1982 Exhaust Emission Systems

SUBARU AIR INJECTION

DESCRIPTION

The air injection systems' purpose is to reduce exhaust emissions by oxidizing hydrocarbons and carbon monoxide during cold engine operation. The system is composed of an air suction and cut-off valve, thermosensor, solenoid valve, check valve, air filter, various hoses and tubing, and an electronic control unit.

OPERATION

When the air injection system is operating, pulsation created by exhaust gas leaving the engine is transmited to the air suction valve through an air suction pipe. When negative pressure from exhaust pulsation reaches suction valve, reeds in suction valve are drawn open and fresh air is drawn into exhaust passage. When positive pressure is present in exhaust, reeds are closed to prevent reverse flow of exhaust gas.

When coolant temperature is below 95°F (35°C), the electronic control module signals the solenoid valve to allow manifold vacuum to open the cut-off valve. This enables the suction valve to operate. The solenoid valve remains open for a period of 123 seconds. During this time, if a low vacuum condition should exist, a check valve is used to maiatain vacuum at the solenoid and cut-off valves.

At the end of the 123 second period, the control module turns off the solenoid valve signal. Vacuum is no longer supplied to the cut-off valve and air injection is terminated.

TESTING

Remove the air suction/cut-off valve. Remove three screws attaching cut-off valve assembly to reed valve. Apply vacuum to the cut-off valve diaphragm to determine if the valve is functioning normally. Check the reed valve for cracks or other damage. Reassemble the 2 valves and reinstall.

Fig. 1: Subaru Air Injection System