

EXHAUST SYSTEM

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DESCRIPTION AND OPERATION

EXHAUST SYSTEM

DESCRIPTION

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.

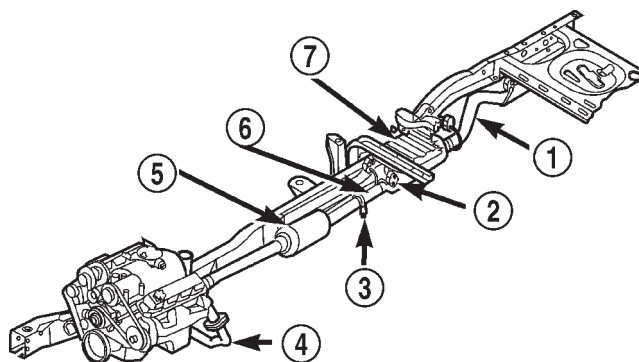
The gasoline engine exhaust system consists of engine exhaust manifolds, exhaust pipes, catalytic

converter(s), extension pipe (if needed), exhaust heat shields, muffler and exhaust tailpipe (Fig. 1).

The exhaust system must be properly aligned to prevent stress, leakage and body contact. Minimum clearance between any exhaust component and the body or frame is 25.4 mm (1.0 in.). If the system contacts any body panel, it may amplify objectionable noises from the engine or body.

OPERATION

The exhaust system channels exhaust gases from the engine and away from the vehicle.



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Fig. 1 Exhaust System 4.7L, 5.2L and 5.9L Engines—Typical

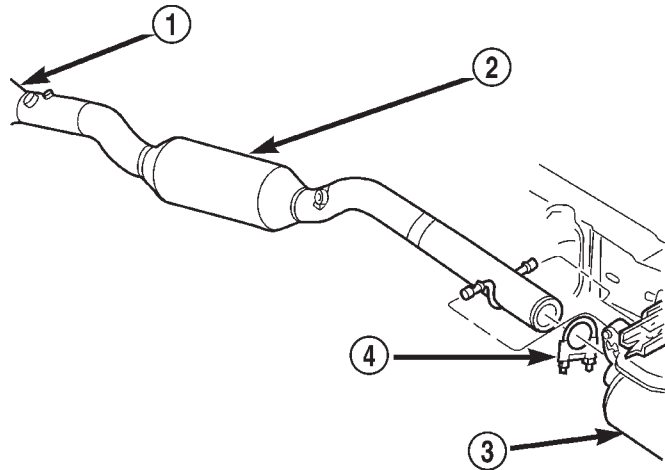
- | | |
|---|-------------------------|
| 1 - TAILPIPE | 5 - CATALYTIC CONVERTER |
| 2 - MUFFLER HANGER BRACKET AND ISOLATOR | 6 - EXTENSION PIPE |
| 3 - CLAMP | 7 - MUFFLER HEAT SHIELD |
| 4 - EXHAUST PIPE | |

DESCRIPTION AND OPERATION (Continued)

CATALYTIC CONVERTER

DESCRIPTION

California emissions vehicles incorporate mini catalytic converters into the exhaust system. The pipes and catalytic converters are made of stainless steel designed to operate at extremely high temperatures (Fig. 2).



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Fig. 2 Catalytic Converter—Typical

- 1 - EXHAUST PIPE
- 2 - CONVERTER
- 3 - MUFFLER
- 4 - CLAMP

OPERATION

The catalytic converter captures and burns any unburned fuel mixture exiting the combustion chambers during the exhaust stroke of the engine. This process aids in reducing emissions output.

EXHAUST PIPE

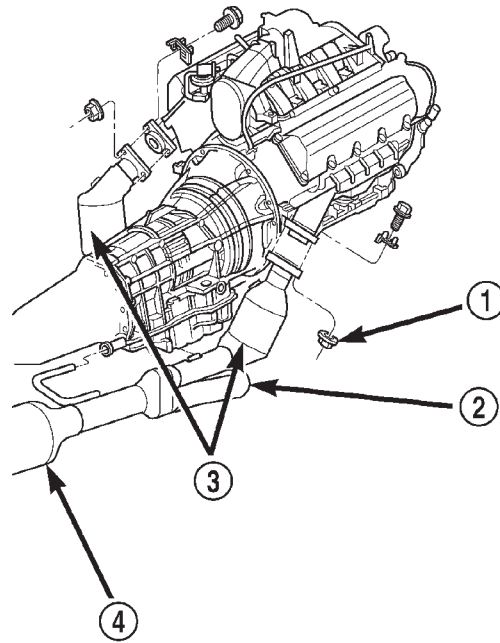
DESCRIPTION

The exhaust pipe(s) is a one piece design encompassing the exhaust pipe(s) and the catalytic converter(s). Neither the exhaust pipe(s) or the catalytic converter(s) is serviceable separately (Fig. 3).

MUFFLER

DESCRIPTION

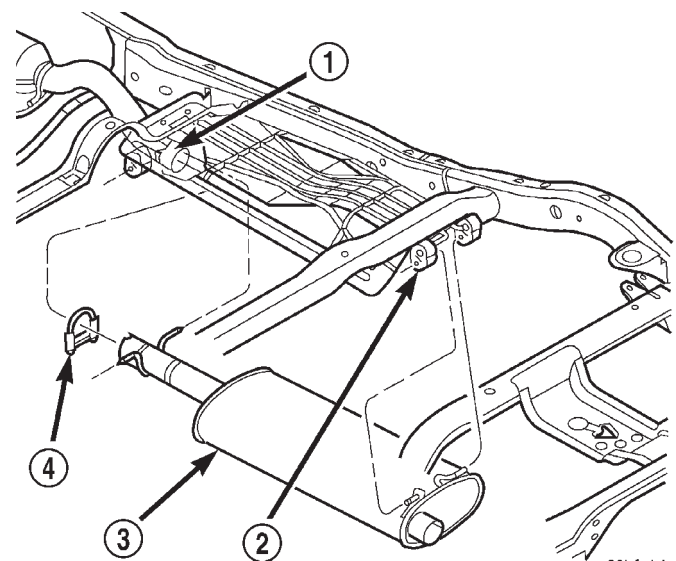
All engines use a stainless steel muffler to control exhaust noise levels and exhaust back pressure (Fig. 4).



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Fig. 3 Exhaust Pipe with Integral Catalytic Converter(s)

- 1 - NUT
- 2 - EXHAUST PIPE
- 3 - MINI CATALYTIC CONVERTERS (CALIFORNIA EMISSIONS VEHICLES ONLY)
- 4 - CATALYTIC CONVERTER



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Fig. 4 Muffler—Typical

- 1 - CATALYTIC CONVERTER WITH PIPE
- 2 - REAR MUFFLER HANGER
- 3 - MUFFLER
- 4 - CLAMP

DESCRIPTION AND OPERATION (Continued)

OPERATION

The muffler is designed to muffle the sound of the exhaust as it leaves the engine.

TAILPIPE

DESCRIPTION

The tailpipe is made of stainless steel and attaches to the muffler (Fig. 5).

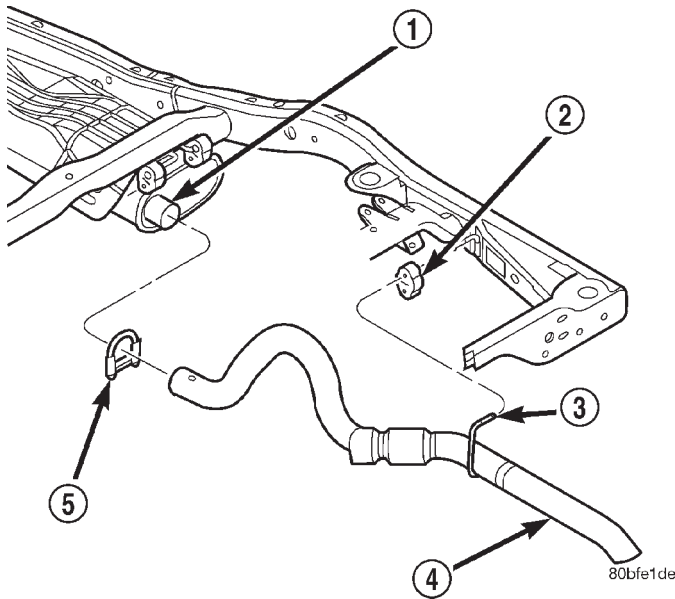
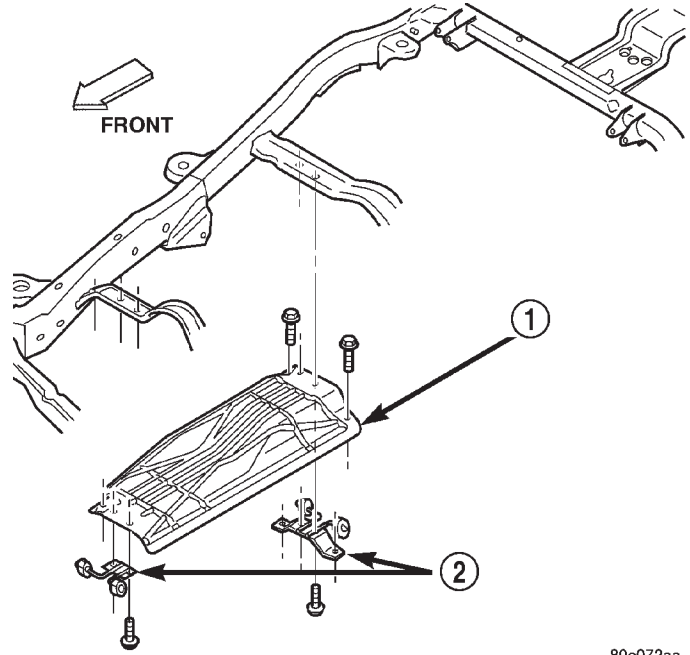


Fig. 5 Tailpipe—Typical

- 1 - MUFFLER
- 2 - TAILPIPE HANGER INSULATOR
- 3 - TAILPIPE HANGER
- 4 - TAILPIPE
- 5 - CLAMP



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Fig. 6 Heat Shield—Typical

- 1 - MUFFLER HEAT SHIELD
- 2 - MUFFLER HANGERS

OPERATION

The tailpipe channels the exhaust out of the muffler and out from under the vehicle to control noise and prevent exhaust gas fumes from entering the passenger compartment.

HEAT SHIELDS

DESCRIPTION

There are two types of heat shields used. One is stamped steel the other is molded foil sheets. The shields attach to the vehicle around the exhaust system (Fig. 6).

OPERATION

The heat shields prevent heat from the exhaust system from entering the passenger area and other areas where the heat can cause damage to other components.

DIAGNOSIS AND TESTING

EXHAUST SYSTEM

EXHAUST SYSTEM DIAGNOSIS CHART

CONDITION	POSSIBLE CAUSE	CORRECTION
EXCESSIVE EXHAUST NOISE OR LEAKING EXHAUST GASES	1. Leaks at pipe joints. 2. Rusted or blown out muffler. 3. Broken 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. Catalytic converter rusted or blown out. 8. Restriction in exhaust system.	1. Tighten clamps/bolts to specified torque at leaking joints. 2. Replace muffler. Inspect exhaust system. 3. Replace exhaust pipe. 4. Tighten/replace flange attaching nuts/bolts. 5. Replace exhaust manifold. 6. Tighten exhaust manifold to cylinder head bolts. 7. Replace catalytic converter assy. 8. Remove restriction, if possible. Replace restricted part if necessary.

When servicing and replacing exhaust system components, disconnect the oxygen sensor connector(s). Allowing the exhaust to hang by the oxygen sensor wires will damage the harness and/or sensor.

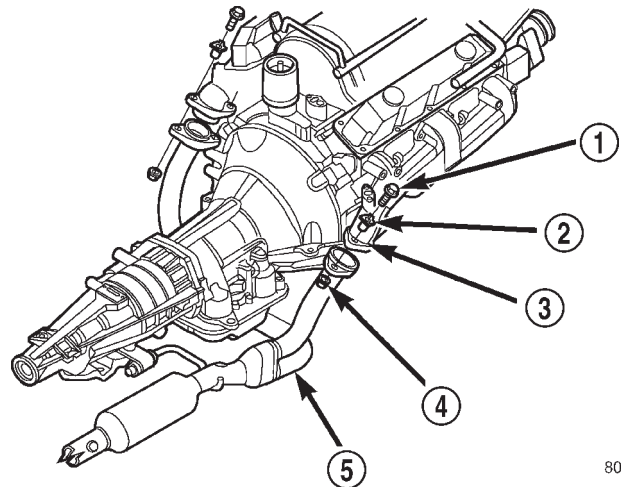
REMOVAL AND INSTALLATION

EXHAUST PIPE

CAUTION: When servicing or replacing exhaust system components, disconnect the oxygen sensor connector(s). Allowing the exhaust to hang by the oxygen sensor wires will damage the harness and/or sensor.

REMOVAL

- (1) Raise and support the vehicle.
- (2) Saturate the bolts and nuts with Mopar® Rust Penetrant. Allow 5 minutes for penetration.
- (3) Disconnect the oxygen sensor(s).
- (4) Remove the exhaust manifold-to-exhaust pipe nuts (Fig. 7) (Fig. 8) (Fig. 9).
- (5) Remove exhaust pipe/converter to muffler exhaust clamp.
- (6) Disconnect the exhaust pipe/catalytic converter from muffler.
- (7) Remove the exhaust pipe.

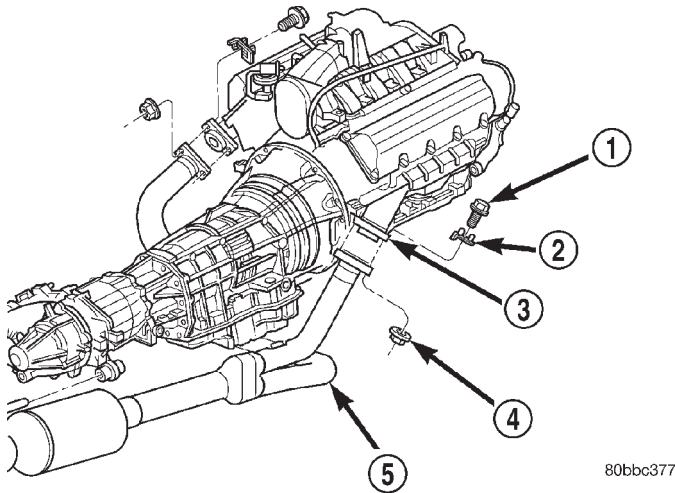


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Fig. 7 Exhaust Pipe to Manifold Connection—(5.2L and 5.9L)

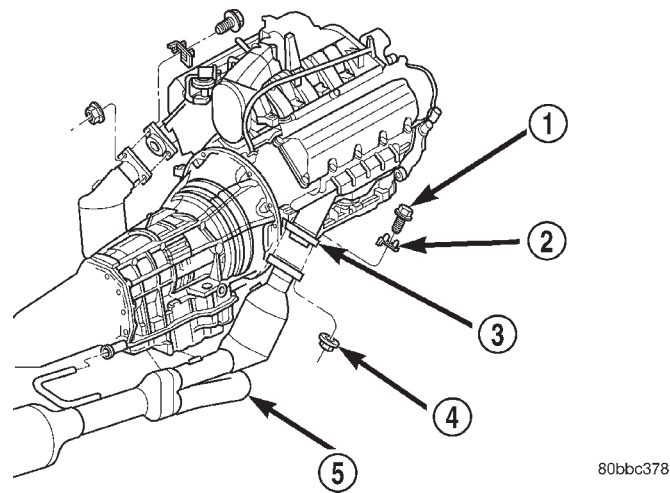
- 1 - BOLT
- 2 - RETAINER
- 3 - EXHAUST MANIFOLD
- 4 - NUT
- 5 - EXHAUST PIPE

REMOVAL AND INSTALLATION (Continued)



**Fig. 8 Exhaust Pipe(s) to Manifold Connection—
(4.7L Federal Models)**

- 1 - BOLT
- 2 - RETAINER
- 3 - EXHAUST MANIFOLD
- 4 - NUT
- 5 - EXHAUST PIPE



**Fig. 9 Exhaust Pipe(s) to Manifold Connection—
(4.7L California Models)**

- 1 - BOLT
- 2 - RETAINER
- 3 - EXHAUST MANIFOLD
- 4 - NUT
- 5 - EXHAUST PIPE

INSTALLATION

- (1) Align and connect the exhaust pipe/catalytic converter to the muffler. Install exhaust clamp and tighten clamp nuts to 42 N·m (31 ft. lbs.) torque.
- (2) Connect the exhaust pipe(s) to the exhaust manifold. Tighten the nuts to 34 N·m (25 ft. lbs.) torque.
- (3) Connect oxygen sensor connector(s).

- (4) Lower the vehicle.
- (5) Start the engine and inspect for exhaust leaks and exhaust system contact with the body panels. Adjust the alignment, if needed.

CATALYTIC CONVERTER

NOTE: Neither the inline catalytic converter nor the mini catalytic converters (California emission vehicles only) are serviceable separately from the exhaust pipe. Refer to Exhaust Pipe for removal / installation procedure.

MUFFLER

WARNING: IF TORCHES ARE USED WHEN WORKING ON THE EXHAUST SYSTEM, WEAR PROTECTIVE EYE COVERING AND DO NOT ALLOW THE FLAME NEAR THE FUEL LINES.

CAUTION: When servicing or replacing exhaust system components, be sure to disconnect all oxygen sensor connectors. Allowing the exhaust system to hang by the harness will damage the wiring and/or sensor.

REMOVAL

- (1) Disconnect battery negative cable.
- (2) Raise vehicle on hoist.
- (3) Remove muffler to exhaust pipe/catalytic converter and tailpipe clamps (Fig. 10).
- (4) Remove tailpipe from hanger isolator. Heat muffler to tailpipe with an oxygen/acetylene torch and twist tailpipe out of muffler.
- (5) Disconnect muffler from hanger isolators (Fig. 10).
- (6) Heat muffler to exhaust pipe/catalytic converter connection and twist muffler off of converter pipe.

INSTALLATION

- (1) Install muffler to exhaust pipe/catalytic converter and tailpipe. Install exhaust clamps and start nuts by hand.
- (2) Connect muffler to rear muffler hanger.
- (3) Connect tailpipe to rear hanger.
- (4) Align muffler and tighten exhaust clamp nuts to 42 N·m (31 ft. lbs.).
- (5) Lower vehicle and connect battery negative cable.
- (6) Start engine and check for exhaust leaks.

REMOVAL AND INSTALLATION (Continued)

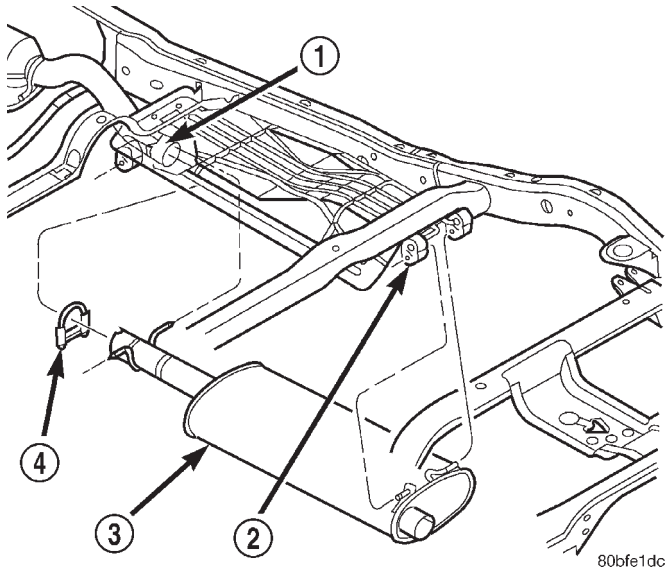


Fig. 10 Muffler Removal/Installation

- 1 - CATALYTIC CONVERTER WITH PIPE
- 2 - REAR MUFFLER HANGER
- 3 - MUFFLER
- 4 - CLAMP

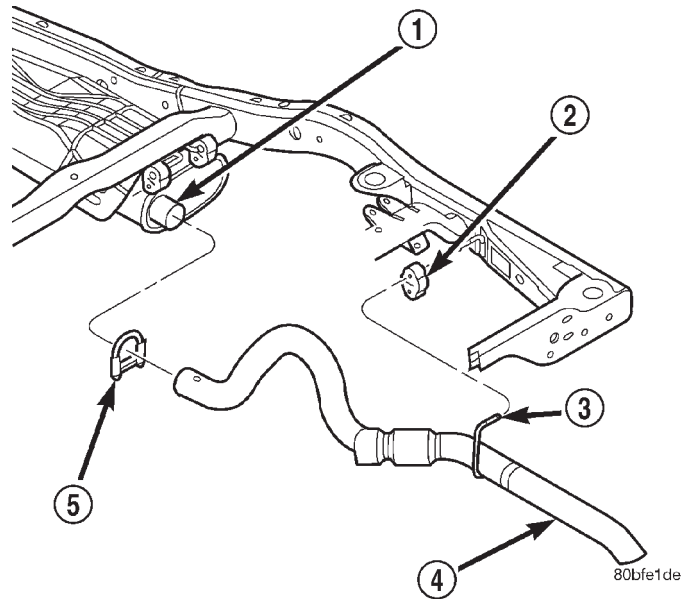


Fig. 11 Tailpipe Removal/Installation

- 1 - MUFFLER
- 2 - TAILPIPE HANGER INSULATOR
- 3 - TAILPIPE HANGER
- 4 - TAILPIPE
- 5 - CLAMP

TAILPIPE

WARNING: IF TORCHES ARE USED WHEN WORKING ON THE EXHAUST SYSTEM, WEAR PROTECTIVE EYE COVERING AND DO NOT ALLOW THE FLAME NEAR THE FUEL LINES.

CAUTION: When servicing or replacing exhaust system components, be sure to disconnect all oxygen sensor connectors. Allowing the exhaust system to hang by the harness will damage the wiring and/or sensor.

REMOVAL

- (1) Disconnect battery negative cable.
- (2) Raise vehicle on hoist.
- (3) Disconnect tailpipe from rear hanger bracket (Fig. 11).
- (4) Remove muffler to tailpipe exhaust clamp (Fig. 11).
- (5) Heat connection with an oxygen/acetylene torch and twist tailpipe out of muffler.

INSTALLATION

- (1) Install tailpipe to muffler. Install exhaust clamp and start nuts by hand.
- (2) Connect tailpipe hanger.
- (3) Align tailpipe and tighten exhaust clamp nuts to 42 N·m (31 ft. lbs.).
- (4) Lower vehicle and connect battery negative cable.
- (5) Start engine and check for exhaust leaks.

HEAT SHIELDS

REMOVAL

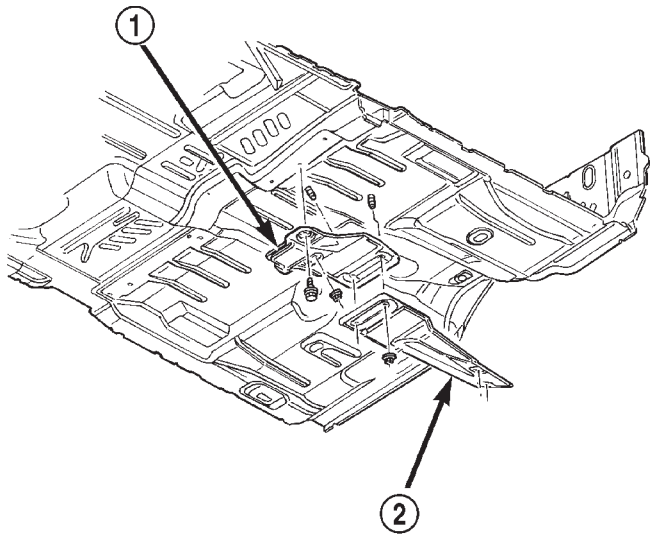
- (1) Raise and support the vehicle.
- (2) Remove the screws and nuts holding the heat shields to the frame and floor pan (Fig. 12) (Fig. 13) (Fig. 14). When removing muffler heat shield, the muffler front and rear support hangers must be removed first (Fig. 15). **Be sure to disconnect both oxygen sensor connectors.**

- (3) Slide the shield out around the exhaust system.

INSTALLATION

- (1) Position the heat shields to the floor pan or the frame and install the screws and nuts.
- (2) Tighten the screws/nuts to 7 N·m (60 in. lbs.) torque. Tighten the muffler hangers to 23 N·m (200 in. lbs.).
- (3) Lower the vehicle.

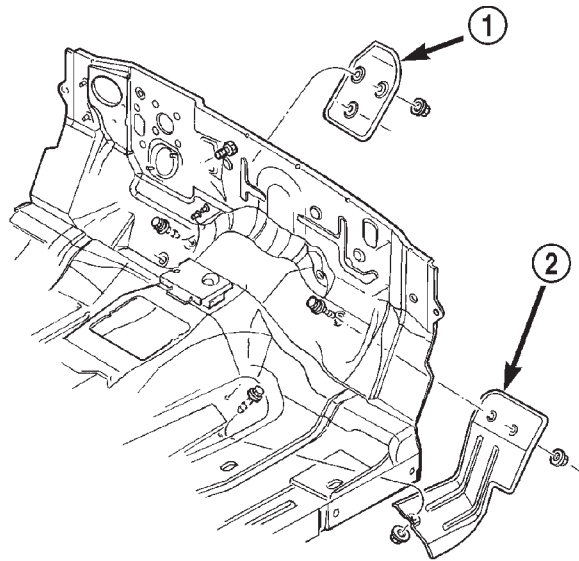
REMOVAL AND INSTALLATION (Continued)



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Fig. 12 Front and Rear Floor Pan/Converter Shields

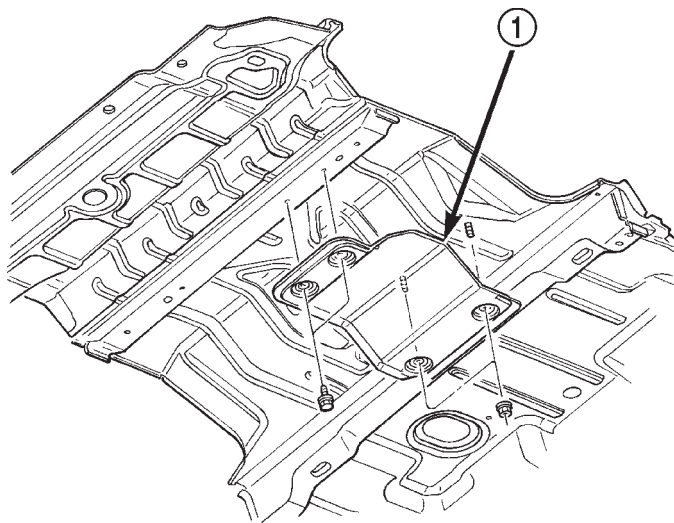
- 1 - REAR FLOOR PAN/CONVERTER SHIELD
- 2 - FRONT FLOOR PAN/CONVERTER SHIELD



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Fig. 14 Left and Right Dash Heat Shield

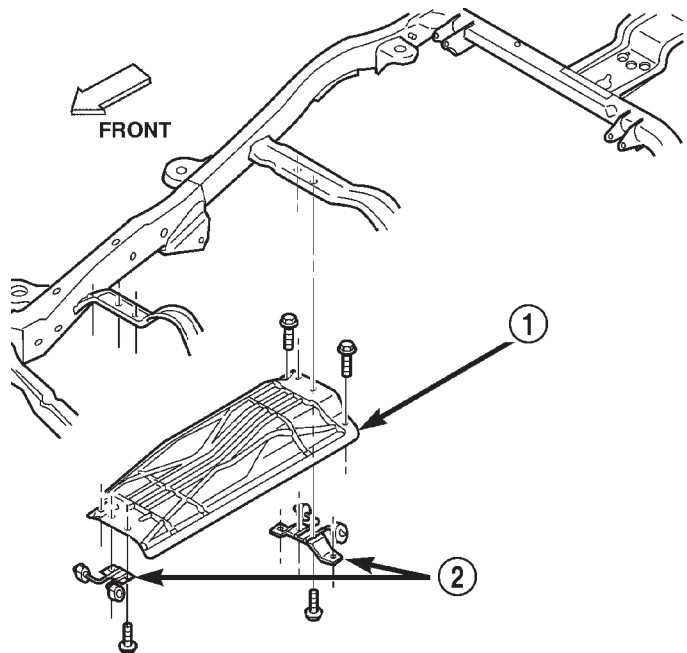
- 1 - LEFT DASH HEAT SHIELD
- 2 - RIGHT DASH HEAT SHIELD



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Fig. 13 Rear Compartment/Tailpipe Heat Shield

- 1 - REAR COMPARTMENT TAILPIPE SHIELD



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Fig. 15 Muffler Heat Shield

- 1 - MUFFLER HEAT SHIELD
- 2 - MUFFLER HANGERS

SPECIFICATIONS

TORQUE SPECIFICATIONS

DESCRIPTION	N·m	Ft. Lbs.	In. Lbs.
Exhaust Clamp—Nuts (All)	42	31	—
Exhaust Pipe to Manifold— Nuts	34	25	—
Heat Shield—Nuts	7	—	60
Muffler Hanger—Bolts	23	—	200
Tailpipe Hanger—Bolt	23	—	200