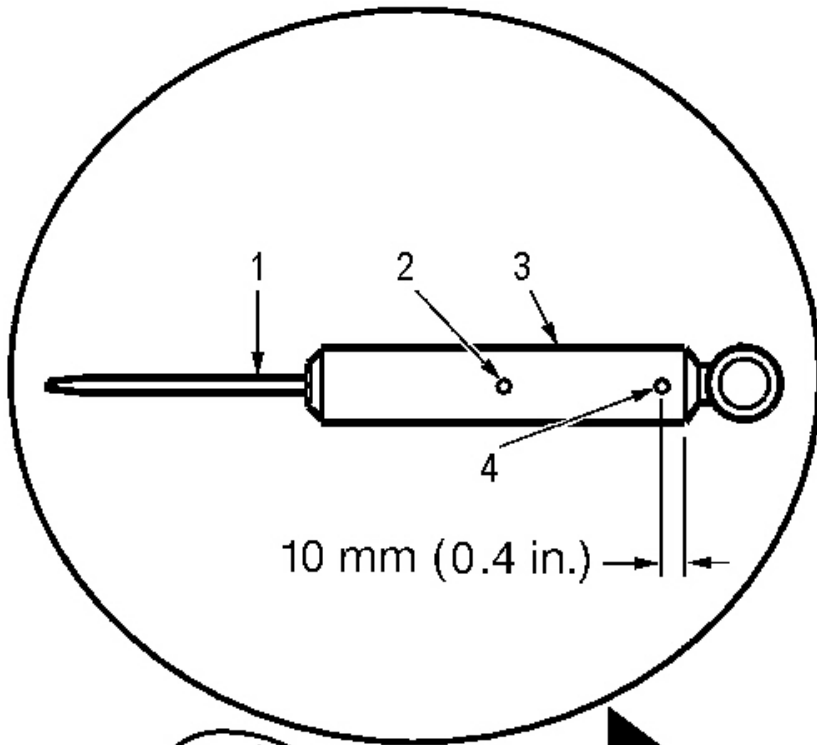


Fig. 71: Making An Indentation 10 mm (0.4 in) From The Bottom Of The Tube
Courtesy of GENERAL MOTORS CORP.

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.

COIL SPRING REPLACEMENT

Removal Procedure

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

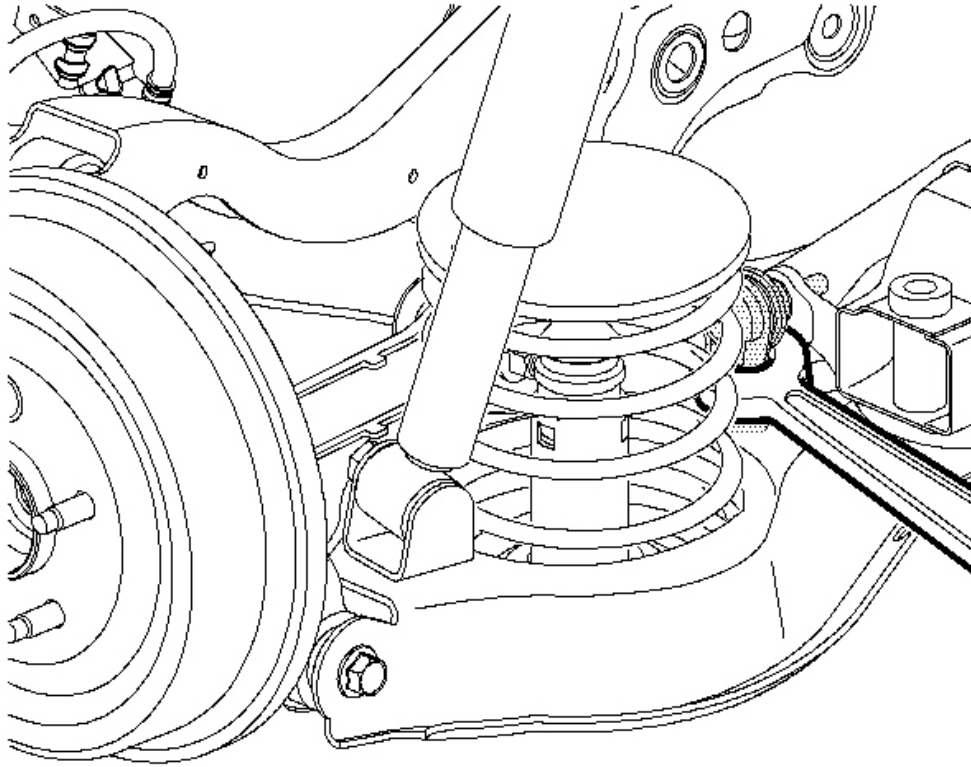


Fig. 72: Stabilizer Link & Lower Control Arm Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Hold the link with a wrench during nut removal.

3. Remove the stabilizer link to lower control arm nut.

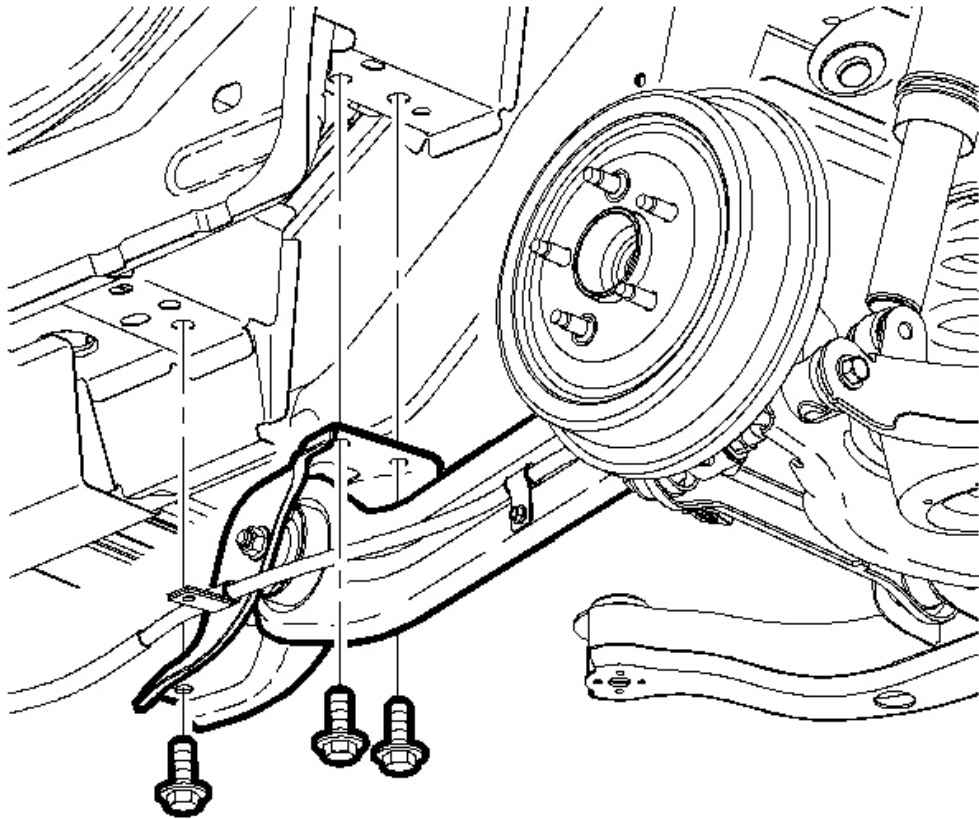


Fig. 73: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

4. Remove the trailing arm bracket to underbody bolts.

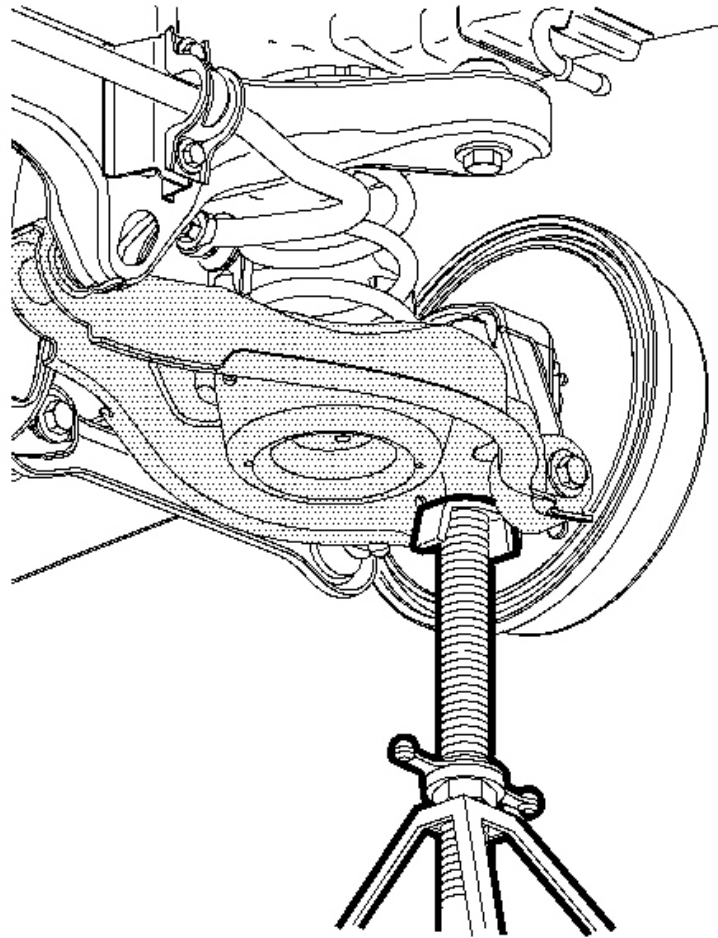


Fig. 74: Jackstand Supporting The Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

5. Place a screw-type jackstand under the lower control arm.
6. Using the jackstand, compress the coil spring.

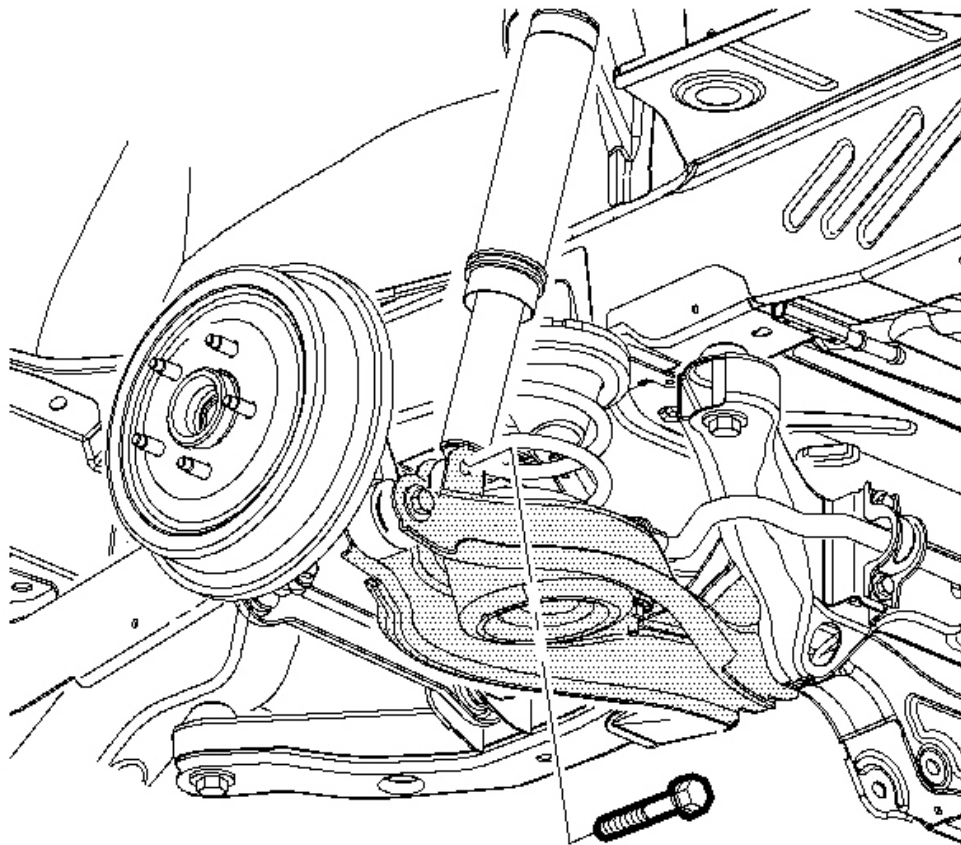


Fig. 75: Lower Shock Bolt
Courtesy of GENERAL MOTORS CORP.

7. Remove the lower shock bolt.

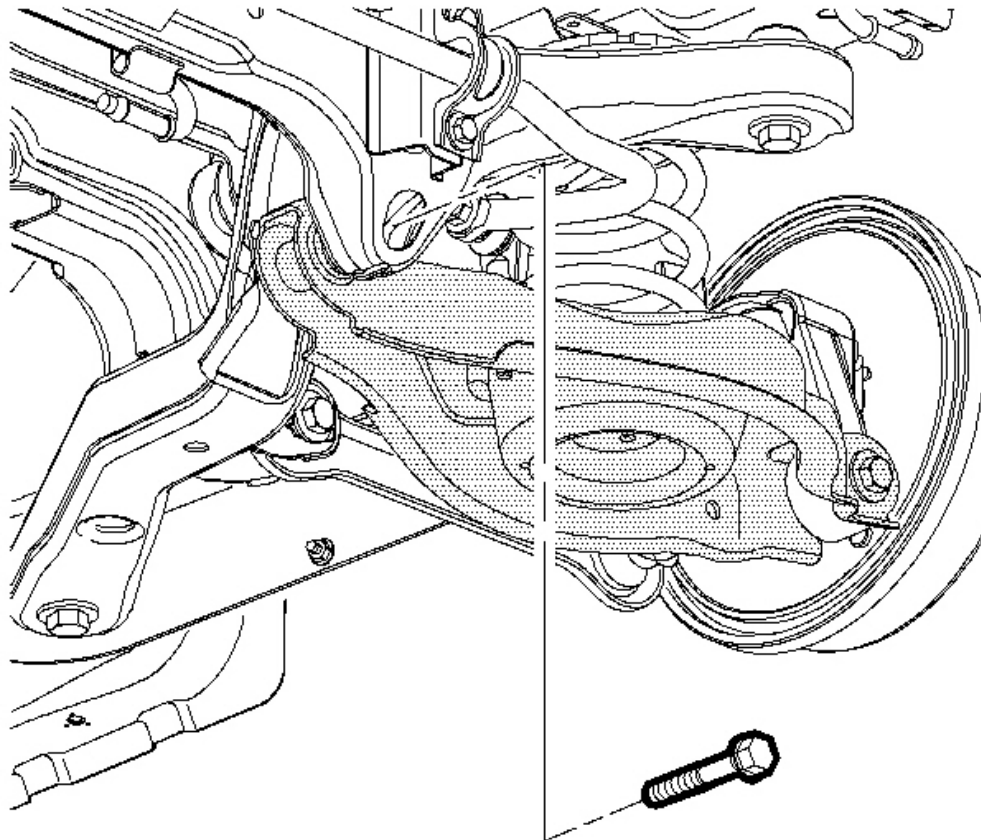


Fig. 76: Lower Control Arm & Frame Bolt
Courtesy of GENERAL MOTORS CORP.

8. Loosen the lower control arm to support frame bolt.

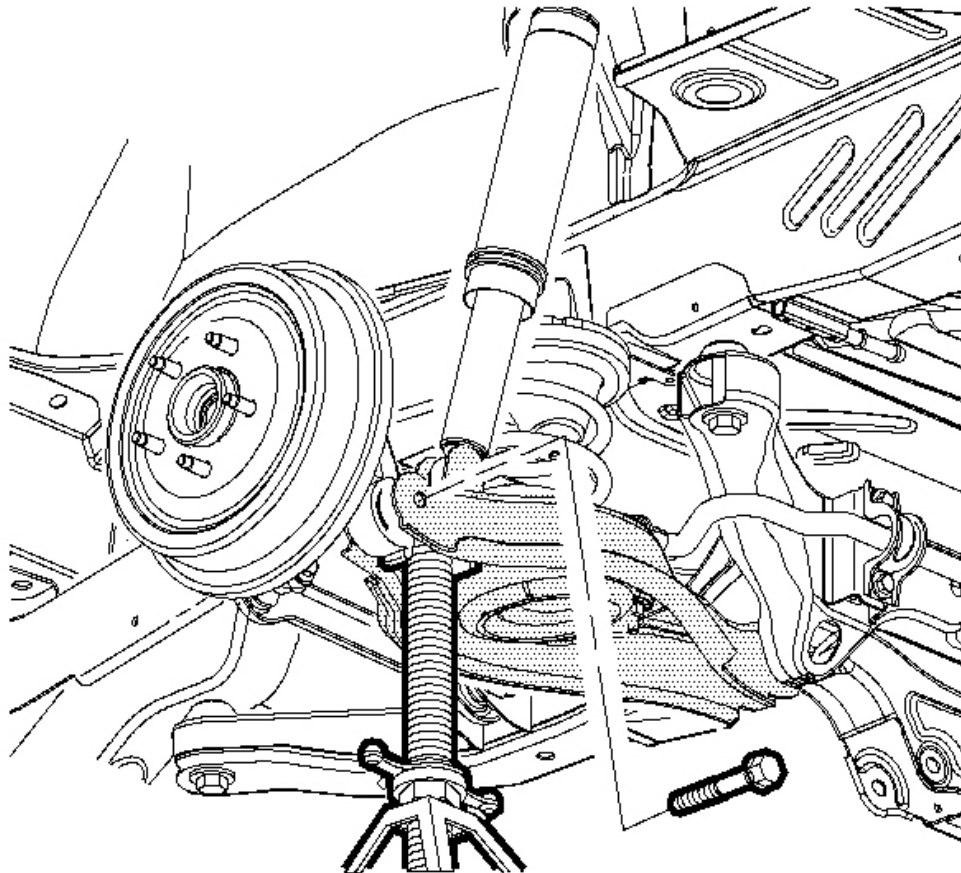


Fig. 77: Lower Control Arm, Knuckle Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

9. Remove the lower control arm to knuckle nut and bolt.

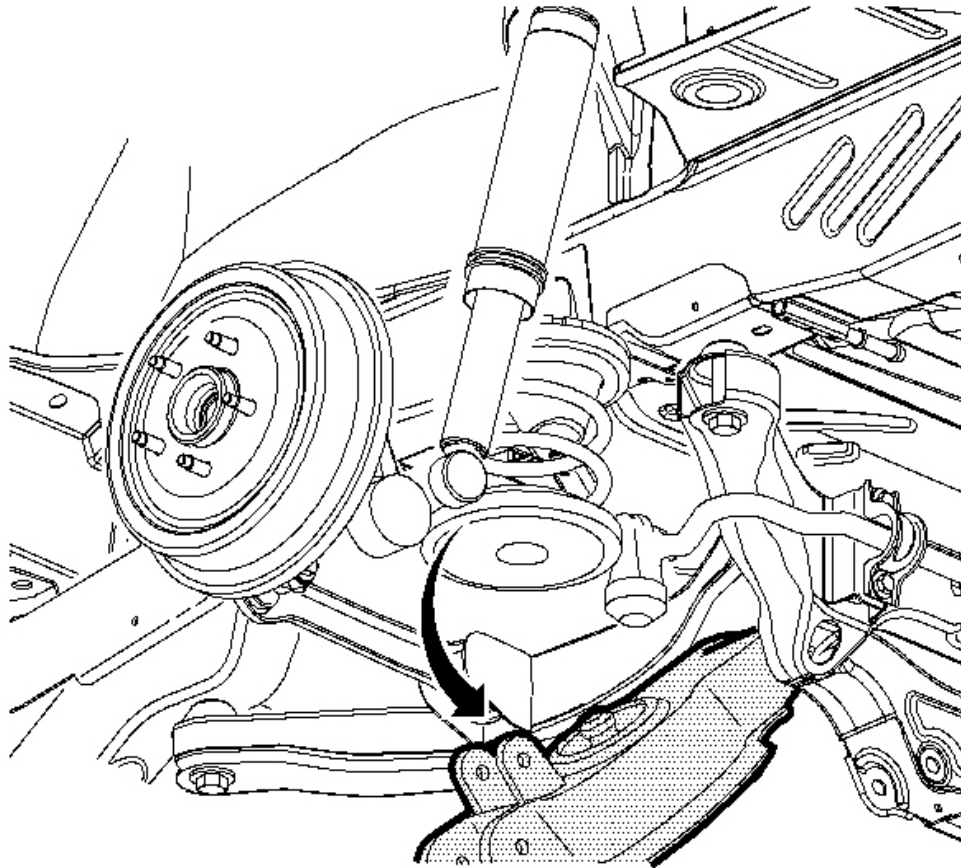


Fig. 78: Control Arm & Coil Spring
Courtesy of GENERAL MOTORS CORP.

10. Lower the control arm in order to unload the coil spring.
11. Remove the coil spring.

Installation Procedure

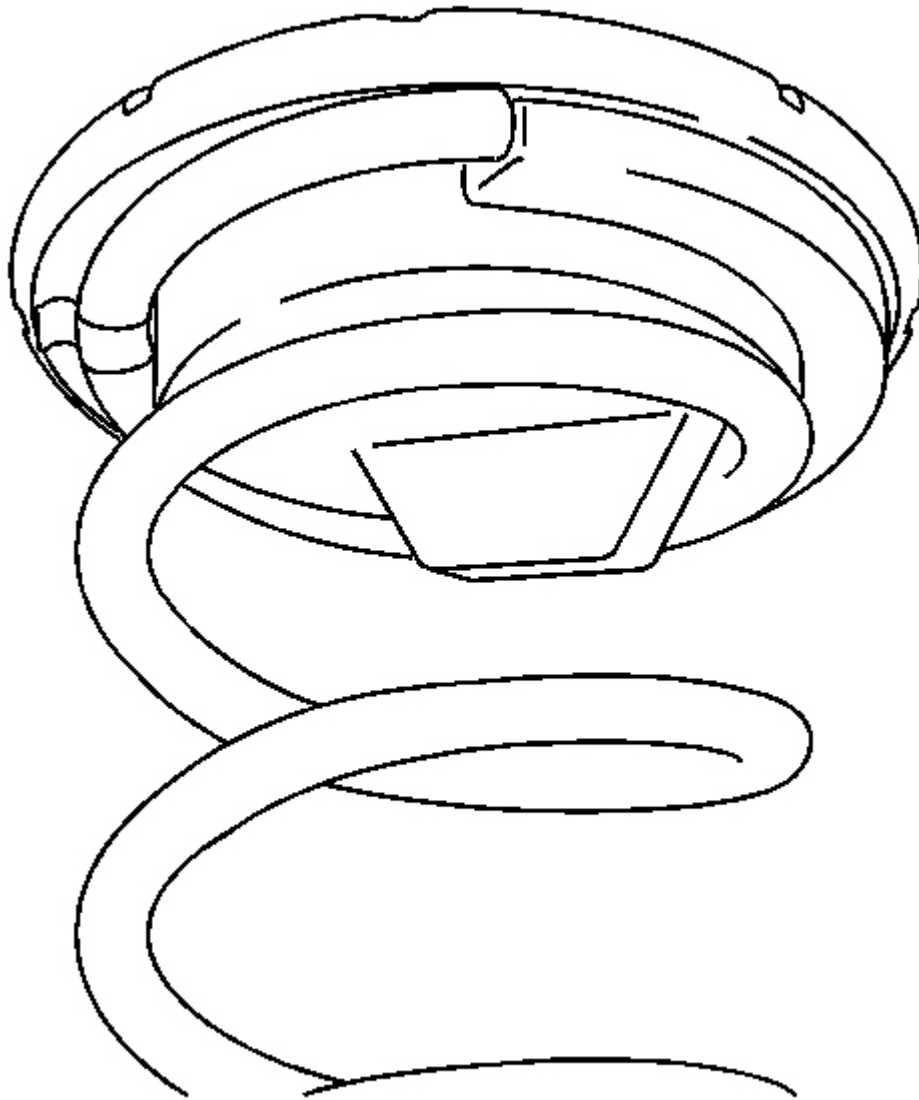


Fig. 79: Coil Spring Insulators
Courtesy of GENERAL MOTORS CORP.

1. Fully seat the top and bottom coil spring insulators to the spring.

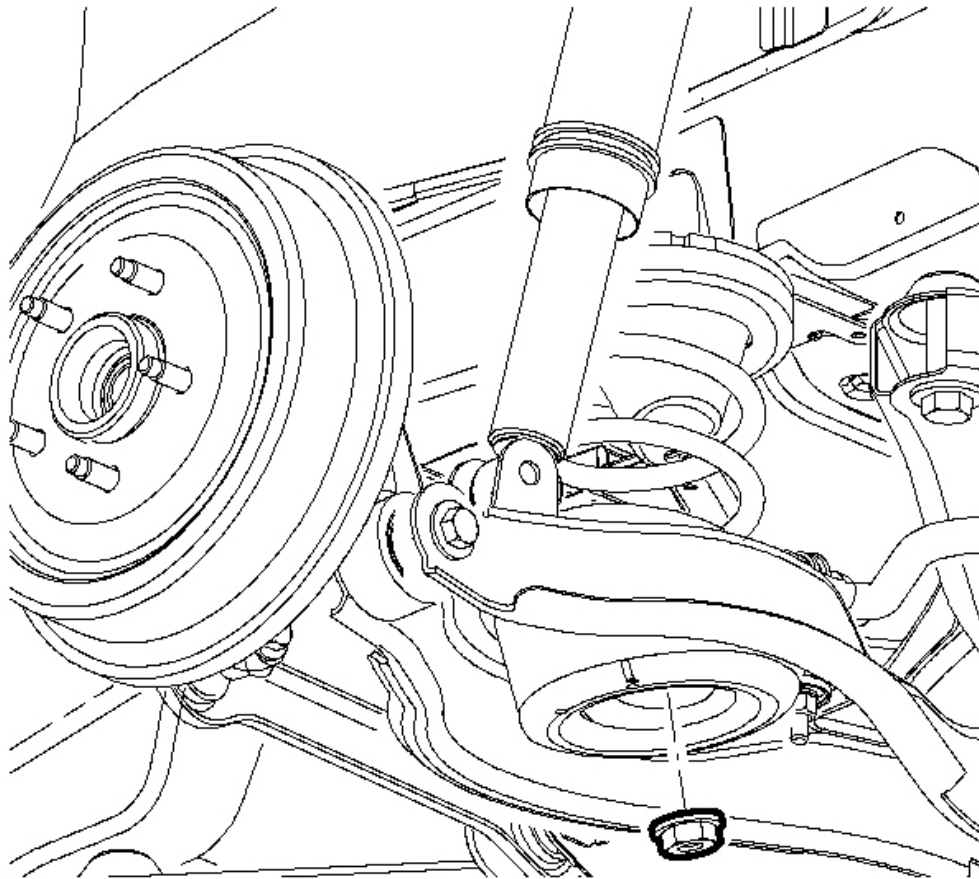


Fig. 80: Jounce Bumper Nut & Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

IMPORTANT:

- **Spray silicon lubricant on the insulators to aid in installation.**
- **Ensure that part number identification tape located on the coil spring is oriented inboard of the vehicle and at the top of the spring.**

2. Position the spring with the rubber insulators into the vehicle.
3. Use a screw-type jackstand to compress the spring.

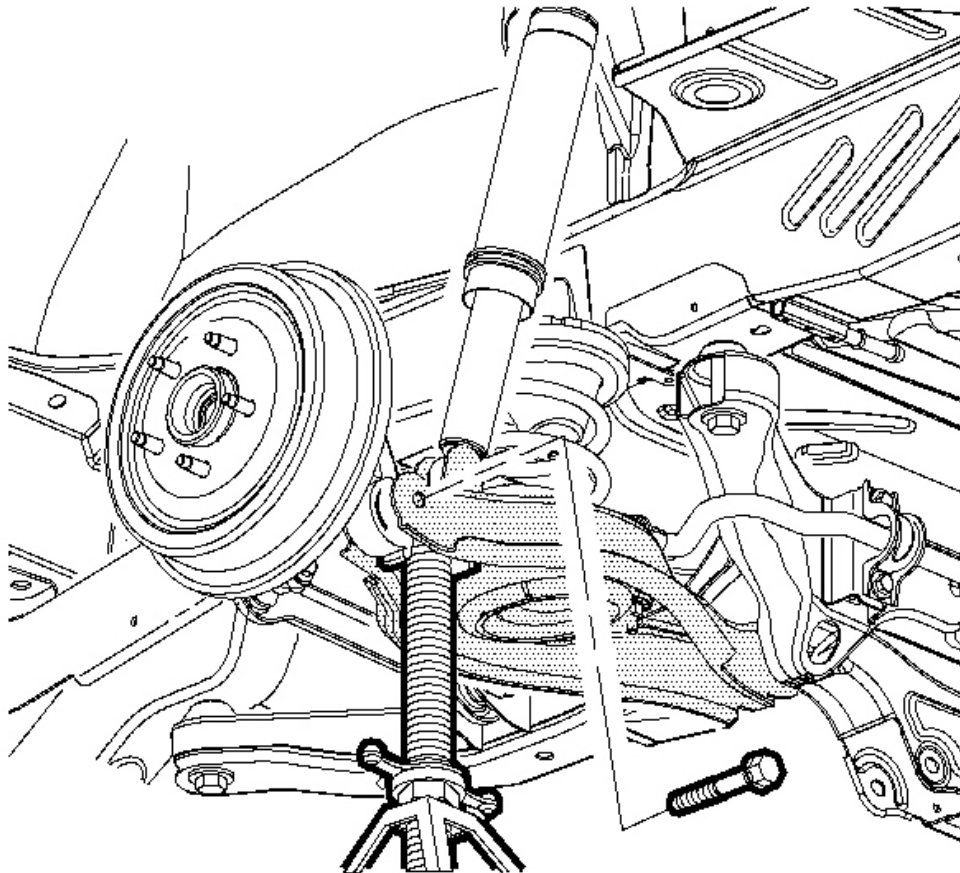


Fig. 81: Lower Control Arm, Knuckle Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Install the knuckle to the lower control arm.

Tighten: Tighten the lower control arm to knuckle bolt to 110 N.m (81 lb ft).

5. Tighten the lower control arm to support nut and bolt.

Tighten: Tighten the bolt to 110 N.m (81 lb ft).

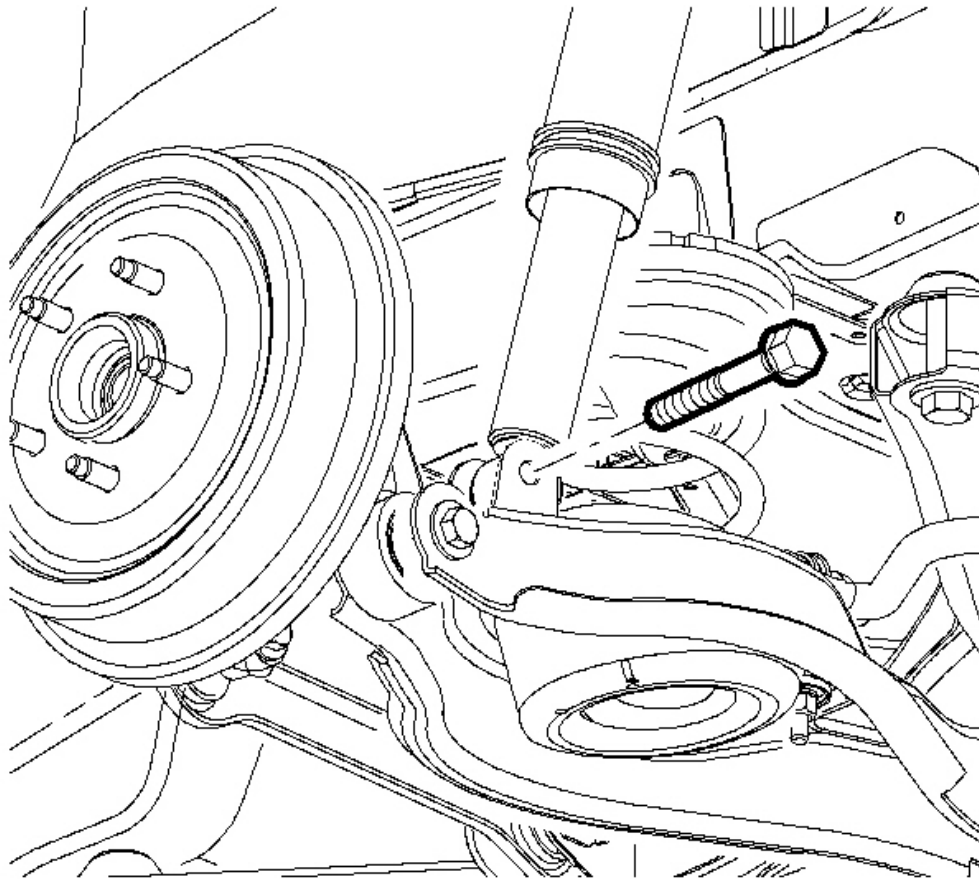


Fig. 82: Shock & Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

6. Install the shock to the lower control arm.

Tighten: Tighten the lower shock bolt to 110 N.m (81 lb ft).

7. Remove the jackstand.

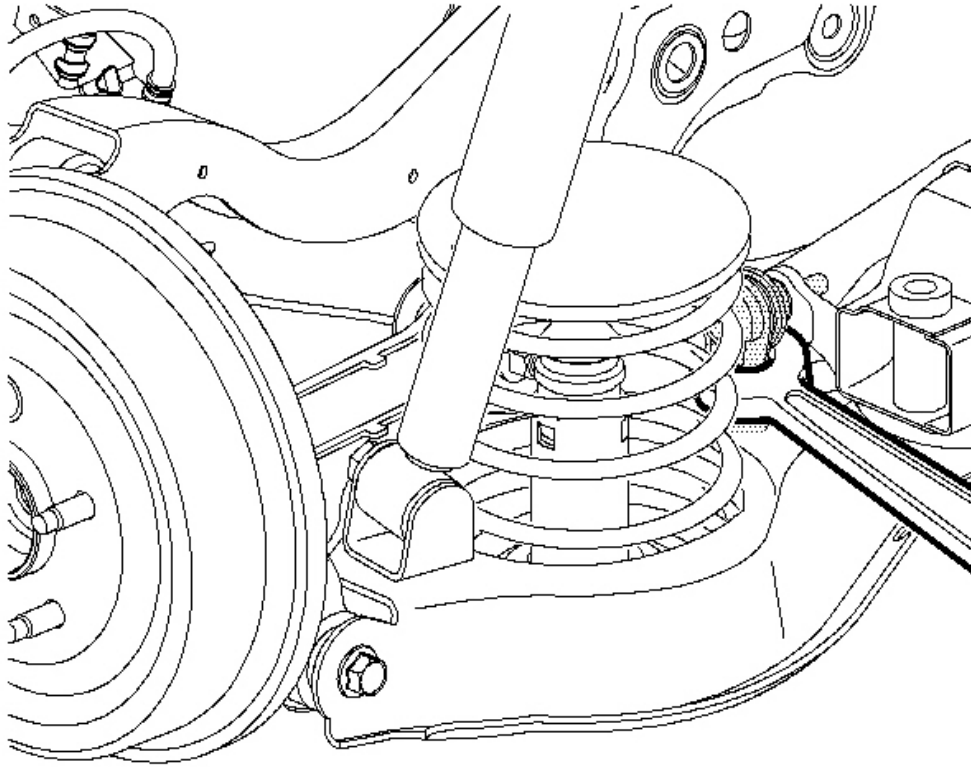


Fig. 83: Stabilizer Link & Lower Control Arm Nut
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Hold the link with a wrench during nut installation.

8. Install the stabilizer link to the lower control arm.

Tighten: Tighten the nut to 15 N.m (11 lb ft).

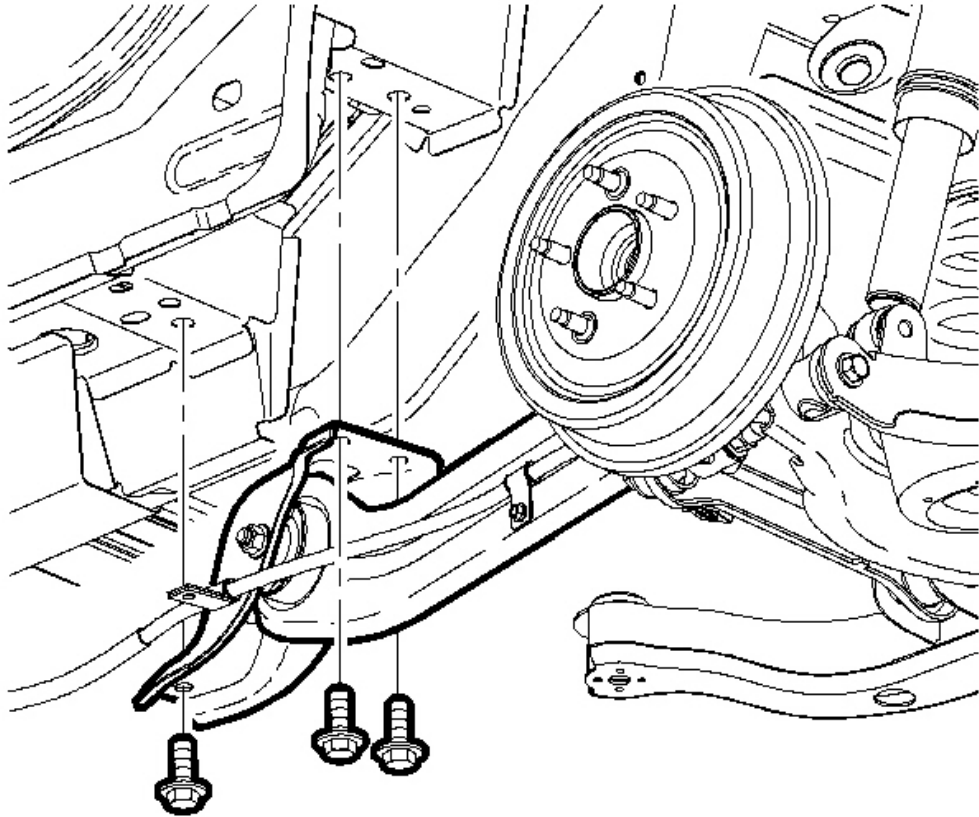


Fig. 84: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

9. Push the trailing arm upward to align the front bracket to body bolt.
10. Use a drift to aid in bracket alignment and install the remaining bolts.

Tighten: Tighten the bracket to body bolts to 110 N.m (81 lb ft).

11. Install the tire and wheel. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
12. Lower the vehicle.
13. Check the rear alignment. Refer to **Measuring Wheel Alignment** in Wheel Alignment.

COIL SPRING INSULATORS REPLACEMENT

Removal Procedure

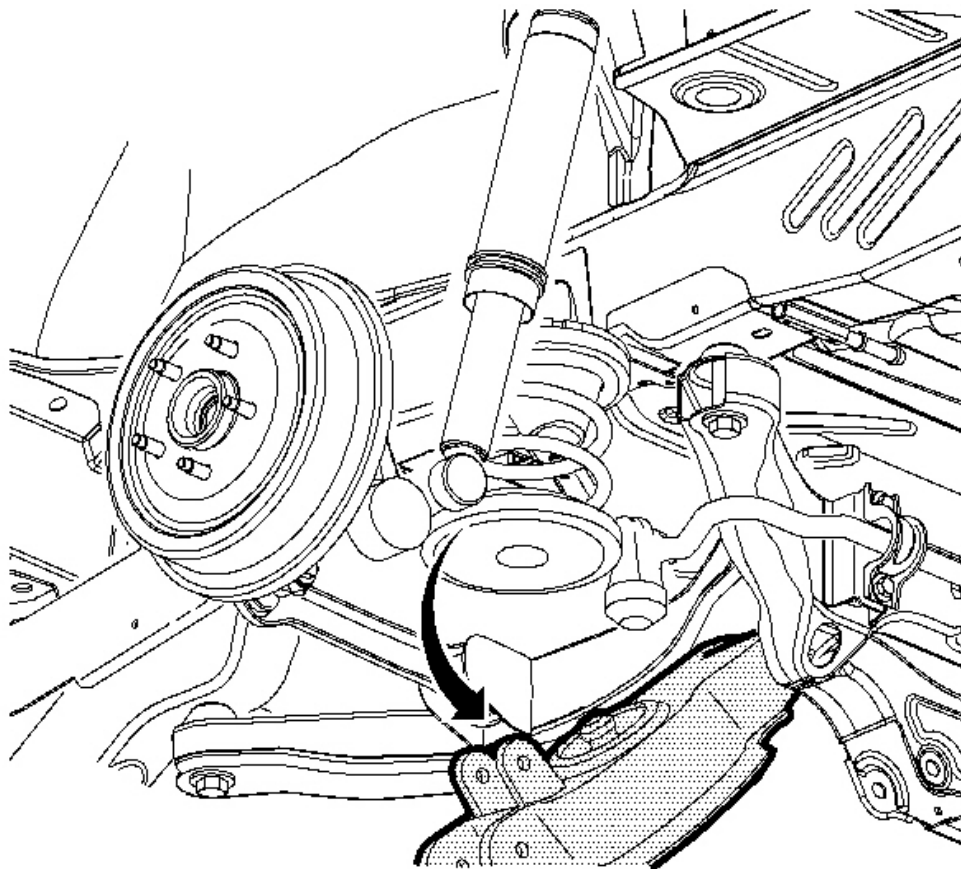


Fig. 85: Control Arm & Coil Spring
Courtesy of GENERAL MOTORS CORP.

1. Remove the coil spring. Refer to Coil Spring Replacement .
2. Remove the rubber insulators from the coil spring.

Installation Procedure

1. Install the rubber insulators to the coil spring.

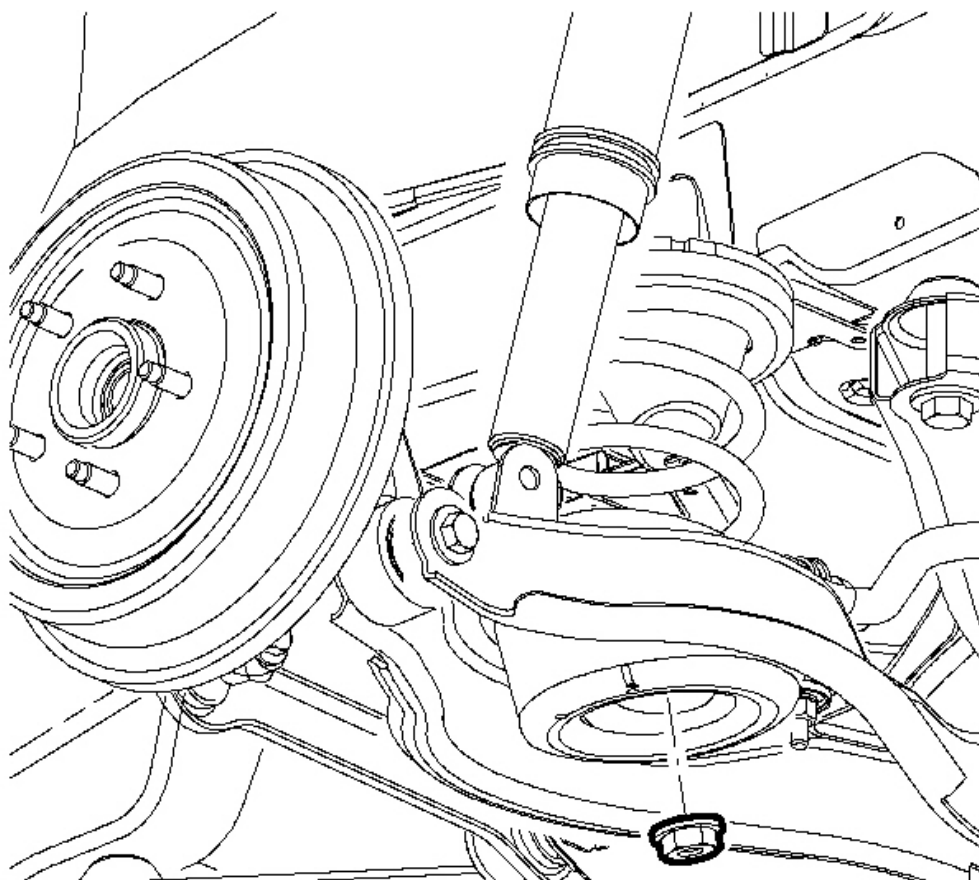


Fig. 86: Jounce Bumper Nut & Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

2. Install the coil spring. Refer to **Coil Spring Replacement** .

TRAILING ARM REPLACEMENT

Removal Procedure

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

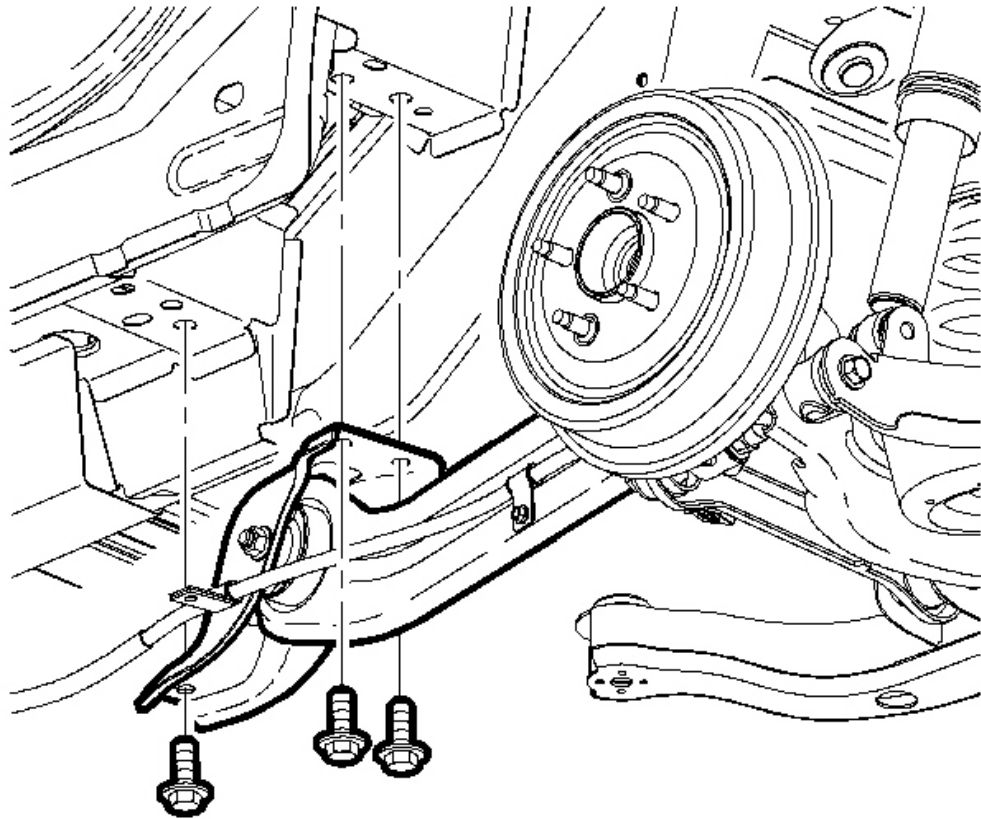


Fig. 87: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

2. Remove the trailing arm bracket to body bolts.
3. Remove the trailing arm bushing to bracket nut and bolt.

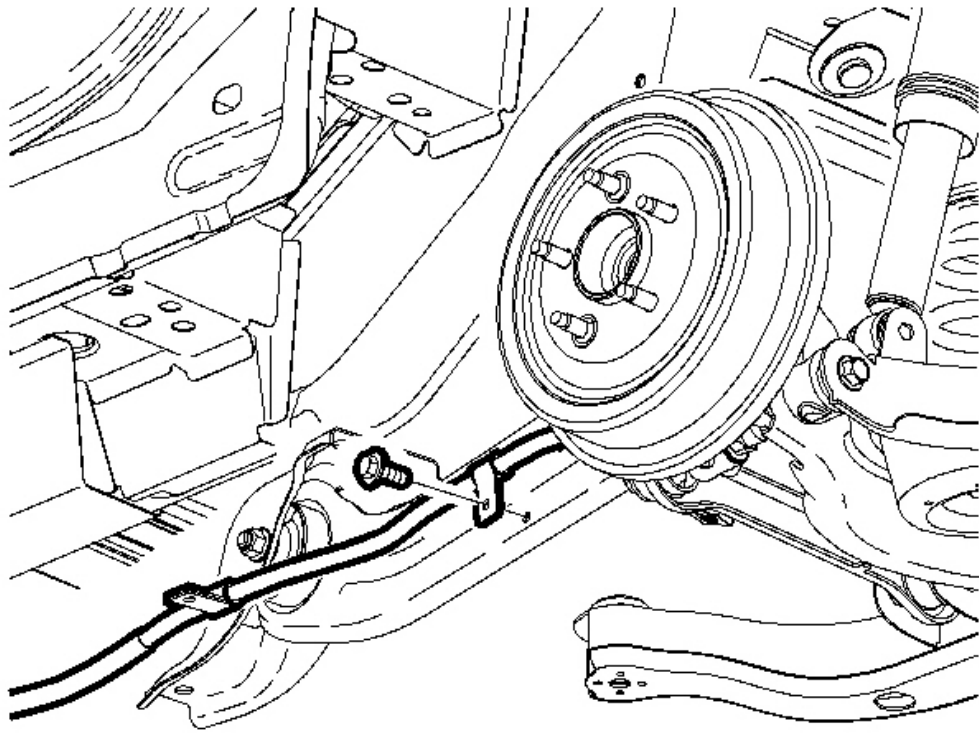


Fig. 88: Park Brake Cable Clip & Trailing Arm
Courtesy of GENERAL MOTORS CORP.

4. Remove the park brake cable clip from the trailing arm.

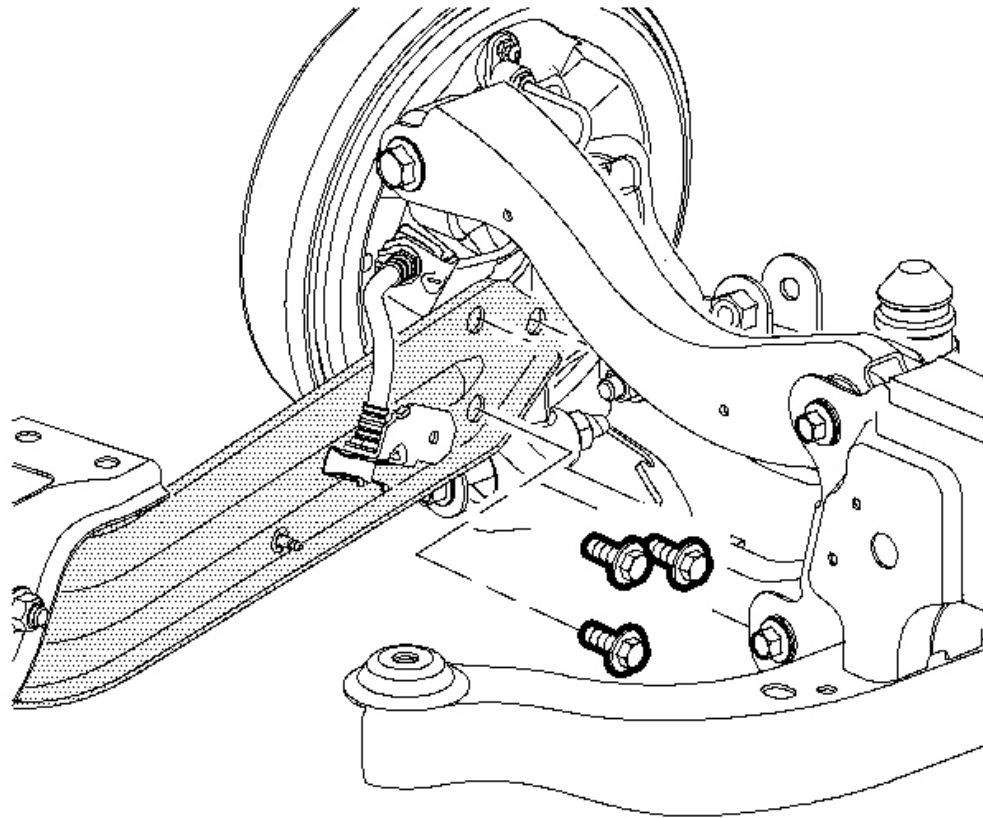


Fig. 89: Trailing Blade & Knuckle Bolts
Courtesy of GENERAL MOTORS CORP.

5. Remove the trailing arm to knuckle bolts.
6. Remove the trailing arm.

Installation Procedure

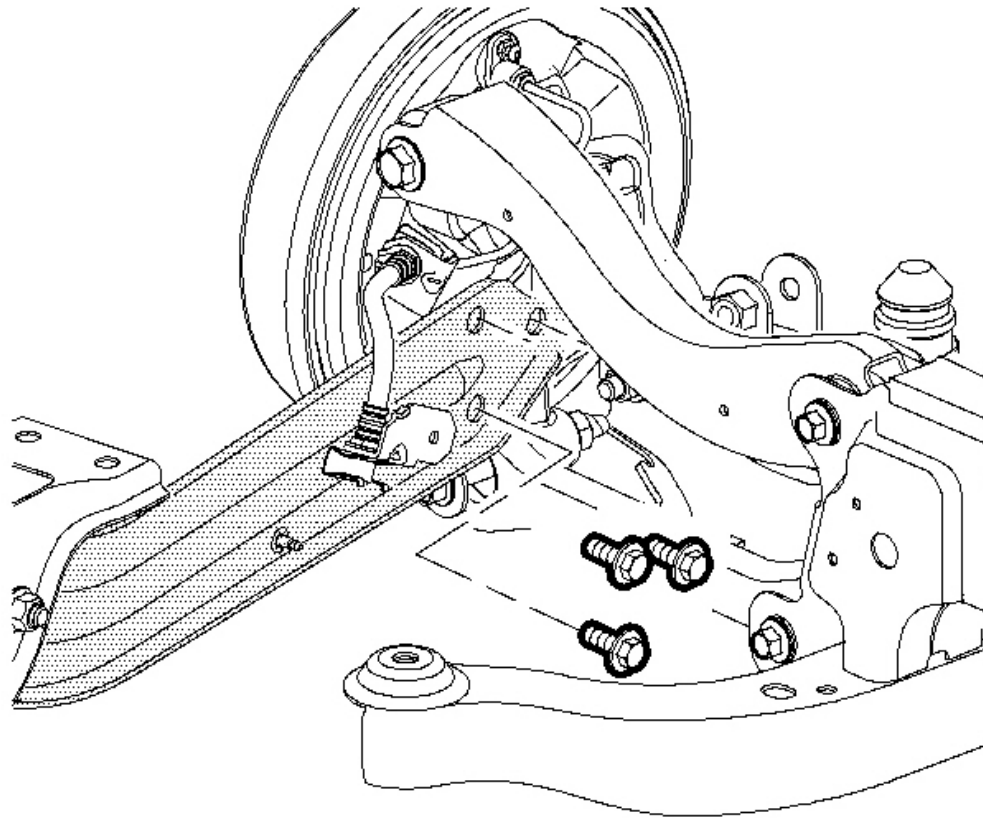


Fig. 90: Trailing Blade & Knuckle Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

1. Install the trailing arm to the knuckle.

Tighten: Tighten the bolts to 135 N.m (100 lb ft).

2. Position the trailing arm bracket to the trailing arm.
3. Loosely install the trailing arm bushing to bracket nut and bolt.

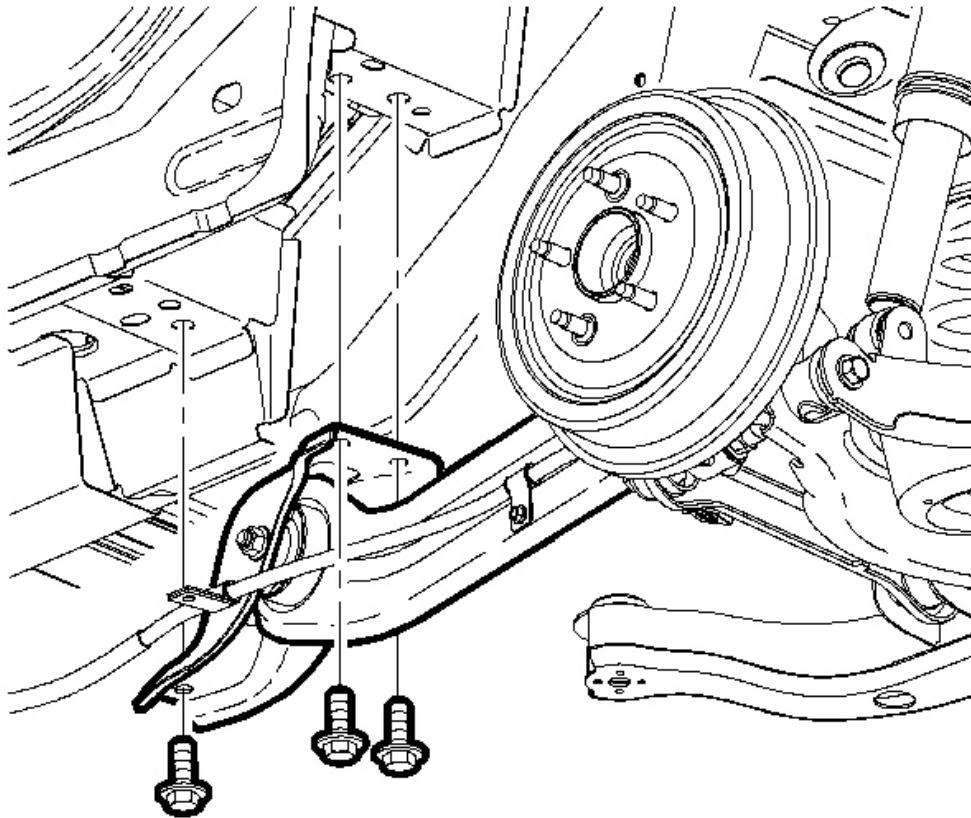


Fig. 91: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

4. Push upward on the trailing arm and loosely install the front bolt.
5. Use a drift to align the remaining bolts.

Tighten: Tighten the trailing arm bracket to body bolts to 110 N.m (81 lb ft).

IMPORTANT: There are two different trailing arms and trailing arm bolts used on this vehicle. You must identify which is on the vehicle and use the corresponding torque value.

6. Tighten the trailing arm bushing to bracket nut and bolt.

Tighten:

1. If the bolt is a M12 bolt, tighten the bolt to 110 N.m (81 lb ft).
2. If the bolt is a M14 bolt, tighten the bolt to 160 N.m (118 lb ft).

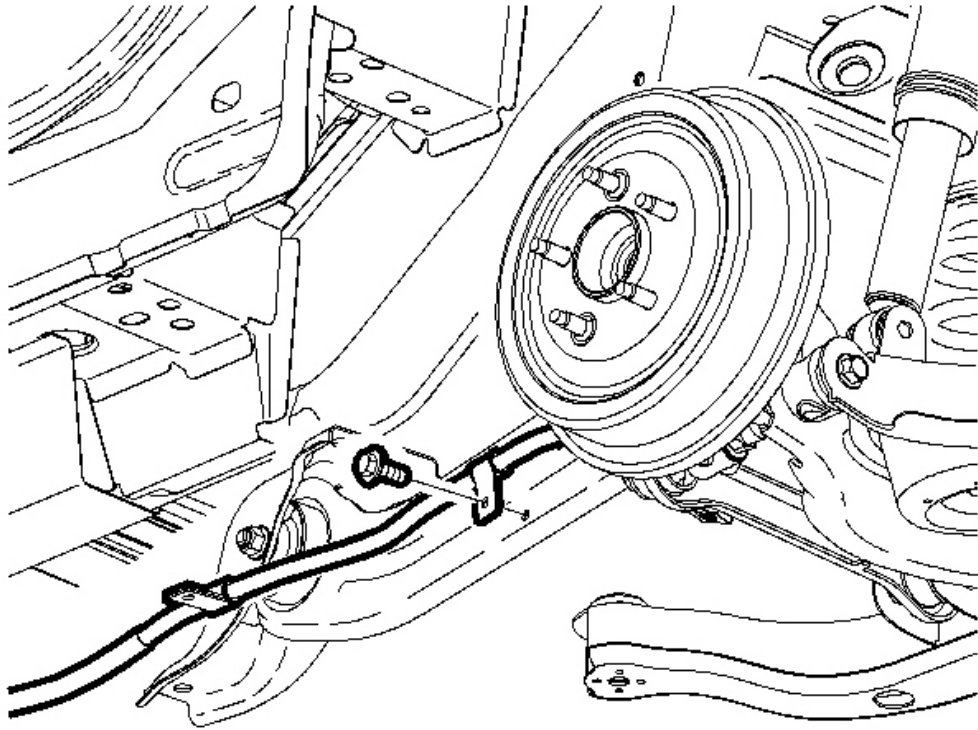


Fig. 92: Park Brake Cable Clip & Trailing Arm
Courtesy of GENERAL MOTORS CORP.

7. Install the park brake cable clip.

Tighten: Tighten the bolt to 25 N.m (18 lb ft).

8. Lower the vehicle.

TRAILING ARM BRACKET REPLACEMENT

Removal Procedure

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

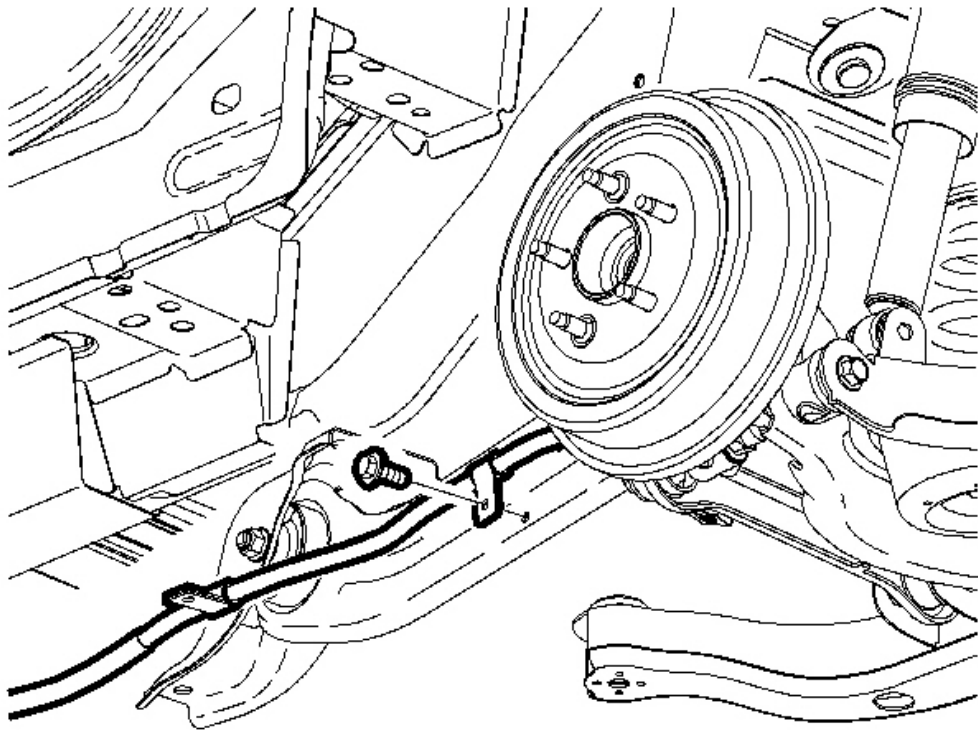


Fig. 93: Park Brake Cable Clip & Trailing Arm
Courtesy of GENERAL MOTORS CORP.

2. Remove the park brake clip from the trailing arm.

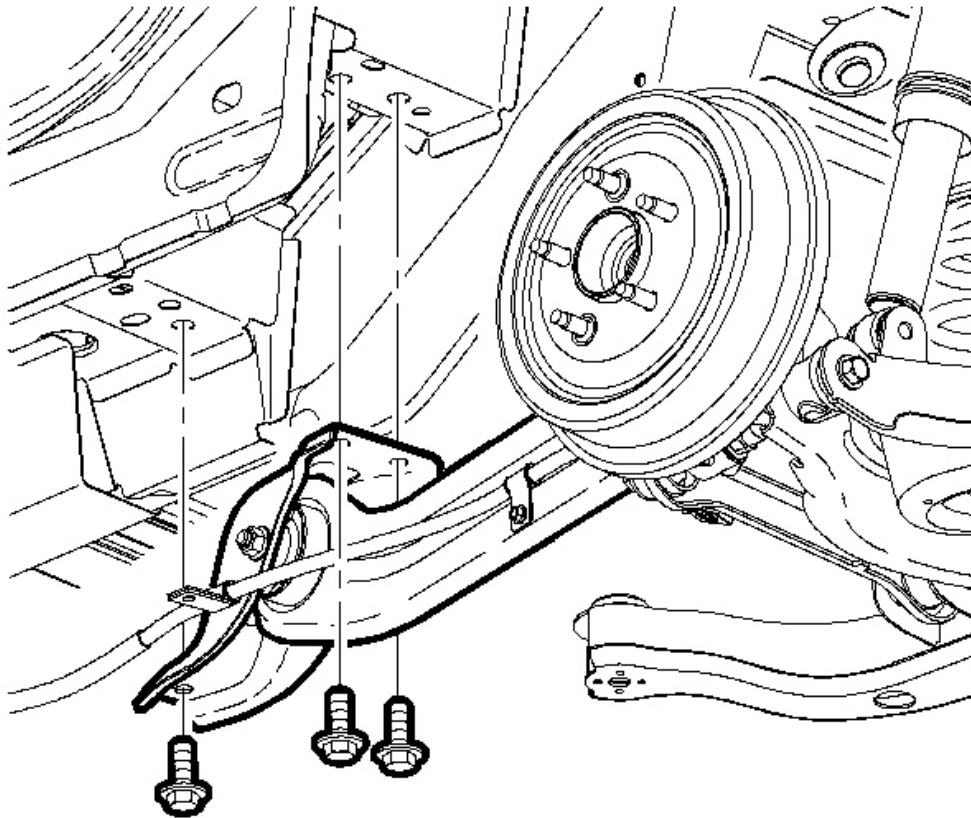


Fig. 94: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

3. Remove the bracket to underbody bolts.
4. Remove the trailing arm to bracket nut and bolt.
5. Remove the bracket.

Installation Procedure

1. Install the bracket to the trailing arm.
2. Loosely install the trailing arm bracket nut and bolt.

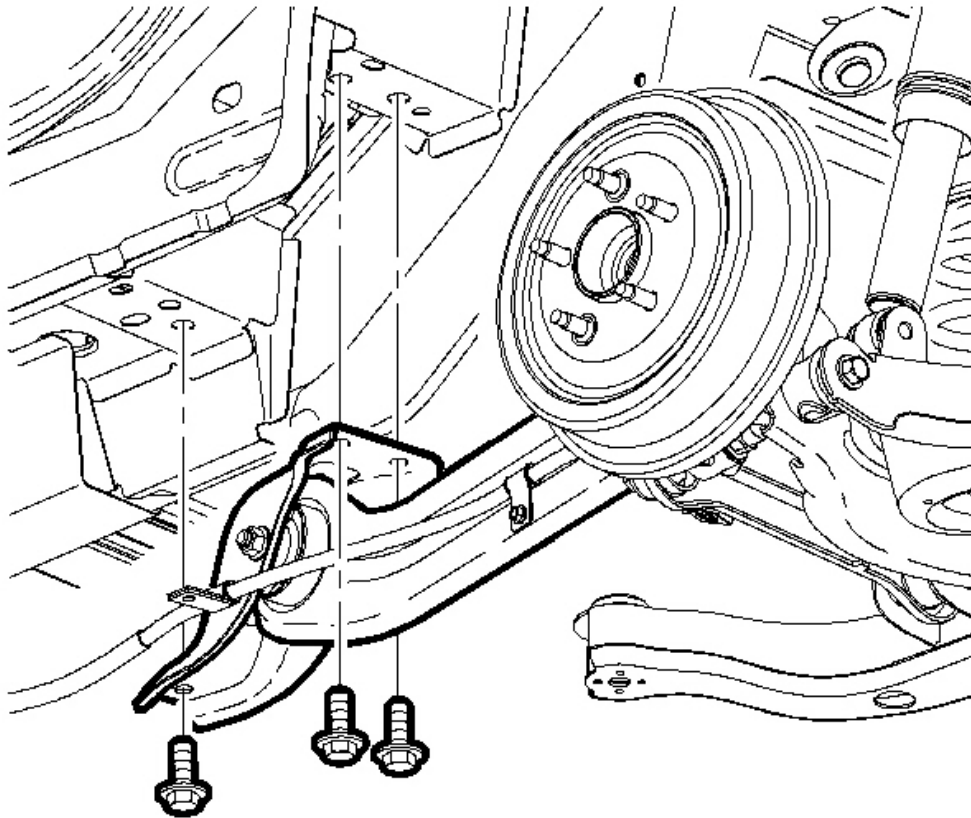


Fig. 95: Rear Axle Upper Control Trailing Arm Bracket & Body Bolts
Courtesy of GENERAL MOTORS CORP.

3. Push the trailing arm upward to align the front bracket to body bolt.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Use a drift to aid in bracket alignment and install the remaining bolts.

Tighten: Tighten the bracket to body bolts to 110 N.m (81 lb ft).

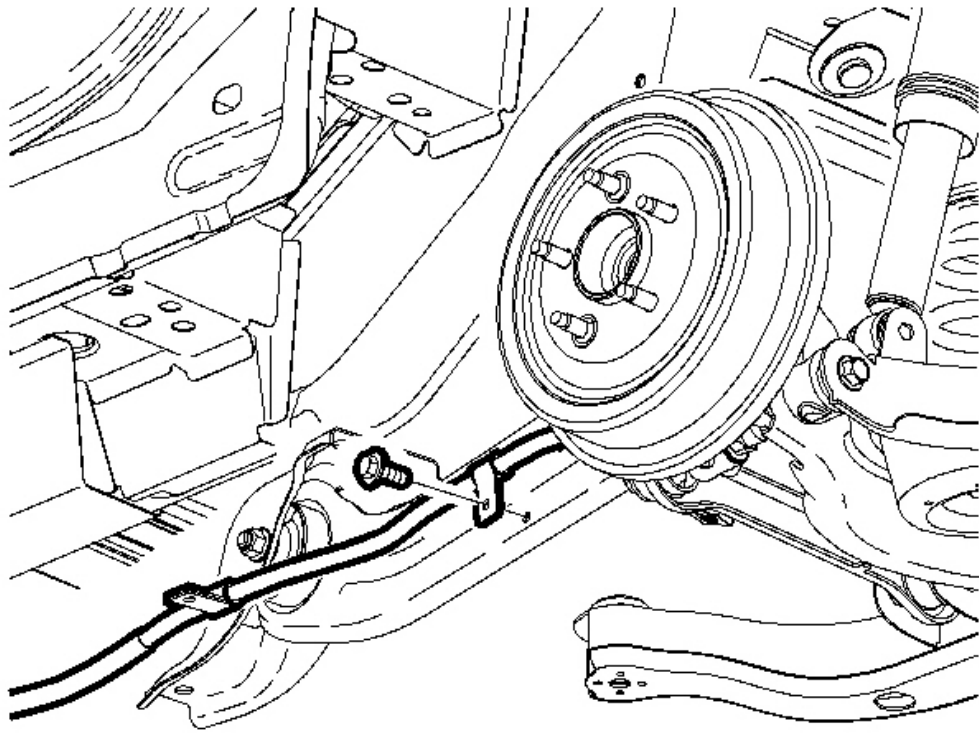


Fig. 96: Park Brake Cable Clip & Trailing Arm
Courtesy of GENERAL MOTORS CORP.

5. Install the parking brake cable clip to the trailing arm.

Tighten: Tighten the bolt to 25 N.m (18 lb ft).

IMPORTANT: There are two different trailing arms and trailing arm bolts used on this vehicle. You must identify which is on the vehicle and use the corresponding torque value.

6. Tighten the trailing arm bushing to bracket nut and bolt.

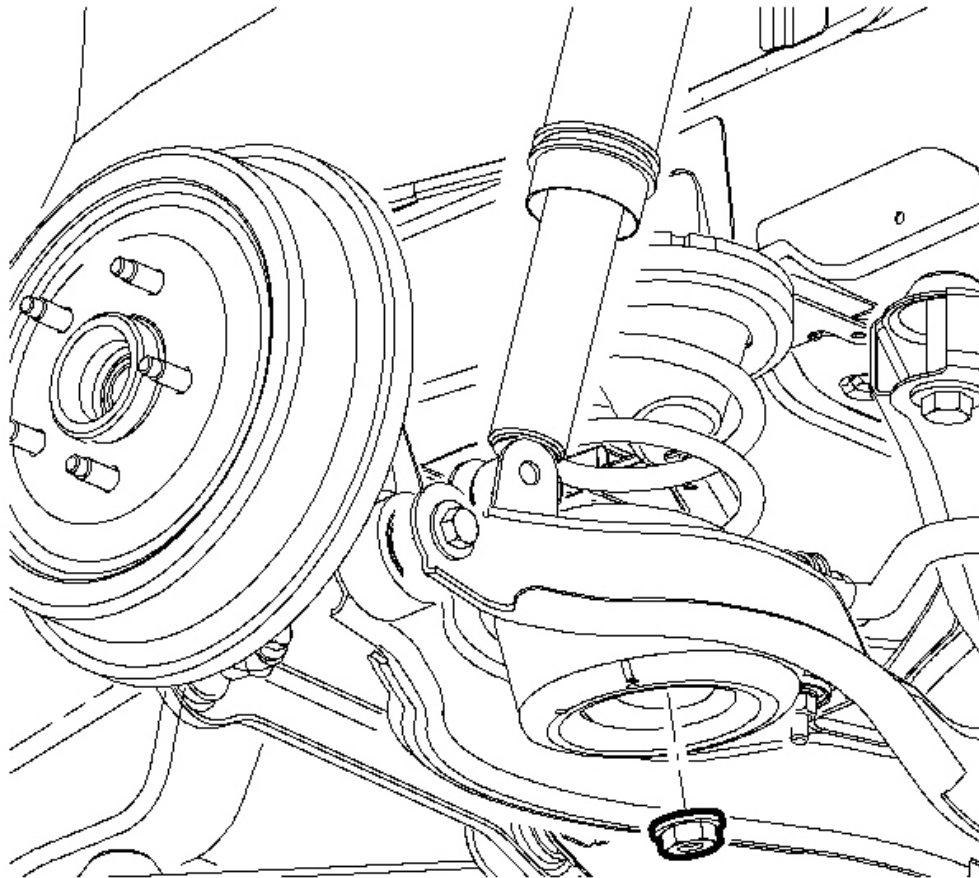
Tighten:

1. If the bolt is a M12 bolt, tighten the bolt to 110 N.m (81 lb ft).
2. If the bolt is a M14 bolt, tighten the bolt to 160 N.m (118 lb ft).

7. Lower the vehicle.

SPRING JOUNCE BUMPER REPLACEMENT**Removal Procedure**

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

**Fig. 97: Jounce Bumper Nut & Lower Control Arm**

Courtesy of GENERAL MOTORS CORP.

2. Remove the jounce bumper nut at the lower control arm.

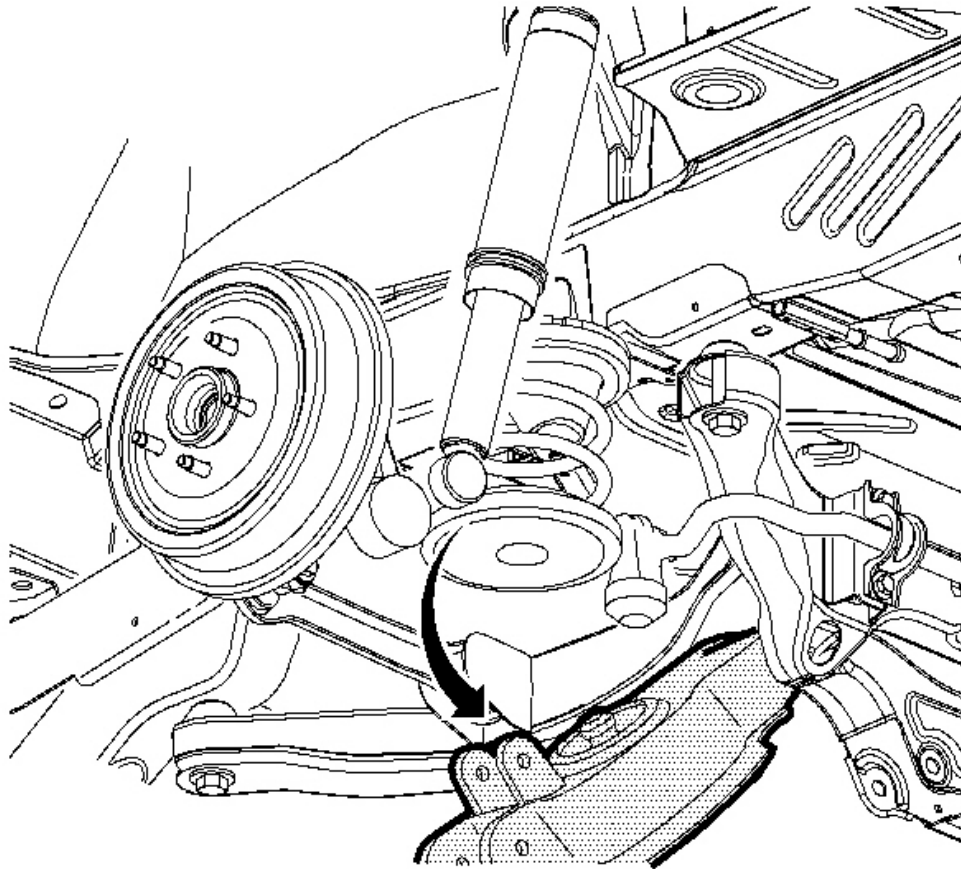


Fig. 98: Control Arm & Coil Spring
Courtesy of GENERAL MOTORS CORP.

3. Remove the coil spring. Refer to **Coil Spring Insulators Replacement**
4. Remove the jounce bumper.

Installation Procedure

1. Install the jounce bumper to the lower control arm.

2. Hand tighten the jounce bumper nut.

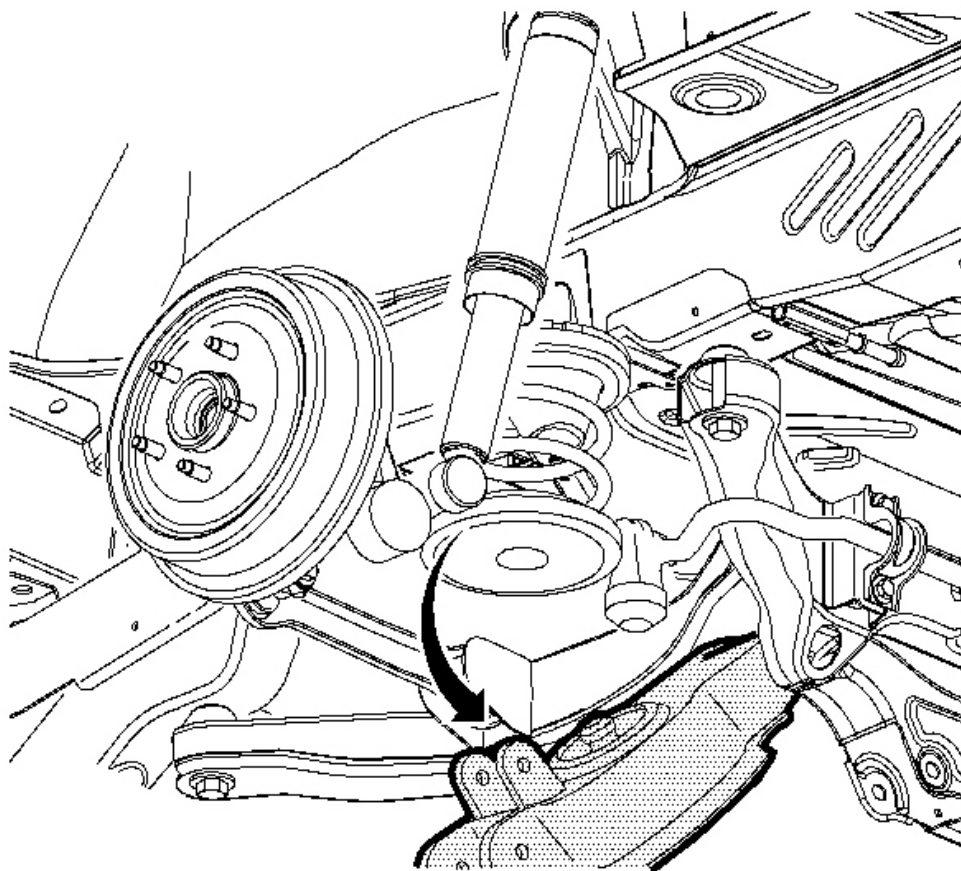


Fig. 99: Control Arm & Coil Spring
Courtesy of GENERAL MOTORS CORP.

3. Install the coil Spring. Refer to **Coil Spring Insulators Replacement** .

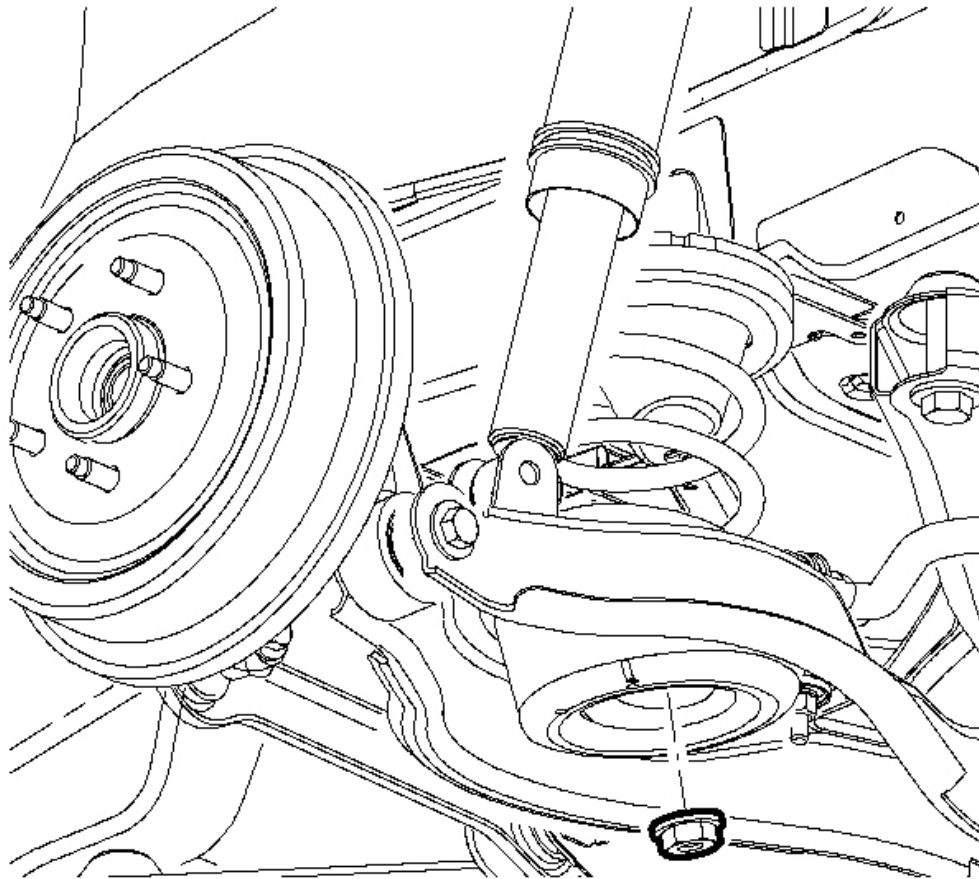


Fig. 100: Jounce Bumper Nut & Lower Control Arm
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

4. Tighten the jounce bumper to lower control arm nut.

Tighten: Tighten the nut to 63 N.m (46 lb ft).

5. Lower the vehicle.
6. Check the rear alignment. Refer to Measuring Wheel Alignment in Wheel Alignment.

TOE LINK REPLACEMENT

Removal Procedure

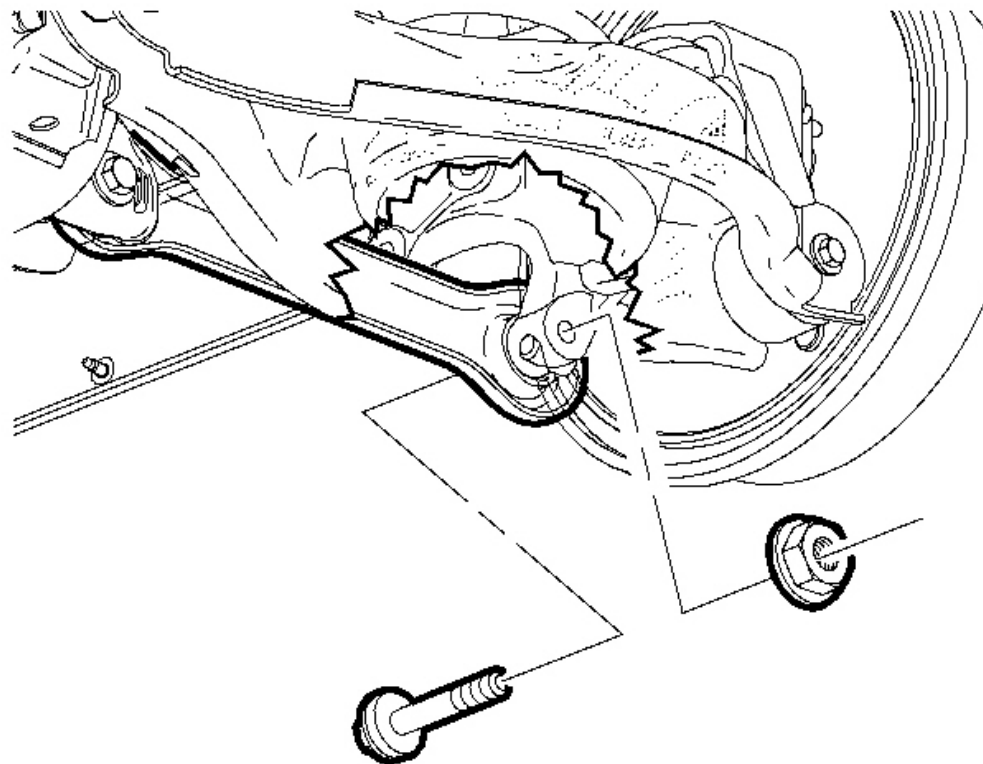


Fig. 101: Toe Link, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the toe link to knuckle nut and bolt.

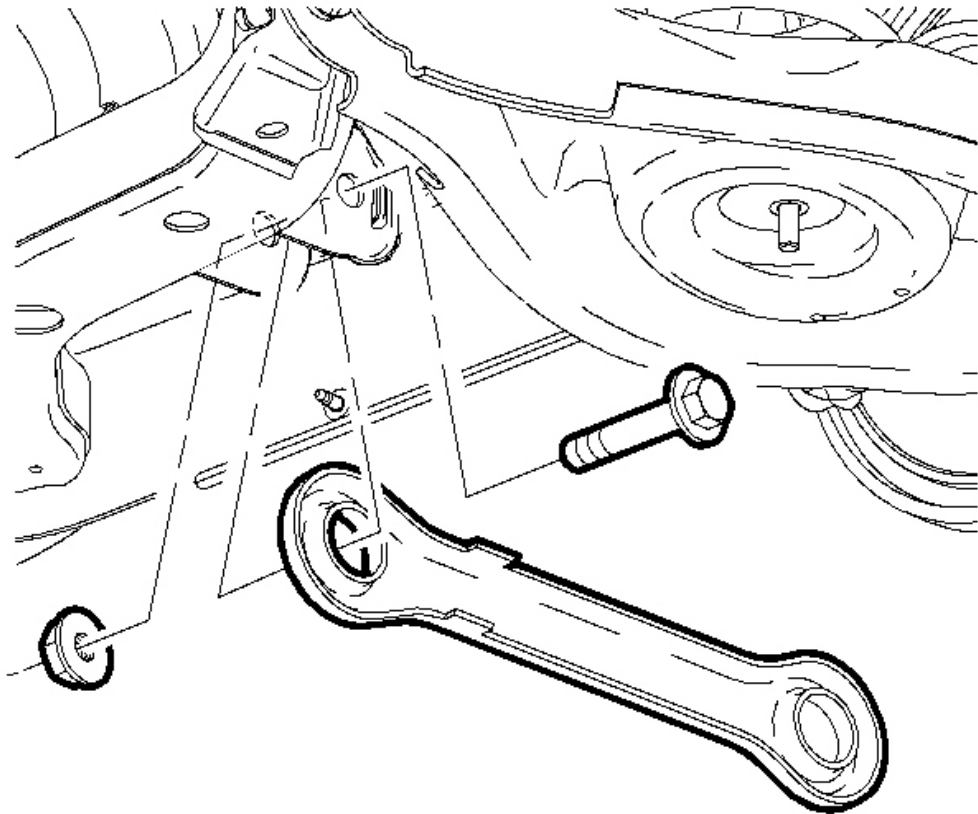


Fig. 102: Toe Link, Support Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

3. Remove the toe link to support nut and bolt.
4. Remove the toe link from the vehicle.

Installation Procedure

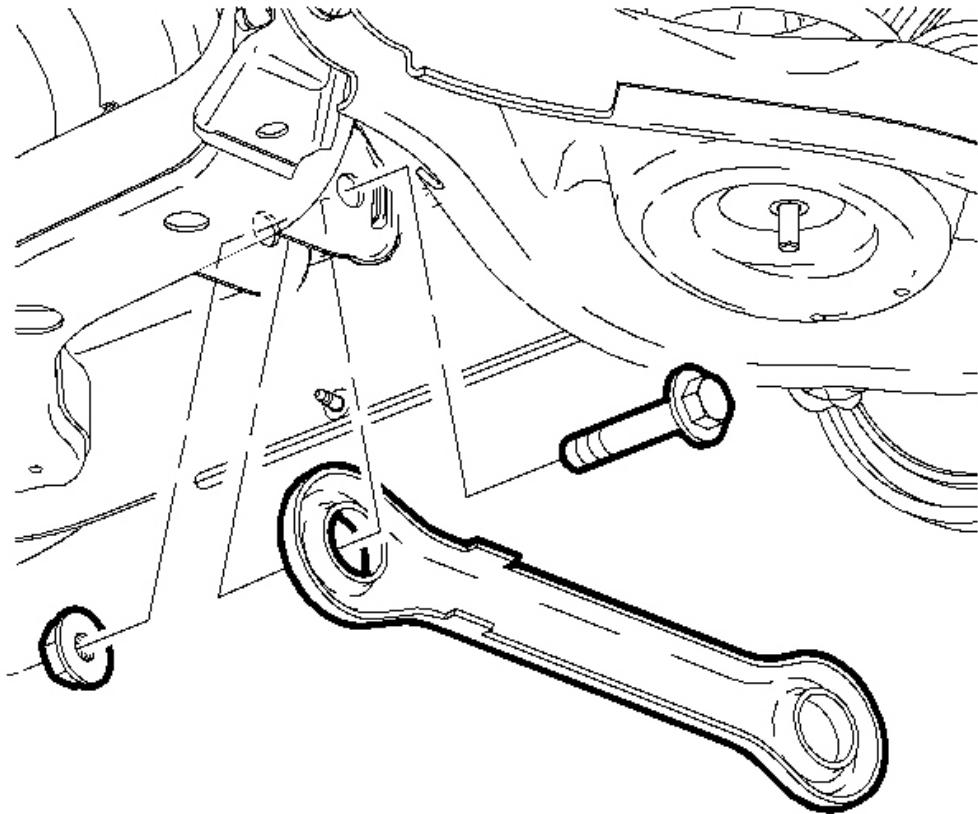


Fig. 103: Toe Link, Support Nut & Bolt
Courtesy of GENERAL MOTORS CORP.

1. Install the toe link to the support assembly.

IMPORTANT:

- Install the bolt with the head towards the front of the vehicle.
- Position the cam nut in same position as in the upper control arm.

2. Install the toe link to support nut and bolt.

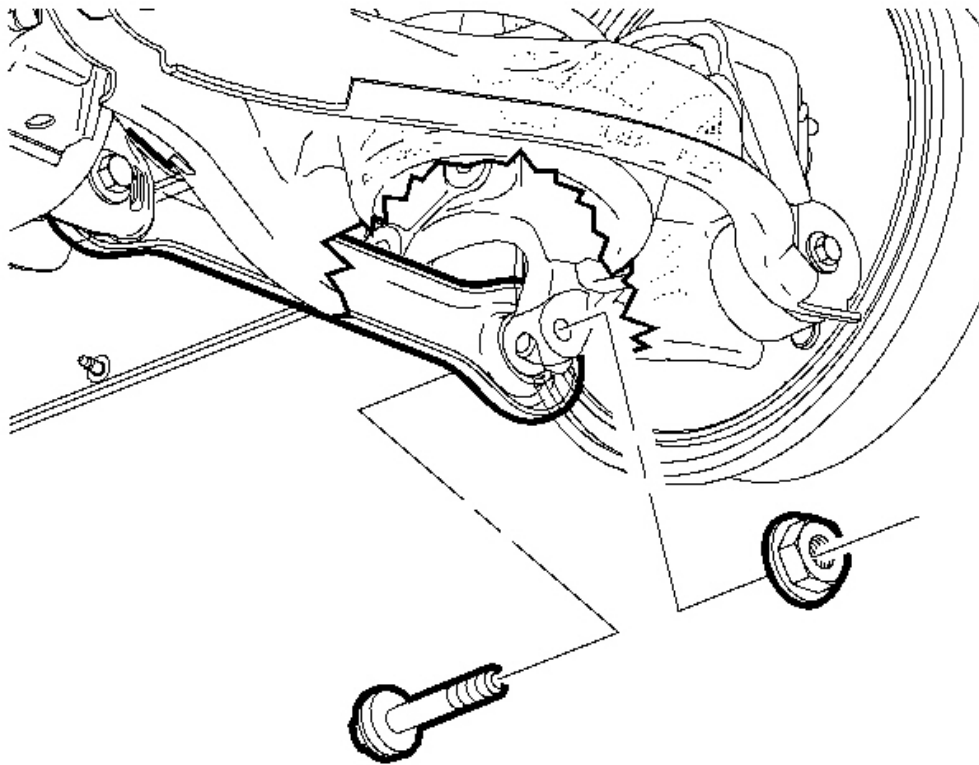


Fig. 104: Toe Link, Knuckle Bolt & Nut
Courtesy of GENERAL MOTORS CORP.

NOTE: Refer to Fastener Notice in Cautions and Notices.

3. Install the toe link to the knuckle.

Tighten:

- If the bolt is a 12 m bolt, tighten the bolt to 110 N.m (81 lb ft).
- If the bolt is a 14 m bolt, tighten the bolt to 160 N.m (118 lb ft).

IMPORTANT: There are two different toe links and toe link bolts used on this vehicle.

You must identify which is on the vehicle and use the corresponding torque value.

4. Tighten the toe link to support bolt.

Tighten:

1. If the bolt is black with a 15 mm head, tighten the bolt to 145 N.m (107 lb ft).
2. If the bolt is silver with a 21 mm head, tighten the bolt to 160 N.m (118 lb ft).

5. Lower the vehicle.

6. Check the rear alignment. Refer to Measuring Wheel Alignment in Wheel Alignment.

WHEEL STUD REPLACEMENT

Tools Required

J 43631 Ball Joint Remover

Removal Procedure

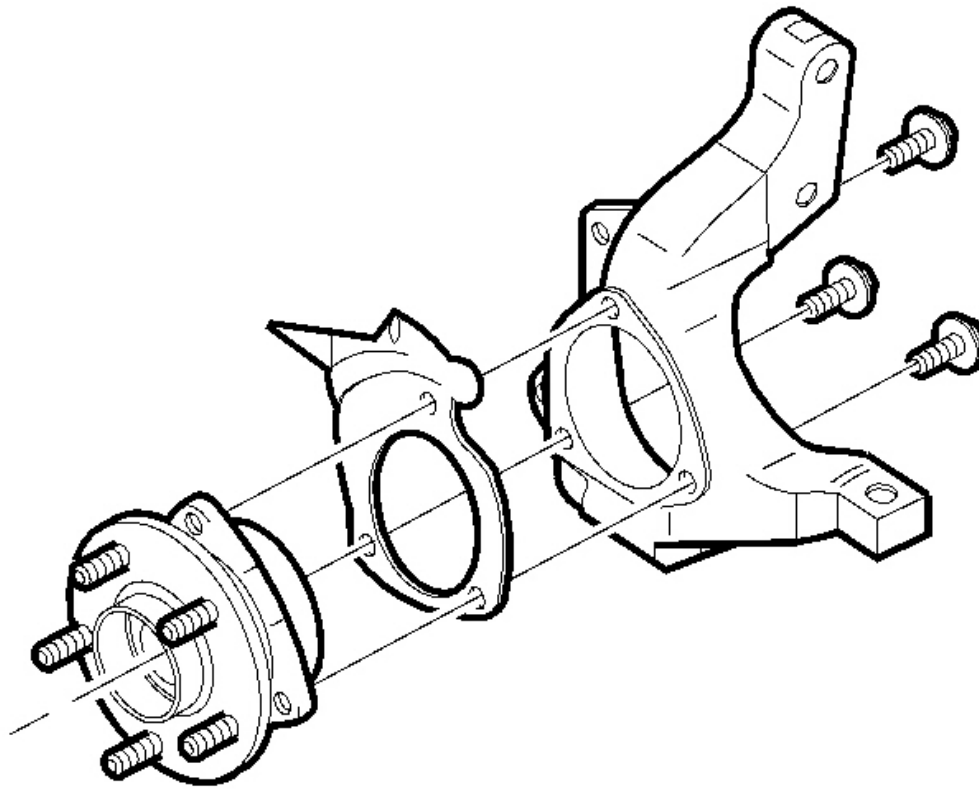


Fig. 105: Tire & Wheel Assembly
Courtesy of GENERAL MOTORS CORP.

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** in General Information.
2. Remove the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.

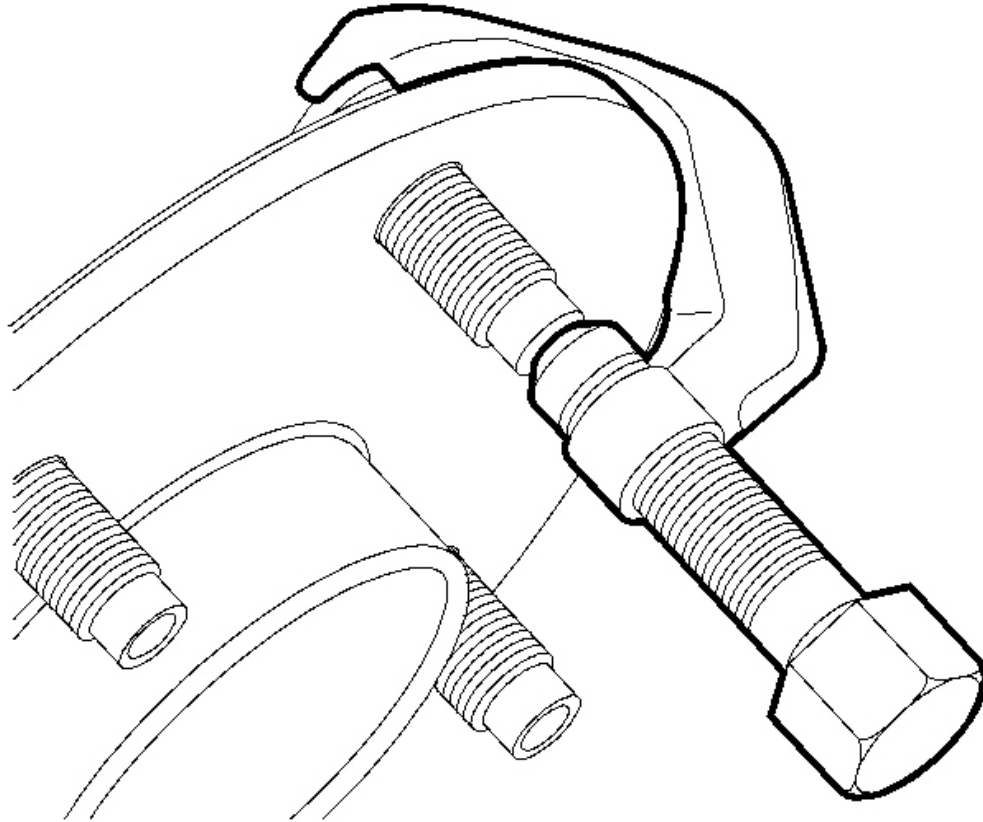


Fig. 106: Wheel Stud & Wheel Bearing/Hub Assembly
Courtesy of GENERAL MOTORS CORP.

3. Using the **J 43631** , press out the wheel stud from the wheel bearing/hub assembly.

Installation Procedure

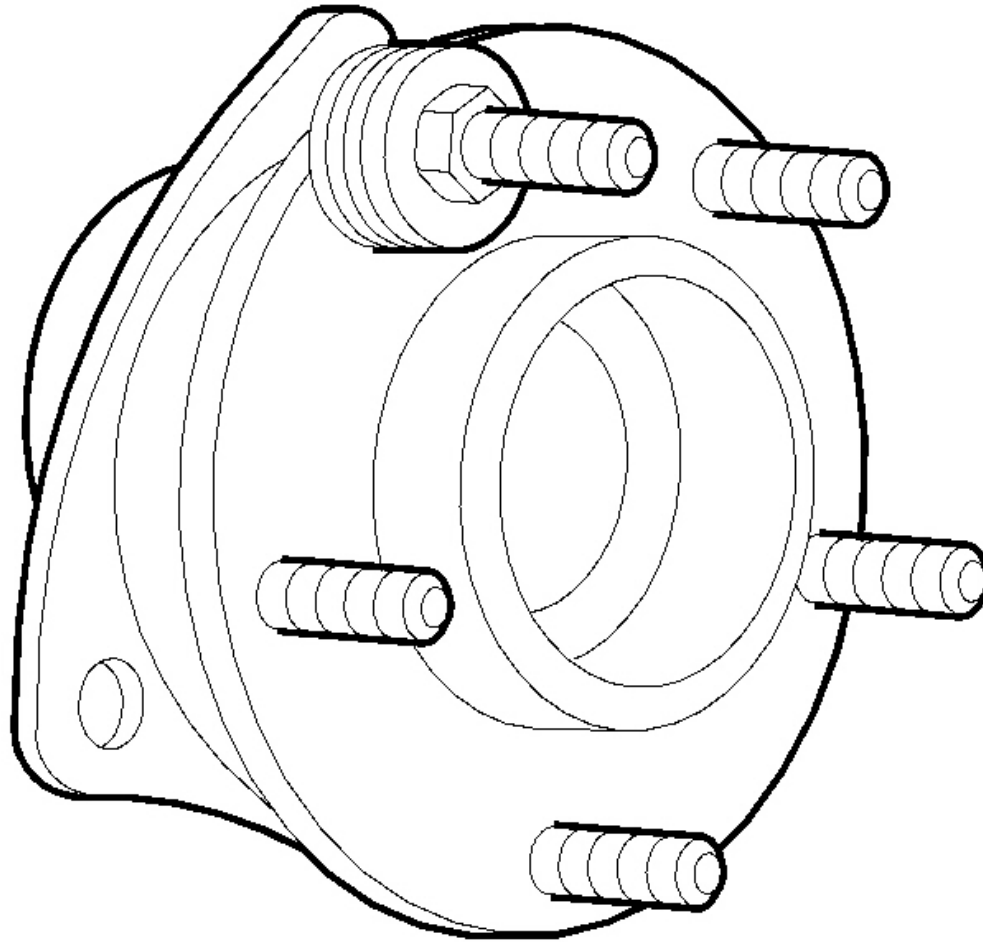


Fig. 107: Hex Head Nut & Wheel Stud
Courtesy of GENERAL MOTORS CORP.

1. Install the wheel stud to the wheel bearing/hub assembly from the bearing side of the hub flange.
2. Place flat washers over the wheel stud being installed.
3. Install the wheel nut or a hex head nut to the wheel stud.
4. Gradually tighten the nut in order to draw the stud into the hub flange until the head of the wheel stud is fully seated against the hub flange.
5. Remove the nut and flat washers.
6. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** in Tires and Wheels.
7. Lower the vehicle.

DESCRIPTION AND OPERATION

GENERAL DESCRIPTION

The rear suspension system on this vehicle is of the independent link type. The rear suspension system performs the following functions:

- Maintains the relationship of the rear axle to the body.
- Controls the torque reaction on acceleration and braking.

The rear coil springs are retained between the spring seat in the lower control arm. Rubber insulators isolate the coil spring at both top and bottom.

The suspension system consists of the following components:

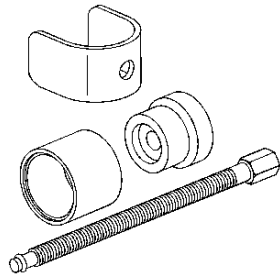
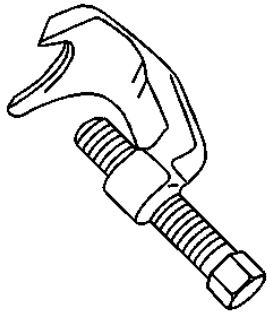
- Support Assembly
- Coil Springs
- Stabilizer Shaft, Insulators and Stabilizer Links
- Toe Link
- Upper Control Arm
- Lower Control Arm
- Trailing Arm
- Knuckles
- Wheel Bearing/Hub
- Shock Absorbers

SPECIAL TOOLS AND EQUIPMENT

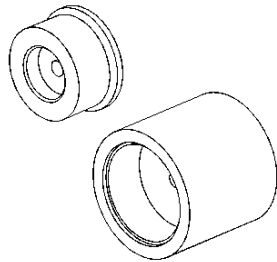
SPECIAL TOOLS

Special Tools

Illustration	Tool Number/ Description
	<p>J 43631 Ball Joint Remover</p>



J 45097
Rear Control Arm Bushing Remover



J 45221
RDM - Bushing Remover/Installer

J 45265
Bushing Remover/Installer

