

EXHAUST SYSTEM

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EXHAUST SYSTEM

DESCRIPTION

The basic exhaust system consists of an engine exhaust manifold, exhaust down pipe, exhaust pipe, exhaust heat shield(s), muffler and exhaust tailpipe

The exhaust system uses a single muffler.

The exhaust system must be properly aligned to prevent stress, leakage and body contact. If the system contacts any body panel, it will transfer objectionable noises originating from the engine to the body.

When inspecting an exhaust system, critically inspect for cracked or loose joints, stripped screw or bolt threads, corrosion damage and worn, cracked or

broken hangers. Replace all components that are badly corroded or damaged. DO NOT attempt to repair.

When replacement is required, use original equipment parts (or equivalent). This will assure proper alignment and provide acceptable exhaust noise levels.

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.

EXHAUST SYSTEM (Continued)

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.
CAUTION: 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.		

CATALYTIC CONVERTER

DESCRIPTION - CATALYTIC CONVERTER

WARNING: THE NORMAL OPERATING TEMPERATURE OF THE EXHAUST SYSTEM IS VERY HIGH. THEREFORE, NEVER WORK AROUND OR 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.

CAUTION: DO NOT remove spark plug wires from plugs or by any other means short out cylinders. Failure of the catalytic converter can occur due to a temperature increase caused by unburned fuel passing through the converter.

The stainless steel catalytic converter body is designed to last the life of the vehicle. Excessive heat can result in bulging or other distortion, but excessive heat will not be the fault of the converter. If unburned fuel enters the converter, overheating may occur. If a converter is heat-damaged, correct the

cause of the damage at the same time the converter is replaced. Also, inspect all other components of the exhaust system for heat damage.

Unleaded gasoline must be used to avoid contaminating the catalyst core.

50 State emission vehicles incorporate two mini catalytic converters located after the exhaust manifolds and before the inline catalytic converter.

REMOVAL

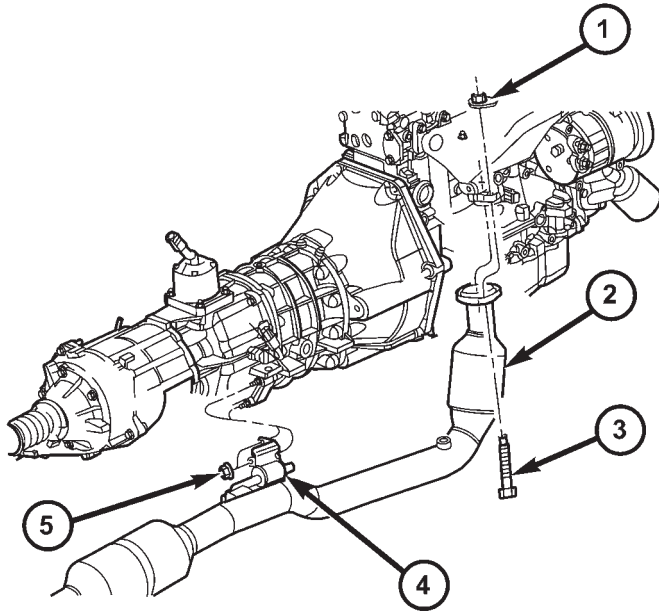
WARNING: IF TORCHES ARE USED WHEN WORKING ON THE EXHAUST SYSTEM, DO NOT ALLOW THE FLAME NEAR THE FUEL LINES.

- (1) Raise and support the vehicle.
- (2) Saturate the bolts and nuts with heat valve lubricant. Allow 5 minutes for penetration.
- (3) Remove the bolts from the crossover pipe to the catalytic converter connection.
- (4) Disconnect oxygen sensor wiring.
- (5) Loosen and remove the nuts from the clamp that hold the catalytic converter to the exhaust pipe flange connection.

CATALYTIC CONVERTER (Continued)

2.4L ENGINES

- (1) Disconnect the oxygen sensors.
- (2) Remove the two bolts and flanged nuts at the manifold (Fig. 1).
- (3) Lower the catalyst assembly and slide out of the mount at the transmission (if equipped).
- (4) Remove the catalyst assembly from the vehicle.



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Fig. 1 2.4L CATALYST ASSEMBLY - 4x4

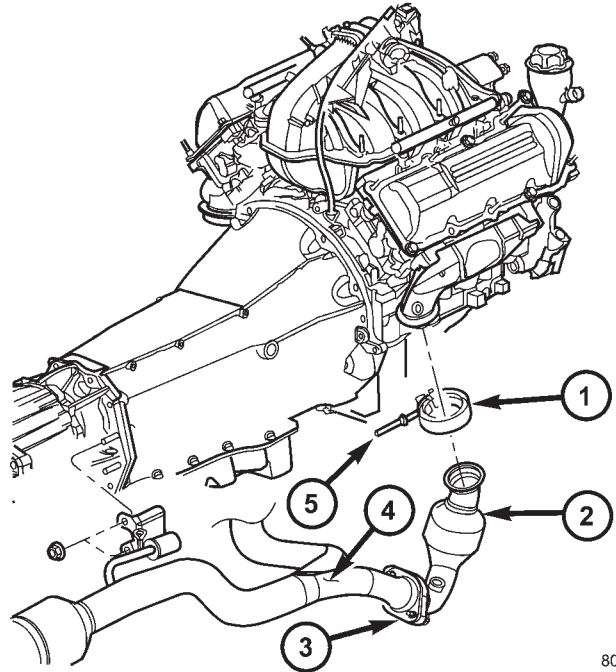
- 1- FLANGED NUT
- 2- CATALYST ASSEMBLY
- 3- BOLT
- 4- HANGER
- 5- NUT

3.7L ENGINES

NOTE: Do not remove nut from T-Bolt. Only remove nut far enough, so that the T end can be removed from the clamp.

- (1) Remove the T bolt end of the fastener, from the clamp.
- (2) Spread the clamp, and remove the catalytic converter from the vehicle.
- (3) Discard the clamp (Fig. 2).

NOTE: The catalytic converter to exhaust manifold clamp is not reusable. Always use a new clamp when reinstalling the catalytic converter.



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Fig. 2 Catalyst Removal

- 1 - V-Clamp
- 2 - Catalytic Converter
- 3 - Flange
- 4 - Crossover Pipe
- 5 - T-Bolt

INSPECTION

Look at the stainless steel body of the converter, inspect for bulging or other distortion that could be a result of overheating. If the converter has a heat shield attached make sure it is not bent or loose.

If you suspect internal damage to the catalyst, tapping the bottom of the catalyst with a rubber mallet may indicate a damaged core.

INSTALLATION

- (1) Position the catalytic converter onto the exhaust pipe flange connection. Tighten the nuts to 28 N·m (250 in. lbs.) torque.
- (2) Install the muffler onto the catalytic converter until the alignment tab is inserted into the alignment slot.
- (3) Install the exhaust clamp at the muffler and catalytic converter connection. Tighten the clamp nuts to 47 N·m (35 ft. lbs.) torque.
- (4) Connect oxygen sensor wiring.
- (5) Lower the vehicle.
- (6) Start the engine and inspect for exhaust leaks and exhaust system contact with the body panels. Adjust the alignment, if needed.

CROSS-OVER PIPE

REMOVAL

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- (1) Raise and support the vehicle.
- (2) Saturate the bolts and nuts with lubricant. Allow 5 minutes for penetration.
- (3) Remove the retaining fasteners holding crossover pipe to exhaust pipe.
- (4) Remove the fasteners from the crossover pipe to the catalytic converter connection.
- (5) Remove the crossover pipe from the hanger insulator (Fig. 3).

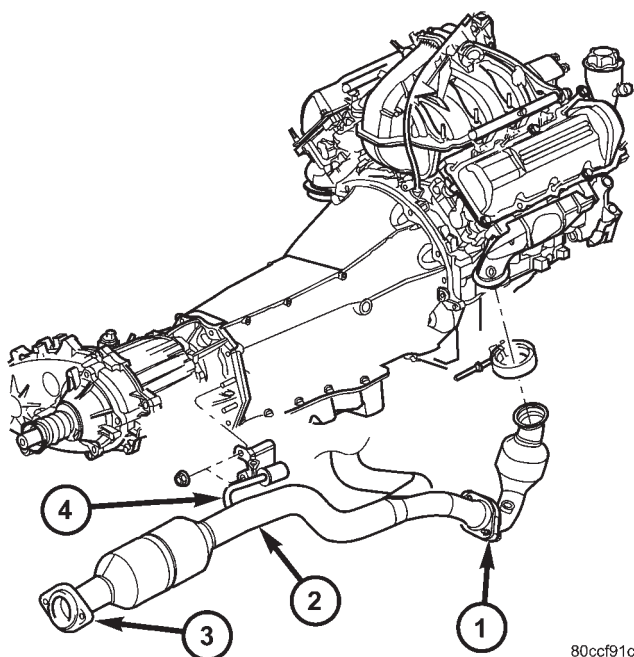


Fig. 3 Crossover Pipe

- 1 - Crossover-toCatalytic Converter flange
- 2 - Crossover Pipe
- 3 - Crossover Pipe to Tail Pipe Flange
- 4 - Hanger Bracket

INSTALLATION

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- (1) Install the crossover pipe into the hanger insulator.
- (2) Install and torque the fasteners in the crossover pipe to the left and right catalytic converter connection.
- (3) Install and torque the retaining fasteners holding the crossover pipe to exhaust pipe.
- (4) Lower vehicle..
- (5) Start engine and check for leaks.

HEAT SHIELDS

DESCRIPTION

Heat shields (Fig. 4) are needed to protect both the vehicle and the environment from the high temperatures developed by the catalytic converter. The catalytic converter releases additional heat into the exhaust system. Under severe operating conditions, the temperature increases in the area of the converter. Such conditions can exist when the engine misfires or otherwise does not operate at peak efficiency.

MUFFLER

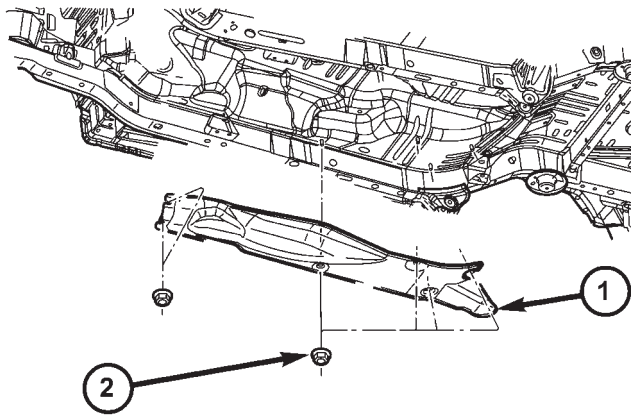
DESCRIPTION

The 2.4L and 3.7L engine uses a galvanized steel muffler (Fig. 5) to control exhaust noise levels and exhaust back pressure.

REMOVAL

All original equipment exhaust systems are manufactured with the exhaust tailpipe welded to the muffler. Service replacement mufflers and exhaust tailpipes are either clamped together or welded together.

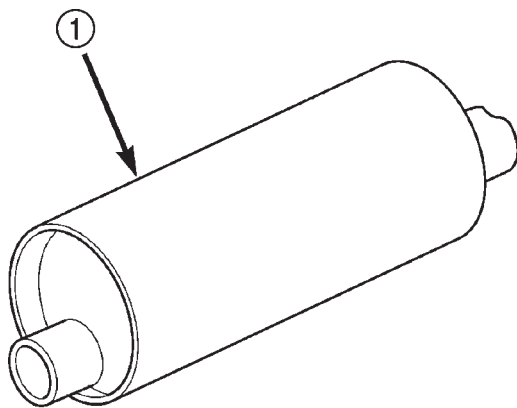
MUFFLER (Continued)



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Fig. 4 KJ REAR HEAT SHIELD

- 1 - HEAT SHIELD
2 - NUT



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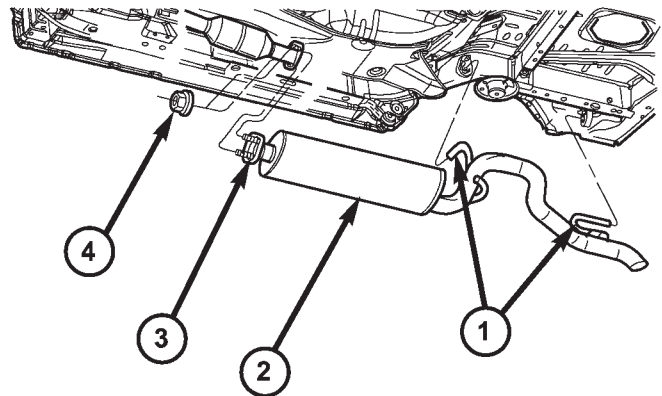
Fig. 5 Muffler - Typical

- 1 - MUFFLER

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

- (1) Raise and support the vehicle.
- (2) Disconnect front tailpipe hanger from the insulator (Fig. 6).
- (3) Remove the mounting nuts from the muffler to catalytic converter flange (Fig. 6).
- (4) Remove the tailpipe from the rear tailpipe hanger.
- (5) Remove the muffler and tailpipe assembly from the vehicle (Fig. 6).



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Fig. 6 KJ MUFFLER AND TAILPIPE ASSEMBLY

- 1- TAILPIPE HANGERS
2- MUFFLER
3- FLANGE
4- NUT

INSTALLATION

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WARNING: IF TORCHES ARE USED WHEN WORKING ON THE EXHAUST SYSTEM, DO NOT ALLOW THE FLAME NEAR THE FUEL LINE.

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

MUFFLER (Continued)

(1) Position muffler and tailpipe assembly into vehicle.

(2) Install clamp retaining tailpipe to the rear tailpipe hanger. **DO NOT** tighten clamp at this time.

(3) Install mounting nuts onto the muffler to catalytic converter flange studs. **DO NOT** tighten nuts at this time.

(4) Make sure the exhaust system is in proper alignment. There should be at least 25mm (1 inch)

clearance between the exhaust components and any surrounding components.

(5) Tighten muffler to catalytic converter flange mounting nuts to 28.5 N·m (21 ft. lbs.).

(6) Tighten tailpipe clamp to 48 N·m (35 ft. lbs.).