

EXHAUST SYSTEM

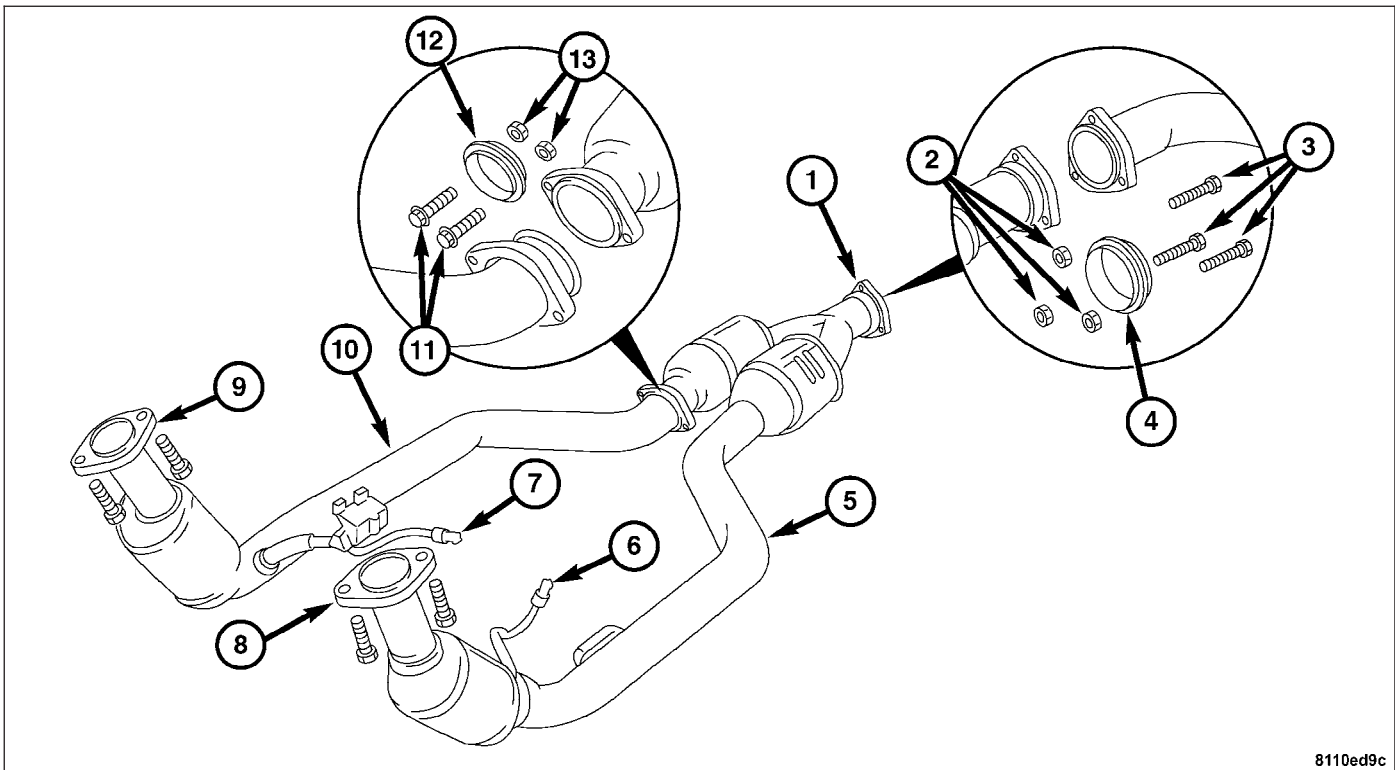
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EXHAUST SYSTEM

DESCRIPTION



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- 1 - CENTER EXHAUST FLANGE
- 2 - NUTS
- 3 - RETAINING BOLTS
- 4 - EXHAUST SEAL
- 5 - LEFT EXHAUST PIPE
- 6 - LEFT SIDE O2 SENSOR CONNECTOR
- 7 - RIGHT SIDE O2 SENSOR CONNECTOR

- 8 - LEFT SIDE MANIFOLD FLANGE
- 9 - RIGHT SIDE MANIFOLD FLANGE
- 10 - RIGHT EXHAUST PIPE
- 11 - RETAINING BOLTS
- 12 - EXHAUST SEAL
- 13 - NUTS

CAUTION: Avoid application of rust prevention compounds or undercoating materials to exhaust system floor pan exhaust heat shields. Light overspray near the edges is permitted. Application of coating will result in excessive floor pan temperatures and objectionable fumes.

A thin-wall air-gap insulated exhaust pipe leads to the three-way catalytic converter, which has an air-gap insulated housing. The air-gap insulation, whereby a steel shell is wrapped around the component, limits heat loss to hasten the catalytic converter action. The insulation also minimizes the need for insulation to protect the passenger compartment from excessive temperatures. A large - 812 cu. in., (13.3 L) - muffler is tuned to produce a sporty tone that meets pass-by noise levels in all markets. The rear-mounted muffler terminates in dual bright exhaust tips.

OPERATION

The exhaust emission control system is calibrated to meet ULEV I emission standards in California, Tier 2, BIN 8 emission standards in other U.S. states and Stage IV emission standards in Europe. The engine control computer and other hardware are the same for all markets, but there is some difference in the software depending on local emissions requirements. Dual ignition reduces hydrocarbon emissions (unburned fuel) released by the engine to the catalytic converter by 20 percent compared to single ignition systems. This reduction is especially beneficial during the cold start and warm up phases of operation, which is when a majority of the tailpipe emissions occur on today's cars because the catalytic converter has not yet reached its operating temperature. The exhaust system channels exhaust gases from the engine and away from the vehicle.

DIAGNOSIS AND TESTING - EXHAUST SYSTEM

EXHAUST SYSTEM DIAGNOSIS CHART

CONDITION	POSSIBLE CAUSE	CORRECTION
EXCESSIVE EXHAUST NOISE	<ol style="list-style-type: none"> 1. Leaks at pipe joints. 2. Burned or blown out muffler. 3. Burned or rusted-out exhaust pipe. 4. Exhaust pipe leaking at manifold flange. 5. Exhaust manifold cracked or broken. 6. Leak between exhaust manifold and cylinder head. 7. Restriction in muffler or tailpipe. 8. Exhaust system contacting body or chassis. 	<ol style="list-style-type: none"> 1. Tighten clamps to specified torque at leaking joints. 2. Replace muffler assembly.. 3. Replace exhaust pipe. 4. Tighten connection attaching nuts. 5. Replace exhaust manifold. 6. Tighten exhaust manifold to cylinder head stud nuts or bolts. 7. Remove restriction, if possible. Replace muffler or tailpipe, as necessary. 8. Re-align exhaust system to clear surrounding components.
LEAKING EXHAUST GASES	<ol style="list-style-type: none"> 1. Leaks at pipe joints. 	<ol style="list-style-type: none"> 1. Tighten/replace clamps at leaking joints.

INSPECTION

Inspect the exhaust pipes, catalytic converters, muffler, and resonators for cracked joints, broken welds and corrosion damage that would result in a leaking exhaust system. Inspect the clamps, support brackets, and insulators for cracks and corrosion damage.

ADJUSTMENTS

EXHAUST SYSTEM ALIGNMENT

A misaligned exhaust system is usually indicated by a vibration, rattling noise, or binding of exhaust system components. These noises are sometimes hard to distinguish from other chassis noises. Inspect exhaust system for broken or loose clamps, heat shields, insulators, and brackets. Replace or tighten as necessary. It is important that exhaust system clearances and alignment be maintained.

Perform the following procedures to align the exhaust system.

1. Loosen clamps and support brackets.
2. Align the exhaust system starting at the front, working rearward.
3. Tighten all clamps and brackets once alignment and clearances are achieved.

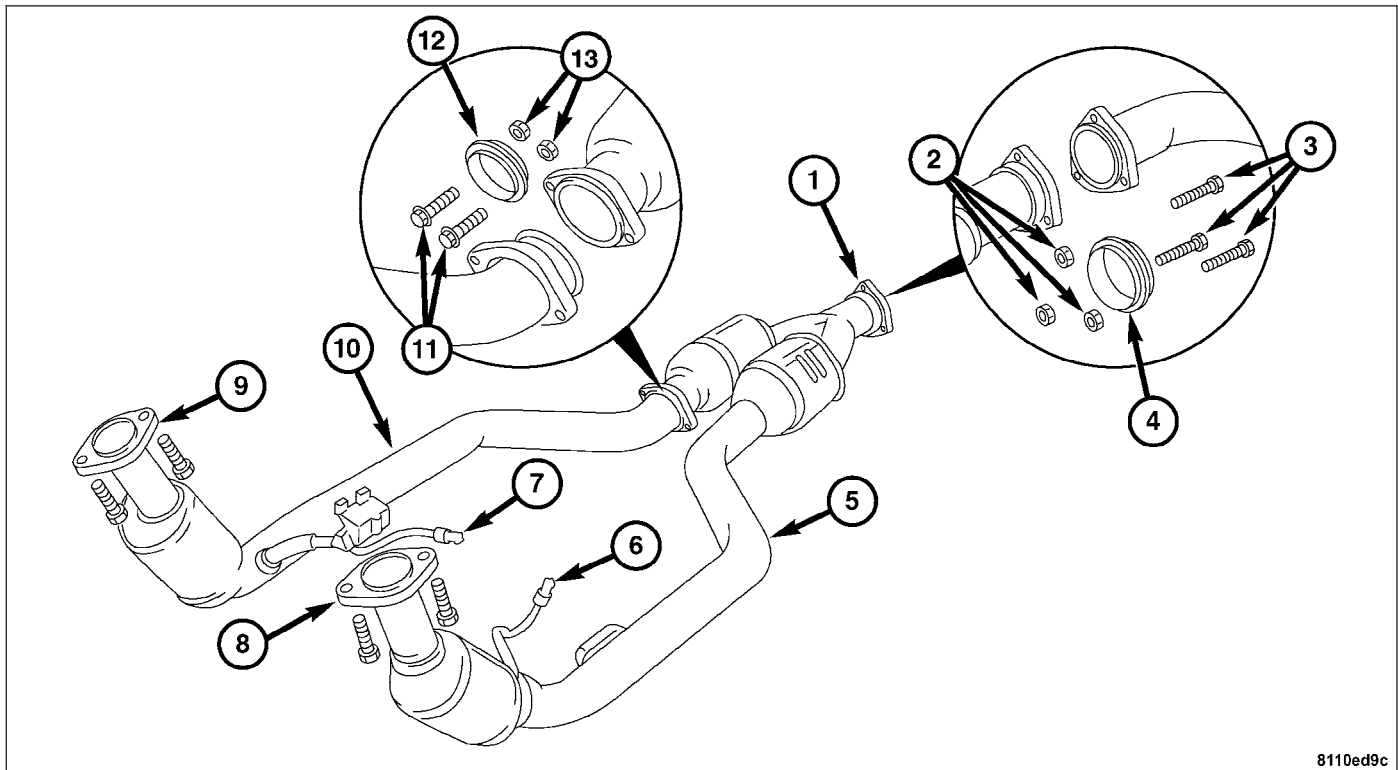
SPECIFICATIONS - TORQUE

DESCRIPTION	N-m	Ft. Lbs.	In. Lbs.
Exhaust Flanges - Bolts(All)	20	15	—
Muffler Hanger - Bolts	20	15	—
Muffler Ground - Bolt	10	—	89
Heat Shield - Nuts (All)	10	—	89
Stiffener - Bolts	20	15	—

CATALYTIC CONVERTER

REMOVAL - FRONT EXHAUST PIPES

WARNING: THE NORMAL OPERATING TEMPERATURE OF THE EXHAUST SYSTEM IS VERY HIGH. THEREFORE, NEVER ATTEMPT TO SERVICE ANY PART OF THE EXHAUST SYSTEM UNTIL IT IS COOLED. SPECIAL CARE SHOULD BE TAKEN WHEN WORKING NEAR THE CATALYTIC CONVERTER. THE TEMPERATURE OF THE CONVERTER RISES TO A HIGH LEVEL AFTER A SHORT PERIOD OF ENGINE OPERATION TIME.

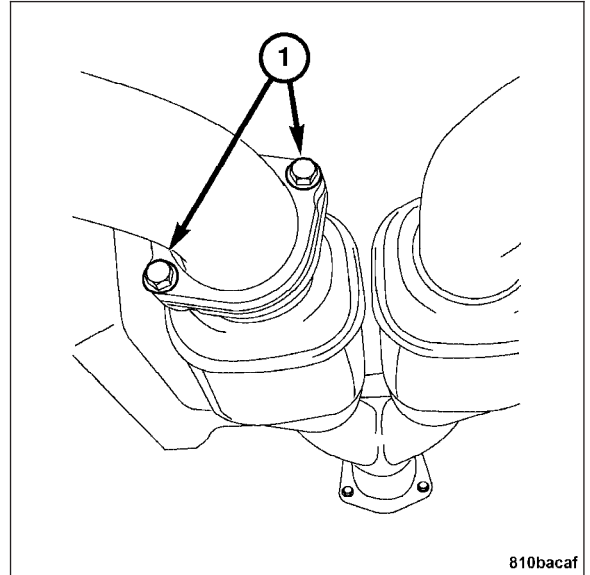


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- | | |
|------------------------------------|--------------------------------|
| 1 - CENTER EXHAUST FLANGE | 8 - LEFT SIDE MANIFOLD FLANGE |
| 2 - NUTS | 9 - RIGHT SIDE MANIFOLD FLANGE |
| 3 - RETAINING BOLTS | 10 - RIGHT EXHAUST PIPE |
| 4 - EXHAUST SEAL | 11 - RETAINING BOLTS |
| 5 - LEFT EXHAUST PIPE | 12 - EXHAUST SEAL |
| 6 - LEFT SIDE O2 SENSOR CONNECTOR | 13 - NUTS |
| 7 - RIGHT SIDE O2 SENSOR CONNECTOR | |

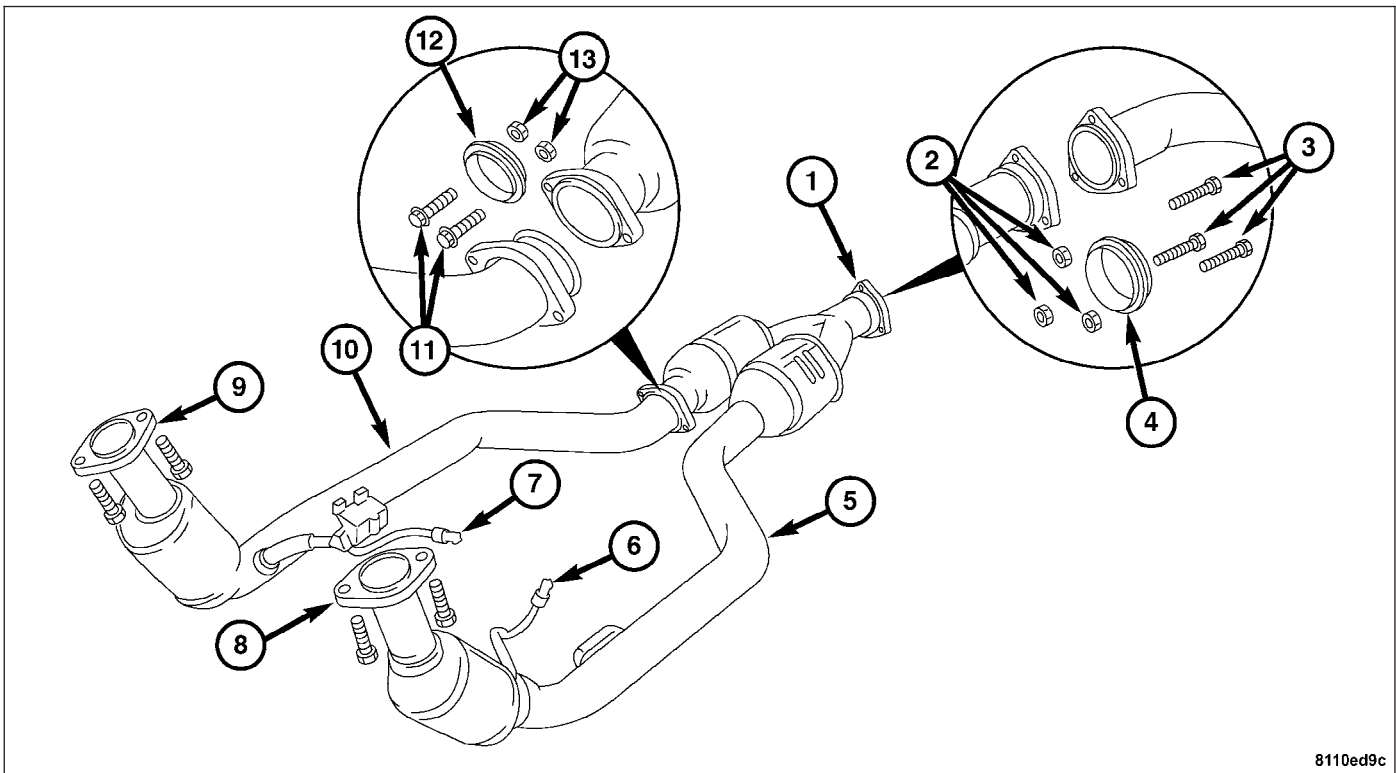
1. Raise and support the vehicle.
2. Disconnect the oxygen sensor harness connectors (6 and 7).
3. Support the exhaust system.
4. Remove the bolts at the left and right side exhaust manifold flanges (8 and 9).
5. Remove the center exhaust flange bolts (3).
6. Remove the left and right side exhaust pipes from the vehicle (5 and 10).

7. Remove the bolts (1) at the right side exhaust pipe flange.



INSTALLATION - FRONT EXHAUST PIPES

Note: Inspect the exhaust manifold flange surface. Replace as required.



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EXHAUST

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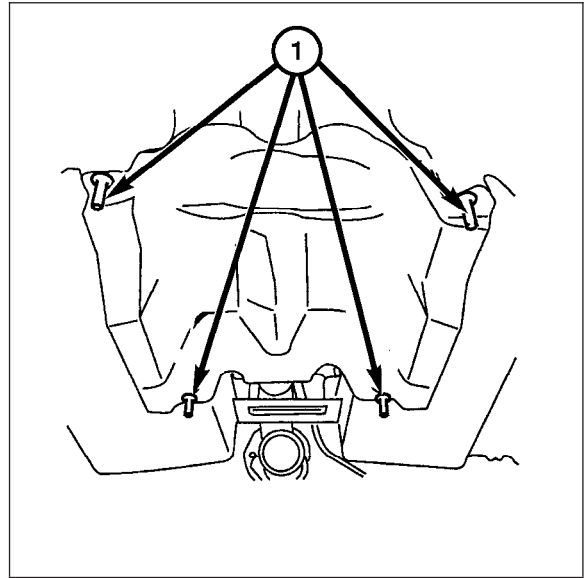
1. Install bolts at right side exhaust pipe flange (11). Tighten to 20 N·m (15 ft. lbs.).
2. Position and support the front exhaust pipes in the vehicle.
3. Install bolts at the left and right exhaust manifold (8 and 9) flanges.
4. Install bolts at the center exhaust manifold flange (3).
5. Tighten exhaust manifold flange bolts to 20 N·m (15 ft. lbs.).
6. Tighten bolts at the center exhaust pipe flange to 20 N·m (15 ft. lbs.).
7. Connect oxygen sensor wiring harness connectors (6 and 7).
8. Route oxygen sensor wire harness in harness retainer.
9. Remove exhaust system support.
10. Lower the vehicle.

HEAT SHIELDS

REMOVAL

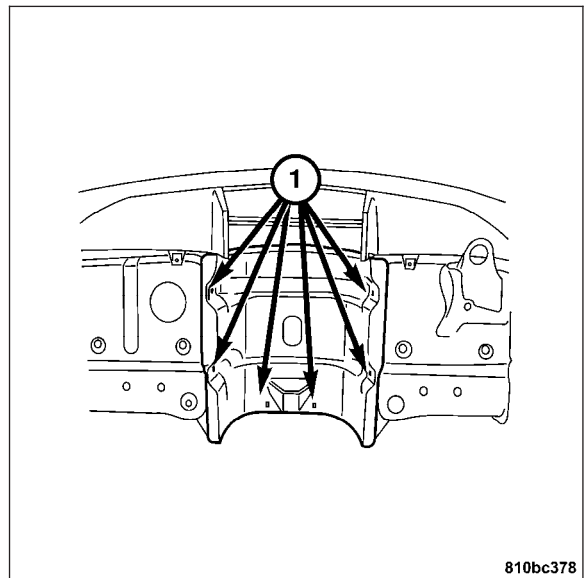
REMOVAL - FRONT HEAT SHIELD

1. Remove front exhaust section. Refer to Page 11-5.
2. Remove the heat shield nuts (1) and the heat shield.



REMOVAL - REAR HEAT SHIELD

1. Remove the muffler. Refer to Page 11-10.
2. Remove the heat shield nuts (1) and the heat shield.

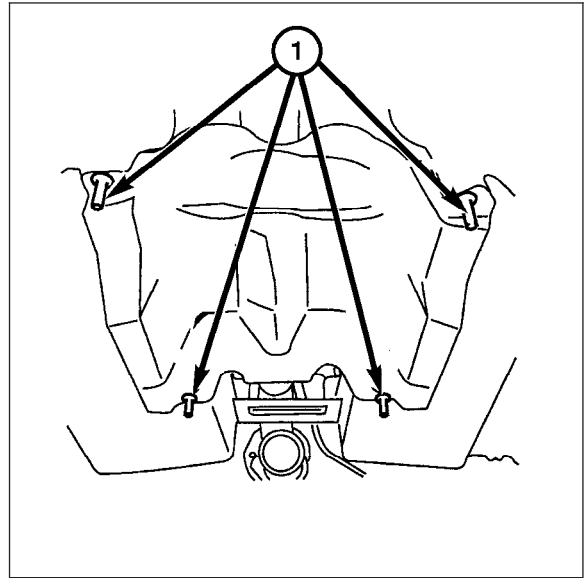


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INSTALLATION

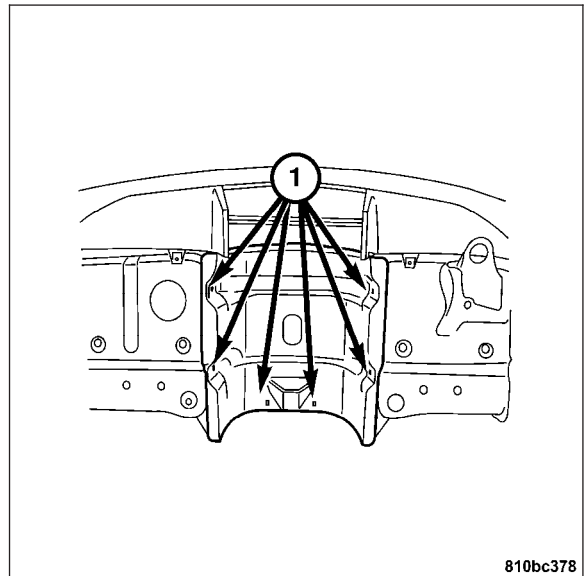
INSTALLATION - FRONT HEAT SHIELD

1. Position the heat shield on the floor pan.
2. Install the heat shield nuts (1). Tighten the nuts to 10 N·m (89 in. lbs.).
3. Install the front exhaust section. Refer to Page 11-7.
4. Start the engine and check for exhaust leaks.



INSTALLATION - REAR HEAT SHIELD

1. Install the heat shield and the nuts (1). Tighten the nuts to 10 N·m (89 in. lbs.).
- 2.
3. Install the muffler. Refer to Page 11-12.



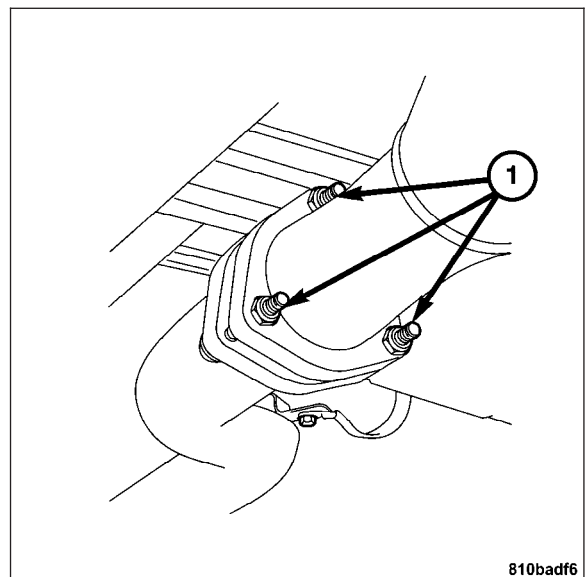
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MUFFLER

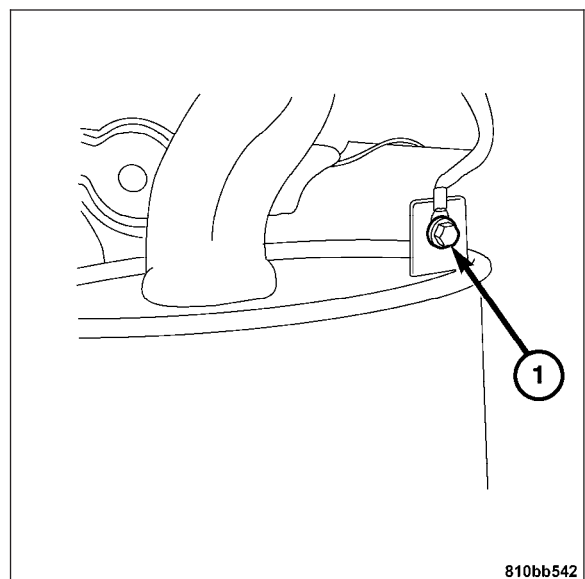
REMOVAL

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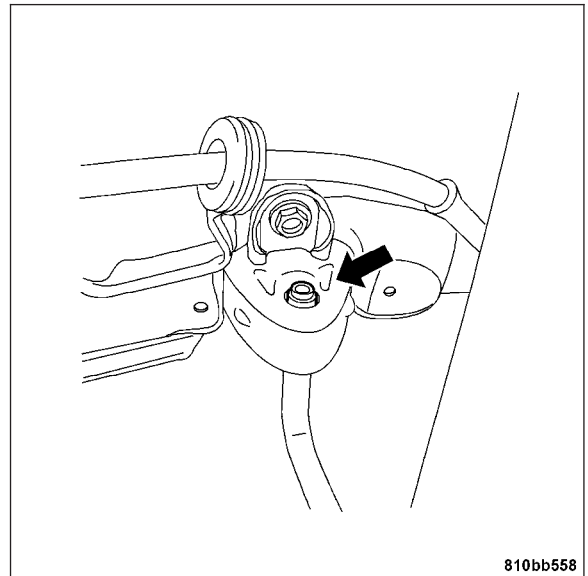
1. Raise and support vehicle.
2. Support the rear section of the exhaust system.
3. Remove bolts (1) from the center connection flange.



4. Disconnect the ground (1) strap at the muffler.

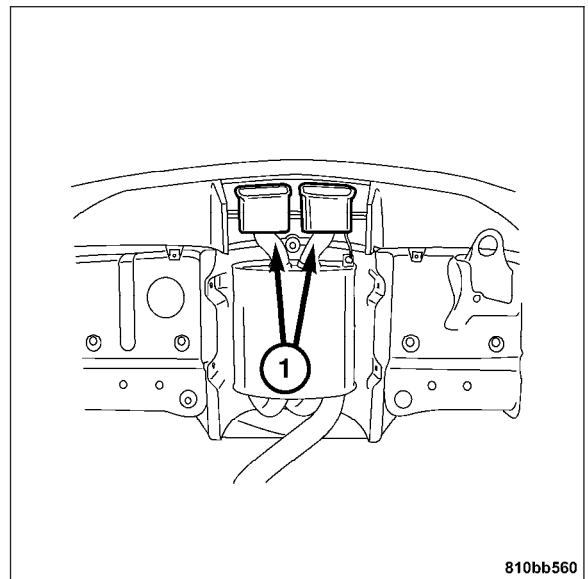


5. Remove the pipe (1) from the exhaust hanger (2).



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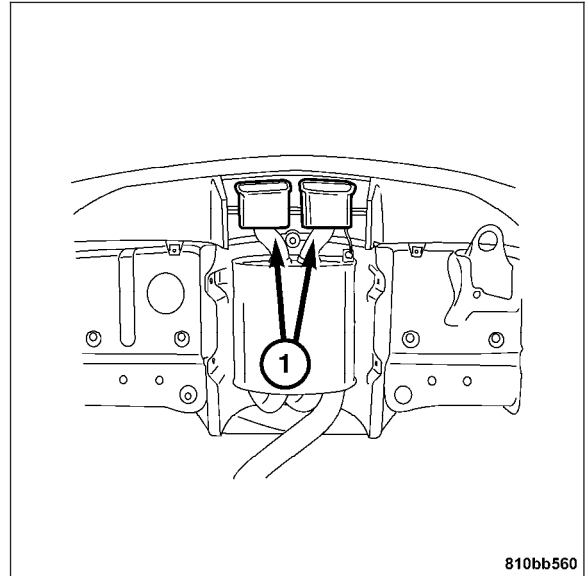
6. Pry off rubber the exhaust hangers (1) and remove the muffler with the pipe.



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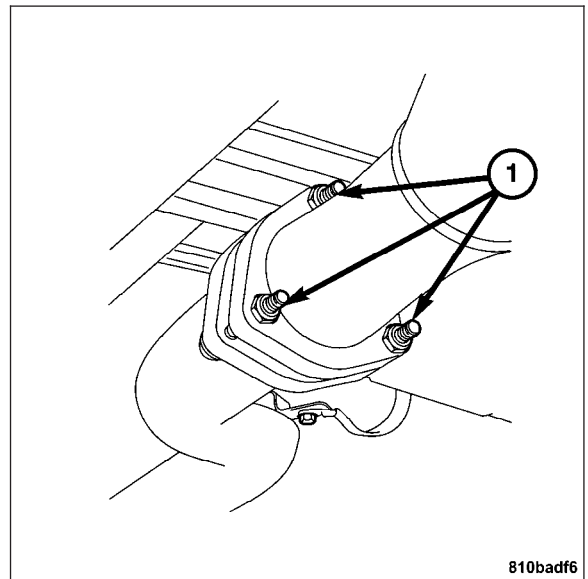
INSTALLATION

1. Position the muffler section in rubber exhaust hangers.



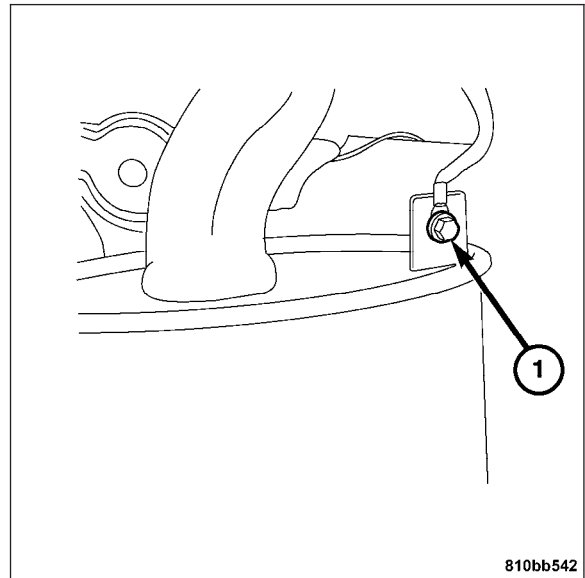
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2. Install the bolts in the center exhaust flange (2). Tighten the bolts to 20 N·m (15 ft. lbs.).



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3. Connect the ground strap (1) at the muffler and tail pipe. Tighten the ground strap bolt to 10 N·m (89 in. lbs.).

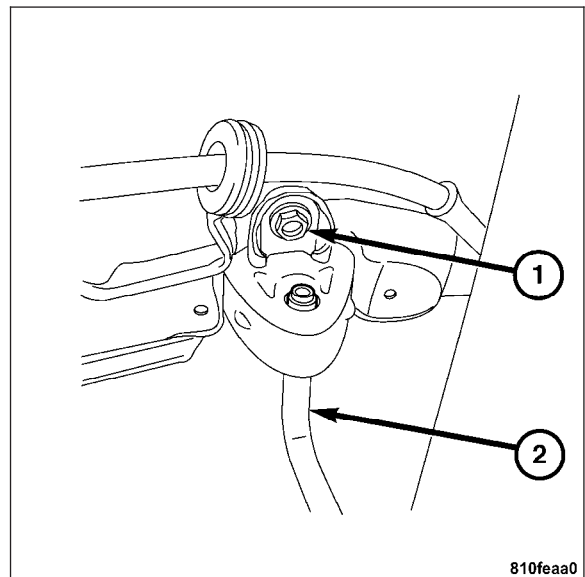


4. Remove the support.
5. Lower the vehicle.

SUPPORT BRACKET AND ISOLATOR

REMOVAL

1. Raise and support the vehicle.
2. Remove the bracket bolt (1).
3. Remove the bracket and the isolator (2) from the exhaust hanger.
4. Remove the isolator from the bracket.



INSTALLATION

1. Position the bracket and bolt on the vehicle.
2. Tighten the bolt to 20 N·m (15 ft. lbs.).
3. Install the isolator and hanger.
4. Lower the vehicle.

