

SECTION 6F

EXHAUST

NOTICE: When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) may be used. Fasteners that are not reused, and those requiring thread locking compound will be called out. The correct torque value must be used when installing fasteners that require it. If the above conditions are not followed, parts or system damage could result.

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DESCRIPTION

The vehicle is equipped with a single horizontal exhaust system which consists of a manifold exhaust pipe with a heat shield attached, a main exhaust pipe, a muffler and a tail pipe. An engine exhaust brake is attached between the manifold

exhaust pipe and the main exhaust pipe. The exhaust brake, when turned on, restricts the flow of exhaust gases and thereby slows the engine. Be sure the exhaust brake system is turned off before performing any exhaust system diagnosis.

DIAGNOSIS OF EXHAUST SYSTEM

PROBLEM	POSSIBLE CAUSE	CORRECTION
Vibrating or Rattling from Exhaust System	Loose and/or misaligned components.	Align, then tighten connections. Also, check for damaged hanger or mounting brackets and clamps.
Restricted Exhaust System	<ol style="list-style-type: none"> 1. Exhaust brake on. 2. Kinked exhaust tubing. 3. Restriction within the muffler. 4. End of tail pipe obstruction. 5. Separation of inner layer of double layer pipe. 	<ol style="list-style-type: none"> 1. Check that the exhaust brake system is turned off. 2. If possible, repair the damaged condition, otherwise replace the component. 3. If a restriction is suspected, remove the muffler and visually check it. Replace the muffler if the condition is doubtful. 4. Remove the obstruction or if end is crimped, straighten outlet. 5. Replace pipe.
Exhaust Leakage and/or Noise	<ol style="list-style-type: none"> 1. Leakage at exhaust component joints and couplings. 2. Improperly installed or misaligned components. 3. Rupture or burn-outs in the tubing or muffler. 4. Inferior exhaust system components (clamps, pipes, mufflers). 5. Missing exhaust system components. 	<ol style="list-style-type: none"> 1. Tighten clamps or couplings. 2. Align, then tighten connections. 3. Replace damaged components. 4. Replace with original equipment parts or equivalent. 5. Install missing components.

ON-VEHICLE SERVICE

EXHAUST RESTRICTION AND LEAKS

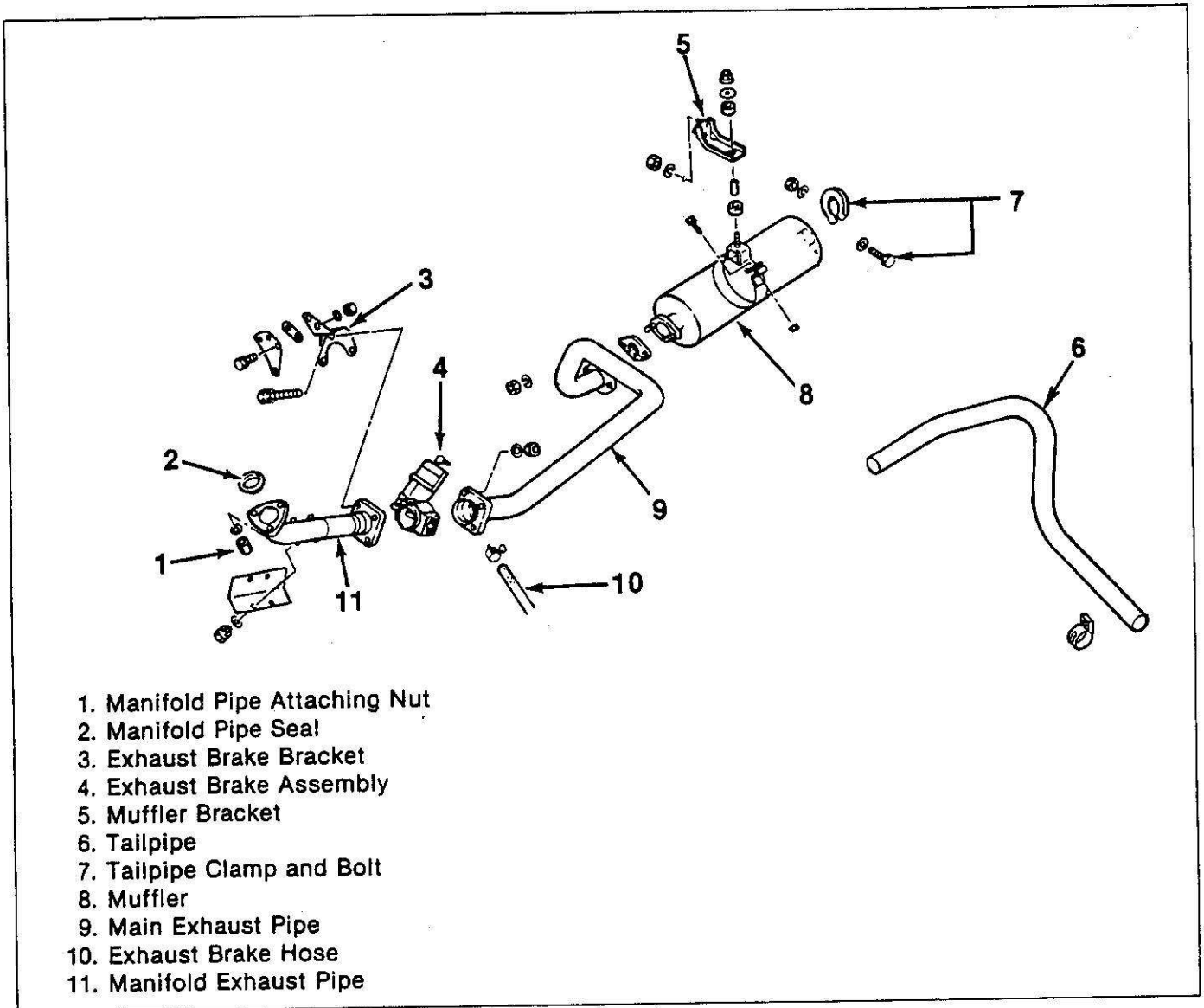
The exhaust system should be inspected periodically for restrictions and leaks. Restrictions such as kinked or crimped pipes lead to increased fuel consumption, power loss, and possible damage to the engine combustion chamber components. Exhaust leaks are commonly the result of loose clamp assemblies, damaged exhaust pipe to manifold packing, corroded pipes, or a punctured muffler.

Damaged or corroded exhaust system components should be replaced without delay.

EXHAUST SYSTEM ALIGNMENT

During installation of a new exhaust pipe, muffler or tail pipe, care should be taken to properly position components in relation to each other.

Incorrectly assembled parts of the exhaust system are frequently the cause of annoying noises and rattles. After adjusting the hangers, aligning pipes, and repositioning the muffler, check the entire system for adequate clearance and then tighten all clamps, working from the front to rear. Start the engine and inspect all connections for leakage.



1. Manifold Pipe Attaching Nut
2. Manifold Pipe Seal
3. Exhaust Brake Bracket
4. Exhaust Brake Assembly
5. Muffler Bracket
6. Tailpipe
7. Tailpipe Clamp and Bolt
8. Muffler
9. Main Exhaust Pipe
10. Exhaust Brake Hose
11. Manifold Exhaust Pipe

Figure 1. Exhaust System

EXHAUST SYSTEM REPLACEMENT

FRONT EXHAUST PIPES AND EXHAUST BRAKE ASSEMBLY

➡ Remove or Disconnect (Figures 1, 2 and 3)

1. Exhaust brake hose (10).
2. Exhaust brake bracket (3).
3. Manifold exhaust pipe (11) and seal (2) from the manifold.
4. Bolts (12) holding the exhaust brake to the exhaust pipes (figure 2).
5. Exhaust brake assembly (4).
6. Main exhaust pipe (9) from the muffler (8).

➡ Install or Connect (Figures 1, 2 and 3)

NOTICE: For steps 2, 3 and 5, see "NOTICE" on page 6F-1 of this section.

1. Main exhaust pipe (9) to the muffler (8).
2. Manifold exhaust seal (2) and pipe (11) to the manifold.

⌚ Tighten

- Nuts to 37 N·m (27 lb·ft).

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3. Exhaust brake bracket (3) to the frame.

Tighten

- Bolt to 17 N·m (12 lb-ft).

4. Exhaust brake assembly (4).

5. Bolts (12) holding the exhaust brake to the exhaust pipes.

Tighten

- Nuts to 17 N·m (12 lb-ft)

6. Exhaust brake hose (10).

- Be sure the exhaust brake hose overlap is 30 mm (1.181 in). This will prevent the hose from contacting the exhaust manifold pipe.

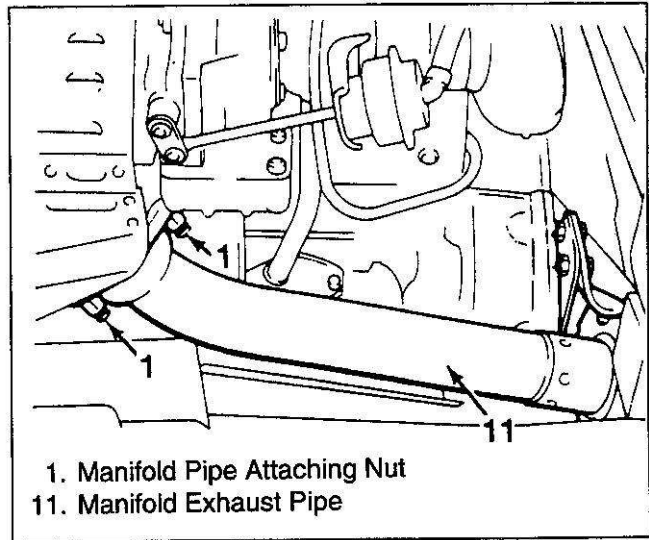


Figure 3. Manifold Exhaust Pipe

MUFFLER AND TAIL PIPE

Remove or Disconnect (Figure 1)

1. Main exhaust pipe (9) from the muffler (8).
2. Muffler clamp attaching nut and washers from muffler bracket (5).
3. Tail pipe clamp, bolt (7), nut and washers from the muffler.
4. Tail pipe (6).

Install or Connect (Figure 1)

1. Muffler clamp attaching nut and washers to the muffler bracket (5).
2. Main exhaust pipe (9) to the muffler.
3. Tail pipe (6) to muffler.
4. Tail pipe clamp and bolt (7), nuts and washers.

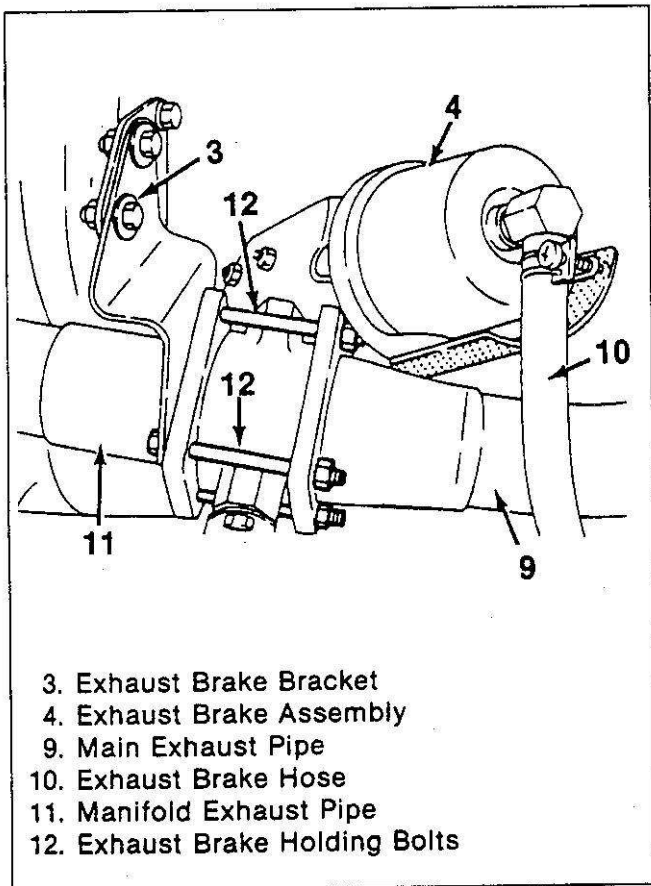


Figure 2. Exhaust Brake Connections

SPECIFICATIONS

FASTENER TORQUES

Front Exhaust Pipe to Manifold Nuts.....	37 N·m (27 lb-ft)
Exhaust Brake Bracket Bolt	17 N·m (12 lb-ft)
Exhaust Brake Nuts to Exhaust Pipes.....	17 N·m (12 lb-ft)