

2006 Chevrolet HHR LT

2006 ACCESSORIES & EQUIPMENT Frame & Underbody - HHR

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SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Ball Joint to Steering Knuckle Nut		
• First Pass	50 N.m Reverse Nut 3/4 turn	37 lb ft Reverse Nut 3/4 turn
• Second Pass	50 N.m +30°	37 lb ft + 30°
Frame Bolts	100 N.m + 180°	74 lb ft + 180°
Intermediate Shaft Pinch Bolt	34 N.m	25 lb ft
Outer Tie Rod to Knuckle Nut	20 N.m +180°	15 lb ft +180°
Rear Transaxle Mount to Frame Bolts	50 N.m	37 lb ft
Transaxle Thru Bolt	100 N.m	74 lb ft

REPAIR INSTRUCTIONS

FRAME REPLACEMENT

Tools Required

- **J 24319-B** Steering Linkage and Tie Rod Puller. See Special Tools.
- **J 43631** Ball Joint Remover. See Special Tools.

Removal Procedure

1. With the wheels in the straight ahead position, remove the key from the ignition switch.

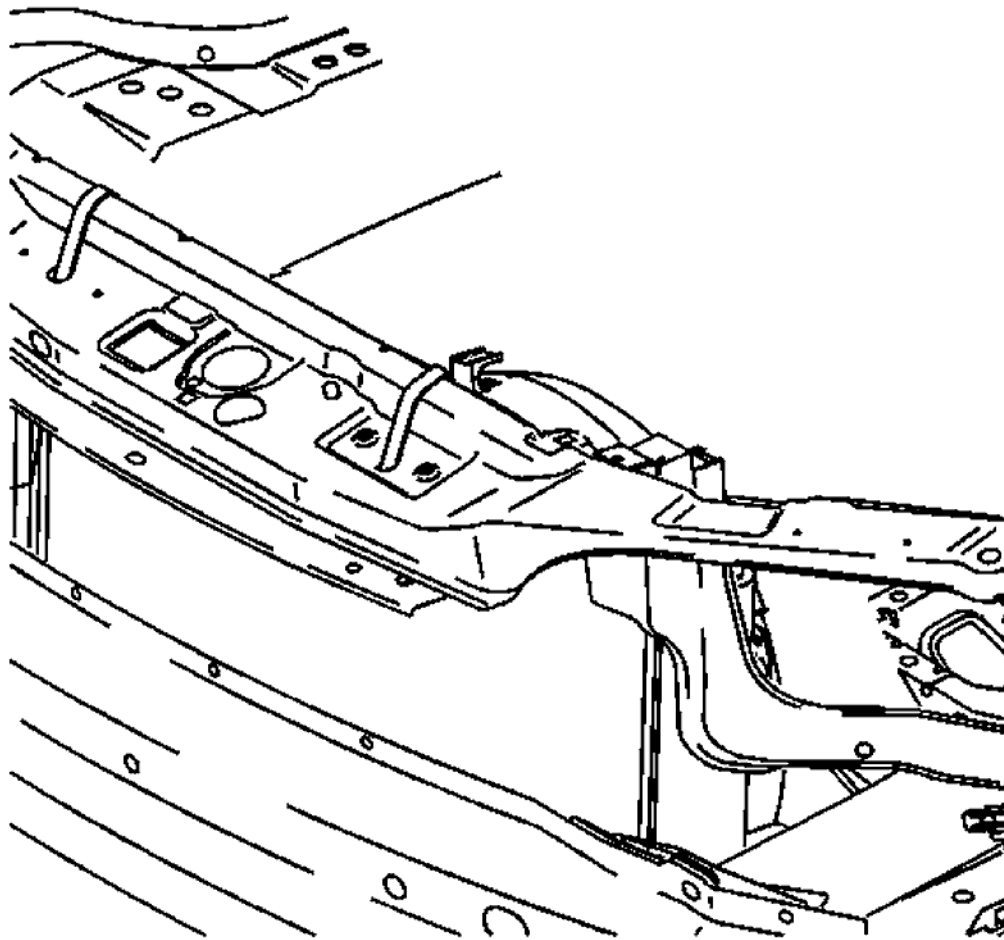


Fig. 1: Cooling Module Secured To Upper Body Structure
Courtesy of GENERAL MOTORS CORP.

2. Secure the cooling module to the upper body structure.
3. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
4. Remove the front wheels from the vehicle. Refer to **Tire and Wheel Removal and Installation** .
5. Remove the left and right wheel house liners. Refer to **Wheelhouse Liner Replacement - Front** .

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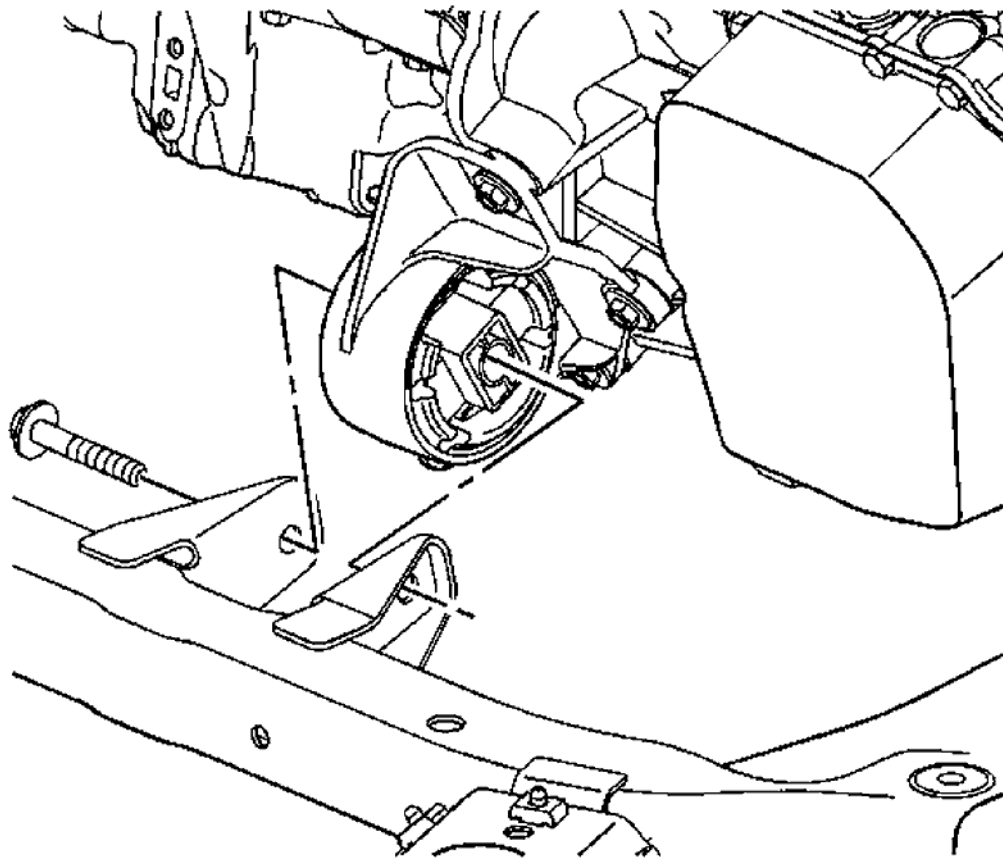


Fig. 2: View Of Front Transmission Mount Through Bolt
Courtesy of GENERAL MOTORS CORP.

6. Remove the front transaxle mount to cradle through bolt.

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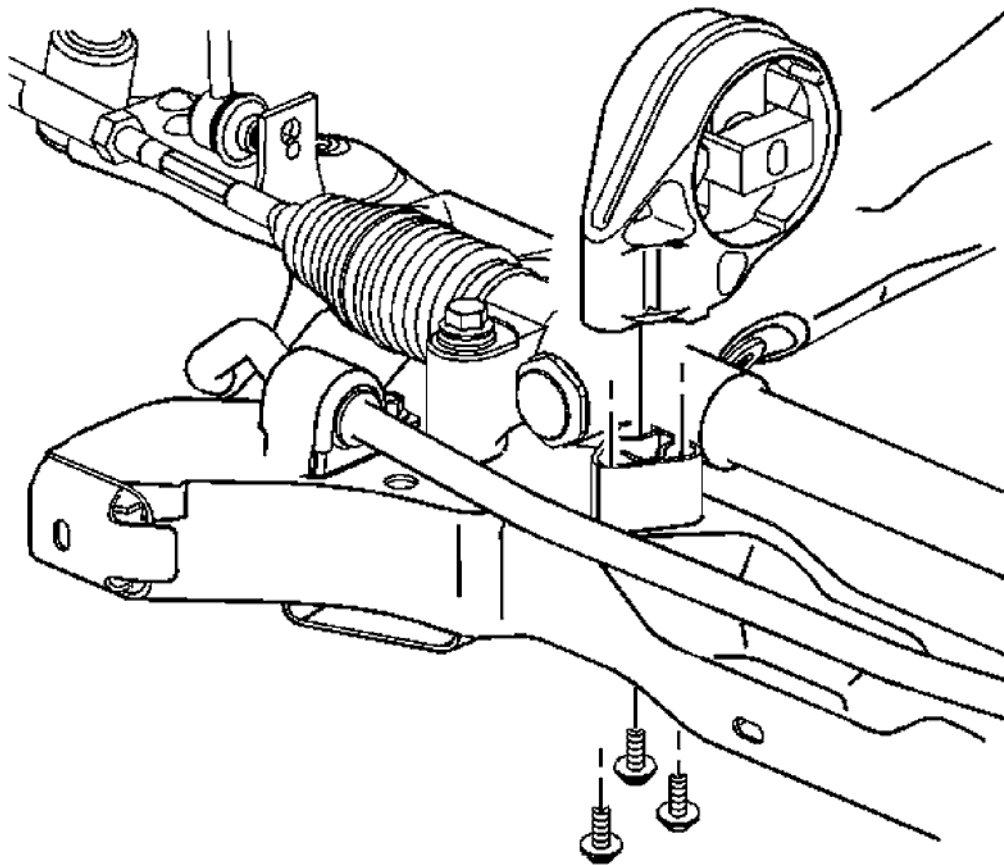


Fig. 3: View Of Rear Transaxle Mount To Frame Bolts
Courtesy of GENERAL MOTORS CORP.

7. Remove the rear transaxle mount to frame bolts.

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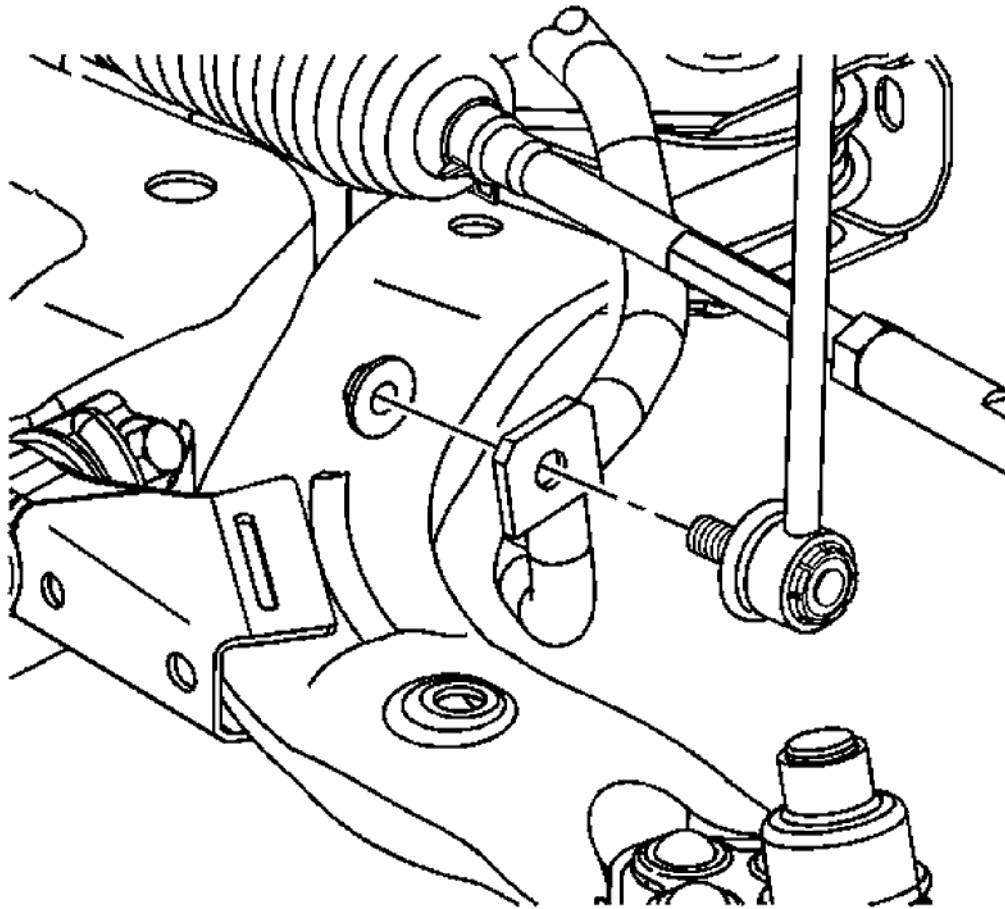


Fig. 4: View Of Stabilizer Link At Stabilizer Shaft
Courtesy of GENERAL MOTORS CORP.

8. Remove both stabilizer link to stabilizer shaft nuts. Refer to **Stabilizer Shaft Link Replacement** .

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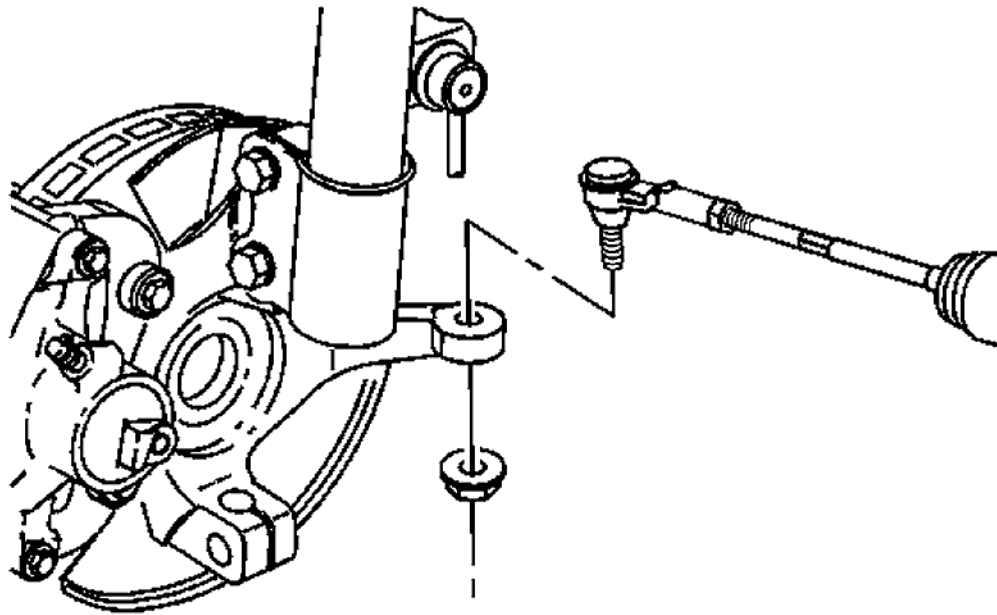


Fig. 5: View Of Tie Rod End To Steering Knuckle
Courtesy of GENERAL MOTORS CORP.

9. Remove both tie rod to steering knuckle nuts.

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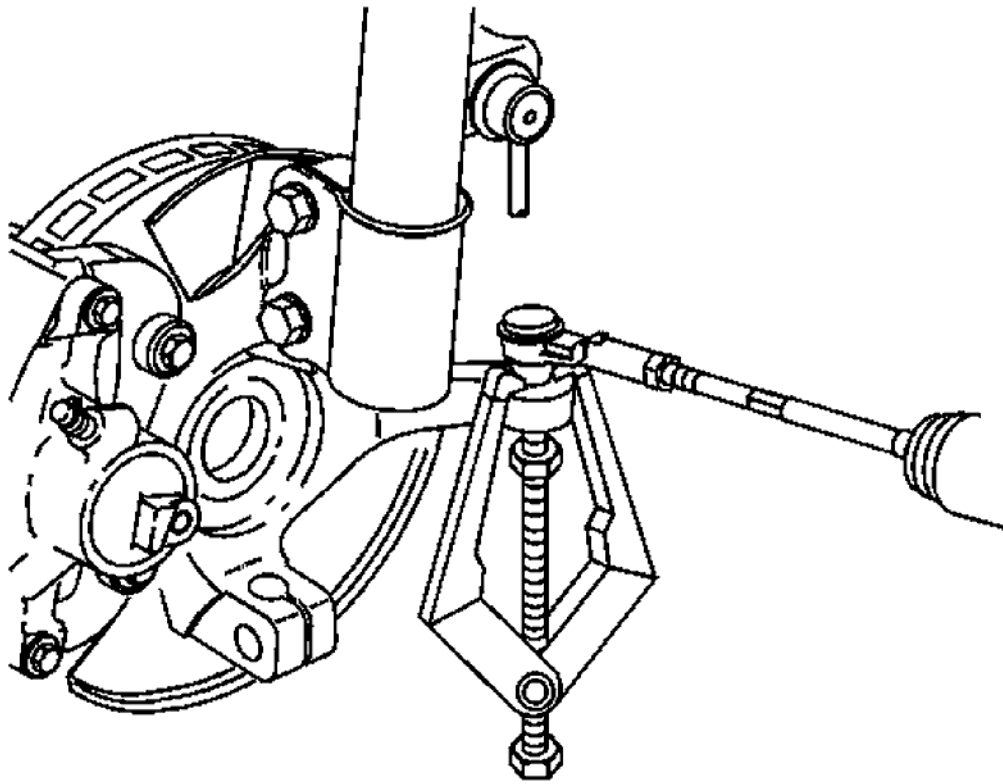


Fig. 6: Separating Outer Tie Rod End From Steering Knuckle
Courtesy of GENERAL MOTORS CORP.

10. Use the **J 24319-B** to separate the outer tie rods from the steering knuckles. See **Special Tools**.

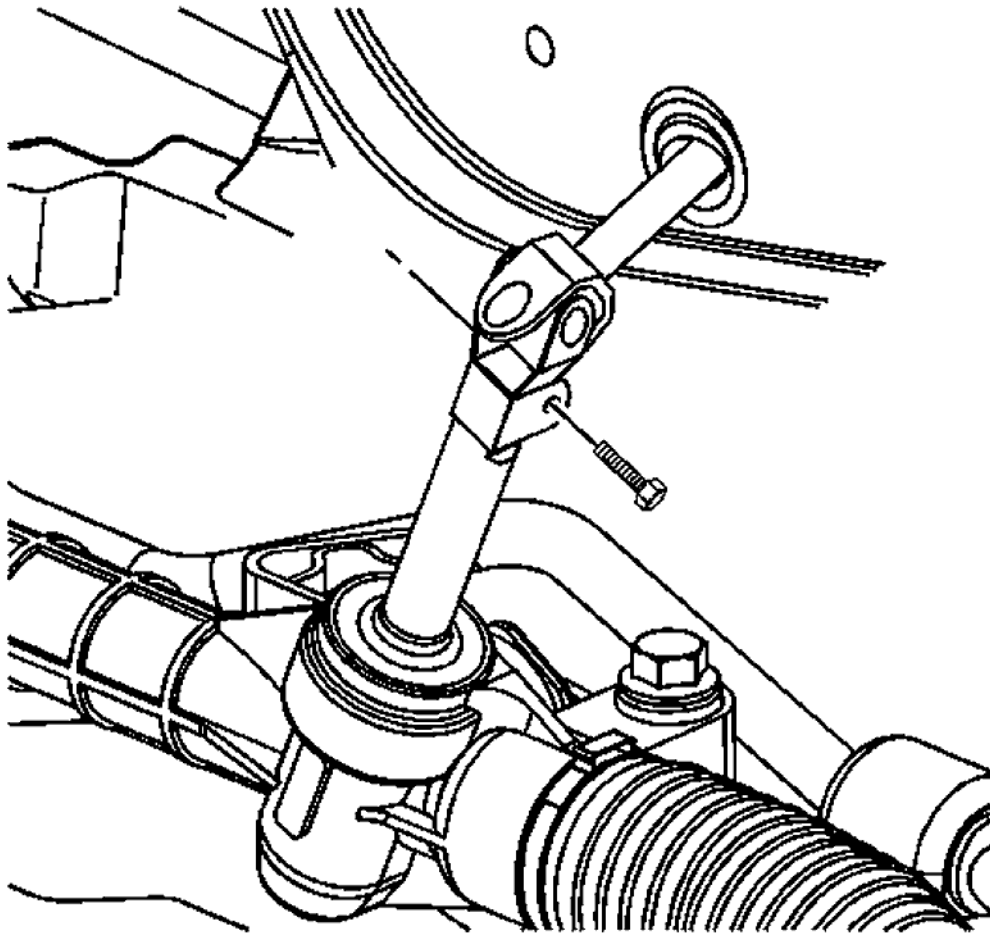


Fig. 7: View Of Intermediate Shaft-To-Steering Gear Pinch Bolt
Courtesy of GENERAL MOTORS CORP.

11. Remove the intermediate steering shaft to steering gear pinch bolt and discard.

IMPORTANT: DO NOT rotate the intermediate shaft once separated from the gear. Possible damage or a malfunction could occur.

12. Disconnect the intermediate steering shaft from the steering gear.

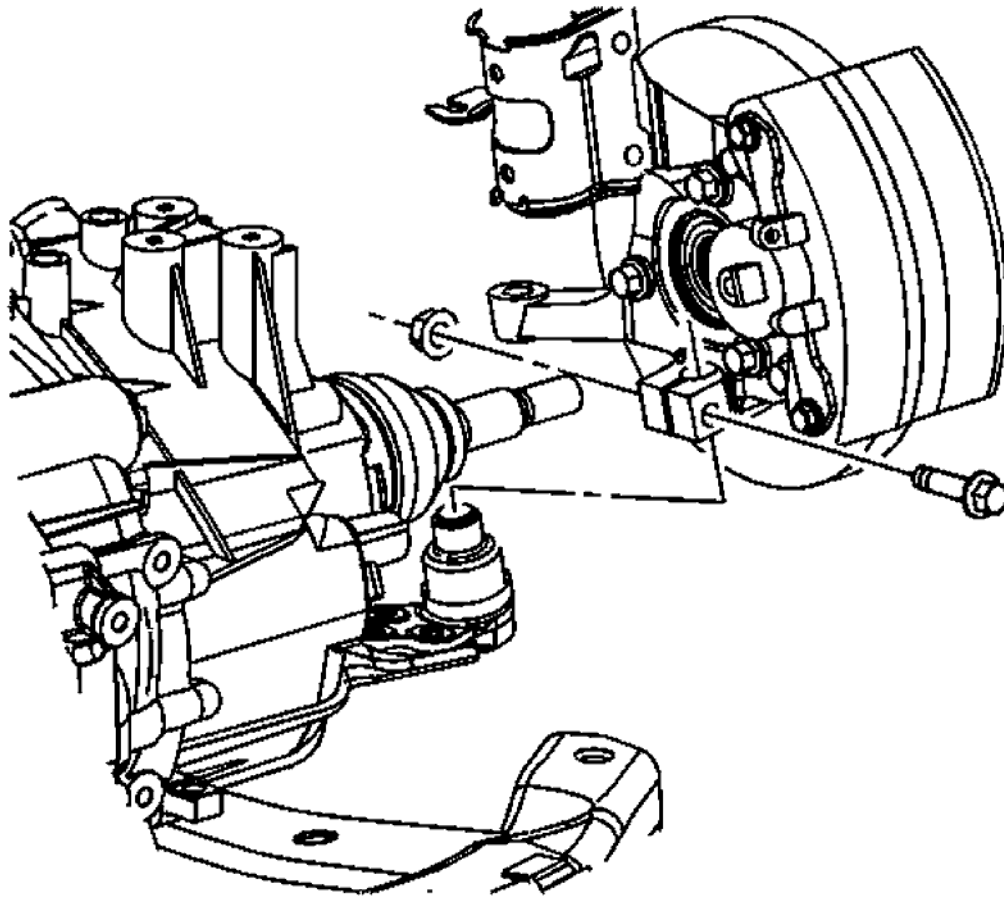


Fig. 8: Identifying Lower Control Arm Ball Stud-To-Steering Knuckle Pinch Bolt
Courtesy of GENERAL MOTORS CORP.

13. Remove both lower control arm ball stud to steering knuckle pinch bolts.

NOTE: Do not free the ball stud by using a pickle fork or a wedge-type tool. Damage to the seal or bushing may result.

14. Lower the lower control arms in order to disengage the steering knuckle. If necessary, use the J 43631 . See Special Tools.
15. Mark the frame to body position with a paint pen or permanent marker.

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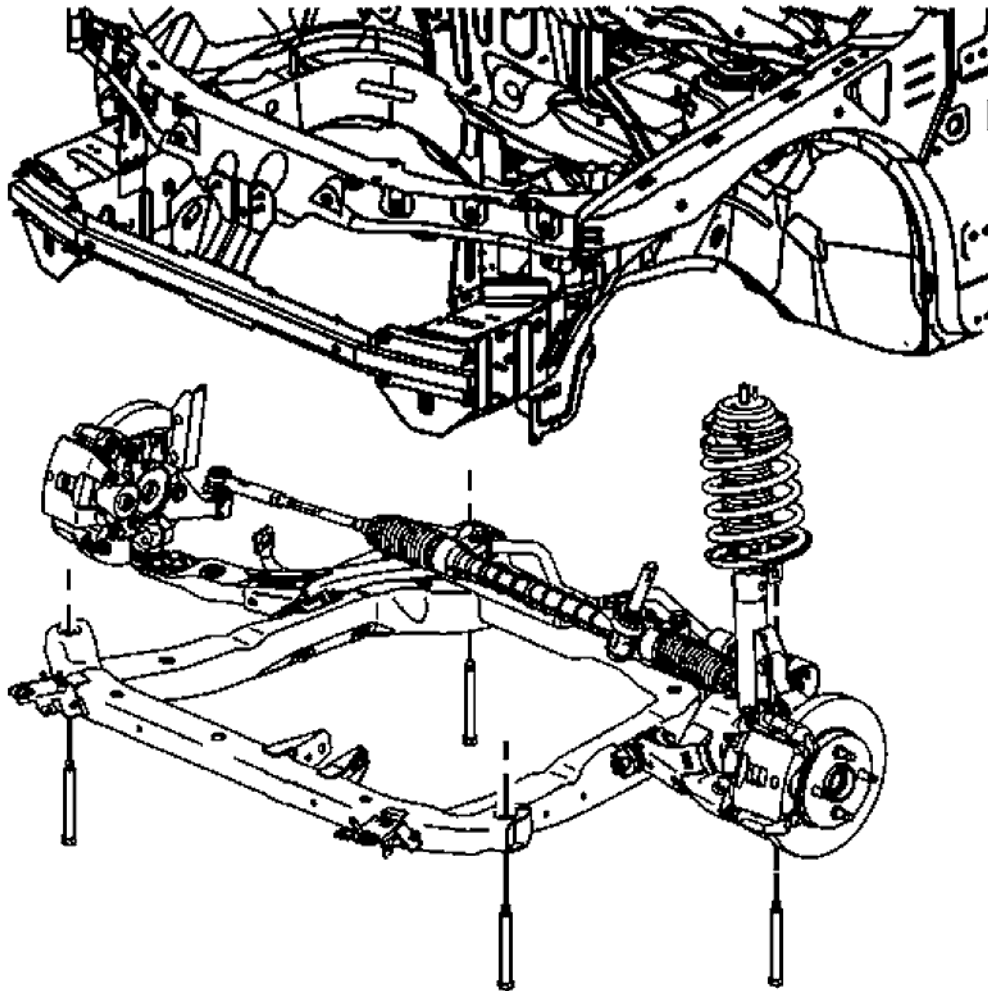


Fig. 9: View Of Frame Bolts
Courtesy of GENERAL MOTORS CORP.

16. Lower the vehicle to about 3 feet off the ground in order to place a hydraulic lift table under the frame.
17. Use two 2 x 4's between the lift table and the frame and lift the table to the frame.
18. Slowly remove the frame bolts using the following sequence:
 1. Remove the front frame bolts.
 2. Partially unscrew the rear frame bolts exposing 25.4 mm (1.5 in) of bolt shank.
19. Slowly lower the lift table to the floor.
20. Continue with the following steps when replacing the frame:

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1. Remove the steering gear from the frame. Refer to **Power Steering Gear Replacement** .
2. Remove the stabilizer bar from the frame. Refer to **Stabilizer Shaft Replacement** .
3. Remove the lower control arms from the frame. Refer to **Lower Control Arm Replacement** .
4. Remove the radiator brackets from the frame.

Installation Procedure

1. If replacing the frame, perform the following steps:
 1. Install the radiator brackets to the frame.
 2. Install the lower control arms to the frame. Refer to **Lower Control Arm Replacement** .
 3. Install the stabilizer bar to the frame. Refer to **Stabilizer Shaft Replacement** .
 4. Install the steering gear to the frame. Refer to **Power Steering Gear Replacement** .
2. With the frame on the lift table, raise the frame to the vehicle.

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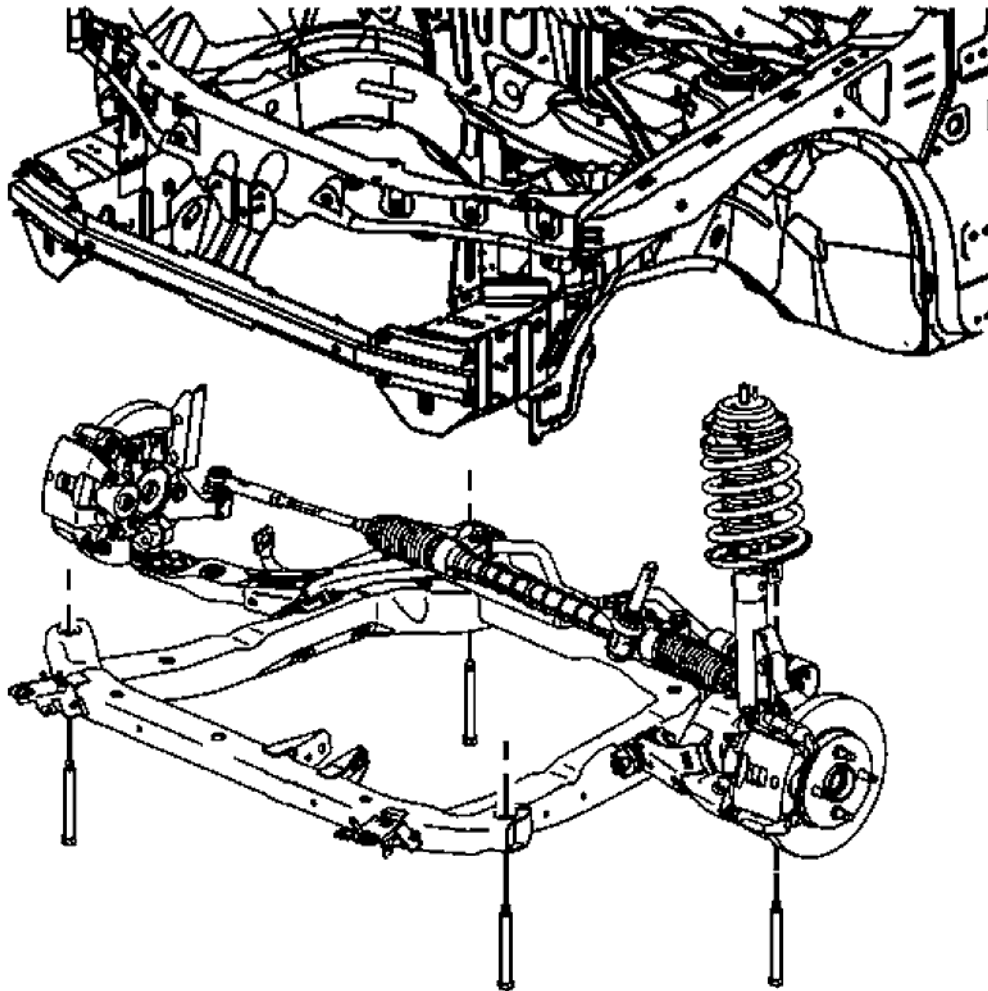


Fig. 10: View Of Frame Bolts
Courtesy of GENERAL MOTORS CORP.

3. Hand start all the frame bolts while aligning the frame to the paint marks.

NOTE: Refer to Fastener Notice .

4. Tighten the frame bolts.

Tighten: Tighten the bolts to 100 N.m plus 180 degrees (74 lb ft) plus 180 degrees.

5. Lower and remove the hydraulic table.

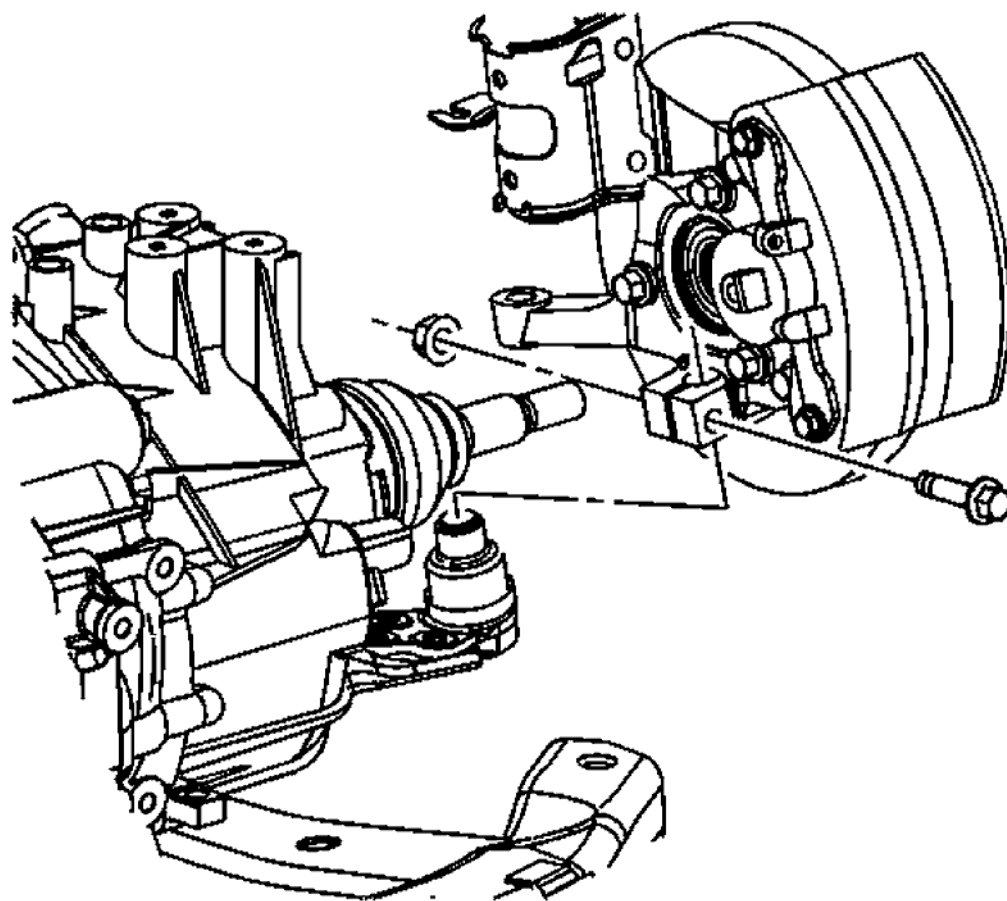


Fig. 11: Identifying Lower Control Arm Ball Stud-To-Steering Knuckle Pinch Bolt

Courtesy of GENERAL MOTORS CORP.

6. Connect the lower control arm to the steering knuckle.

IMPORTANT: The torque sequence must be followed in the order that is listed.

7. Install the ball joint pinch bolt and nut.

Tighten:

1. First Pass: Tighten the nut to 50 N.m (37 lb ft).
2. Reverse nut 3/4 turn
3. Second Pass: Tighten the nut to 50 N.m (37 lb ft) plus 30 degrees.

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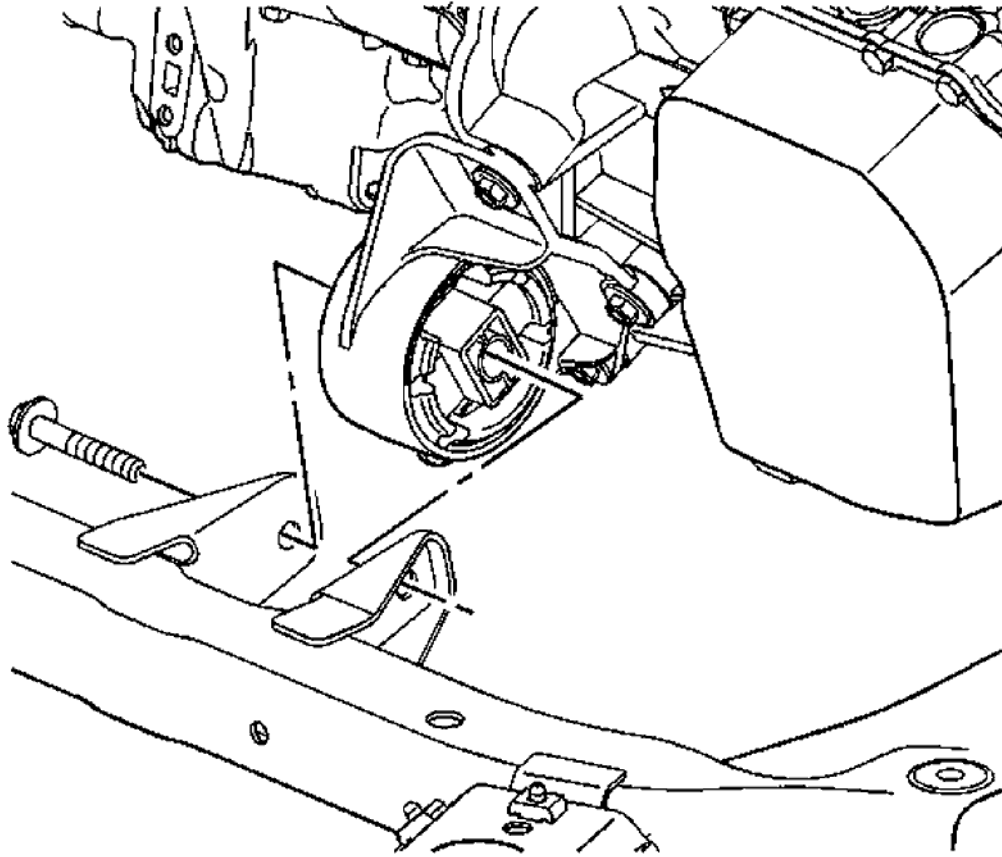


Fig. 12: View Of Front Transmission Mount Through Bolt
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: The front and rear transmission mounts must be allowed to settle with the through bolts loosened.

8. Hand start the front transaxle mount through bolt.
9. Loosen the rear transmission mount through bolt.

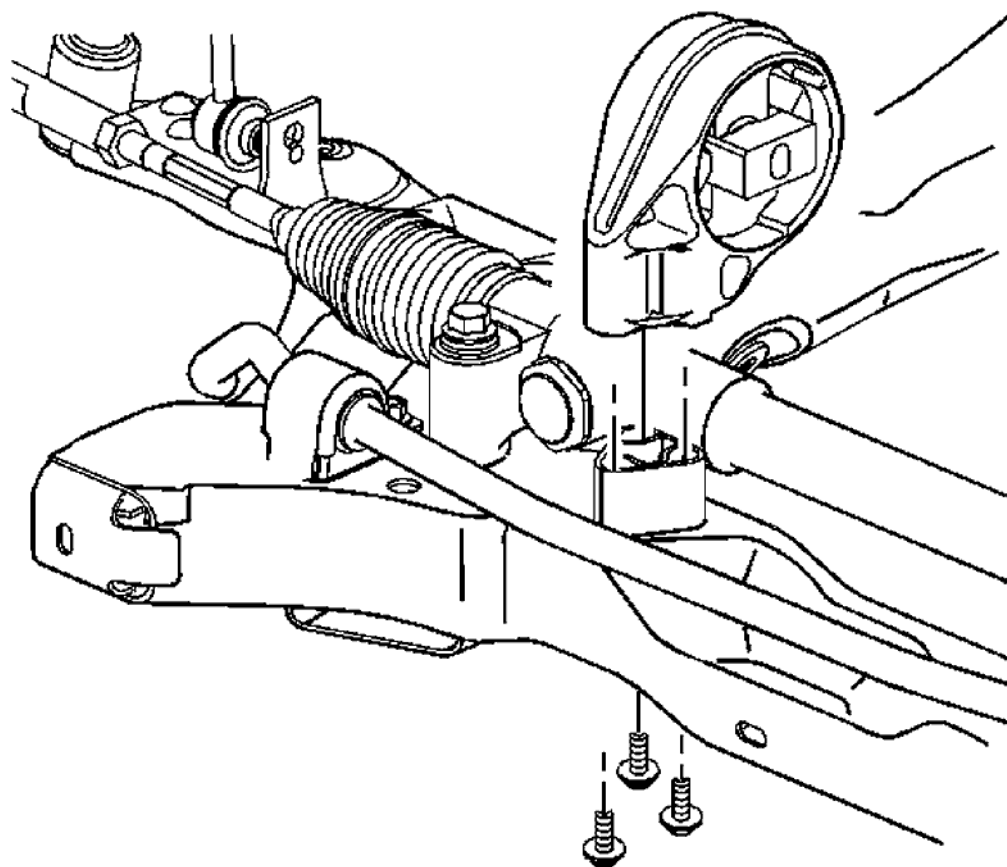


Fig. 13: View Of Rear Transaxle Mount To Frame Bolts
Courtesy of GENERAL MOTORS CORP.

10. Tighten the rear transaxle mount to frame bolts.

Tighten: Tighten the rear bolts to 50 N.m (37 lb ft).

11. Tighten the front and rear transaxle mount through bolts in the following order.

Tighten:

1. Tighten the rear bolt to 100 N.m (74 lb ft).
2. Tighten the front bolt to 100 N.m (74 lb ft).

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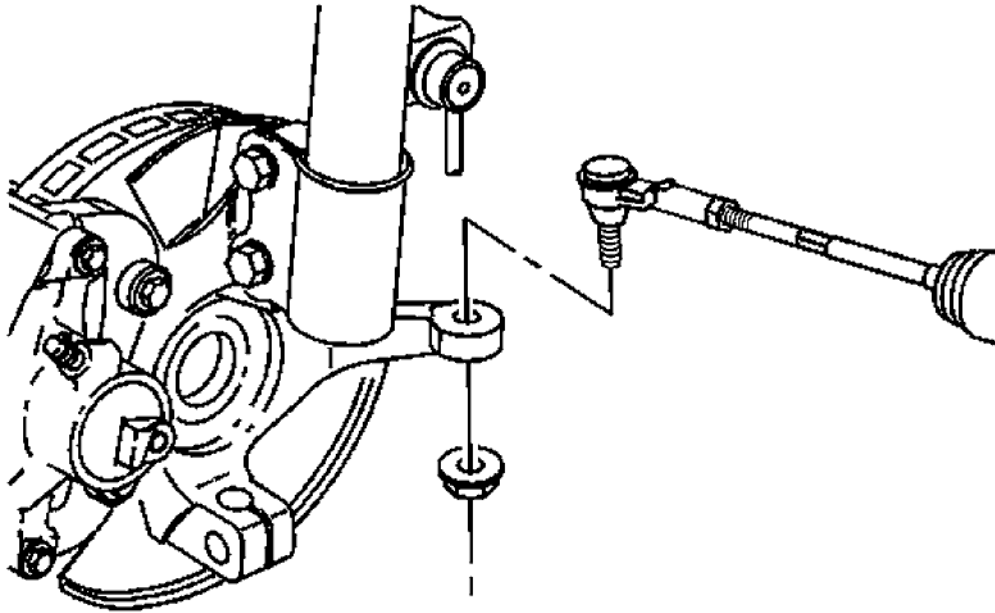


Fig. 14: View Of Tie Rod End To Steering Knuckle
Courtesy of GENERAL MOTORS CORP.

12. Install the outer tie rods to the steering knuckles.
13. Install the new outer tie rod to the knuckle nuts.

Tighten: Tighten the nuts to 20 N.m (15 lb ft) plus 180 degrees.

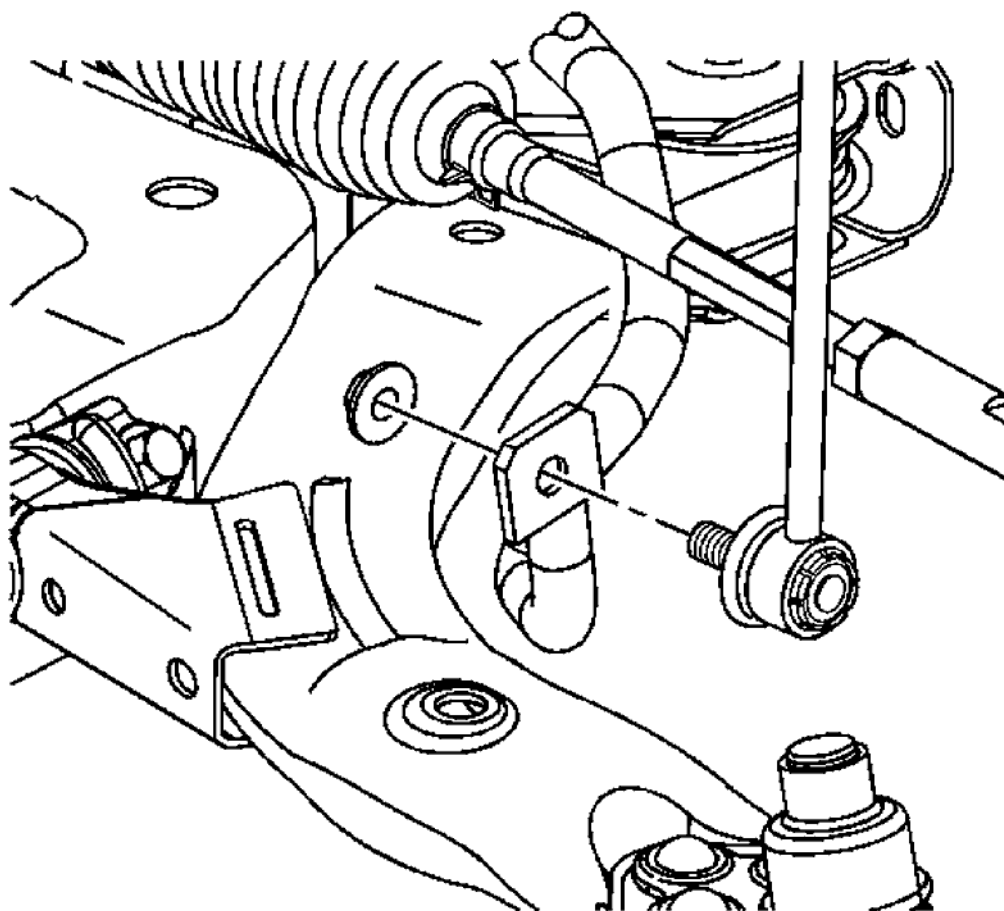


Fig. 15: View Of Stabilizer Link At Stabilizer Shaft
Courtesy of GENERAL MOTORS CORP.

14. Connect the stabilizer links to the stabilizer shaft. Refer to **Stabilizer Shaft Link Replacement** .
15. Connect the intermediate shaft to the steering gear.
16. Install a new intermediate shaft pinch bolt.

Tighten: Tighten the bolt to 34 N.m (25 lb ft).

17. Install the left and right wheel house liners. Refer to **Wheelhouse Liner Replacement - Front** .
18. Install the front wheels. Refer to **Tire and Wheel Removal and Installation** .
19. Lower the vehicle.
20. Road test the vehicle in order to test for the following conditions:

- Steering leads or pulls-Refer to **Measuring Wheel Alignment** .
- Abnormal powertrain noise or vibration at idle. Inspect the engine and transmission mounts for proper alignment and torque.

DESCRIPTION AND OPERATION

FLOOR PAN INSULATORS DESCRIPTION

Floor pan insulators have been designed for the higher floor pan temperatures. Higher temperatures result from the use of the catalytic converter in the exhaust system. If you remove or disturb any insulators when servicing the vehicle in the field, reinstall the insulators in the original sequence and location. Use the material specified for that particular location on the floor pan if you replace an insulator.

IMPORTANT: Ensure that the following materials meet the Motor Vehicle Safety Standard Number 302 for flammability.

- Floor pan insulator (cerra blanket thermal)
Consists of 10 mm (3/8 in) thick aluminum silica (type 1).
- Floor pan insulator (amberlite)
Consists of 10 mm (3/8 in) thick resinated fibers (type 2).
- Floor pan insulator sheet (phenolic bonded fiberglass) 305 x 457 mm (12 x 18 in) cut to size (type 3)

Types 1 and 2 have the following characteristics:

- Rolled stock
- Ordered by linear foot
- Cut to fit

When servicing or replacing interior insulators, observe the following instructions:

- Install the insulators in the original position and sequence. Place the pieces close together in order to avoid gapping or overlapping.
- Use the original part for the following reasons:
 - In order to determine the amount of replacement material required
 - As a template for cutting and fitting the new piece to the floor pan
- When installing the insulator, do not enlarge the cutouts or holes. The cutouts or holes are used for the attachment of the interior components such as seats or seat belts.

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- Route the cross body harnesses for the following interior components over the floor pan insulators and into the original location:
 - The power seats
 - The lap belt warning light and alarm
 - The rear speakers

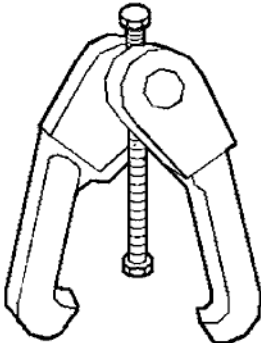
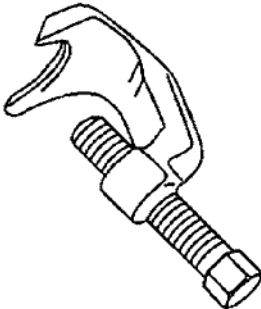
Clip the cross body harnesses into place.

- Do not apply the spray-on deadeners and trim adhesive to the top of the floor pan at the area located directly over the catalytic converter or muffler(s).

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Special Tools

Illustration	Tool Number/Description
	J-24319-B Steering Linkage and Tie Rod Puller
	J-43631 Ball Joint Remover