

SUSPENSION

Rear Suspension - Corvette

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Adjust Link Nut (Inner)	70	52 lb ft
Adjust Link Nut (Outer)		
• First Pass	30	22 lb ft
• Final Pass	plus 120 degrees	
Lower Control Arm Ball Joint Stud Nut		
• First Pass	30	22 lb ft
• Final Pass	plus 180 degrees	
Lower Control Arm Cam Bolt Nut	170	125 lb ft
Shock Absorber Lower Mounting Bolt	160	118 lb ft
Shock Absorber Upper Mounting Bolt	100	74 lb ft
Stabilizer Shaft Insulator Clamp Bolt (FE3, FE4)	58	43 lb ft
Stabilizer Shaft Link Nut (FE3, FE4)		
• First Pass	60	44 lb ft
• Final Pass	plus 30 degrees	
Transverse Spring Mounting Bracket Bolt	67	49 lb ft
Upper Control Arm Ball Joint Stud Nut		
• First Pass	30	22 lb ft
• Final Pass	plus 140 degrees	
Upper Control Arm Mounting Bolt with RPO FE4, FE5	65	48 lb ft
Wheel Hub Mounting Bolt	130	96 lb ft

REPAIR INSTRUCTIONS

REAR WHEEL BEARING AND HUB REPLACEMENT

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 suspension knuckle from the vehicle. Refer to **Knuckle Replacement (without J55)**, **Knuckle Replacement (with J55)**.

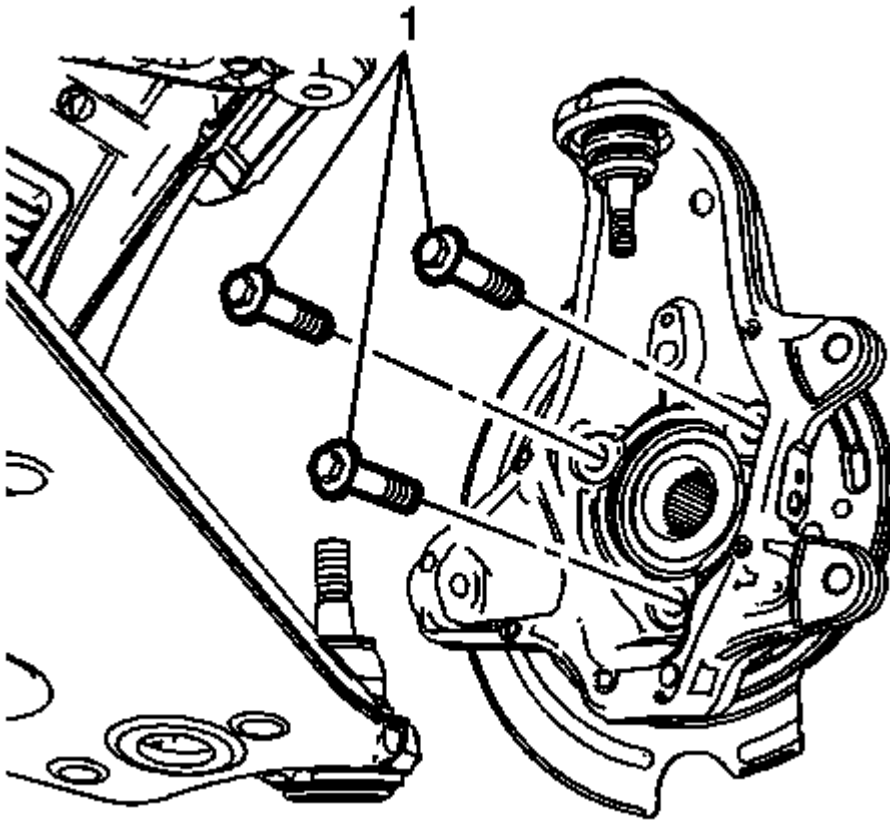


Fig. 1: Wheel Bearing And Hub Mounting Bolts
Courtesy of GENERAL MOTORS COMPANY

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

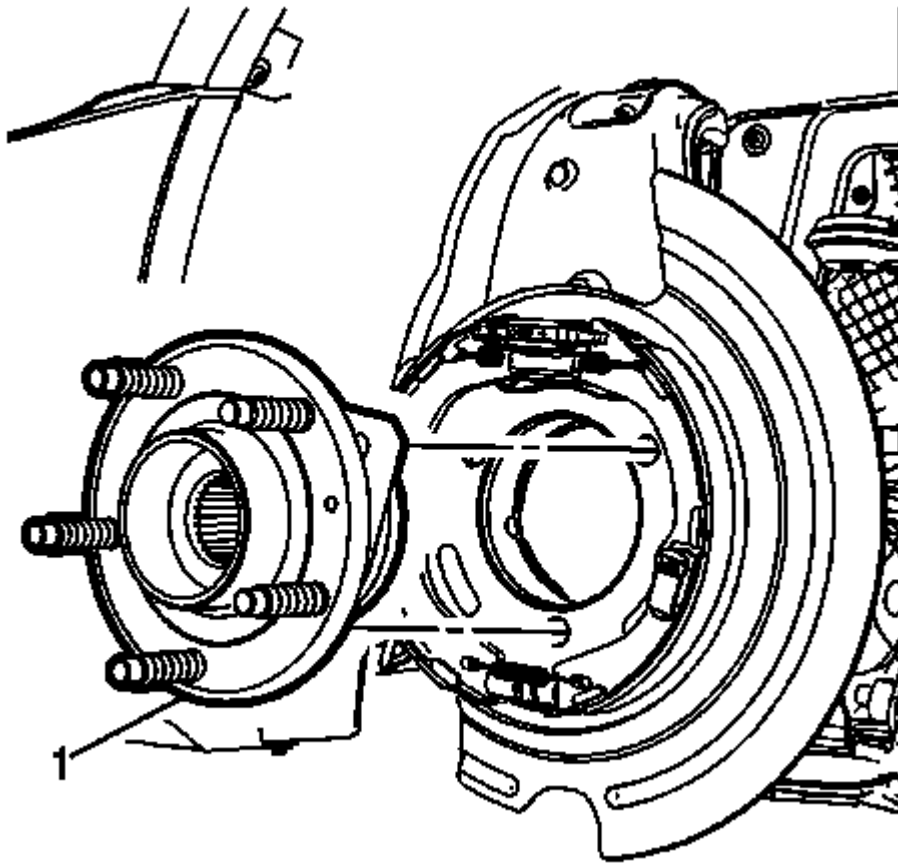


Fig. 2: Rear Wheel Bearing And Hub Assembly
Courtesy of GENERAL MOTORS COMPANY

5. Remove the wheel bearing and hub assembly (1) from the suspension knuckle.

Installation Procedure

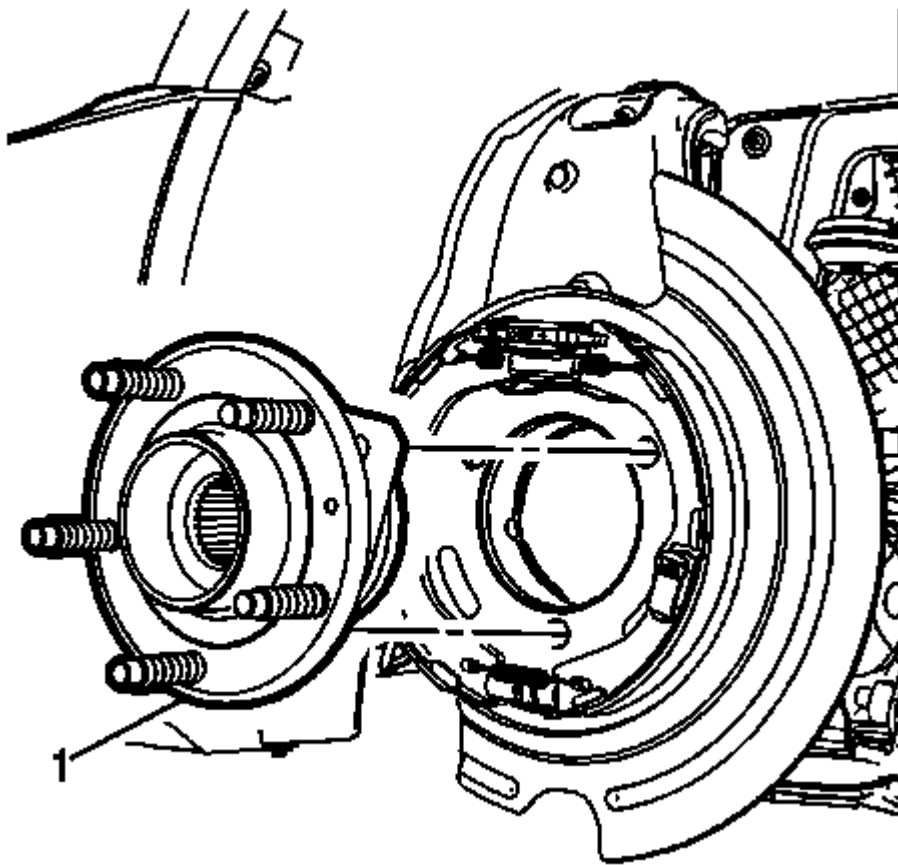


Fig. 3: Rear Wheel Bearing And Hub Assembly
Courtesy of GENERAL MOTORS COMPANY

1. Install the wheel bearing and hub assembly (1) to the suspension knuckle.

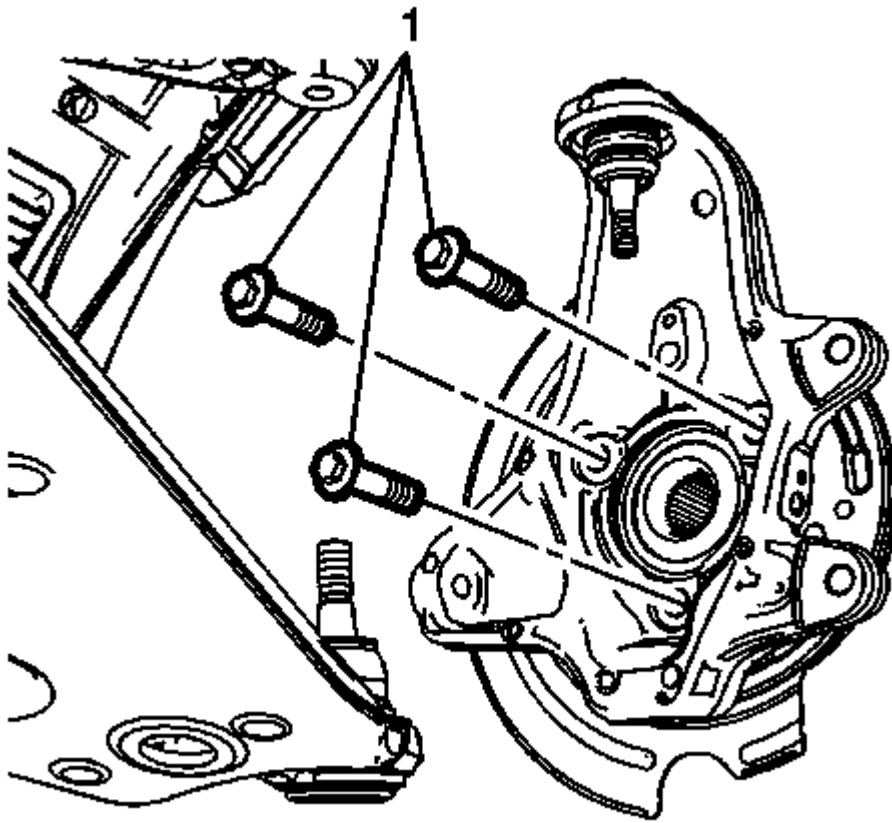


Fig. 4: Wheel Bearing And Hub Mounting Bolts
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

2. Install the wheel bearing and hub mounting bolts (1) and tighten to 130 (96 lb ft).
3. Install the suspension knuckle to the vehicle. Refer to **Knuckle Replacement (without J55)**, **Knuckle Replacement (with J55)**.
4. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
5. Lower vehicle.

KNUCKLE REPLACEMENT (WITHOUT J55)

Special Tools

J-42188-B Ball Joint Separator

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

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
3. Disconnect the wheel speed sensor harness electrical connector. Refer to **Rear Wheel Speed Sensor Replacement** .
4. Remove and set aside the brake caliper assembly. Refer to **Rear Brake Caliper Replacement** .
5. Remove the rear brake rotor. Refer to **Rear Brake Rotor Replacement** .

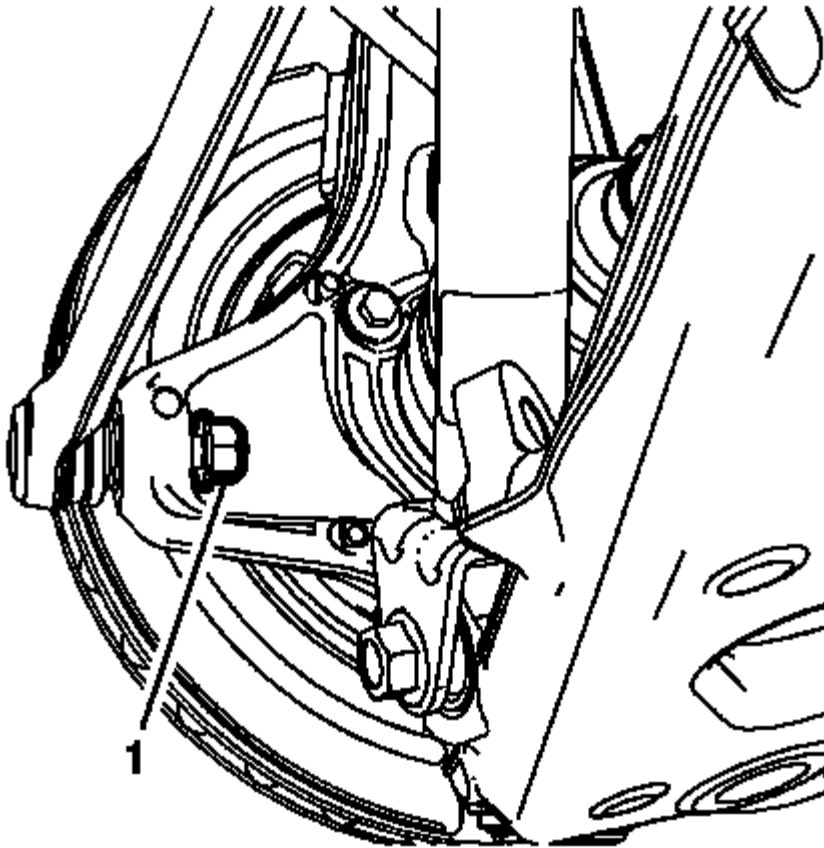


Fig. 5: Adjust Link Nut
Courtesy of GENERAL MOTORS COMPANY

6. Loosen the adjust link nut (1).

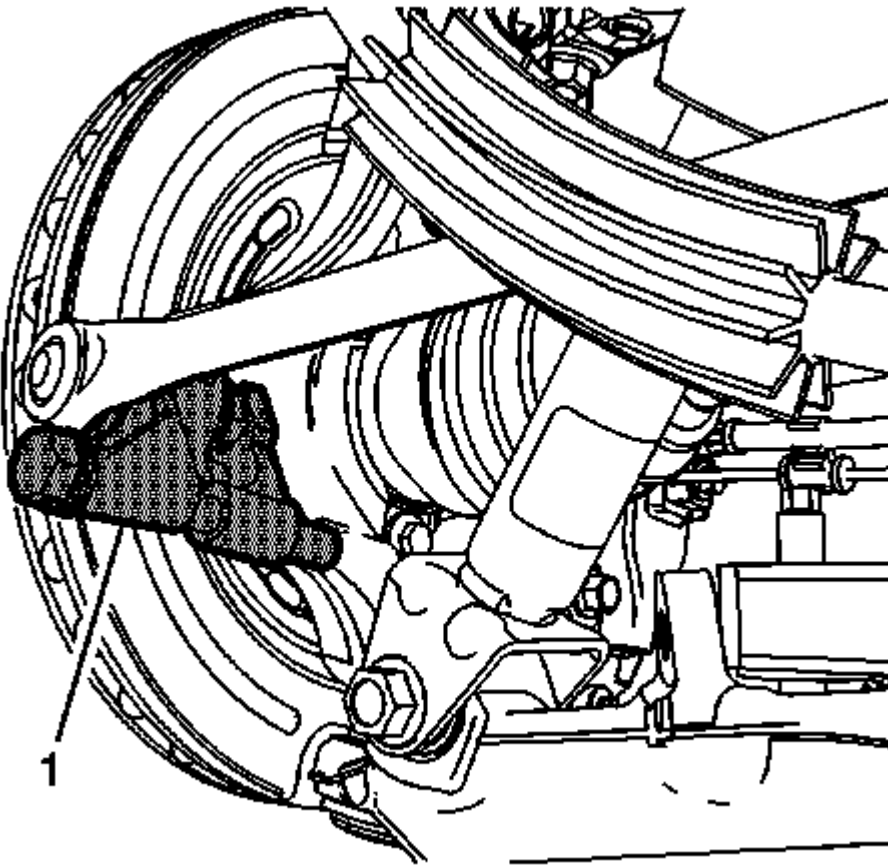


Fig. 6: Using J-42188-B Separator
Courtesy of GENERAL MOTORS COMPANY

7. Using the **J-42188-B** separator (1), separate the adjust link from the knuckle.

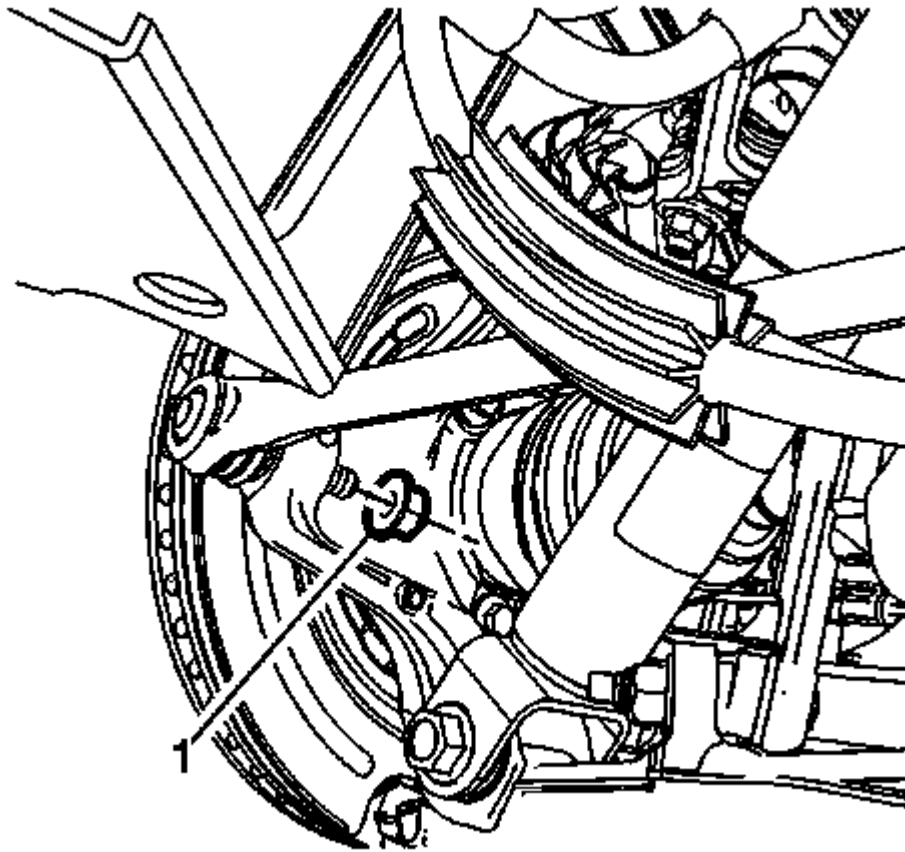


Fig. 7: Link Nut

Courtesy of GENERAL MOTORS COMPANY

8. Remove the adjust link nut (1).
9. Disconnect the parking brake rear cable from the knuckle and the park brake actuator. Refer to **Parking Brake Rear Cable Replacement - Left Side** or **Parking Brake Rear Cable Replacement - Right Side** .
10. Separate the wheel drive shaft from the wheel bearing and hub. Refer to **Rear Wheel Drive Shaft Replacement** .

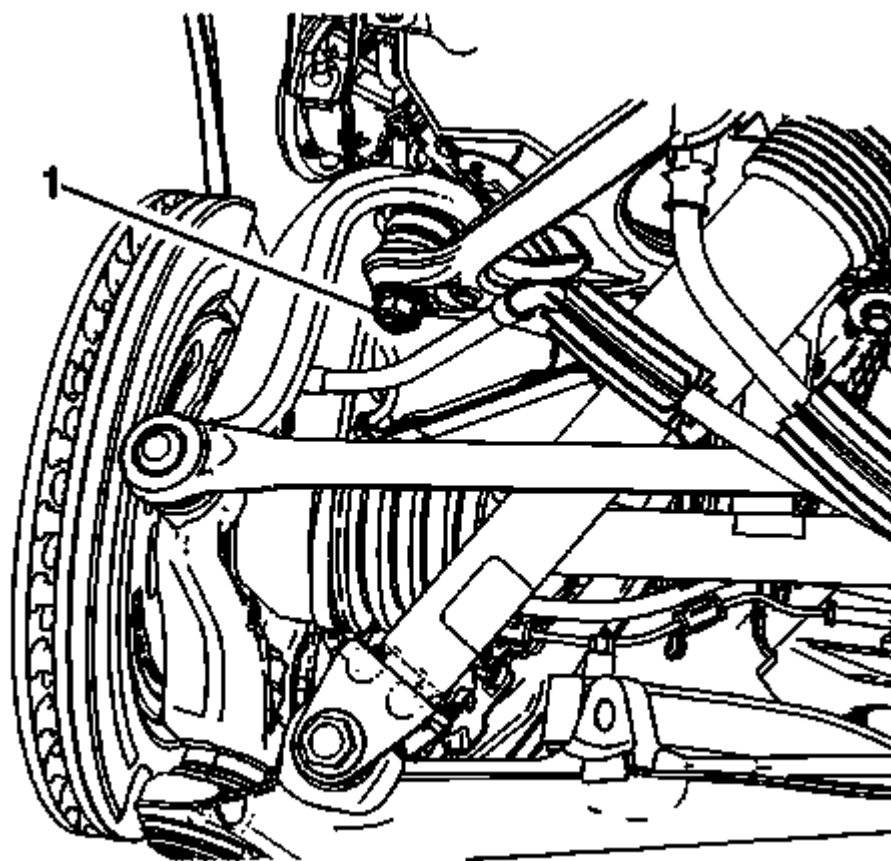


Fig. 8: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

11. Loosen the upper control arm ball joint nut (1).

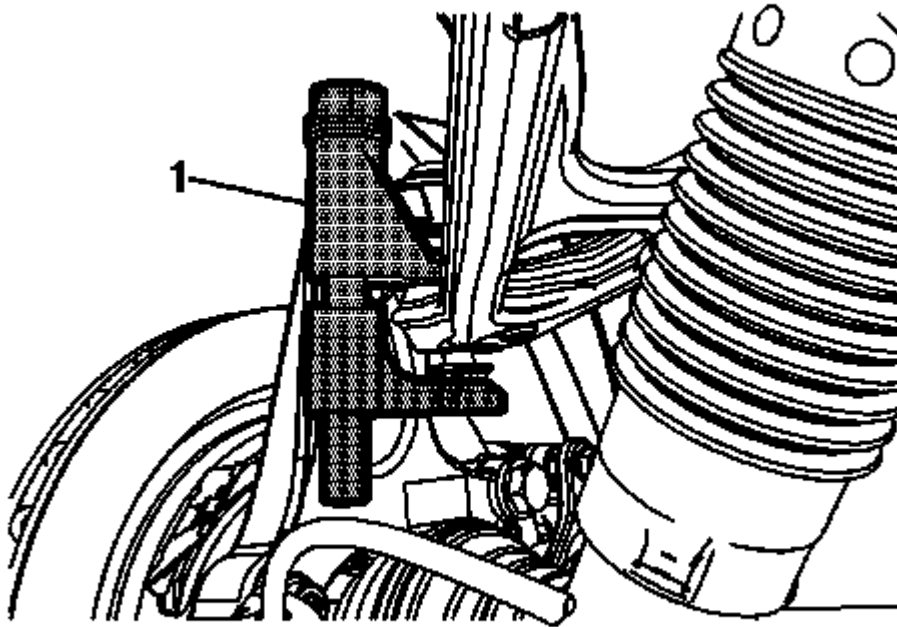


Fig. 9: J-42188-B Separator

Courtesy of GENERAL MOTORS COMPANY

12. Using the **J-42188-B** separator (1), separate the upper control arm ball joint stud from the knuckle.
13. Support the knuckle assembly.

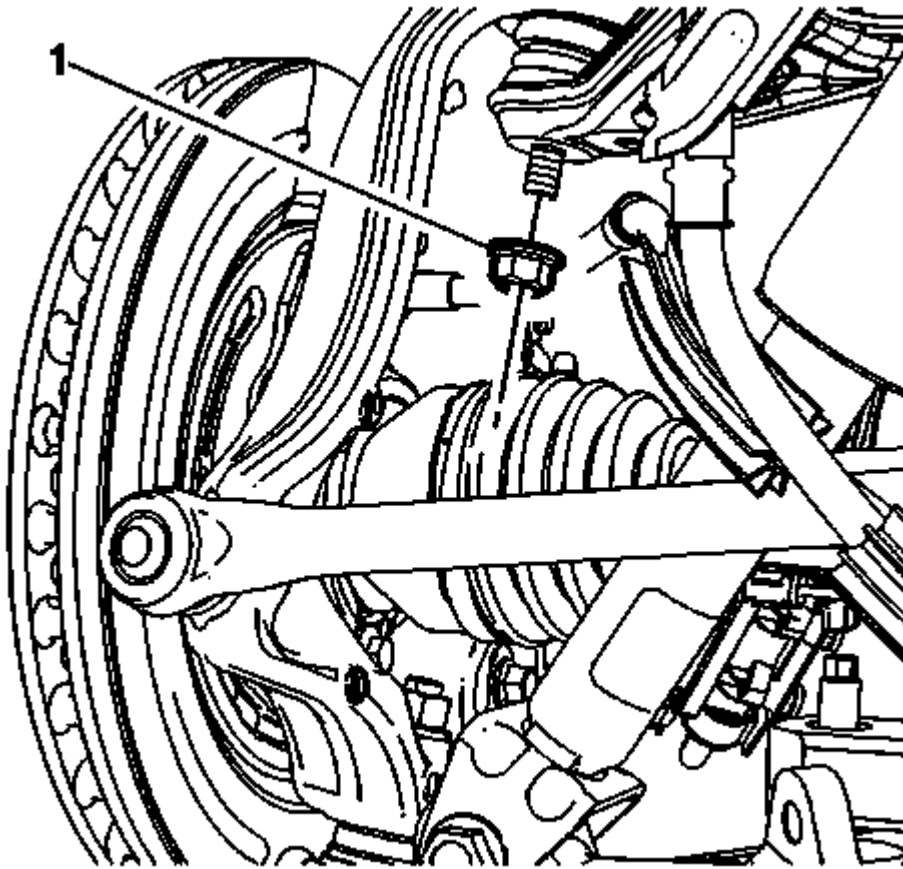


Fig. 10: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

14. Remove the upper control arm ball joint nut (1).
15. It will be necessary pivot the knuckle on the lower ball joint to allow access to the lower control arm ball joint nut.

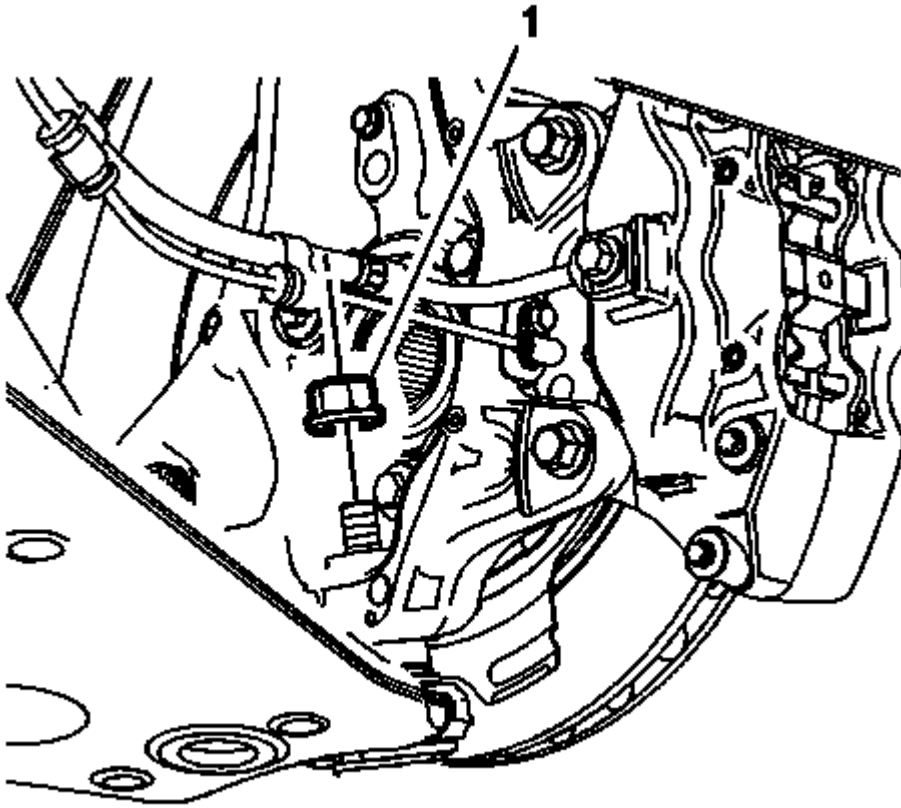


Fig. 11: Rear Axle Lower Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

16. Remove the rear axle lower control arm ball joint nut (1).

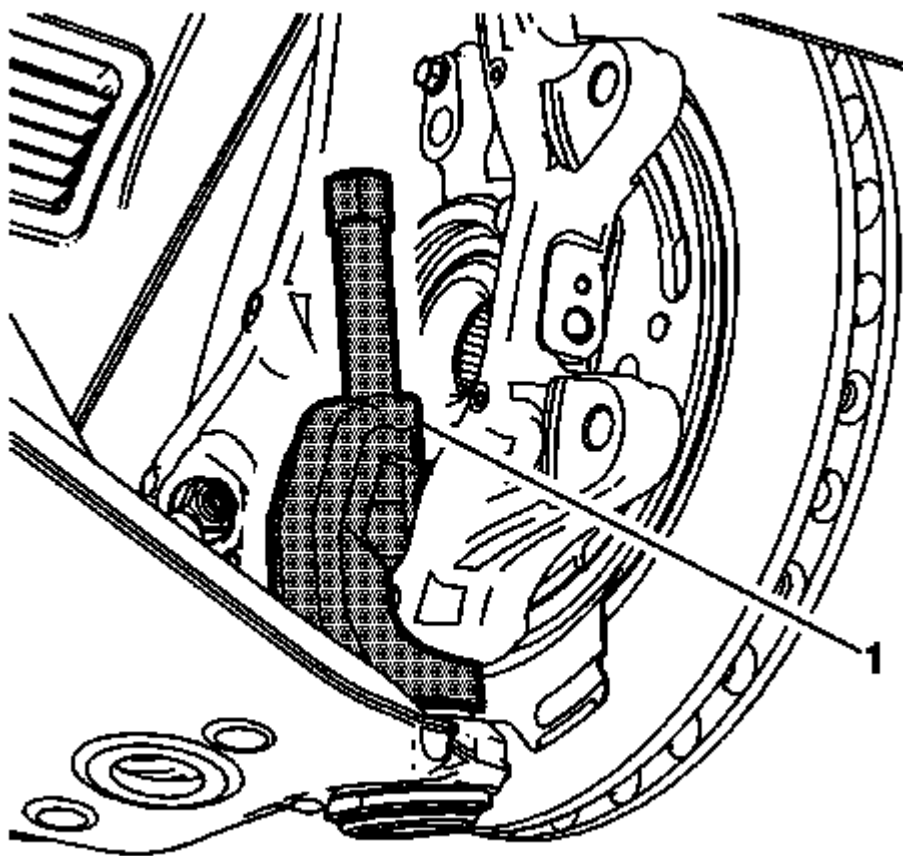


Fig. 12: Using J-43631 Separator
Courtesy of GENERAL MOTORS COMPANY

17. Using the **J-43631** separator (1), separate the knuckle from the rear axle lower control arm ball joint stud.

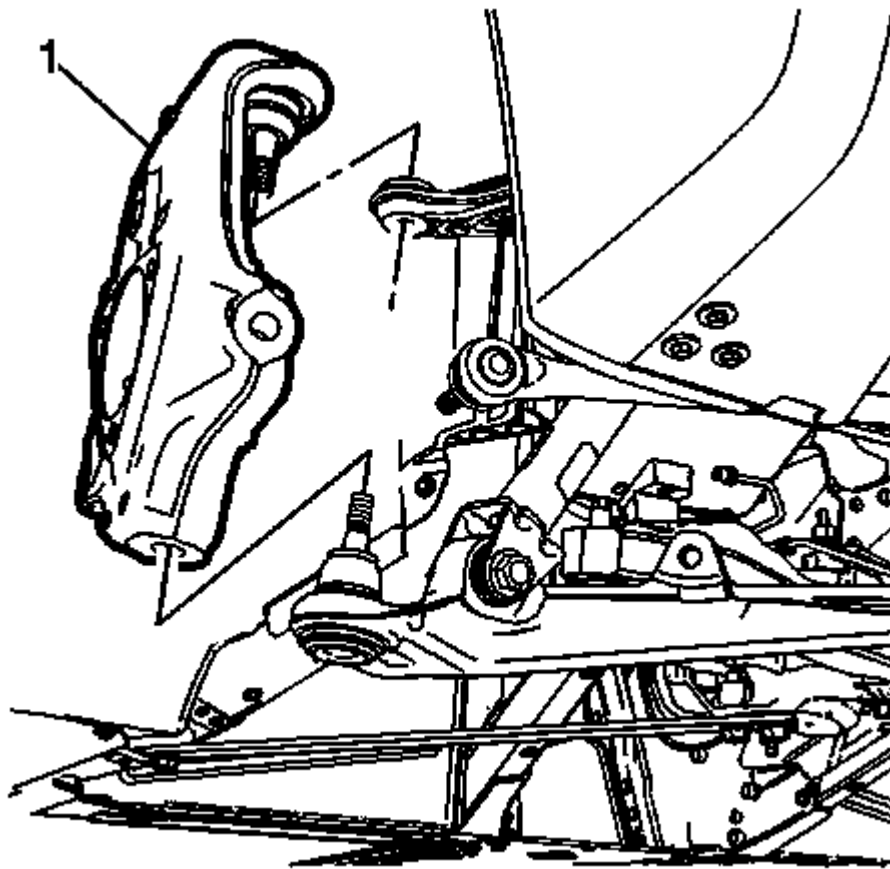


Fig. 13: Knuckle Assembly
Courtesy of GENERAL MOTORS COMPANY

18. Remove the knuckle assembly (1).
19. If replacing the knuckle, remove the parking brake actuator lever. Refer to **Rear Parking Brake Actuator Lever Replacement** .
20. If replacing the knuckle, remove the wheel bearing and hub assembly. Refer to **Rear Wheel Bearing and Hub Replacement**.
21. If replacing the knuckle, remove the parking brake backing plate. Refer to **Rear Parking Brake Anchor Backing Plate Replacement** .

Installation Procedure

1. If replacing the knuckle, install the parking brake backing plate. Refer to **Rear Parking Brake Anchor Backing Plate Replacement** .
2. If replacing the knuckle, install the wheel bearing and hub assembly. Refer to **Rear Wheel Bearing and Hub Replacement**.
3. If replacing the knuckle, install the parking brake actuator lever. Refer to **Rear Parking Brake Actuator Lever Replacement** .

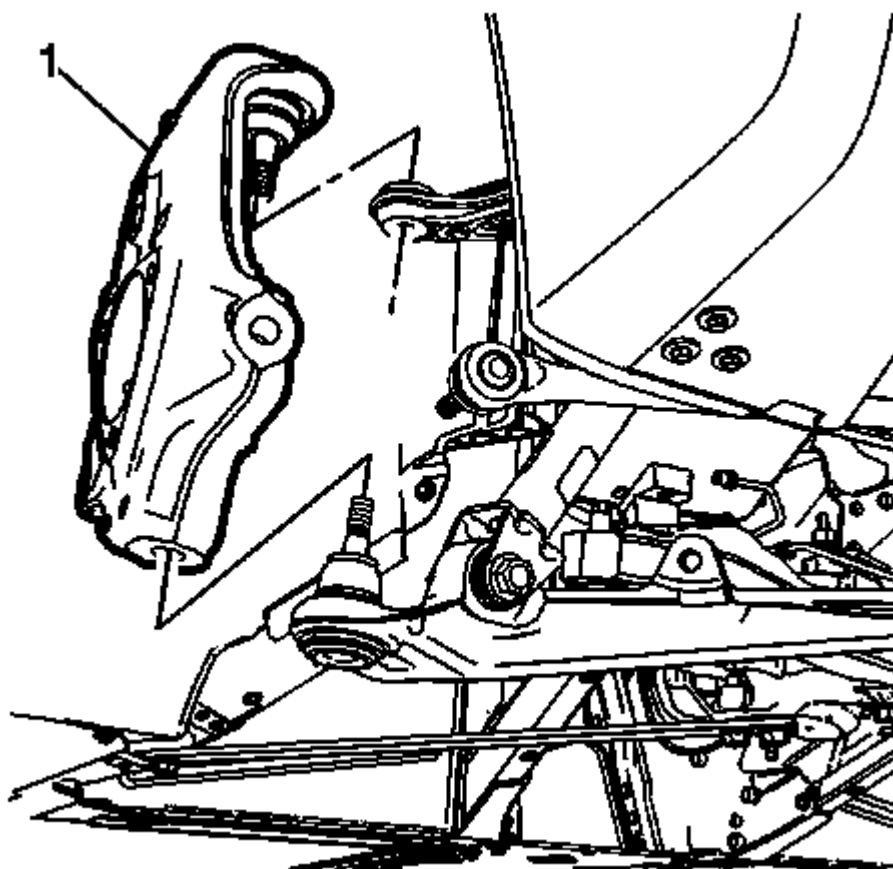


Fig. 14: Knuckle Assembly
Courtesy of GENERAL MOTORS COMPANY

4. Install the knuckle assembly (1).

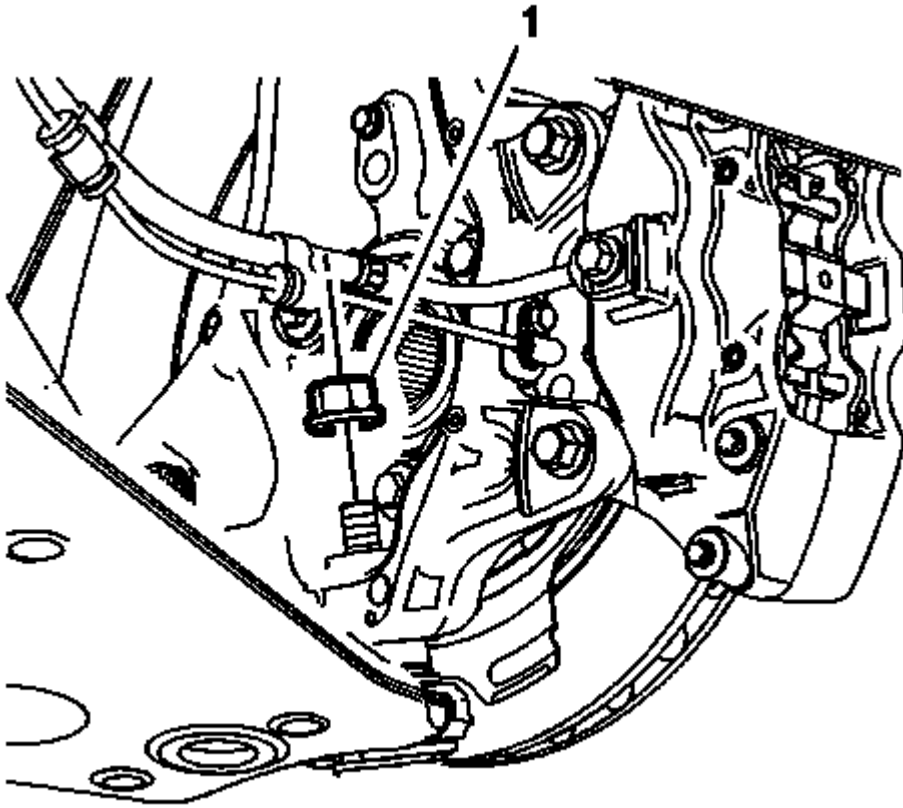


Fig. 15: Rear Axle Lower Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

5. Install the rear axle lower control arm ball joint nut (1) and tighten to 30 (22 lb ft) + 180 degrees.
6. Install the wheel drive shaft assembly into the wheel bearing hub. Refer to **Rear Wheel Drive Shaft Replacement** .

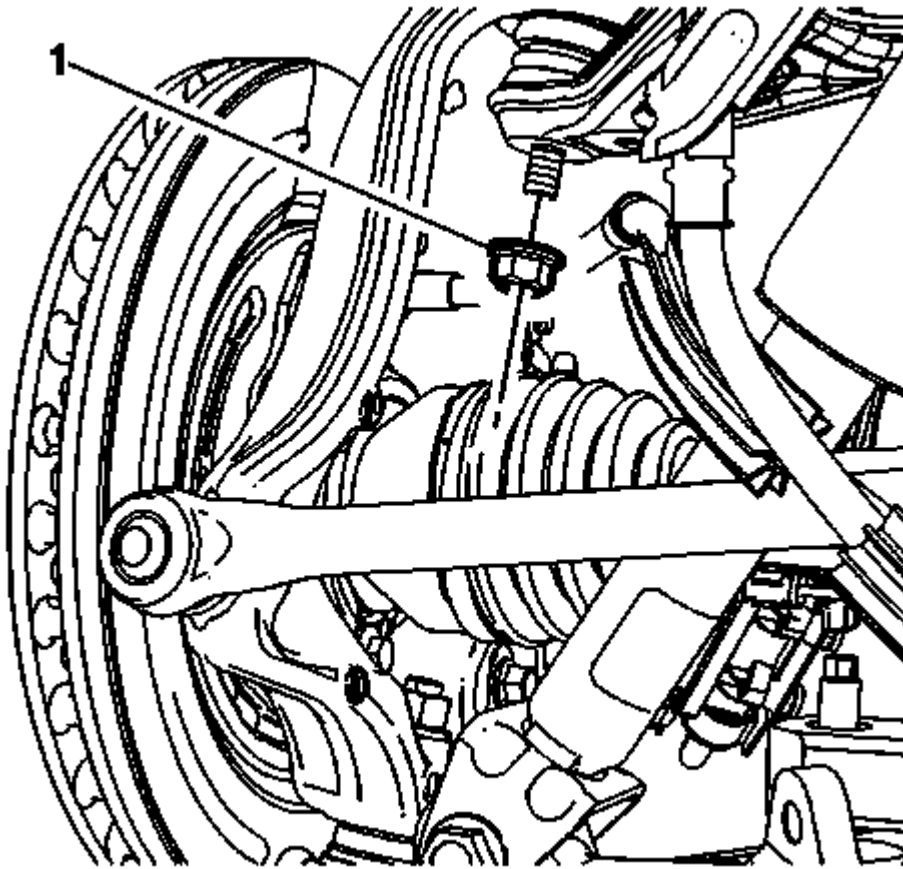


Fig. 16: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

7. Install the upper control arm ball joint nut (1) and tighten to 30 (22 lb ft) + 140 degrees.
8. Connect the parking brake rear cable to the knuckle and the park brake actuator. Refer to **Parking Brake Rear Cable Replacement - Left Side** or **Parking Brake Rear Cable Replacement - Right Side**.
9. Install the adjust link to the knuckle.

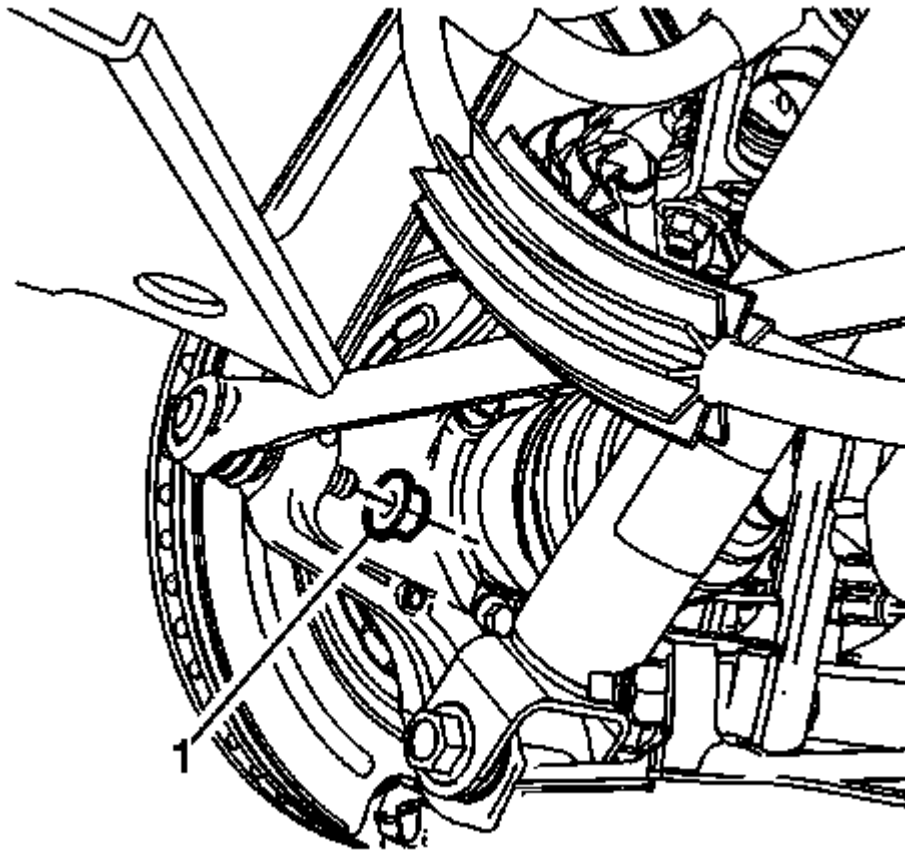


Fig. 17: Link Nut

Courtesy of GENERAL MOTORS COMPANY

10. Install the adjust link nut (1) and tighten to 30 (22 lb ft) + 120 degrees.
11. Install the rear brake rotor. Refer to Rear Brake Rotor Replacement .
12. Install the brake caliper assembly. Refer to Rear Brake Caliper Replacement .
13. Connect the wheel speed sensor harness electrical connector. Refer to Rear Wheel Speed Sensor Replacement .
14. Install the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
15. Lower the vehicle.

KNUCKLE REPLACEMENT (WITH J55)

Special Tools

J-42188-B Ball Joint Separator

For equivalent regional tools, refer to Special Tools.

Removal Procedure

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .
2. Remove the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
3. Remove the rear brake caliper cooling duct deflector. Refer to Rear Brake Caliper Cooling Duct Deflector Replacement .
4. Remove and set aside the brake caliper assembly. Refer to Rear Brake Caliper Replacement .
5. Remove the wheel speed sensor from the knuckle. Refer to Rear Wheel Speed Sensor Replacement .
6. Remove the rear brake rotor. Refer to Rear Brake Rotor Replacement .

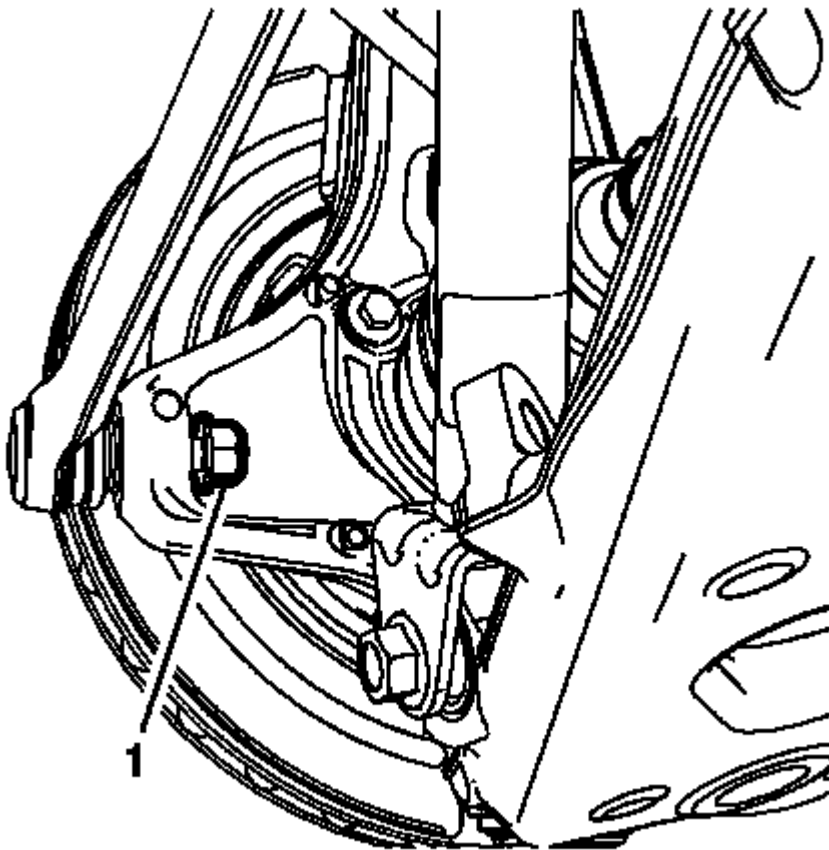


Fig. 18: Adjust Link Nut

Courtesy of GENERAL MOTORS COMPANY

7. Loosen the adjust link nut (1).

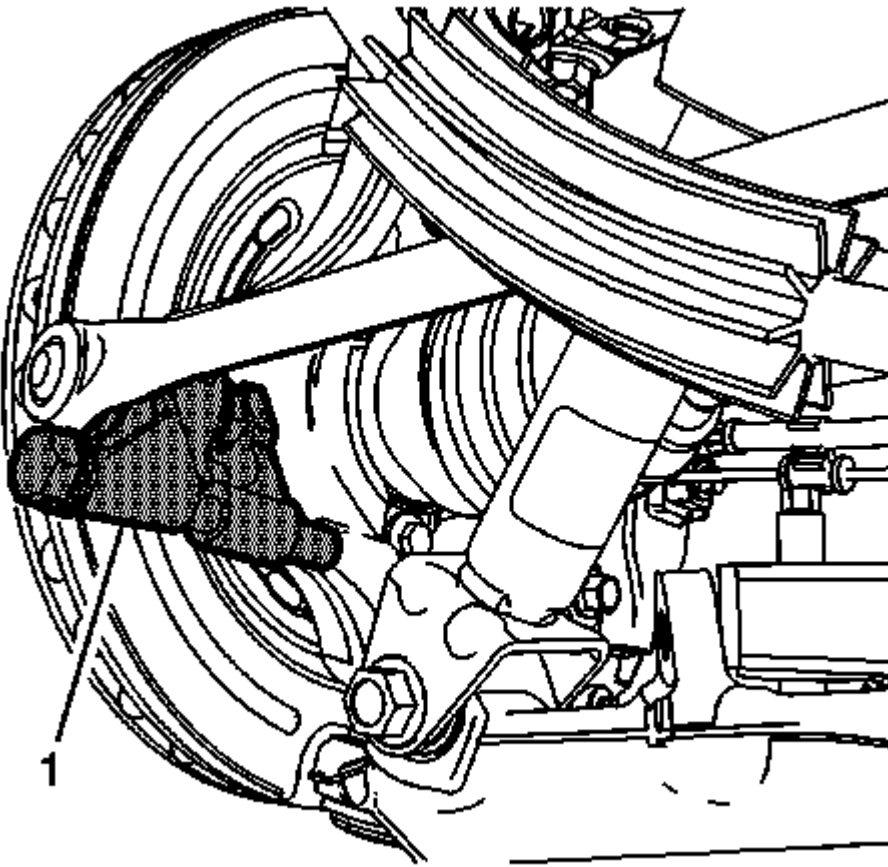


Fig. 19: Using J-42188-B Separator
Courtesy of GENERAL MOTORS COMPANY

8. Using the **J-42188-B** separator (1), separate the adjust link from the knuckle.

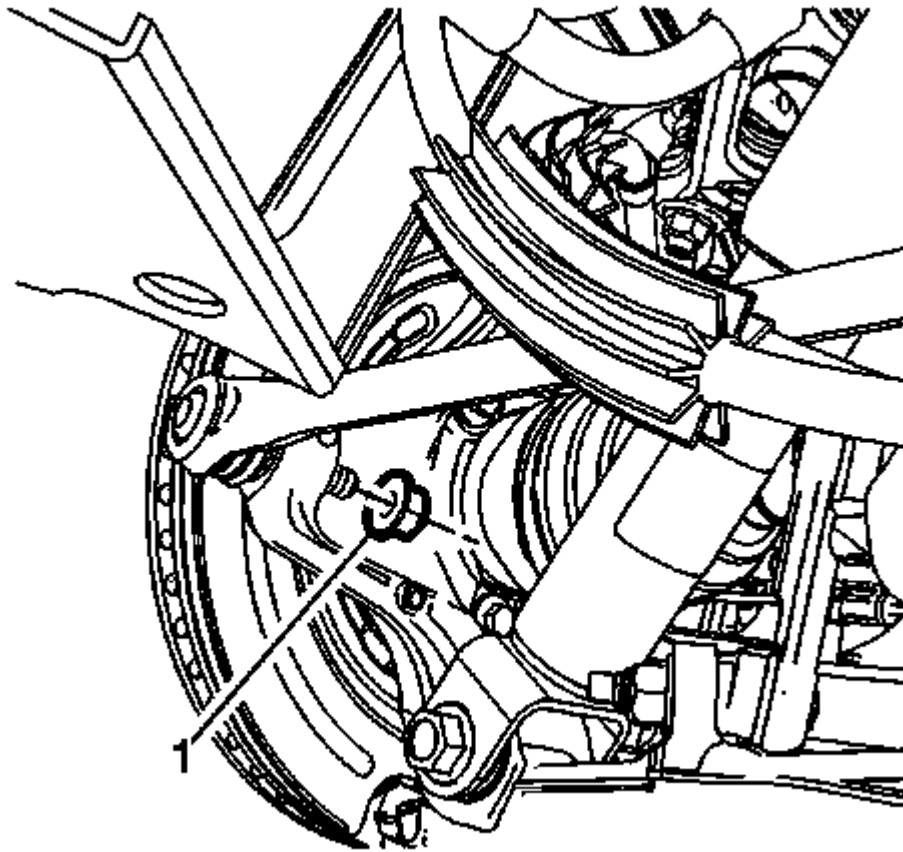


Fig. 20: Link Nut

Courtesy of GENERAL MOTORS COMPANY

9. Remove the adjust link nut (1).
10. Disconnect the parking brake rear cable from the knuckle and the park brake actuator. Refer to **Parking Brake Rear Cable Replacement - Left Side** or **Parking Brake Rear Cable Replacement - Right Side** .
11. Separate the wheel drive shaft from the wheel bearing and hub. Refer to **Rear Wheel Drive Shaft Replacement** .

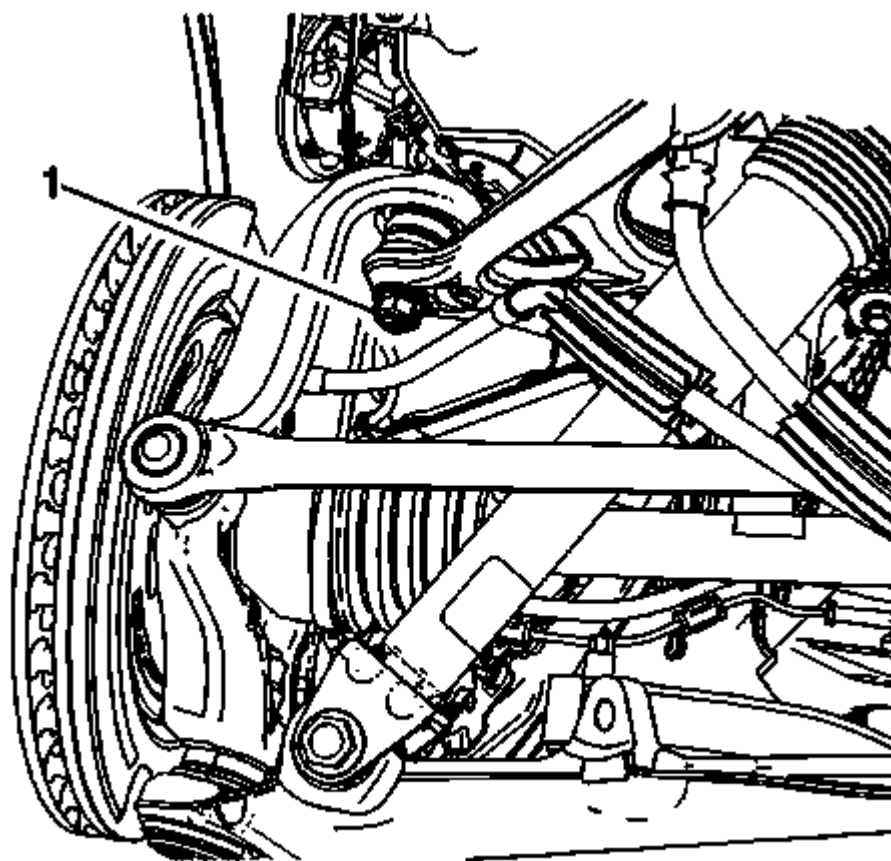


Fig. 21: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

12. Loosen the upper control arm ball joint nut (1).

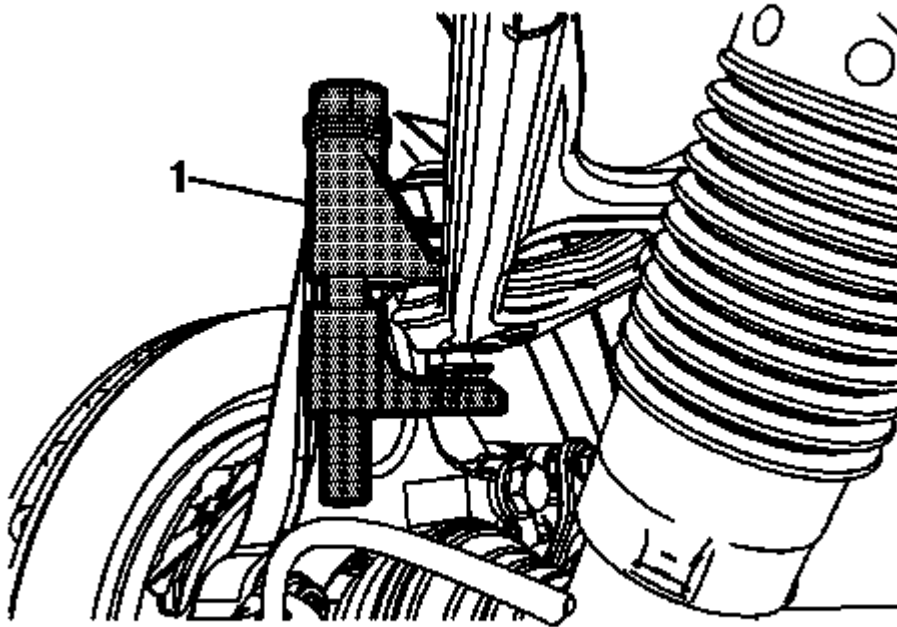


Fig. 22: J-42188-B Separator

Courtesy of GENERAL MOTORS COMPANY

13. Using the **J-42188-B** separator (1), separate the upper control arm ball joint stud from the knuckle.
14. Support the knuckle assembly.

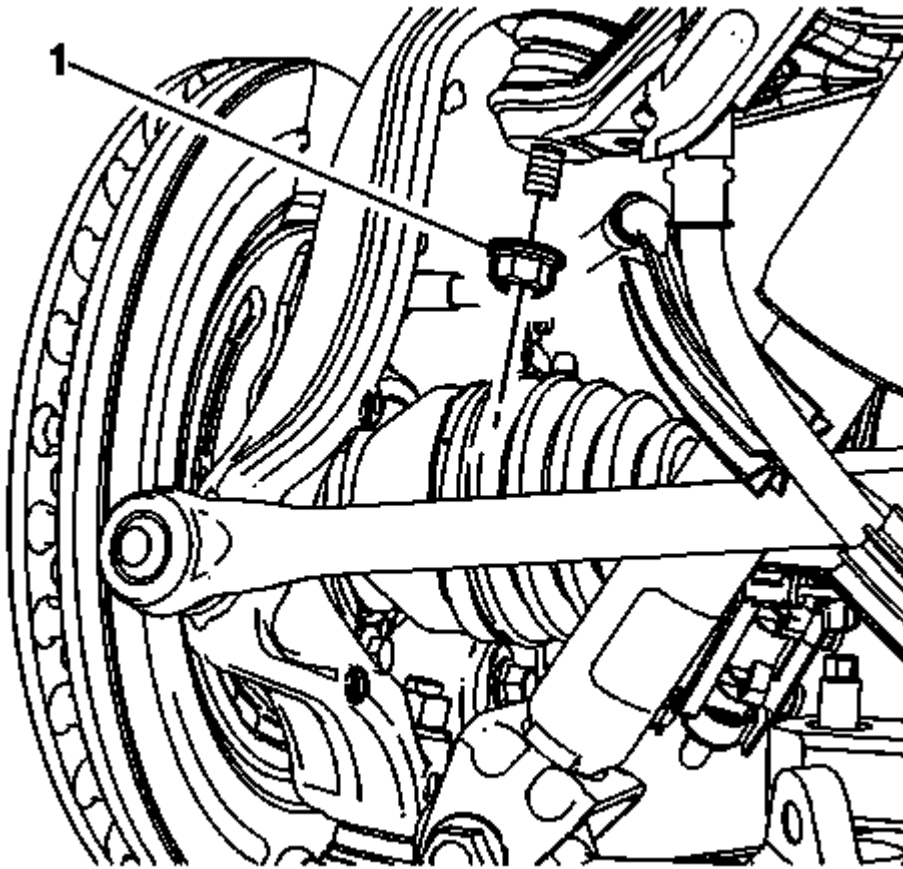


Fig. 23: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

15. Remove the upper control arm ball joint nut (1).
16. It will be necessary pivot the knuckle on the lower ball joint to allow access to the lower control arm ball joint nut.

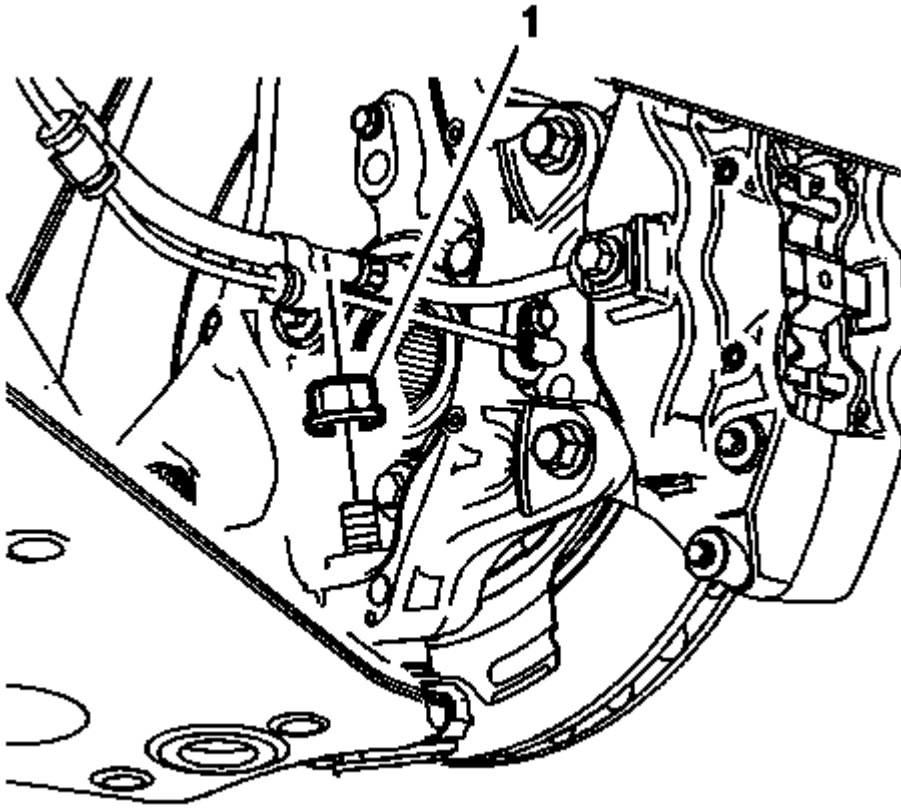


Fig. 24: Rear Axle Lower Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

17. Remove the rear axle lower control arm ball joint nut (1).

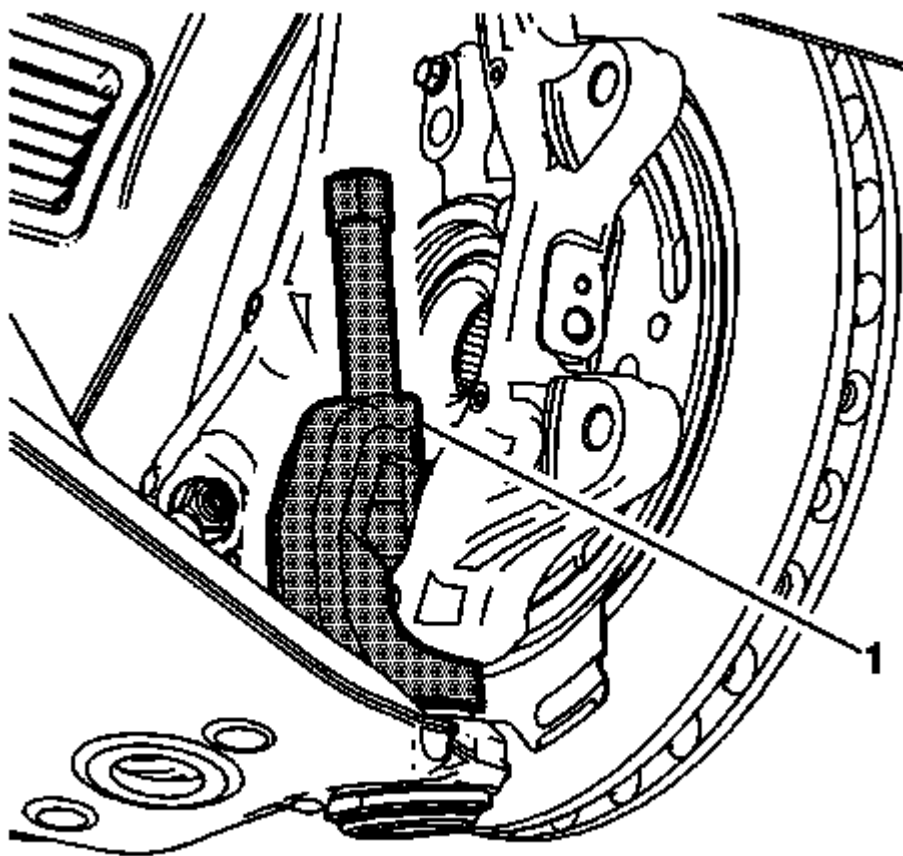


Fig. 25: Using J-43631 Separator
Courtesy of GENERAL MOTORS COMPANY

18. Using the **J-43631** separator (1), separate the knuckle from the rear axle lower control arm ball joint stud.

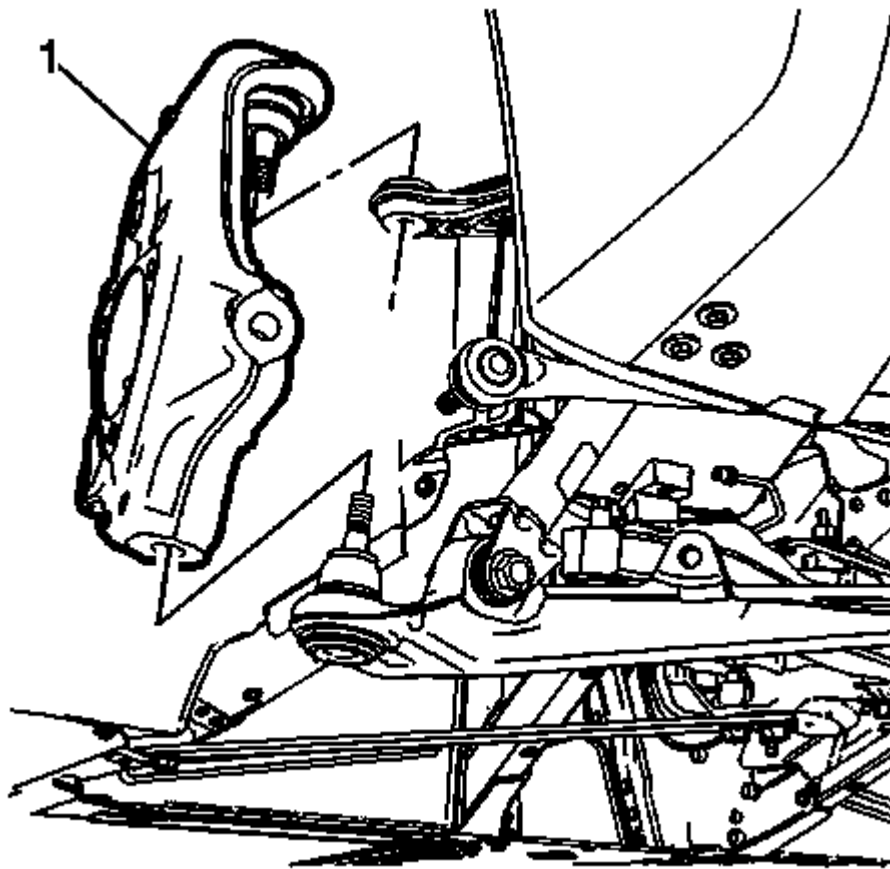


Fig. 26: Knuckle Assembly
Courtesy of GENERAL MOTORS COMPANY

19. Remove the knuckle assembly (1).
20. If replacing the knuckle, remove the parking brake actuator lever. Refer to **Rear Parking Brake Actuator Lever Replacement** .
21. If replacing the knuckle, remove the wheel bearing and hub assembly. Refer to **Rear Wheel Bearing and Hub Replacement**.
22. If replacing the knuckle, remove the parking brake backing plate. Refer to **Rear Parking Brake Anchor Backing Plate Replacement** .

Installation Procedure

1. If replacing the knuckle, install the parking brake backing plate. Refer to **Rear Parking Brake Anchor Backing Plate Replacement** .
2. If replacing the knuckle, install the wheel bearing and hub assembly. Refer to **Rear Wheel Bearing and Hub Replacement**.
3. If replacing the knuckle, install the parking brake actuator lever. Refer to **Rear Parking Brake Actuator Lever Replacement** .

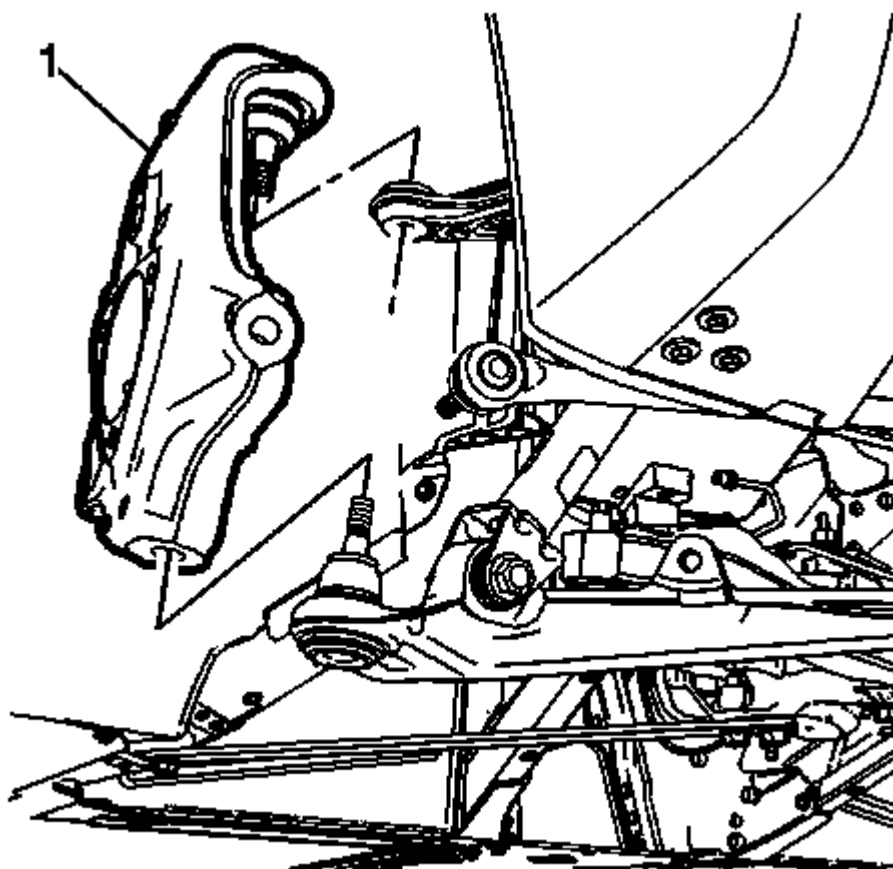


Fig. 27: Knuckle Assembly
Courtesy of GENERAL MOTORS COMPANY

4. Install the knuckle assembly (1).

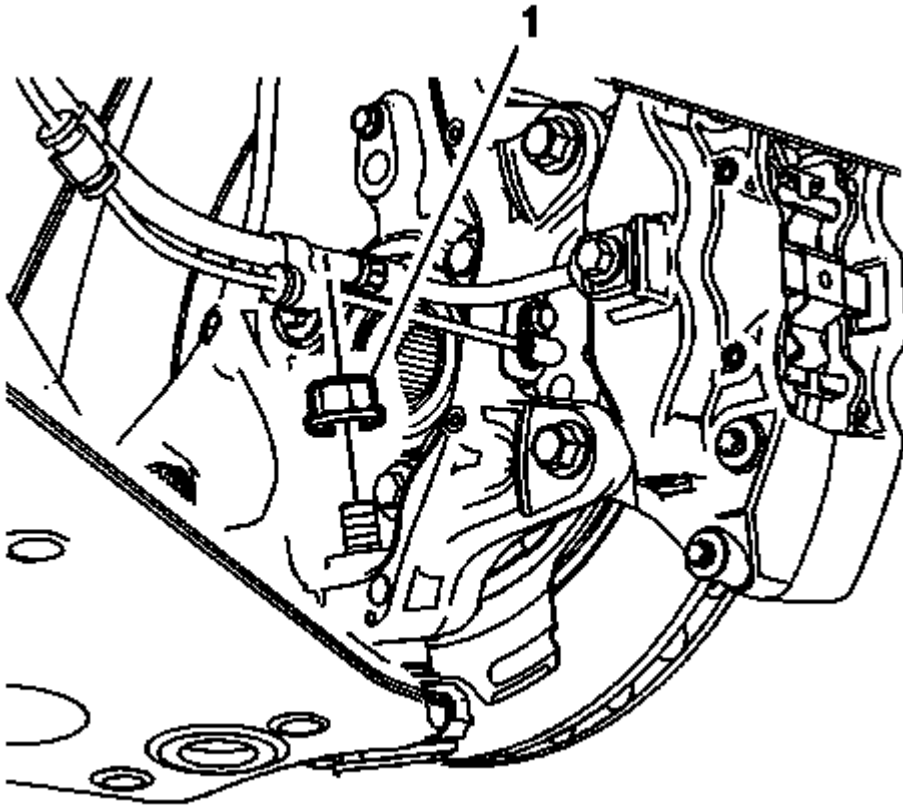


Fig. 28: Rear Axle Lower Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

5. Install the rear axle lower control arm ball joint nut (1) and tighten to 30 (22 lb ft) + 180 degrees.
6. Install the wheel drive shaft assembly into the wheel bearing hub. Refer to **Rear Wheel Drive Shaft Replacement** .

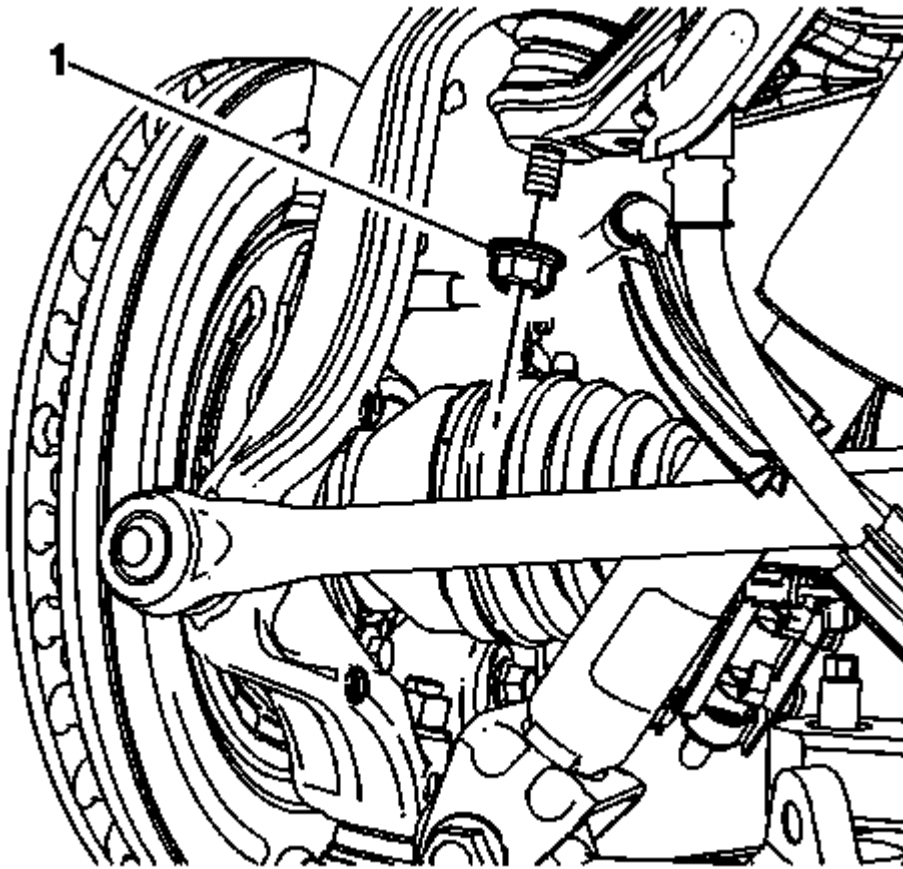


Fig. 29: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

7. Install the upper control arm ball joint nut (1) and tighten to 30 (22 lb ft) + 140 degrees.
8. Connect the parking brake rear cable to the knuckle and the park brake actuator. Refer to **Parking Brake Rear Cable Replacement - Left Side** or **Parking Brake Rear Cable Replacement - Right Side**.
9. Install the adjust link to the knuckle.

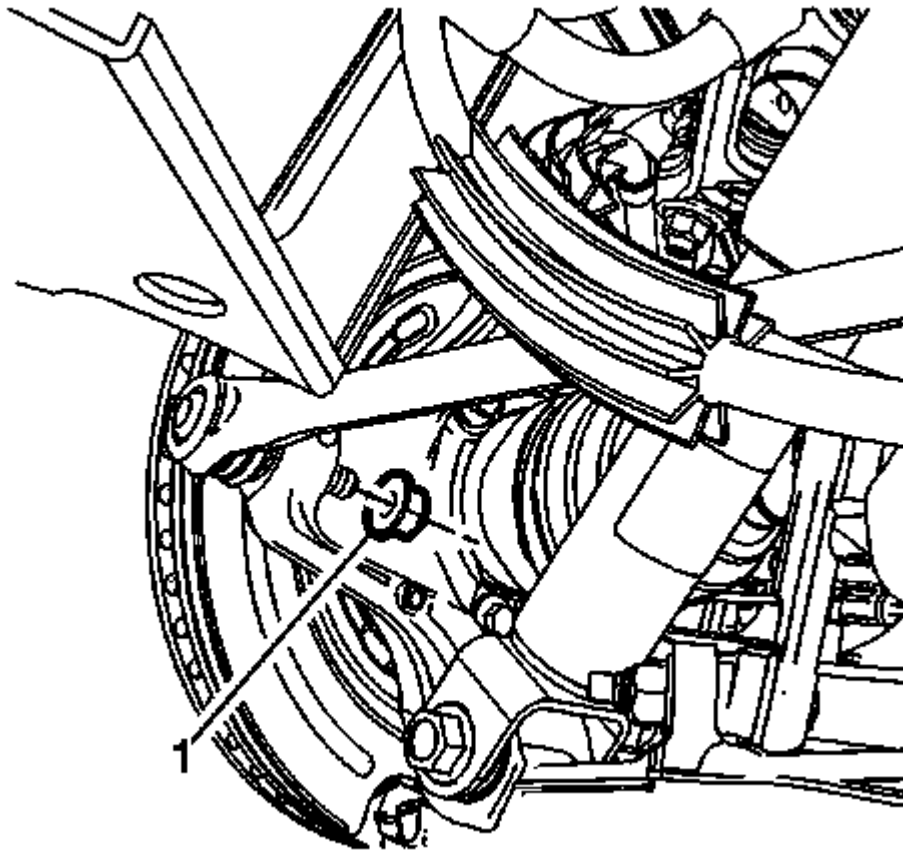


Fig. 30: Link Nut

Courtesy of GENERAL MOTORS COMPANY

10. Install the adjust link nut (1) and tighten to 30 (22 lb ft) + 120 degrees.
11. Install the wheel speed sensor into the knuckle assembly. Refer to **Rear Wheel Speed Sensor Replacement** .
12. Install the rear brake rotor. Refer to **Rear Brake Rotor Replacement** .
13. Install the brake caliper assembly. Refer to **Rear Brake Caliper Replacement** .
14. Install the rear brake caliper cooling duct deflector. Refer to **Rear Brake Caliper Cooling Duct Deflector Replacement** .
15. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
16. Lower the vehicle.

STABILIZER SHAFT REPLACEMENT (WITH FE3 AND FE4)

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Disconnect the left and right stabilizer shaft links from the stabilizer shaft. Refer to **Stabilizer Shaft Link Replacement (with FE3 and FE4)**.

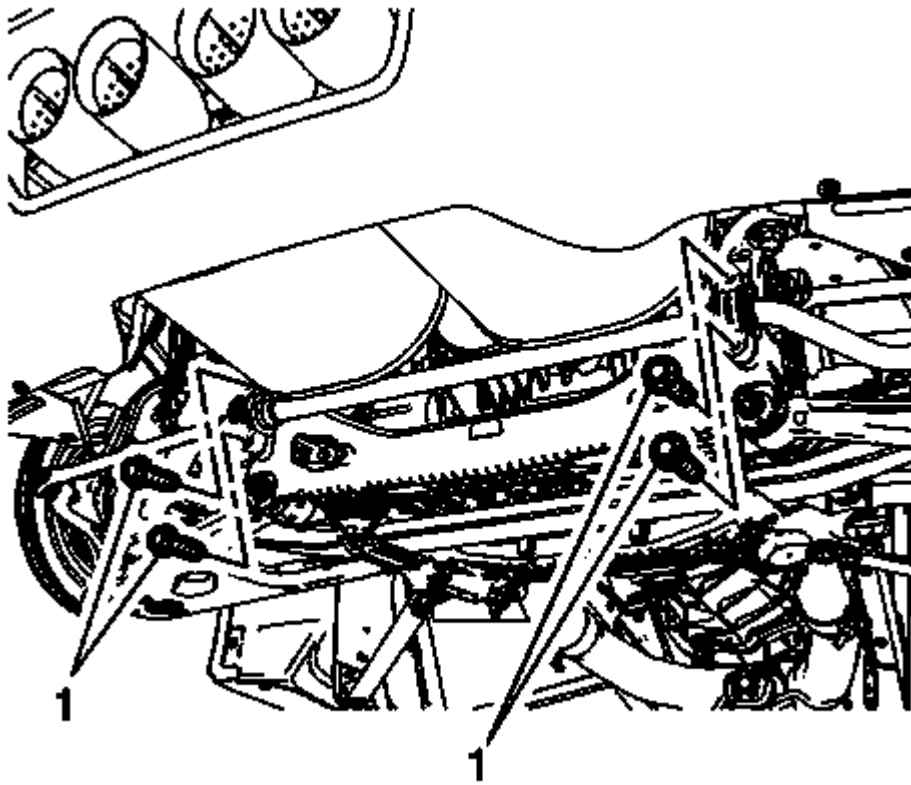


Fig. 31: Insulator Clamp Bolts
Courtesy of GENERAL MOTORS COMPANY

3. Remove the insulator clamp bolts (1).

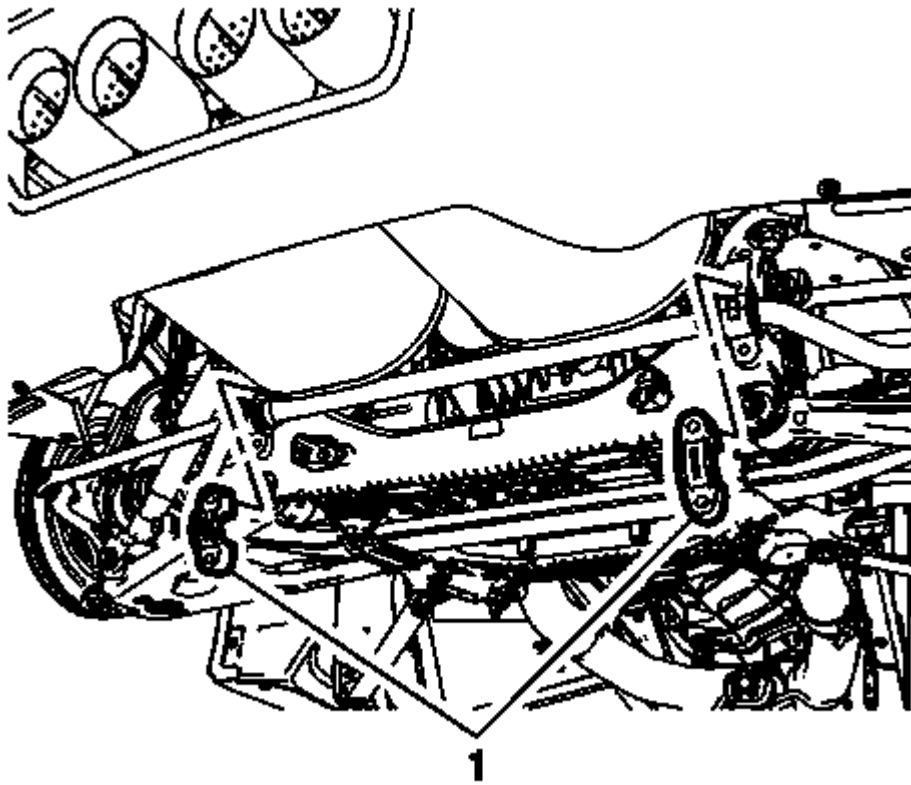


Fig. 32: Insulator Clamps

Courtesy of GENERAL MOTORS COMPANY

4. Remove the insulator clamps (1).

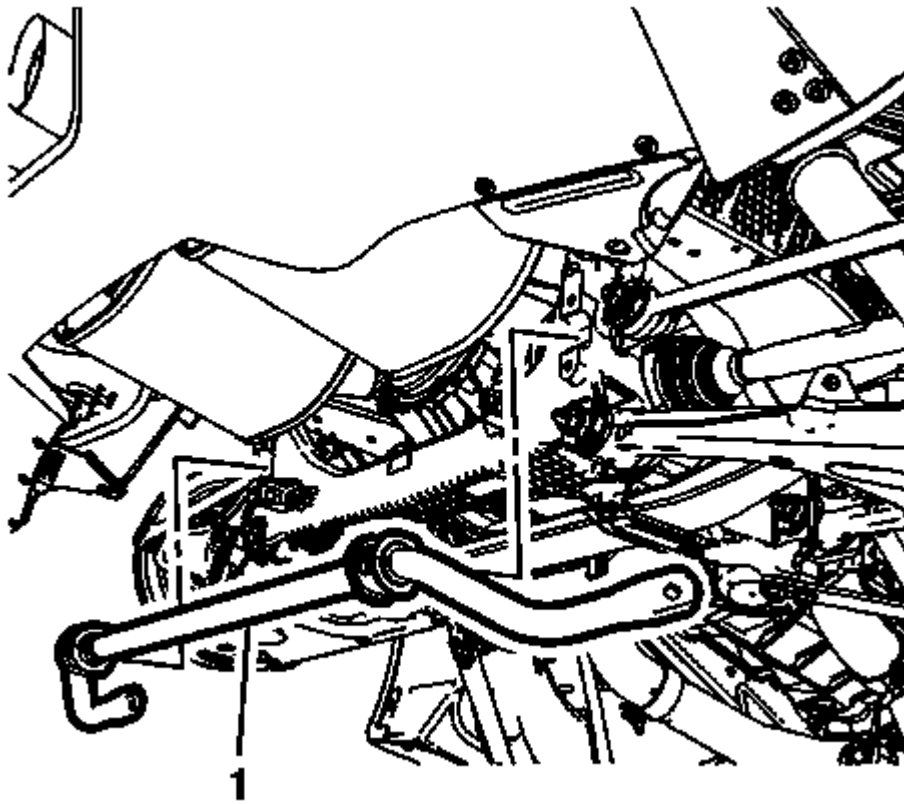


Fig. 33: Stabilizer Shaft Assembly And Vehicle
Courtesy of GENERAL MOTORS COMPANY

5. Remove the stabilizer shaft assembly (1) from the vehicle.

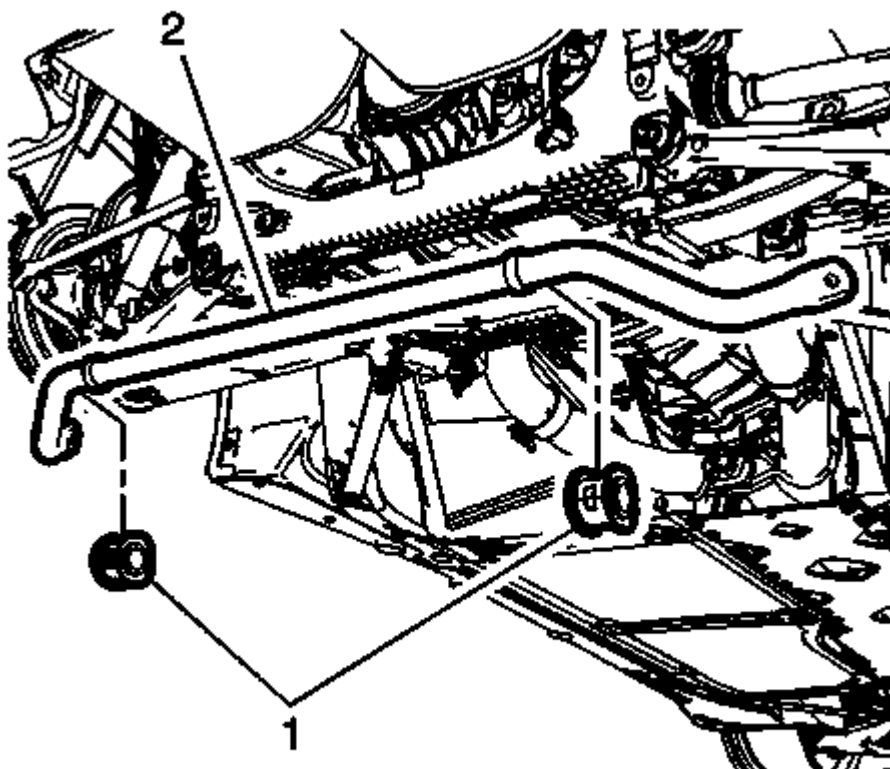


Fig. 34: Stabilizer Shaft Insulators
Courtesy of GENERAL MOTORS COMPANY

6. Remove the stabilizer shaft insulators (1).

Installation Procedure

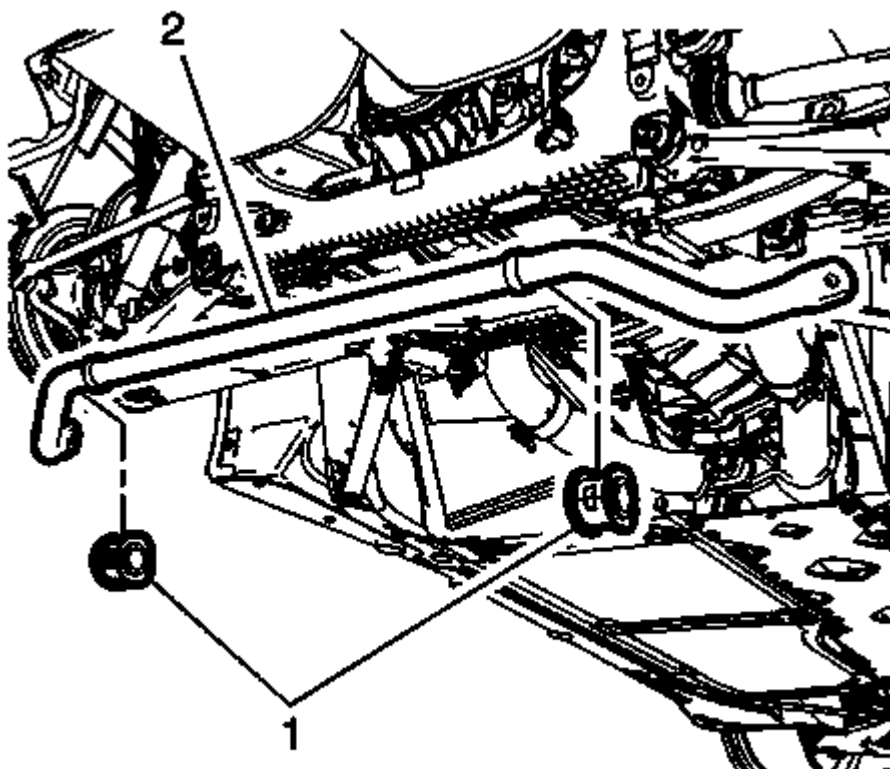


Fig. 35: Stabilizer Shaft Insulators
Courtesy of GENERAL MOTORS COMPANY

1. Install the stabilizer shaft insulators (1).

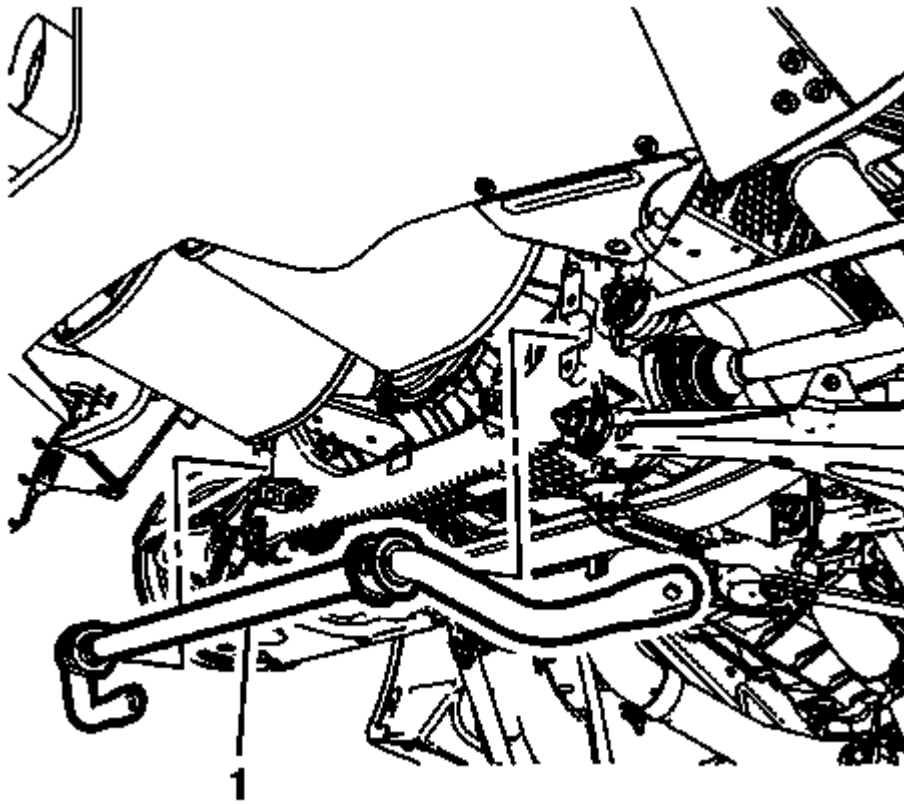


Fig. 36: Stabilizer Shaft Assembly And Vehicle
Courtesy of GENERAL MOTORS COMPANY

2. Install the stabilizer shaft assembly (1) to the vehicle.

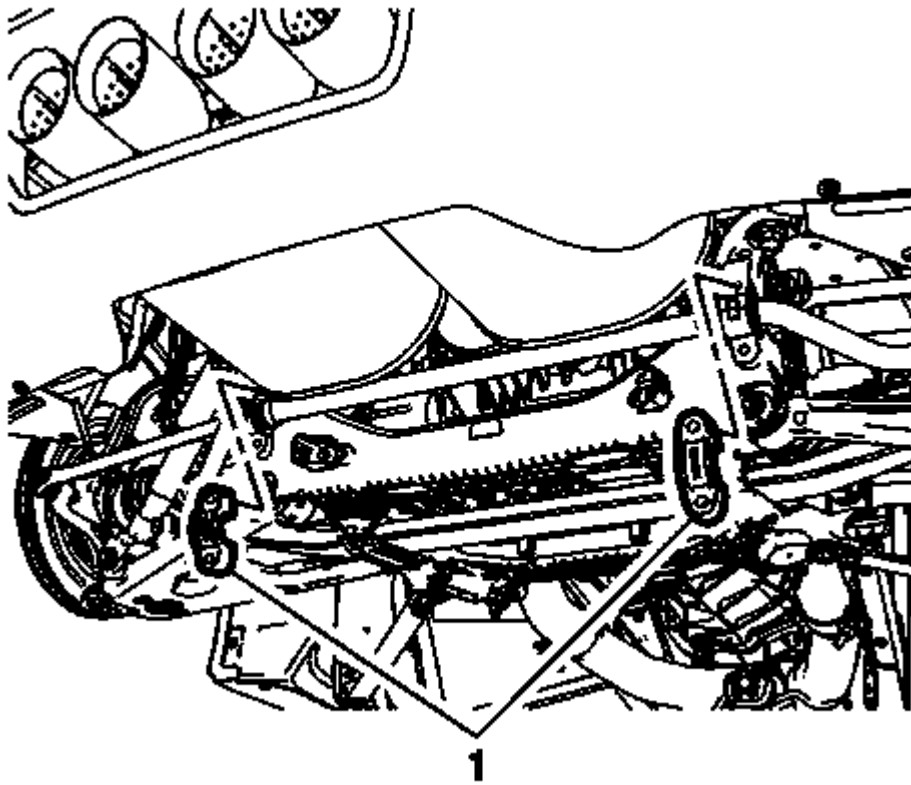


Fig. 37: Insulator Clamps

Courtesy of GENERAL MOTORS COMPANY

3. Install the insulator clamps (1).

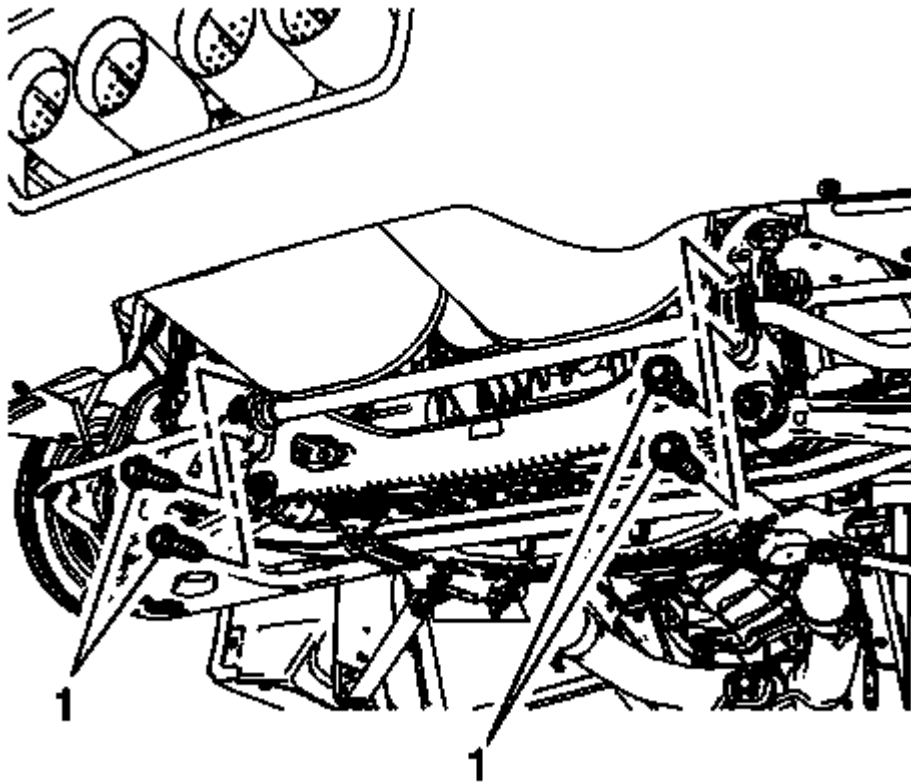


Fig. 38: Insulator Clamp Bolts

Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not fully tighten the insulator clamp bolts until instructed.

4. Loosely install the insulator clamp bolts (1).

NOTE: Only tighten the insulator clamp bolts enough to draw the insulator clamp to the rear suspension support.

5. Tighten the insulator clamp bolts (1) alternating between the top and bottom, until the insulator clamps are drawn to the rear suspension support.

CAUTION: Refer to Fastener Caution .

6. Tighten the insulator clamp bolts to 58 (43 lb ft).
7. Connect the left and right stabilizer shaft links to the stabilizer shaft. Refer to Stabilizer Shaft Link Replacement (with FE3 and FE4).

STABILIZER SHAFT INSULATOR REPLACEMENT (WITH FE3 AND FE4)

Removal Procedure

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

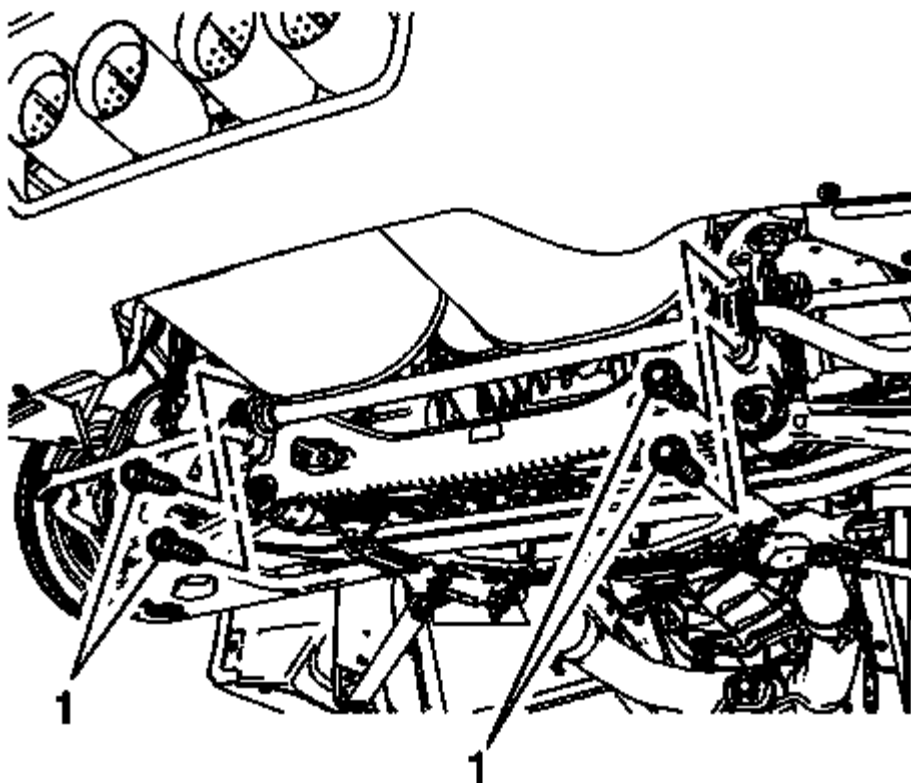


Fig. 39: Insulator Clamp Bolts
Courtesy of GENERAL MOTORS COMPANY

2. Remove the insulator clamp bolts (1).

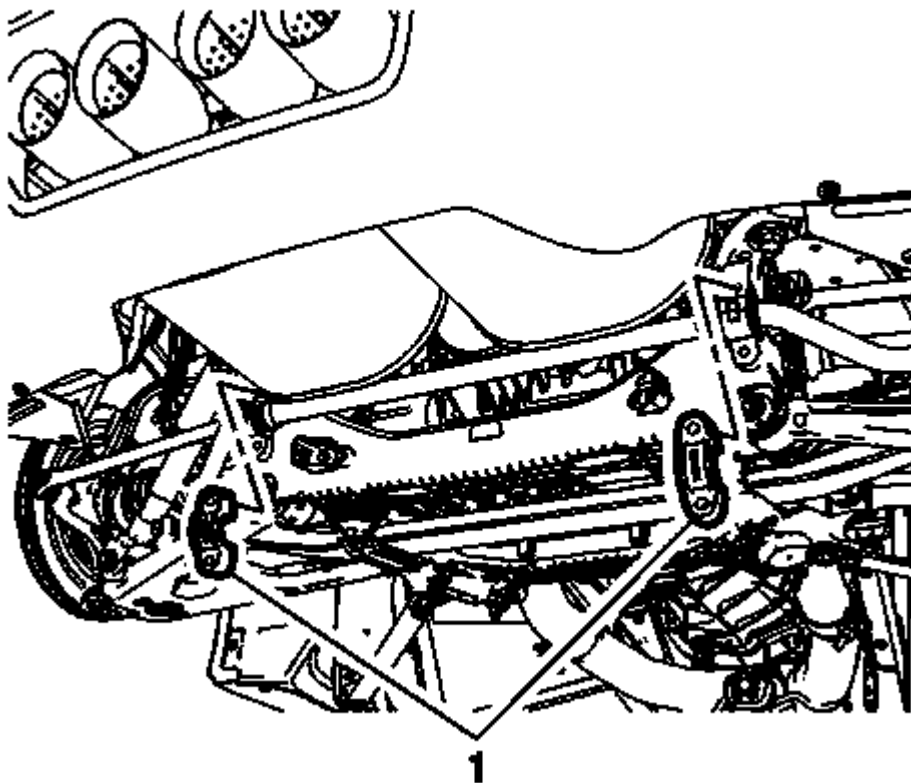


Fig. 40: Insulator Clamps

Courtesy of GENERAL MOTORS COMPANY

3. Remove the insulator clamps (1).
4. Lower the stabilizer shaft.

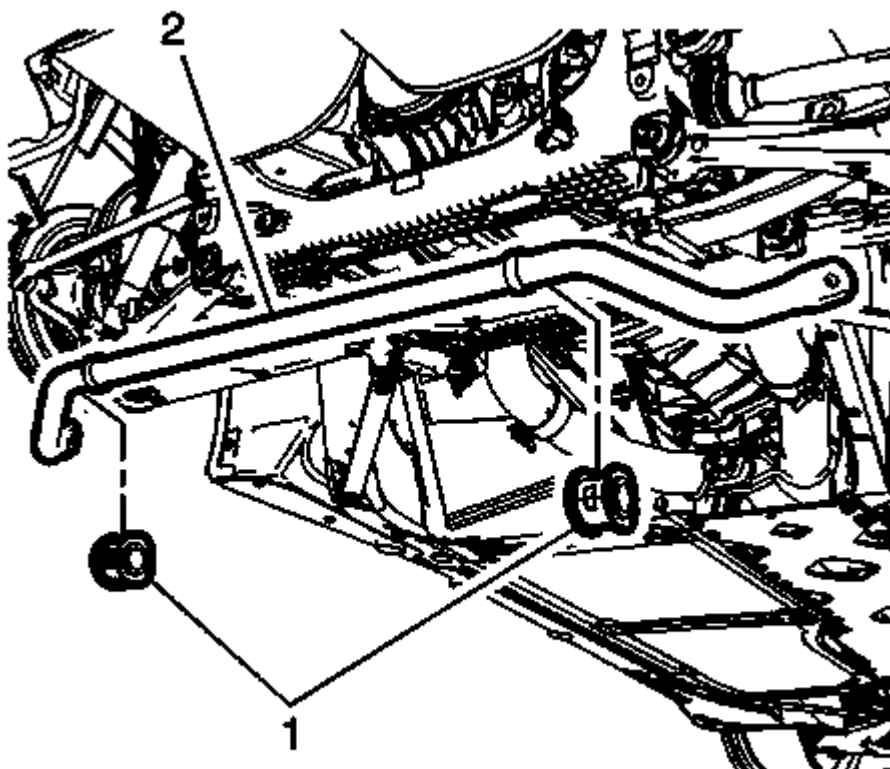


Fig. 41: Stabilizer Shaft Insulators
Courtesy of GENERAL MOTORS COMPANY

5. Remove the stabilizer shaft insulators (1).

Installation Procedure

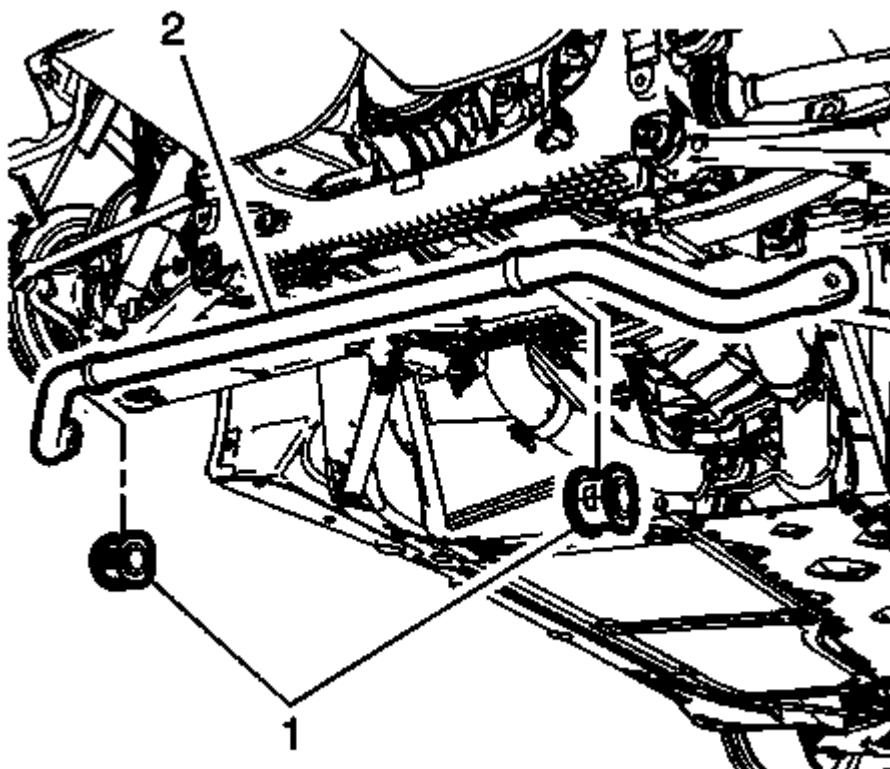


Fig. 42: Stabilizer Shaft Insulators
Courtesy of GENERAL MOTORS COMPANY

1. Install the new stabilizer shaft insulators (1).
2. Raise the stabilizer shaft into position.

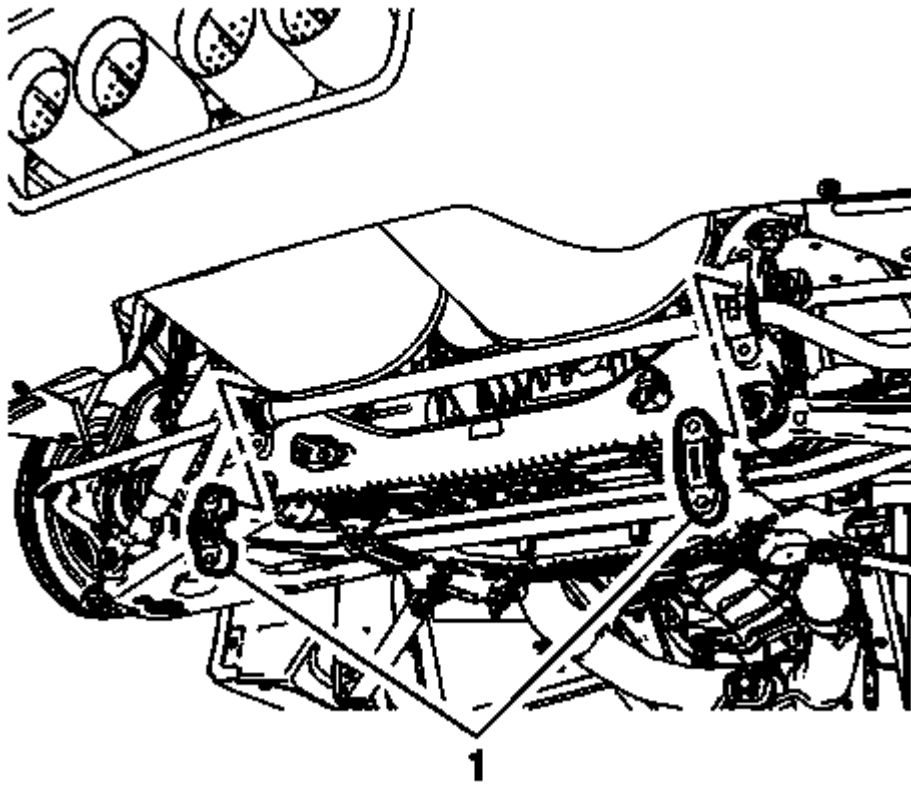


Fig. 43: Insulator Clamps

Courtesy of GENERAL MOTORS COMPANY

3. Install the insulator clamps (1).

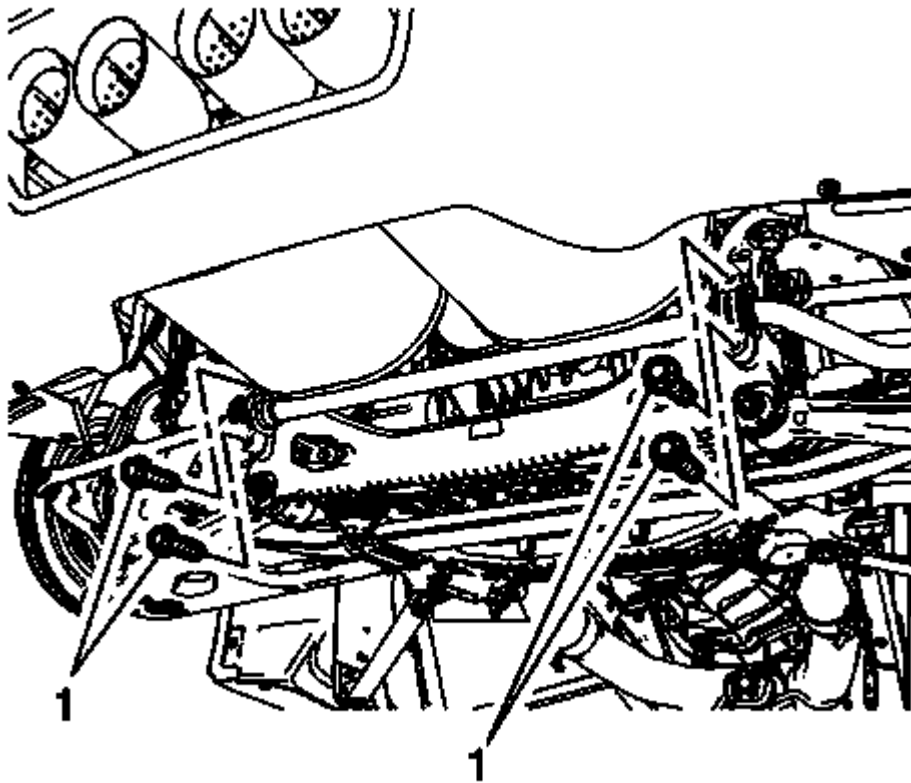


Fig. 44: Insulator Clamp Bolts

Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not fully tighten the insulator clamp bolts until instructed.

4. Loosely install the insulator clamp bolts (1).

NOTE: Only tighten the insulator clamp bolts enough to draw the insulator clamp to the rear suspension support.

5. Tighten the insulator clamp bolts (1) alternating between the top and bottom, until the insulator clamps are drawn to the rear suspension support.

CAUTION: Refer to Fastener Caution .

6. Tighten the insulator clamp bolts to 58 (43 lb ft).
7. Connect the left and right stabilizer shaft links to the stabilizer shaft. Refer to Stabilizer Shaft Link Replacement (with FE3 and FE4).

STABILIZER SHAFT LINK REPLACEMENT (WITH FE3 AND FE4)

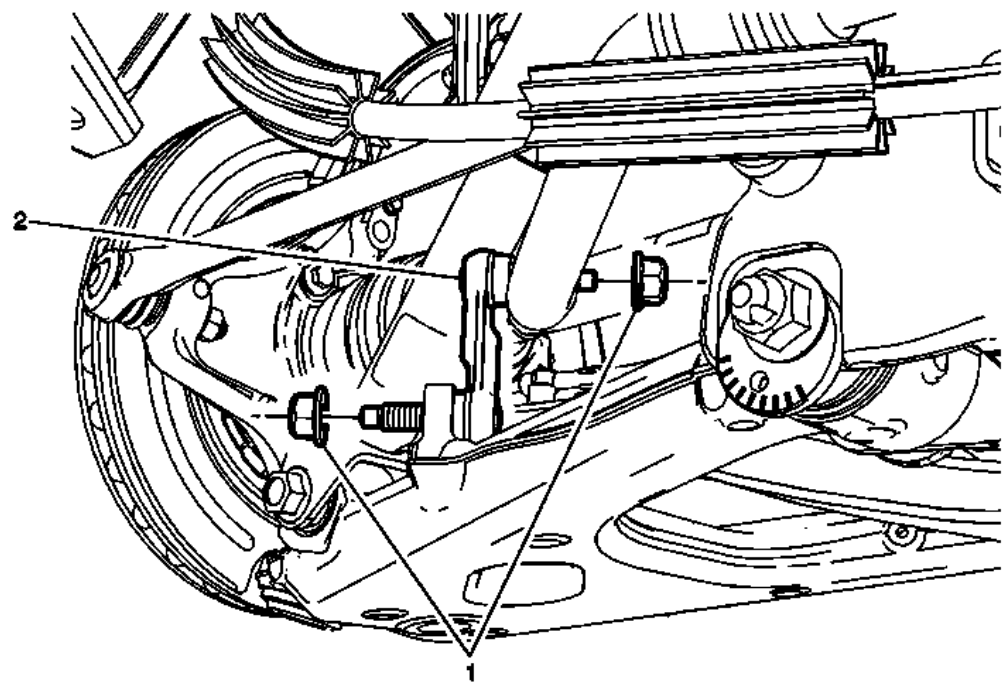


Fig. 45: Stabilizer Shaft Link (with FE3 and FE4)
Courtesy of GENERAL MOTORS COMPANY

Stabilizer Shaft Link Replacement (with FE3 and FE4)

Callout	Component Name
Preliminary Procedure Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .	
1	Rear Stabilizer Shaft Link Nut (Qty: 2) CAUTION: Refer to Fastener Caution . Procedure Use the appropriate size wrench to keep the ball stud from rotating when removing the stabilizer shaft link nut. Tighten • First pass 60 N.m (44 lb ft) • Final pass plus 30°
2	Rear Stabilizer Shaft Link Procedure

SHOCK ABSORBER REPLACEMENT (WITHOUT FE2, FE4)

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. Using a post jack, carefully raise the rear axle lower control arm to relieve the tension on the rear shock absorber lower bolt.

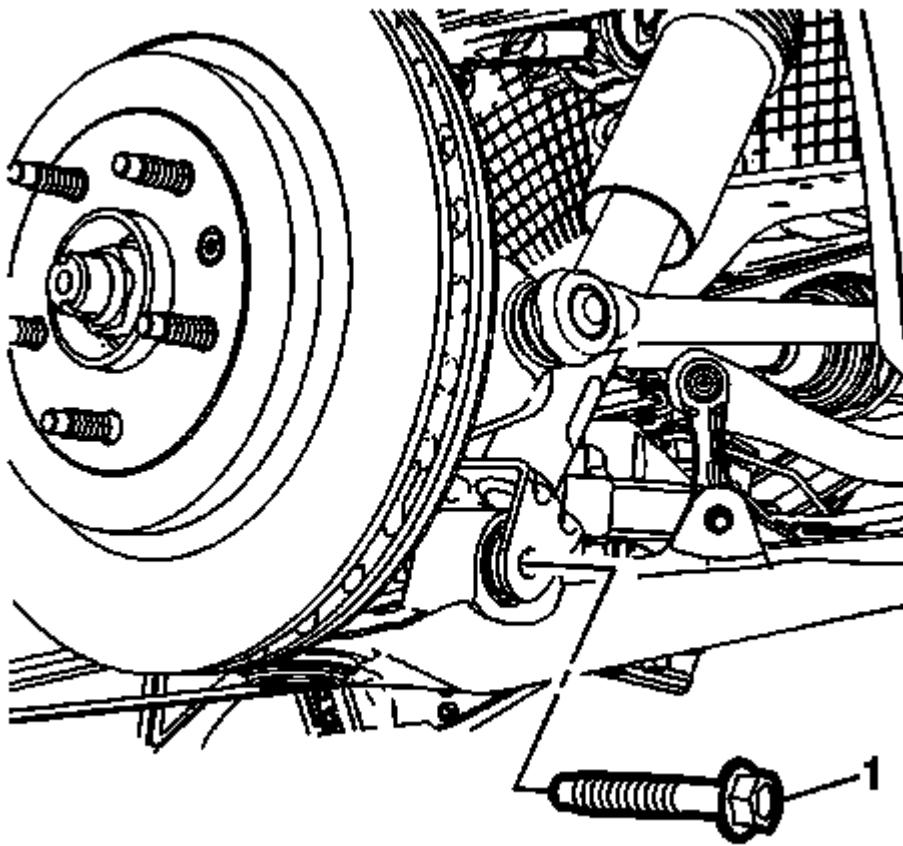


Fig. 46: Rear Shock Absorber Lower Bolt
Courtesy of GENERAL MOTORS COMPANY

4. Remove the rear shock absorber lower bolt (1).

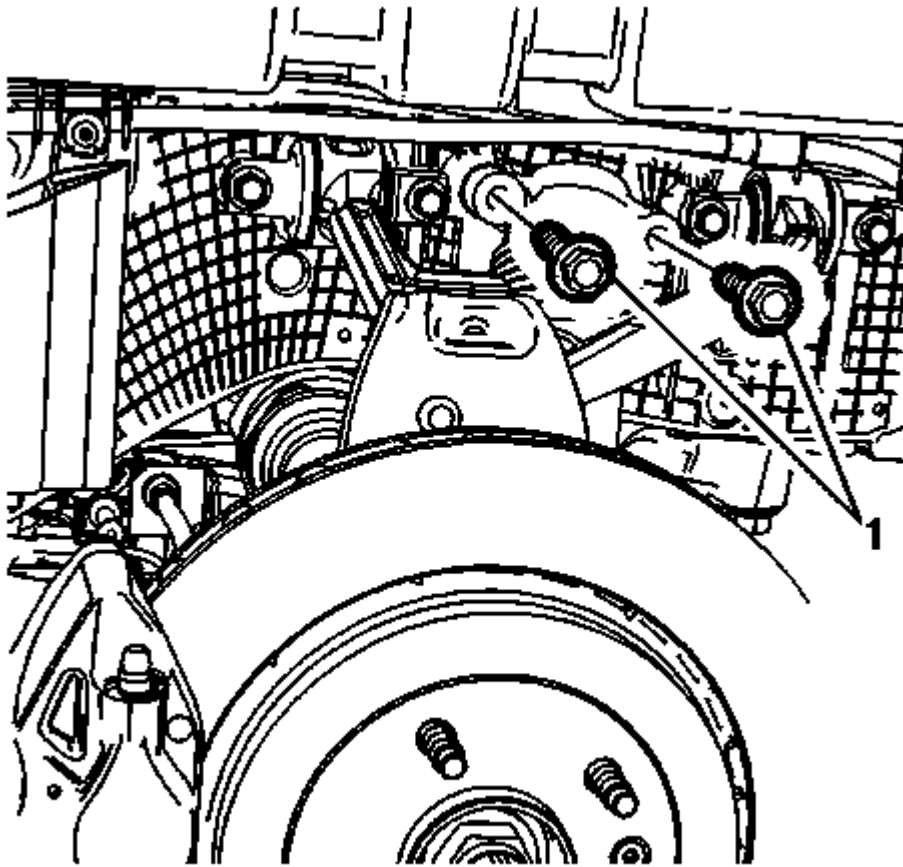


Fig. 47: Upper Shock Absorber Bolts
Courtesy of GENERAL MOTORS COMPANY

5. Remove the upper shock absorber bolts (1).
6. Remove the rear shock absorber.

Installation Procedure

1. Install the rear shock absorber

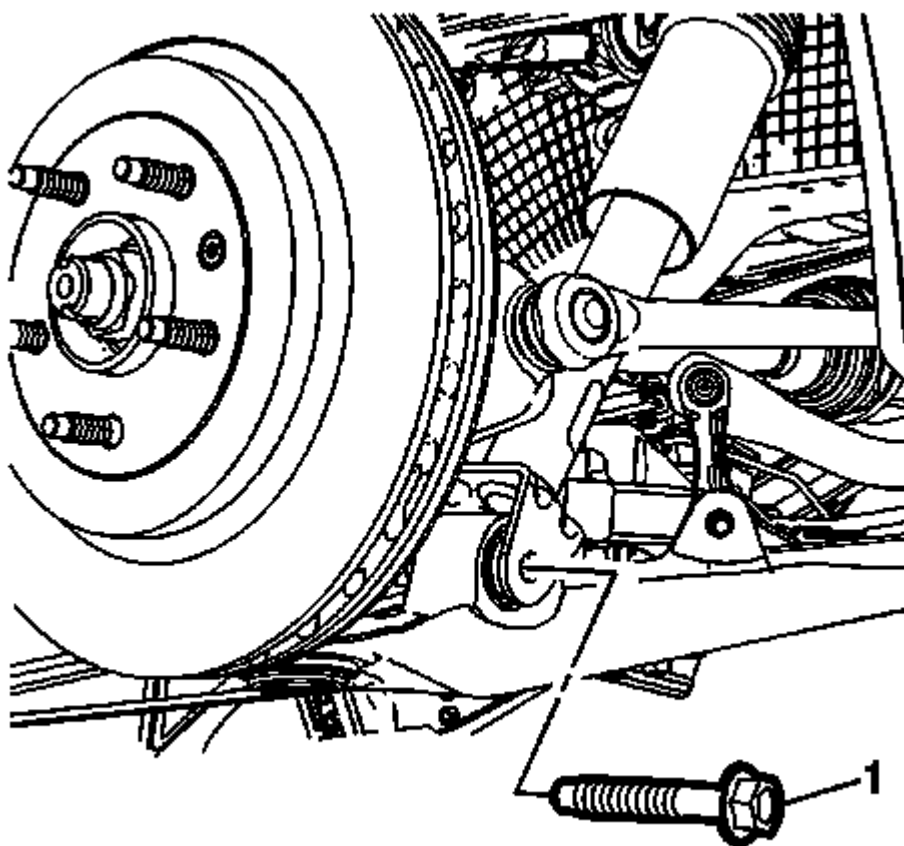


Fig. 48: Rear Shock Absorber Lower Bolt
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not tighten the lower shock bolt until vehicle is setting on flat surface.

2. Install the rear shock absorber lower bolt (1).

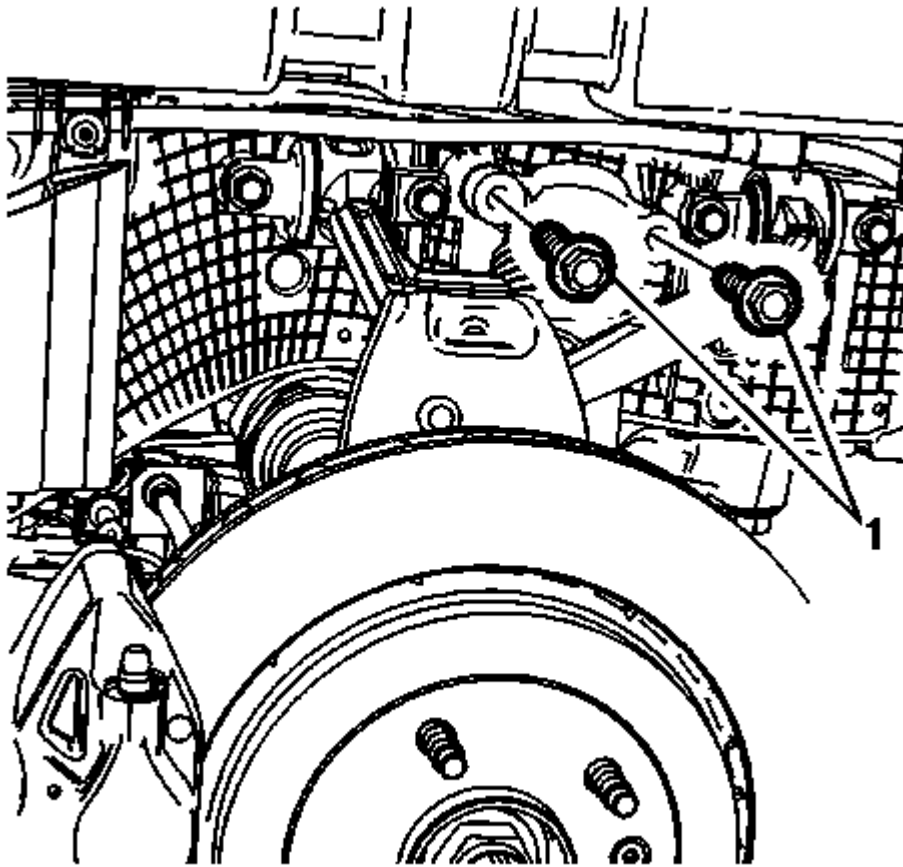


Fig. 49: Upper Shock Absorber Bolts
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

3. Install the upper shock absorber bolts (1) and tighten to 100 (74 lb ft).
4. Carefully lower and remove the post jack.
5. Install the tire and wheel assembly. Refer to Tire and Wheel Removal and Installation .
6. Lower the vehicle and tighten the lower shock absorber bolt (1) to 160 (118 lb ft).

SHOCK ABSORBER REPLACEMENT (WITH FE2, FE4)

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 .

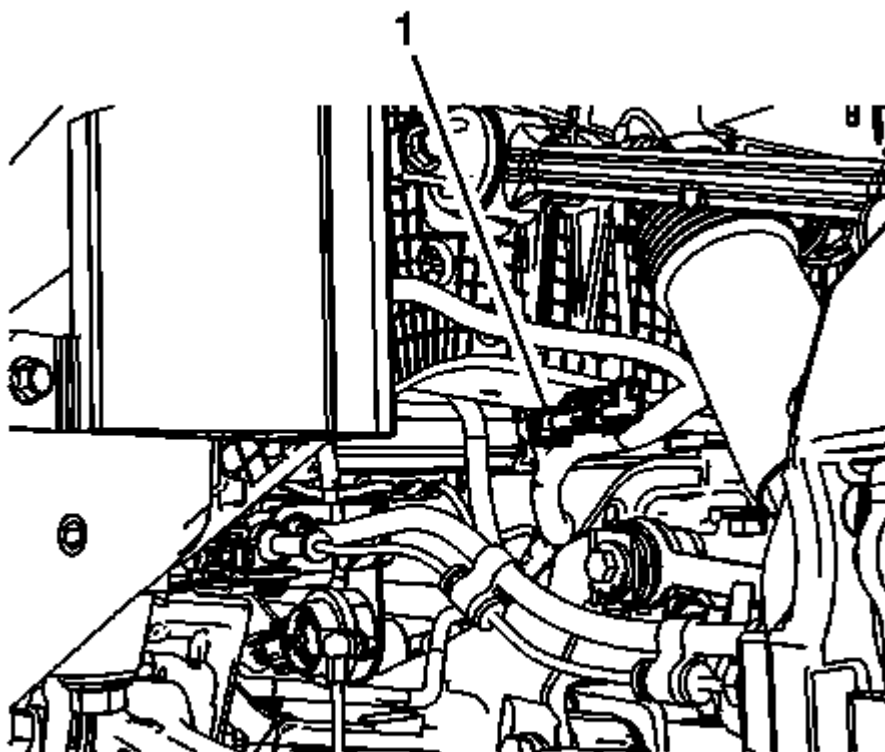


Fig. 50: Shock Absorber Electrical Connector
Courtesy of GENERAL MOTORS COMPANY

3. Disconnect the shock absorber electrical connector (1).
4. Using a post jack, carefully raise the rear axle lower control arm to relieve the tension on the rear shock absorber lower bolt.

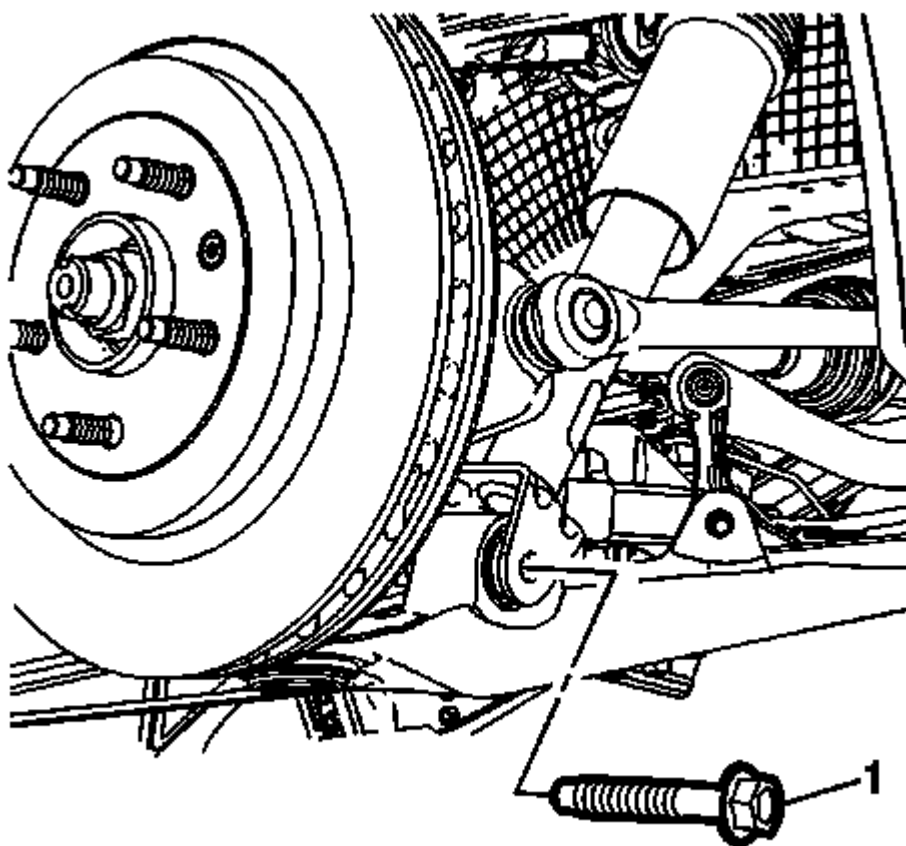


Fig. 51: Rear Shock Absorber Lower Bolt
Courtesy of GENERAL MOTORS COMPANY

5. Remove the rear shock absorber lower bolt (1).

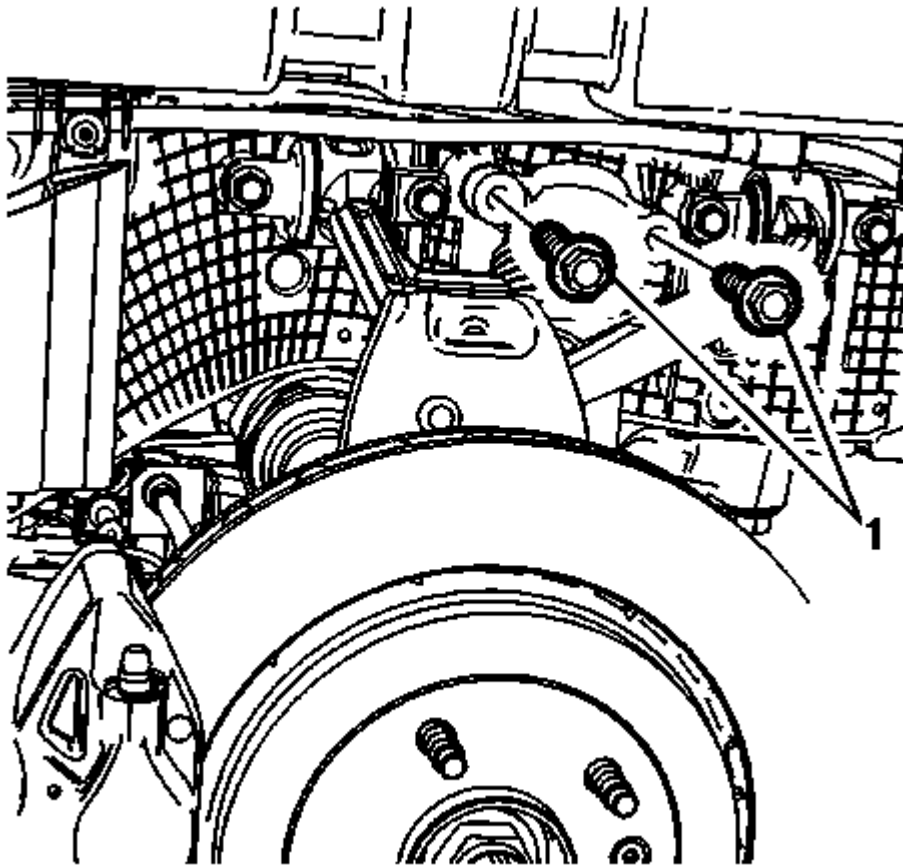


Fig. 52: Upper Shock Absorber Bolts
Courtesy of GENERAL MOTORS COMPANY

6. Remove the upper shock absorber bolts (1).
7. Remove the rear shock absorber.

Installation Procedure

1. Install the rear shock absorber

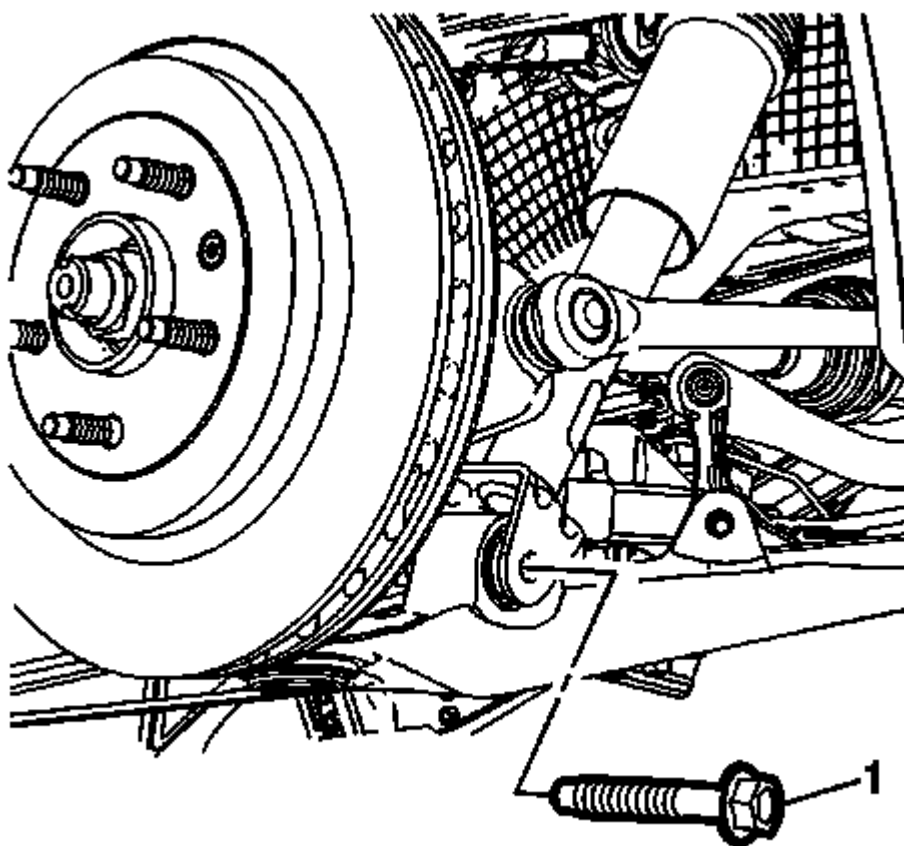


Fig. 53: Rear Shock Absorber Lower Bolt
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not tighten the lower shock bolt until vehicle is setting on flat surface.

2. Install the rear shock absorber lower bolt (1).

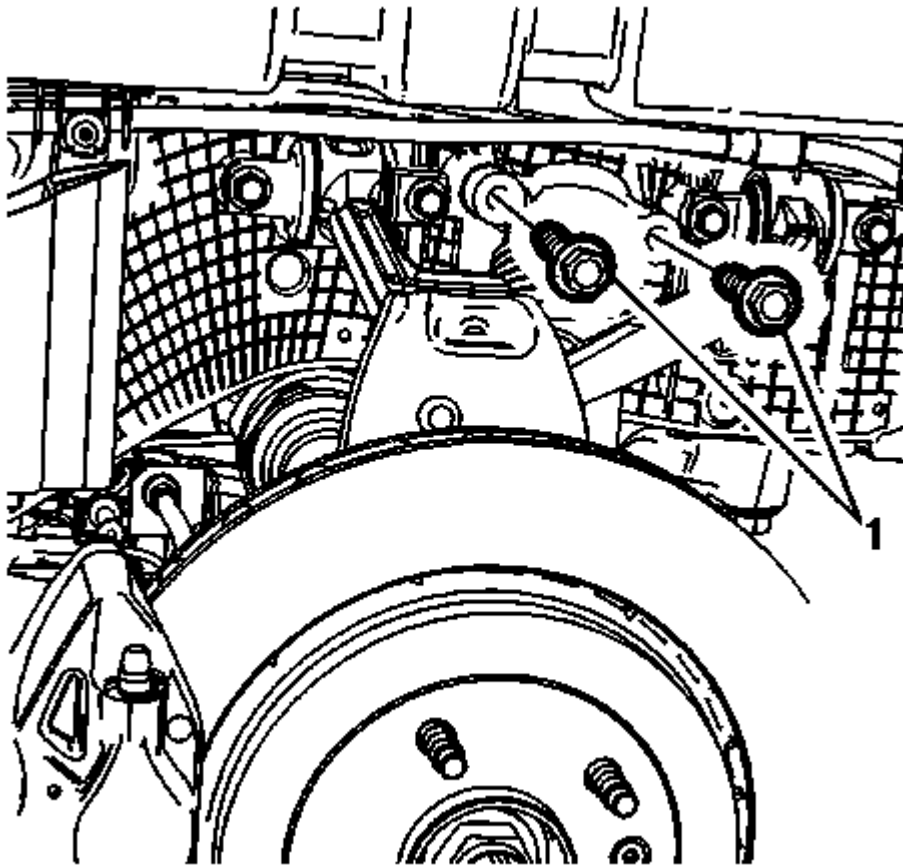


Fig. 54: Upper Shock Absorber Bolts
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

3. Install the upper shock absorber bolts (1) and tighten to 100 (74 lb ft).
4. Carefully lower and remove the post jack.

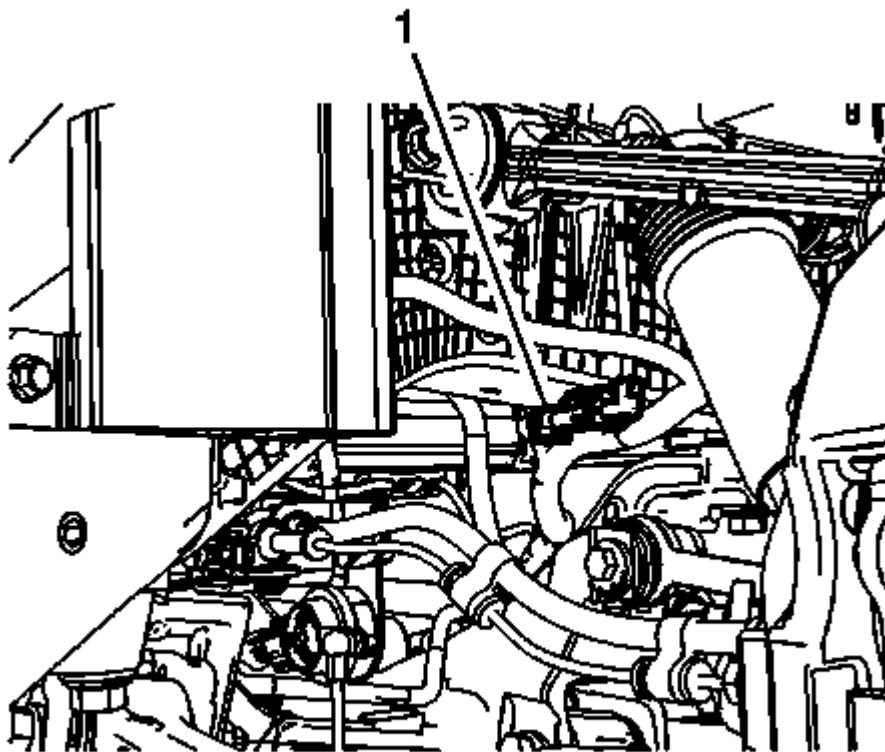


Fig. 55: Shock Absorber Electrical Connector
Courtesy of GENERAL MOTORS COMPANY

5. Connect the shock absorber electrical connector (1).
6. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
7. Lower the vehicle and tighten the lower shock absorber bolt (1) to 160 (118 lb ft).

ADJUST LINK REPLACEMENT

Removal Procedure

Special Tool

CH-42188-B Ball Joint Separator

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** .

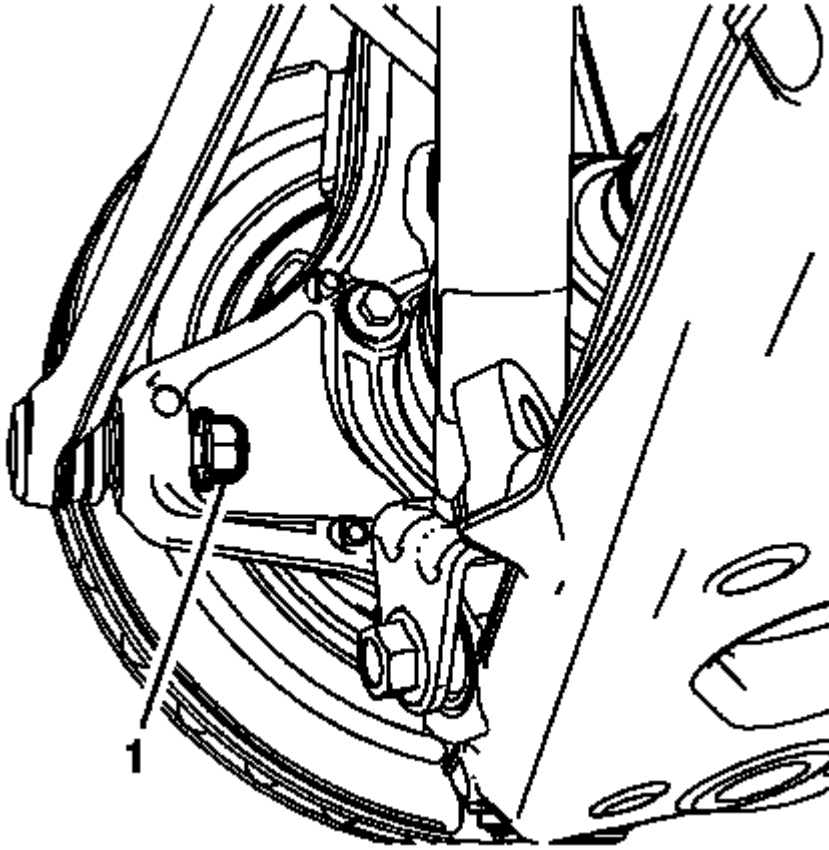


Fig. 56: Adjust Link Nut

Courtesy of GENERAL MOTORS COMPANY

3. Loosen the adjust link nut (1) at the knuckle.

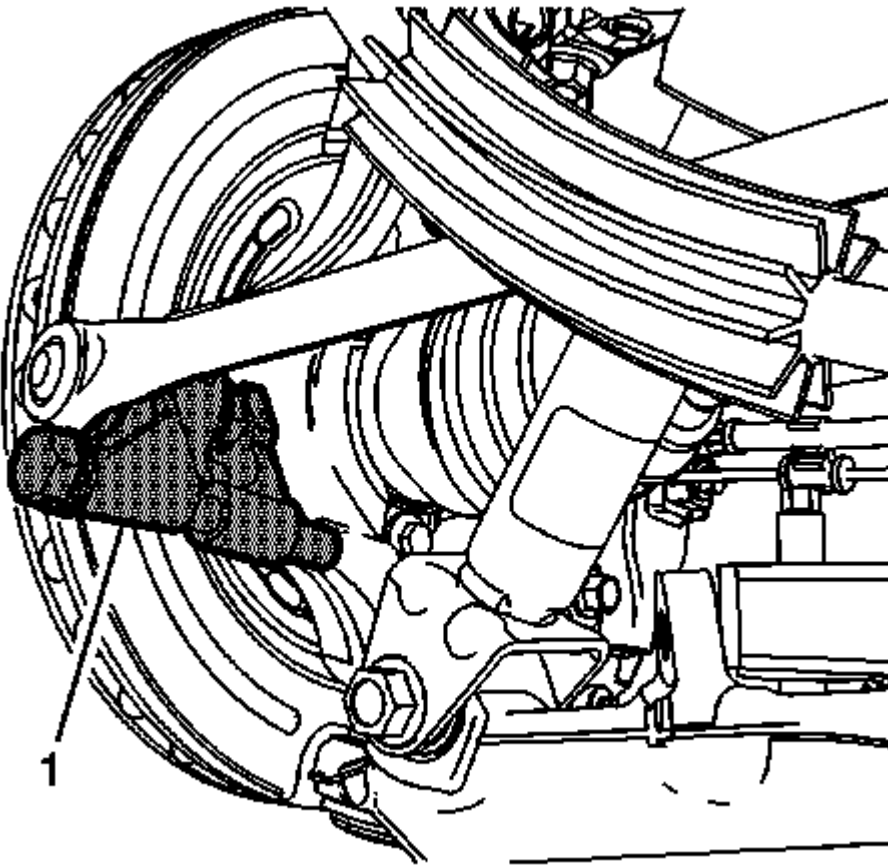


Fig. 57: Using J-42188-B Separator
Courtesy of GENERAL MOTORS COMPANY

4. Using **CH-42188-B** separator (1) separate the adjust link from the knuckle.

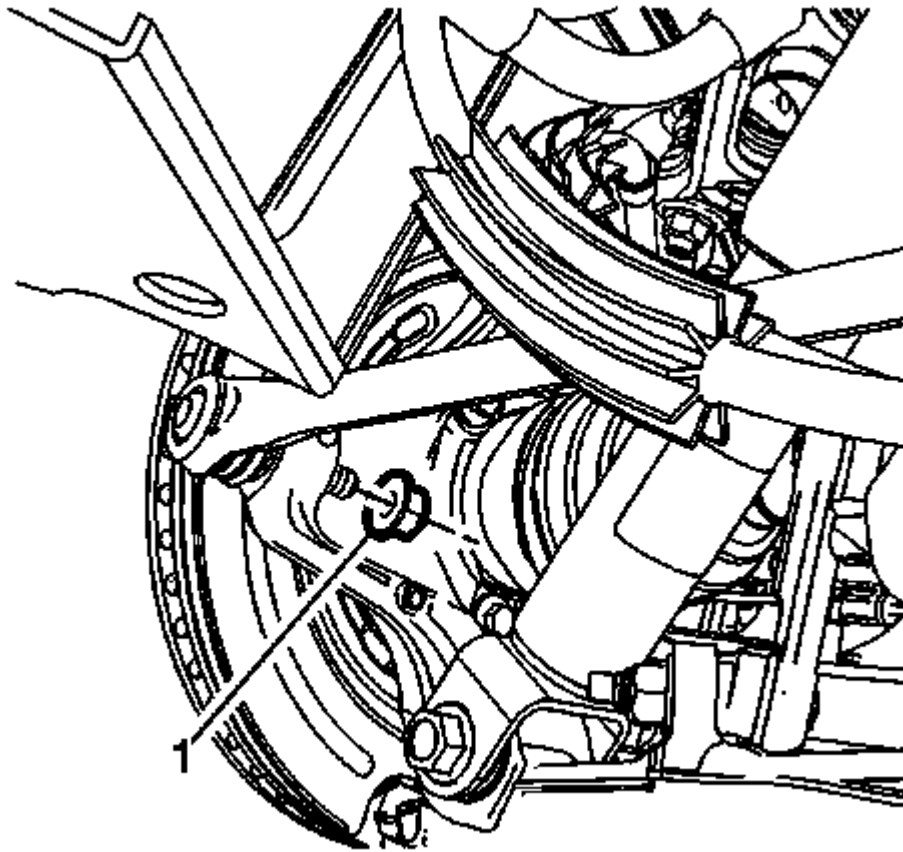


Fig. 58: Link Nut

Courtesy of GENERAL MOTORS COMPANY

5. Remove the adjust link nut (1).

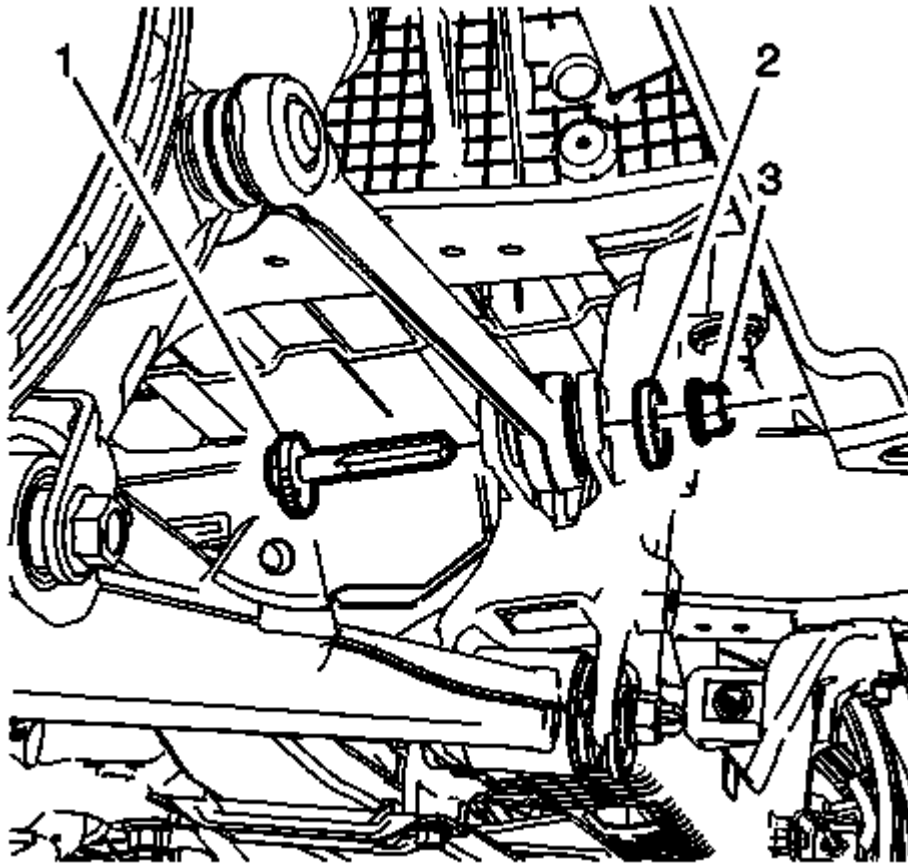


Fig. 59: Removing Adjust Link Nut Cam Washer And Cam Bolt From Frame
Courtesy of GENERAL MOTORS COMPANY

NOTE: Mark the position of the adjust link cam bolt (1) and cam washer (2) to the frame before removal.

6. Remove the adjust link nut (3) cam washer (2) and cam bolt (1) from the frame.

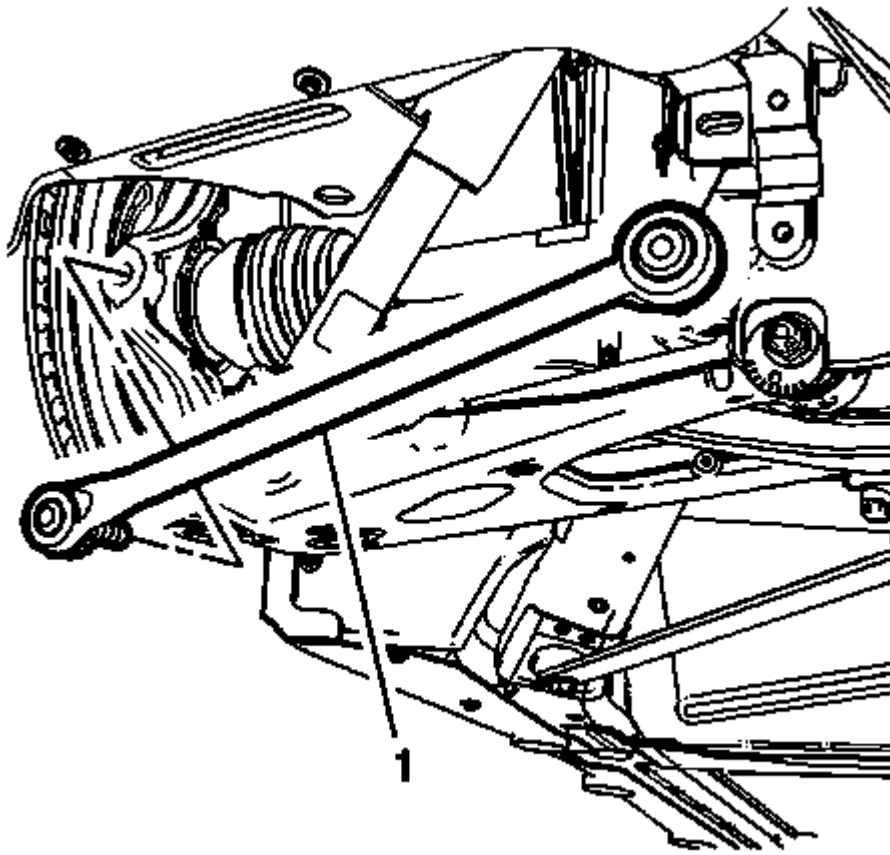


Fig. 60: Adjust Link
Courtesy of GENERAL MOTORS COMPANY

7. Remove the adjust link (1).

Installation Procedure

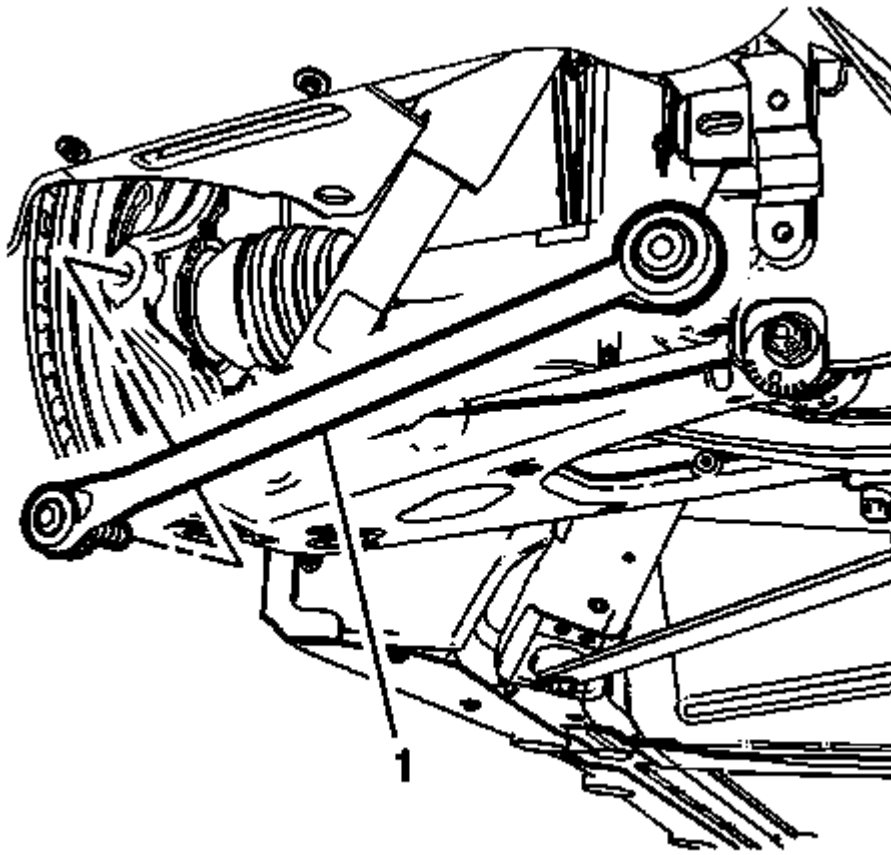


Fig. 61: Adjust Link

Courtesy of GENERAL MOTORS COMPANY

1. Install the adjust link (1).

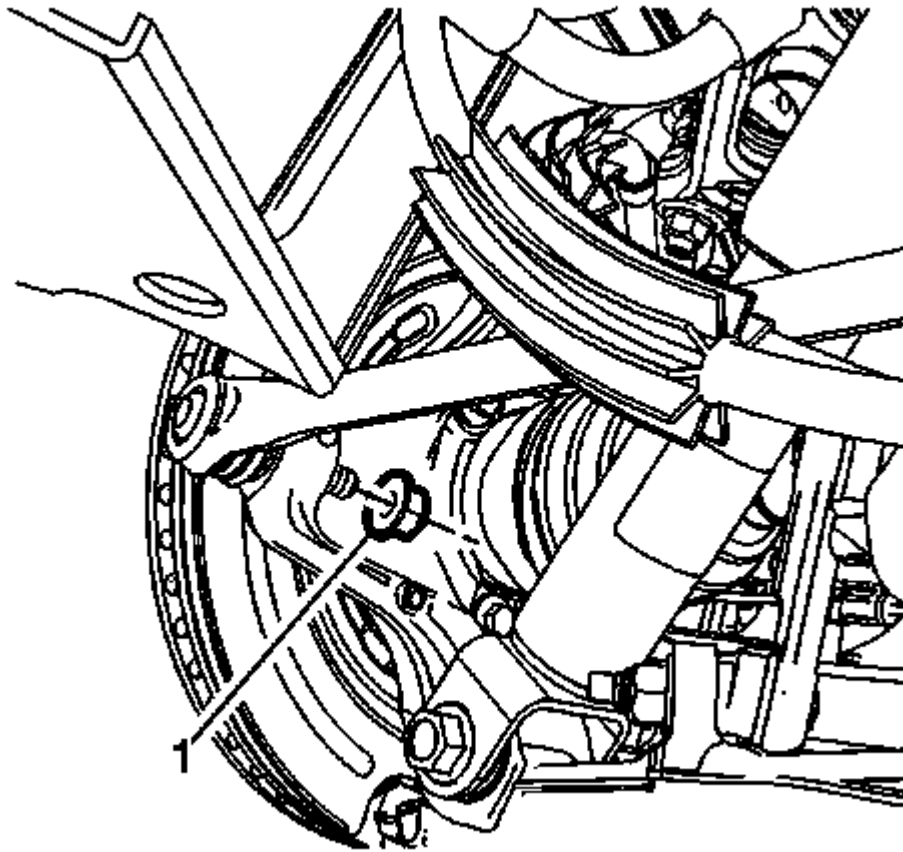


Fig. 62: Link Nut

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

2. Install the adjust link nut (1) and tighten to:
 - First Pass, 30 N.m (22 lb ft)
 - Final Pass, plus 120 degrees

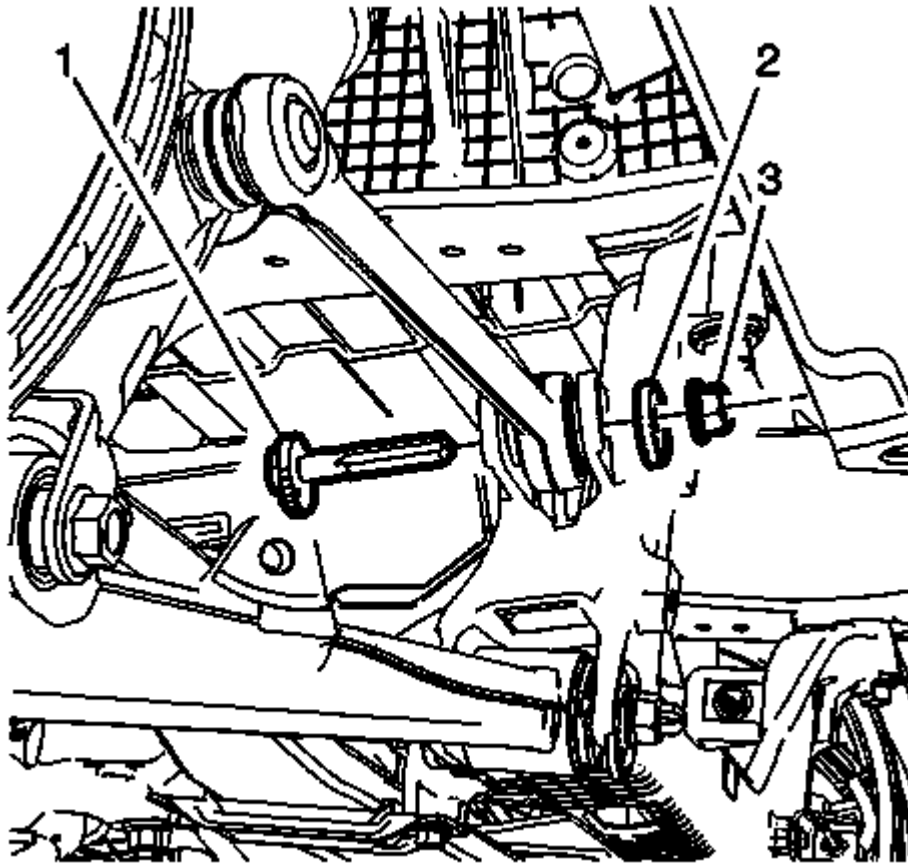


Fig. 63: Removing Adjust Link Nut Cam Washer And Cam Bolt From Frame
Courtesy of GENERAL MOTORS COMPANY

NOTE: Make note of the marks made on the cam bolt (1) and cam washer (2) when installing.

3. Install the adjust link nut (3) cam washer (2) and cam bolt (1) from the frame. Tighten the nut (3) to 70 N.m (52 lb ft)
4. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
5. Inspect the rear wheel alignment. Refer to **Wheel Alignment Measurement** .

REAR SPRING REPLACEMENT

Special Tools

J-33432-A Transverse Spring Compressor

Removal Procedure

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

Installation .

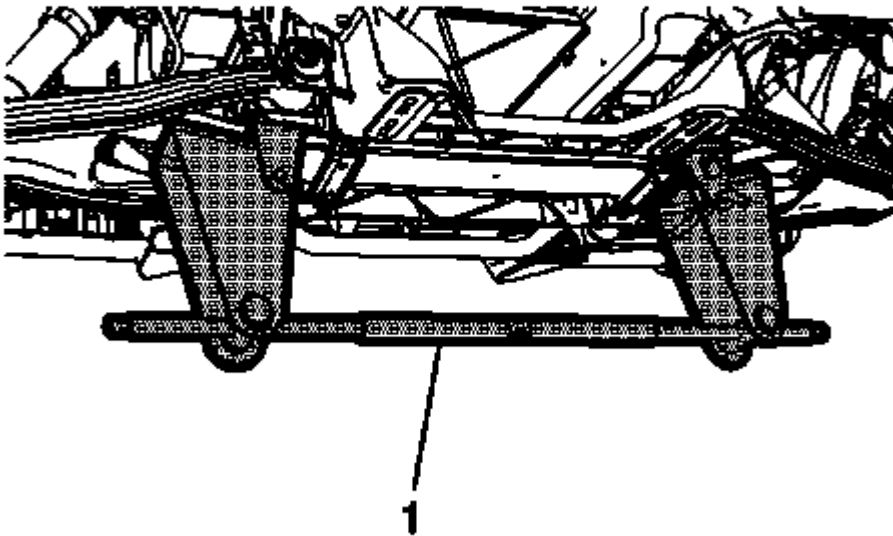


Fig. 64: Transverse Spring Compressor
Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not scratch the surface of the transverse spring.

3. Install the **J-33432-A** Transverse Spring Compressor (1) to the rear transverse spring.
4. Using the **J-33432-A** Transverse Spring Compressor, compress the spring.

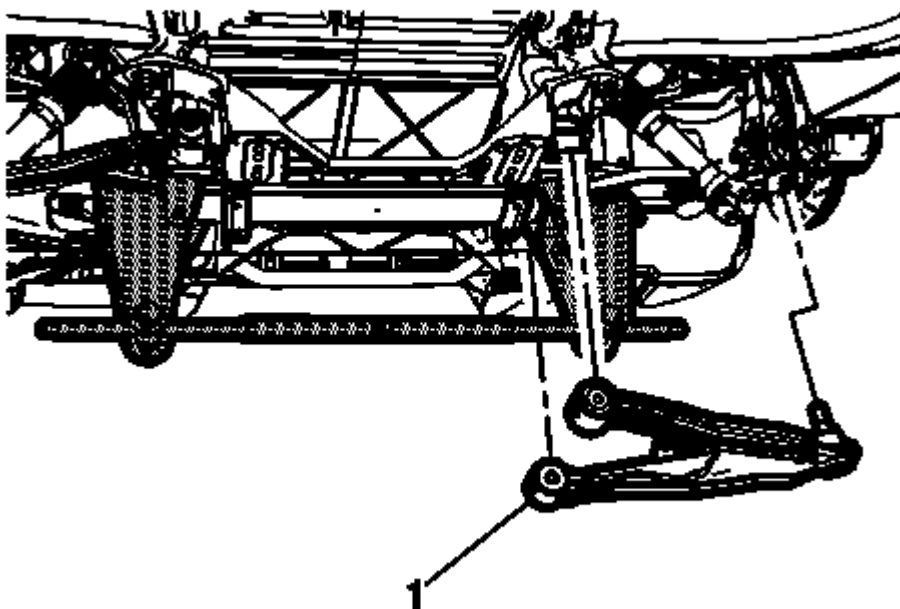


Fig. 65: Rear Axle Lower Control Arms
Courtesy of GENERAL MOTORS COMPANY

5. Remove one of the lower control arms (1). Refer to **Lower Control Arm Replacement (without FE2, FE4)**, **Lower Control Arm Replacement (with FE2, FE4)**.

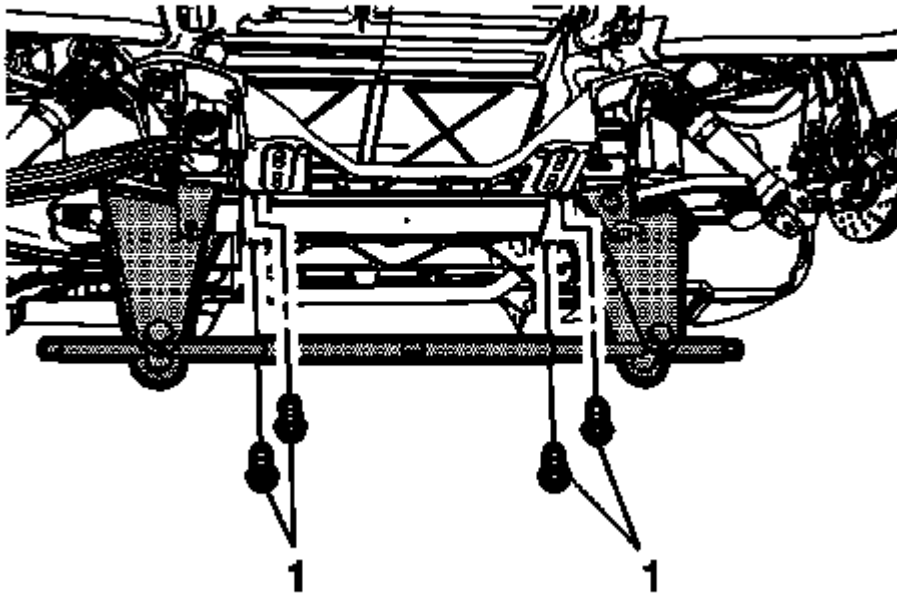


Fig. 66: Rear Transverse Spring Clamp Bolts
Courtesy of GENERAL MOTORS COMPANY

6. Remove the rear transverse spring clamp bolts (1).

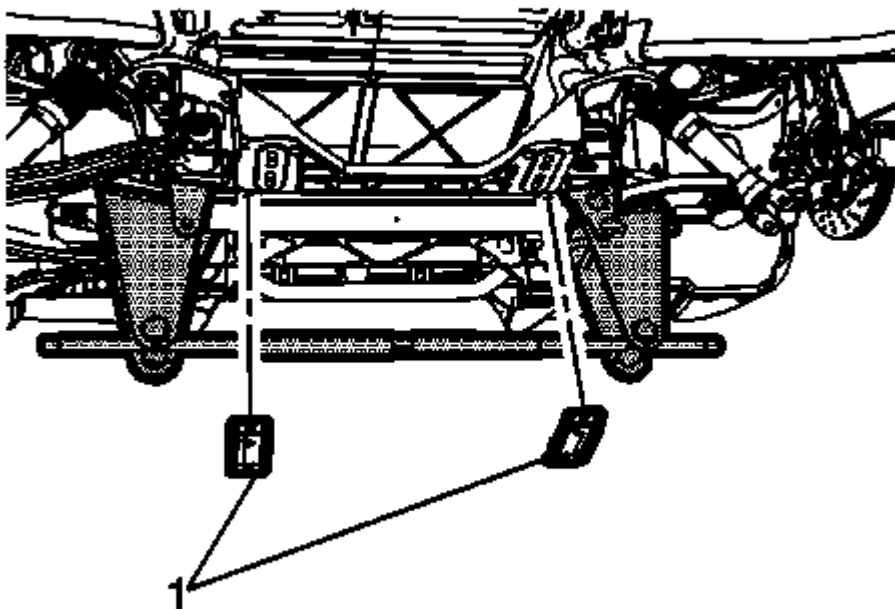


Fig. 67: Rear Transverse Spring Clamps
Courtesy of GENERAL MOTORS COMPANY

7. Remove the rear transverse spring clamps (1).

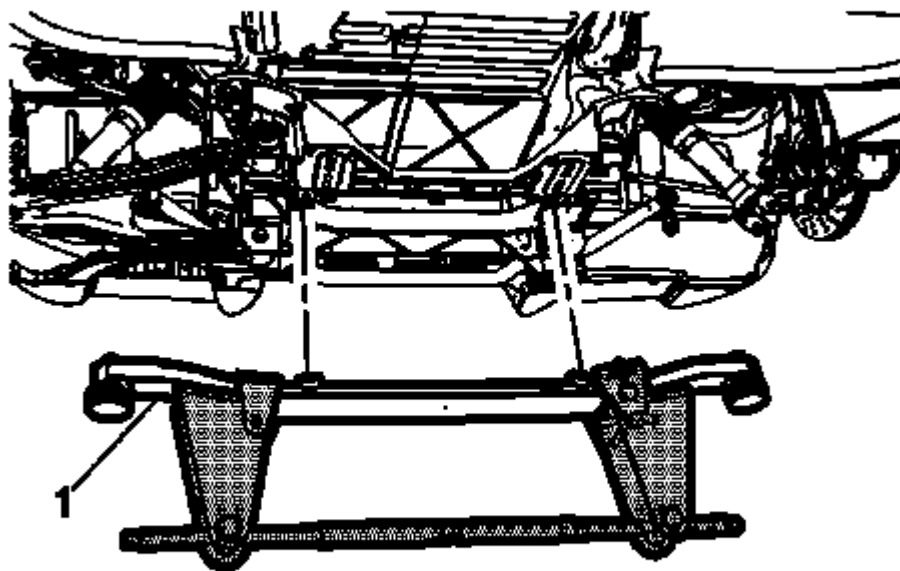


Fig. 68: Rear Transverse Spring
Courtesy of GENERAL MOTORS COMPANY

8. Remove the rear transverse spring (1).
9. If the rear transverse spring is to be replaced, remove the **J-33432-A** Transverse Spring Compressor.
10. If the rear transverse spring is to be replaced, measure and record the gap between the surface of the rear transverse spring and the spring adjuster pads.
11. If the rear transverse spring is to be replaced, remove the spring adjusters.

Installation Procedure

1. If replacing the rear transverse spring, install the spring adjusters.
2. If replacing the rear transverse spring, set the spring adjuster gaps to the measurement recorded during removal.
3. If the rear transverse spring is to be replaced, install the **J-33432-A** Transverse Spring Compressor to the rear transverse spring.

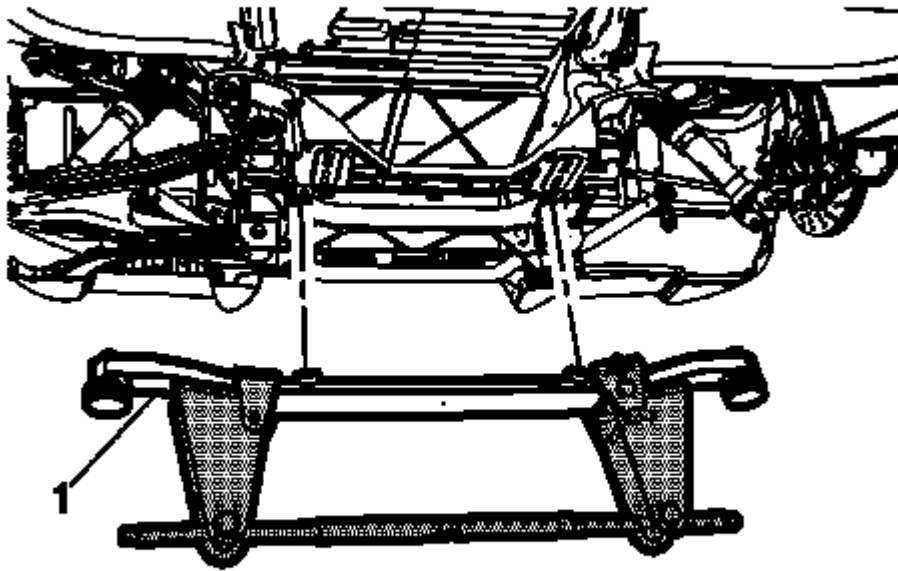


Fig. 69: Rear Transverse Spring
Courtesy of GENERAL MOTORS COMPANY

4. Compress and install the rear transverse spring (1).

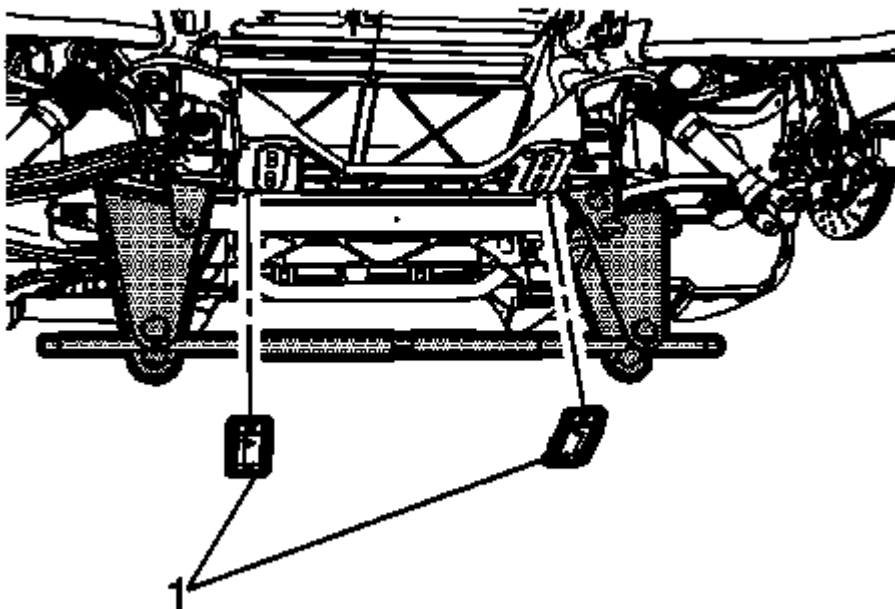


Fig. 70: Rear Transverse Spring Clamps
Courtesy of GENERAL MOTORS COMPANY

5. Install the rear transverse spring clamps (1).

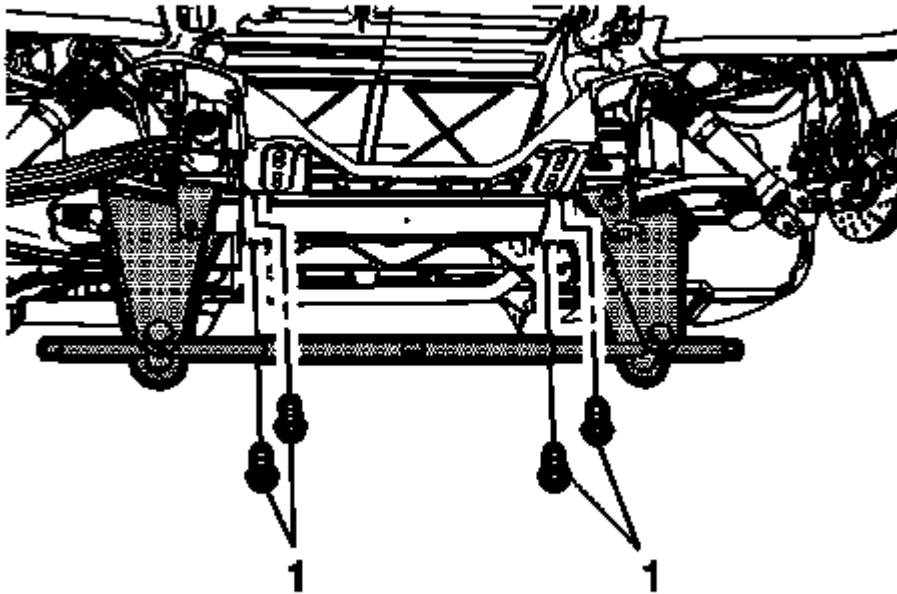


Fig. 71: Rear Transverse Spring Clamp Bolts
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

6. Install the rear transverse spring clamp bolts (1) and tighten to 67 (49 lb ft).

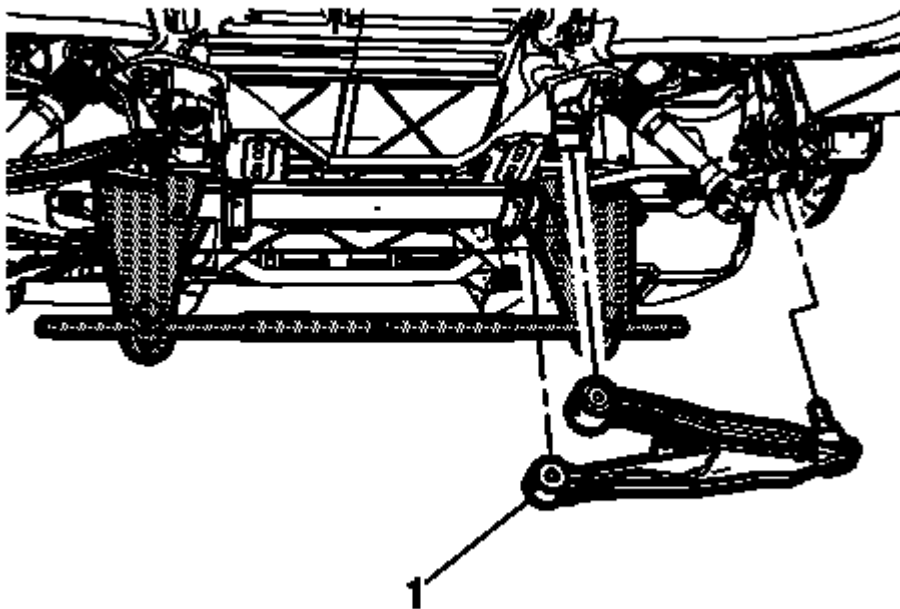


Fig. 72: Rear Axle Lower Control Arms
 Courtesy of GENERAL MOTORS COMPANY

7. Install the lower control arm (1). Refer to Lower Control Arm Replacement (without FE2, FE4), Lower Control Arm Replacement (with FE2, FE4).
8. Remove the J-33432-A Transverse Spring Compressor.
9. Install the rear tire and wheel assemblies. Refer to Tire and Wheel Removal and Installation .
10. Inspect and, if necessary, adjust the ride height. Refer to Trim Height Inspection .
11. Inspect the rear wheel alignment. Refer to Wheel Alignment Measurement .

UPPER CONTROL ARM REPLACEMENT

Special Tools

J-42188-B Ball Joint Separator

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 .

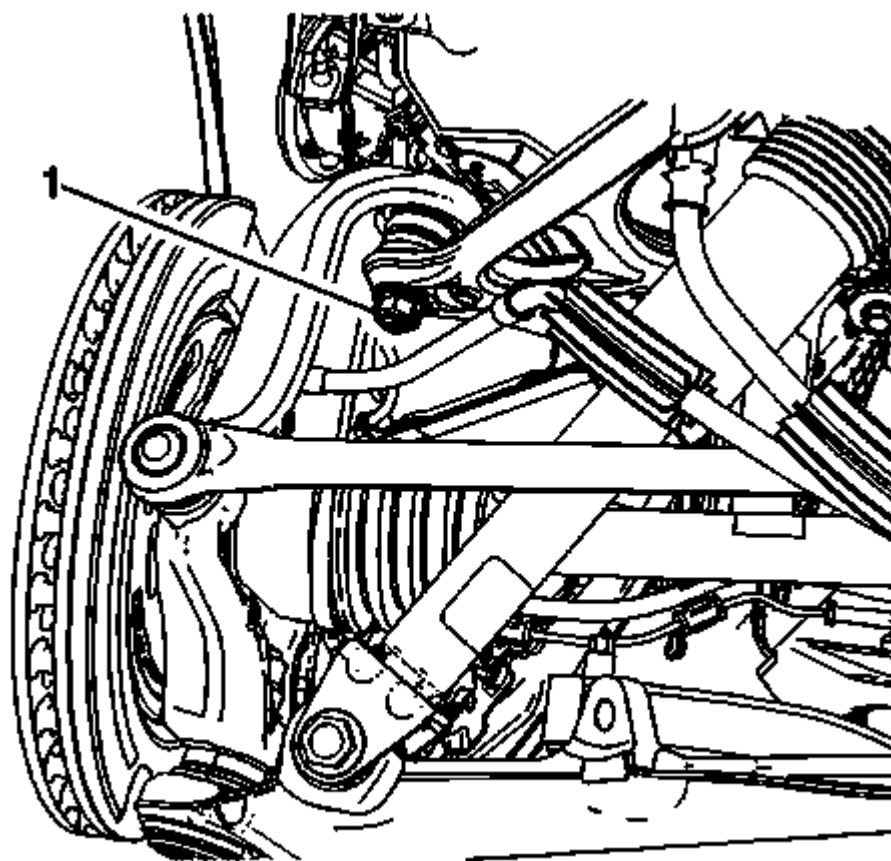


Fig. 73: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

3. Loosen the rear upper control arm ball joint nut (1).

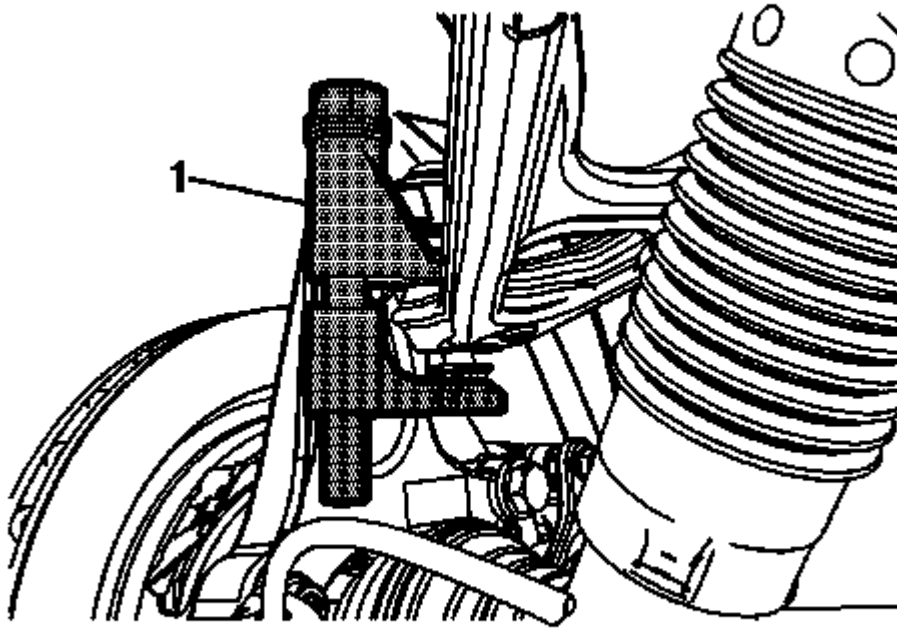


Fig. 74: J-42188-B Separator

Courtesy of GENERAL MOTORS COMPANY

4. Using the **J-42188-B** Ball Joint Separator (1), separate the rear upper control arm ball joint stud from the rear suspension knuckle.

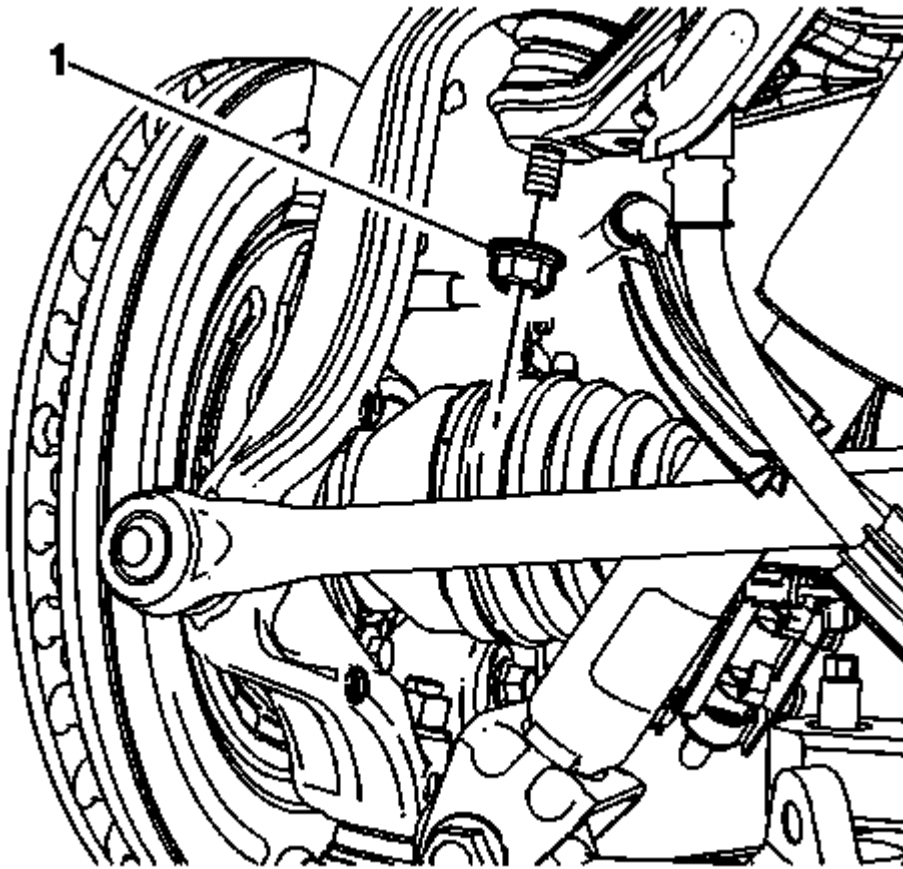


Fig. 75: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

5. Remove the rear upper control arm ball joint nut (1).
6. Support the rear suspension knuckle.

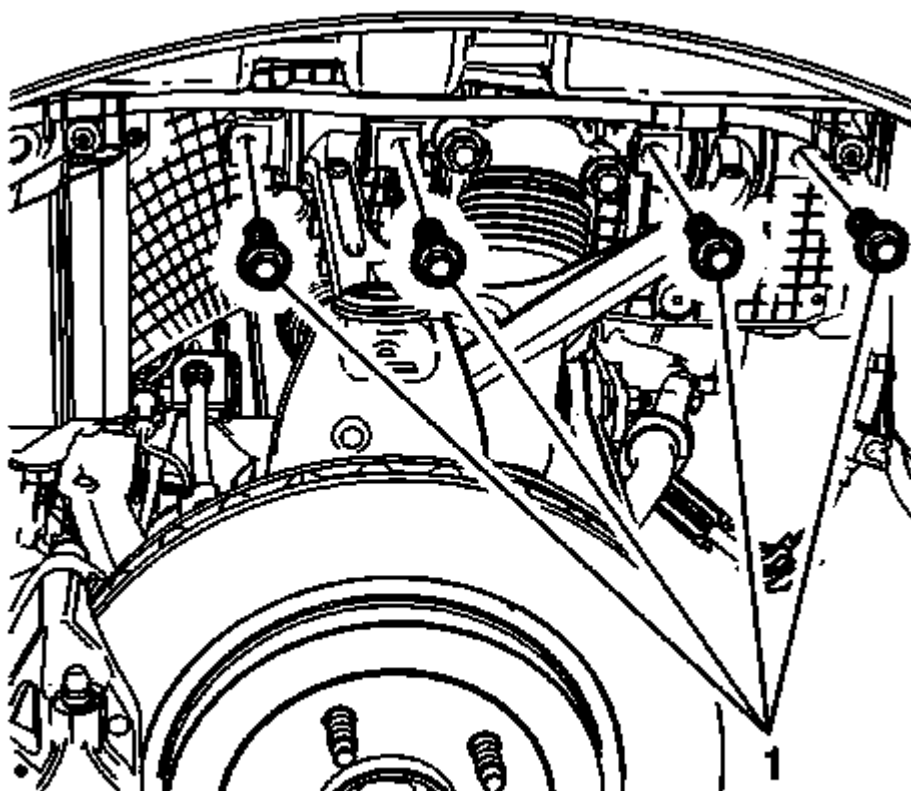


Fig. 76: 4 Rear Upper Control Arm Bolts
Courtesy of GENERAL MOTORS COMPANY

7. Remove the 4 rear upper control arm bolts (1).
8. Remove the rear upper control arm from the vehicle.

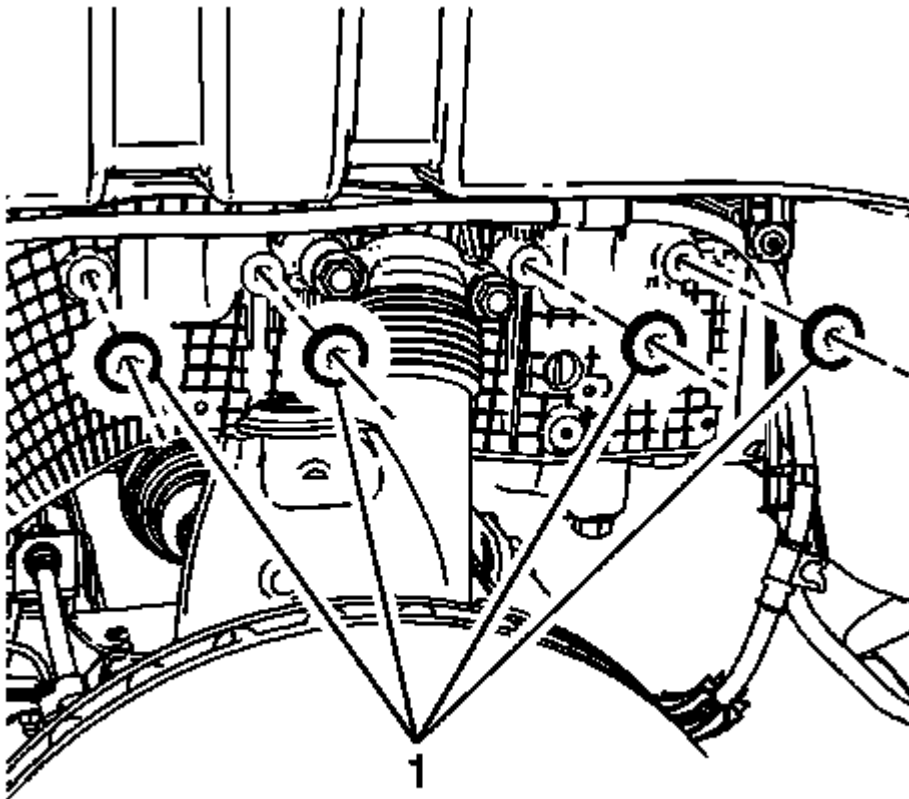


Fig. 77: 8 Rear Upper Control Arm Spacers
Courtesy of GENERAL MOTORS COMPANY

NOTE: The upper control arm spacers must be installed in the same position as removed.

9. Remove the 8 rear upper control arm spacers (1).

Installation Procedure

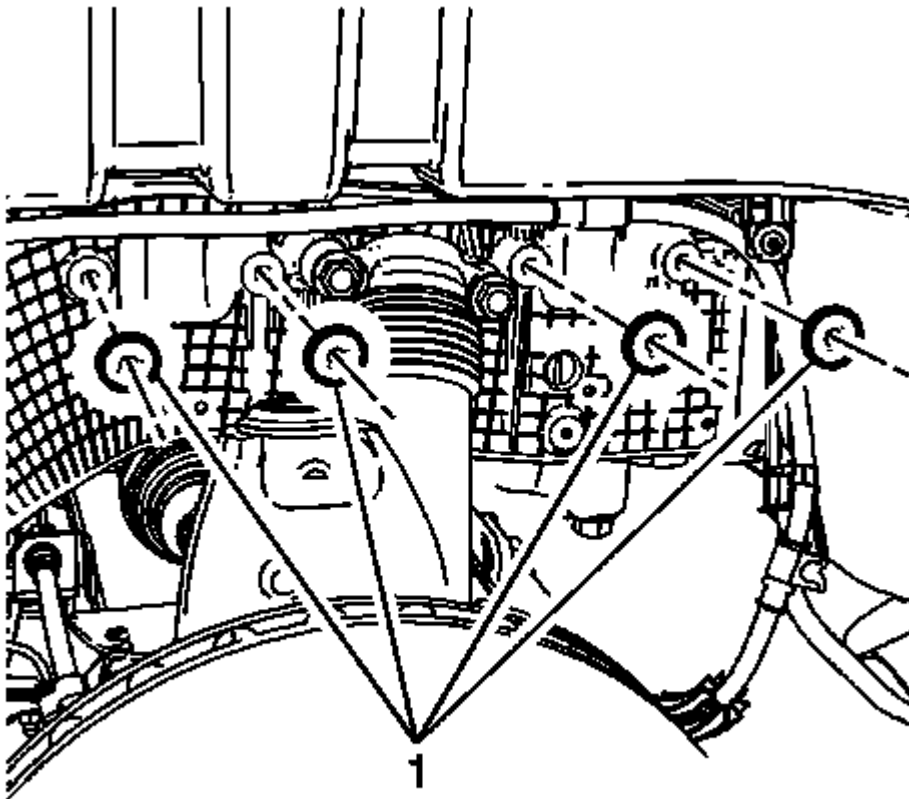


Fig. 78: 8 Rear Upper Control Arm Spacers
Courtesy of GENERAL MOTORS COMPANY

NOTE: The upper control arm spacers must be installed in the same position as removed.

1. Install the 8 rear upper control arm spacers (1).
2. Install the rear upper control arm to the vehicle.

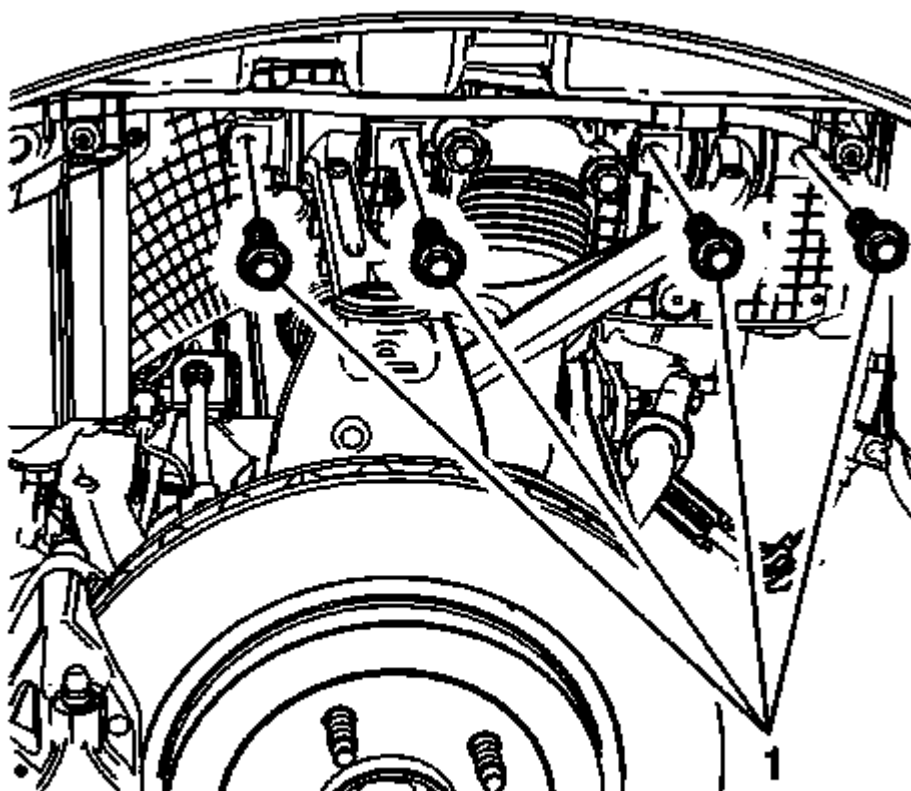


Fig. 79: 4 Rear Upper Control Arm Bolts
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

3. Install the 4 rear upper control arm bolts (1) and tighten to 65 (48 lb ft).
4. Install the rear suspension knuckle to the rear upper control arm ball joint.

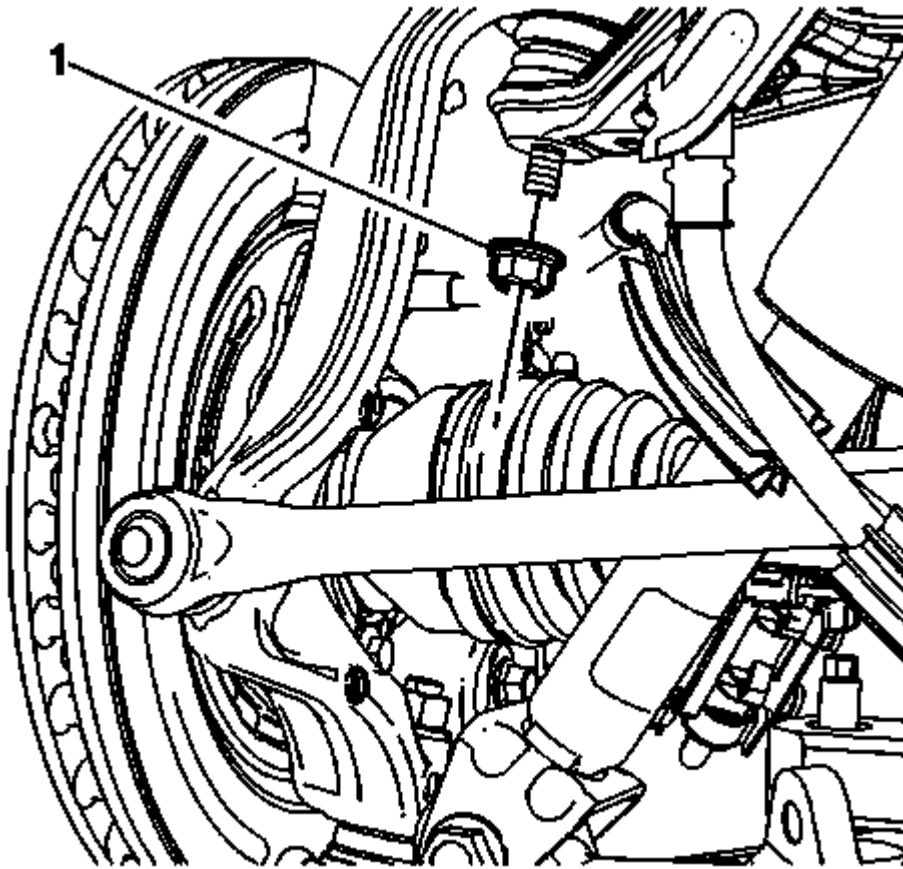


Fig. 80: Upper Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

5. Install the rear upper control arm ball joint nut (1) and tighten to 30 (22 lb ft) + 140 degrees.
6. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
7. Inspect the rear wheel alignment. Refer to **Wheel Alignment Measurement** .

LOWER CONTROL ARM REPLACEMENT (WITHOUT FE2, FE4)

Special Tools

J-43631 Ball Joint Separator

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** .

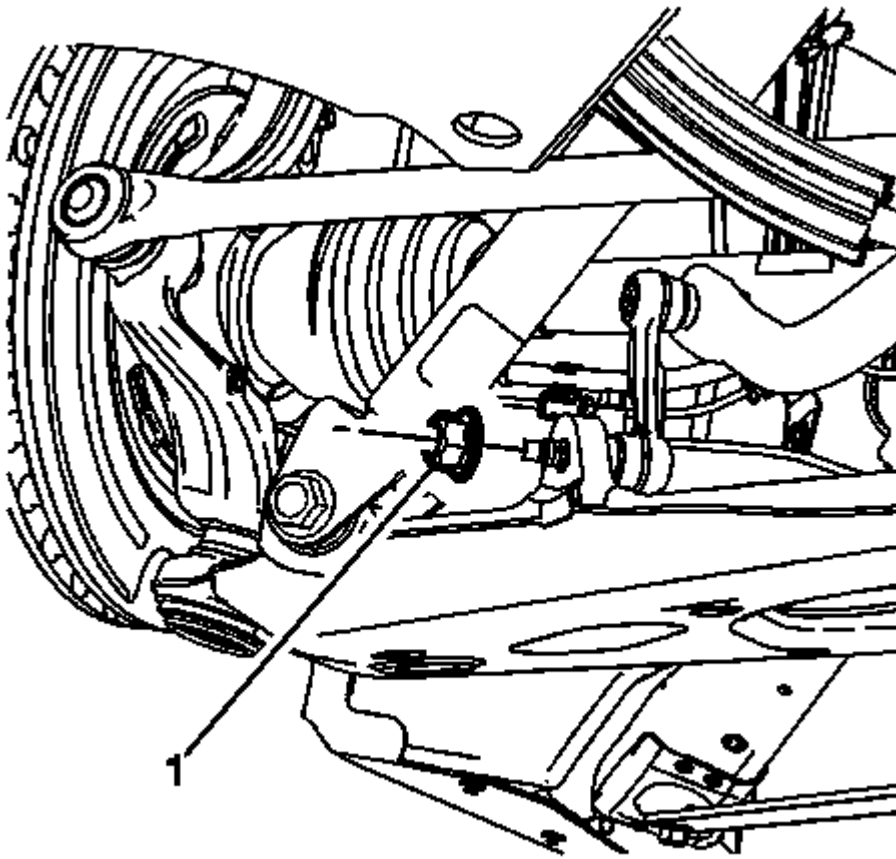


Fig. 81: Stabilizer Shaft Link Nut
Courtesy of GENERAL MOTORS COMPANY

3. Remove the stabilizer shaft link nut (1) at the rear axle lower control arm.
4. Disconnect the stabilizer shaft link from the rear axle lower control arm.
5. Using a post jack, carefully raise the rear axle lower control arm to relieve the tension on the rear shock absorber lower bolt.

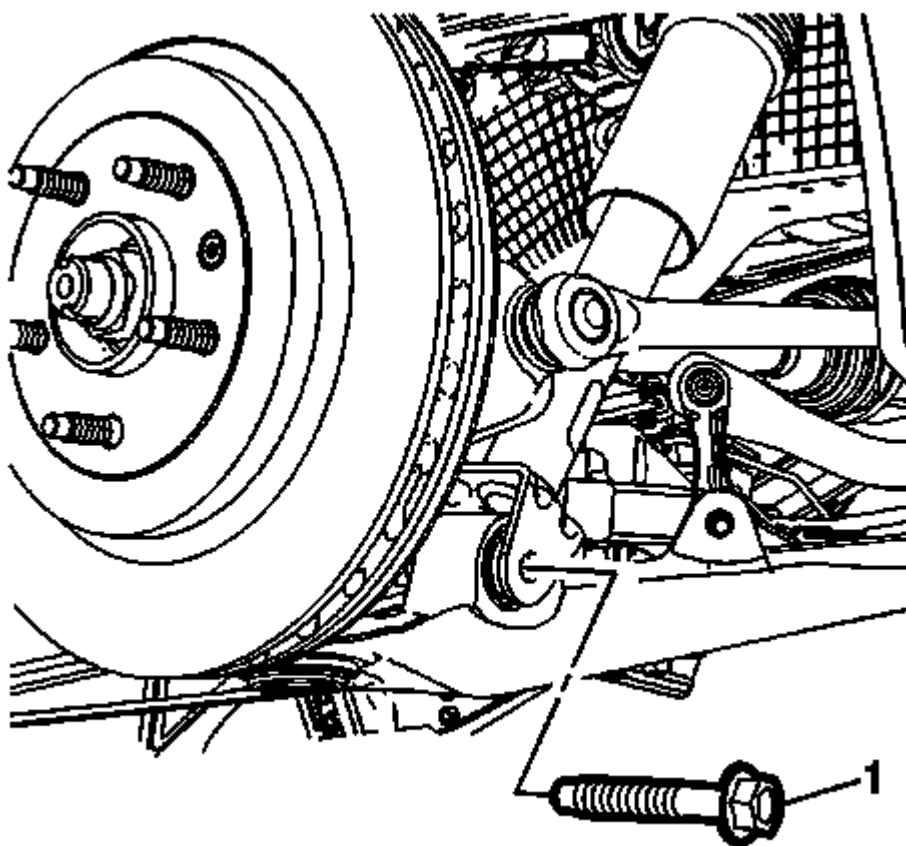


Fig. 82: Rear Shock Absorber Lower Bolt
Courtesy of GENERAL MOTORS COMPANY

6. Remove the rear shock absorber lower bolt (1).
7. Carefully lower and remove the post jack.

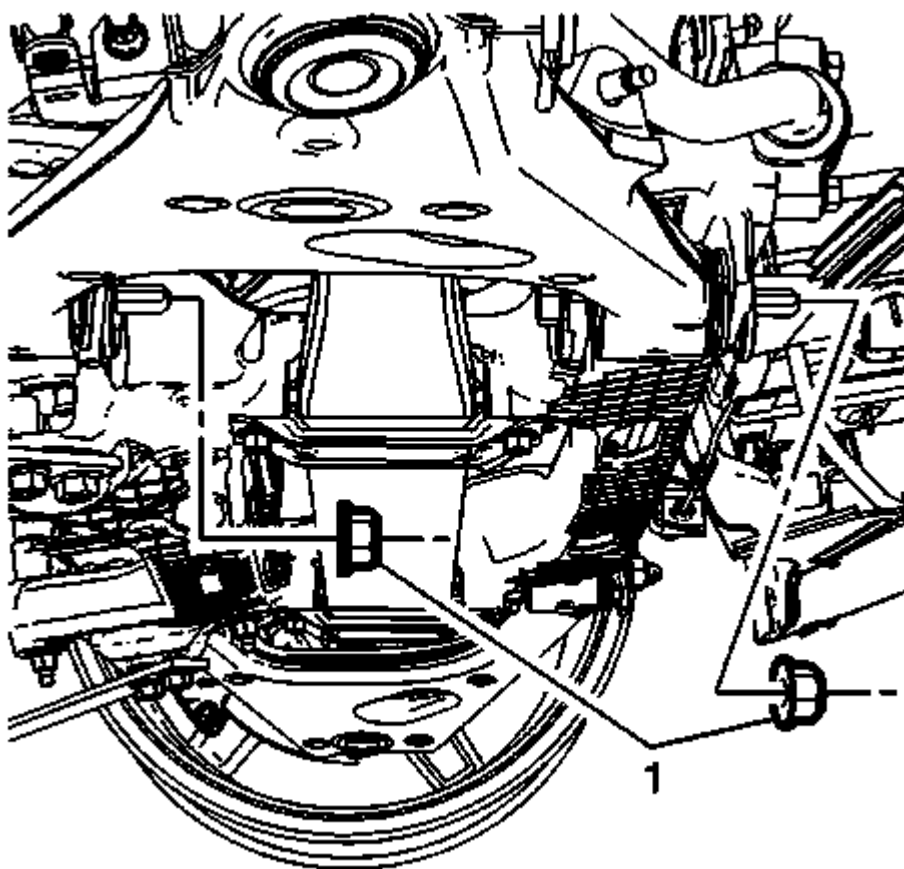


Fig. 83: Rear Axle Lower Control Arm Nuts
Courtesy of GENERAL MOTORS COMPANY

8. Remove the rear axle lower control arm nuts (1).

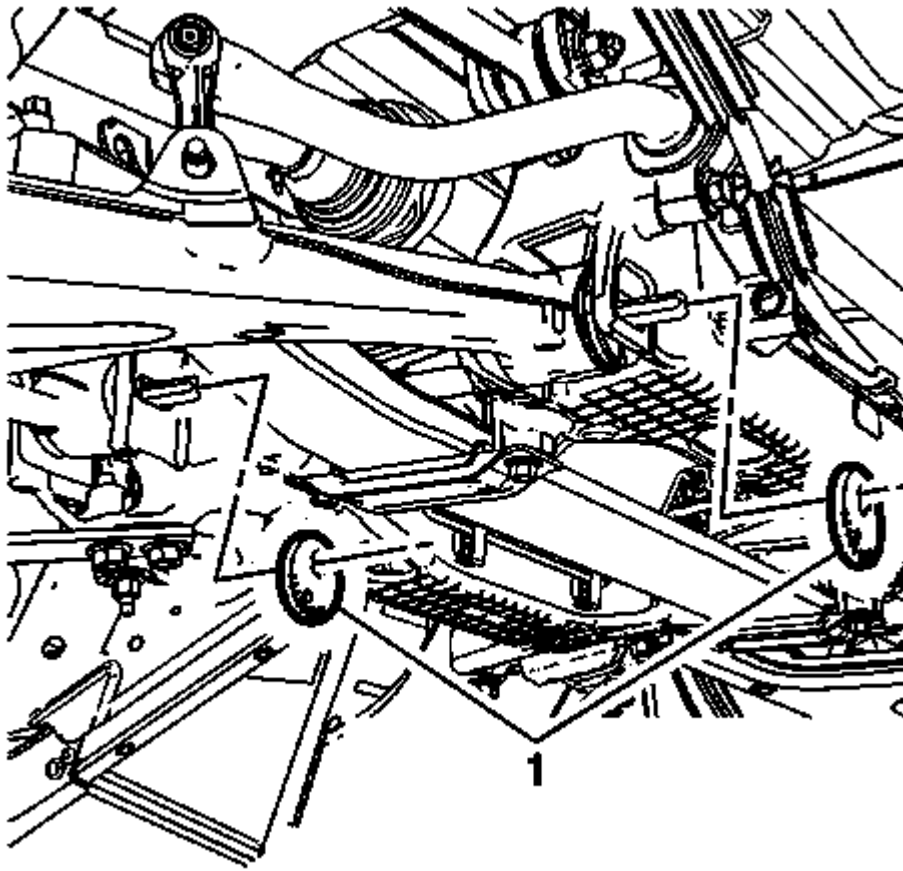


Fig. 84: Rear Axle Lower Control Arm Alignment Cams
Courtesy of GENERAL MOTORS COMPANY

9. Remove the rear axle lower control arm alignment cams (1).
10. Lower the rear cross member. Refer to **Rear Crossmember Replacement** .

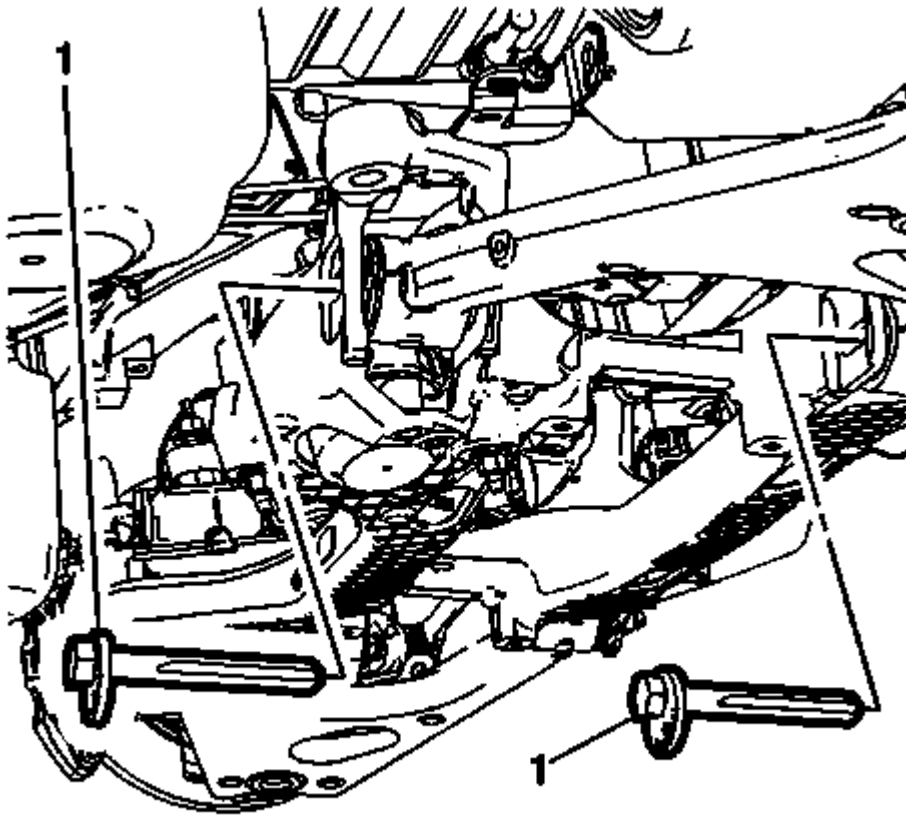


Fig. 85: Rear Axle Lower Control Arm Cam Bolts
Courtesy of GENERAL MOTORS COMPANY

NOTE: Mark the location of the rear axle lower control arm cam bolts (1) before removal.

11. Remove the rear axle lower control arm cam bolts (1).
12. Remove the rear axle lower control arm.

Installation Procedure

1. Install the rear axle lower control arm.

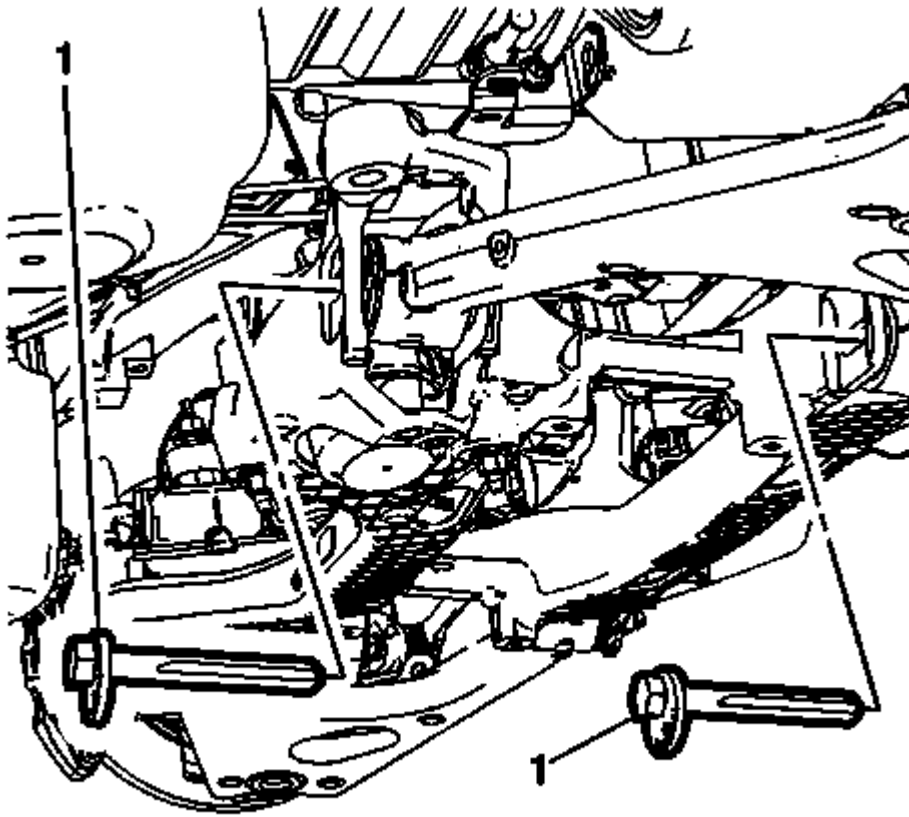


Fig. 86: Rear Axle Lower Control Arm Cam Bolts
Courtesy of GENERAL MOTORS COMPANY

NOTE: When reinstalling the cam bolts (1) ensure that the head of the bolt is toward the front of the vehicle.

2. Install the rear axle lower control arm cam bolts (1).
3. Raise the rear cross member. Refer to **Rear Crossmember Replacement** .

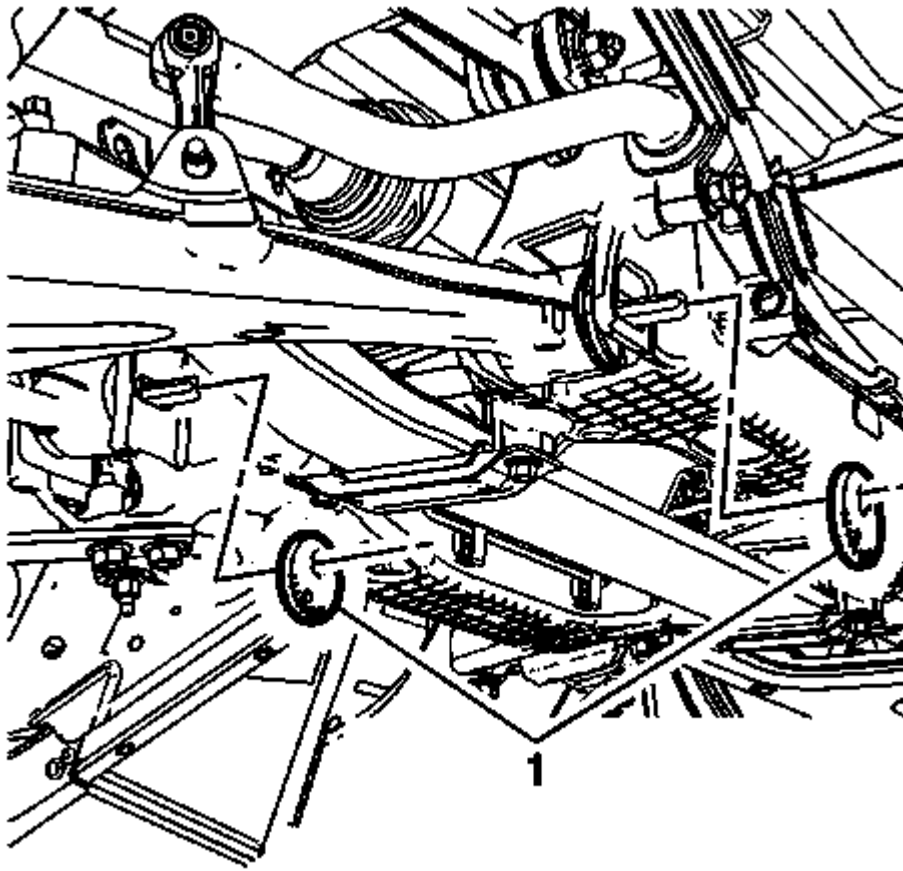


Fig. 87: Rear Axle Lower Control Arm Alignment Cams
Courtesy of GENERAL MOTORS COMPANY

4. Install the rear axle lower control arm alignment cams (1).

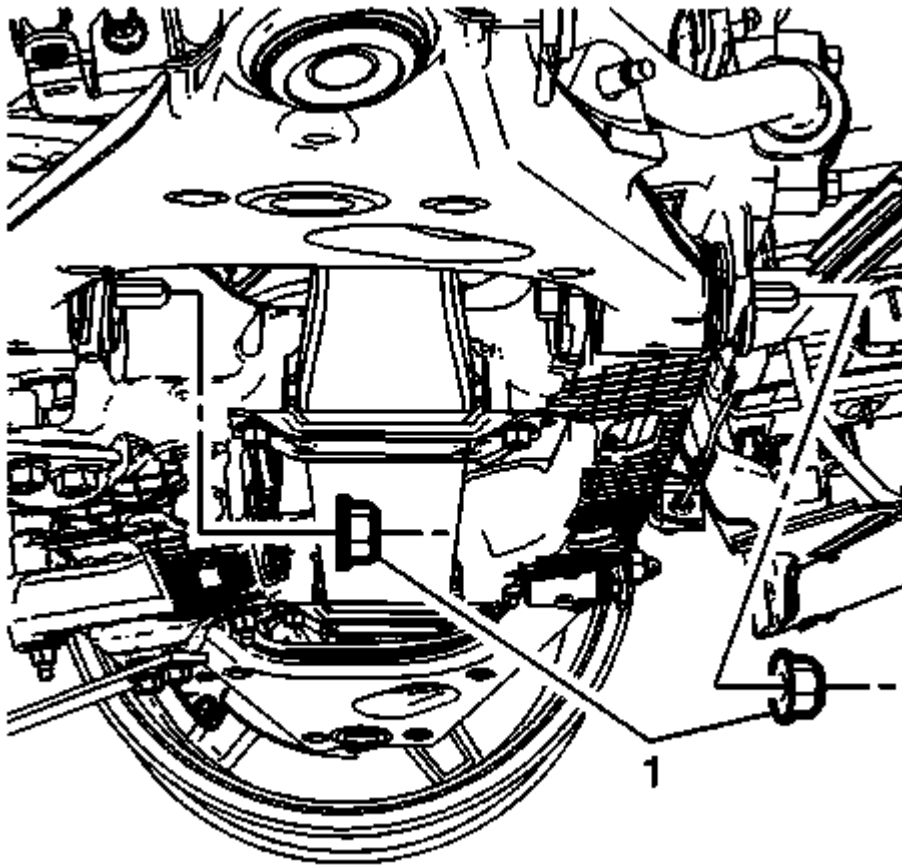


Fig. 88: Rear Axle Lower Control Arm Nuts
Courtesy of GENERAL MOTORS COMPANY

NOTE: The rear axle lower control arm fasteners must be tightened with the vehicle at ride height.

5. Install, but do not tighten, the rear axle lower control arm nuts (1).
6. Using a post jack, carefully raise the rear axle lower control arm to align the lower shock absorber.

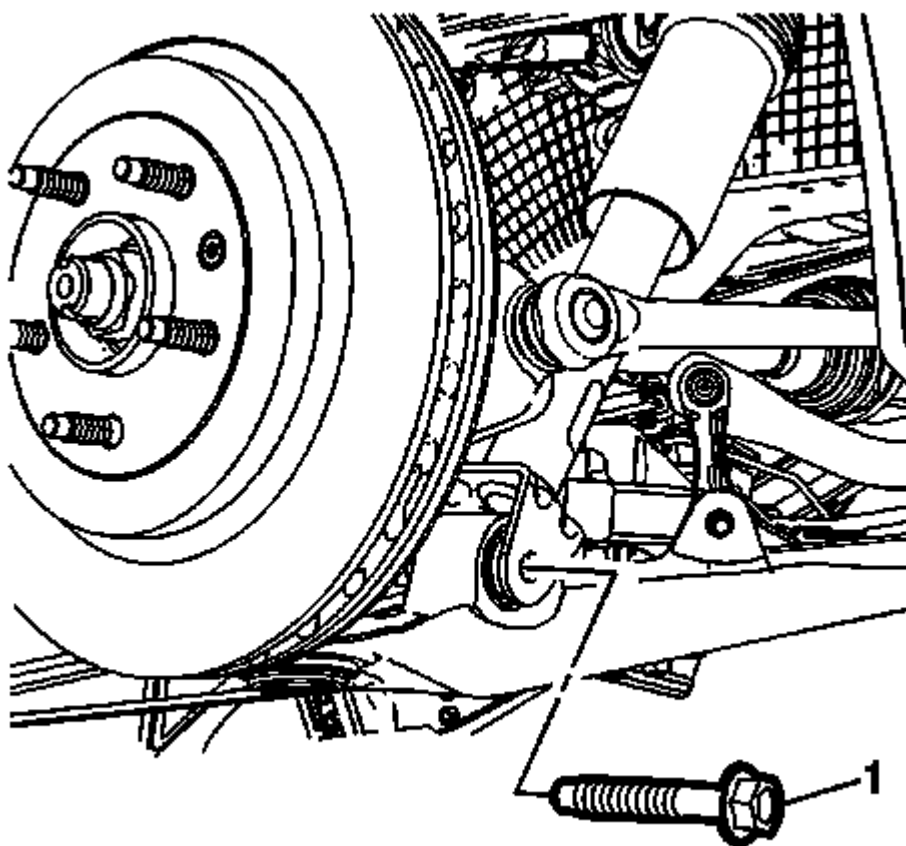


Fig. 89: Rear Shock Absorber Lower Bolt
Courtesy of GENERAL MOTORS COMPANY

NOTE: The rear axle lower control arm fasteners must be tightened with the vehicle at ride height.

7. Install the rear shock absorber lower bolt (1).

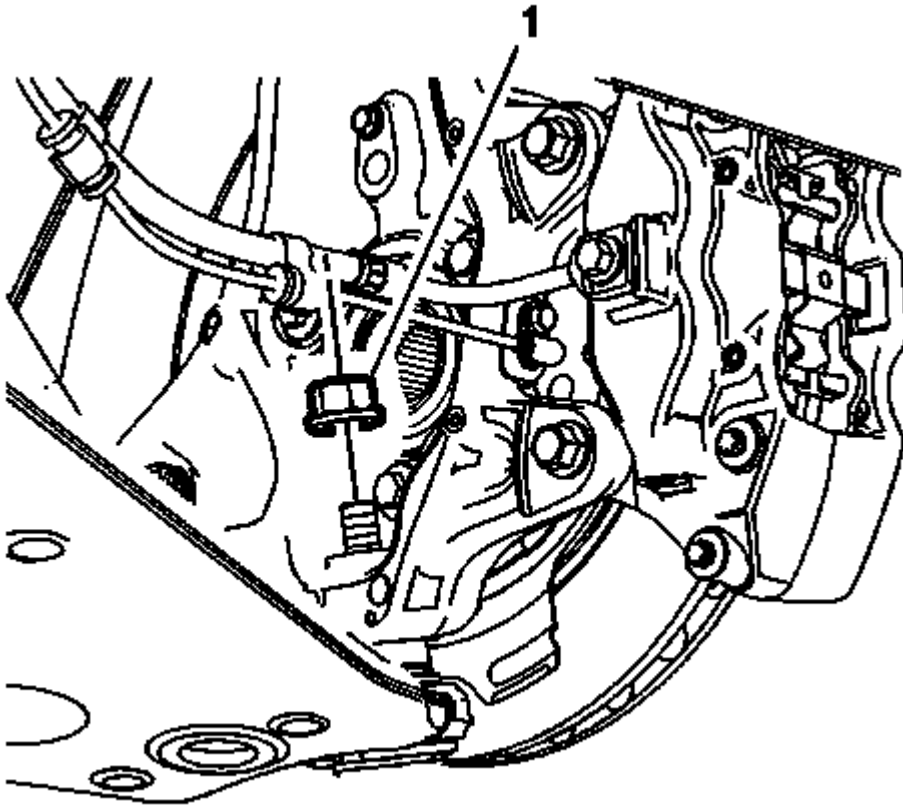


Fig. 90: Rear Axle Lower Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

8. Install the rear axle lower control arm ball joint nut (1) and tighten to 30 (22 lb ft) + 180 degrees.

NOTE: When removing or installing the wheel drive shaft do not over extend the inner joint due to the possibility of separation.

9. Install the rear wheel drive shaft assembly. Refer to Rear Wheel Drive Shaft Replacement .
10. Carefully lower and remove the post jack.
11. Connect the stabilizer shaft link to the rear axle lower control arm.

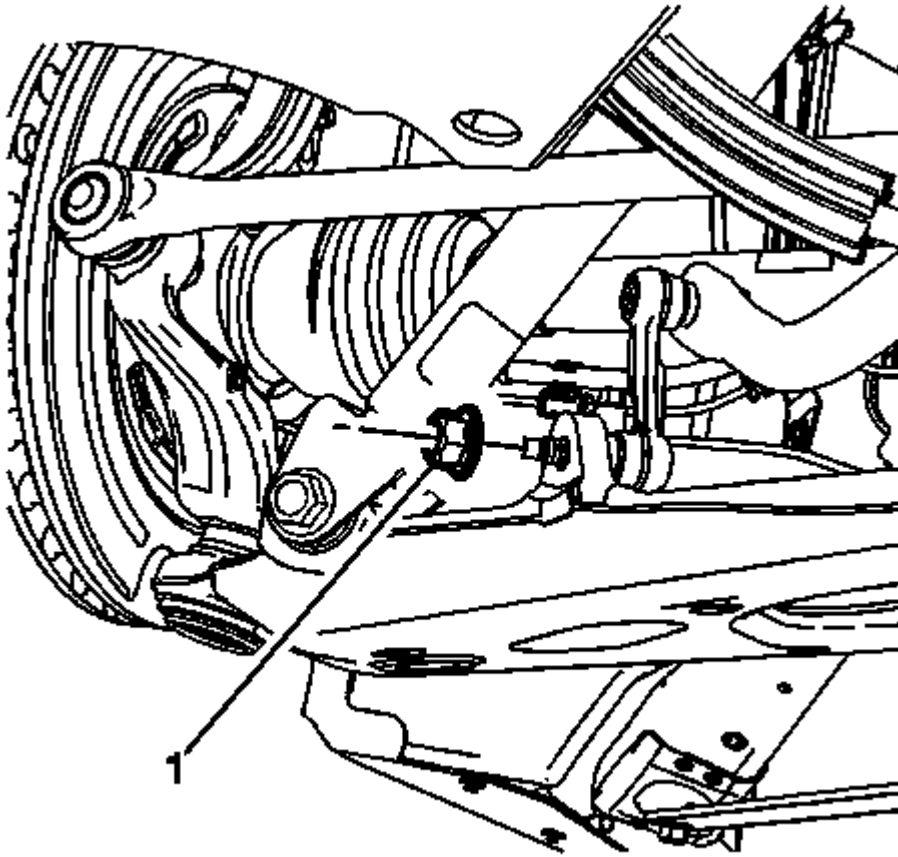


Fig. 91: Stabilizer Shaft Link Nut
Courtesy of GENERAL MOTORS COMPANY

12. Install the stabilizer shaft link nut (1) at the rear axle lower control arm and tighten to 60 (44 lb ft) + 30 degrees.
13. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
14. Lower vehicle.
15. With the vehicle at ride height, tighten the rear shock absorber lower nut to 160 (118 lb ft).
16. Inspect the rear wheel alignment. Refer to **Wheel Alignment Specifications** .
17. With the vehicle at ride height, tighten the rear axle lower control arm nuts. Tighten to: 170 (125 lb ft).

LOWER CONTROL ARM REPLACEMENT (WITH FE2, FE4)

Special Tools

J-43631 Ball Joint Separator

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 .

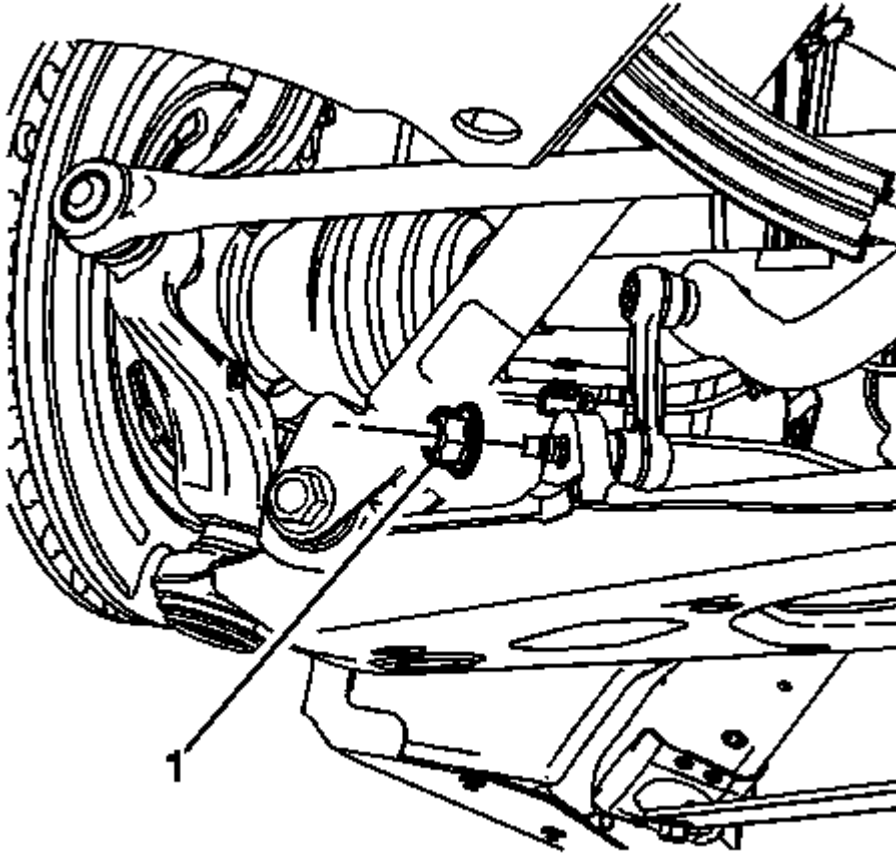


Fig. 92: Stabilizer Shaft Link Nut
Courtesy of GENERAL MOTORS COMPANY

3. Remove the stabilizer shaft link nut (1) at the rear axle lower control arm.
4. Disconnect the stabilizer shaft link from the rear axle lower control arm.
5. Disconnect the electronic suspension rear position sensor link from the rear axle lower control arm ball stud. Refer to Electronic Suspension Rear Position Sensor Replacement .
6. Using a post jack, carefully raise the rear axle lower control arm to relieve the tension on the rear shock absorber lower bolt.

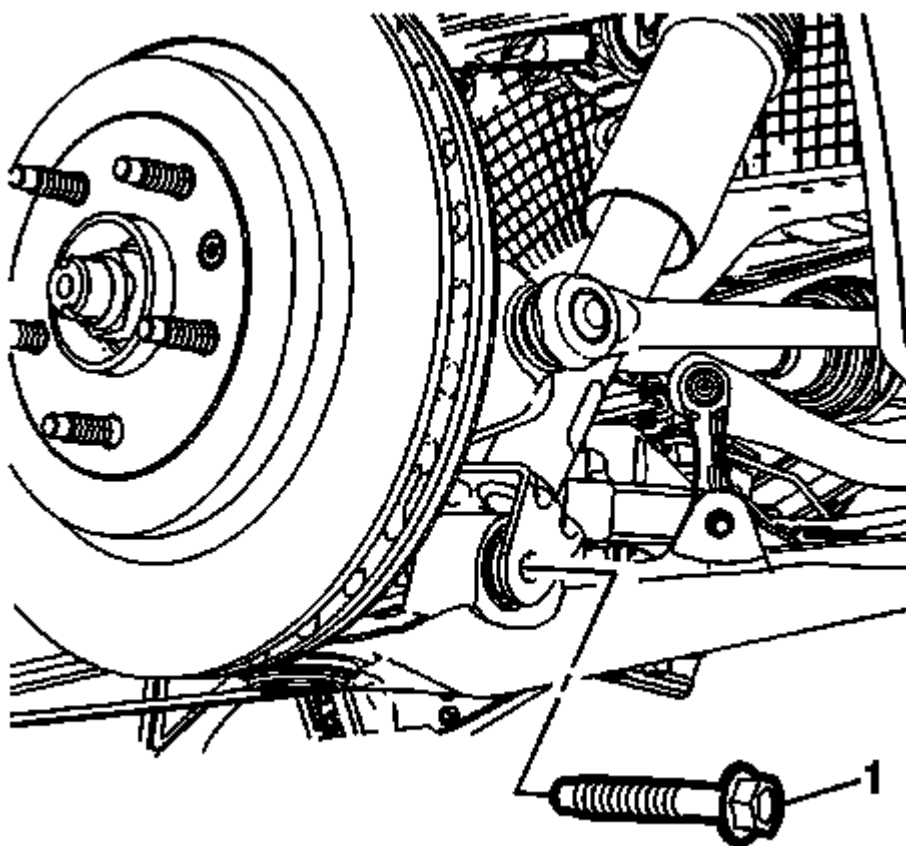


Fig. 93: Rear Shock Absorber Lower Bolt
Courtesy of GENERAL MOTORS COMPANY

7. Remove the rear shock absorber lower bolt (1).
8. Carefully lower and remove the post jack.

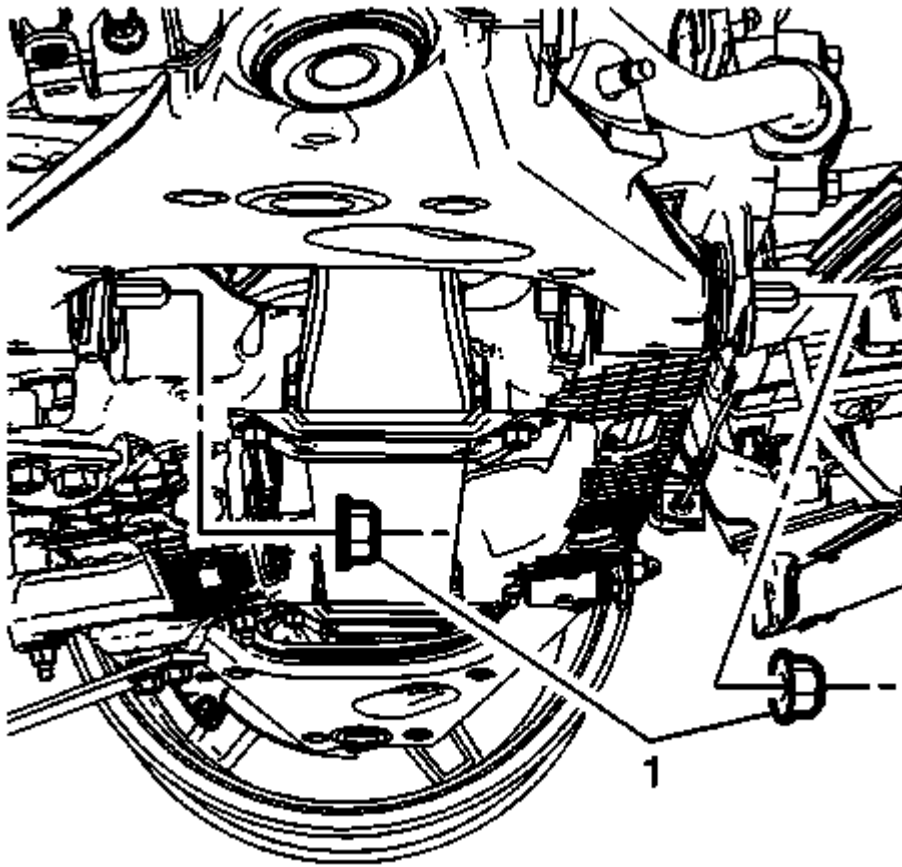


Fig. 94: Rear Axle Lower Control Arm Nuts
Courtesy of GENERAL MOTORS COMPANY

9. Remove the rear axle lower control arm nuts (1).

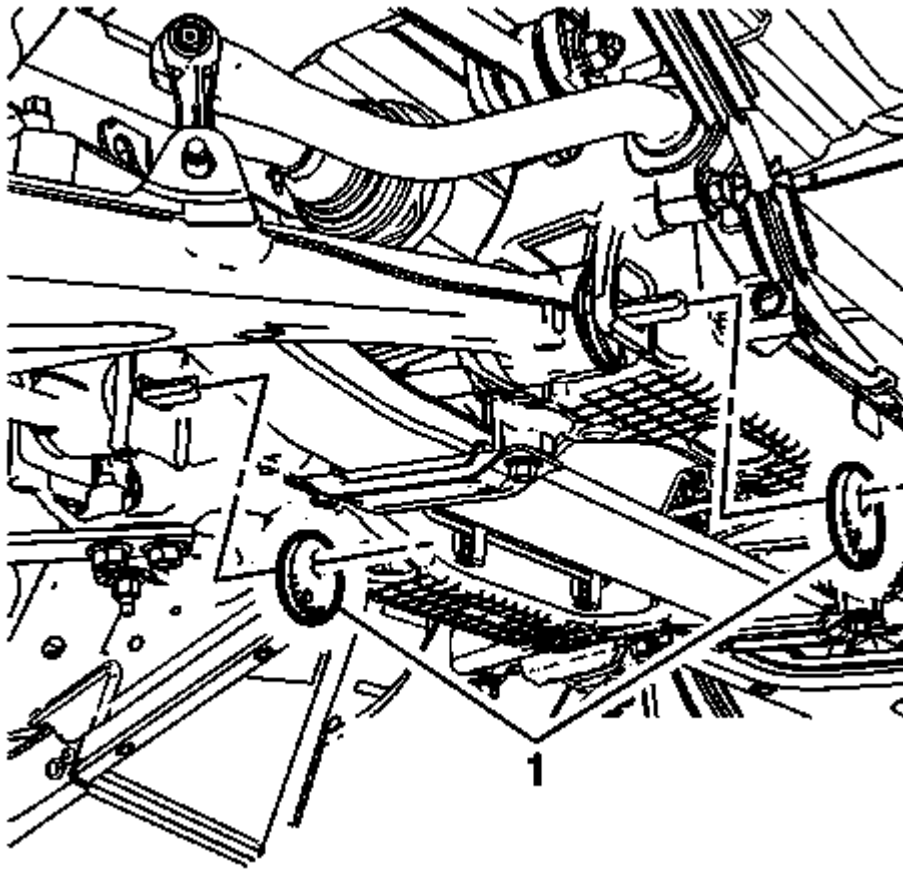


Fig. 95: Rear Axle Lower Control Arm Alignment Cams
Courtesy of GENERAL MOTORS COMPANY

10. Remove the rear axle lower control arm alignment cams (1).
11. Lower the rear cross member. Refer to **Rear Crossmember Replacement** .

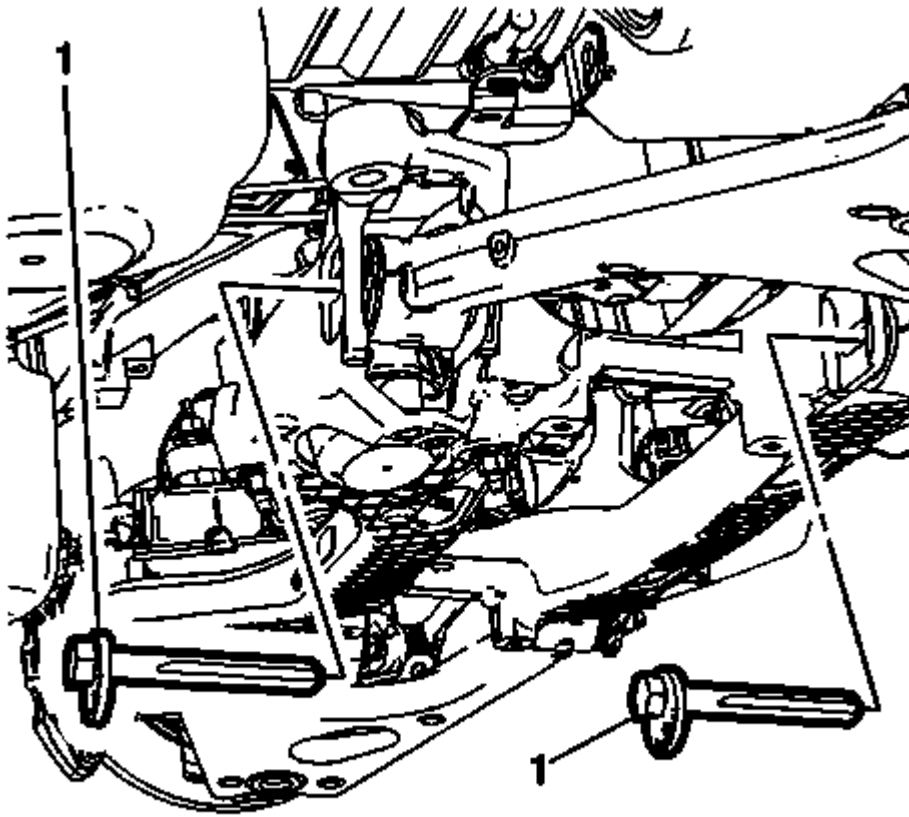


Fig. 96: Rear Axle Lower Control Arm Cam Bolts
Courtesy of GENERAL MOTORS COMPANY

NOTE: Mark the location of the rear axle lower control arm cam bolts (1) before removal.

12. Remove the rear axle lower control arm cam bolts (1).
13. Remove the rear axle lower control arm.

Installation Procedure

1. Install the rear axle lower control arm.

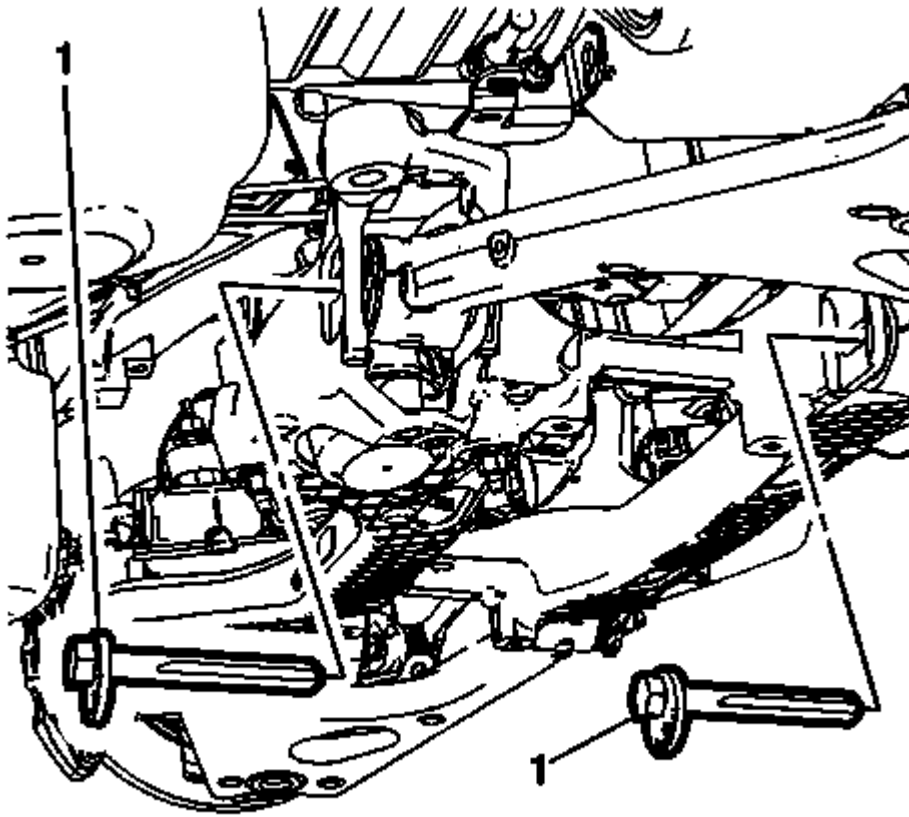


Fig. 97: Rear Axle Lower Control Arm Cam Bolts
Courtesy of GENERAL MOTORS COMPANY

NOTE: When reinstalling the cam bolts (1) ensure that the head of the bolt is toward the front of the vehicle.

2. Install the rear axle lower control arm cam bolts (1).
3. Raise the rear cross member. Refer to **Rear Crossmember Replacement** .

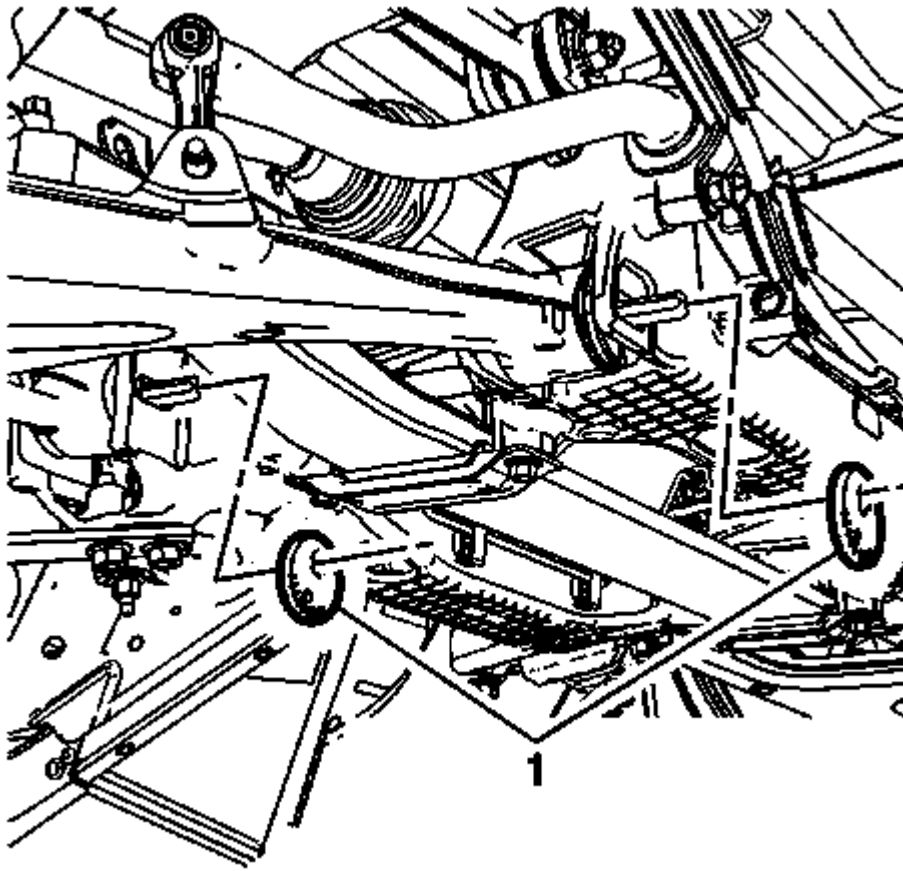


Fig. 98: Rear Axle Lower Control Arm Alignment Cams
Courtesy of GENERAL MOTORS COMPANY

4. Install the rear axle lower control arm alignment cams (1).

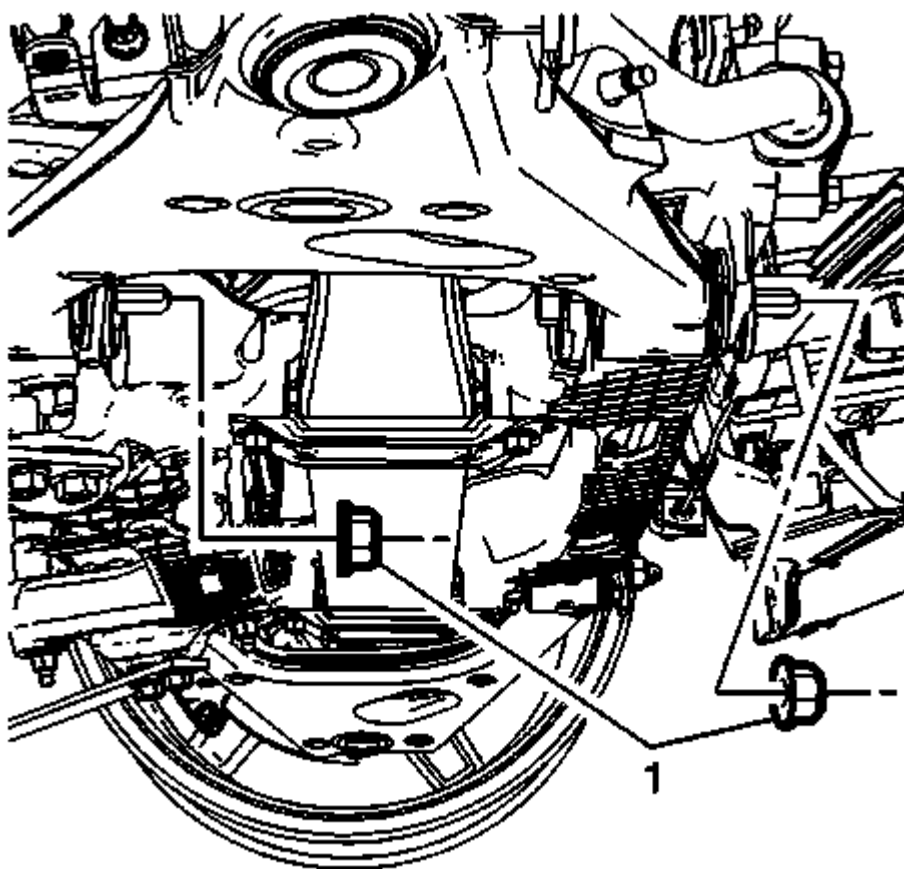


Fig. 99: Rear Axle Lower Control Arm Nuts
Courtesy of GENERAL MOTORS COMPANY

NOTE: The rear axle lower control arm fasteners must be tightened with the vehicle at ride height.

5. Install, but do not tighten, the rear axle lower control arm nuts (1).
6. Using a post jack, carefully raise the rear axle lower control arm to align the lower shock absorber.

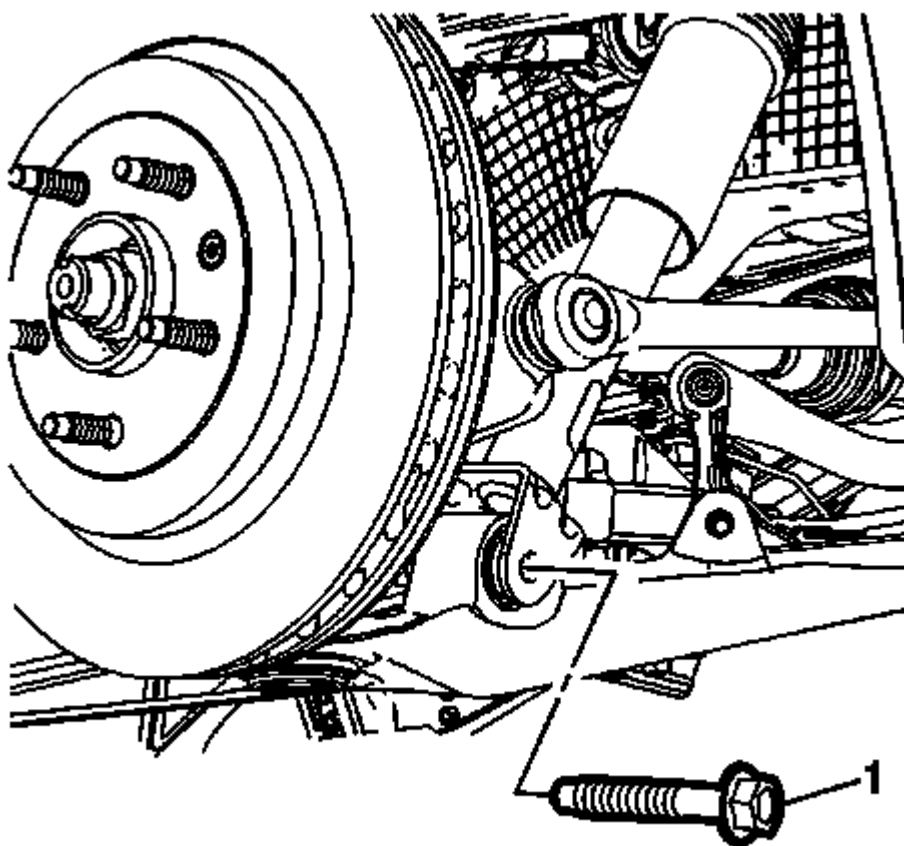


Fig. 100: Rear Shock Absorber Lower Bolt
Courtesy of GENERAL MOTORS COMPANY

NOTE: The rear axle lower control arm fasteners must be tightened with the vehicle at ride height.

7. Install the rear shock absorber lower bolt (1).
8. Install the rear suspension knuckle onto the lower control arm ball joint.

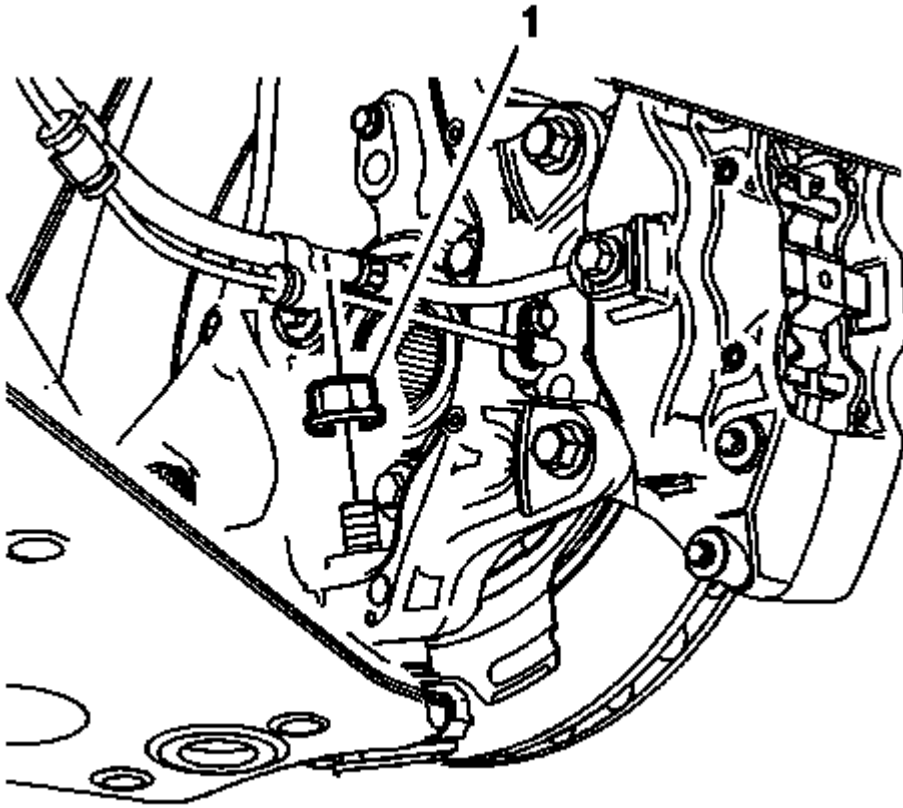


Fig. 101: Rear Axle Lower Control Arm Ball Joint Nut
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

9. Install the rear axle lower control arm ball joint nut (1) and tighten to 30 (22 lb ft) + 180 degrees.

NOTE: When removing or installing the wheel drive shaft do not over extend the inner joint due to the possibility of separation.

10. Install the rear wheel drive shaft assembly into the rear wheel bearing hub. Refer to Rear Wheel Drive Shaft Replacement .
11. Carefully lower and remove the post jack.
12. Connect the electronic suspension rear position sensor link to the rear axle lower control arm ball stud. Refer to Electronic Suspension Rear Position Sensor Replacement .
13. Connect the stabilizer shaft link to the rear axle lower control arm.
14. Install the rear wheel speed sensor in to the knuckle. Rear Wheel Speed Sensor Replacement .

15. Install the rear brake caliper assembly to the knuckle. **Rear Brake Caliper Replacement** .
16. Install the rear brake caliper cooling duct deflector. Refer to **Rear Brake Caliper Cooling Duct Deflector Replacement** .

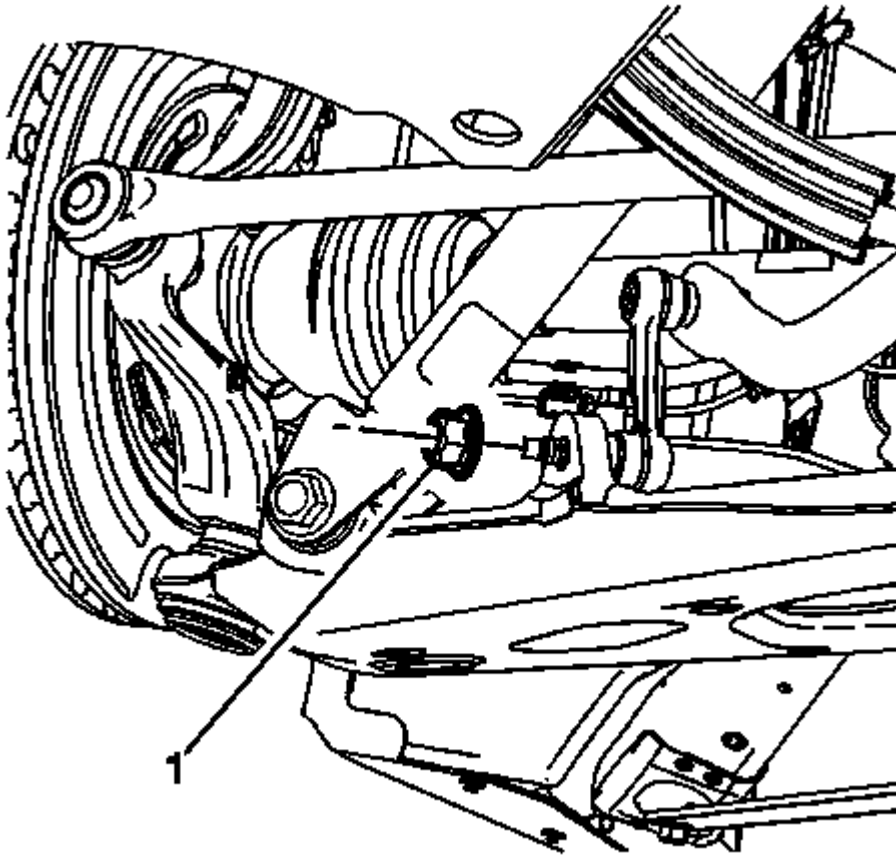


Fig. 102: Stabilizer Shaft Link Nut
Courtesy of GENERAL MOTORS COMPANY

17. Install the stabilizer shaft link nut (1) at the rear axle lower control arm and tighten to 60 (44 lb ft) + 30 degrees.
18. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation** .
19. Lower vehicle.
20. With the vehicle at ride height, tighten the rear shock absorber lower bolt to 160 (118 lb ft).
21. Inspect the rear wheel alignment. Refer to **Wheel Alignment Specifications** .
22. With the vehicle at ride height, tighten the rear axle lower control arm nuts. Tighten to: 170 (125 lb ft).

WHEEL STUD REPLACEMENT

Tools Required

J 43631 Ball Joint Separator

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 rear wheel hub/speed sensor assembly from the suspension knuckle. Refer to **Rear Wheel Bearing and Hub Replacement**.

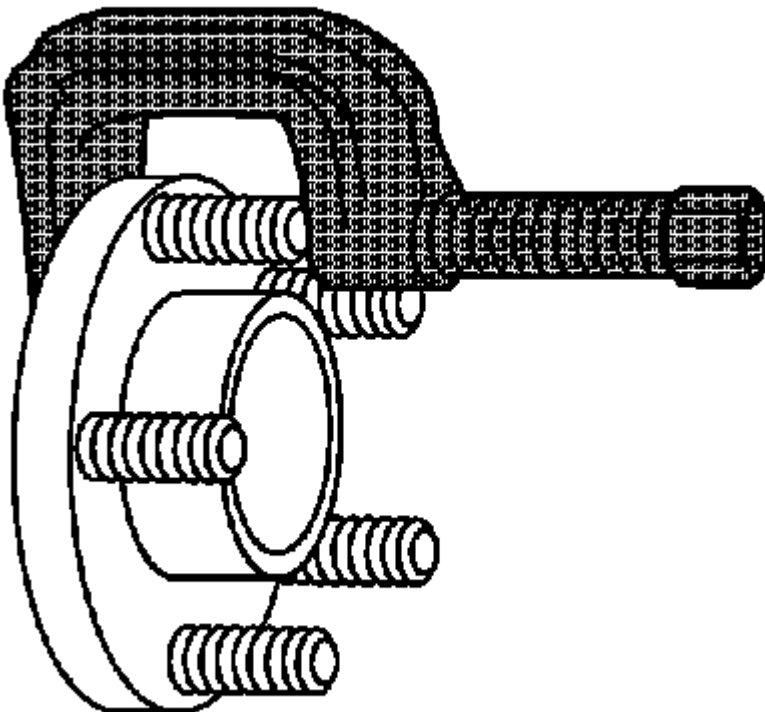


Fig. 103: Removing Wheel Stud From Axle Flange
Courtesy of GENERAL MOTORS COMPANY

4. Install **J 43631** ball joint separator onto the wheel hub and stud.
5. Turn the forcing screw in until the stud is pushed out of the wheel hub.

Installation Procedure

1. Place a new stud in the wheel hub.

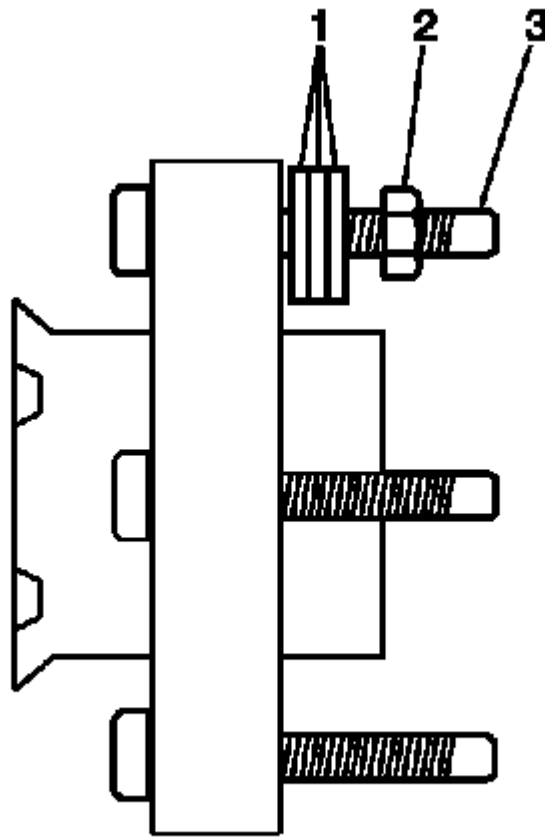


Fig. 104: Identifying Washers, Wheel Stud & Hex Nut
Courtesy of GENERAL MOTORS COMPANY

2. Place some washers (1) onto the wheel stud (3).

IMPORTANT: Make sure that the wheel stud is fully seated against the wheel hub flange.

3. With the flat side of a wheel nut against the washers, tighten the wheel nut until the wheel stud head seats against the wheel hub flange.
4. Remove the wheel nut and washers.
5. Install the rear wheel hub/speed sensor assembly into the suspension knuckle. Refer to **Rear Wheel Bearing and Hub Replacement**.
6. Install the tire and wheel assembly. Refer to **Tire and Wheel Removal and Installation**.
7. Lower the vehicle.

DESCRIPTION AND OPERATION

REAR SUSPENSION DESCRIPTION AND OPERATION

The rear suspension uses a single lightweight fiberglass transverse spring mounted to the crossmember and lower control arms. The following lightweight aluminum components are used throughout the rear suspension:

- Rear suspension knuckles
- Upper control arms
- Lower control arms
- Rear suspension toe links
- Crossmember
- Drive shaft support tube

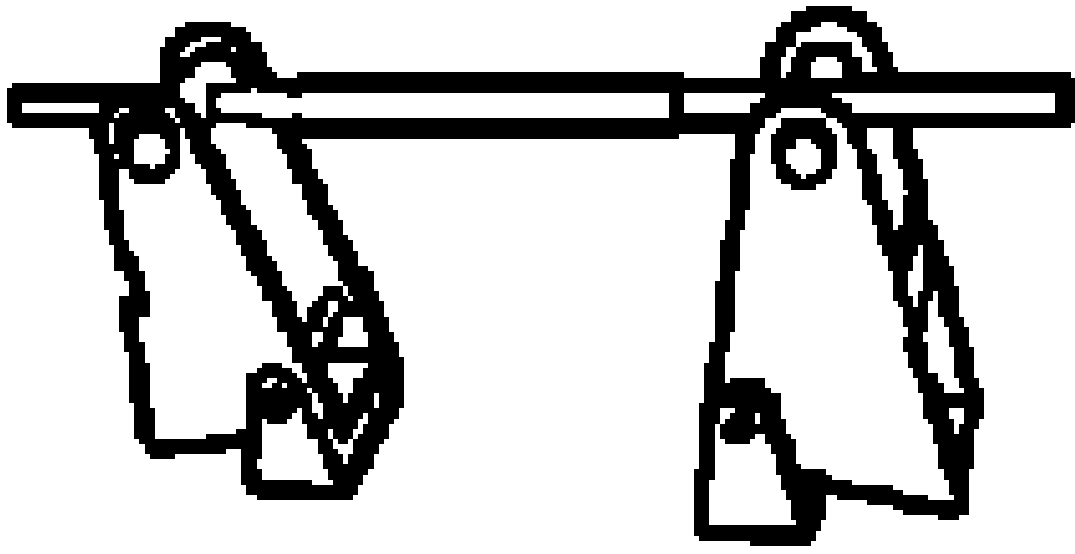
The shock absorbers attach at the upper end to the frame and at the lower end, to the lower control arm. Shock absorbers help keep the wheels in contact with the road surface under most road conditions. Shock absorbers reduce crash-through at full jounce and rebound.

The electronically controlled shock absorbers are gas charged to reduce aeration (foaming) of the shock fluid. Aeration of the shock fluid results in poor damping control.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/ Description
	J 33432-A Transverse Spring Compressor



	J 42188-B Ball Joint Separator
	J 43631 Ball Joint Separator Tool

