EXHAUST SYSTEM AND INTAKE MANIFOLD

CONTENTS

GENERAL INFORMATION

EXHAUST SYSTEM

The basic exhaust system consists of an engine exhaust manifold, 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 may amplify objectionable noises originating from the engine or 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 HEAT SHIELDS

Exhaust heat shields are needed to protect both the vehicle and the environment from the high temperatures (Fig. 1).

DO NOT allow the engine to operate at fast idle for extended periods (over 5 minutes). This condition may result in excessive temperatures in the exhaust system and on the floor pan.

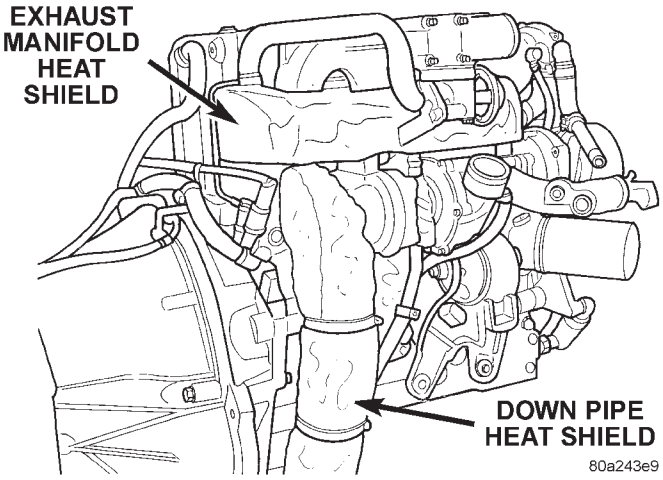

Fig. 1 Heat Shields

REMOVAL AND INSTALLATION

EXHAUST PIPE

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

REMOVAL

(1) Raise and support the vehicle.

(2) Saturate the bolts and nuts at turbo down pipe to exhaust pipe with heat valve lubricant. Allow 5 minutes for penetration.

(3) Disconnect bolts from exhaust pipe to turbo down pipe (Fig. 2).

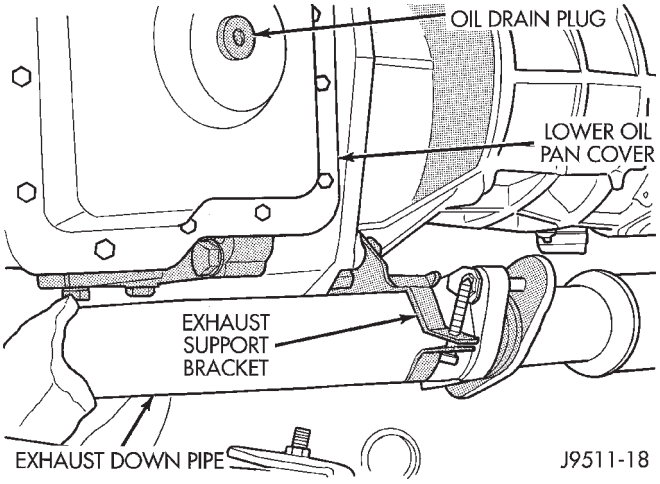

Fig. 2 Exhaust Down Pipe to Front Exhaust Pipe

(4) Remove the clamp nuts at muffler (Fig. 3). To remove the exhaust pipe from the muffler, apply heat until the metal becomes cherry red. Disconnect the exhaust pipe from the muffler. Remove the exhaust pipe.

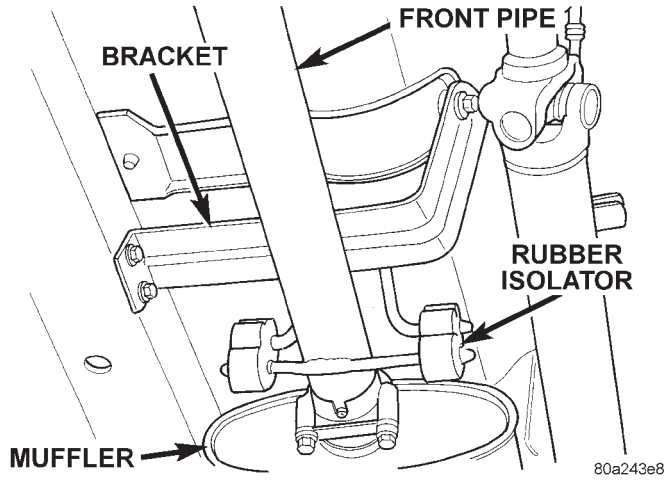

Fig. 3 Front Pipe to Muffler

INSTALLATION

(1) Assemble exhaust pipe to muffler, loosely to permit proper alignment of all parts.

(2) Connect the exhaust pipe to the turbo down pipe manifold. Tighten the bolts to 22.5 N·m torque.

(3) Use a new clamp and tighten the nuts to 43 N·m torque.

(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.

MUFFLER AND EXHAUST TAILPIPE

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.

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

REMOVAL

(1) Raise and support the vehicle.

(2) Remove the front muffler clamp from the exhaust pipe and muffler connection.

(3) Remove the rear exhaust tailpipe hanger clamp and remove the exhaust tailpipe from the front exhaust tailpipe hanger.

(4) Remove the exhaust tailpipe assembly from the muffler.

INSTALLATION

(1) Install the muffler onto the exhaust pipe. Install the clamp and tighten the nuts finger tight.

(2) Install the exhaust tailpipe into the rear of the muffler.

(3) Install the exhaust tailpipe/muffler assembly on the rear exhaust tailpipe hanger. Make sure that the exhaust tailpipe has sufficient clearance from the floor pan.

(4) Install the remaining clamps and the front exhaust tailpipe hanger.

(5) Tighten the nuts on the muffler-to-exhaust pipe clamp to 43 N·m torque.

(6) Tighten the nuts on the muffler-to-exhaust pipe clamp to 43 N·m torque.

(7) Lower the vehicle.

(8) Start the engine and inspect for exhaust leaks and exhaust system contact with the body panels. Adjust the alignment, if needed.

REMOVAL AND INSTALLATION (Continued)

ENGINE EXHAUST MANIFOLD AND TURBOCHARGER

REMOVAL

(1) Disconnect the battery negative cable.
(2) Remove air cleaner hoses from turbocharger.
(3) Remove air cleaner assembly.
(4) Remove charge air cooler hoses from turbocharger and intake manifold.
(5) Remove all components attached to the intake manifold.
(6) Remove the EGR tube and EGR valve.
(7) Remove exhaust manifold heat shield.
(8) Remove turbocharger oil feed line.
(9) Remove exhaust down pipe from turbo.
(10) Raise the vehicle.
(11) Remove oil drain tube from turbocharger.
(12) Lower the vehicle.
(13) Remove turbocharger and exhaust manifold as an assembly.

CLEANING

Clean the exhaust manifold and cylinder head mating surfaces.

INSTALLATION

(1) Install turbocharger to exhaust manifold tighten nuts to 27 N·m.
(2) Install assembly to engine, tighten nuts to 30 N·m.
(3) Install oil feed line to turbocharger, tighten nut to 26 N·m.
(4) Install exhaust down pipe to turbocharger, tighten bolts to 27 N·m.
(5) Install exhaust heat shield, tighten bolts to 11 N·m.
(6) Loose install EGR tube and EGR valve to intake manifold.
(7) Install EGR valve, tighten bolts to 26 N·m.
(8) Tighten EGR tube nut to 26 N·m.
(9) Tighten EGR tube flange bolts to 26 N·m.
(10) Connect all components to intake manifold.
(11) Connect charge air cooler hoses to turbocharger and intake manifold.
(12) Install air cleaner assembly.
(13) Connect air cleaner hose to turbocharger.
(14) Raise the vehicle.
(15) Install turbocharger drain line.
(16) Lower the vehicle.
(17) Connect the battery negative cable.
(18) Start the engine and check for leaks.

INTAKE MANIFOLD

REMOVAL

(1) Remove exhaust manifold and turbocharger assembly.
(2) Remove water manifold.
(3) Remove intake manifold.

CLEANING

Clean the intake manifold and cylinder head mating surfaces. **DO NOT allow foreign material to enter either the intake manifold or the ports in the cylinder head.**

INSTALLATION

(1) Install the new intake manifold gasket.
(2) Position the intake manifold in place and finger tighten the mounting nuts.
(3) Tighten the fasteners in sequence and to the specified torque 30 N·m.
(4) Position the water manifold in place and finger tighten the mounting nuts.
(5) Tighten the fasteners to the specified torque 12 N·m.
(6) Install exhaust manifold and turbocharger assembly.
(7) Install charge air cooler hose to intake manifold.
(8) Connect the battery negative cable.
(9) Start engine and check for leaks.

SPECIFICATIONS

TORQUE SPECIFICATIONS

Description	Torque
EGR	
Attaching Nuts	19 N·m
EGR	
Tube Nut	34 N·m
EGR	
Tube Flange Bolts	26 N·m
Exhaust Manifold	
Nuts	30 N·m
Exhaust Manifold	
Heat Shield Nuts	11 N·m
Exhaust Pipe	
Support Clamp Bolts	22.5 N·m
Exhaust Pipe	
Support Clamp Screw	22.5 N·m
Intake Manifold	
Nuts	30 N·m
Muffler-to-Exhaust Pipe	
Clamp Nuts	43 N·m
Tail Pipe Clamp	
Hanger bolt	22.5 N·m
Turbocharger-to-Exhaust manifold	
Nuts	27 N·m
Turbocharger	
Oil Feed Line	27.4 N·m

SPECIFICATIONS (Continued)

Description	Torque
Turbocharger Down Pipe-to-Exhaust Pipe	
Bolts/Nuts	22.5 N·m
Turbocharger Down Pipe-to-Turbocharger	
Bolts	27 N·m