
Fastener Tightening Specifications

Application	Specification	
	Metric	English
Bumper Nut	25 N·m	18 lb ft
Catalytic Converter Nut	50 N·m	37 lb ft
Exhaust Hanger Mounting Bracker Bumper Nuts	25 N·m	18 lb ft
Exhaust Manifold Bolt (LP1, LY7, LLT)	20 N·m	15 lb ft
Exhaust Manifold Heat Shield Bolt (LP1, LY7, LLT)	10 N·m	89 lb in
Exhaust Manifold Heat Shield Bolt (LSA)	9 N·m	80 lb in
Exhaust Pipe Nut	17 N·m	13 lb ft
Floor Panel Tunnel Brace Bolt	25 N·m	18 lb ft

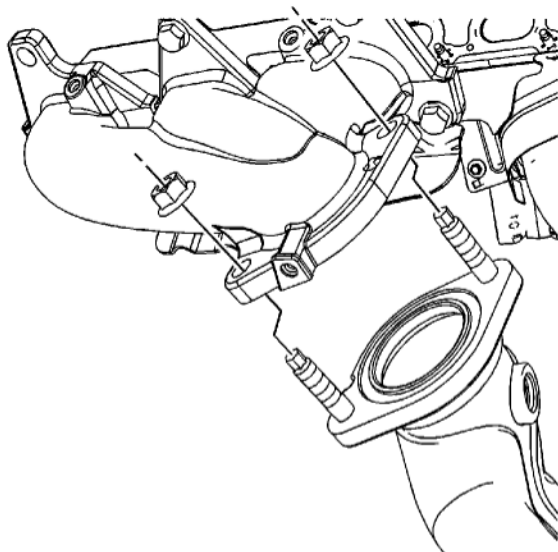
Exhaust Manifold Replacement - Left Side (V6)

Removal Procedure

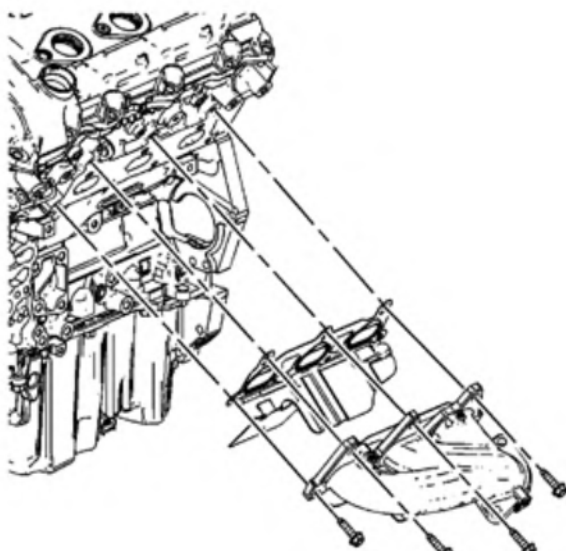
Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

1. Remove the exhaust manifold heat shield. Refer to [Exhaust Manifold Heat Shield Replacement - Left Side](#).
2. Remove the oil level indicator and tube. Refer to [Oil Level Indicator Tube Replacement](#).



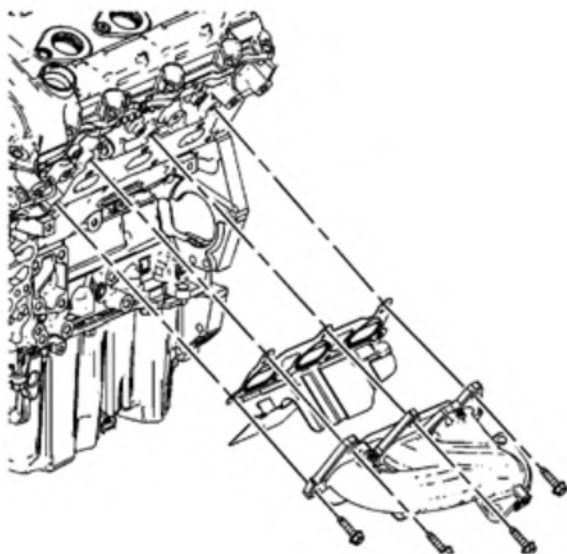
3. Remove the lower intermediate steering shaft. Refer to [Lower Intermediate Steering Shaft Replacement](#).





4. Remove the catalytic converter. Refer to [Catalytic Converter Replacement - Left Side](#).
5. Remove the exhaust manifold and discard the exhaust manifold gasket.
6. If reusing the exhaust manifold, clean and inspect the exhaust manifold sealing surfaces. Refer to [Exhaust Manifold Cleaning and Inspection - Left Side](#).

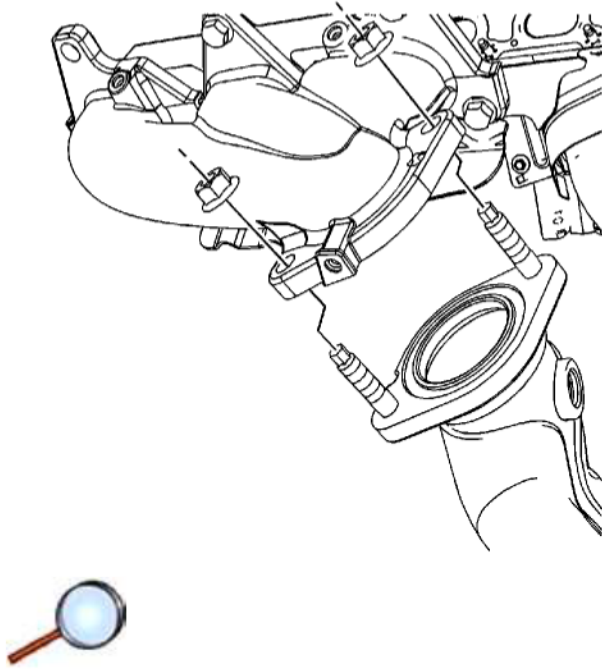
Installation Procedure



1. Install a NEW exhaust manifold gasket to the exhaust manifold.
2. Install the exhaust manifold and the gasket to the cylinder head.

Caution: Refer to [Fastener Caution](#) in the Preface section.

3. Install the exhaust manifold bolts and tighten to **20 N·m (15 lb ft)**.



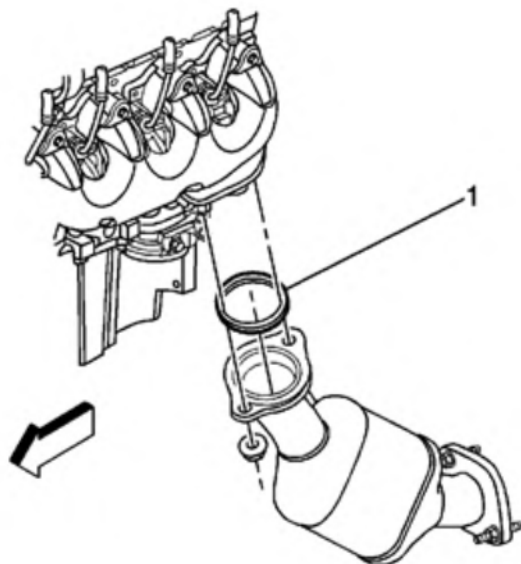
Note: Inspect the catalytic converter seal/heat shield sealing surface. replace the seal/heat shield if the sealing surface is worn or damaged.

4. Install the catalytic converter to the exhaust manifold. Refer to [Catalytic Converter Replacement - Left Side](#).
5. Install the lower intermediate steering shaft. [Lower Intermediate Steering Shaft Replacement](#).
6. Install the oil level indicator and tube. Refer to [Oil Level Indicator Tube Replacement](#).
7. Install the exhaust manifold heat shield. Refer to [Exhaust Manifold Heat Shield Replacement - Left Side](#).
8. Inspect the exhaust system for leaks.

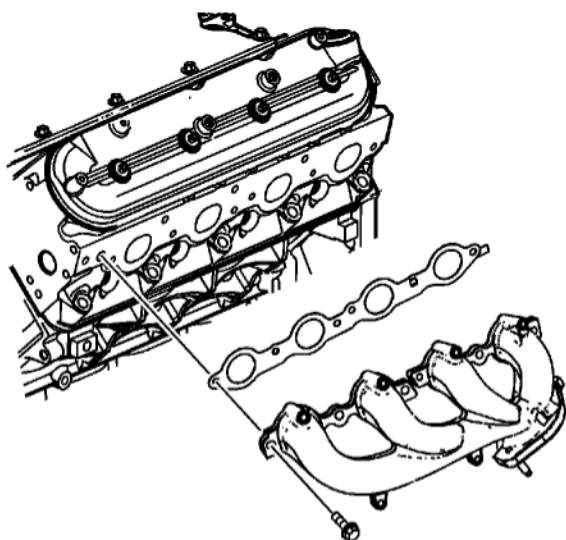
Exhaust Manifold Replacement - Left Side (V8)

Removal Procedure

1. Remove the engine sight shield. Refer to [Intake Manifold Cover Replacement - Front](#).
2. Remove the left bank coil assembly. Refer to [Ignition Coil Replacement](#).
3. Remove the left bank spark plugs. Refer to [Spark Plug Replacement](#).
4. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).



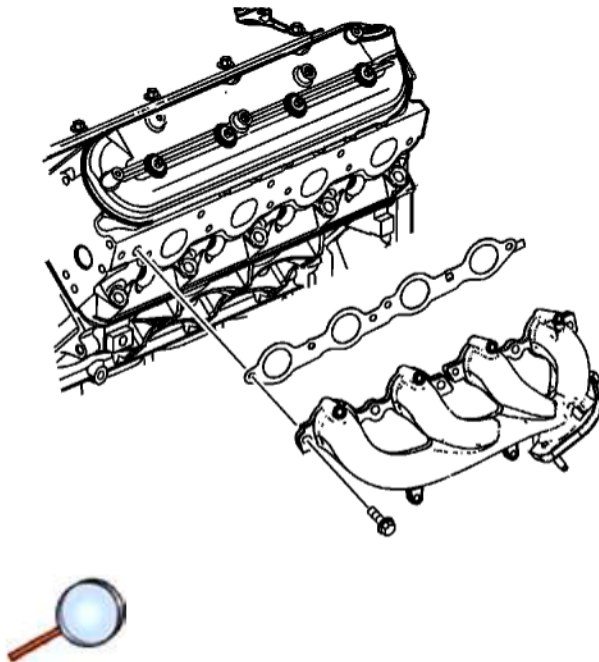
5. Remove the left catalytic converter and seal (1). Refer to [Catalytic Converter Replacement - Left Side](#).



6. Disconnect the center steering shaft from the lower steering shaft. Separate the shafts and position aside to provide a removal envelope for the manifold. Refer to [Intermediate Steering Shaft Replacement](#).
7. Lower the vehicle.
8. Remove the exhaust manifold bolts.
9. Remove the exhaust manifold, bolts, and gasket. Discard the gasket.
10. Remove the heat shield from the manifold, if required.
11. Clean and inspect the exhaust manifold. Refer to [Exhaust Manifold Cleaning and Inspection](#).

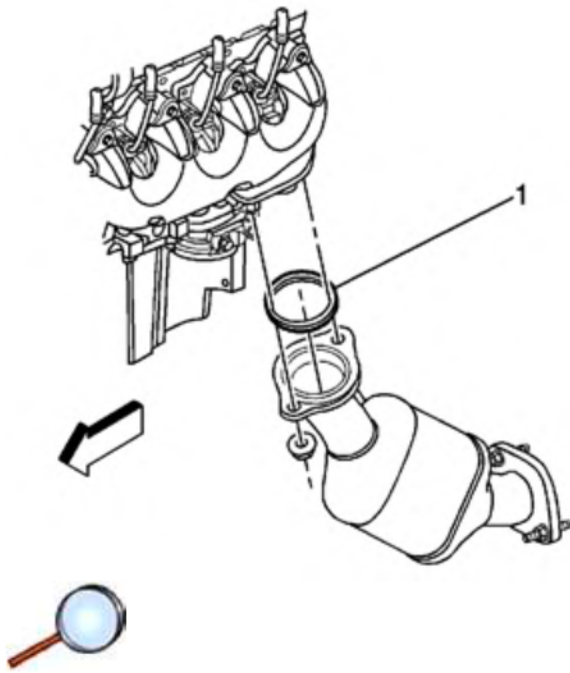
Installation Procedure

Caution: Refer to [Fastener Caution](#) in the Preface section.



Note: Tighten the exhaust manifold bolts as specified in the service procedure. Improperly installed and/or leaking exhaust manifold gaskets may effect vehicle emissions and/or On-Board Diagnostics (OBD) II system performance.

1. If necessary, install the exhaust manifold heat shield and bolts and tighten to **10 N·m (89 lb in)**.
2. Position the exhaust manifold and a NEW gasket into place.
3. Lower the vehicle.
4. Install the exhaust manifold bolts. Refer to [Exhaust Manifold Installation - Left Side](#).
5. Connect the center steering shaft to the lower steering shaft. Refer to [Intermediate Steering Shaft Replacement](#).



6. Install the left catalytic converter and seal (1). Refer to [Catalytic Converter Replacement - Left Side](#).
7. Lower the vehicle.
8. Install the left bank spark plugs. Refer to [Spark Plug Replacement](#).
9. Install the left bank coil assembly. Refer to [Ignition Coil Replacement](#).
10. Install the engine sight shield. Refer to [Intake Manifold Cover Replacement - Front](#).

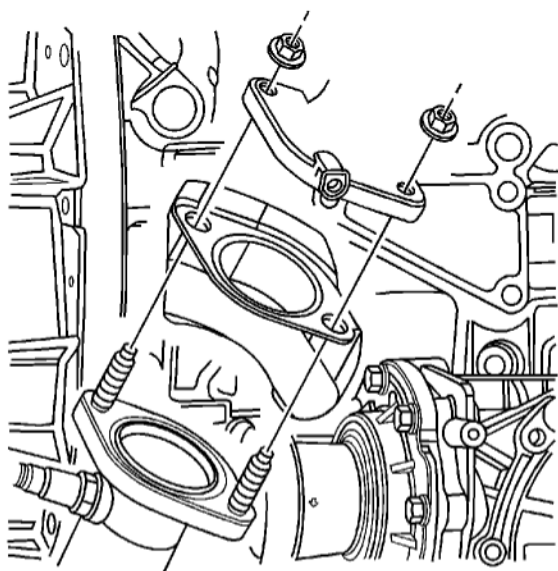
Exhaust Manifold Replacement - Right Side (V6)

Removal Procedure

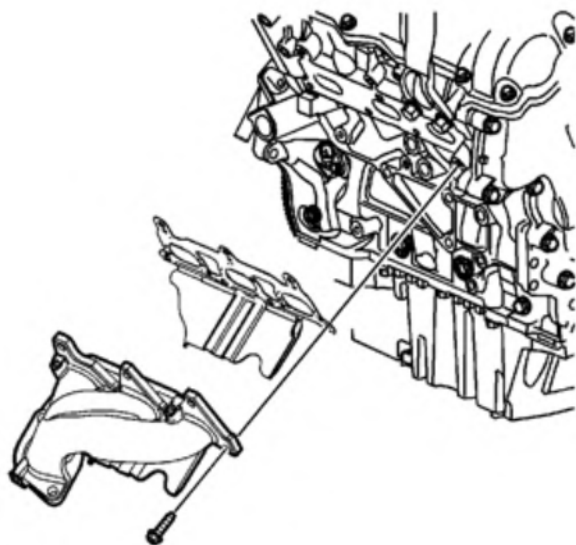
Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

1. Remove the exhaust manifold heat shield. Refer to [Exhaust Manifold Heat Shield Replacement - Right Side](#).



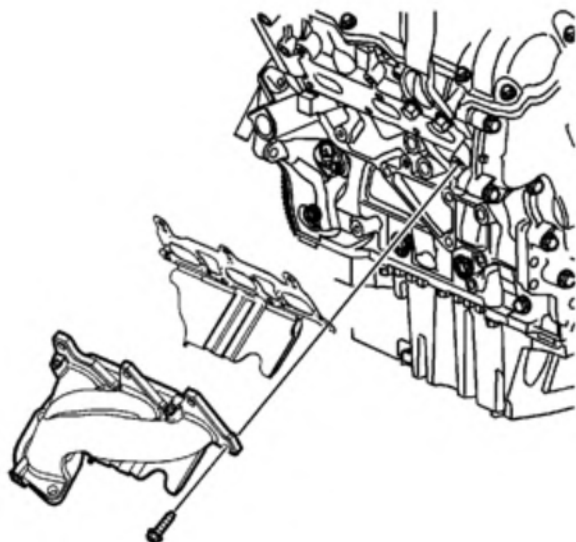
2. Remove the catalytic converter nuts.





3. Remove the exhaust manifold bolts.
4. Remove the exhaust manifold and discard the exhaust manifold gasket.
5. If reusing the exhaust manifold, clean and inspect the exhaust manifold sealing surfaces.
Refer to [Exhaust Manifold Cleaning and Inspection - Right Side](#).

Installation Procedure

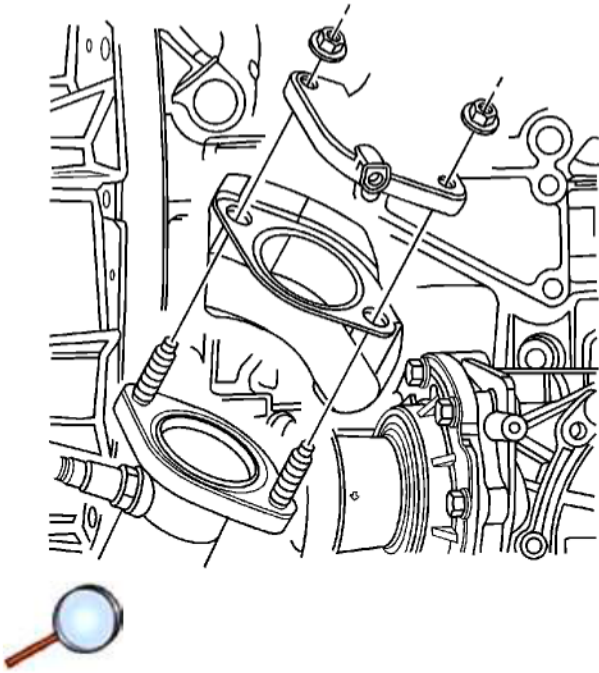


Note : Inspect the catalytic converter seal/heat shield sealing surface. Replace the seal/heat shield if the sealing surface is worn or damaged.

1. Install a NEW exhaust manifold gasket to the exhaust manifold.
2. Install the exhaust manifold with the gasket to the cylinder head and the catalytic converter.

Caution: Refer to [Fastener Caution](#) in the Preface section.

3. Install the exhaust manifold bolts and tighten to **20 N·m (15 lb ft)**.

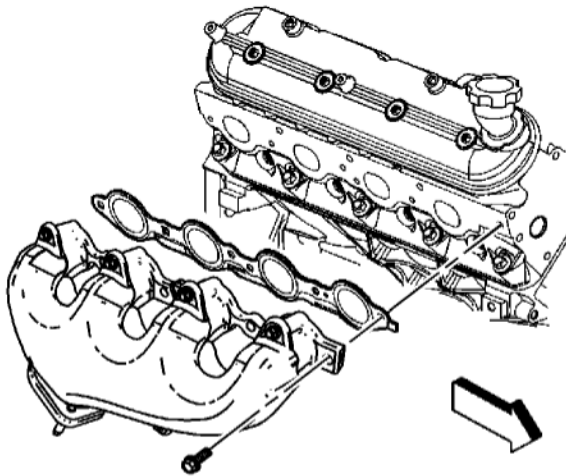


4. Install the catalytic converter nuts and tighten to **50 N·m (37 lb ft)**.
5. Install the exhaust manifold heat shield. Refer to [Exhaust Manifold Heat Shield Replacement - Right Side](#).
6. Inspect the exhaust system for leaks.

Exhaust Manifold Replacement - Right Side (V8)

Removal Procedure

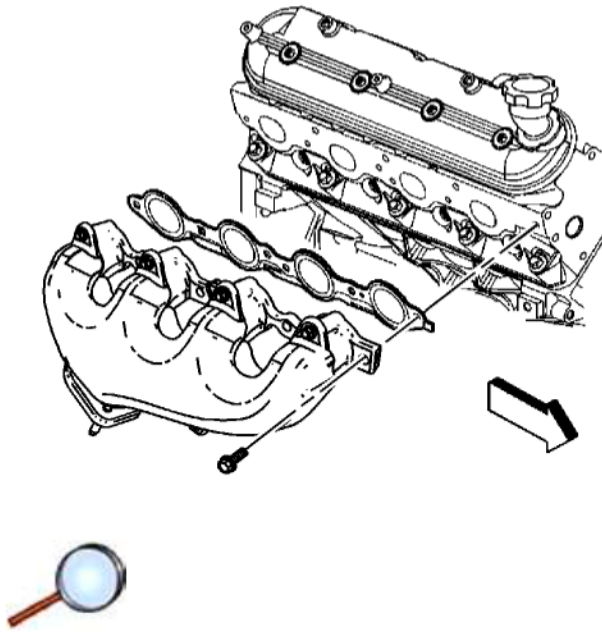
1. Remove the engine sight shield. Refer to [Intake Manifold Cover Replacement - Front](#).
2. Remove the right bank coil assembly. Refer to [Ignition Coil Replacement](#).
3. Remove the right bank spark plugs. Refer to [Spark Plug Replacement](#).
4. Remove the oil level dipstick tube. Refer to [Oil Level Indicator Tube Replacement](#).
5. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
6. Remove the right catalytic converter. Refer to [Catalytic Converter Replacement - Right Side](#).



7. Remove the starter motor. Refer to [Starter Replacement](#).
8. Remove the exhaust manifold bolts.
9. Remove the exhaust manifold, bolts, and gasket. Discard the gasket.
10. Remove the heat shield from the manifold, if required.
11. Clean and inspect the exhaust manifold. Refer to [Exhaust Manifold Cleaning and Inspection](#).

Installation Procedure

Caution: Refer to [Fastener Caution](#) in the Preface section.



Note: Tighten the exhaust manifold bolts as specified in the service procedure. Improperly installed and/or leaking exhaust manifold gaskets may effect vehicle emissions and/or On-Board Diagnostics (OBD) II system performance.

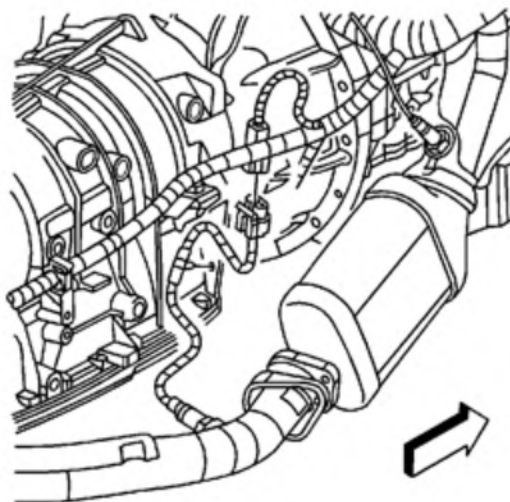
1. If necessary, install the exhaust manifold heat shield and bolts and tighten to **9 N·m (80 lb in)**.
2. Position the exhaust manifold and a NEW gasket into place.
3. Install the exhaust manifold bolts. Refer to [Exhaust Manifold Installation - Right Side](#).
4. Install the starter motor. Refer to [Starter Replacement](#).
5. Install the right catalytic converter. Refer to [Catalytic Converter Replacement - Right Side](#).
6. Lower the vehicle.
7. Install the right bank spark plugs. Refer to [Spark Plug Replacement](#).
8. Install the right bank coil assembly. Refer to [Ignition Coil Replacement](#).
9. Install the oil level dipstick tube. Refer to [Oil Level Indicator Tube Replacement](#).
10. Install the engine sight shield. Refer to [Intake Manifold Cover Replacement - Front](#).

Exhaust System Replacement (With LY7 or LLT)

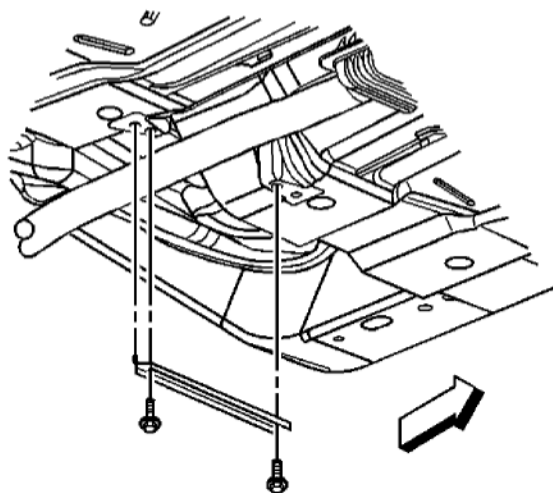
Removal Procedure

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

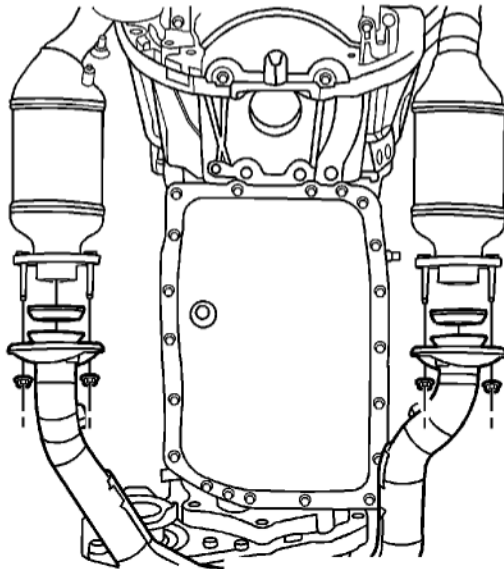


1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Disconnect the left bank and the right bank heated oxygen sensor (HO2S) electrical connectors (bank 1 shown, bank 2 similar).
3. Disconnect both the HO2S harnesses from the transmission case.

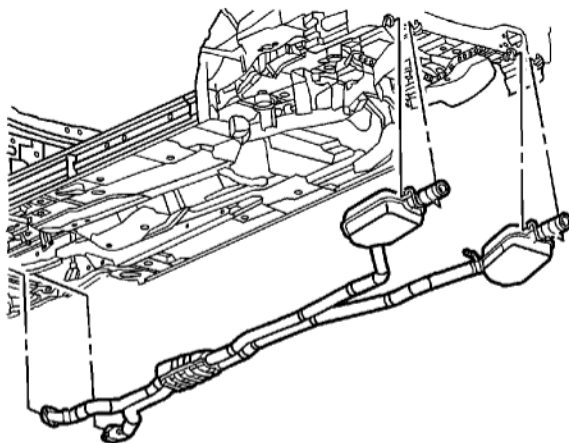




4. Remove the floor panel tunnel brace bolts.
5. Remove the floor panel tunnel brace from the floor panel.



6. Remove the catalytic converter to the exhaust pipe nuts and separate the exhaust system from the catalytic converters.
7. Using an adjustable jack stand, support the rear of the exhaust system.
8. Apply a non petroleum based lubricant to the exhaust insulators and the hanger rods to aid in removal and installation.
9. Remove the rear exhaust system insulators from the exhaust hangers, leaving the insulators attached to the body hangers. Refer to [Exhaust System Insulator, Hanger, Bracket Replacement](#).



10. With the aid of an assistant, lower the exhaust system from the vehicle.

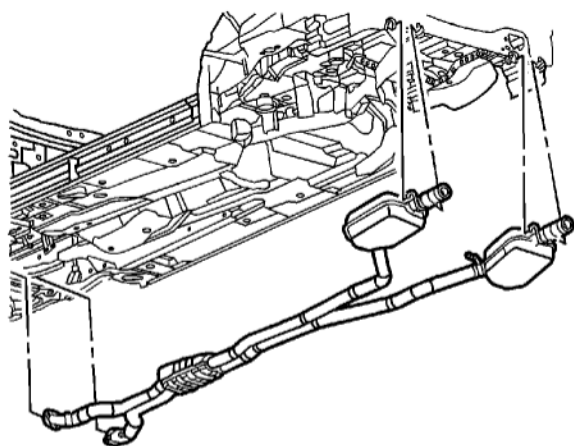
11. Remove the left bank and the right bank HO2S from the exhaust system. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 2](#) and [Heated Oxygen Sensor Replacement - Bank 2 Sensor 2](#).

Installation Procedure

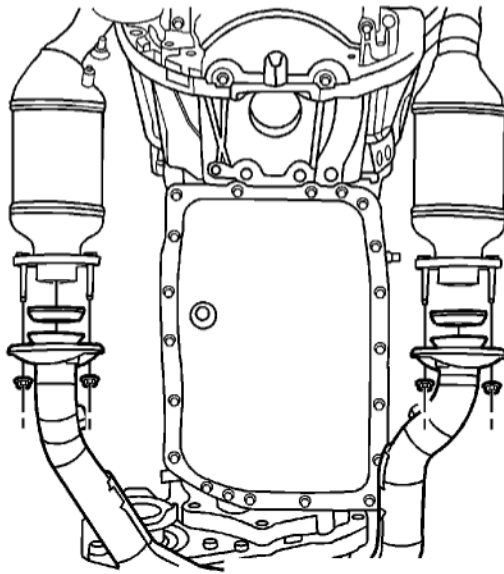
1. Install both the HO2S to the exhaust system. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 2](#) and [Heated Oxygen Sensor Replacement - Bank 2 Sensor 2](#).

Caution: Refer to [Exhaust System Inspection Caution](#) in the Preface section.

Caution: Refer to [Flex Decoupler Caution](#) in the Preface section.



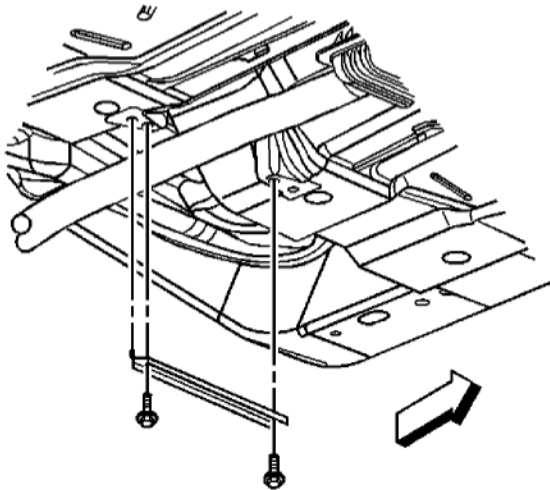
2. With the aid of an assistant, raise the exhaust system to the insulators and to the catalytic converters.
3. Install the muffler hanger rods to the body insulators. Refer to [Exhaust System Insulator, Hanger, Bracket Replacement](#).



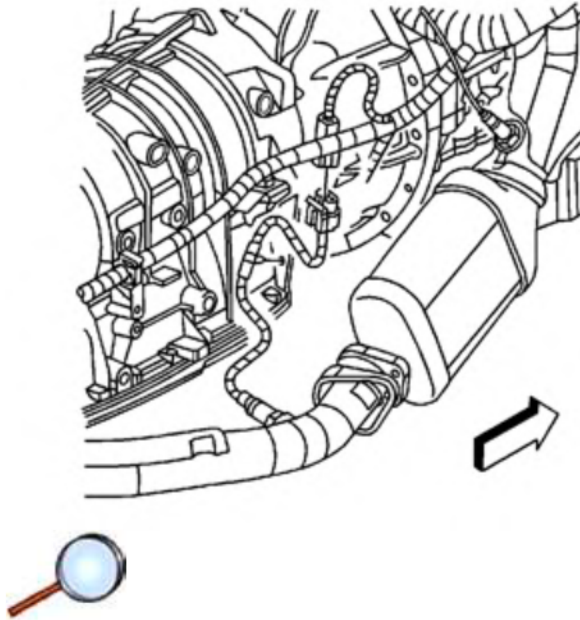
4. Position the exhaust pipe to the catalytic converters.

Caution: Refer to [Fastener Caution](#) in the Preface section.

5. Install the catalytic converter to the exhaust pipe nuts and tighten to **17 N·m (13 lb ft)**.



6. Install the floor panel tunnel brace to the floor panel.
7. Install the floor panel tunnel brace bolts and tighten to **25 N·m (18 lb ft)**.



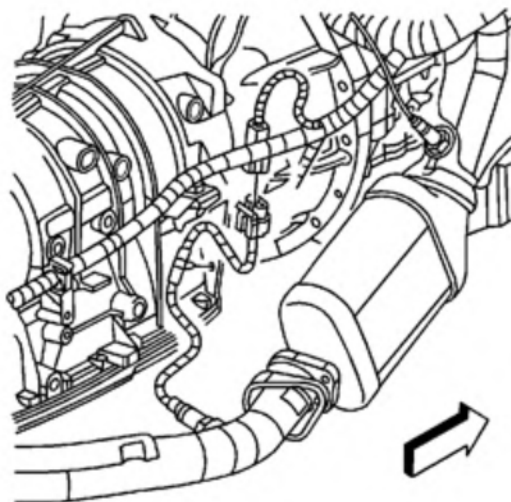
8. Connect the left bank and the right bank 2 HO2S electrical connectors (bank 1 shown, bank 2 similar).
9. Install the HO2S wiring harnesses to the transmission case.
10. Lower the vehicle.
11. Inspect for exhaust leaks.

Exhaust System Replacement (LP1)

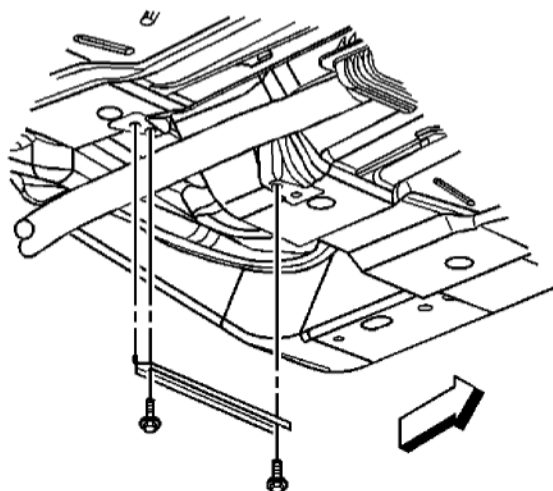
Removal Procedure

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

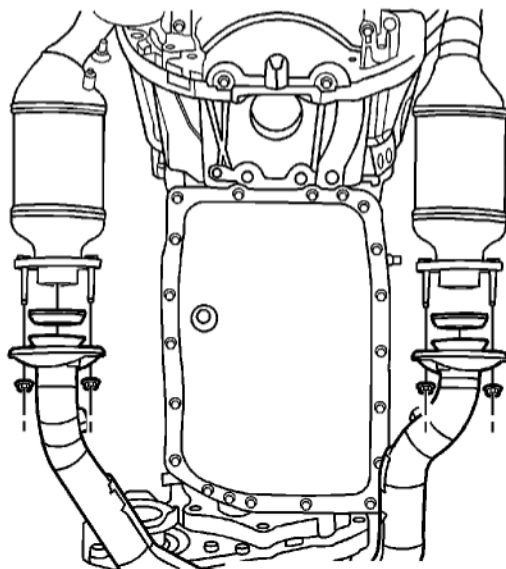


1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Disconnect the left bank and the right bank 2 heated oxygen sensor (HO2S) electrical connectors (bank 1 shown, bank 2 similar) from the harnesses.
3. Remove the HO2S wiring harnesses from the transmission case.

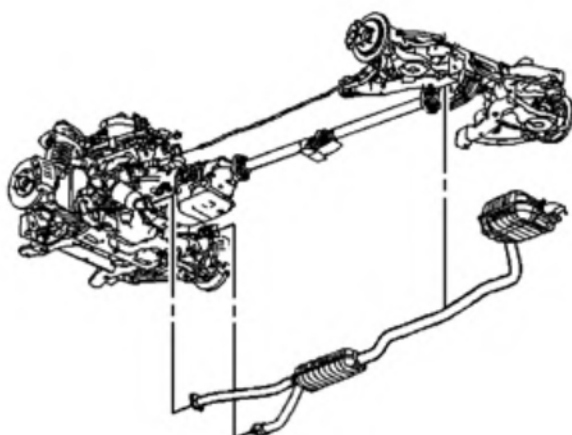




4. Remove the floor panel tunnel brace bolts.
5. Remove the floor panel tunnel brace from the floor panel.



6. Remove the catalytic converter to the exhaust pipe nuts and separate the exhaust system from the catalytic converters.
7. Using an adjustable jack stand, support the rear of the exhaust system.
8. Apply a non petroleum based lubricant to the exhaust insulators and the muffler hanger rods to aid in removal and installation.
9. Remove the rear muffler insulators from the muffler hanger rods leaving the insulators attached to the vehicle. Refer to [Exhaust System Insulator, Hanger, Bracket Replacement](#).



10. With the aid of an assistant, lower the exhaust system from the vehicle.
11. Remove the left bank and the right bank HO₂S from the exhaust system. Refer to [Heated](#)

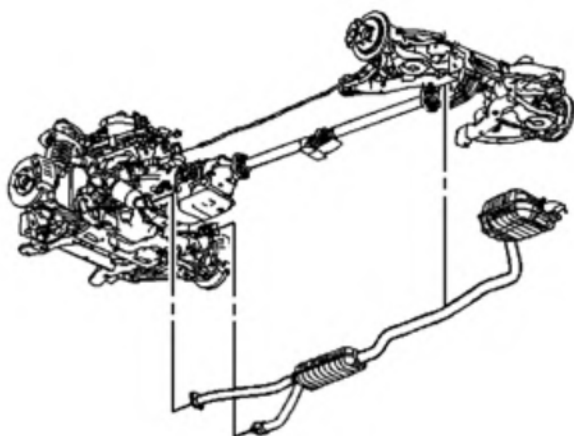
[Oxygen Sensor Replacement - Bank 1 Sensor 2.](#)

Installation Procedure

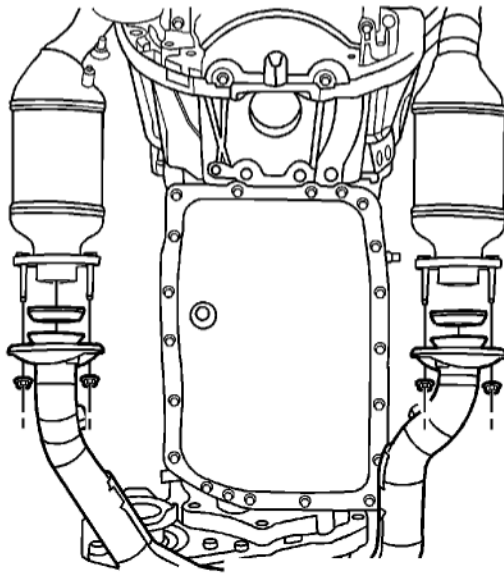
1. Install the left bank and the right bank HO2S to the exhaust system. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 2.](#)

Caution: Refer to [Exhaust System Inspection Caution](#) in the Preface section.

Caution: Refer to [Flex Decoupler Caution](#) in the Preface section.



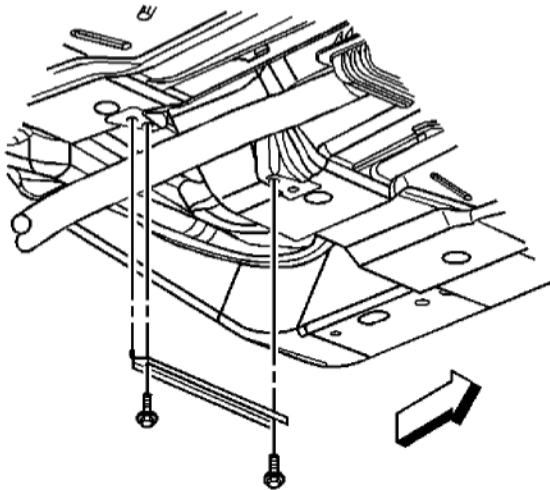
2. With the aid of an assistant, raise the exhaust system to the body insulators and to the catalytic converters.
3. Install the muffler hanger rods to the muffler insulators. Refer to [Exhaust System Insulator, Hanger, Bracket Replacement.](#)



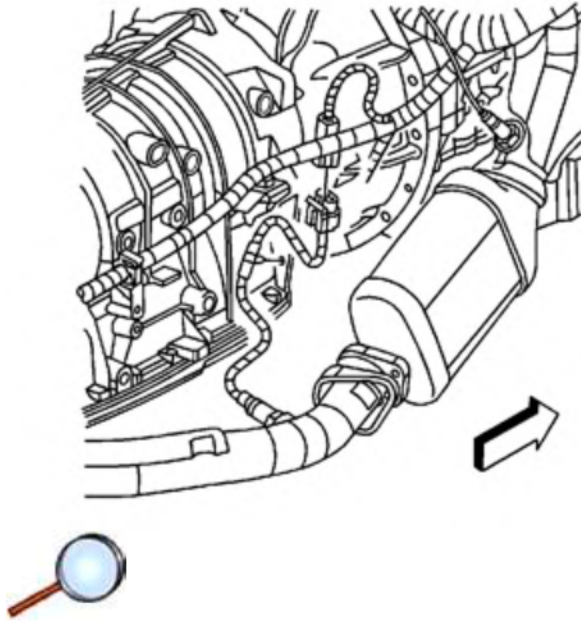
4. Position the exhaust pipe to the catalytic converts.

Caution: Refer to [Fastener Caution](#) in the Preface section.

5. Install the catalytic converter to exhaust pipe nuts and tighten to **17 N·m (13 lb ft)**.



6. Install the floor panel tunnel brace to the floor panel.
7. Install the floor panel tunnel brace bolts and tighten to **25 N·m (18 lb ft)**.



8. Connect the left and right bank 2 HO2S electrical connectors (bank 1 shown, bank 2 similar) to the harnesses.
9. Install the HO2S wiring harnesses to the transmission case.
10. Lower the vehicle.

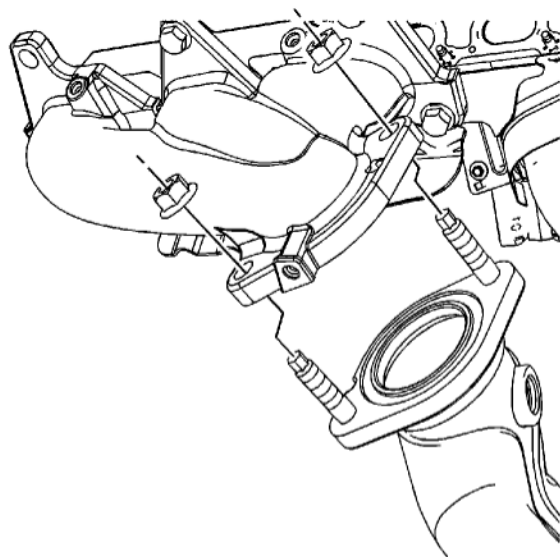
Catalytic Converter Replacement - Left Side (V6)

Removal Procedure

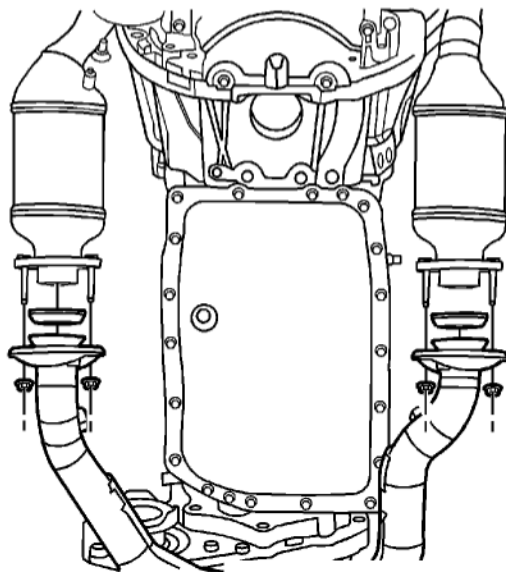
Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

1. Remove the exhaust manifold heat shield. Refer to [Exhaust Manifold Heat Shield Replacement - Left Side](#).



2. Remove the catalytic converter nuts.
3. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
4. Disconnect the oxygen sensor electrical connector.



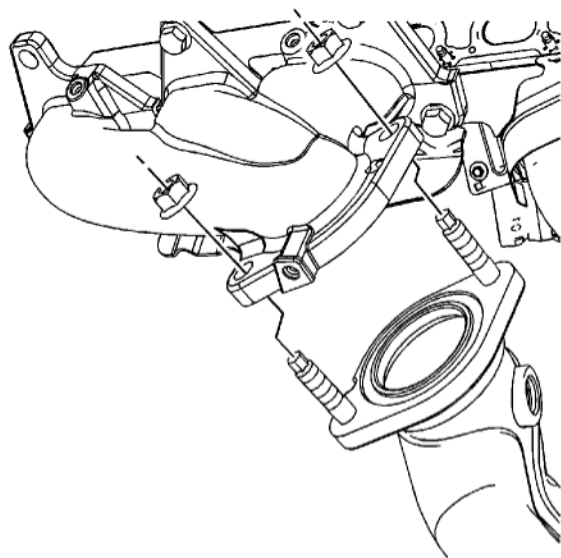


5. Disconnect the muffler pipe from the left and the right side catalytic converters.
6. Carefully remove the catalytic converter with the seal/heat shield and oxygen sensor from the exhaust manifold.
7. Remove the oxygen sensor from the catalytic converter. Refer to [Heated Oxygen Sensor Replacement - Bank 2 Sensor 1](#).

Installation Procedure

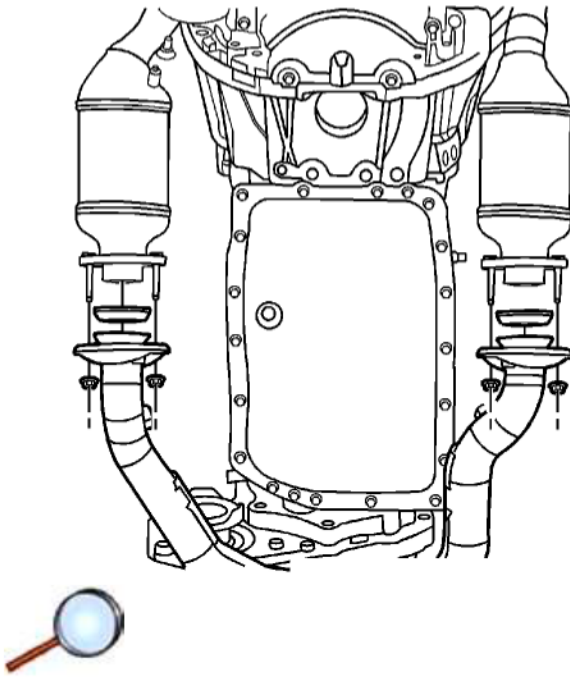
1. Install the oxygen sensor to the catalytic converter. Refer to [Heated Oxygen Sensor Replacement - Bank 2 Sensor 1](#).

Note: Inspect the catalytic converter seal/heat shield sealing surface. Replace the seal/heat shield if the sealing surface is worn or damaged.



2. Install the catalytic converter to the exhaust manifold.
3. Partially install the catalytic converter nuts to the exhaust manifold.
4. Connect the oxygen sensor electrical connector.

Caution: Refer to [Fastener Caution](#) in the Preface section.



Note: Inspect the catalytic converter seals. Replace the seals if they are worn or damaged.

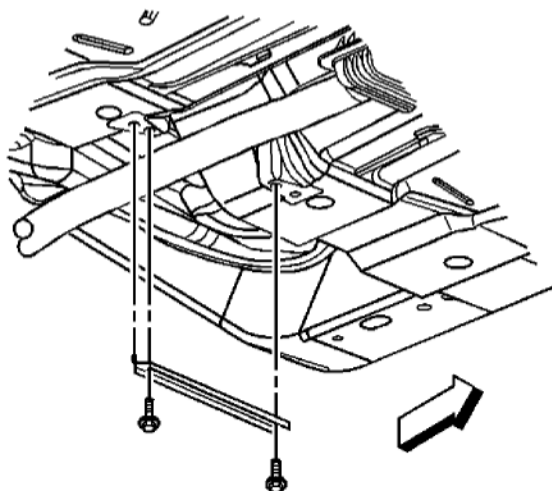
5. Install the exhaust pipe to the left and the right side catalytic converters and tighten to **17 N·m (13 lb ft)**.
6. Lower the vehicle.
7. Tighten the catalytic converter to exhaust manifold nuts to **50 N·m (37 lb ft)**.
8. Install the exhaust manifold heat shield. Refer to [Exhaust Manifold Heat Shield Replacement - Left Side](#).
9. Inspect the exhaust system for leaks.

Catalytic Converter Replacement - Left Side (V8)

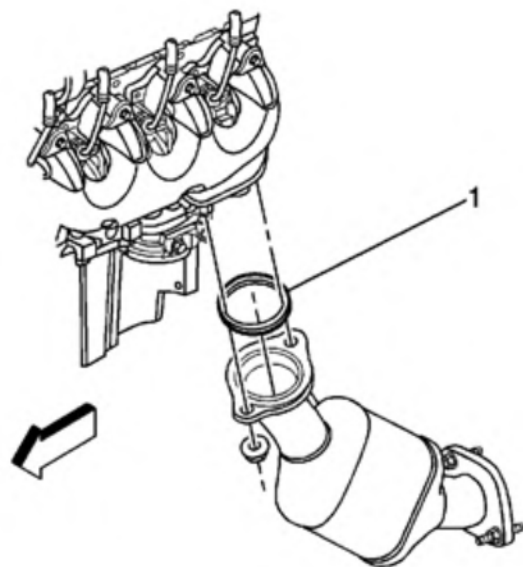
Removal Procedure

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.



1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Support the exhaust with a suitable screw jack.

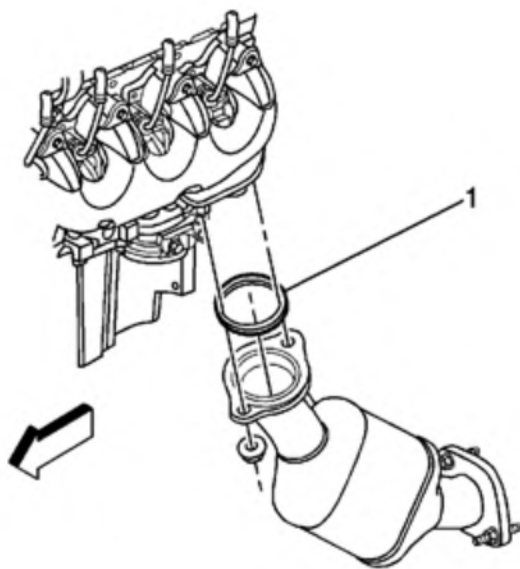




3. Disconnect the exhaust system from the left and right side catalytic converters. Refer to [Exhaust System Replacement](#).
4. Using the screw jack, lower the exhaust system.
5. Disconnect the oxygen sensor electrical connectors.
6. Remove the left bank catalytic converter to exhaust manifold nuts.
7. Carefully remove the catalytic converter with the gasket (1) and oxygen sensors from the exhaust manifold.
8. Remove the oxygen sensors from the catalytic converter. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 1](#) and [Heated Oxygen Sensor Replacement - Bank 1 Sensor 2](#).

Installation Procedure

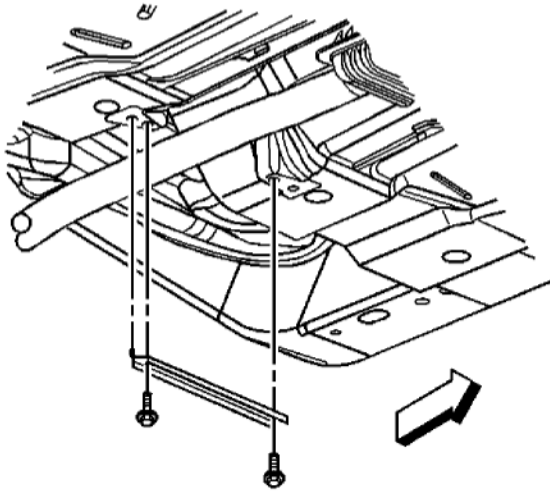
1. Install the oxygen sensors to the catalytic converter. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 1](#) and [Heated Oxygen Sensor Replacement - Bank 1 Sensor 2](#).
2. Install the catalytic converter gasket (1) to the catalytic converter.



3. Carefully install the catalytic converter to the exhaust manifold.

Caution: Refer to [Fastener Caution](#) in the Preface section.

4. Install the catalytic converter nuts and tighten to **50 N·m (37 lb ft)**.
5. Connect the oxygen sensor electrical connectors.
6. Using the screw jack, raise the exhaust system.
7. Connect the exhaust system to the left and right side catalytic converters. Refer to [Exhaust System Replacement](#).



8. Remove the screw jack.
9. Lower the vehicle.

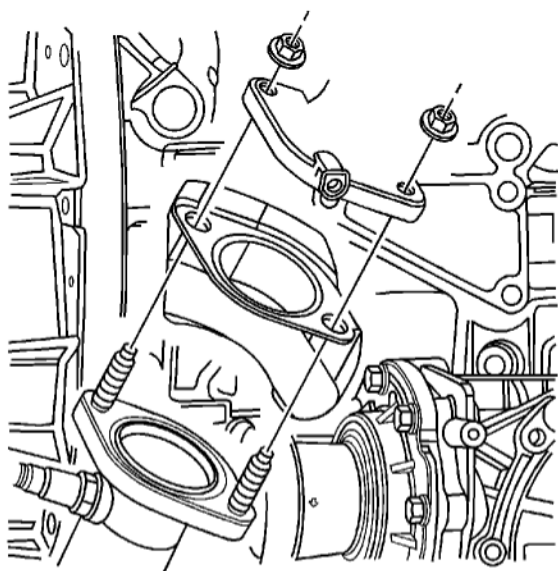
Catalytic Converter Replacement - Right Side (V6)

Removal Procedure

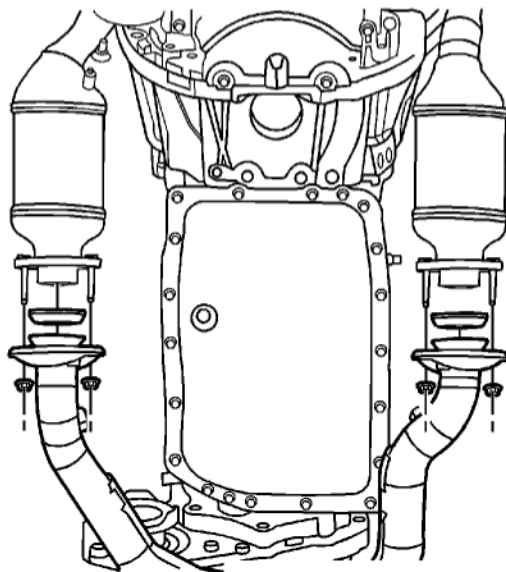
Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

1. Remove the exhaust manifold heat shield. Refer to [Exhaust Manifold Heat Shield Replacement - Right Side](#).



2. Remove the catalytic converter nuts.
3. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
4. Disconnect the oxygen sensor electrical connector.



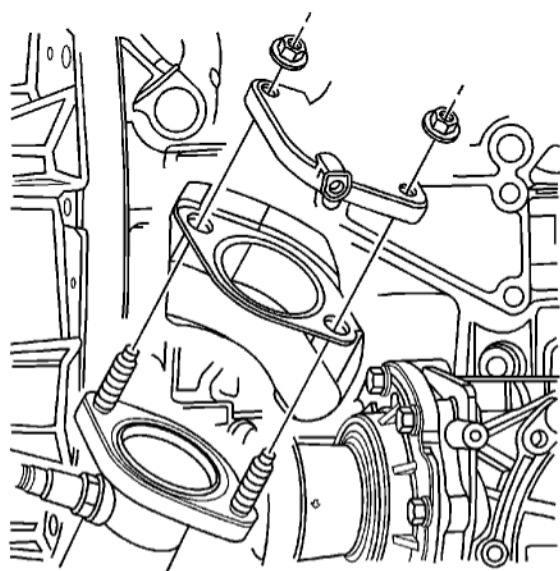


5. Disconnect the exhaust pipe from the left and right side catalytic converters.
6. Remove the catalytic converter with the seal/heat shield and oxygen sensor from the exhaust manifold.
7. Remove the oxygen sensor from the catalytic converter. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 1](#).

Installation Procedure

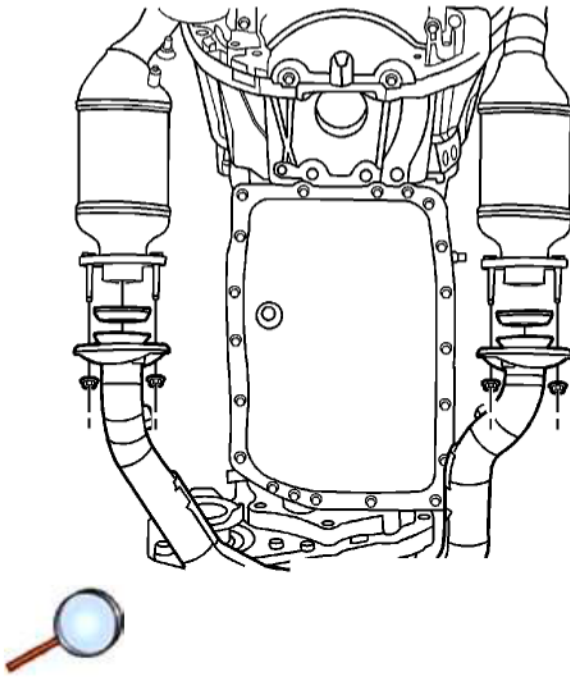
1. Install the oxygen sensor to the catalytic converter. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 1](#).

Note: Inspect the catalytic converter seal/heat shield sealing surface. Replace the seal/heat shield if the sealing surface is worn or damaged.



2. Install the catalytic converter to the exhaust manifold.
3. Partially install the catalytic converter to exhaust manifold nuts.
4. Connect the oxygen sensor electrical connector.

Caution: Refer to [Fastener Caution](#) in the Preface section.



Note: Inspect the catalytic converter seal. Replace the seal if it is worn or damaged.

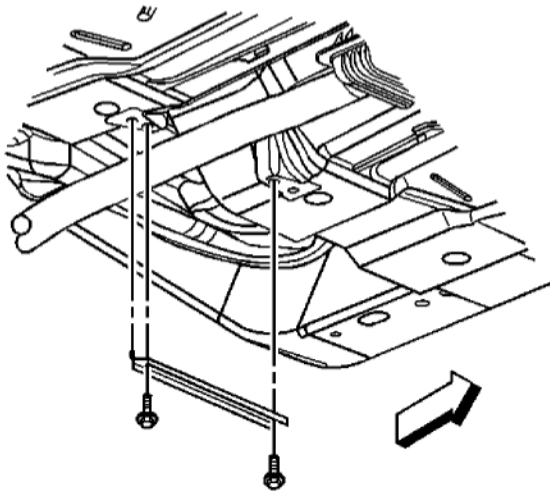
5. Install the exhaust pipes and nuts to the left and right side catalytic converters and tighten to **17 N·m (13 lb ft)**.
6. Lower the vehicle.
7. Tighten the catalytic converter nuts to **50 N·m (37 lb ft)**.
8. Install the exhaust manifold heat shield. Refer to [Exhaust Manifold Heat Shield Replacement - Right Side](#).
9. Inspect the exhaust system for leaks.

Catalytic Converter Replacement - Right Side (V8)

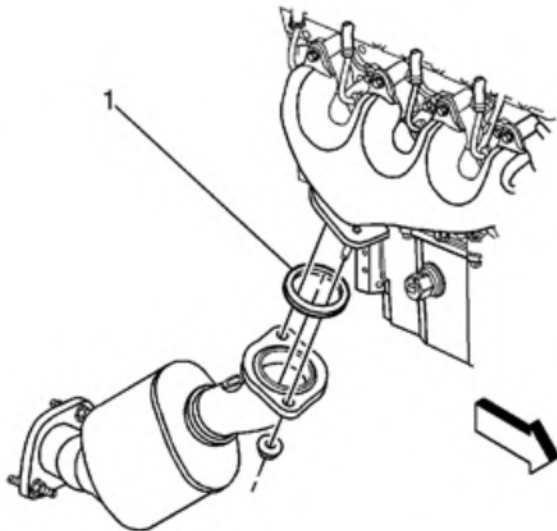
Removal Procedure

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.



1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Support the exhaust with a suitable screw jack.

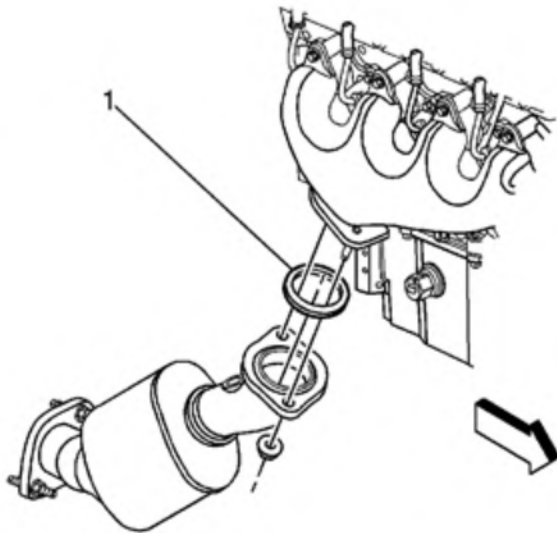




3. Disconnect the exhaust system from the left and right side catalytic converters. Refer to [Exhaust System Replacement](#).
4. Using the screw jack, lower the exhaust system.
5. Disconnect the oxygen sensor electrical connectors.
6. Remove the right bank catalytic converter to exhaust manifold nuts.
7. Carefully remove the catalytic converter with the gasket (1) and oxygen sensors from the exhaust manifold.
8. Remove the oxygen sensors from the catalytic converter. Refer to [Heated Oxygen Sensor Replacement - Bank 2 Sensor 1](#) and [Heated Oxygen Sensor Replacement - Bank 2 Sensor 2](#).

Installation Procedure

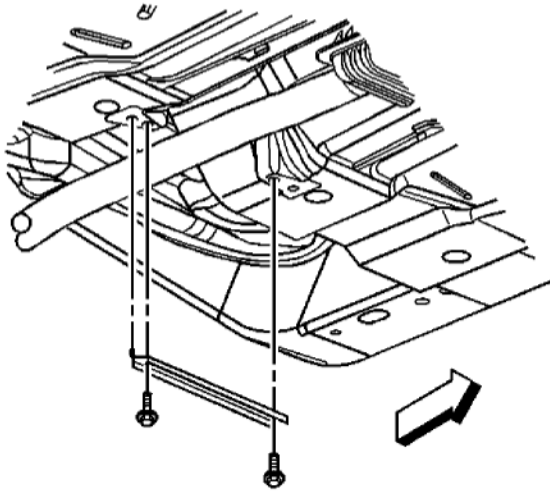
1. Install the oxygen sensors to the catalytic converter. Refer to [Heated Oxygen Sensor Replacement - Bank 2 Sensor 1](#) and [Heated Oxygen Sensor Replacement - Bank 2 Sensor 2](#).
2. Install the catalytic converter gasket (1) to the catalytic converter.



3. Carefully install the catalytic converter to the exhaust manifold.

Caution: Refer to [Fastener Caution](#) in the Preface section.

4. Install the catalytic converter nuts and tighten to **50 N·m (37 lb ft)**.
5. Tighten the catalytic converter to exhaust manifold nuts.
6. Connect the oxygen sensor electrical connectors.
7. Using the screw jack, raise the exhaust system.
8. Connect the exhaust system to the left and right side catalytic converters. Refer to [Exhaust System Replacement](#).



9. Remove the screw jack.
10. Lower the vehicle.

Exhaust System Insulator, Hanger, Bracket Replacement

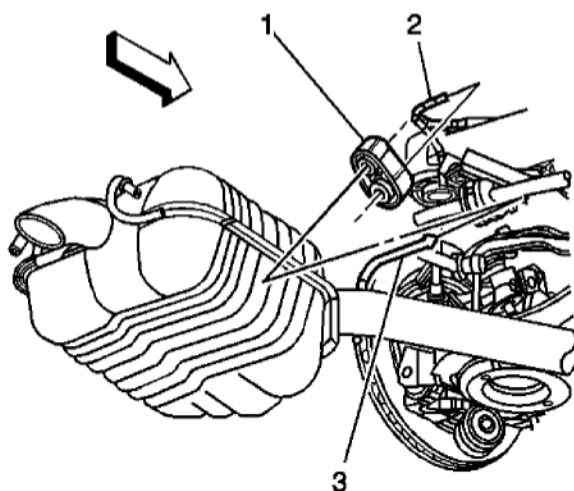
Note: Service the exhaust hangers individually in order to retain the support of the exhaust system.

Removal Procedure

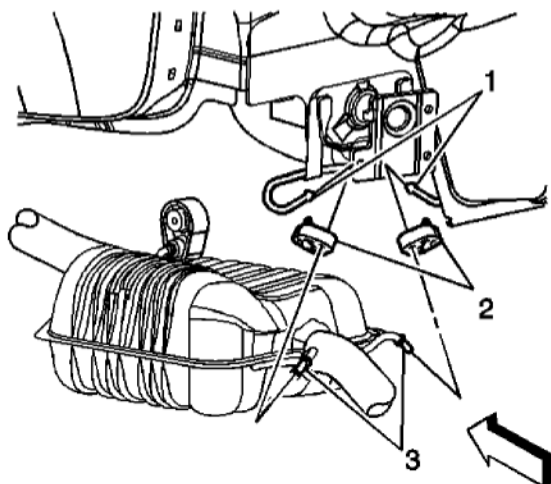
Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).

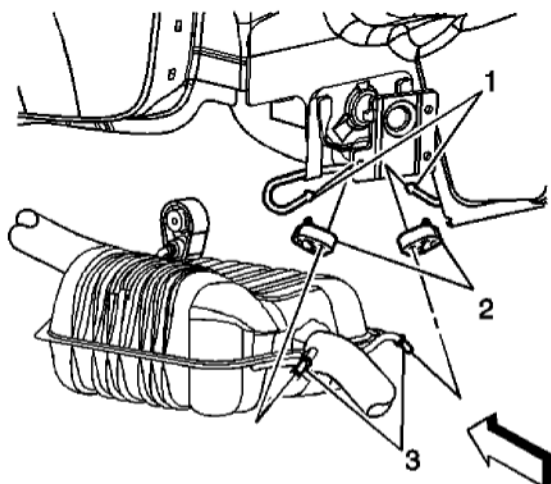


2. Apply a non petroleum based lubricant to the insulators and the hanger rods to aid in removal.
3. Remove the muffler insulator (1) from the rear suspension hanger rod (2).
4. Remove the muffler insulator (1) from the muffler hanger rod (3).

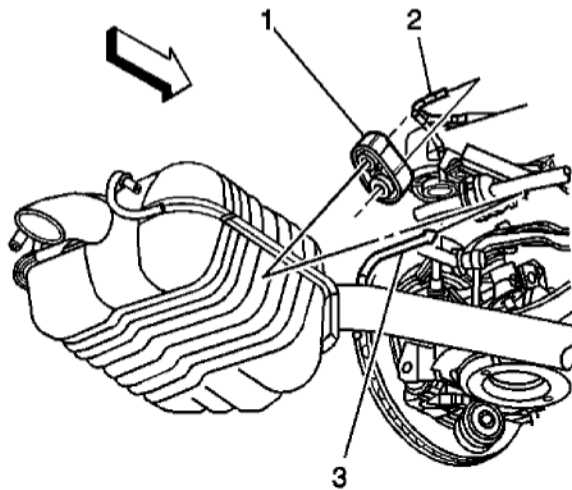


5. Remove the tail pipe insulators (2) from the body support hanger rods (1).
6. Remove the tail pipe insulators (2) from the muffler hanger rods (3).

Installation Procedure



1. Apply a non petroleum based lubricant to the insulators and the hanger rods to aid in installation.
2. Install the tail pipe insulators (2) to the tail pipe hanger rods (3).
3. Install the tail pipe insulators (2) over the body support bracket rods (1).



4. Install the muffler insulator (1) to the muffler hanger rod (3).
5. Install the muffler insulator (1) to the rear suspension hanger rod (2).
6. Inspect for underbody clearance and tail pipe alignment.

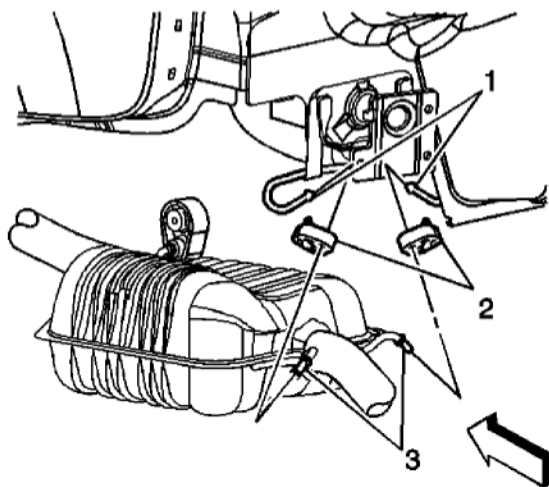
Exhaust Hanger Mounting Bracket Replacement

Removal Procedure

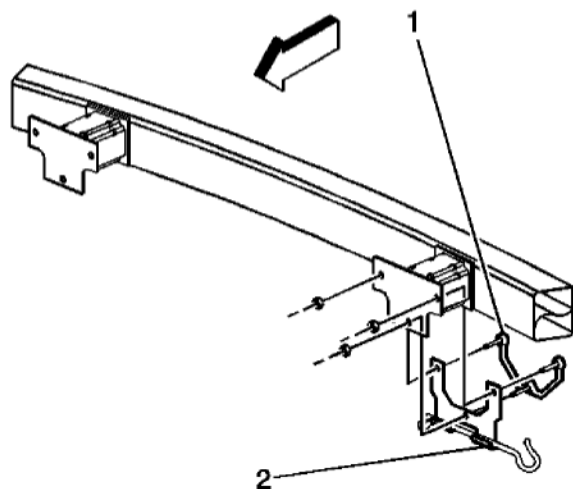
Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).



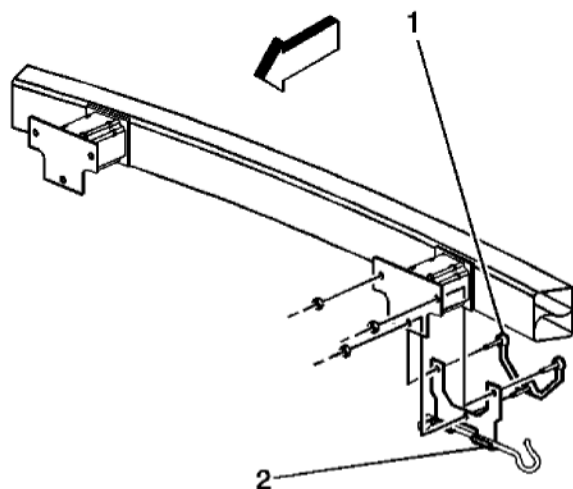
2. Apply a non petroleum based lubricant to the insulators and the hanger rods for ease of removal and installation.
3. Remove the muffler insulators (2) from the hanger mounting bracket rods (1).





4. Remove the nuts securing the rear energy absorber and the exhaust hanger mounting bracket (2) to the rear compartment rail.
5. Remove the stud plate (1) from the rear energy absorber.
6. Remove the exhaust hanger mounting bracket from the rear energy absorber.

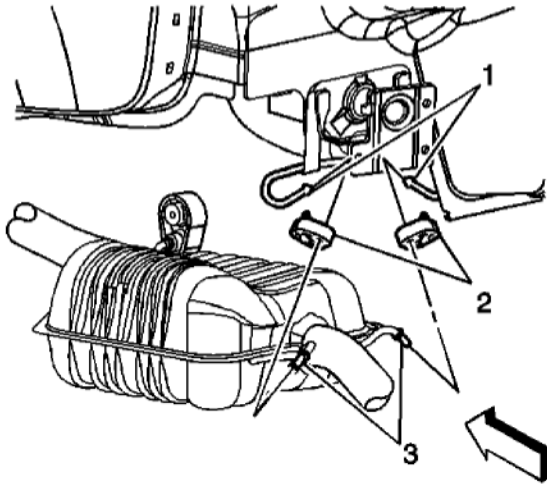
Installation Procedure



1. Position the exhaust hanger mounting bracket (2) between the rear energy absorber and the stud plate (1).

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the bumper nuts securing the rear energy absorber and the hanger mounting bracket (2) to the rear compartment rail and Tighten to **25 N·m (18 lb ft)**.



3. Install the tail pipe insulators (2) to the hanger mounting bracket rods (1).
4. Lower the vehicle.

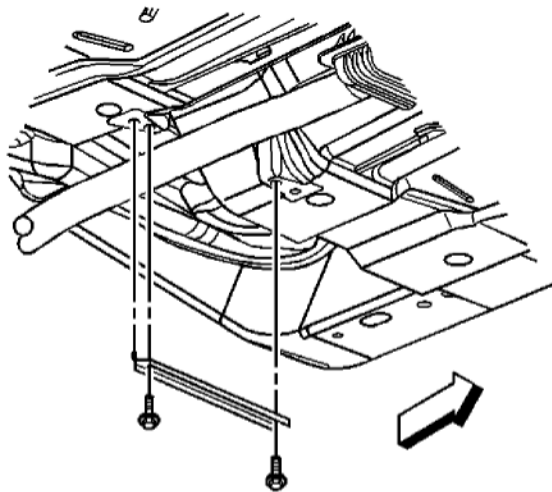
Exhaust Muffler Replacement (V8)

Servicing of the muffler, resonator or pipe requires the replacement of the exhaust system as a complete one-piece unit.

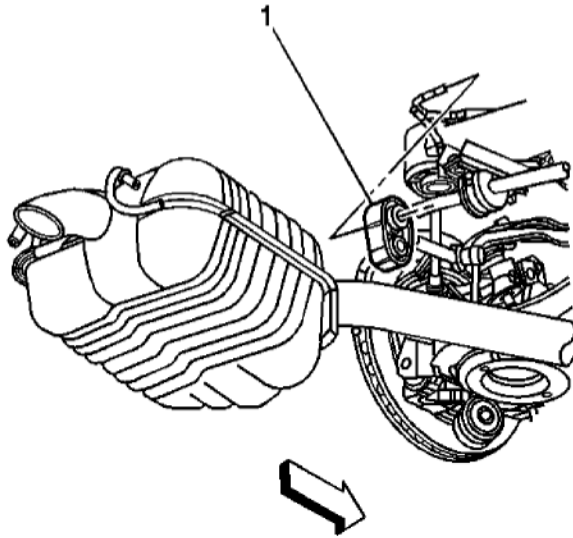
Removal Procedure

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

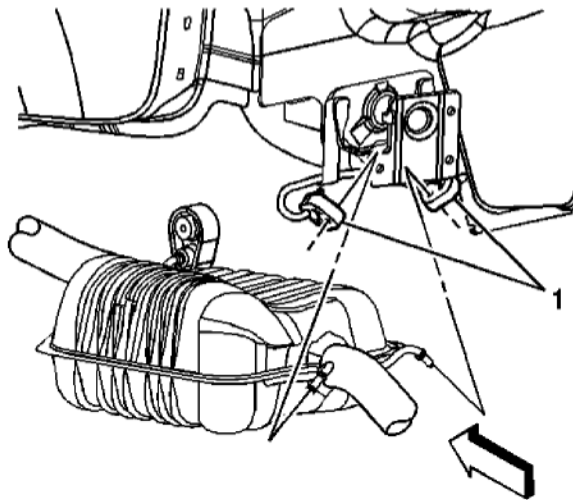
Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.



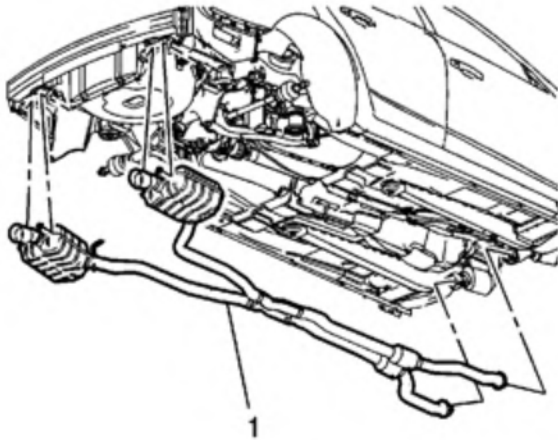
1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the 2 bolts securing the floor panel tunnel brace to the floor panel.
3. Remove the floor panel tunnel brace from the floor panel.
4. Suitably support the exhaust system.
5. Remove the exhaust pipe nuts securing the exhaust pipes to the catalytic converters.



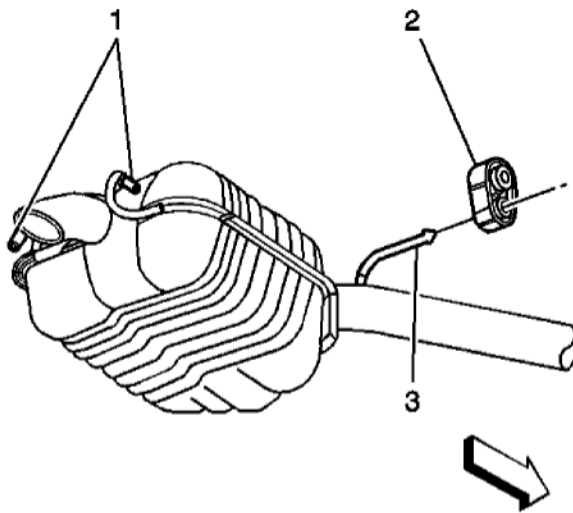
6. Pry the front exhaust hangers (1) free from the rear suspension hanger rods.



7. Apply a suitable lubricant to the tail pipe hanger rods in order to ease the removal of the tail pipe hangers (1).
8. Pry the tail pipe hangers (1) free from the tail pipe hanger rods.

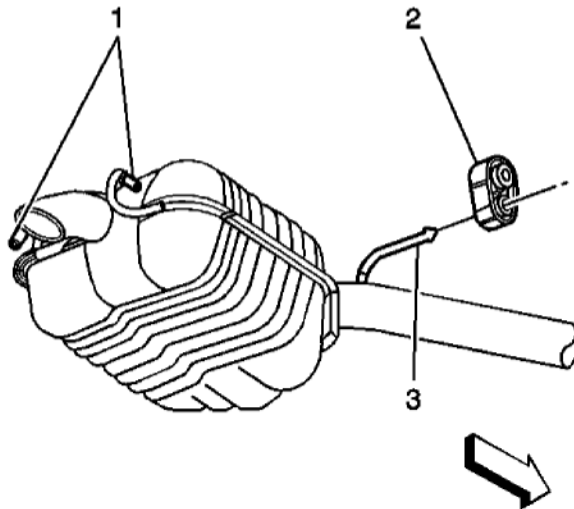


9. With the aid of an assistant, lower the exhaust system (1).
10. Remove the catalytic converter seals. Do not reuse the seals.

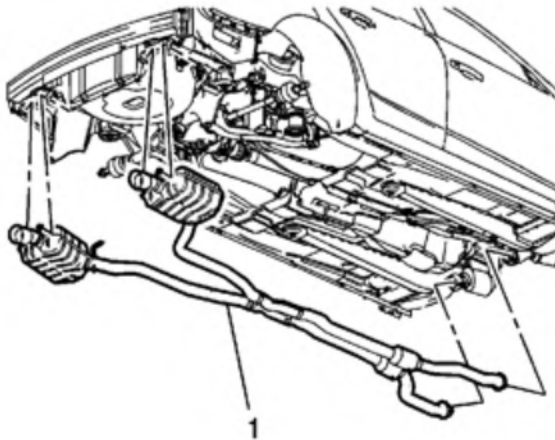


11. While the exhaust system is on the floor complete the following:
 - 11.1. Apply a suitable lubricant to the exhaust pipe hanger rods (3) in order to ease the removal of the front exhaust hangers (2).
 - 11.2. Pull the front exhaust hangers (2) from the exhaust pipe hanger rods.

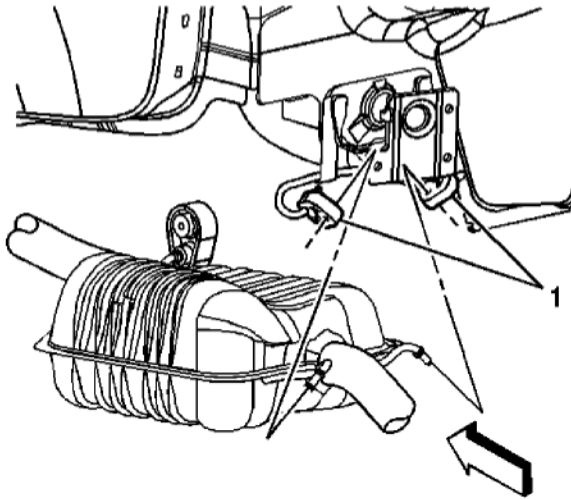
Installation Procedure



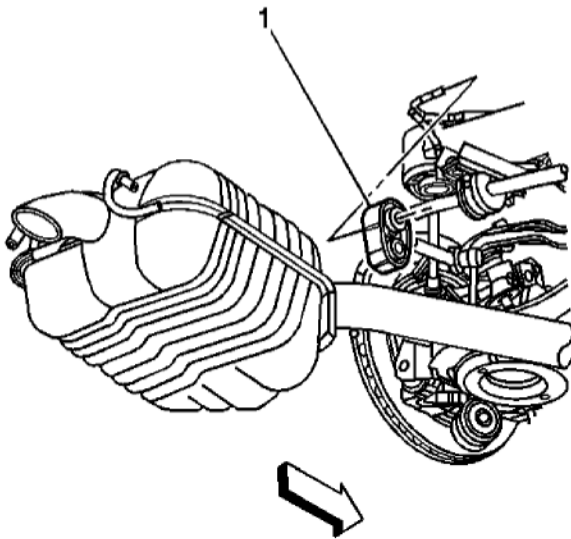
1. While the exhaust system is on the floor complete the following:
 - 1.1. Apply a soapy solution to the following in order to ease the installation of the hangers:
 - The inner diameter of the front exhaust hangers (2)
 - The exhaust pipe hanger rods (3)
 - The inner diameter of the tail pipe hangers
 - The tail pipe hanger rods (1)
 - 1.2. Press the front exhaust hangers over the exhaust pipe hanger rods.
2. Place NEW seals on the catalytic converter flanges.



3. With the aid of an assistant, raise the exhaust system (1) into position, aligning the exhaust pipe flanges with the studs located in the rear of the catalytic converters.
4. Finger tighten the exhaust pipe nuts to the catalytic converter studs.



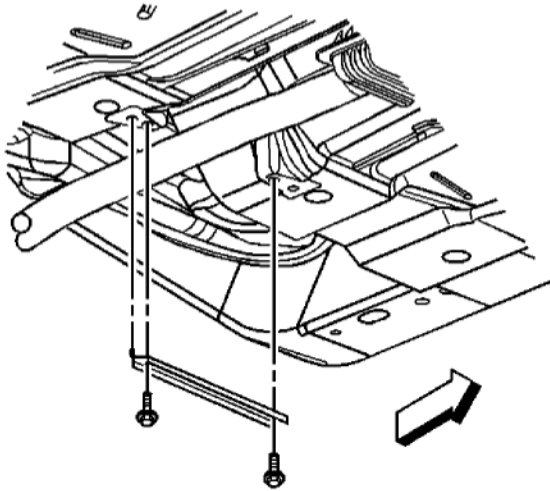
5. Press the tail pipe hangers (1) over the tail pipe hanger rods.



6. Press the front exhaust hangers (1) over the rear suspension hanger rods.

Caution: Refer to [Fastener Caution](#) in the Preface section.

7. Tighten the exhaust pipe nuts to 17 N·m (13 lb ft).



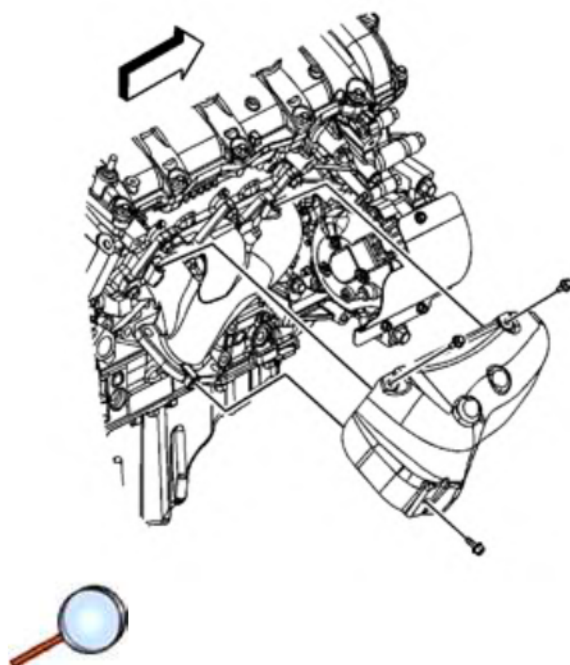
8. Position the floor panel tunnel brace to the floor panel.
9. Install the 2 bolts securing the floor panel tunnel brace to the floor panel and tighten to **25 N·m (18 lb ft)**.
10. Lower the vehicle.

Exhaust Manifold Heat Shield Replacement - Right Side (V6)

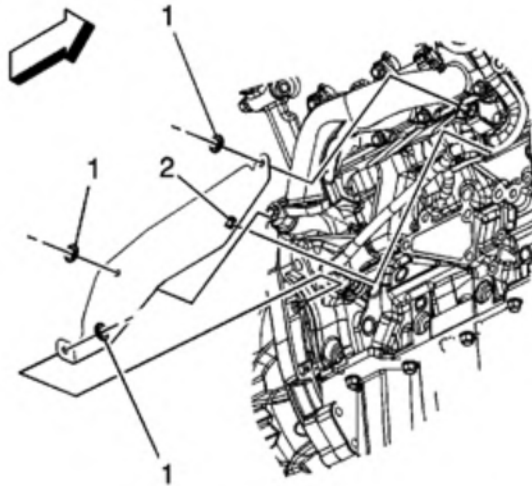
Removal Procedure

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

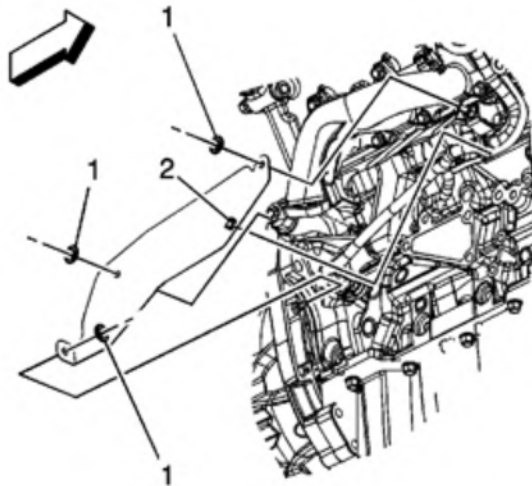


1. Remove the fuel injector sight shield. Refer to [Fuel Injector Sight Shield Replacement](#).
2. Remove the engine coolant inlet pipe. Refer to [Engine Coolant Inlet Pipe Replacement](#).
3. Remove the exhaust manifold heat shield bolts.
4. Remove the exhaust manifold heat shield from the exhaust manifold.

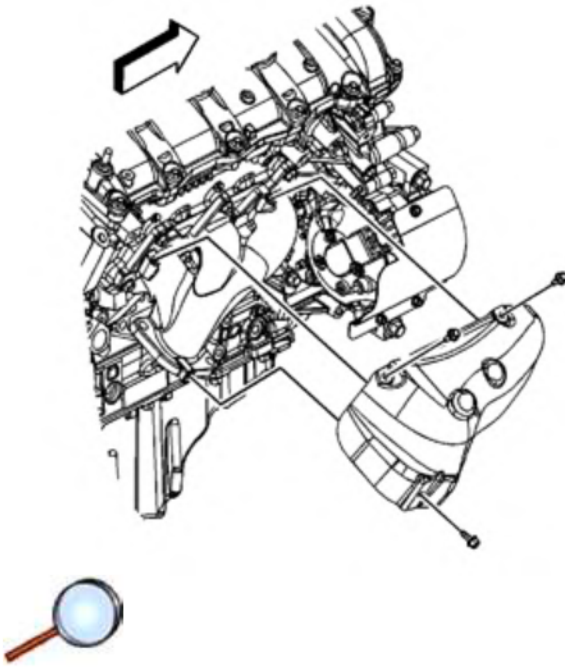


5. Remove the lower exhaust manifold heat shield retainers (1), if necessary.
6. Remove the lower exhaust manifold heat shield (2), if necessary.

Installation Procedure



1. Install the lower exhaust manifold heat shield (2), if necessary.
2. Install the lower exhaust manifold heat shield retainers (1), if necessary.



3. Install the exhaust manifold heat shield to the exhaust manifold.

Caution: Refer to [Fastener Caution](#) in the Preface section.

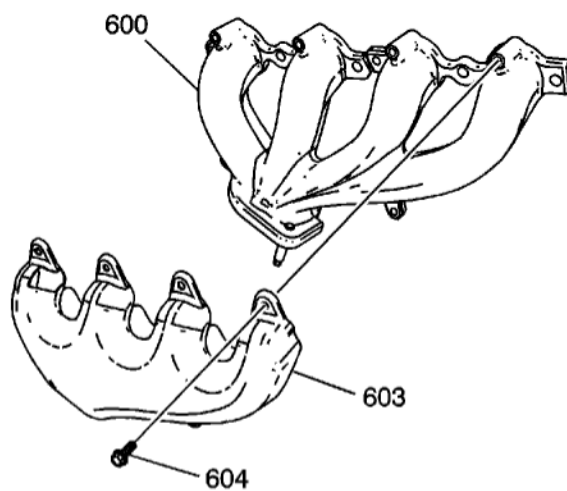
4. Install the exhaust manifold heat shield bolts and tighten to **10 N·m (89 lb in)**.
5. Install the engine coolant inlet pipe. Refer to [Engine Coolant Inlet Pipe Replacement](#).
6. Install the fuel injector sight shield. Refer to [Fuel Injector Sight Shield Replacement](#).

Exhaust Manifold Heat Shield Replacement - Right Side (V8)

Removal Procedure

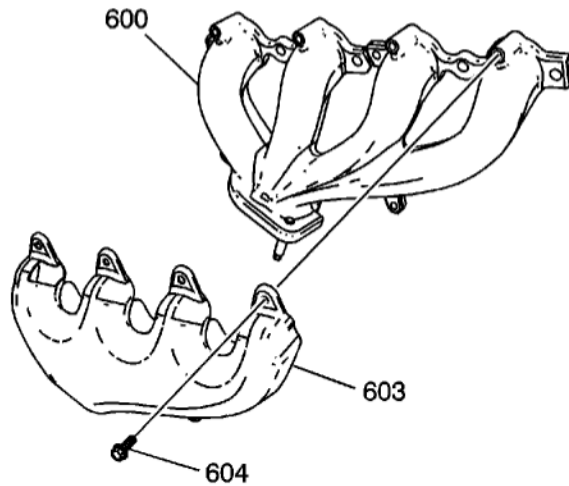
Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.



1. Remove the right exhaust manifold. Refer to [Exhaust Manifold Replacement - Right Side](#).
2. Remove the bolts (604) securing the exhaust manifold heat shield (603) to the exhaust manifold (600).
3. Remove the heat shield from the manifold.

Installation Procedure



1. Install the exhaust manifold heat shield to the manifold.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the bolts (604) securing the exhaust manifold heat shield (603) to the manifold (600) and tighten to **9 N·m (80 lb in)**.
3. Install the right exhaust manifold. Refer to [Exhaust Manifold Replacement - Right Side](#).

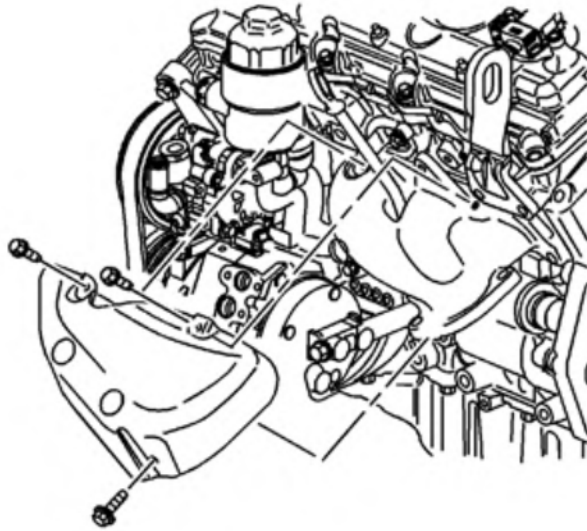
Exhaust Manifold Heat Shield Replacement - Left Side (V6)

Removal Procedure

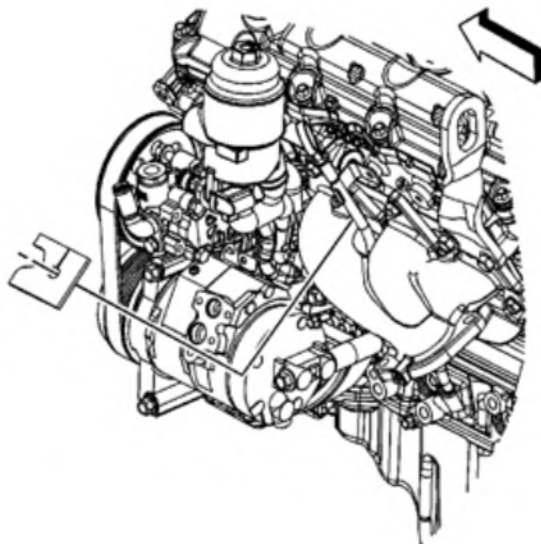
Warning: Refer to [Title not found](#) in the Preface section.

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.

1. Remove the fuel injector sight shield. Refer to [Fuel Injector Sight Shield Replacement](#).

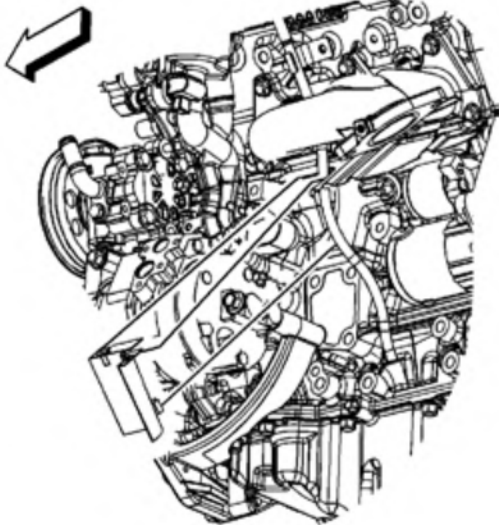


2. Remove the exhaust manifold heat shield bolts.
3. Remove the exhaust manifold heat shield.



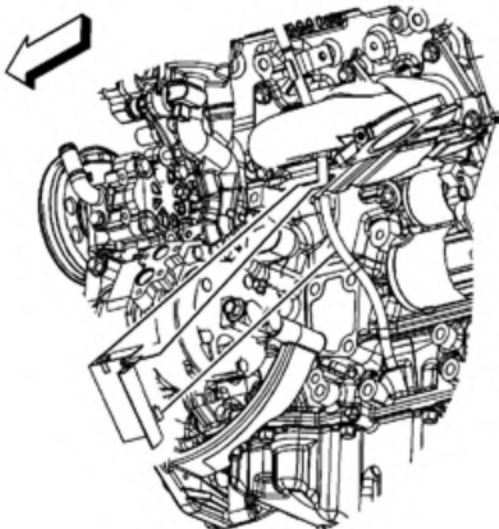


4. Remove the upper exhaust manifold heat shield insulator from the oil level indicator tube, if necessary.

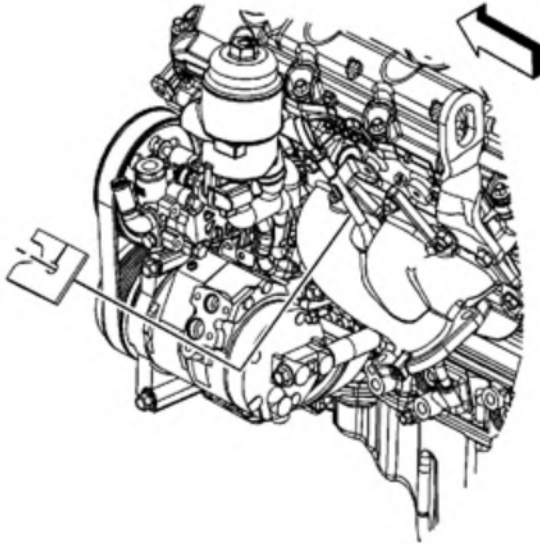


5. Remove the lower exhaust manifold heat shield insulator from the oil level indicator and exhaust gasket, if necessary.

Installation Procedure

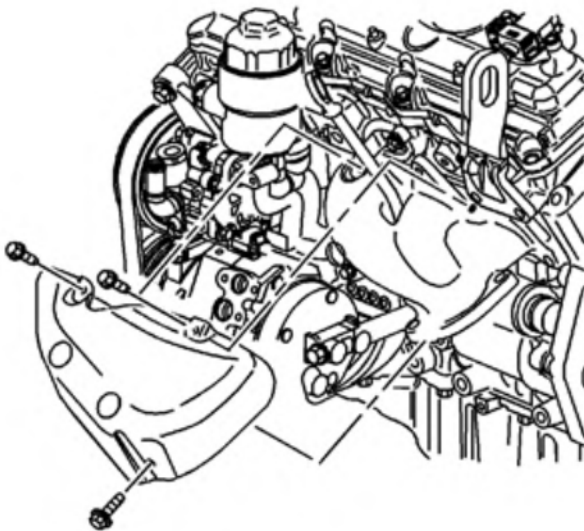


1. Install the lower exhaust manifold heat shield insulator to the oil level indicator and exhaust gasket, if necessary.



2. Install the upper exhaust manifold heat shield insulator to the oil level indicator tube, if necessary.

Caution: Refer to [Fastener Caution](#) in the Preface section.



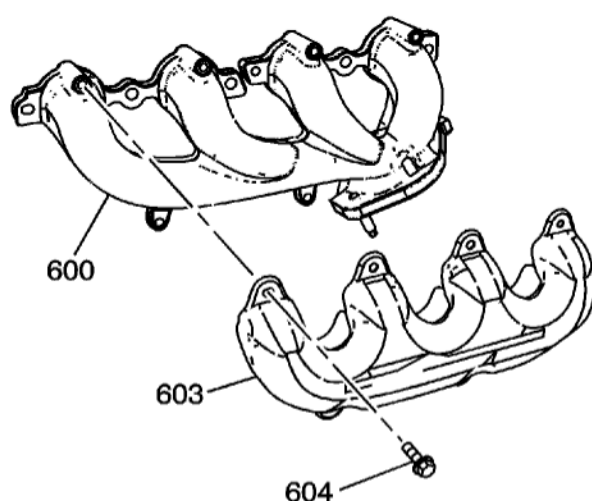
3. Install the exhaust manifold heat shield and tighten the bolts to **10 N·m (89 lb in)**.

Exhaust Manifold Heat Shield Replacement - Left Side (V8)

Removal Procedure

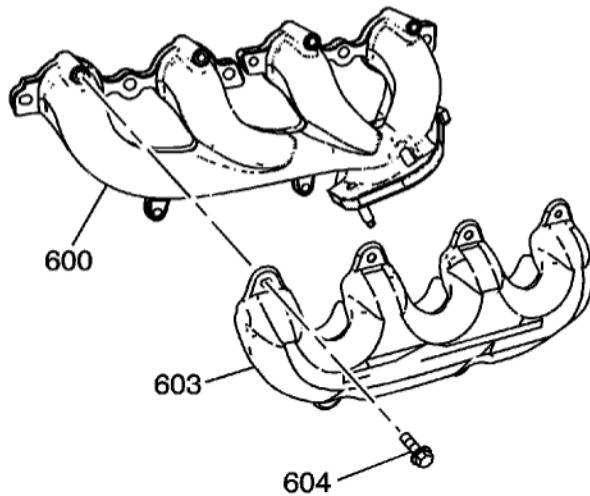
Warning: Refer to [Exhaust Service Warning](#) in the Preface section.

Warning: Refer to [Protective Goggles and Glove Warning](#) in the Preface section.



1. Remove the left exhaust manifold. Refer to [Exhaust Manifold Replacement - Left Side](#).
2. Remove the bolts (604) securing the exhaust manifold heat shield (603) to the exhaust manifold (600).
3. Remove the heat shield from the manifold.

Installation Procedure



1. Install the exhaust manifold heat shield to the manifold.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the bolts (604) securing the exhaust manifold heat shield (603) to the manifold (600) and tighten to **9 N·m (80 lb in)**.
3. Install the left exhaust manifold. Refer to [Exhaust Manifold Replacement - Left Side](#).