MAZDA PISTON ENGINE REED VALVE AIR INJECTION

GLC (Exc. Calif. w/Auto. Trans.)
B2000 (Exc. Calif.)

NOTE – *All other models use air pump type air injection system. See appropriate article in this section.*

DESCRIPTION

This pumpless air injection system injects atmospheric air into the exhaust system to reduce hydrocarbon emissions. System components vary depending on vehicle application and are as follows:

GLC – Reed type injection system consists of 1 large reed valve, 1 small reed valve, air control valve, water thermo valve, air silencer, catalytic converter and connecting hoses and pipes.

B2000 – Reed type injection system consists of a reed valve, catalytic converter and connecting hoses and pipes.

NOTE – *All Mazda models use the same catalytic converter. See "Mazda Piston Engine Air Pump Air Injection System" article in this section.*

OPERATION

GLC – The large reed valve is connected directly to exhaust manifold to increase amount of secondary air injected into exhaust gas stream. The small reed valve is connected to an air gallery which delivers injected air to each exhaust port. When exhaust pulsations are less than atmospheric pressure, reed valves are pushed open by incoming fresh air provided by the air control valve. When exhaust pressure exceeds atmospheric pressure, reed valves are pushed closed to prevent injection of fresh air. Reed valves act as oneway valves.

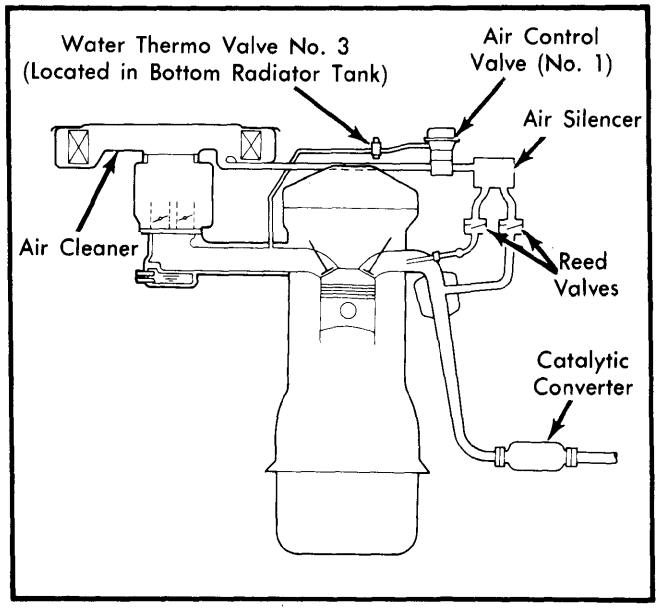

Fig. 1 Schematic of GLC (Exc. Calif. w/Auto. Trans.) Reed Valve Type Air Injection System

The air control valve is located between air cleaner and air silencer. This valve controls the amount of fresh air delivered to the reed valves according to intake manifold vacuum signals received from the water thermo valve. An air by-pass orifice is provided to prevent collapsing of connection pipes when air control valve is closed.

The water thermo valve is located in the bottom radiator tank. This valve controls the intake manifold vacuum signal sent to the air control valve. Below 64° F (18° C), valve is open to transmit vacuum to air control valve. Above this predetermined temperature, valve is closed and no vacuum is present.

B2000 – When exhaust system pressure pulsations are less than atmospheric pressure, reed valve is opened to incoming air. When exhaust pressure exceeds atmospheric pressure, reed valve is closed to incoming air. This valve also acts as oneway valve.

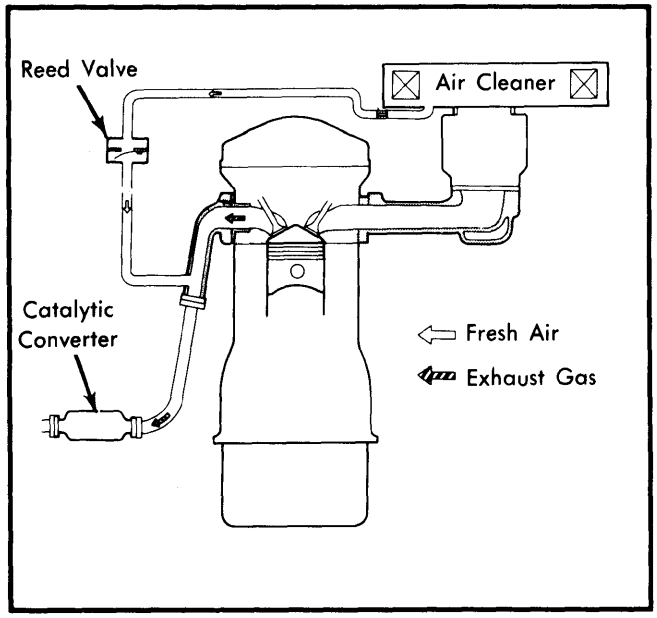

Fig. 2 Schematic of B2000 (Exc. Calif.) Reed Valve Type Air Injection System

TESTING

REED VALVE

1) With engine warmed to normal operating temperature, remove hose from inlet side (air cleaner side) of reed valve.

2) At idle, air should be felt being sucked into reed valve (check by placing finger over valve inlet). Increase speed to 1500 and hold finger over valve inlet. Check that no exhaust leakage is coming through valve. If so, replace valve.

AIR CONTROL VALVE (GLC ONLY)

1) With engine at normal operating temperature, disconnect air cleaner-to-air control valve hose from control valve. Discon-

MAZDA PISTON ENGINE REED VALVE AIR INJECTION (Cont.)

nect vacuum sensing hose (white) from air control valve. With engine at idle, place fingers over inlet port of air control valve. Vacuum should be felt.

NOTE – *If coolant temperature is above 64° F (18° C), vacuum must be applied to vacuum port.*

2) Reconnect vacuum sensing hose (white) to air control valve. Vacuum should decrease. If valve does not function as described, check water thermo valve or replace air control valve.

WATER THERMO VALVE (GLC ONLY)

1) With engine temperature below 64° F (18° C), disconnect vacuum sensing tube (white) from air control valve. Start engine and run at idle. With finger placed over disconnected tube, vacuum should be felt.

2) Continue to run engine at idle until temperature exceeds 64° F (18° C). Vacuum should not be present at tube opening. Replace thermo valve if necessary.

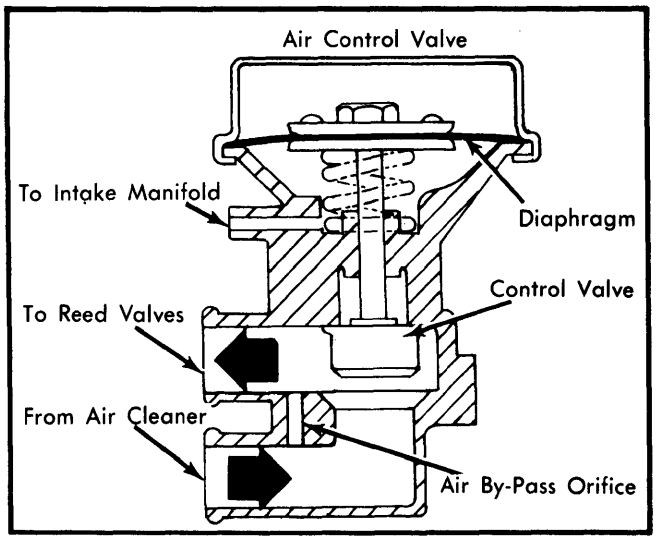

Fig. 3 Schematic of GLC Air Control Valve (Calif. with Auto. Trans. Only)

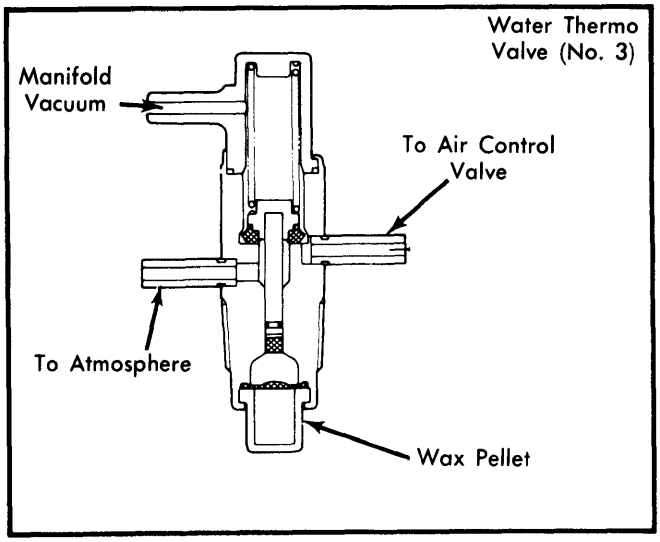

Fig. 4 Schematic of GLC Water Thermo Valve (Calif. with Auto. Trans. Only)