1981 Fuel Evaporation Systems

MAZDA ROTARY ENGINE

RX7

DESCRIPTION

System prevents escape of fuel vapors into atmosphere. Components consist of a non-vented fuel tank with integral vapor separator, a vapor valve, a check and cut valve (located at fuel tank), a charcoal canister, an air vent solenoid valve, a purge valve and connecting hoses and pipes.

OPERATION

When engine is not running, fuel vapors formed in the fuel tank pass through vapor valve. Those vapors that do not condense to liquid fuel are routed through vent lines to the charcoal canister where they are absorbed. When engine is running, filtered air is drawn into the system through the air cleaner, mixed with gases and vapors that blow by the rotor and are drawn out through purge valve and into the intake runner to be burned. The purge valve operates as the PCV and check valve in this system.

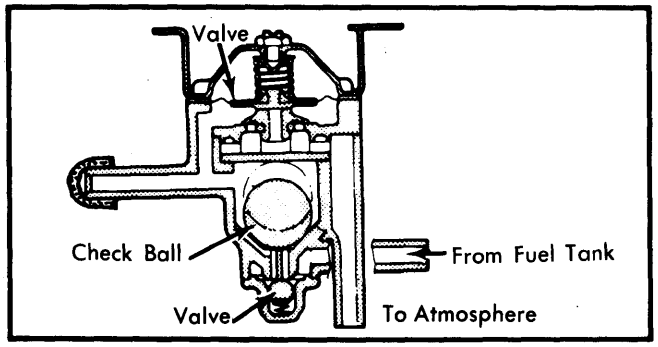

Fig. 1 Mazda RX7 Check and Cut Valve

Air Vent System – An air vent solenoid is installed on the carburetor to prevent carburetor bowl evaporated fuel from collecting in the intake manifold after a hot engine is shut off. When the ignition is turned off, the solenoid closes an air vent in the carbon canister, effectively trapping the evaporated fuel.

Check & Cut Valve – This valve has 3 functions. When pressure in fuel tank becomes too high, valve releases pressure to atmosphere to prevent damage. When vacuum becomes too high, valve opens to allow air into tank to prevent tank from collapsing. If the vehicle is overturned, the valve prevents fuel leakage by sealing the line with a check ball.

TESTING

EVAPORATIVE LINE CHECK

NOTE – *Ventilation line test is performed in the same manner as on piston engine. See "Evaporative Line Check" in "Mazda Piston Engine" article in this section.*

CHECK & CUT VALVE

NOTE – *Check and cut valve test is performed in same manner as on piston engine. See "Check & Cut Valve (Exc. B2000)" in "Mazda Piston Engine" article in this section.*

AIR VENT SOLENOID VALVE

1) Check air vent hose for cracks or deterioration. Disconnect air vent hose from ventilation pipe.

2) Slowly blow through hose. Air should pass through solenoid. Turn ignition "ON" and blow through hose again. Air should not pass through valve. If solenoid valve does not respond as described, replace air vent solenoid valve.

MAINTENANCE

Check entire system for proper functioning every 15,000 miles. Check and cut valve should be tested every 25,000 miles. Replace parts as necessary.

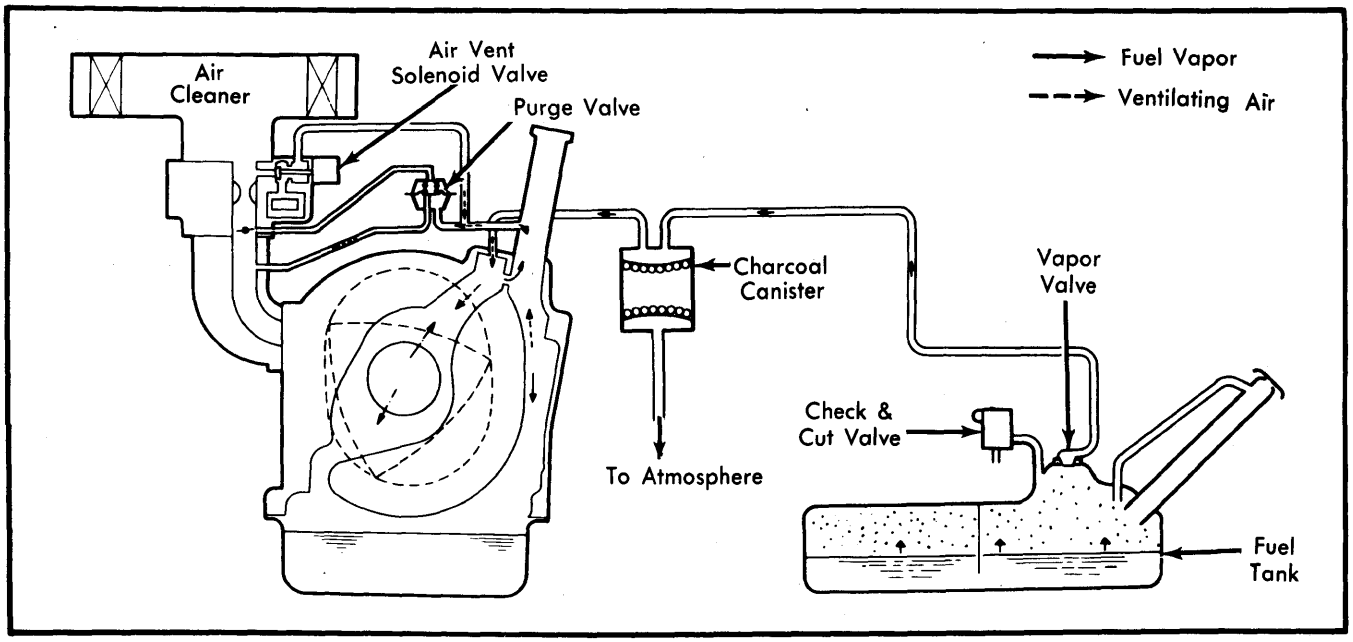

Fig. 2 Mazda RX7 Air Vent and Fuel Evaporation System