

Rear Suspension

Specifications

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Center Support Bearing Bolt	50 N·m	37 lb ft
Jounce Bumper Bolt	27 N·m	20 lb ft
Lower Control Arm Bolt	118 N·m	87 lb ft
Tie Rod Bracket Brace Bolt	47 N·m	35 lb ft
Tie Rod Bolt	118 N·m	87 lb ft
Tie Rod Nut	75 N·m	55 lb ft
Torque Arm Bolt	130 N·m	96 lb ft
Torque Arm Bracket Nut	45 N·m	33 lb ft
Torque Arm Outer Bracket Bolt (Manual Transmission)	50 N·m	37 lb ft
Torque Arm Inner Bracket Bolt (Automatic Transmission)	50 N·m	37 lb ft
Torque Arm Nut	132 N·m	97 lb ft
Torque Arm Outer Bracket Bolt (Manual Transmission)	27 N·m	20 lb ft
Shock Absorber Nut To Rear Axle	90 N·m	66 lb ft
Shock Absorber Nut	17 N·m	13 lb ft
Stabilizer Shaft Bracket Bolt	47 N·m	35 lb ft
Stabilizer Shaft Insulator Clamp Nut	24 N·m	18 lb ft
Stabilizer Shaft Bolt	23 N·m	17 lb ft

GM SPO Group Numbers

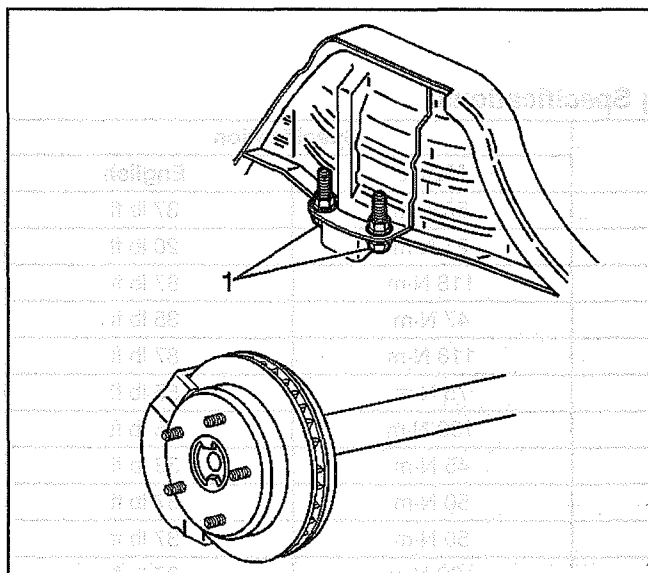
Application	GM SPO Group Number
Coil Spring	7.000
Coil Spring Insulator	7.000
Control Arm	7.000
Jounce Bumper	7.000
Propeller Shaft Center Support Bearing	5.000
Rear Axle	5.000
Shock Absorber	7.000
Stabilizer Shaft	7.000
Tie Rod	7.000
Tie Rod Bracket Brace	7.000
Torque Arm	7.000

Repair Instructions

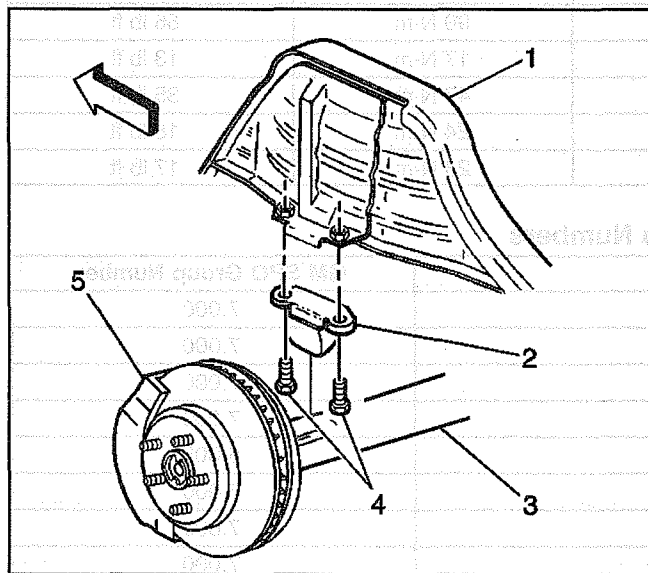
Bumper Replacement

Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the rear axle with an adjustable jack stand.
3. Remove the jounce bumper bolts (1).
4. Remove the jounce bumper (2).
5. Remove the jounce bumper spacer, if equipped.



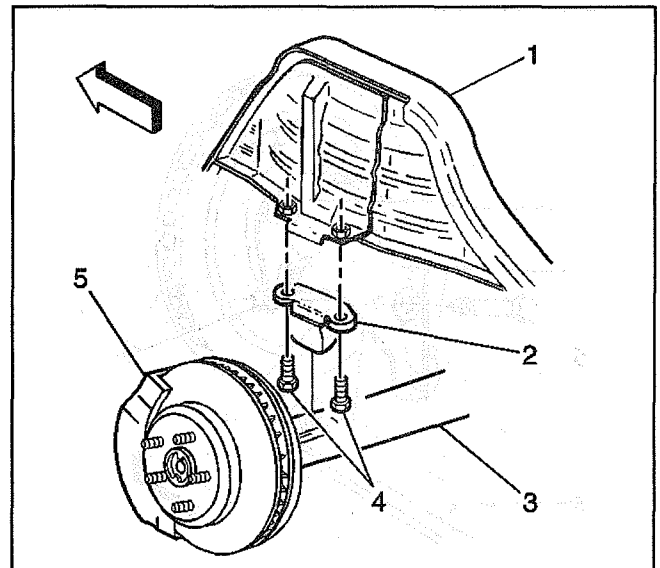
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Installation Procedure

1. Install the jounce bumper spacer, if equipped.
2. Install the jounce bumper (2).



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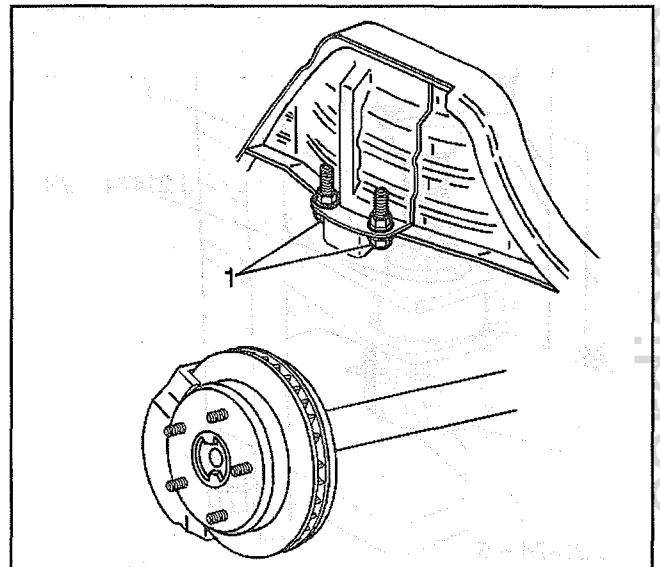
Notice: Refer to *Fastener Notice* in Cautions and Notices.

3. Install the jounce bumper bolts (1).

Tighten

Tighten the jounce bumper bolts (1) to 27 N·m (20 lb ft).

4. Remove the rear axle support.
5. Lower the vehicle.



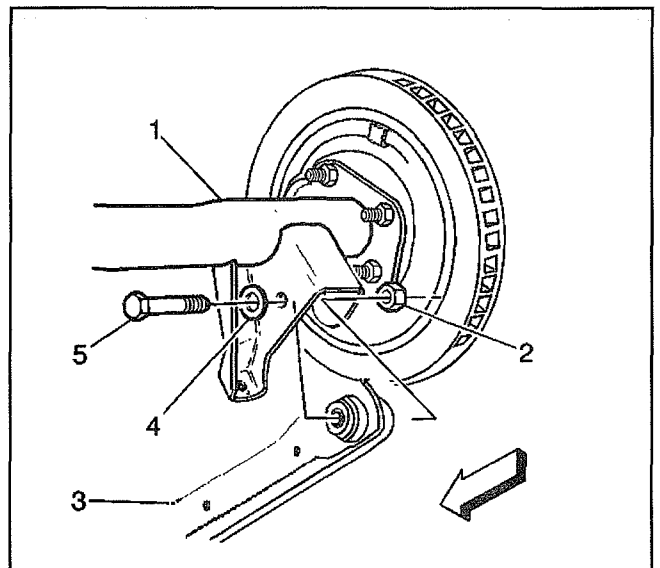
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Rear Axle Lower Control Arm Replacement

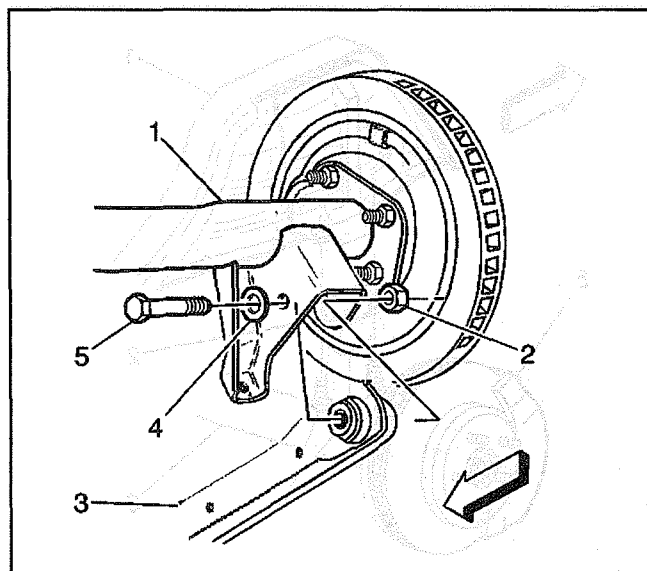
Removal Procedure

Important: If replacing both lower control arms, remove and replace only one control arm at a time in order to prevent the rear axle from rolling or slipping sideways.

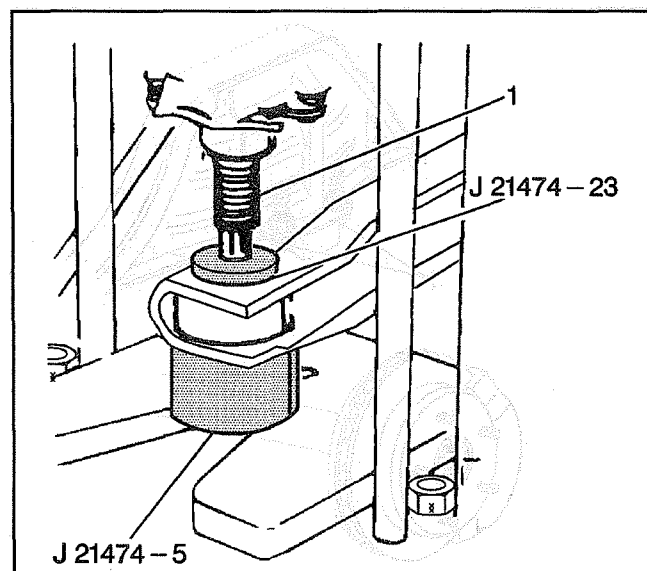
1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Remove the lower control arm bolts (5), nuts (2) and washers (4) from the rear axle (1).
3. Remove the lower control arm bolts, nuts and washers from the underbody pan.
4. Remove the lower control arm (3).



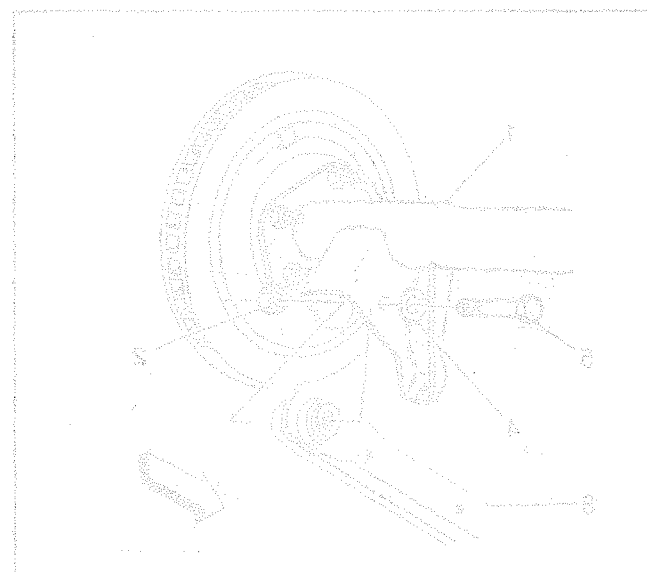
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Installation Procedure

1. Position and align the lower control arm (3) to the rear axle (1) and the underbody pan.

Important: Do not tighten the bolts unless the suspension is at the curb height position.

Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the lower control arm bolts (5), washers (4) and nuts (2) to the rear axle (1) from the inboard side out.

Tighten

Tighten the lower control arm bolts (5) to 118 N·m (87 lb ft).

3. Remove the adjustable rear axle support.
4. Lower the vehicle.

Rear Axle Lower Control Arm Bushings Replace

Removal Procedure

Tools Required

- J 21474-5 Bushing Receiver
- J 21474-23 Bushing Remover

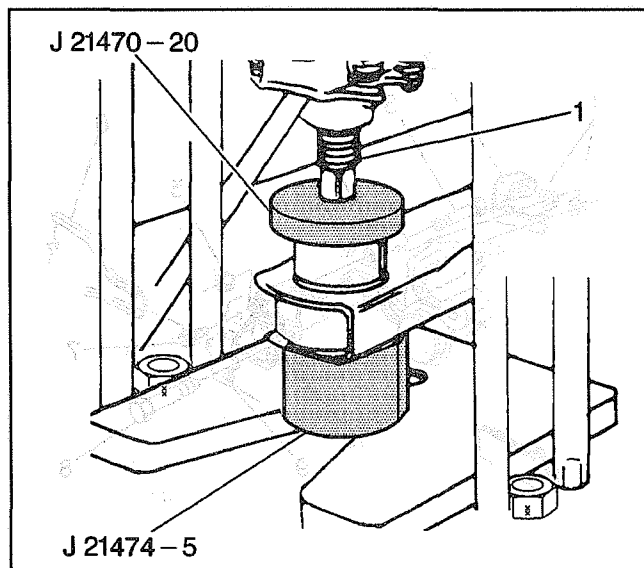
Important: If replacing both lower control arms, remove and replace only one control arm at a time in order to prevent the rear axle from rolling or slipping sideways.

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the rear axle with an adjustable jack stand.
3. Remove the lower control arm. Refer to *Rear Axle Lower Control Arm Replacement*.
4. Install J 21474-5 over the flanged side of the bushing.
5. Using an arbor press (1), place the large outside diameter of J 21474-23 in contact with the outside diameter of the outer sleeve in order to force the bushing out of the lower control arm.

Installation Procedure

Tools Required

- J 21474-5 Bushing Receiver
 - J 21474-20 Front and Rear Bushing Installer
1. Install J 21474-5 over the flanged side of the bushing.
 2. Install the bushing into position using J 21474-20.
 3. Install the lower control arm. Refer to *Rear Axle Lower Control Arm Replacement*.
 4. Remove the rear axle support.
 5. Lower the vehicle.



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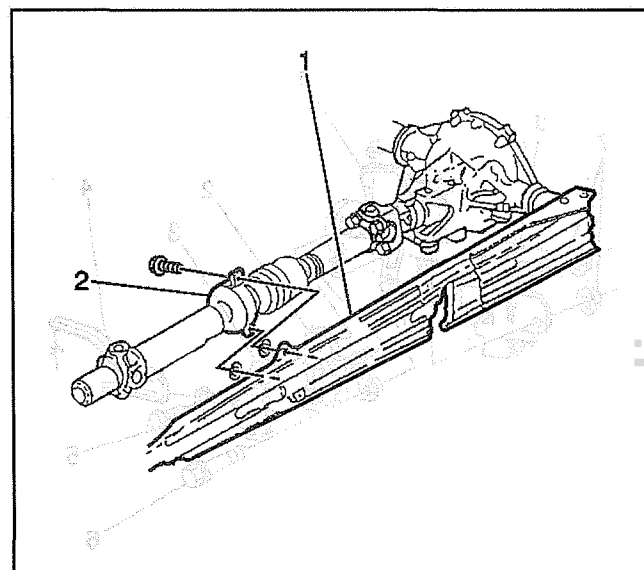
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Torque Arm Replacement

Removal Procedure

Important: When raising the vehicle, support the vehicle by the frame, allowing the suspension to fully extend (unloaded).

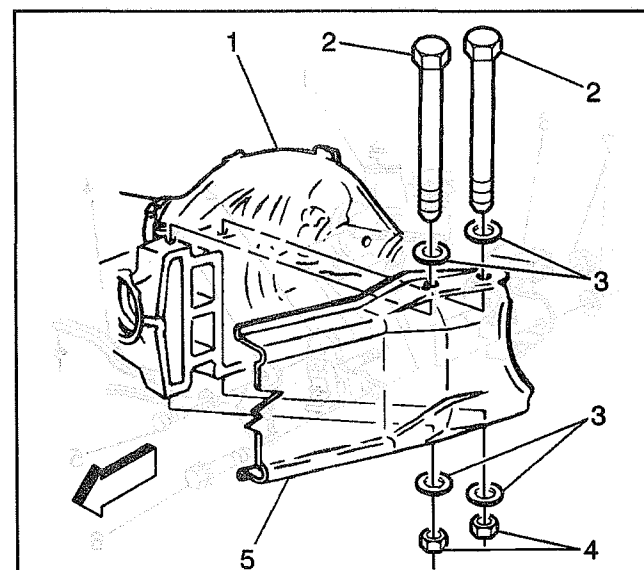
1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle in General Information*.
2. Support the rear axle with an adjustable jack stand.
3. Remove the center support bearing (2) bolts from the torque arm (1), if equipped with a two-piece propeller shaft only.



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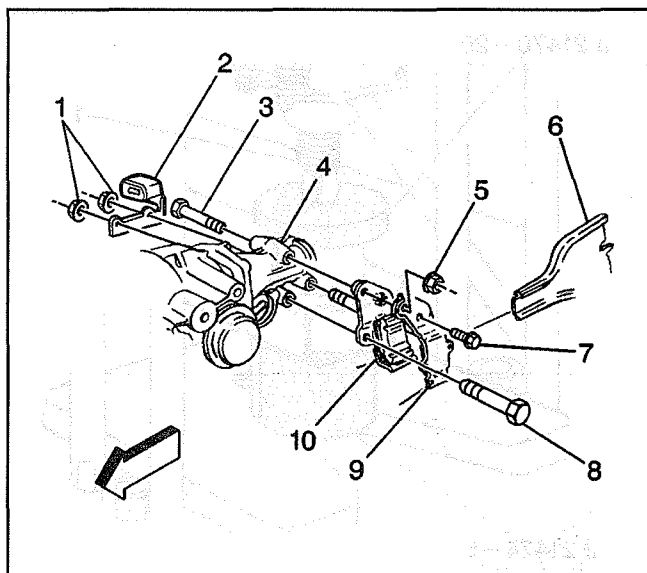
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4. Remove the torque arm bolts (2), washers (3) and nuts (4) from the rear axle (1).

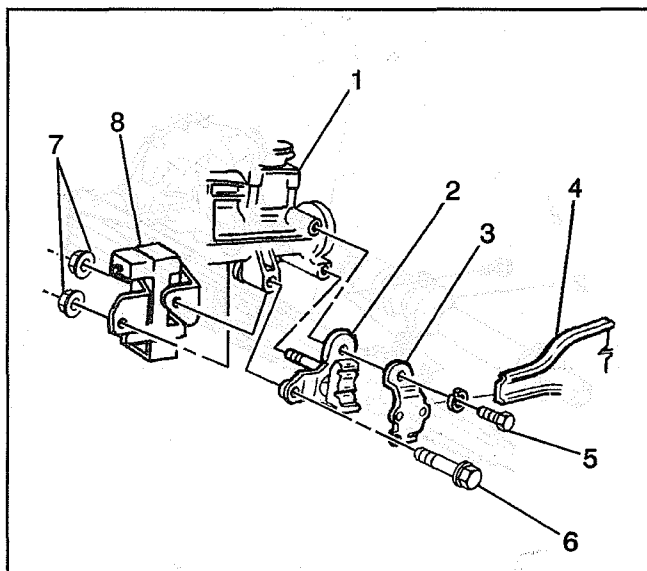


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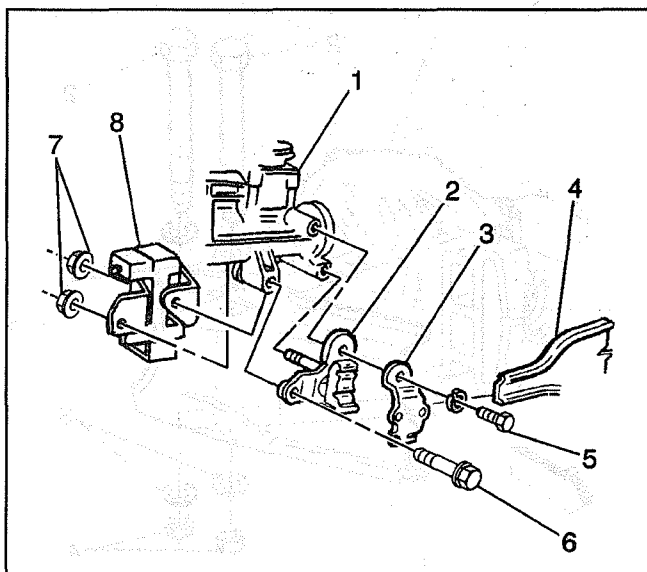
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5. If equipped with a automatic transmission remove the following:

- 5.1. Remove the torque arm inner bracket bolts (3 and 8) and nuts (5).
- 5.2. Remove the torque arm outer bracket (9).
- 5.3. Remove the torque arm inner bracket (10).
- 5.4. Remove the torque arm (6).

6. If equipped with a manual transmission (M49 shown, MM6 similar) remove the following:

- 6.1. Remove the torque arm outer bracket bolt (5), washer and nut (7).
- 6.2. Remove the torque arm inner bracket bolt (6) and nut (7).
- 6.3. Remove the torque arm outer bracket (3).
- 6.4. Remove the torque arm inner bracket (2).
- 6.5. Remove the torque arm (4).

Installation Procedure

1. If equipped with a manual transmission (M49 shown, MM6 similar) install the following:
2. Install the torque arm inner bracket (2) to the transmission (1).
3. Install the torque arm outer bracket (3) to the inner bracket (2) and loosely install the torque arm outer bracket bolts (5 and 6), washer, and nuts (7).
4. Insert the torque arm (4) into the torque arm brackets (2 and 3).

Notice: Refer to *Fastener Notice* in Cautions and Notices.

5. Tighten the torque arm outer bracket bolts (5) to 27 N·m (20 lb ft).

Tighten

- Tighten the torque arm outer bracket bolt (5) to 27 N·m (20 lb ft).
- Tighten the torque arm outer bracket bolt (6) to 50 N·m (37 lb ft).
- Tighten the torque arm bracket nuts (7) to 45 N·m (33 lb ft).

6. If equipped with a automatic transmission install the following:

- 6.1. Install the torque arm inner bracket (10) to the transmission (4).
- 6.2. Install the torque arm outer bracket (9) to the inner bracket (10) and loosely install the torque arm inner bracket bolts (3 and 8), washer, and nuts (1).
- 6.3. Insert the torque arm (6) into the torque arm brackets (9 and 10).

Notice: Refer to *Fastener Notice* in Cautions and Notices.

- 6.4. Tighten the torque arm inner bracket bolts (3 and 8) or nuts (1).

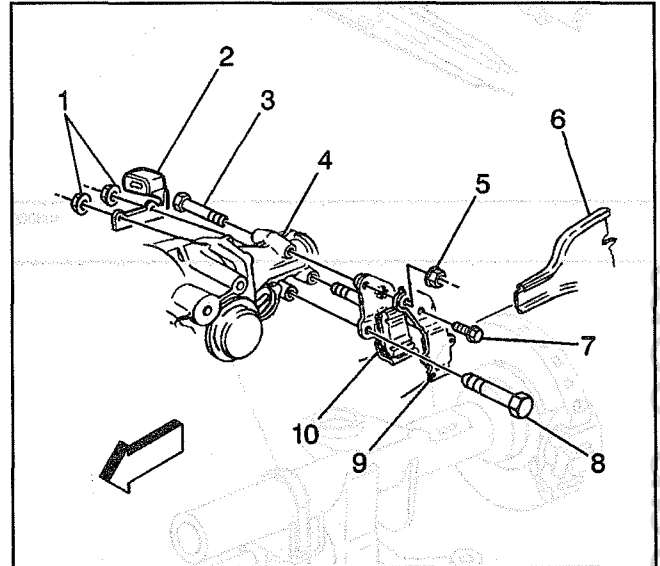
Tighten

- Tighten the torque arm inner bracket bolts (3 and 8) to 50 N·m (37 lb ft).
- Tighten the torque arm bracket nuts (1) to 45 N·m (33 lb ft).

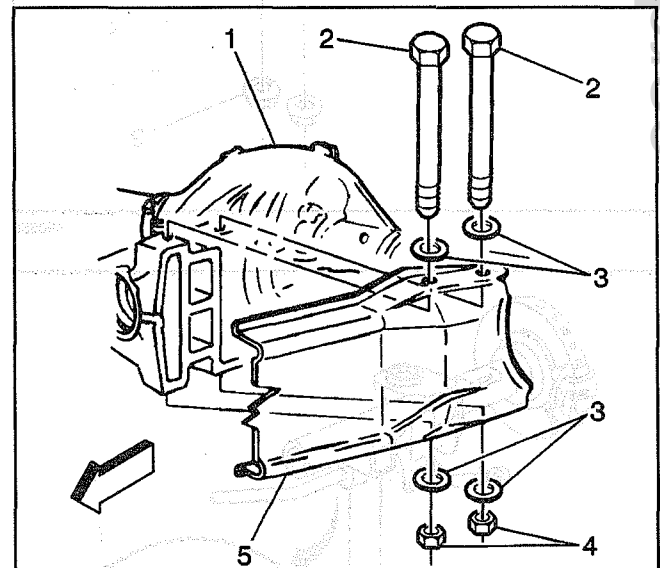
7. Position the torque arm (5) onto the rear axle (1).
8. Install the torque arm bolts (2), washers (3) and the nuts (4).
9. Tighten the torque arm bolts (2) or nuts (4).

Tighten

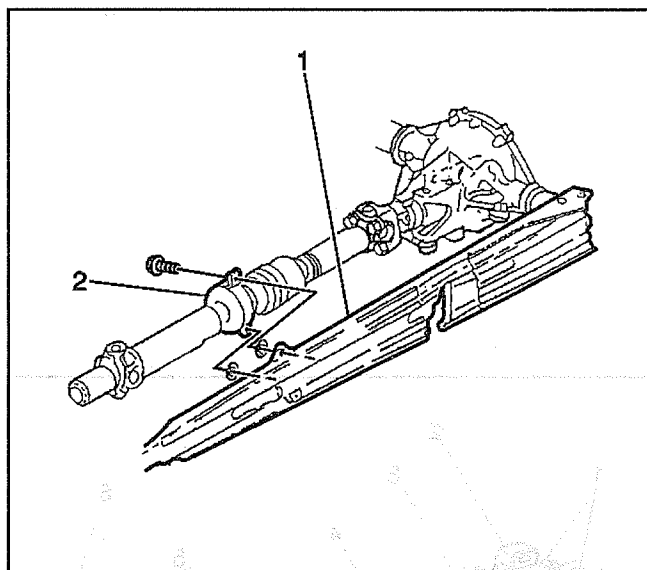
- Tighten the torque arm bolt (2) to 130 N·m (96 lb ft).
- Tighten the torque arm nuts (4) to 132 N·m (97 lb ft).



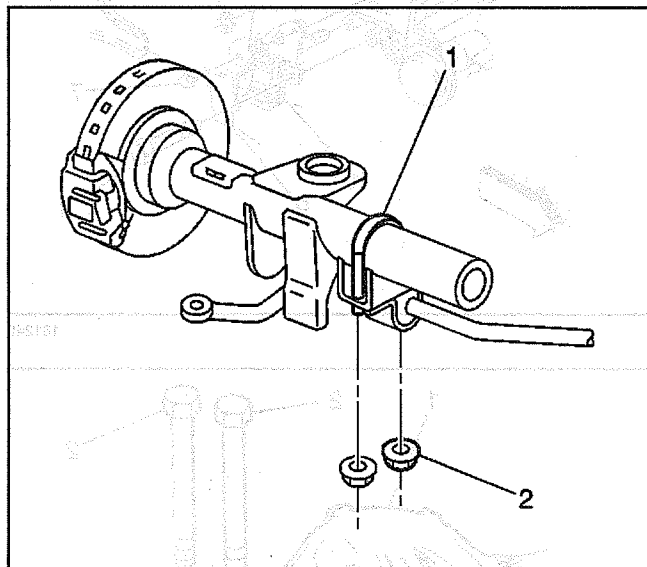
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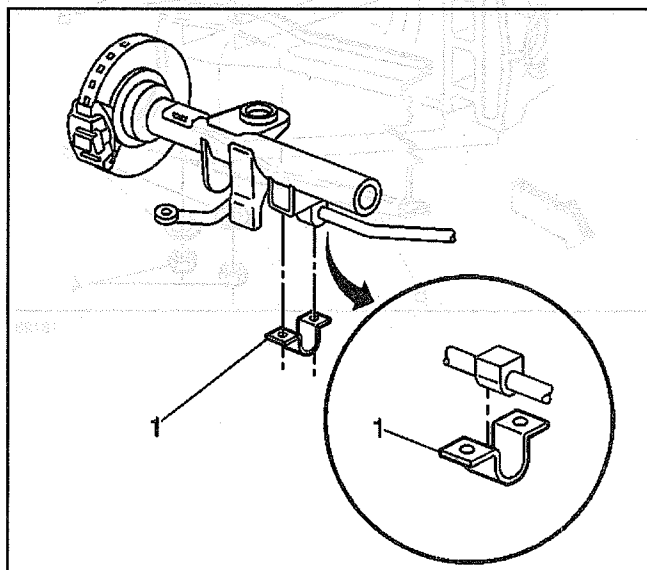
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10. Install the center support bearing (2) bolts to the torque arm (1), if equipped with a two piece propeller shaft.

Tighten

Tighten the center support bearing (2) bolts to 50 N·m (37 lb ft).

11. Remove the adjustable jack stand.
12. Lower the vehicle.

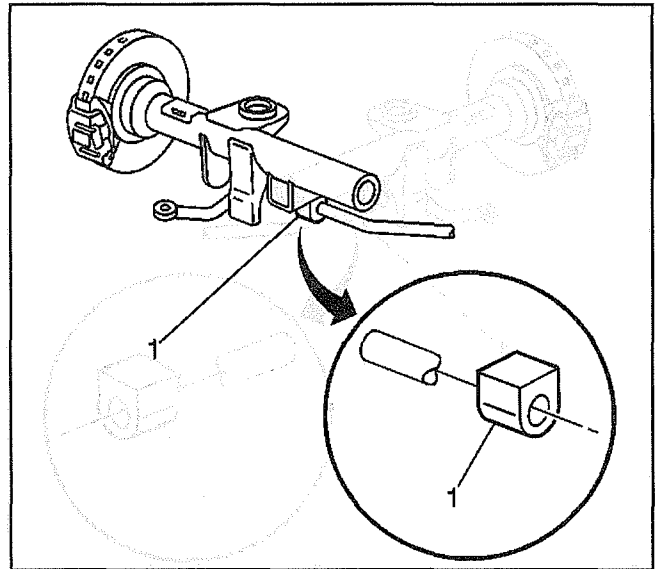
Stabilizer Shaft Replacement

Removal Procedure

1. Remove the stabilizer shaft link. Refer to *Stabilizer Shaft Link Replacement*.
2. Remove the stabilizer shaft insulator clamp nuts (2) and bolt (1).
3. Remove the stabilizer shaft insulator clamp (1).

4. Remove the stabilizer shaft insulator (1).

Important: Install the rear stabilizer shaft with the end of the shaft facing down.
Important: The slit of the shaft insulator must face the rear of the vehicle.
Install the stabilizer shaft insulator (1) over the stabilizer shaft.

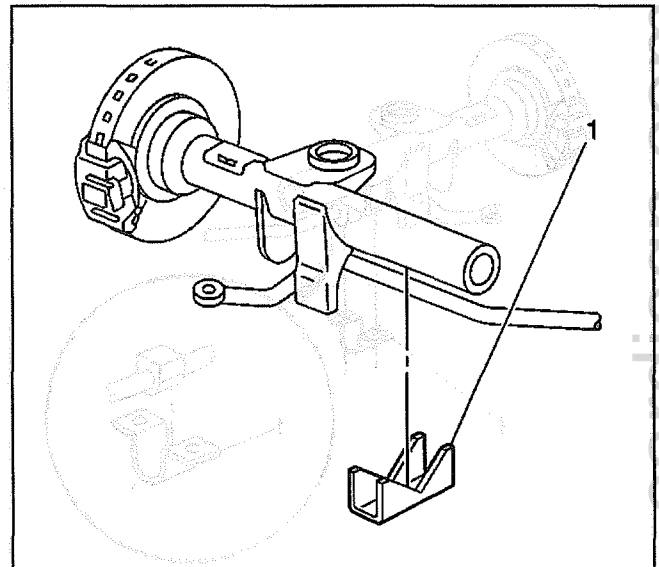


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5. Remove the stabilizer shaft rod bracket (1).

Important: The insulator must face the rear of the vehicle.

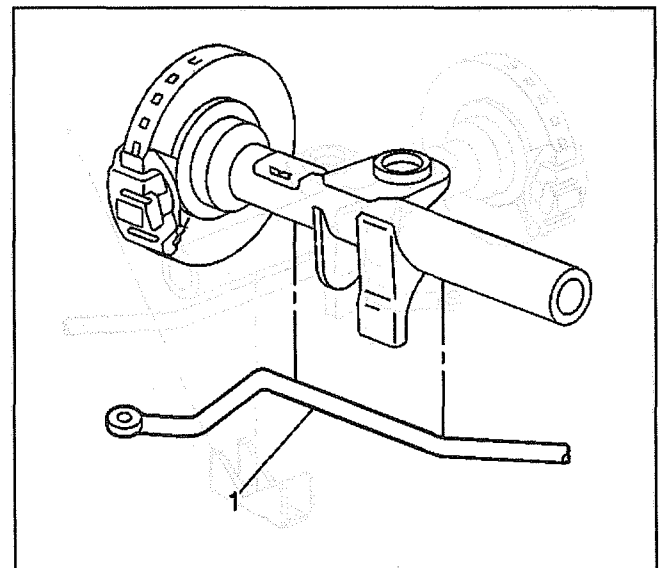


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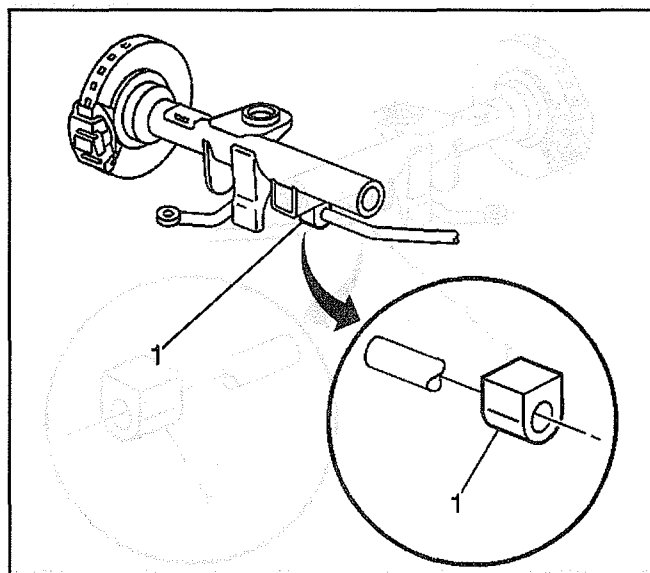
6. Remove the stabilizer shaft (1).

Important: Place the stabilizer shaft on the rear axle.



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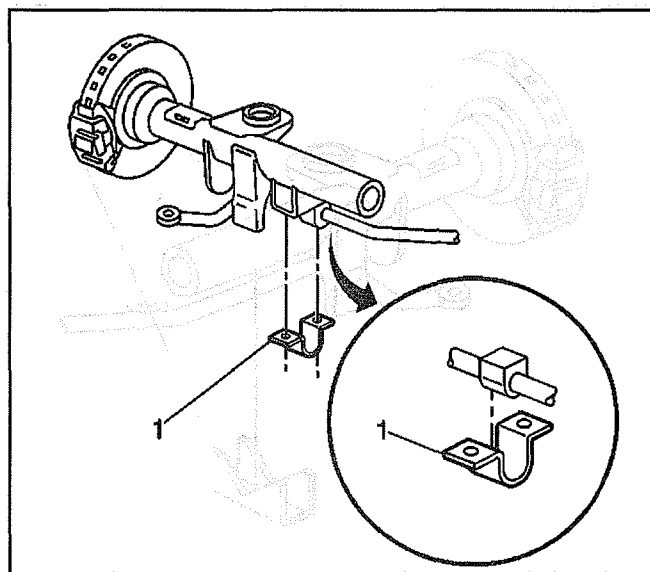
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Installation Procedure

Important: Install the rear stabilizer shaft with the bend of the shaft facing down.

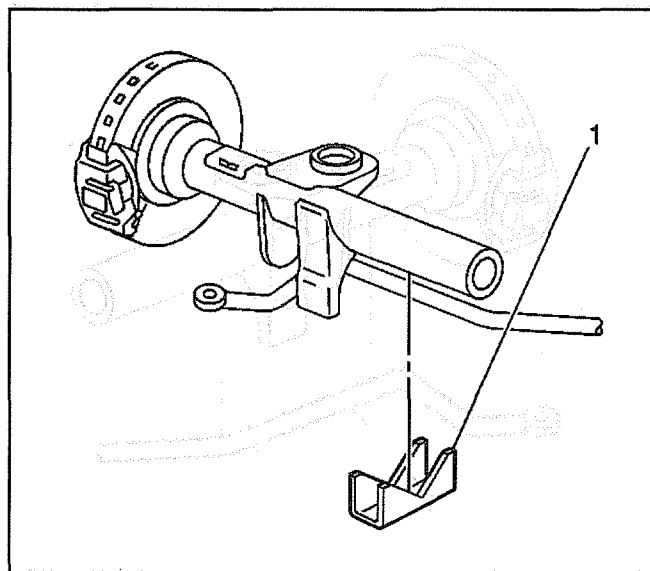
Important: The slit of the shaft insulator must face the rear of the vehicle.

1. Install the stabilizer shaft insulator (1) over the stabilizer shaft.



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2. Install the stabilizer shaft insulator clamp (1) over the insulator.



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3. Place the stabilizer shaft rod bracket (1) against rear axle.

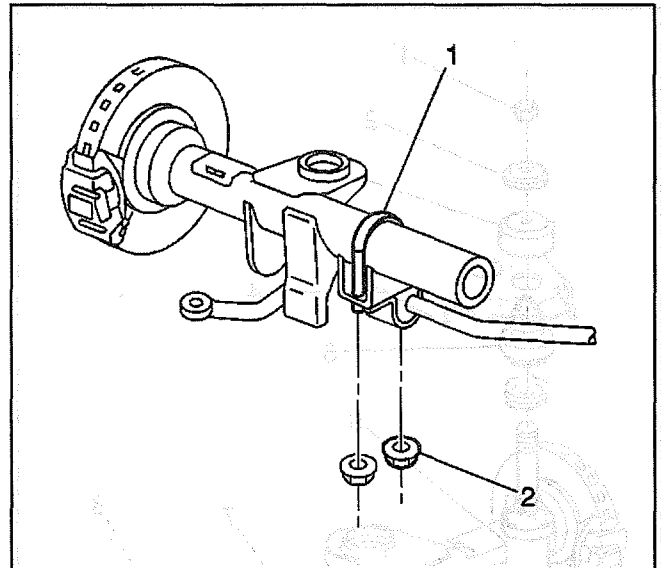
Notice: Refer to *Fastener Notice* in Cautions and Notices.

4. Install the stabilizer shaft insulator bolt (1) and clamp nuts (2).

Tighten

Tighten the stabilizer shaft insulator clamp nuts (2) to 24 N·m (18 lb ft).

5. Install the stabilizer shaft link. Refer to *Stabilizer Shaft Link Replacement*.

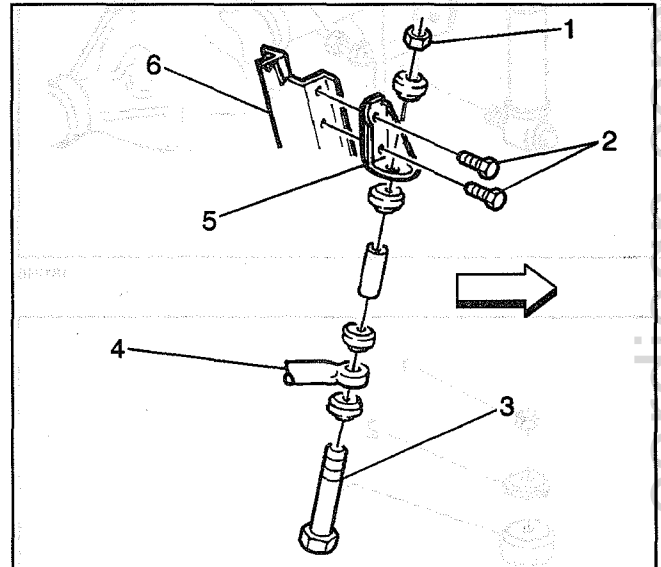


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Stabilizer Shaft Link Replacement

Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Remove the stabilizer shaft nut (1), bolt (3) and bushings.
3. Remove the stabilizer shaft spacer and bushings.
4. Remove the stabilizer shaft bracket bolts (2) and bracket (5), if necessary.
5. Remove the stabilizer shaft bracket (5) from the underbody pan (6), if necessary.



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Installation Procedure

1. Align the stabilizer shaft bracket (5) to the underbody pan (6).

Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the stabilizer shaft bracket (5) and bolts (2).

Tighten

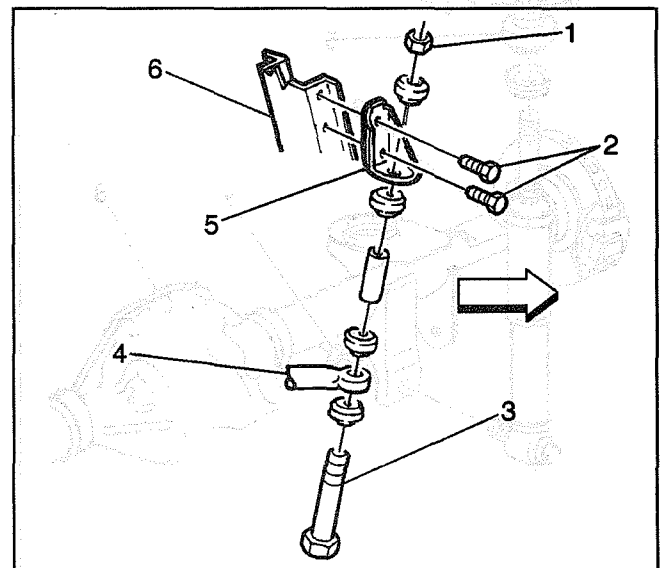
Tighten the stabilizer shaft bracket bolts (2) to 47 N·m (35 lb ft).

3. Install the stabilizer shaft spacer and bushings.
4. Install the stabilizer shaft bushings, bolt (3), nut (1).

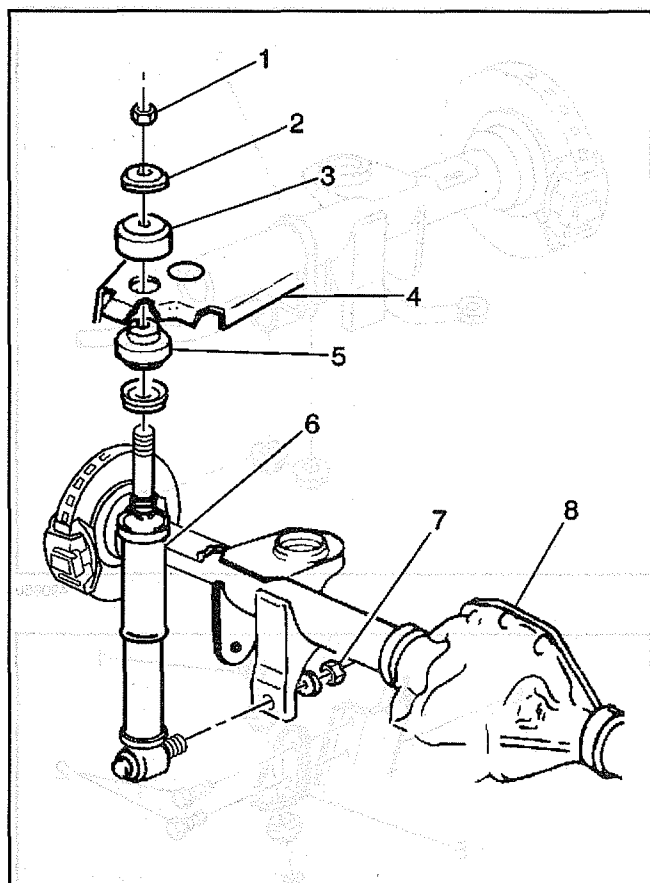
Tighten

Tighten the stabilizer shaft bolt (3) to 23 N·m (17 lb ft).

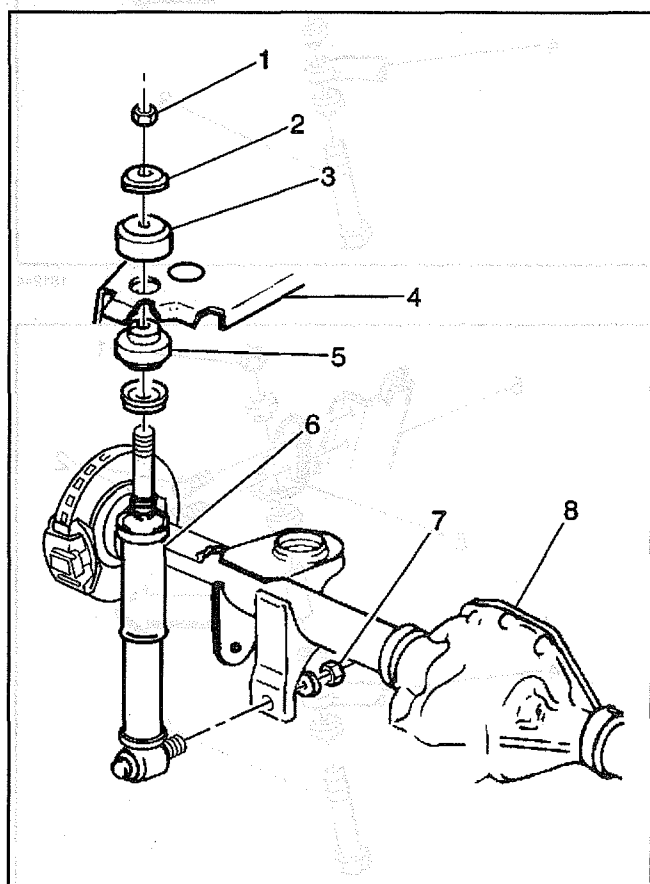
5. Lower the vehicle.



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Shock Absorber Replacement

Removal Procedure

1. Fold down the rear seatback.
2. Remove the quarter trim panel. Refer to *Trim Panel Replacement - Cargo Area Side (Coupe)* in Interior Trim.
3. Fold the carpet back.
4. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.

Notice: The rear axle must be supported before removing the nut in order to avoid possible damage to the brake hose lines, the tie rod and the propeller shaft.

5. Support the rear axle (8) with an adjustable jack stand.
6. Remove the shock absorber nut (1).
7. Remove the shock absorber insulator retainer (2) and insulator (3).
8. Remove the shock absorber lower retainer and the insulator (5).
9. Remove the shock absorber nut (7) to the rear axle (8).
10. Remove the shock absorber (6).

Installation Procedure

1. Install the shock absorber (6) stud to the rear axle (8).

Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the shock absorber nut (7) to rear axle.

Tighten

Tighten the shock absorber nut (7) to rear axle to 90 N·m (66 lb ft).

3. Install the shock absorber lower insulator (5) and retainer to the shock absorber (6).
4. Position the shock absorber (6) through the underbody pan (4) and seat the insulator.
5. Install the shock absorber insulator (3) and retainer (2) to the shock absorber (6).

Notice: Turning the shock absorber while tightening the nut could damage the shock absorber. In order to prevent damage, keep the shock absorber stationary while you tighten the nut.

6. Install the shock absorber nut (1).

Tighten

Tighten the shock absorber nut (1) to 17 N·m (13 lb ft).

7. Remove the rear axle support.
8. Lower the vehicle.
9. Place the folded carpet into position.

10. Install the quarter trim panel. Refer to *Trim Panel Replacement - Cargo Area Side (Coupe)* in Interior Trim.
11. Fold the rear seatback into the upright position.

Coil Spring Replacement

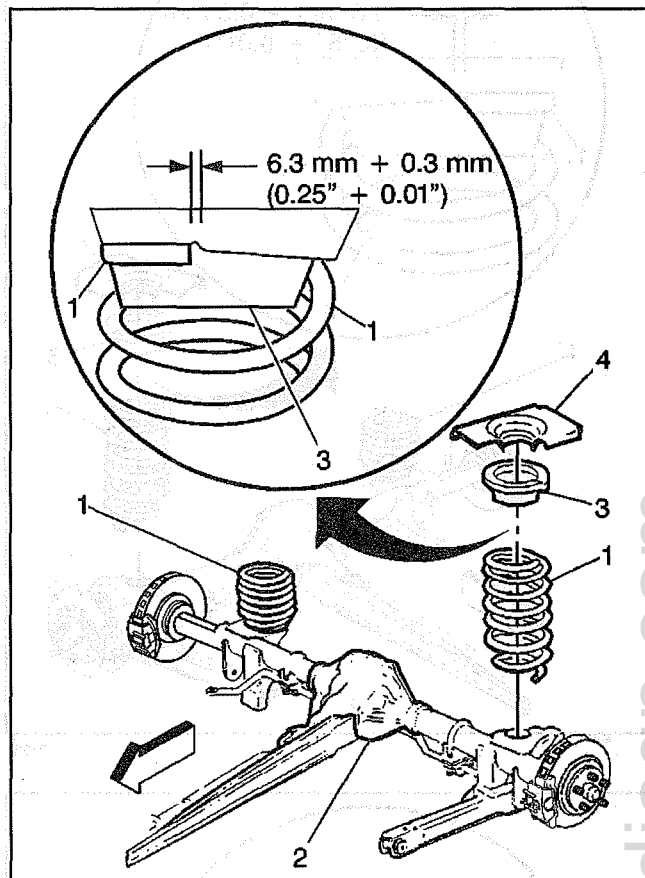
Removal Procedure

Important: When raising the vehicle, support the vehicle by the frame, allowing the suspension to fully extend (unloaded).

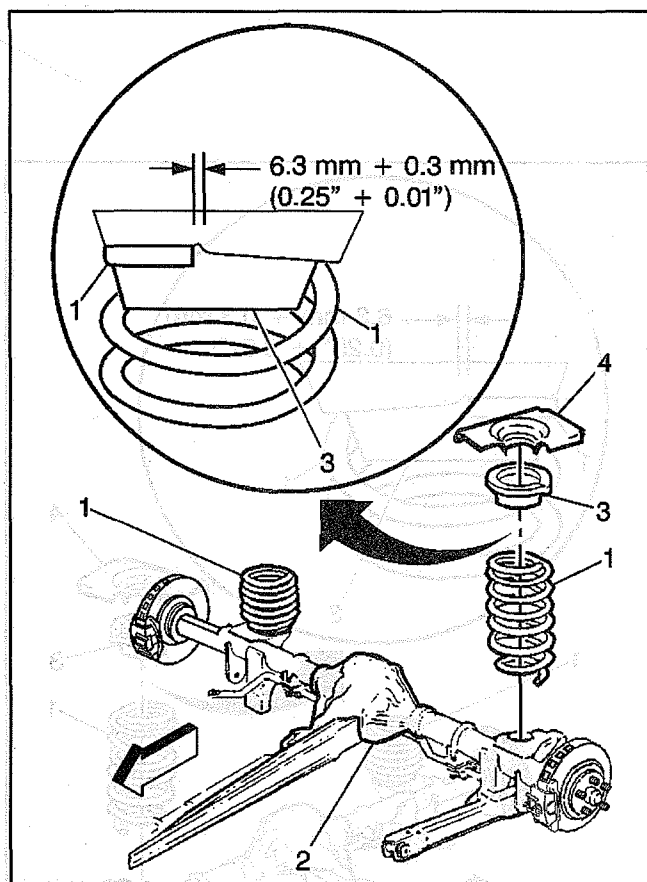
1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the rear axle (2) with an adjustable jack stand.
3. Remove the shock absorber to rear axle nut.

Notice: Do not suspend rear axle by brake hoses. Damage to hoses could result.

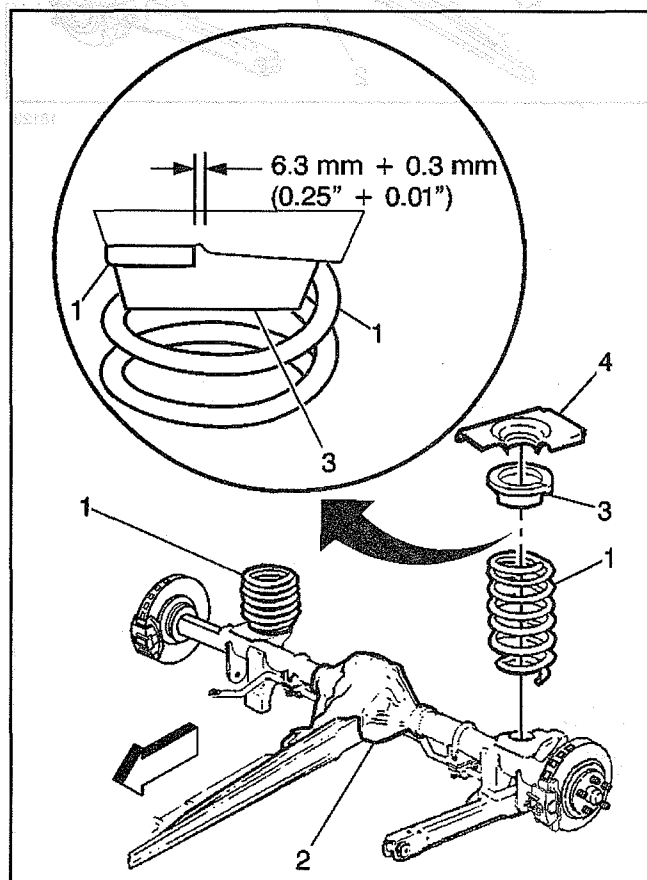
4. Slowly lower the rear axle (2).
5. Remove the rear coil spring (1).



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Installation Procedure

Important: The lower end of the rear spring should be facing forward. Do not chip or damage the corrosion protection coating on the rear spring. Avoid contact with hard steel. If the coating is chipped or damaged, replace the rear spring.

1. Install the rear spring (1) to the rear axle (2).
2. Raise the rear axle (2).

Notice: Refer to *Fastener Notice* in Cautions and Notices.

3. Install the shock absorber to rear axle nut.

Tighten

Tighten the shock absorber to rear axle nut to 90 N·m (66 lb ft).

4. Remove the rear axle support.
5. Lower the vehicle.

Coil Spring Insulators Replacement

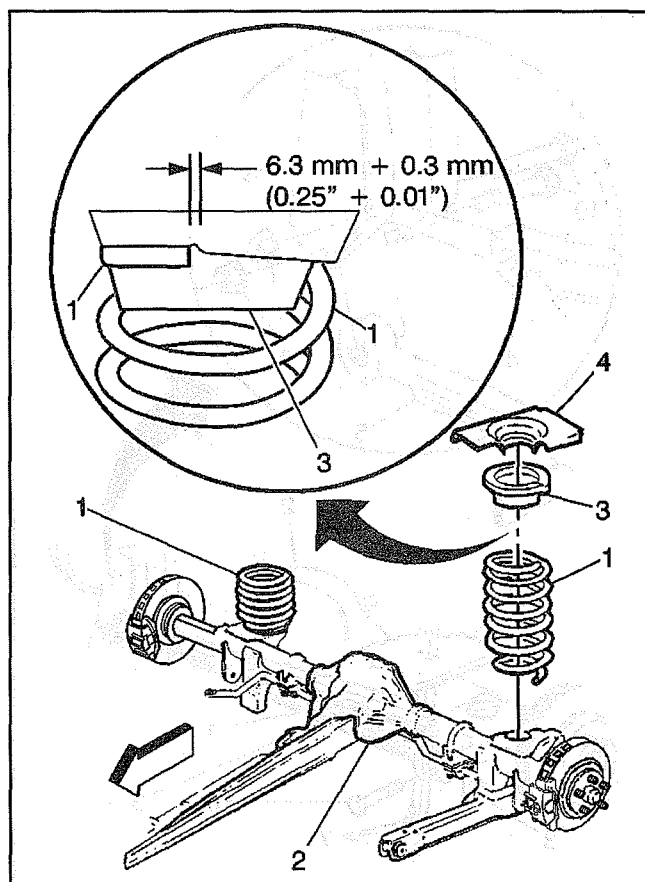
Removal Procedure

Important: When raising the vehicle, support the vehicle by the frame, allowing the suspension to fully extend (unloaded).

1. Remove the rear coil spring (1). Refer to *Coil Spring Replacement*.
2. Remove the spring upper insulator (3).

Installation Procedure

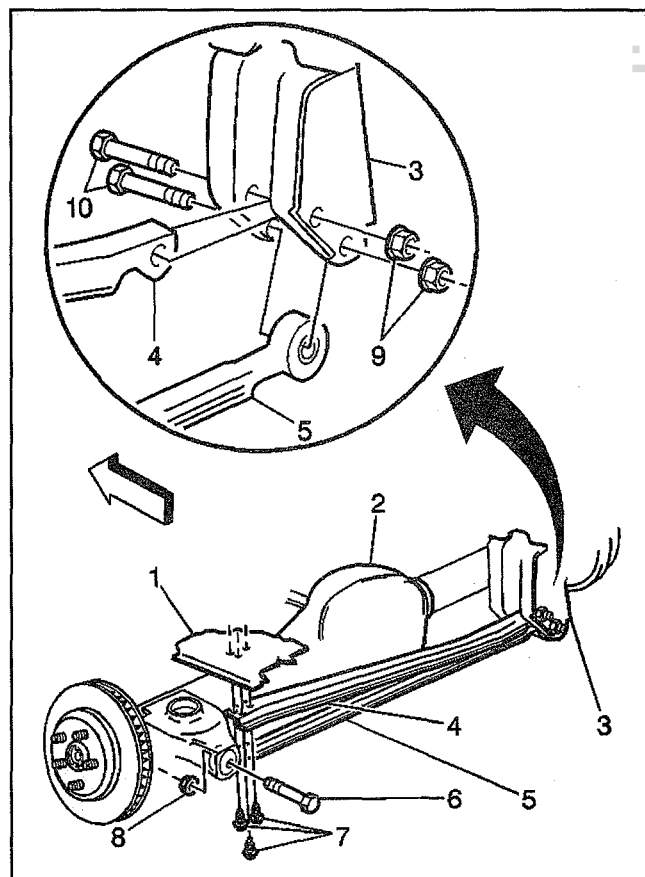
1. Position the spring upper insulator (3) to the top of the coil spring (1).
2. Install the rear coil spring (1). Refer to *Coil Spring Replacement*.



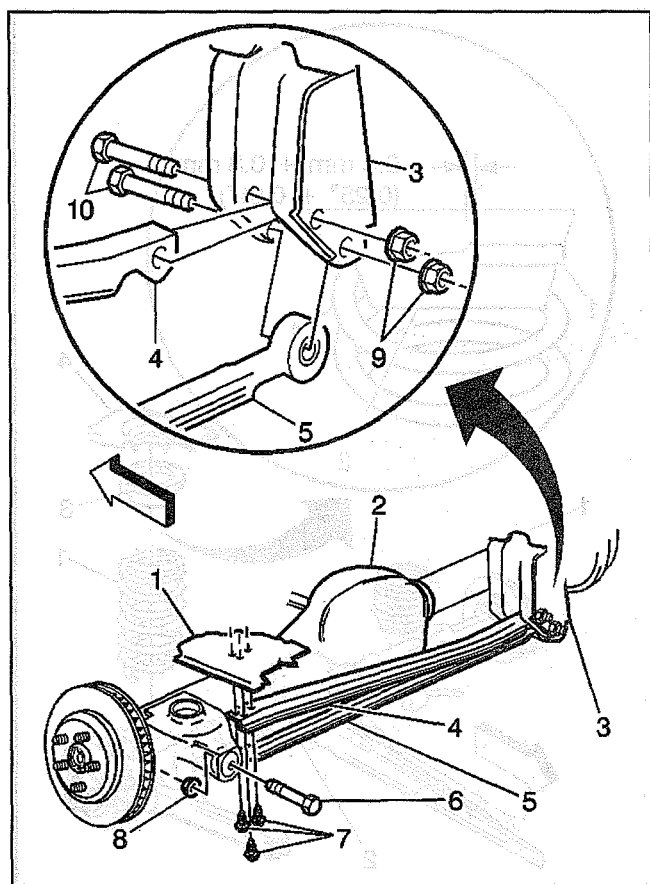
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Track Bar Replacement**Removal Procedure**

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the rear axle (2) with an adjustable jack stand.
3. Remove the tie rod bolt (6) and nut (8) from the spring seat.
4. Remove the tie rod bracket brace bolts (7) from the body brace bracket (1).
5. Remove the tie rod bolts (10) and nuts (9) from the body brace and tie rod bracket (3).
6. Remove the tie rod (5).
7. Remove the tie rod bracket brace (4).



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Installation Procedure

1. Install the tie rod bracket brace (4) to the body brace and tie rod bracket (3).
2. Loosely install the upper tie rod bolt (10) and nut (9) to the body brace and tie rod bracket (3).
3. Install the tie rod (5) to the body brace and tie rod bracket (3).
4. Loosely install the lower tie rod bolt (10) and nut (9) to the body brace and tie rod bracket (3).

Notice: Refer to *Fastener Notice* in Cautions and Notices.

5. Install the tie rod bracket brace bolts (7) to the body brace bracket (1).

Tighten

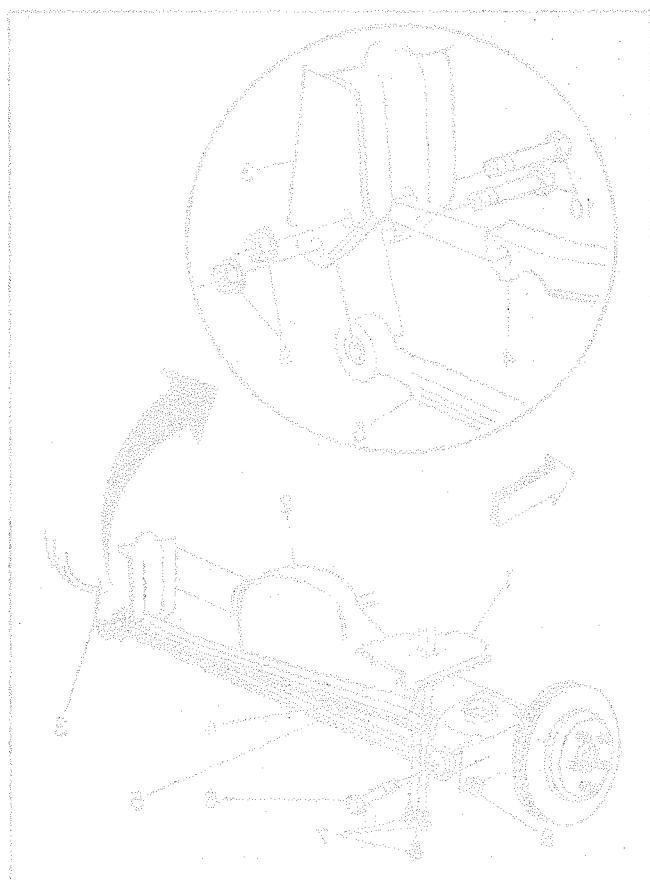
- Tighten the tie rod bracket brace bolts (7) to 47 N·m (35 lb ft).
- Tighten the upper tie rod bolt (10) to 118 N·m (87 lb ft) or tighten the tie rod nut (9) to 75 N·m (55 lb ft).

6. Install the tie rod bolt (6) and nut (8) to the spring seat.

Tighten

Tighten the tie rod bolt (6) to 118 N·m (87 lb ft). Or tighten the tie rod nut (8) to 75 N·m (55 lb ft).

7. Remove the rear axle support.
8. Lower the vehicle.



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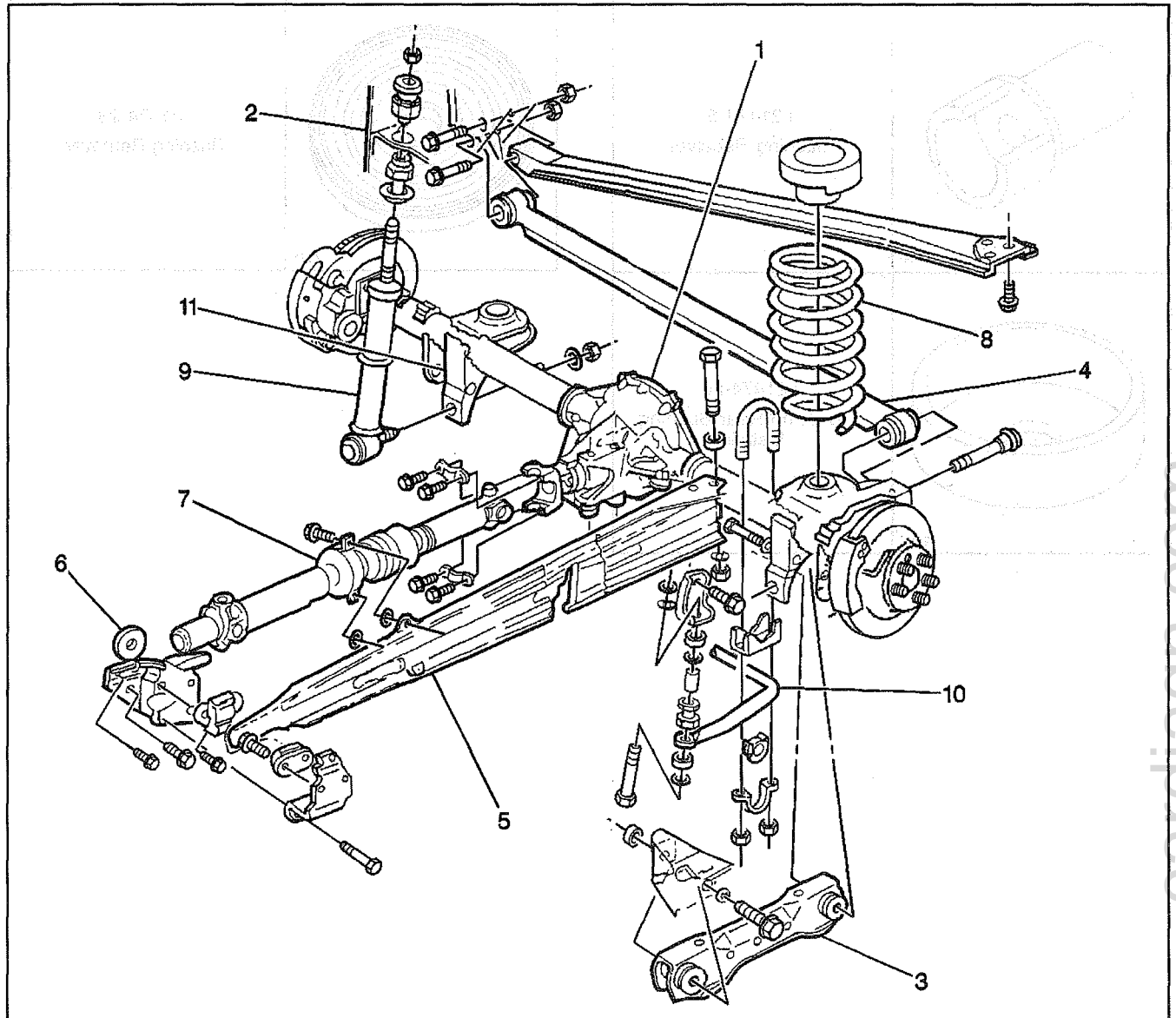
Track Bar Replacement

Removal Procedure

1. Raise and suitably support the vehicle. Refer to Lifting and Jacking the Vehicle in General Information.
2. Support the rear axle (2) with an adjustable jack stand.
3. Remove the tie rod bolt (6) and nut (8) from the spring seat.
4. Remove the tie rod bracket brace bolts (7) from the body brace bracket (1).
5. Remove the tie rod bolts (10) and nuts (9) from the body brace and the tie rod bracket (3).
6. Remove the tie rod (5).
7. Remove the tie rod bracket brace (4).

Description and Operation

General Description



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- The rear axle (1) attaches to the vehicle with a link suspension system.
- The rear axle housing connects to the floor panel (2) by two lower control arms (3) and a track bar (4). A single torque arm (5) is used in place of an upper control arm.
- The torque arm (5) rigidly mounts to the rear axle housing at the rear.
- The torque arm (5) mounts through a torque arm bushing (6) at the front.
- On some vehicles, the torque arm (5) also mounts to the two piece propeller shaft center support bearing (7) with two bolts.
- The rear springs (8) support the weight of the vehicle.
- The rear shock absorbers (9) mount to the rear of the axle housing and provide ride control. A rear stabilizer shaft (10) is also part of the suspension system.
- The rear shock absorbers (9) mount at the bottom with a nut to brackets (11) welded to the rear of the rear axle housing and also mount at the top of the floor panel (2) with a nut.
- The only service that the rear shock absorbers require is replacement for the following conditions:
 - Loss of resistance
 - Damage or leaking fluid
- For rear shock absorber diagnosis, refer to Suspension General Diagnosis.

Special Tools and Equipment

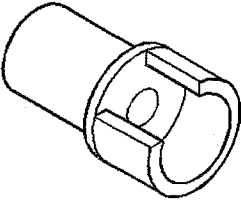
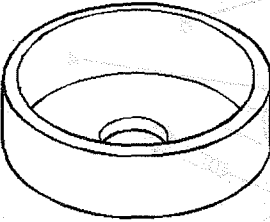
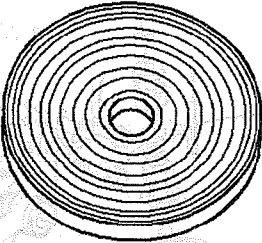
Illustration	Tool Number/Description
	J 21474-5 Bushing Receiver
	J 21474-20 Front and Rear Bushing Installer

Illustration	Tool Number/Description
	J 21474-23 Bushing Remover

- The rear shock absorbers (9) mount to the rear of the axle housing and provide ride control. A rear stabilizer shaft (10) is also part of the suspension system.
- The rear shock absorbers (9) mount at the bottom with a nut to brackets (11) welded to the rear of the rear axle housing and also mount at the top of the floor panel (12) with a nut.
- The only service that the rear shock absorbers require is replacement for the following conditions:
 - Loss of resistance
 - Damage or leaking fluid
- For rear shock absorber diagnosis, refer to Suspension General Diagnosis.

- The rear axle (1) attaches to the vehicle with a link suspension system.
- The rear axle housing connects to the floor panel (2) by two lower control arms (3) and a track bar (4). A single torque arm (5) is used in place of an upper control arm.
- The torque arm (5) rigidly mounts to the rear axle housing at the rear.
- The torque arm (5) mounts through a torque arm bushing (6) at the front.
- On some vehicles, the torque arm (5) also mounts to the two piece coilover shaft center support bearing (7) with two bolts.
- The rear springs (8) support the weight of the vehicle.