

Engine Exhaust

Specifications

Fastener Tightening Specifications

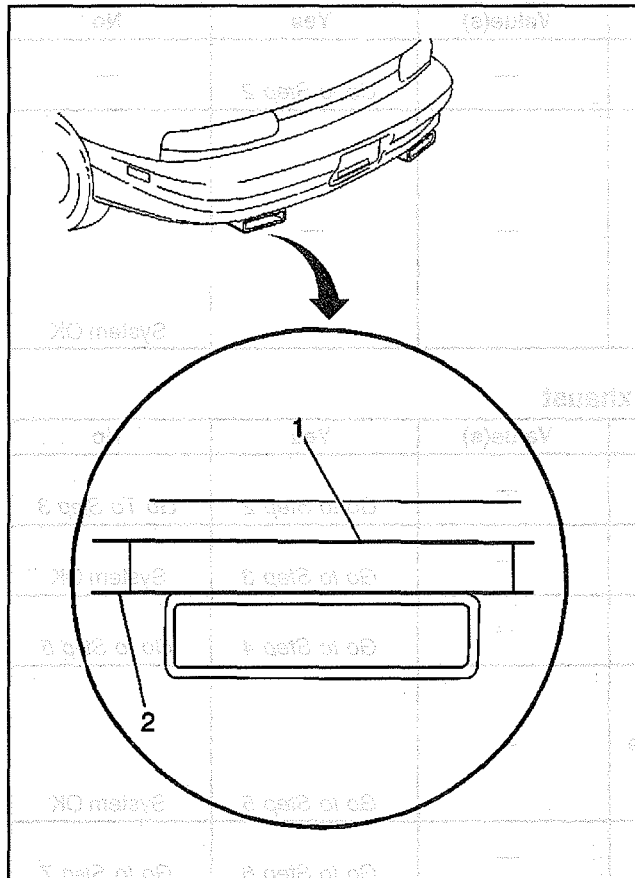
Application	Specification	
	Metric	English
Catalytic Converter Hanger Bolt	41 N·m	30 lb ft
Catalytic Converter Heat Shield Bolt	2.0 N·m	18 lb in
Catalytic Converter Nut	25 N·m	18 lb ft
End Link Nut	23 N·m	17 lb ft
Engine Mount Heat Shield Nut	10 N·m	89 lb in
Exhaust Heat Shield Bolt	2.0 N·m	18 lb in
Exhaust Manifold Pipe Bolt	30 N·m	22 lb ft
Exhaust Manifold Pipe Nut	35 N·m	26 lb ft
Exhaust Muffler Clamp Bolt	48 N·m	35 lb ft
Exhaust Muffler Hanger Bolt	10 N·m	89 lb in
Exhaust Muffler Heat Shield Bolt	2.0 N·m	18 lb in
Exhaust Pipe Hanger Nut	20 N·m	15 lb ft
Exhaust Pipe Hanger Bracket Bolt	9.5 N·m	84 lb in
Exhaust Pipe Heat Shield Bolt	2.0 N·m	18 lb in
Heated Oxygen Sensor	42 N·m	31 lb ft
Rear Axle Torque Arm Bracket Nut	45 N·m	33 lb ft
Rear Shock Nut	90 N·m	66 lb ft
Torque Arm Bolt	130 N·m	96 lb ft
Torque Arm Nut	132 N·m	97 lb ft
Wheel Nut	120 N·m	89 lb ft

GM SPO Group Numbers

Application	GM SPO Group Number
Catalytic Converter Front Hanger Bracket (3.8L)	3.000
Catalytic Converter Gasket (5.7L)	3.000
Catalytic Converter Hanger	3.000
Catalytic Converter Hanger Bracket (5.7L)	3.000
Catalytic Converter Heat Shield	3.000
Exhaust Heat Shield	3.000
Exhaust Manifold Pipe Seal (3.8L)	3.000
Exhaust Muffler	3.000
Exhaust Muffler Hanger	3.000
Exhaust Muffler Hanger Insulator	3.000
Exhaust Muffler Heat Shield	3.000
Exhaust Pipe Hanger Bracket	3.000
Exhaust Pipe Heat Shield	3.000
Oxidation Catalytic Converter	3.000
Three Way Catalytic Converter	3.000

Exhaust System Clearances

Chevrolet Tailpipe Clearance



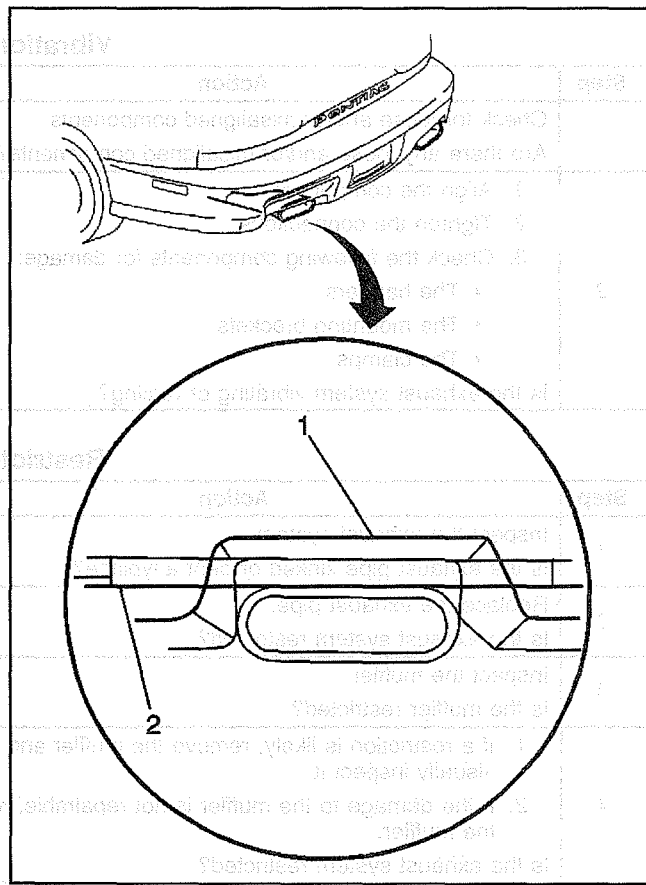
395057

Measure the clearance from the rear fascia (1) to the top of tailpipe (2).

Specification

- Without RPO WU8 specification should be 40.0 mm (+/- 5.0 mm), 1.575 in (+/- 0.197 in).
- With RPO WU8 specification should be 35.0 mm (+/- 5.0 mm), 1.378 in (+/- 0.197 in).

Pontiac Tailpipe Clearance



395058

Measure the clearance from the rear fascia (1) to the top of the tailpipe (2).

Specification

- Without RPO WS6 specification should be 40.0 mm (+/- 5.0 mm), 1.575 in (+/- 0.197 in).
- With RPO WS6 specification should be 35.0 mm (+/- 5.0 mm), 1.378 in (+/- 0.197 in).

Diagnostic Information and Procedures

Vibration or Rattling

Step	Action	Value(s)	Yes	No
1	Check for loose and/or misaligned components. Are there any loose and/or misaligned components?	—	Go to Step 2	—
2	1. Align the components. 2. Tighten the connections. 3. Check the following components for damage: • The hangers • The mounting brackets • The clamps Is the exhaust system vibrating or rattling?	—	—	System OK

Restricted Exhaust

Step	Action	Value(s)	Yes	No
1	Inspect the exhaust system. Is the exhaust pipe kinked or bent anywhere?	—	Go to Step 2	Go To Step 3
2	Replace the exhaust pipe. Is the exhaust system restricted?	—	Go to Step 3	System OK
3	Inspect the muffler. Is the muffler restricted?	—	Go to Step 4	Go to Step 5
4	1. If a restriction is likely, remove the muffler and visually inspect it. 2. If the damage to the muffler is not repairable, replace the muffler. Is the exhaust system restricted?	—	Go to Step 5	System OK
5	Inspect the end of the tailpipe. Is the end of the tailpipe obstructed?	—	Go to Step 6	Go to Step 7
6	Remove the obstruction, or if the end of the tailpipe is crimped, straighten the outlet. Is the exhaust system restricted?	—	Go to Step 7	System OK
7	Inspect the catalytic converter for obstructions, which may have occurred as a result of a serious engine malfunction. Is the catalytic converter obstructed?	—	Go to Step 8	—
8	1. Replace the catalytic converter. 2. Correct the engine malfunction. Is the exhaust system restricted?	—	—	System OK

Exhaust Noise

Step	Action	Value(s)	Yes	No
1	When cold and after a warmup, check for heat shields that contact the exhaust pipes. Are the heat shields misaligned or loose?	—	Go to Step 2	Go to Step 3
2	Tighten the heat shield fasteners to the value given. Is there still exhaust noise?	2 N·m (18 lb in)	Go to Step 3	System OK
3	Check for leaks at the manifold or the pipe connections. Are there leaks?	—	Go to Step 4	Go to Step 5
4	Tighten the leaking connections according to specifications. Refer to <i>Fastener Tightening Specifications</i> . Is there still a exhaust noise?	—	Go to Step 5	System OK
5	Inspect the muffler. Is the muffler burned or blown out?	—	Go to Step 6	Go to Step 7
6	Replace the muffler. Refer to <i>Muffler Replacement</i> . Is there still exhaust noise?	—	Go to Step 7	System OK
7	Look for a burned or rusted exhaust pipe. Is the exhaust pipe burned or rusted?	—	Go to Step 8	Go to Step 9
8	Replace the muffler. Refer to <i>Muffler Replacement</i> . Is there still exhaust noise?	—	Go to Step 9	System OK
9	Check for a leak at the exhaust crossover pipe at the manifold flange. Is there a leak?	—	Go to Step 10	Go to Step 11
10	Repair the leak. Is there still exhaust noise?	—	Go to Step 11	System OK
11	Check for a cracked or broken manifold. Is the manifold cracked or broken?	—	Go to Step 12	Go to Step 13
12	Replace the exhaust manifold. Refer to <i>Exhaust Manifold Replacement (Left)</i> , <i>Exhaust Manifold Replacement (Right)</i> in Engine Mechanical - 3.8L or <i>Exhaust Manifold Replacement (Left)</i> , <i>Exhaust Manifold Replacement (Right)</i> in Engine Mechanical - 5.7L. Is there still exhaust noise?	—	Go to Step 13	System OK
13	Check for a leak between the manifold and the cylinder head. Is there a leak?	—	Go to Step 14	—
14	Tighten the manifold-to-cylinder head fasteners to specifications. Refer to <i>Fastener Tightening Specifications</i> . Is there still exhaust noise?	—	—	System OK

Internal Muffler Rattles/Loss of Power

Step	Action	Value(s)	Yes	No
1	1. Remove the muffler. 2. Visually inspect the muffler. Is there a restriction in the muffler?	—	Go to Step 2	Go to Step 3
2	Replace the muffler. Refer to <i>Muffler Replacement</i> . Does the vehicle still have a loss of power and/or internal rattles?	—	Go to Step 3	System OK
3	Inspect the catalytic converter. Is the honeycomb broken in the catalytic converter?	—	Go to Step 4	System OK
4	Replace the catalytic converter. • For the three-way catalytic converter, refer to <i>Catalytic Converter Replacement (3.8 L)</i> . • For the oxidation catalytic converter, refer to <i>Oxidation Catalytic Converter Replacement (5.7 L Left) or Oxidation Catalytic Converter Replacement (5.7 L Right)</i> . Does the vehicle still have a loss of power and/or internal rattles?	—	—	System OK

Exhaust Leakage

Step	Action	Value(s)	Yes	No
1	Check for a leaks at the pipe joints. Are there any leaks?	—	Go to Step 2	—
2	Tighten the fasteners at the leaking joint(s) to specifications. Refer to <i>Fastener Tightening Specifications</i> . Are there still a leaks?	—	—	System OK

Repair Instructions

Exhaust System Inspection

- Inspect the exhaust pipes, the catalytic converter(s), the muffler, and the tailpipe for the following conditions:
 - Cracked joints
 - Broken welds
 - Corrosion damage (Corrosion damage could cause leaks in the exhaust system.)
- Inspect the clamps, the brackets, and the insulators for the following conditions:
 - Broken bolts
 - Stripped bolt threads
 - Corroded bolts

- The exhaust system (including the heat shield) must be free of the following conditions:

- Leaks
- Binding
- Grounding
- Excessive vibration

- These conditions may occur if any of the following components are loose or damaged:

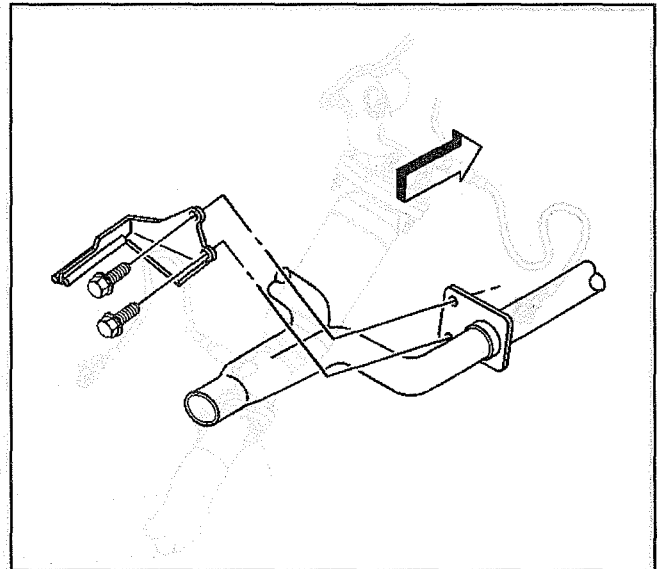
- Flange bolts or flange nuts
- Heat shields
- Brackets
- Pipes

- If any of these conditions exist, inspect the tailpipe alignment. Align and replace any components necessary, including new manifold seals, nuts, and gaskets.

Exhaust Crossover Pipe Replacement (5.7 L)

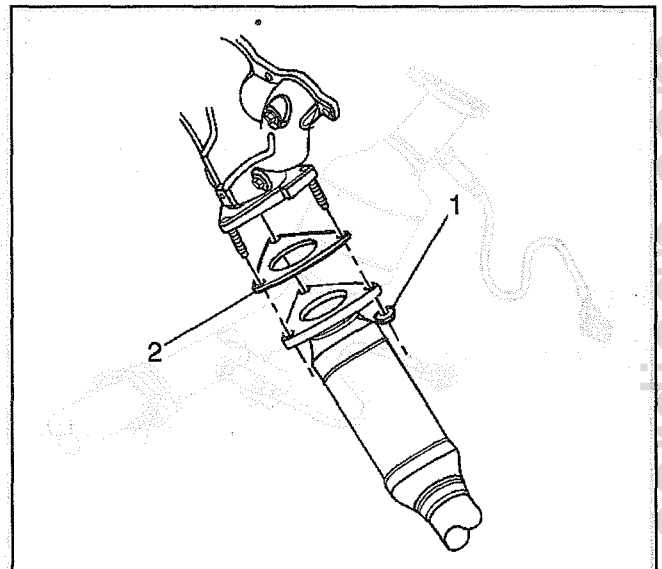
Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Remove the catalytic converter hanger bolts.
3. Remove the catalytic converter hanger.



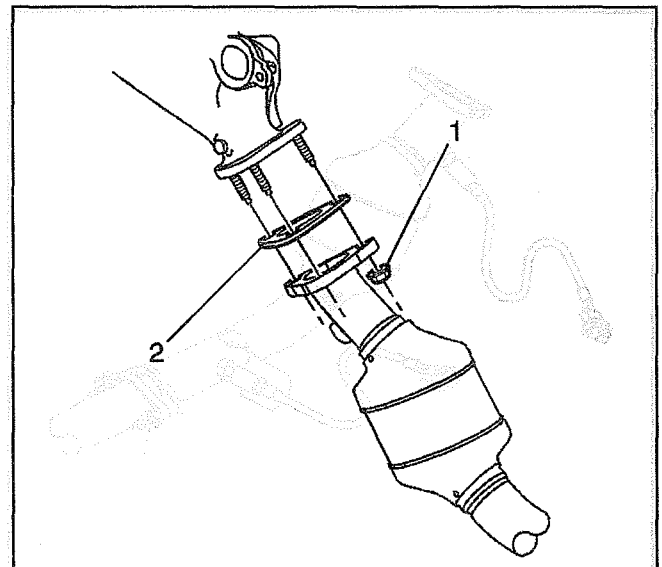
550693

4. Loosen the exhaust manifold pipe nuts (1) (left side).

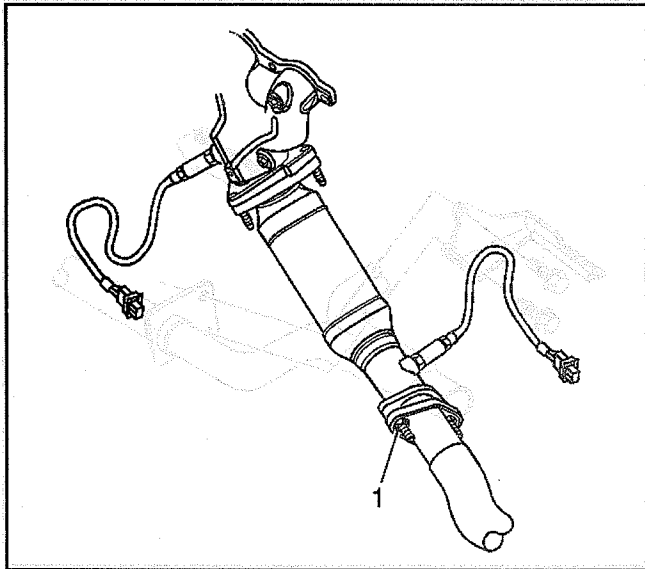


550682

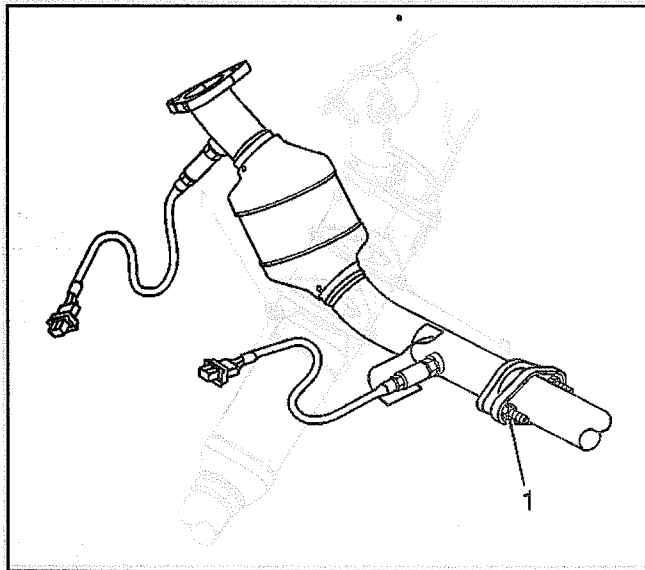
5. Loosen the exhaust manifold pipe nuts (1) (right side).



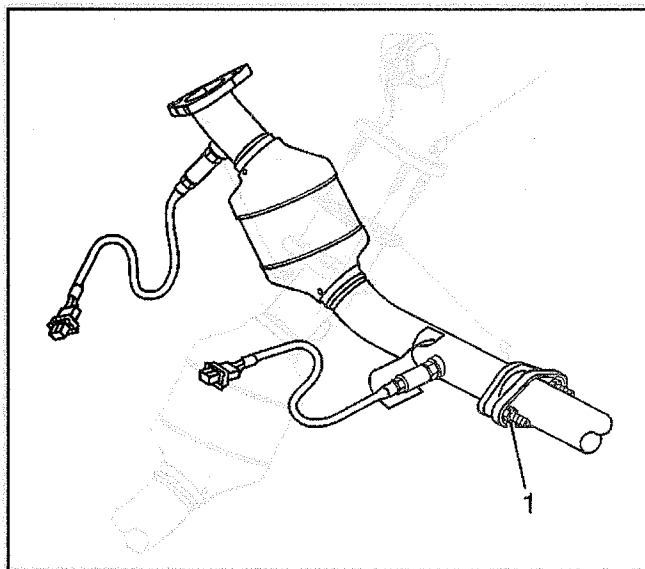
550687



550700



550702



550702

6. Remove the catalytic converter nuts (1) (left side).

Replacement (6.7 L)

Removal Procedure

1. Raise and suitably support the vehicle. Refer to Lifting and Jacking the Vehicle in General Information.
2. Remove the catalytic converter hanger bolts.
3. Remove the catalytic converter hanger.

7. Remove the catalytic converter nuts (1) (right side).

8. Slide the crossover pipe rearward.

9. Remove the crossover pipe off the studs on the left and right catalytic converters.

10. Slide the crossover pipe out of the exhaust muffler.

Installation Procedure

1. Slide the crossover pipe into the exhaust muffler.
2. Install the crossover pipe over the studs on the left and right catalytic converters.
3. Slide the crossover pipe forward to align the components.

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

4. Install the catalytic converter nuts (1) (right side).

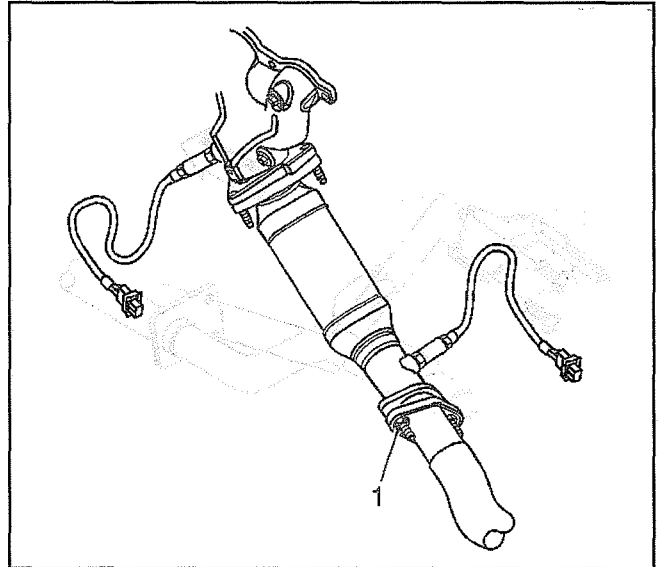
Tighten

Tighten the catalytic converter nuts (1) (right side) to 25 N·m (18 lb ft).

5. Install the catalytic converter nuts (1) (left side).

Tighten

Tighten the catalytic converter nuts (1) (left side) to 25 N·m (18 lb ft).



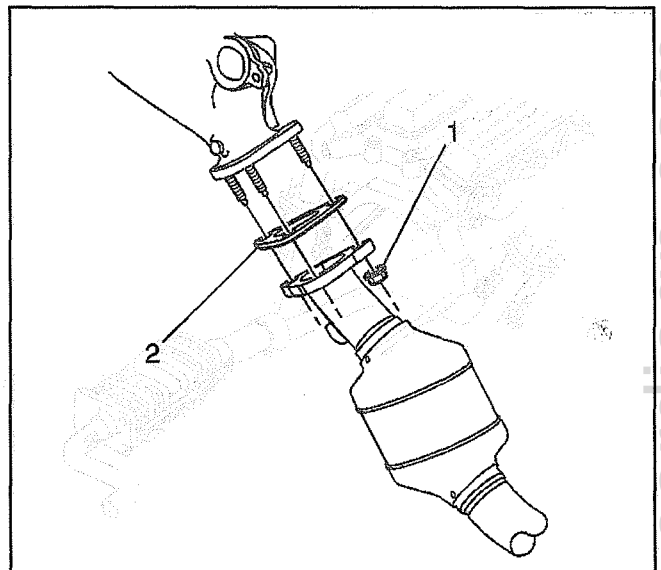
550700

550700

6. Tighten the exhaust manifold pipe nuts (1) (right side).

Tighten

Tighten the exhaust manifold pipe nuts (1) (right side) to 35 N·m (26 lb ft).



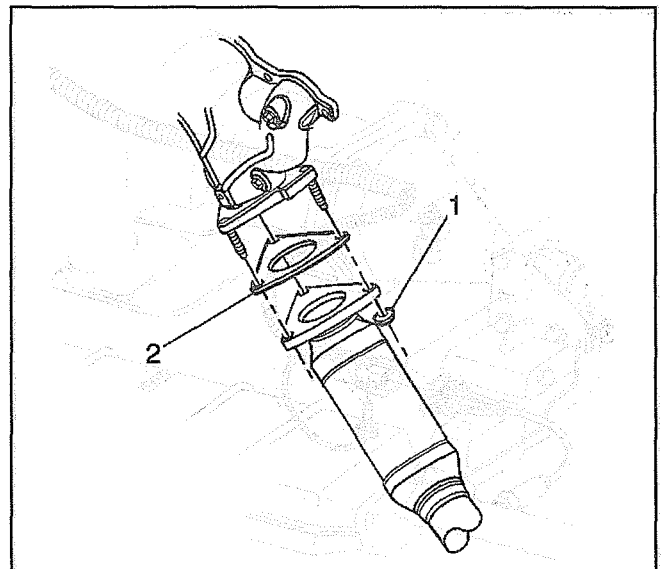
550687

550687

7. Tighten the exhaust manifold pipe nuts (1) (left side).

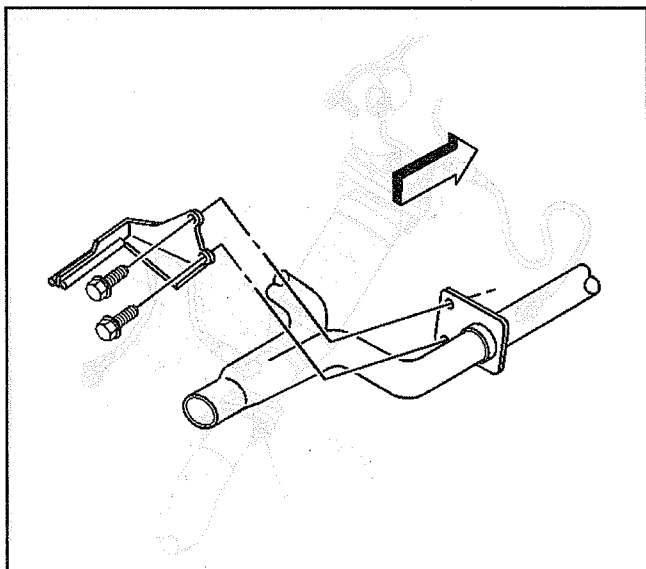
Tighten

Tighten the exhaust manifold pipe nuts (1) (left side) to 35 N·m (26 lb ft).



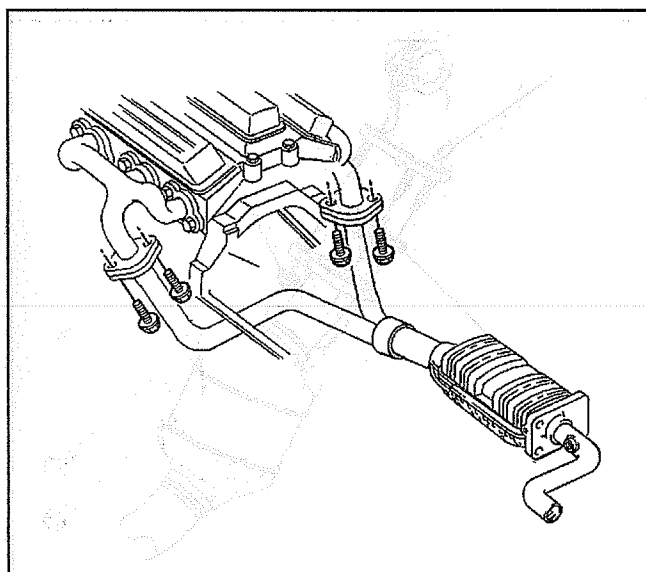
550682

550682



550693

8. Remove the catalytic converter hanger.
 9. Remove the catalytic converter hanger bolts.
- Tighten**
Tighten the catalytic converter hanger bolts to 41 N·m (30 lb ft).
10. Lower the vehicle.

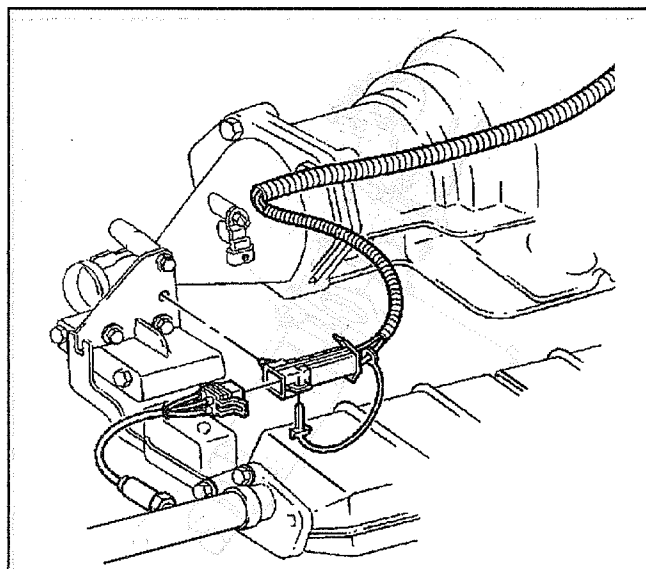


222949

Catalytic Converter Replacement (3.8 L)

Removal Procedure

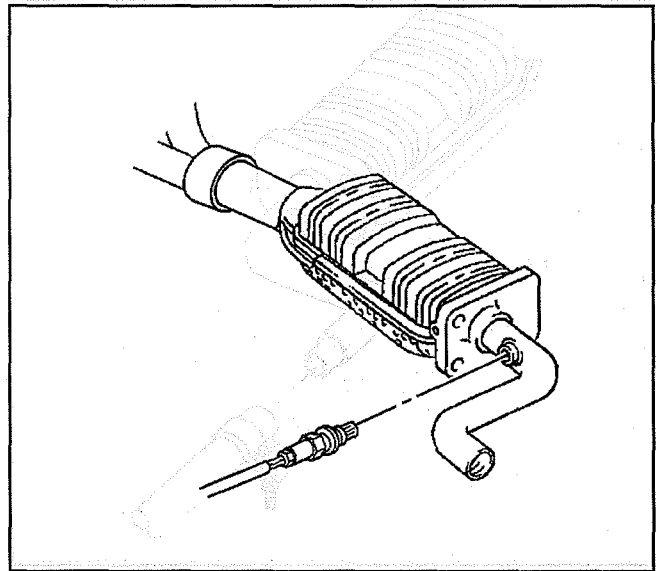
1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Remove the exhaust manifold pipe bolts at the exhaust manifolds.
3. Remove the exhaust pipe gaskets.



222946

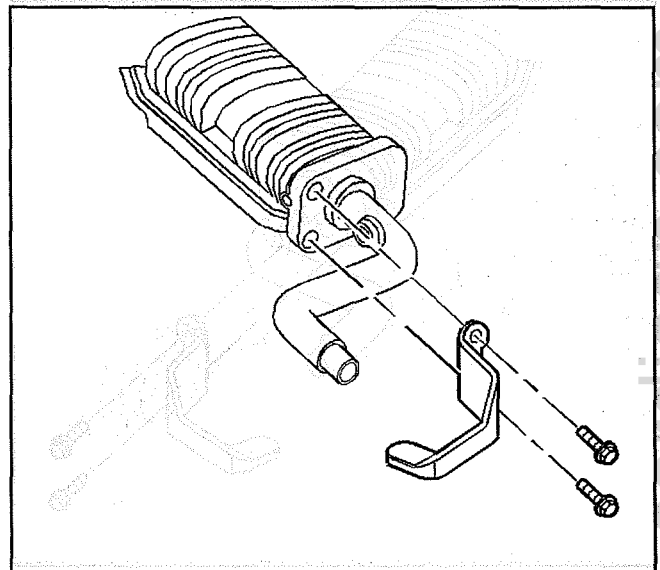
4. Remove the connector position assurance (CPA) retainer.
5. Disconnect the heated oxygen sensor electrical connector.

6. Remove the heated oxygen sensor from the three way catalytic converter.
7. Loosen the muffler clamp bolt at the three way catalytic converter.



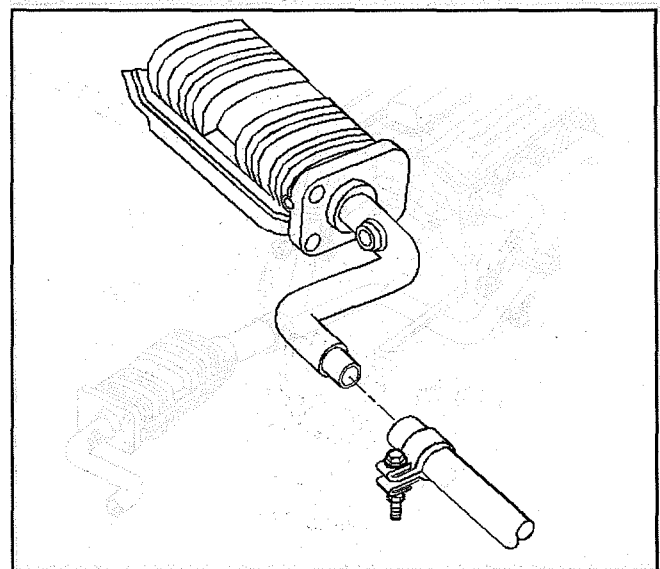
222948

8. Remove the catalytic converter hanger bolts.
9. Remove the catalytic converter hanger from the hanger bracket.

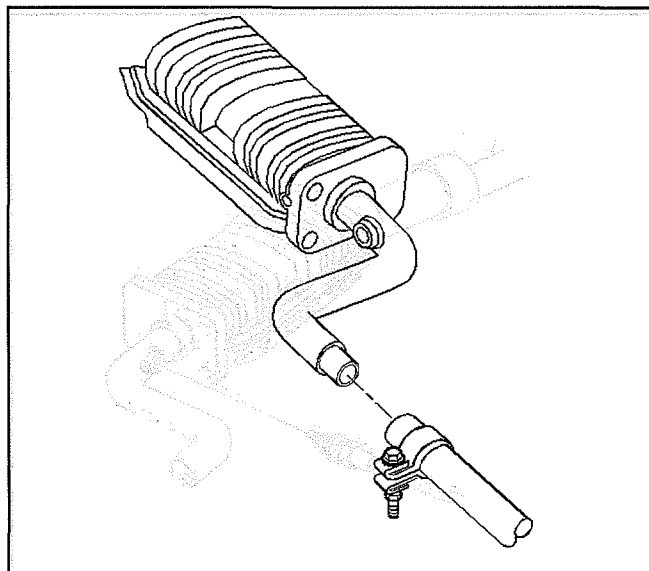


21664

10. Twist and slide out the three way catalytic converter from the exhaust muffler.



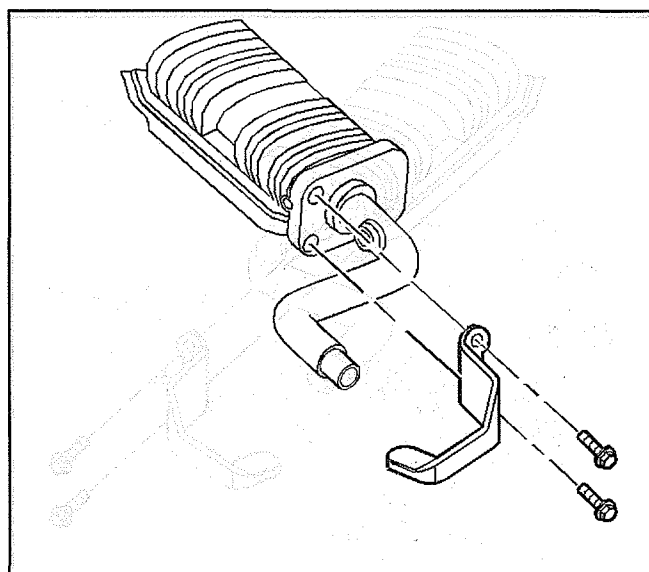
21662



21662

Installation Procedure

1. Twist and slide the three way catalytic converter into the exhaust muffler.



21664

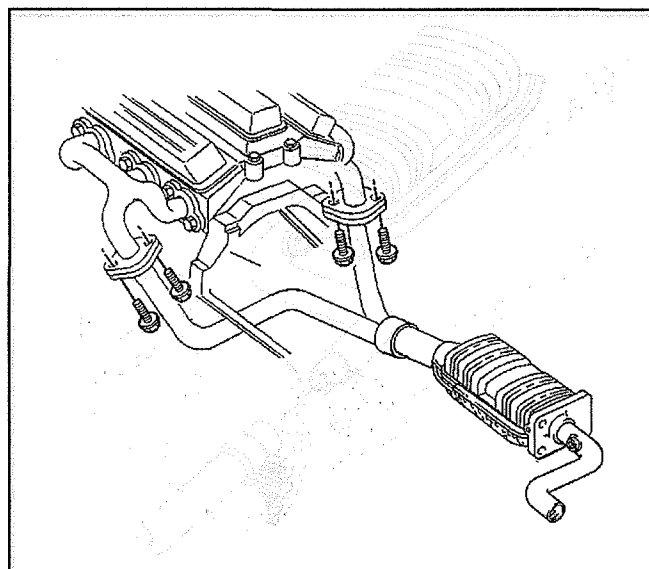
2. Install the catalytic converter hanger to the hanger bracket.

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

3. Install the catalytic converter hanger bolts.

Tighten

Tighten the catalytic converter hanger bolts to 41 N·m (30 lb ft).



222949

4. Install the exhaust manifold pipe bolts at the exhaust manifolds.

Tighten

Tighten the exhaust manifold pipe bolts to 30 N·m (22 lb ft) alternating back and forth from the left to the right manifolds.

5. Tighten the exhaust muffler clamp bolt at the three way catalytic converter.

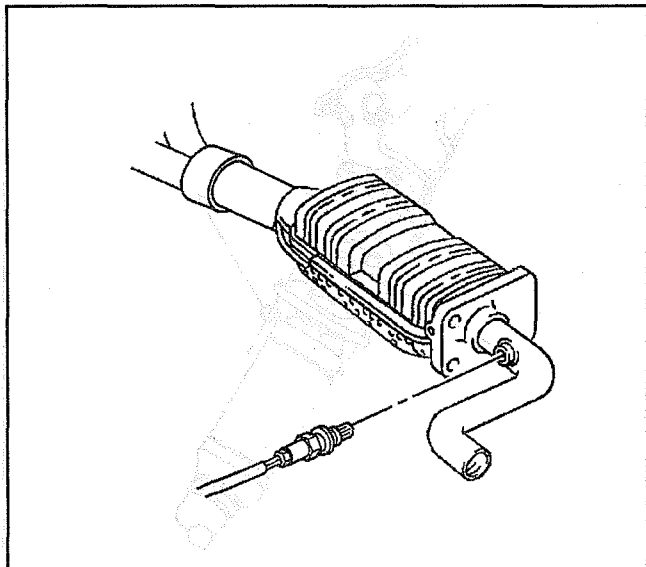
Tighten

Tighten the exhaust muffler clamp bolt to 48 N·m (35 lb ft).

6. Install the heated oxygen sensor to the three way catalytic converter.

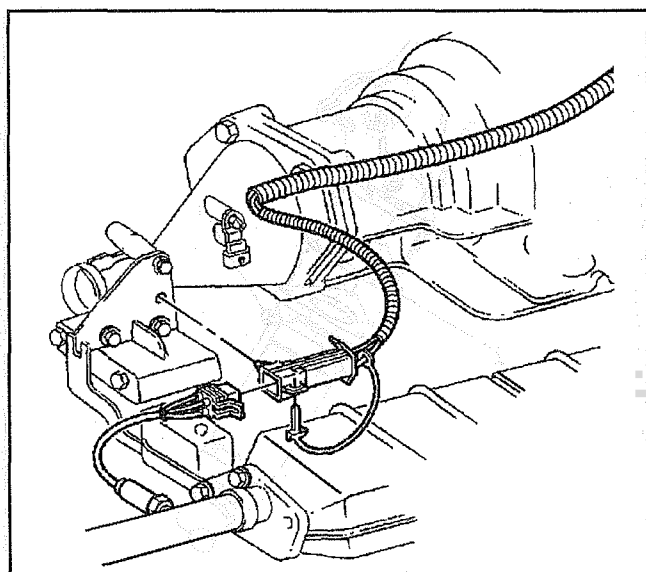
Tighten

Tighten the heated oxygen sensor to 42 N·m (31 lb ft).



222948

7. Connect the heated oxygen sensor electrical connector.
8. Install the CPA retainer.
9. Lower the vehicle.

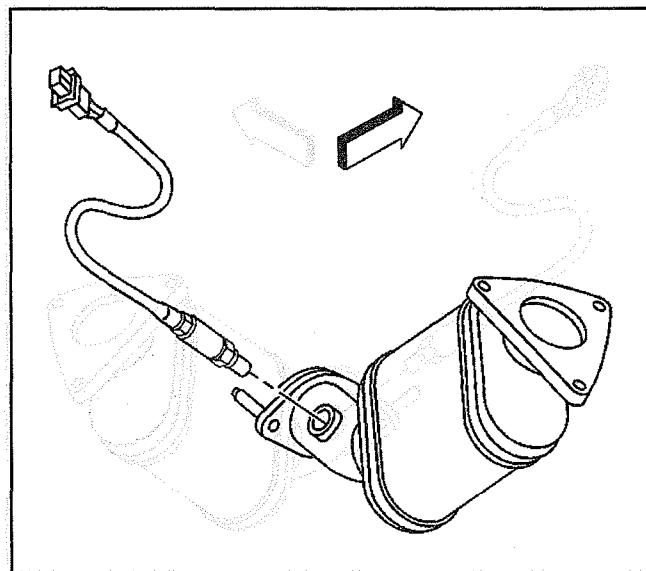


222946

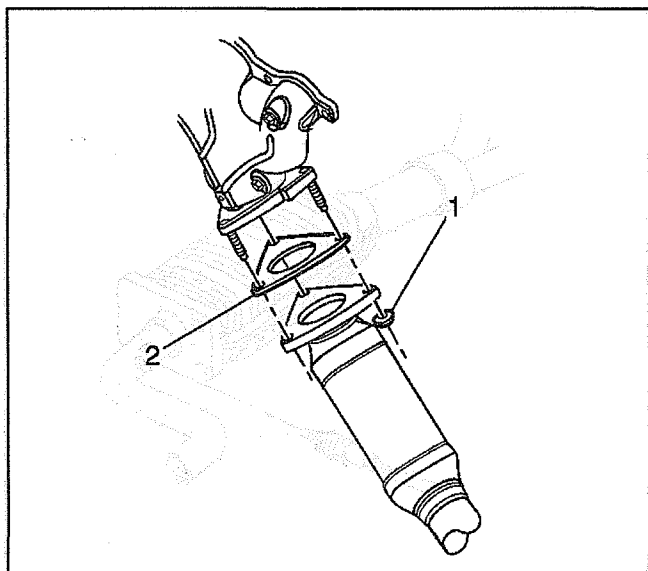
Oxidation Catalytic Converter Replacement (5.7 L Left)

Removal Procedure

1. Remove the exhaust crossover pipe. Refer to *Exhaust Crossover Pipe Replacement (5.7 L)*.
2. Remove the connector position assurance (CPA) retainer.
3. Disconnect the heated oxygen sensor electrical connector.
4. Remove the heated oxygen sensor from the left catalytic converter.

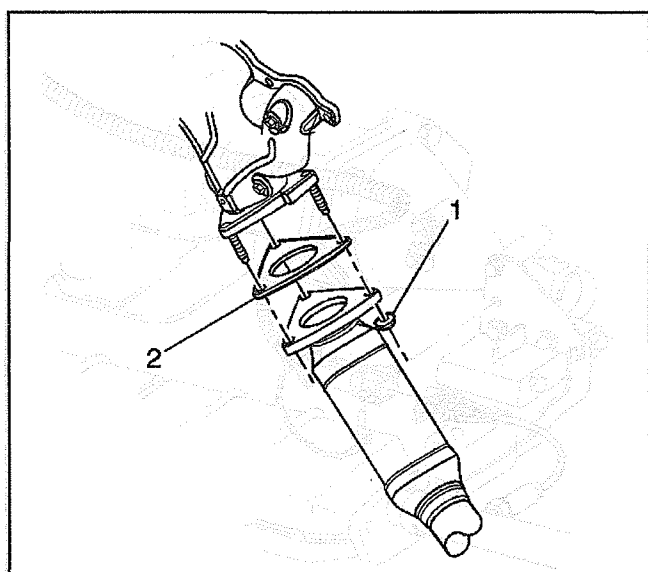


550706



550682

5. Remove the exhaust manifold pipe nuts (1).
6. Remove the catalytic converter gasket (2).
7. Remove the left catalytic converter.



550682

Installation Procedure

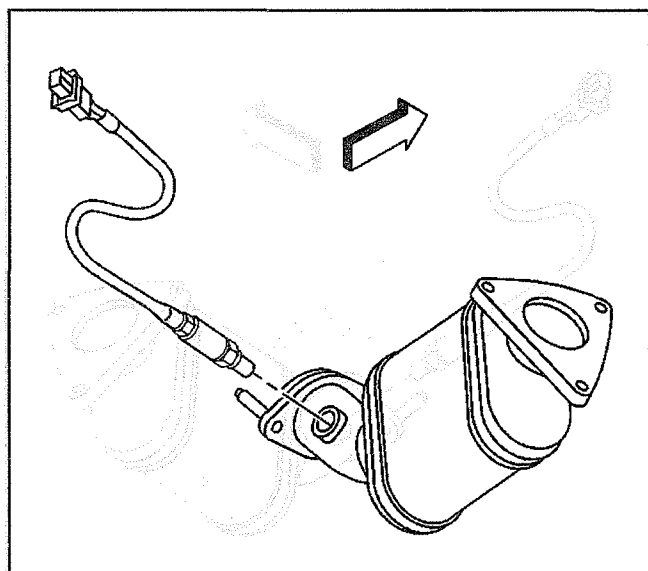
1. Install the left catalytic converter gasket (2).
2. Install the left catalytic converter.

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

3. Install the exhaust manifold pipe nuts (1).

Tighten

Tighten the exhaust manifold pipe nuts (1) to 35 N·m (26 lb ft).



550706

4. Install the heated oxygen sensor to the left catalytic converter.

Tighten

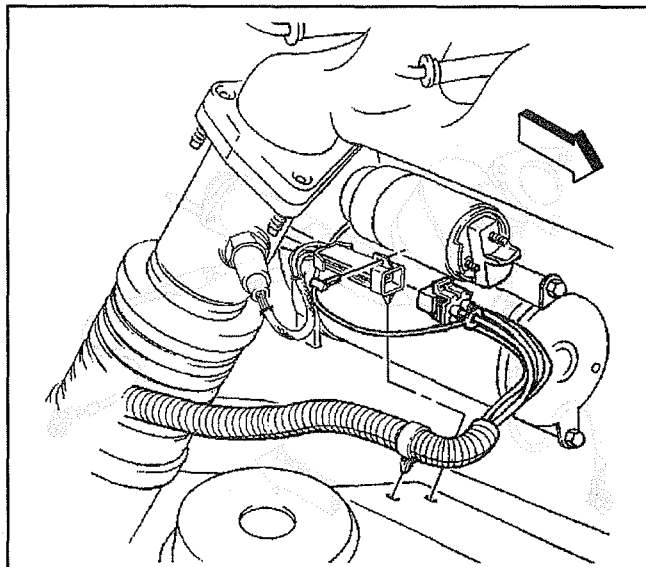
Tighten the heated oxygen sensor to 42 N·m (31 lb ft).

5. Connect the heated oxygen sensor electrical connector.
6. Install the CPA retainer.
7. Install the exhaust crossover pipe. Refer to *Exhaust Crossover Pipe Replacement* (5.7 L).

Oxidation Catalytic Converter Replacement (5.7 L Right)

Removal Procedure

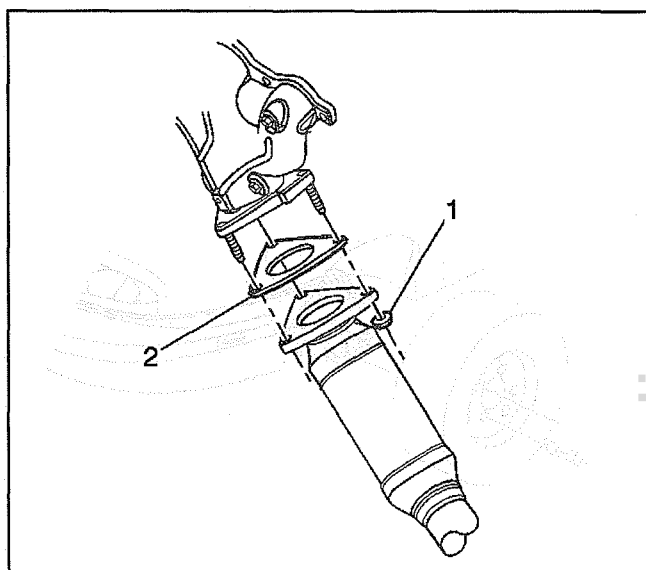
1. Remove the exhaust crossover pipe. Refer to *Exhaust Crossover Pipe Replacement (5.7 L)*.
2. Remove the connector position assurance (CPA) retainers.
3. Disconnect the heated oxygen sensors electrical connectors.
4. Remove the heated oxygen sensors from the right catalytic converter.



FIGURE

222953

5. Remove the exhaust manifold pipe nuts (1).
6. Remove the catalytic converter gasket (2).
7. Remove the right catalytic converter.



FIGURE

550682

Installation Procedure

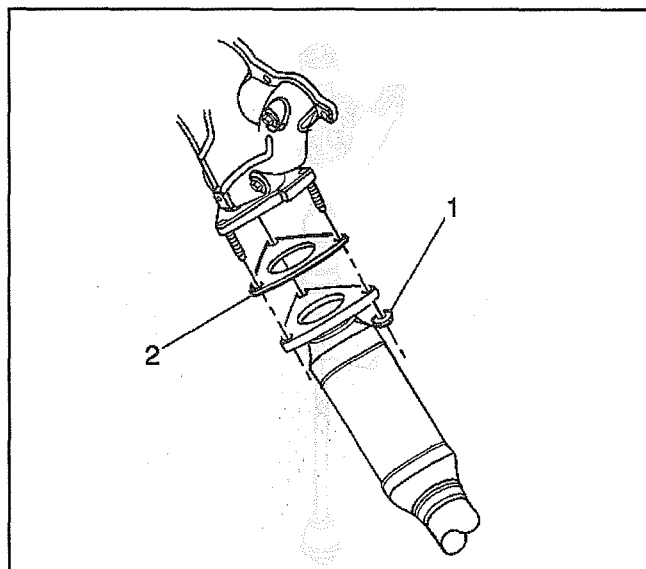
1. Install the catalytic converter gasket (2).
2. Install the right catalytic converter.

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

3. Tighten the exhaust manifold pipe nuts (1).

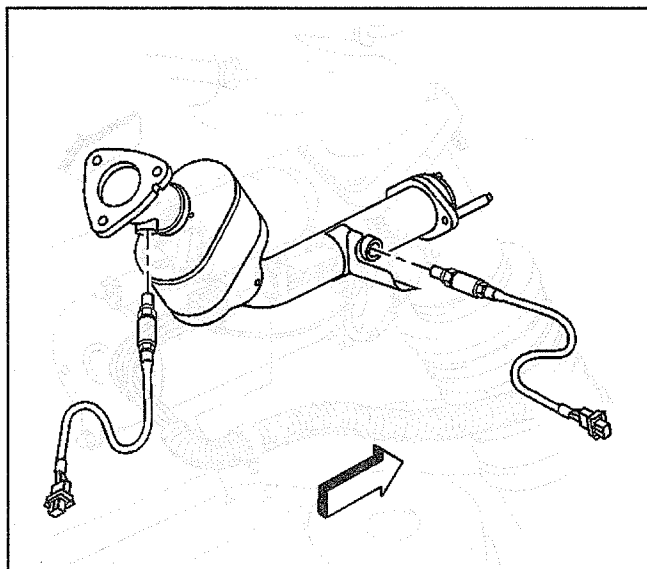
Tighten

Tighten the exhaust manifold pipe nuts (1) to 35 N·m (26 lb ft).



FIGURE

550682



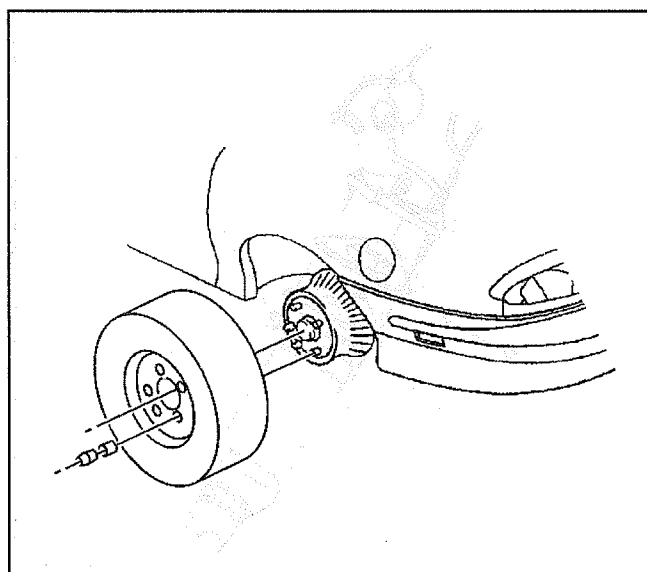
550704

4. Install the heated oxygen sensors to the right catalytic converter.

Tighten

Tighten the heated oxygen sensor to 42 N·m (31 lb ft).

5. Connect the heated oxygen sensors electrical connectors.
6. Install the CPA retainers.
7. Install the exhaust crossover pipe. Refer to *Exhaust Crossover Pipe Replacement (5.7 L)*.

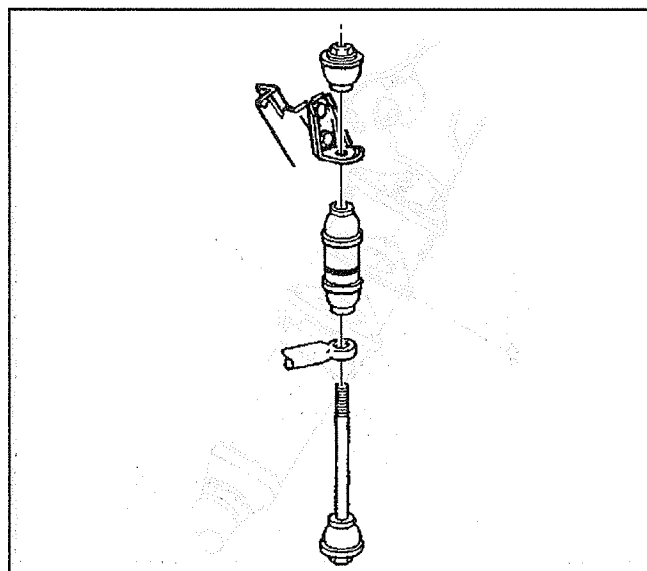


222971

Muffler Replacement

Removal Procedure

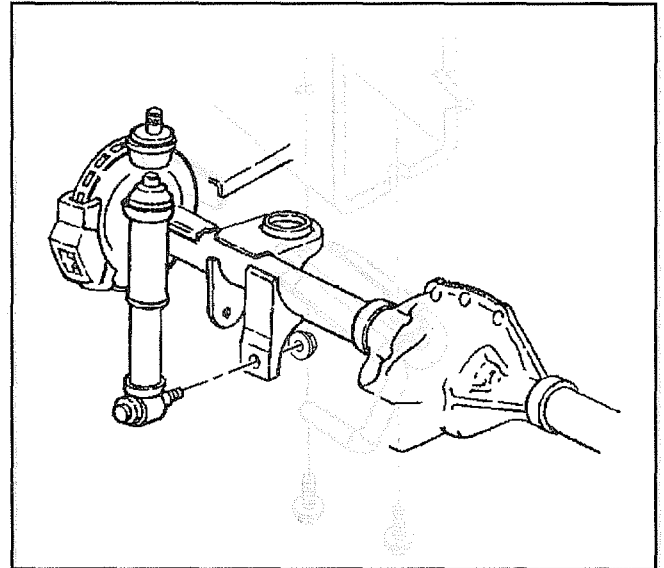
1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Remove the track bar. Refer to *Track Bar Replacement* in Rear Suspension.
3. Remove the drivers side rear tire.
4. Support the rear axle with jack stands.



222972

5. Remove the passenger side rear stabilizer bar and end link.

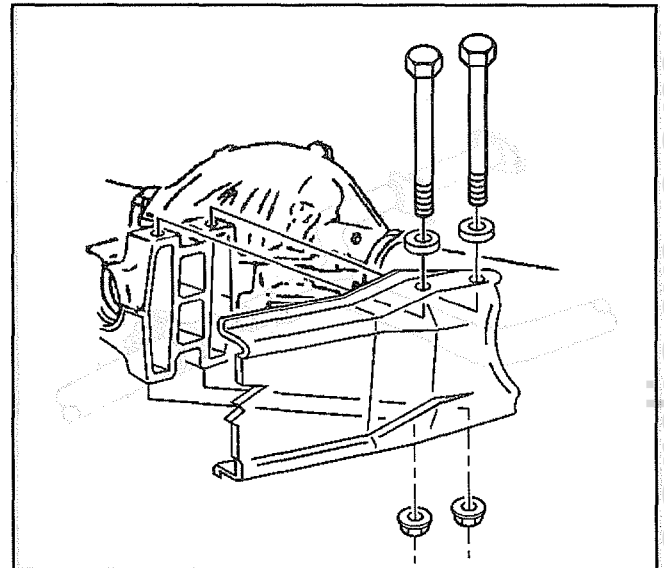
6. Disconnect the passenger side rear shock from the rear axle.



222973

222973

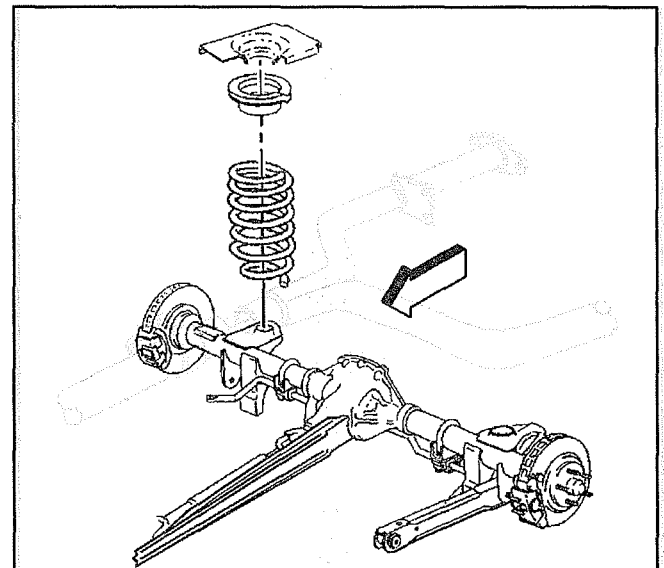
7. Remove the torque arm bolts at the rear axle.
Lower the rear axle slightly.



222974

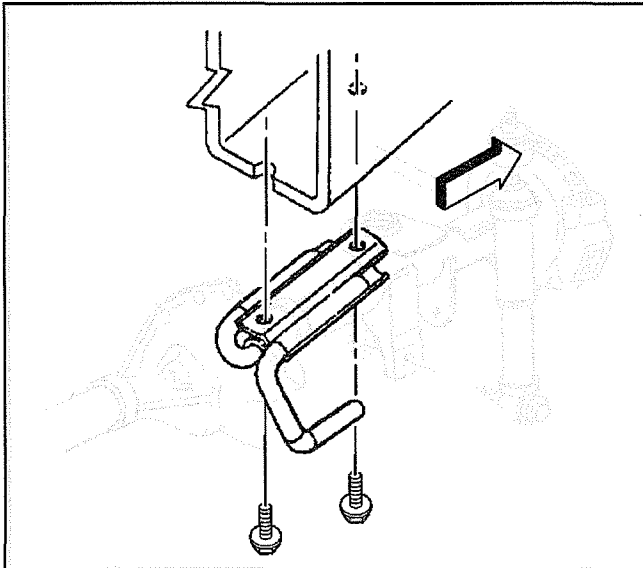
222974

8. Remove the passenger side rear coil spring and bushing.



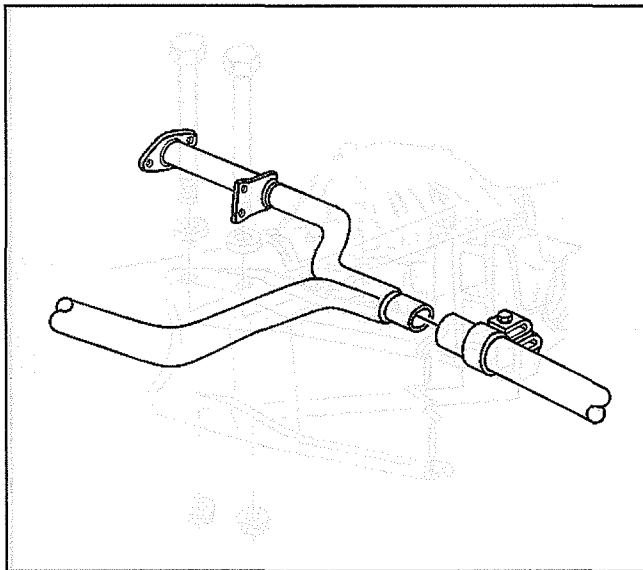
222975

222975



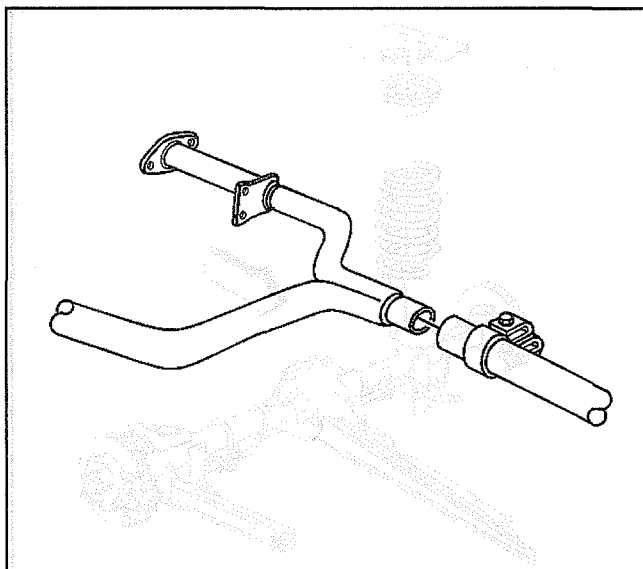
222976

9. Remove the left exhaust hanger from the underbody.



550689

10. Loosen the exhaust muffler clamp, (5.7 L shown, 3.8 L similar).
11. Lower the rear axle enough to remove the muffler.
12. Remove the muffler by rotating and sliding the muffler out from behind the vehicle.
13. Transfer the exhaust hanger(s) to the new muffler.



550689

Installation Procedure

1. Install the exhaust muffler to the vehicle, (5.7 L shown, 3.8 L similar).
2. Raise the rear axle.

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

3. Tighten the exhaust muffler clamp.

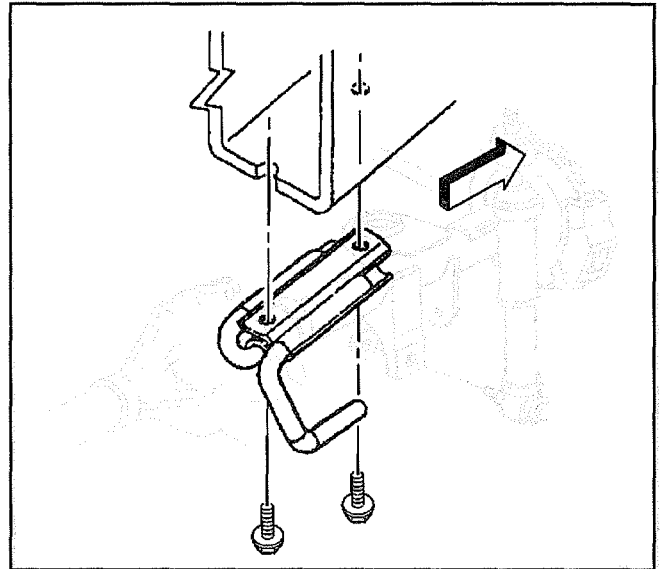
Tighten

Tighten the exhaust muffler clamp bolt to 48 N·m (35 lb ft).

4. Install the left exhaust muffler hanger to the underbody.

Tighten

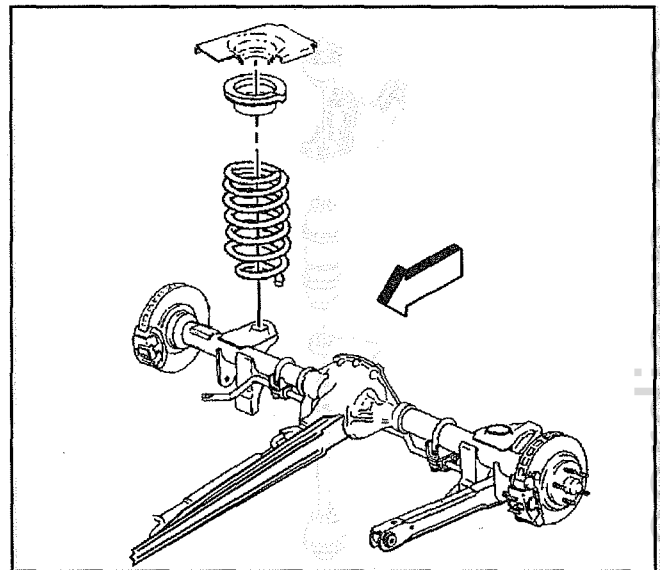
Tighten the exhaust muffler hanger bolts to 10 N·m (89 lb in).



222976

222976

5. Install the passenger side rear coil spring and bushing.



222975

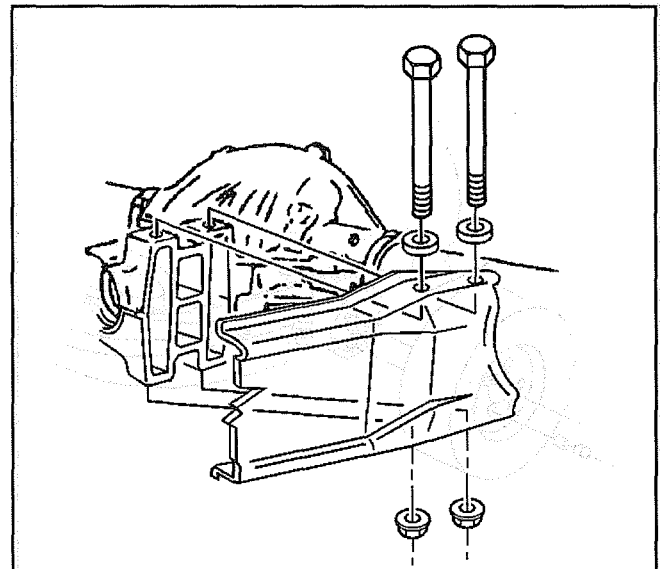
222975

6. Raise the axle completely.

7. Install the torque arm bolts at the rear axle.

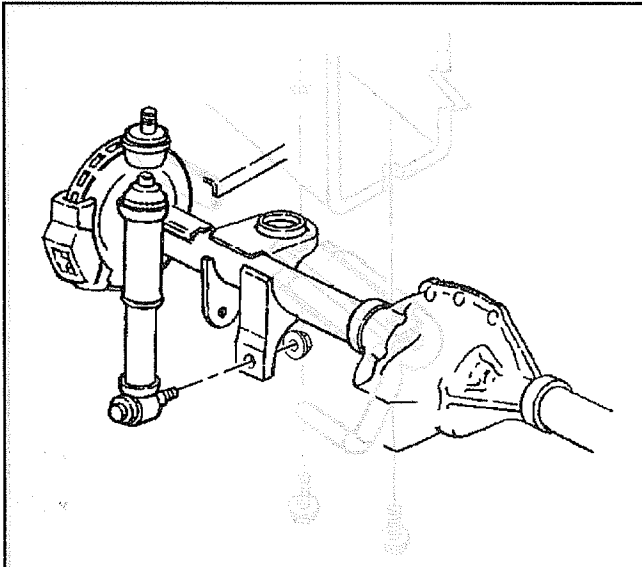
Tighten

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



222974

222974



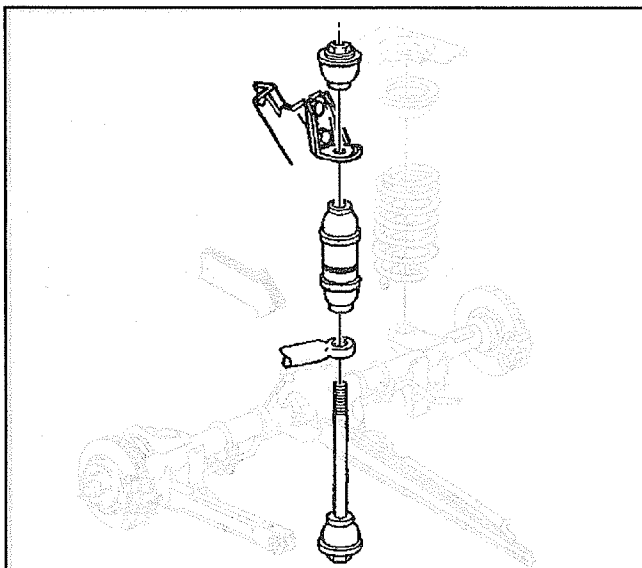
222973

222973

8. Connect the passenger side rear shock to the rear axle.

Tighten

Tighten the rear shock nuts to 90 N·m (66 lb ft).



222972

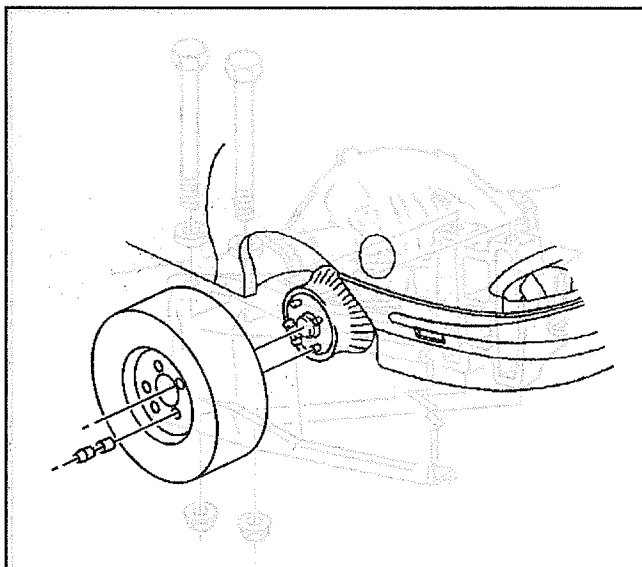
222972

9. Connect the passenger side rear stabilizer bar end link.

Tighten

Tighten the end link nut to 23 N·m (17 lb ft).

10. Remove the rear axle support.



222971

222971

11. Install the driver's side rear tire.

Tighten

Tighten the wheel nuts to 120 N·m (89 lb ft).

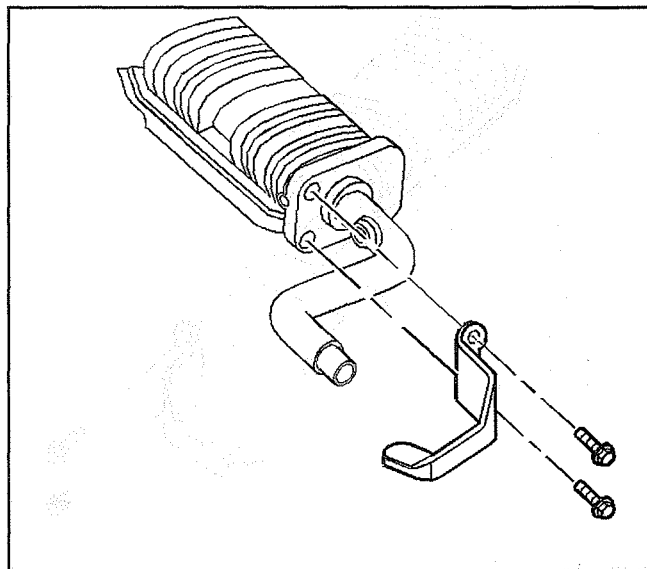
12. Install the track bar. Refer to *Track Bar Replacement* in Rear Suspension.

13. Lower the vehicle.

Converter Hanger Assembly Replacement (3.8 L Automatic)

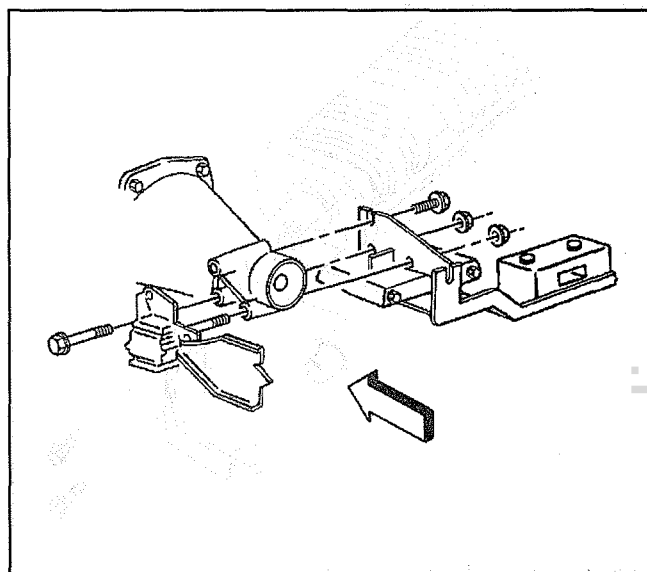
Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the catalytic converter.
3. Remove the catalytic converter hanger bolts.
4. Remove the catalytic converter hanger from the front hanger bracket.



21664

5. Remove the rear axle torque arm nuts.
6. Remove the rear axle torque arm bracket bolts.
7. Remove the catalytic converter front hanger bracket from the vehicle.



222998

Installation Procedure

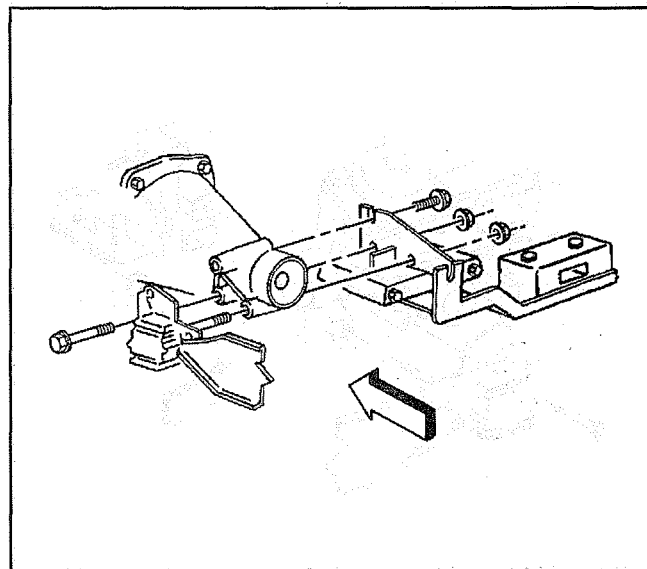
1. Install the catalytic converter front hanger bracket to the vehicle.
2. Install the rear axle torque arm bracket bolts.

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

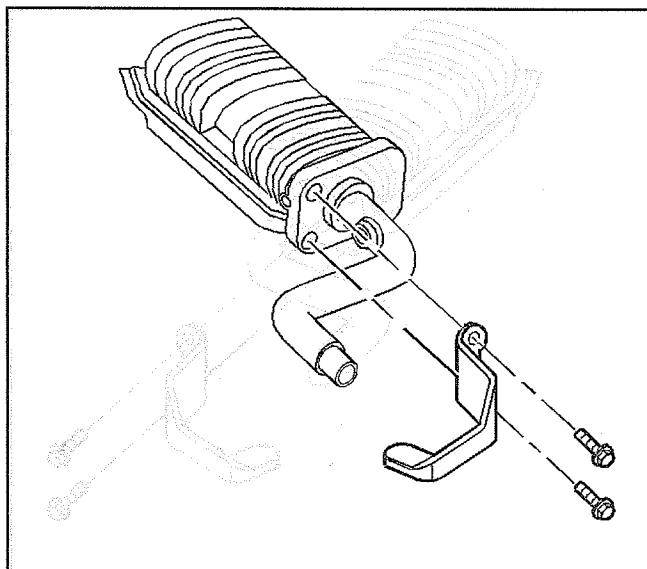
3. Install the rear axle torque arm bracket nuts.

Tighten

Tighten the rear axle torque arm bracket nuts to 45 N·m (33 lb ft).



222998



21664

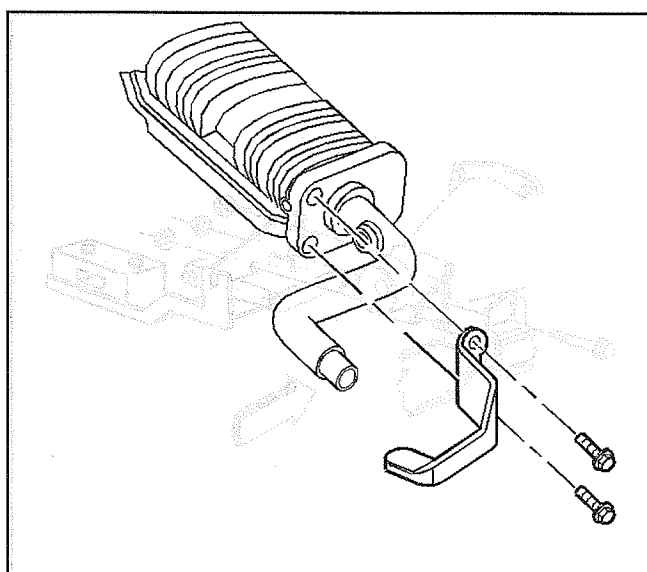
21664

4. Install the catalytic converter hanger to the front hanger bracket.
5. Install the catalytic converter hanger bolts.

Tighten

Tighten the catalytic converter hanger bolts to 41 N·m (30 lb ft).

6. Remove the support from the catalytic converter.
7. Lower the vehicle.



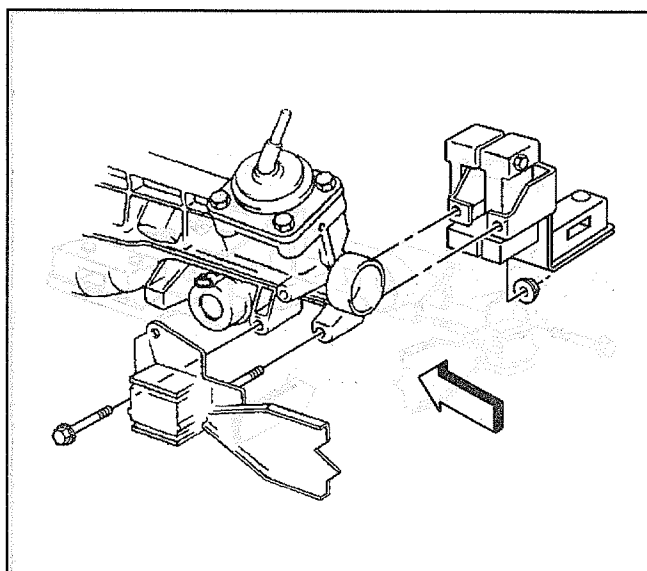
21664

21664

Converter Hanger Assembly Replacement (3.8 L Manual)

Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the catalytic converter.
3. Remove the catalytic converter hanger bolts.
4. Remove the hanger from the bracket.



222996

222996

5. Remove the rear axle torque arm bracket nuts.
6. Remove the catalytic converter front hanger bracket.

Installation Procedure

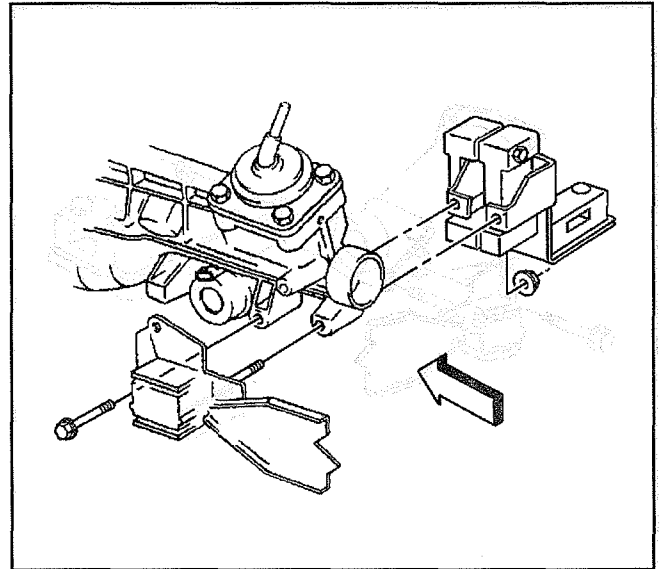
1. Install the catalytic converter front hanger bracket.

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

2. Install the rear axle torque arm bracket nuts.

Tighten

Tighten the rear axle torque arm bracket nut to 45 N·m (33 lb ft).



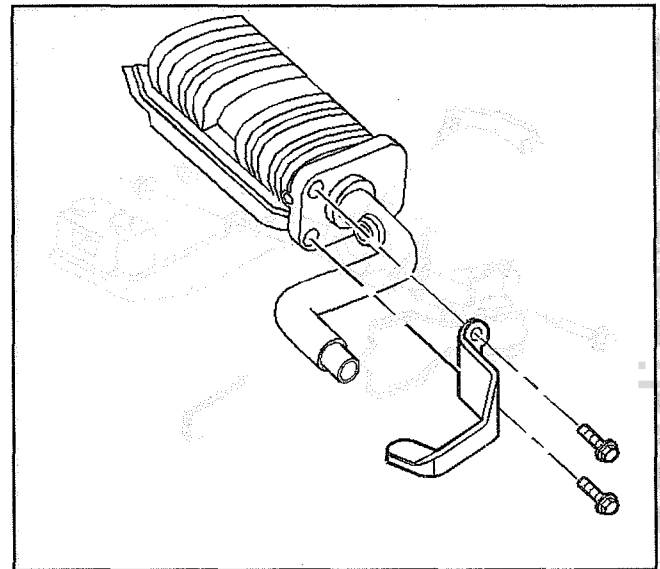
222996

3. Install the hanger to the bracket.
4. Install the catalytic converter hanger bolts.

Tighten

Tighten the converter hanger bolts to 41 N·m (30 lb ft).

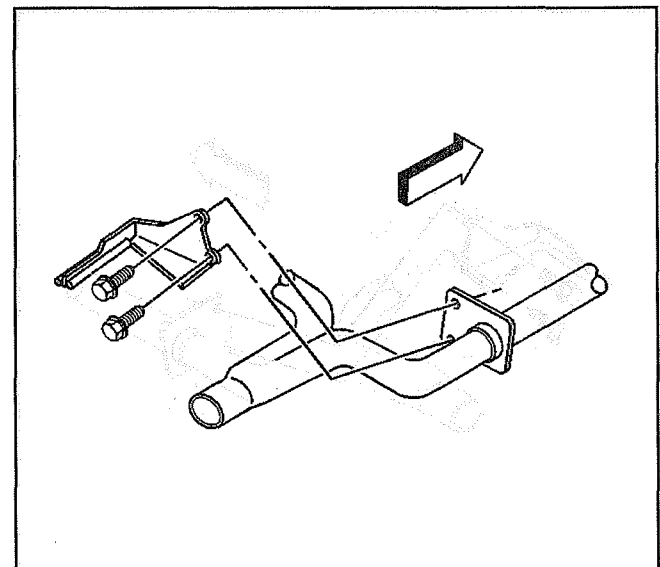
5. Remove the support from the catalytic converter.
6. Lower the vehicle.



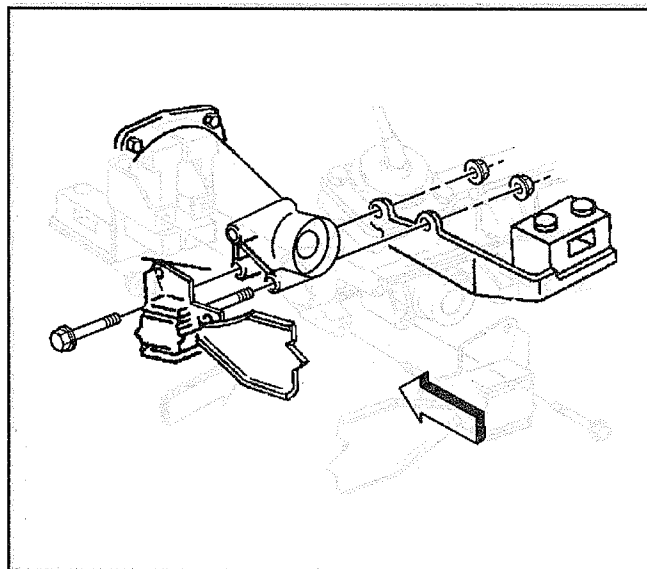
21664

Converter Hanger Assembly Replacement (5.7 L)**Removal Procedure**

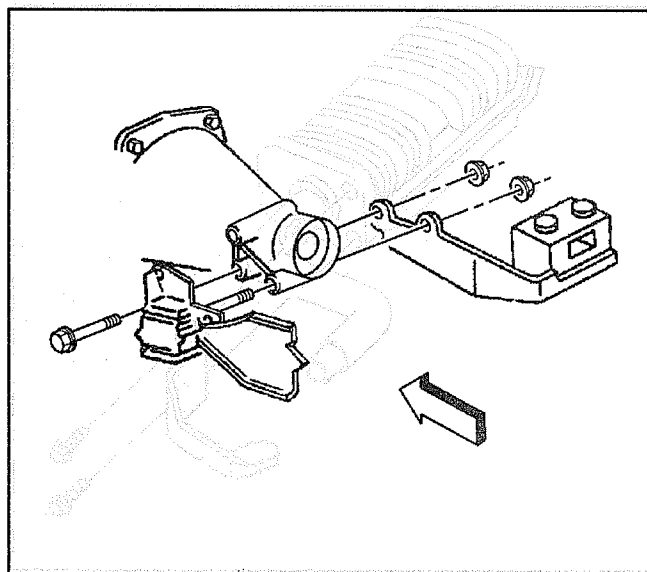
1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the catalytic converter.
3. Remove the catalytic converter hanger bolts.
4. Remove the hanger from the bracket.



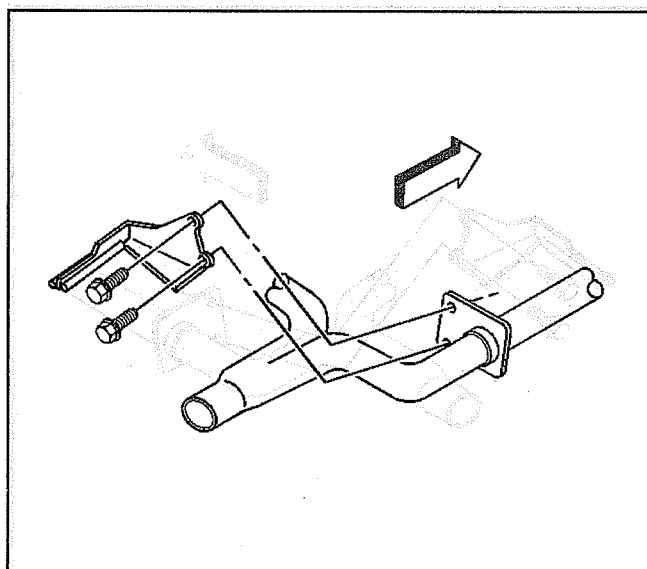
550693



222993



222993



550693

5. Remove the rear axle torque arm bracket nuts.
6. Remove the catalytic converter hanger bracket.

Installation Procedure

1. Install the catalytic converter hanger to the bracket.
2. Install the catalytic converter bracket to the rear axle torque arm bracket.

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

3. Install the rear axle torque arm bracket nuts.

Tighten

Tighten the rear axle torque arm bracket nut to 45 N·m (33 lb ft).

4. Install the catalytic converter hanger bolts.

Tighten

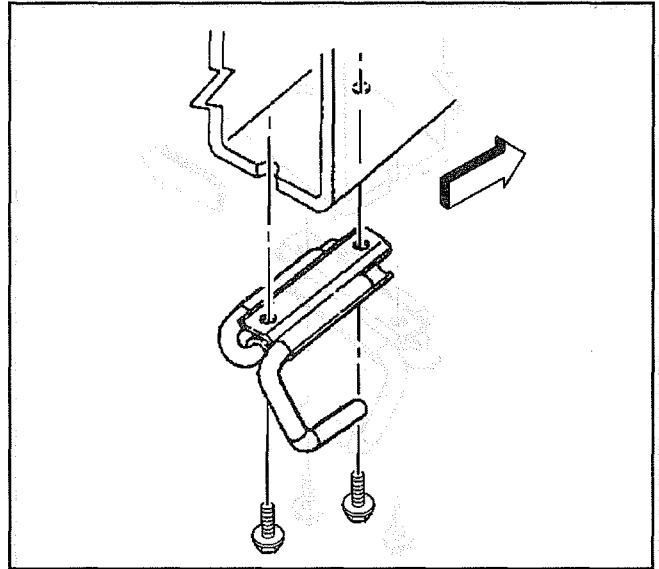
Tighten the catalytic converter hanger bolts to 41 N·m (30 lb ft).

5. Remove the support from the catalytic converter.
6. Lower the vehicle.

Exhaust Muffler Hangers Replacement (3.8 L)

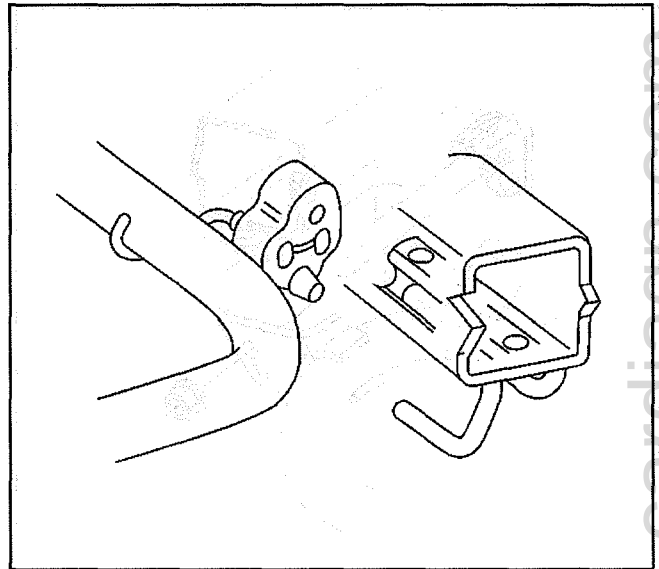
Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the exhaust muffler.
3. Remove the exhaust muffler hanger bolts.



222976

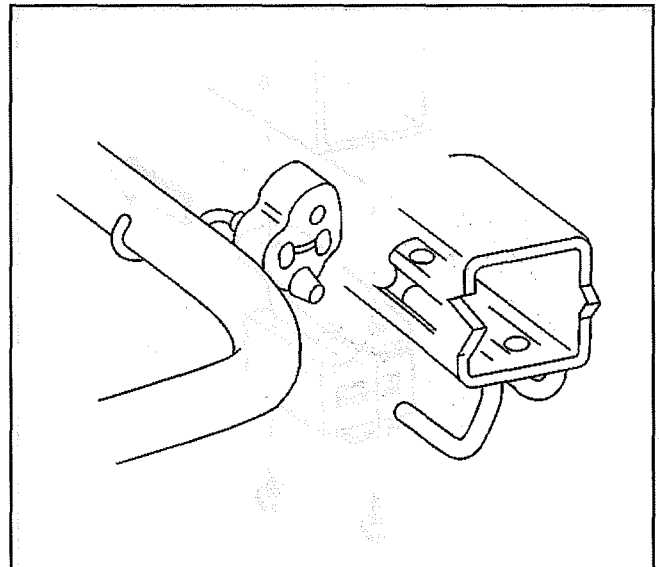
4. Remove the exhaust muffler rubber hanger from the muffler.



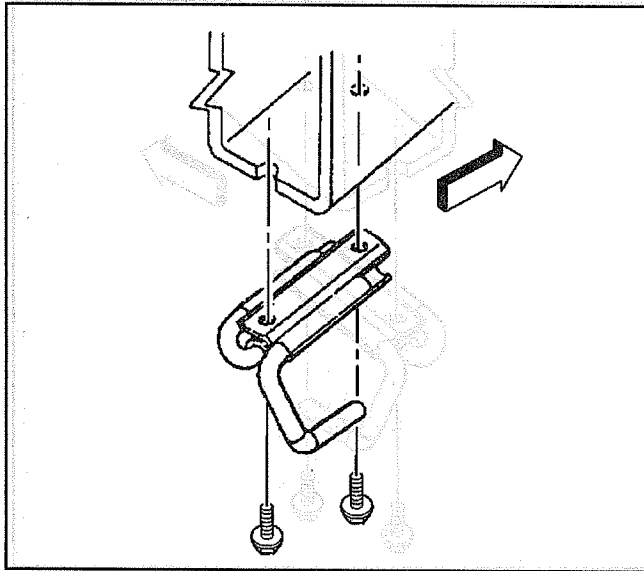
222982

Installation Procedure

1. Install the exhaust muffler rubber hanger to the muffler.



222982



222976

222976

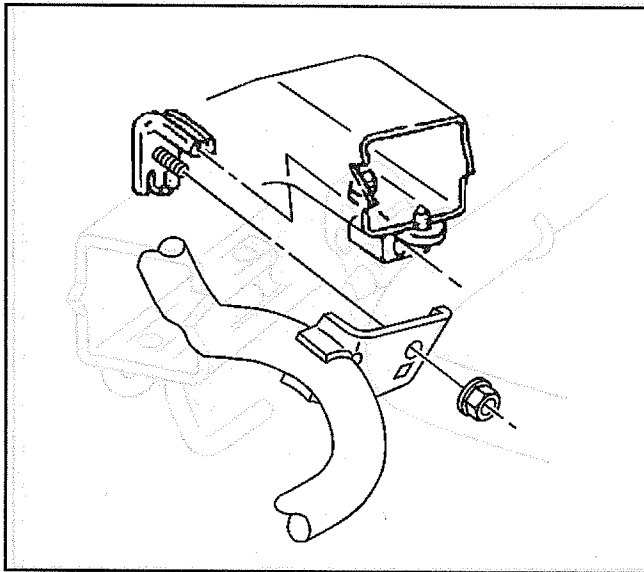
Notice: Refer to *Fastener Notice* in *Cautions and Notices*.

2. Install the exhaust muffler hanger bolts.

Tighten

Tighten the exhaust muffler hanger bolts to 10 N·m (89 lb in).

3. Remove the exhaust muffler support.
4. Lower the vehicle.



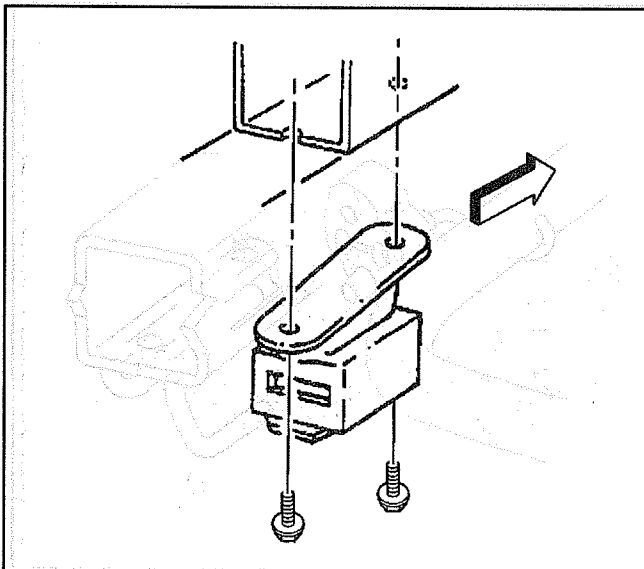
222989

222989

Exhaust Muffler Hangers Replacement (5.7 L)

Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in *General Information*.
2. Support the exhaust muffler.
3. Remove the exhaust pipe hanger nut.



222977

222977

4. Remove the exhaust pipe hanger bracket bolts.
5. Remove the exhaust muffler interior hanger bracket.

Installation Procedure

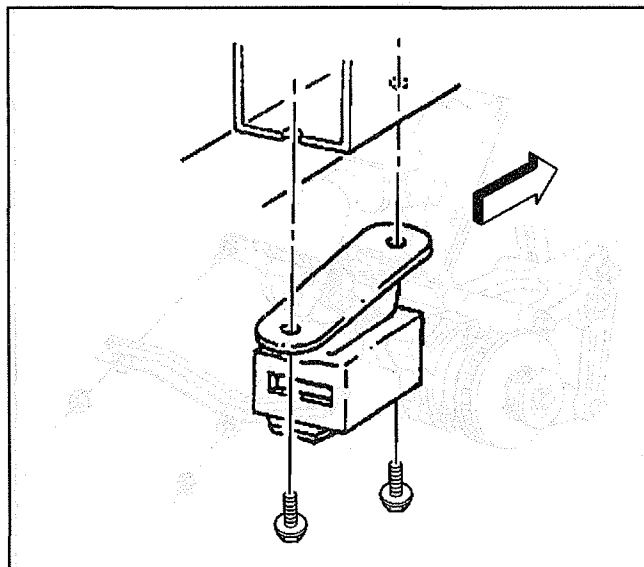
1. Install the exhaust muffler interior hanger bracket.

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

2. Install the exhaust pipe hanger bracket bolts.

Tighten

Tighten the exhaust pipe hanger bracket bolts to 10 N·m (89 lb in).



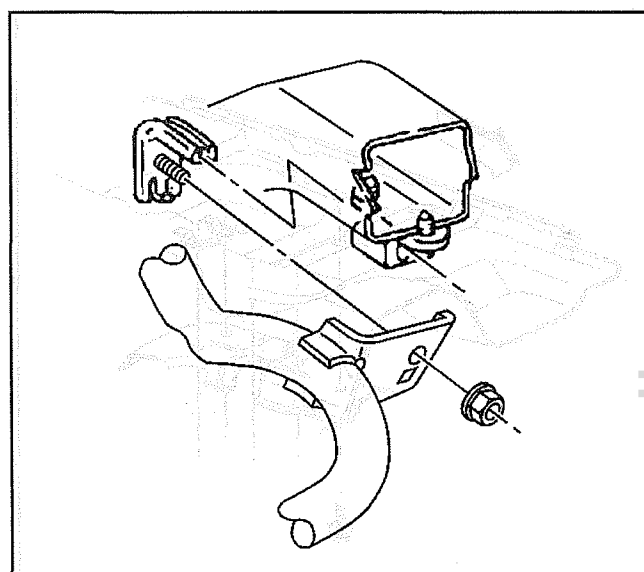
222977

3. Install the exhaust pipe hanger nut.

Tighten

Tighten the exhaust pipe hanger nut to 20 N·m (15 lb ft).

4. Remove the support from the exhaust muffler.
5. Lower the vehicle.

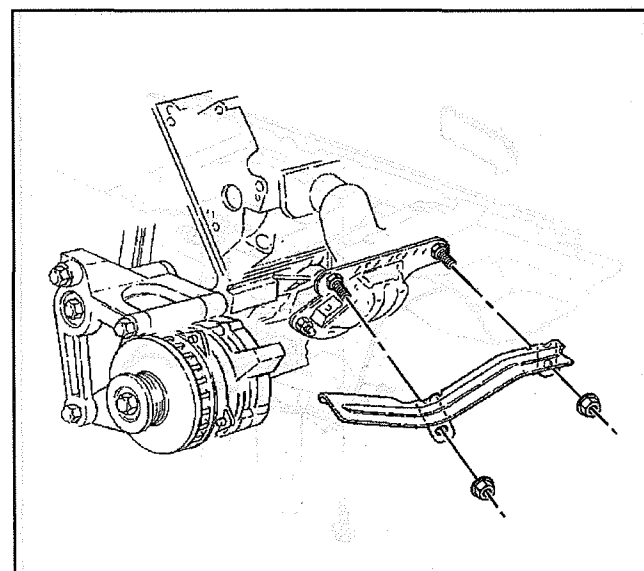


222989

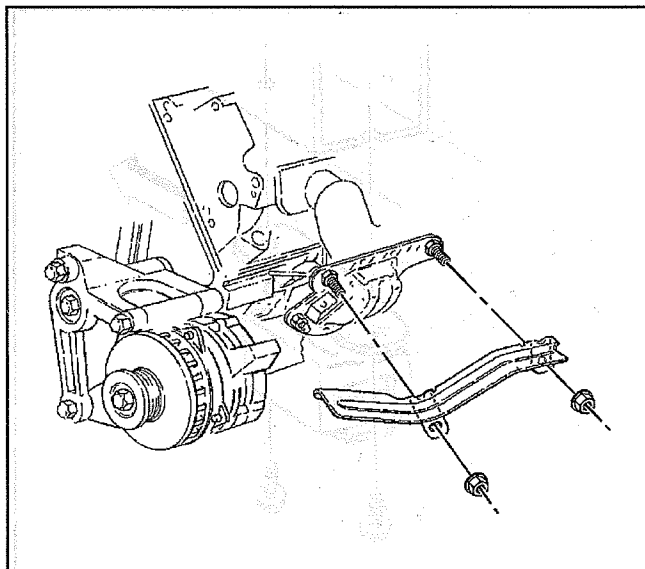
Engine Mount Heat Shield Replacement (5.7 L)

Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Remove the engine mount heat shield nuts.
3. Remove the engine mount heat shield.



220590



220590

Installation Procedure

1. Install the engine mount heat shield.

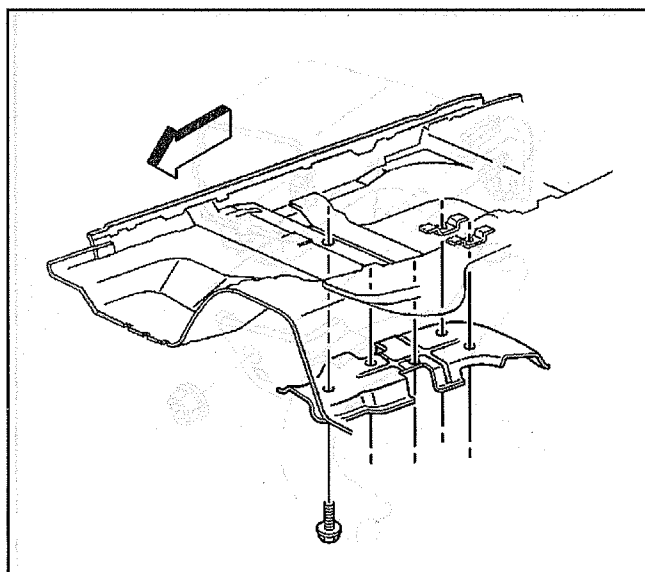
Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the engine mount heat shield nuts.

Tighten

Tighten the engine mount heat shield nuts to 10 N·m (89 lb in).

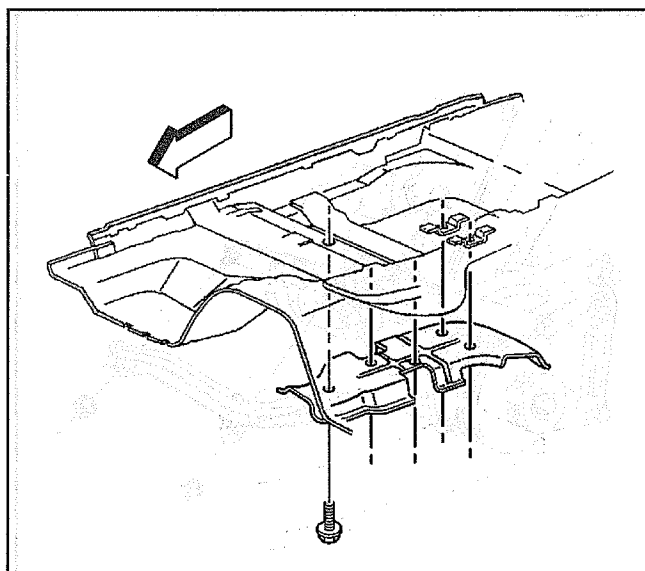
3. Lower the vehicle.



223001

Converter Heat Shield Replacement**Removal Procedure**

1. Remove the catalytic converter. Refer to *Catalytic Converter Replacement (3.8 L)* or *Oxidation Catalytic Converter Replacement (5.7 L Right)*.
2. Remove the catalytic converter heat shield bolts.
3. Remove the catalytic converter heat shield.



223001

Installation Procedure

1. Install the catalytic converter heat shield.

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

2. Install the converter heat shield bolts.

Tighten

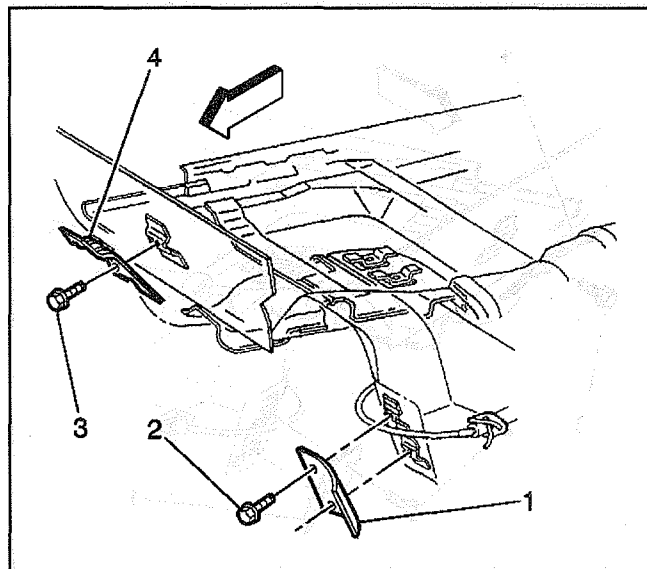
Tighten the catalytic converter heat shield bolts to 2 N·m (18 lb in).

3. Install the catalytic converter. Refer to *Catalytic Converter Replacement (3.8 L)* or *Oxidation Catalytic Converter Replacement (5.7 L Right)*.

Exhaust Heat Shield Replacement

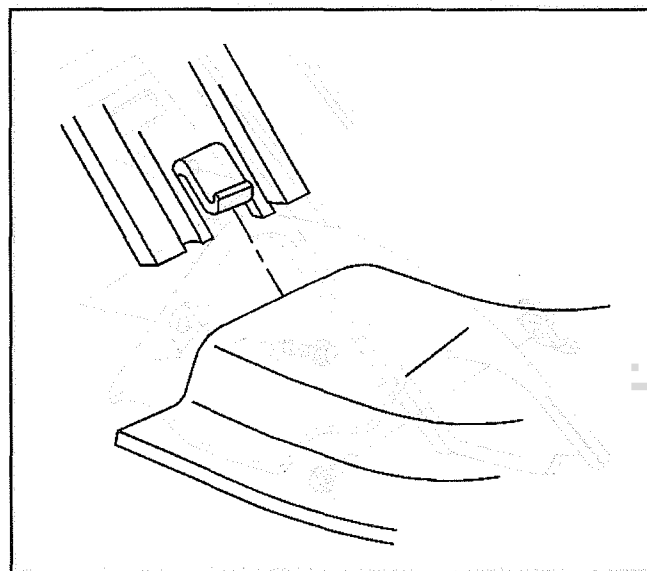
Removal Procedure

1. Remove the catalytic converter. Refer to *Catalytic Converter Replacement (3.8 L)* or *Oxidation Catalytic Converter Replacement (5.7 L Right)*.
2. Remove the exhaust heat shield bolts (2 and 3).



223003

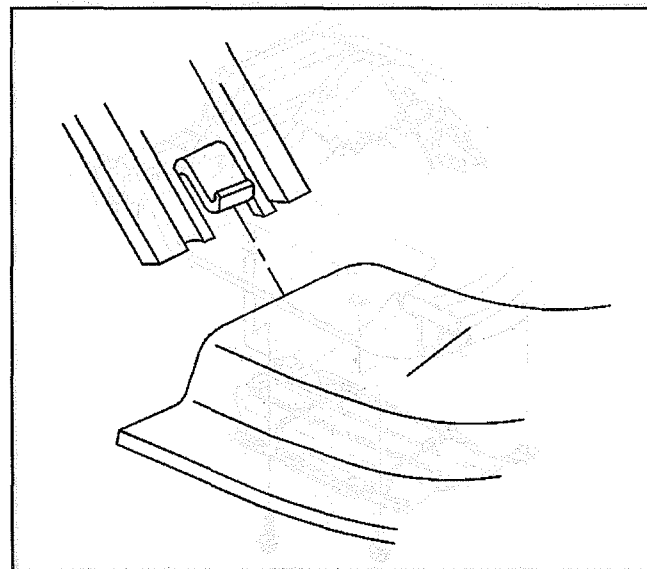
3. Unhook the exhaust heat shield from the converter heat shield.
4. Remove the exhaust heat shield.



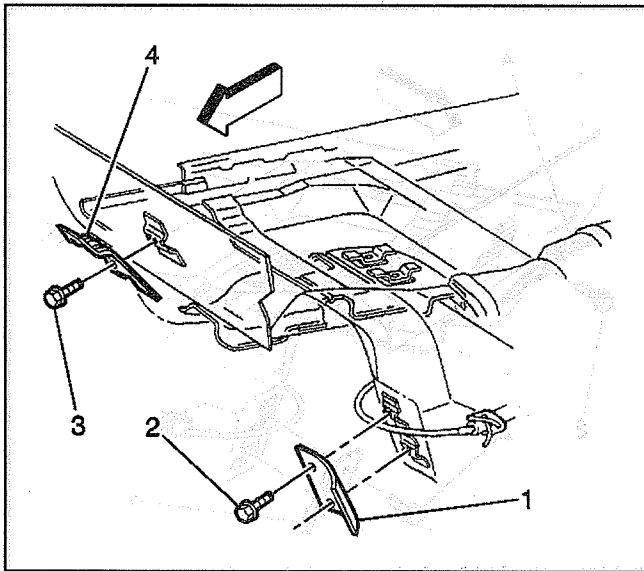
223006

Installation Procedure

1. Install the exhaust heat shield.
2. Hook the exhaust heat shield to the converter heat shield.



223006



223003

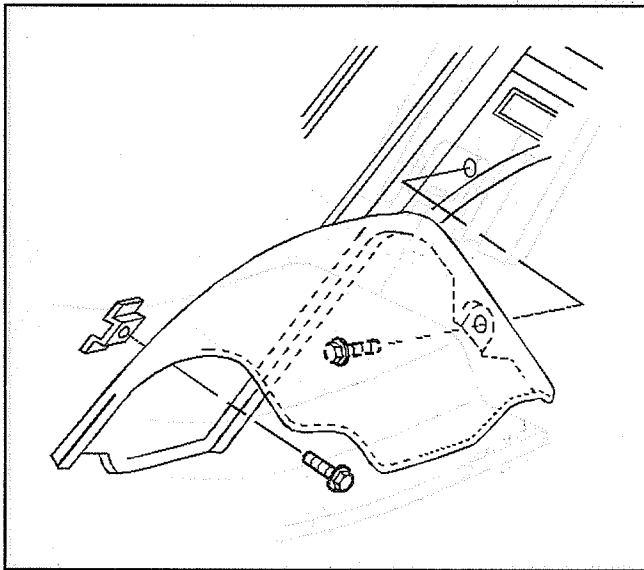
Notice: Refer to *Fastener Notice* in Cautions and Notices.

3. Install the exhaust heat shield bolts (2 and 3).

Tighten

Tighten the exhaust heat shield bolt to 2 N·m (18 lb in).

4. Install the catalytic converter. Refer to *Catalytic Converter Replacement (3.8 L)* or *Oxidation Catalytic Converter Replacement (5.7 L Right)*.

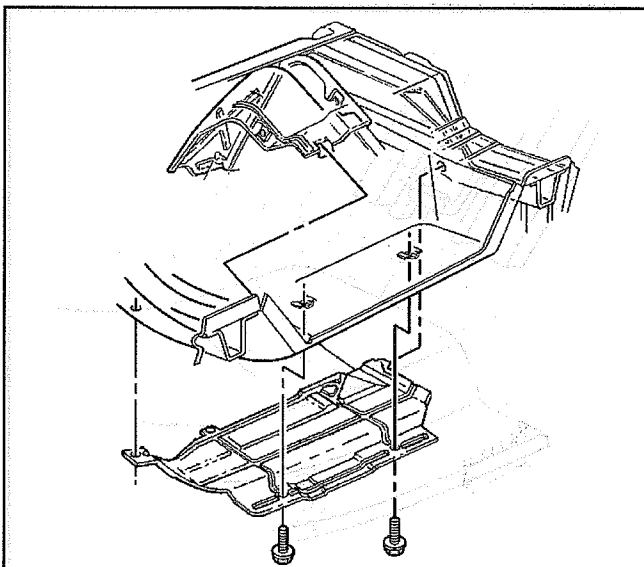


21701

Exhaust Pipe and Muffler Heat Shields Replacement

Removal Procedure

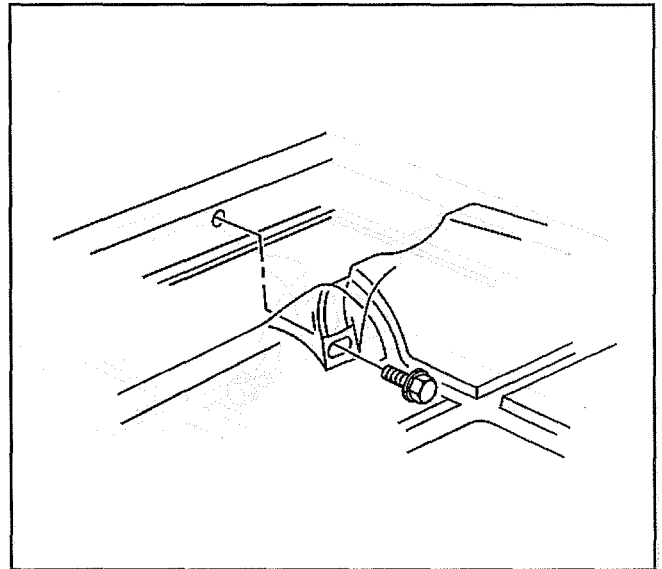
1. Remove the exhaust muffler. Refer to *Muffler Replacement*.
2. Remove the exhaust pipe heat shield bolts.
3. Remove the exhaust pipe heat shield.



223008

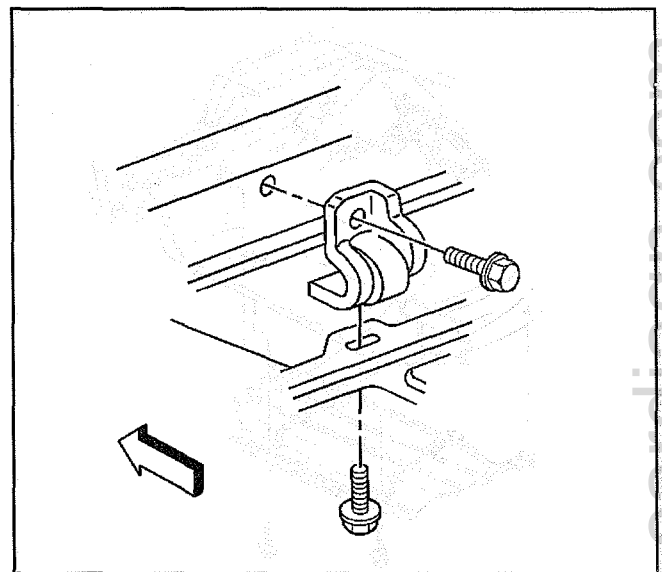
4. Remove the exhaust muffler heat shield bolts.

5. Remove the exhaust muffler heat shield bolt.



223010

6. Remove the exhaust muffler heat shield bolts and bracket.
7. Remove the exhaust muffler heat shield.



223012

Installation Procedure

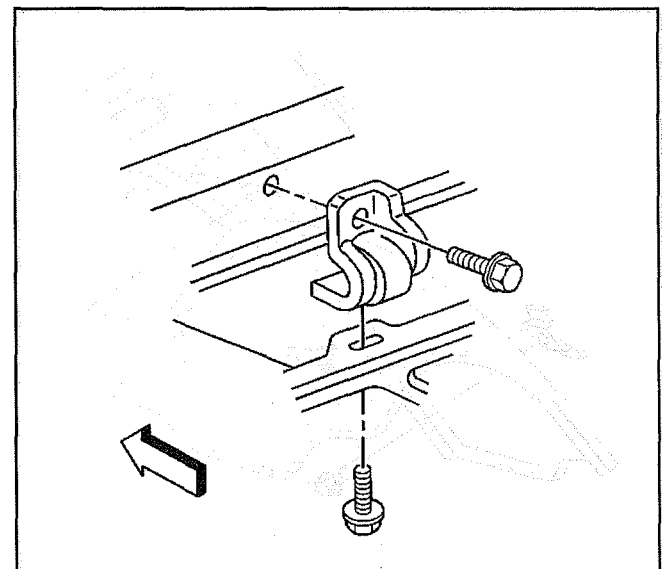
1. Install the exhaust muffler heat shield.

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

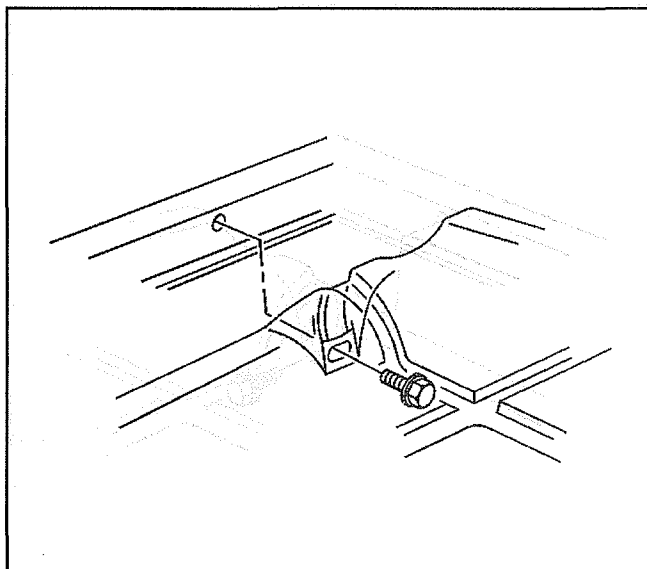
2. Install the exhaust muffler heat shield bracket and bolts.

Tighten

Tighten the muffler heat shield bolts to 2 N·m (18 lb in).



223012

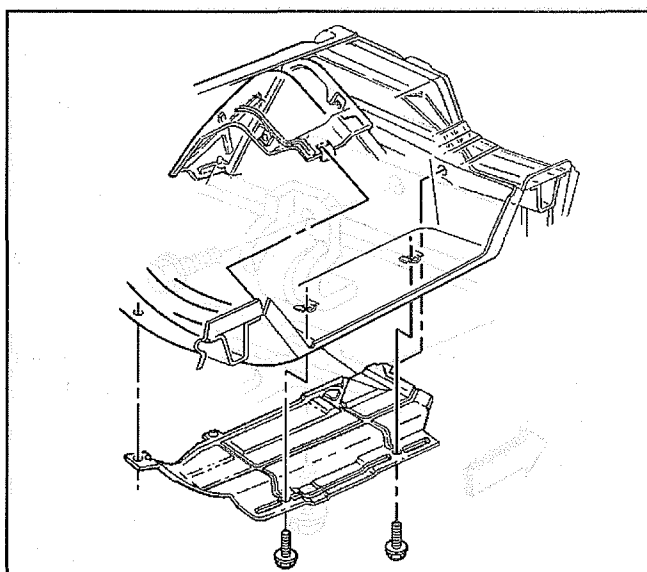


223010

3. Install the exhaust muffler heat shield bolt.

Tighten

Tighten the exhaust muffler heat shield bolt to 2 N·m (18 lb in).

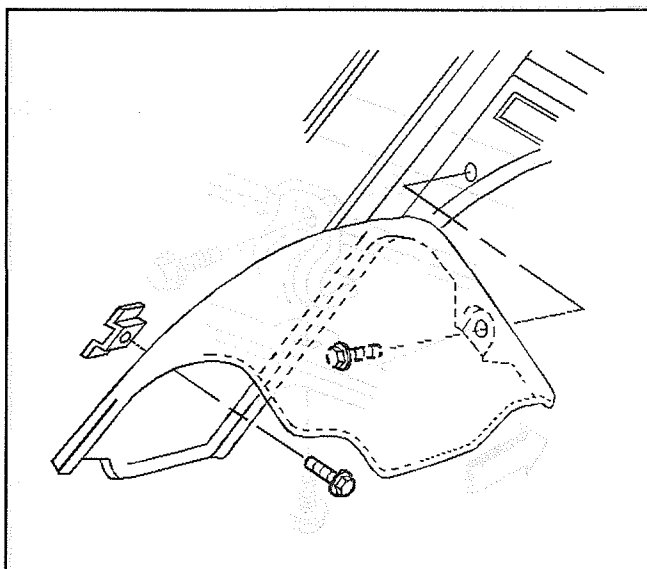


223008

4. Install the exhaust muffler heat shield bolts.

Tighten

Tighten the exhaust muffler heat shield bolts to 2 N·m (18 lb in).



21701

5. Install the exhaust pipe heat shield.

6. Install the exhaust pipe heat shield bolts.

Tighten

Tighten the exhaust pipe heat shield bolts to 2 N·m (18 lb in).

7. Install the exhaust muffler. Refer to *Muffler Replacement*.

Description and Operation

Exhaust System Description

The exhaust system design will vary according to the model of vehicle. The exhaust system uses a flange and seal joint coupling to secure the exhaust pipe to the engine exhaust manifolds. The exhaust system is suspended by hangers that are attached to the underbody. The hangers allow some movement of the exhaust system.

Notice: Replacement of exhaust system parts must be OEM standard to ensure that the vehicle operates as designed.

Catalytic Converter Description

Caution: *Prolonged operation of a misfiring or flooded engine may cause the catalytic converter to overheat. Damage to the catalyst, the operating vehicle, or personal injury may result.*

Notice: When jacking or lifting the vehicle from the frame side rails, be certain that the lift pads do not contact the catalytic converter. This may damage the converter.

Notice: The catalytic converters require the use of unleaded fuel only. Using leaded fuel will damage the catalytic converters and other emission system components.

The catalytic converter is an emission control device. The catalytic converter is added to the exhaust system on unleaded fuel vehicles to reduce pollutants from the exhaust gas stream. The catalyst in the monolith converter is not serviceable.

The three-way catalytic converter burns three types of exhaust gases:

- Carbon monoxide (CO)
- Hydrocarbons (HC)
- Oxides of nitrogen (NOx)

The oxidation catalytic converter burns the same gases, but uses an air pump/smog pump to force added oxygen into the catalytic converter. The additional oxygen forces the converter to run hotter and to burn exhaust gases more effectively.

A single bed ceramic monolith style brick catalytic converter is used in combination with two types of catalyst

- Oxidation catalyst
- Three-way (reduction/oxidation) catalyst

The catalysts have coatings that contain platinum and palladium. These coatings burn the unwanted exhaust emissions.

Muffler Description

The muffler controls the exhaust noise level. The exhaust muffler is a tri-flow design.

- 3.8L vehicles not equipped with RPOs Y87 and W68 use a single outlet muffler.
- 3.8L vehicles equipped with PROs Y87 and W68 use a dual outlet muffler.
- 5.7L vehicles equipped with RPOs VP6, WS6 and WU8 use a single outlet muffler.
- 5.7L vehicles equipped without RPOs VP6, WS6 and WU8 use a dual outlet muffler.

The muffler used on this vehicle must be serviced with the exhaust pipe they can not be serviced separately.

Hangers Description

Important: The installation of the exhaust system hangers is very important, as improperly installed hangers can cause annoying vibrations that can be difficult to diagnose.

The type of hanger used to support the exhaust system on this vehicle is a conventional rubber block. The rubber block is a rigid hanger with a feature that supports the exhaust system in case a rubber block is broken. The rubber mounts allow some exhaust system movement, but not the transfer of noise or vibration into the passenger compartment.

Clamps Description

Caution: *Exhaust may enter the vehicle and cause personal injury if the slip joints are not coated with exhaust system sealer before assembly.*

Important: Apply sealer GM P/N 9985020 or equivalent to the slip joint connection.

When installing a new exhaust component on any model, check for proper alignment. Rattles and noise vibrations in the exhaust system are usually caused by the misalignment of parts. When installing the components, leave all bolts and nuts loose until all parts are properly aligned.

The clamp used to connect the catalytic converter to the exhaust muffler is a single nut compression clamp.

Description and Operation

Exhaust System Description

The exhaust system design will vary according to the model of vehicle. The exhaust system uses a flange and seal joint coupling to secure the exhaust pipe to the engine exhaust manifold. The exhaust system is suspended by hangers that are attached to the underbody. The hangers allow some movement of the exhaust system.

Notice: Replacement of exhaust system parts must be OEM standard to ensure that the vehicle operator is designed.

Catalytic Converter Description

Caution: Prolonged operation of a catalytic converter located engine may cause the catalytic converter to overheat. Damage to the catalytic converter, vehicle, or personnel injury may result.

Notice: When jacking or lifting the vehicle from the frame side rails, be certain that the lift pads do not contact the catalytic converter. This may damage the converter.

Notice: The catalytic converter requires the use of unleaded fuel only. Using leaded fuel will damage the catalytic converter and other emission system components.

The catalytic converter is an emission control device. The catalytic converter is added to the exhaust system on unleaded fuel vehicles to reduce pollutants from the exhaust gas stream. The catalyst in the monolith converter is not serviceable.

The three-way catalytic converter burns three types of exhaust gases:

- Carbon monoxide (CO)
- Hydrocarbons (HC)
- Oxides of nitrogen (NOx)

The oxidation catalytic converter burns the same gases but uses an air pump-driven pump to force added oxygen into the catalytic converter. The additional oxygen forces the converter to run hotter and is from exhaust gases more effective.

A single bed ceramic monolith style dual catalytic converter is used in combination with two types of catalysts:

- Oxidation catalyst
- Three-way (reduced/oxidation) catalyst

The catalysts have coatings that convert harmful and polluting gases into less harmful exhaust emissions.

Muffler Description

The muffler controls the exhaust noise level. The exhaust muffler is a friction device.

- 3.0L vehicles not equipped with PFC V-6 and V-8 use a single outlet muffler.
- 3.0L vehicles equipped with PFC V-6 and V-8 use a dual outlet muffler.
- 3.5L vehicles equipped with PFC V-6 and V-8 use a single outlet muffler.
- 3.5L vehicles equipped with PFC V-6 and V-8 use a dual outlet muffler.

The muffler used on the vehicle must be serviced with the muffler pipe they are not be serviced separately.

Hangers Description

Important: The installation of the exhaust system hangers is very important, as improperly installed hangers can cause annoying vibrations that can be difficult to diagnose.

The type of hanger used to support the exhaust system on this vehicle is a noncontact rubber block. The rubber block is a rigid hanger with a feature that supports the exhaust system in case a rubber block is broken. The rubber mounts allow some exhaust system movement, but not the transfer of noise or vibration into the passenger compartment.

Exhaust System Description

Caution: Exhaust may enter the vehicle and cause personal injury if the lift points are not coated with exhaust system sealer before assembly.

Important: Apply sealer GM PN 988502 or equivalent to the slip joint connection.

When installing a new exhaust component on any model, check for proper alignment. Rattles and noise vibrations in the exhaust system are usually caused by the misalignment of parts. When installing the components, leave all bolts and nuts loose until all parts are properly aligned.

The clamp used to connect the catalytic converter to the exhaust muffler is a single nut insertion clamp.

BLANK