GROUP

EXHAUST SYSTEM 09

(5000)

SECTION 09-00 Exhaust System

VEHICLE APPLICATION

Capri.

DIAGNOSIS

Exhaust system malfunctions generally appear in three categories: rattle and vibrations, leakage or noise, and a restricted system.

Always begin the diagnosis by road testing the vehicle to determine the symptom category.

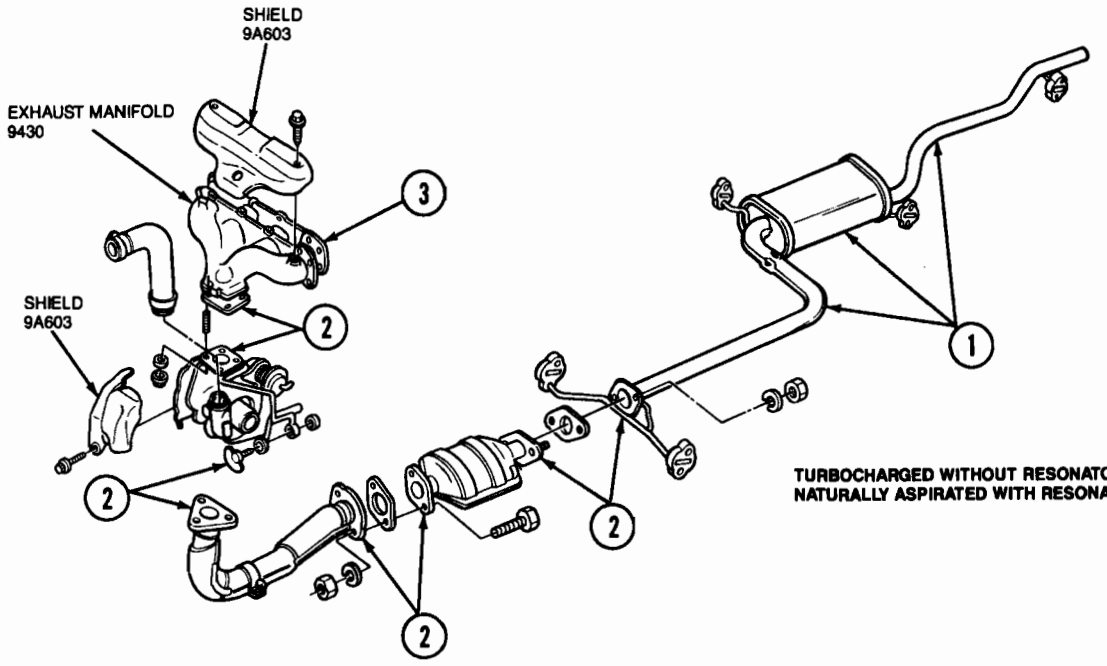
WARNING: THE NORMAL OPERATING TEMPERATURE OF THE EXHAUST SYSTEM IS VERY HIGH. NEVER WORK AROUND OR ATTEMPT TO SERVICE ANY PART OF THE EXHAUST SYSTEM UNTIL IT HAS COOLED. USE SPECIAL CARE WHEN WORKING AROUND THE CATALYTIC CONVERTER. THESE UNITS HEAT TO A HIGH TEMPERATURE AFTER ONLY A SHORT PERIOD OF ENGINE OPERATION.

Exhaust Leakage or Noise

NOTE: In the event of a catalytic converter failure, always check the muffler to be sure converter debris has not entered muffler.

DIAGNOSIS (Continued)

External leaks in the exhaust system are often accompanied by noises and exhaust fumes. A visual inspection of the exhaust system usually will show the location of a leak. When checking for exhaust leakage or noise, inspect the entire system for burnout holes, loose or corroded clamps, muffler, inlet pipe or outlet pipe. Examine the underbody for greyish-white or black exhaust soot which would indicate exhaust leakage at that point. On small leaks, have an assistant hold rags over the tail pipe outlet while listening for the leak. This helps magnify the leak.



TURBOCHARGED WITHOUT RESONATOR SHOWN
NATURALLY ASPIRATED WITH RESONATOR TYPICAL

POSSIBLE CAUSE	CORRECTIVE ACTION
① LEAKING PIPES OR COMPONENTS	REPLACE DAMAGED COMPONENTS
② LOOSE CONNECTIONS LEAKING FLANGE GASKETS	REALIGN AND TIGHTEN CONNECTIONS REPLACE GASKETS
③ LEAKING EXHAUST MANIFOLD OR GASKET	TIGHTEN LOOSE CONNECTIONS OR REPLACE LEAKING GASKET

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Exhaust System Alignment

A misaligned exhaust system is usually indicated by vibration, grounding, rattling, or binding of system components. Often the associated noise is hard to distinguish from other chassis noises. Look for broken or loose clamps and brackets. Replace or tighten as necessary. It is important that exhaust clearances and alignment be maintained.

Perform the following procedures to align the system.

1. Loosen the attaching hardware, clamp and the pipe support brackets.
2. Align the exhaust system, beginning at the front of the vehicle, to establish maximum clearance.
3. Tighten all attachments.

   NOTE: Tighten the flange nuts and the exhaust manifold nuts evenly and alternately.

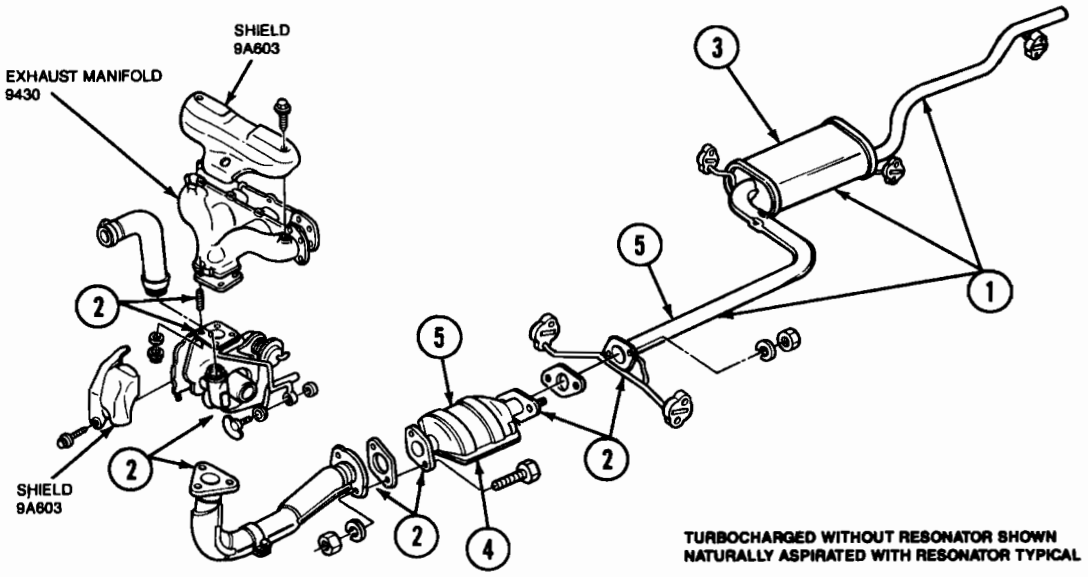
DIAGNOSIS (Continued)

4. Start the engine and check the exhaust system for leaks.

   NOTE: Muffler, resonator, inlet pipes, outlet pipes, brackets, clamps and insulators should be replaced if they are worn or become badly corroded. Do not attempt to service these parts.

When testing for a rattle or vibration condition, it is helpful to use a rubber mallet. Tap on the exhaust components to simulate the bouncing action of the exhaust, while watching for exhaust-to-body / chassis contact. Also look for loose or rusted flange connections, loose or damaged heat shields or clamps and loose or broken hangers.

Lightly tapping on the muffler, and catalytic converter can determine if there are loose or broken baffles in the muffler or a loose or broken element in the converter.



TURBOCHARGED WITHOUT RESONATOR SHOWN
NATURALLY ASPIRATED WITH RESONATOR TYPICAL

POSSIBLE CAUSE	CORRECTIVE ACTION
① EXHAUST COMPONENTS RUBBING ON VEHICLE CHASSIS BODY	REALIGN EXHAUST COMPONENTS REPLACE IF DAMAGED
② LOOSE EXHAUST CLAMPS LOOSE CONNECTIONS DUE TO CORROSION DAMAGE	REALIGN EXHAUST AND TIGHTEN CLAMPS REPLACE AFFECTED COMPONENTS
③ LOOSE OR BROKEN MUFFLER OR SILENCER BAFFLES	REPLACE MUFFLER OR SILENCER
④ LOOSE OR BROKEN ELEMENT IN CATALYTIC CONVERTER	REPLACE CONVERTER* AND CHECK ENGINE TO DETERMINE CAUSE OF CONVERTER MALFUNCTION, I.E., ENGINE MISFIRE, OVERRICH FUEL MIXTURE
⑤ LOOSE OR DAMAGED EXHAUST SHIELD(S)	SECURE OR REPLACE EXHAUST SHIELD(S)

*WHEN REPLACING THE CATALYTIC CONVERTER BECAUSE OF BROKEN ELEMENT, ALWAYS INSPECT THE MUFFLER FOR PARTICLES WHICH COULD RESTRICT THE EXHAUST SYSTEM OR CAUSE A RATTLE.

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Restricted Exhaust System

There is no easy method to finding a restricted exhaust system component. By following a systematic approach, considerable time and effort can be saved.

DIAGNOSIS (Continued)

Exhaust Back Pressure—Check

The back pressure test can be carried out to test for a restricted or blocked exhaust system which usually results in loss of power, poor fuel economy, or popping through the intake. Verify that the condition is not caused by ignition or timing concerns, then perform a visual inspection of the exhaust system. If the restriction cannot be located by visual inspection, perform the following procedures:

1. Attach Rotunda Vacuum / Pressure Tester 059-00008 or equivalent to intake manifold.
2. Connect tachometer.
3. Start engine and observe gauge. Gauge should indicate 400mm-530mm (16-21 inch) of vacuum.
4. Increase engine speed to 2,000 rpm and observe vacuum gauge. Vacuum will drop when speed is increased rapidly, but should settle at 400mm-530mm (16-21 inch) and remain steady.

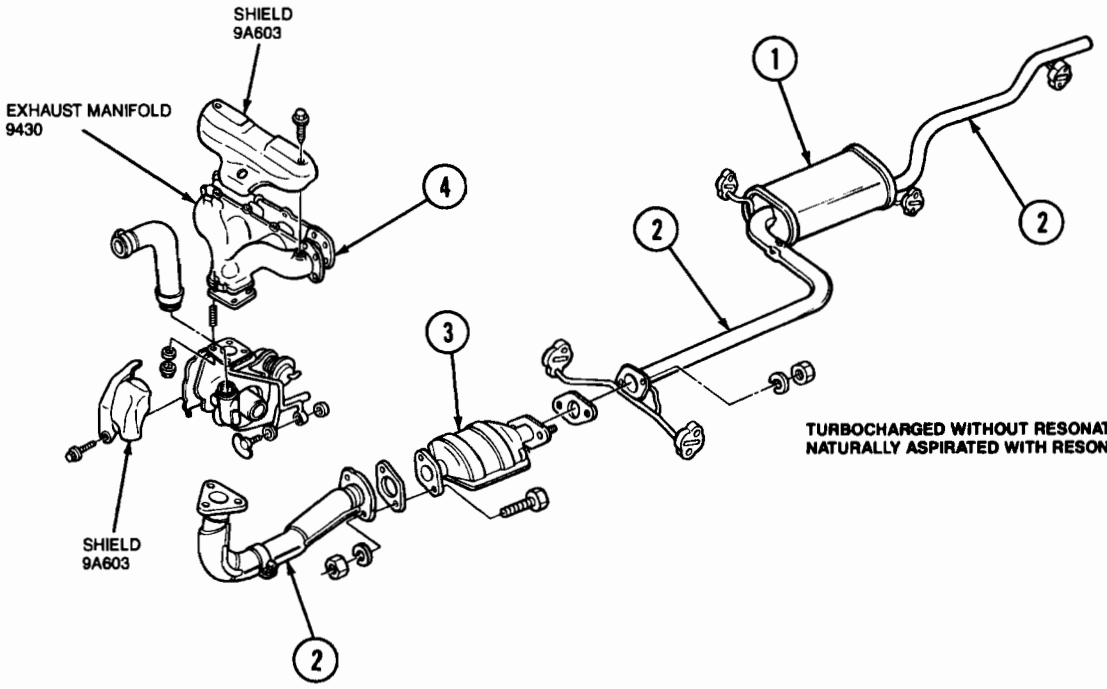
   If vacuum drops below 400mm (16 inch) exhaust system is restricted or blocked. Stop engine and proceed to Step 5.
5. Disconnect exhaust pipe at manifold. Make sure area is well ventilated.
6. Start engine and increase speed to 2,000 rpm. Observe vacuum gauge.

   If vacuum settles at 400mm-530mm (16-21 inch), restriction or blockage is in exhaust pipe, catalytic converter or muffler.
7. Connect exhaust pipe and repeat the test without the muffler.

   If vacuum drops below 400mm (16 inch), restriction or blockage is in the catalytic converter.

   If vacuum is normal, muffler is restricted.

   NOTE: In the event of a converter failure, always check muffler to be sure converter debris has not entered muffler.
8. Re-assemble exhaust system and remove test equipment.



TURBOCHARGED WITHOUT RESONATOR SHOWN
NATURALLY ASPIRATED WITH RESONATOR TYPICAL

POSSIBLE CAUSE	CORRECTIVE ACTION
① RESTRICTED MUFFLER OR SILENCER	REPLACE MUFFLER OR SILENCER
② BENT OR KINKED EXHAUST PIPES	STRAIGHTEN OR REPLACE BENT EXHAUST PIPES
③ RESTRICTED CATALYTIC CONVERTER	REPLACE CONVERTER AND DETERMINE CAUSE OF MALFUNCTION, I.E., ENGINE MISFIRE, OVERRICH FUEL MIXTURE
④ RESTRICTED EXHAUST MANIFOLD PORT	REMOVE EXHAUST MANIFOLD AND ATTEMPT TO CLEAR BLOCKAGE. IF BLOCKAGE CANNOT BE CLEARED, REPLACE DEFECTIVE COMPONENT.

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REMOVAL AND INSTALLATION

Exhaust System

Removal and Installation

Removal and installation procedures are, in most cases, a matter of removing the shield attachments and shield. Installation is the reverse process using new parts. The illustrations under Diagnosis indicate the types and proper positioning of exhaust shields and clamps.

SPECIAL SERVICE TOOLS

ROTUNDA EQUIPMENT

Model	Description
059-00008	Vacuum / Pressure Tester