MAZDA ROTARY ENGINE DECELERATION CONTROL SYSTEM

RX-7

DESCRIPTION

System is designed to maintain a balanced air/fuel mixture during deceleration. System consists of anti-afterburn valve, anti-afterburn solenoid, coasting valve (Man. Trans.), and dashpot (Man. Trans.). A power valve solenoid and richer solenoid (Man. Trans.) are also installed to supply additional fuel to prevent engine misfiring during deceleration and various engine operating conditions.

OPERATION

The anti-afterburn valve (actuated by anti-afterburn solenoid) supplies additional air from air cleaner to intake manifold at initial deceleration mode and after ignition is switched "OFF" to prevent afterburning of fuel. On Man. Trans. models, the coasting valve and richer solenoid operate together to supply air (coasting valve) and fuel (richer solenoid) during deceleration at engine speeds above 1150 RPM to prevent backfiring. On all models, the power valve solenoid closes the vacuum passage to carburetor power valve to supply additional fuel during heavy load and transient operating conditions.

TESTING

ANTI-AFTERBURN VALVE

1) Insure hoses are in good condition and properly connected. Remove air control valve to air cleaner hose from air cleaner. Disconnect vacuum sensing tube from relief solenoid valve.

2) Start engine and run at idle. Place finger over open end of hose detached from air cleaner. No suction should be felt. Disconnect electrical coupler from anti-afterburn solenoid and suction should now be felt.

ANTI-AFTERBURN SOLENOID

1) Remove air filter from anti-afterburn valve solenoid and connect a suitable tube to nipple as shown. Disconnect vacuum tube from solenoid valve as indicated. Blow through tube. Air should come out opposite port of solenoid. See *Fig. 2*.

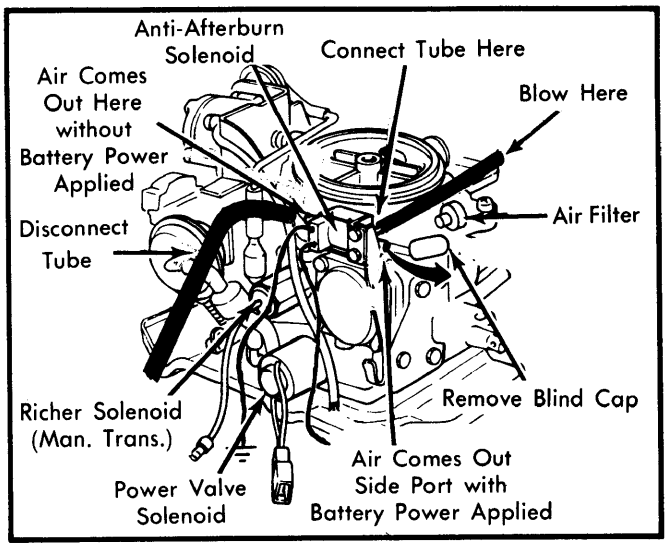

Fig. 2 Checking Anti-Afterburn Solenoid

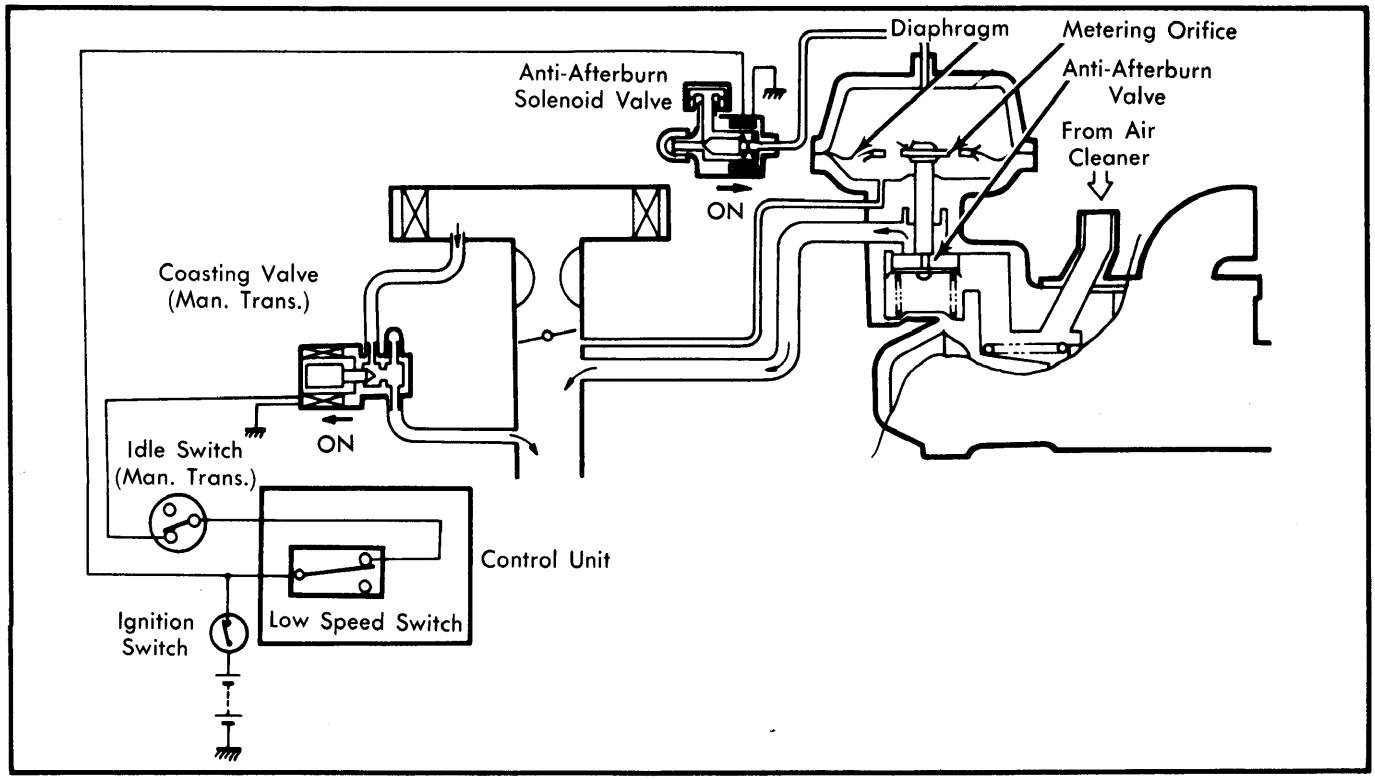

Fig. 1 Schematic of Mazda RX-7 Deceleration System

MAZDA ROTARY ENGINE DECELERATION CONTROL SYSTEM (Cont.)

2) Detach coupler from relief solenoid valve and connect battery power to terminals on valve. Blow through tube again and note that air passes out of side port as shown. *See Fig. 2.*

COASTING VALVE (MAN. TRANS. ONLY)

1) Connect tachometer to engine. Start and warm engine to normal operating temperature. Detach electrical coupler from coasting valve. Attach voltmeter to terminal as shown. *Fig. 3.*

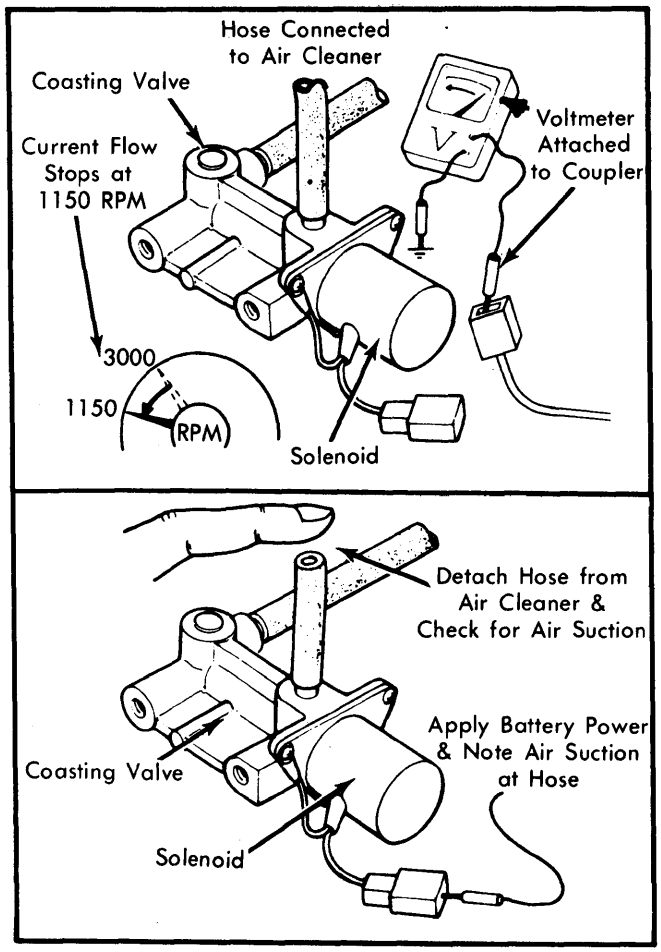

Fig. 3 Testing Coasting Valve

2) Start engine and set speed at 3000 RPM with throttle. Quickly release throttle and note speed when current stops flowing to terminal. It should be 1050-1250 RPM. Restore all connections to original location.

3) Detach electrical coupler from coasting valve solenoid. Remove coasting valve-to-air cleaner hose from air cleaner. With engine running, hold finger over end of hose. No air suction should be felt.

4) Apply battery power to disconnected coupler. Air suction should now be felt at hose. If coasting valve does not respond as indicated, replace it.

DASHPOT (MAN. TRANS. ONLY)

1) Remove air cleaner. Checking all vacuum sensing tubes for proper condition and connections. Check that dashpot rod does not bind throttle lever movement.

2) Quickly operate throttle lever fully and make sure dashpot rod extends quickly. Release throttle lever and make sure that throttle lever returns slowly to idle position after it has touched dashpot rod.

3) Connect tachometer to engine. Start engine and warm to operating temperature. Ensure engine idle speed is adjusted to specification. Operate throttle lever until it is away from dashpot rod.

4) Slowly decrease engine speed and check speed at which throttle lever just touches dashpot rod. It should be 3500-3900 RPM. If not, loosen lock nut and turn dashpot diaphragm to adjust engine speed.

POWER VALVE SOLENOID

1) Warm engine to normal operating temperature and stop engine. Disconnect coupler from solenoid and connect voltmeter to light green/blue wire of wiring harness. On all Auto. Trans. and Calif. Man. Trans. models, disconnect vacuum switch coupler.

2) On all models, start engine with choke knob fully pulled and push choke knob back completely. Increase engine speed from 2000 RPM and check to ensure current stops flowing to terminal when engine speed exceeds 4200-5000 RPM.

3) Increase engine speed to 2000 RPM with throttle. Note that current stops flowing to terminal after 1½-2 minutes after starting engine.

4) On all Auto. Trans. and Calif. Man. Trans. models, isolate vacuum switch from system and perform test procedures given in steps **2)** through **5)** of EGR solenoid valve test. *See "Mazda Rotary Engine Exhaust Gas Recirculation System" article in this section.*

RICHER SOLENOID (MAN. TRANS. ONLY)

1) Connect a tachometer to engine and warm engine to normal operating temperature. Disconnect coupler from solenoid and connect voltmeter to terminal of wiring harness.

2) Start engine and increase engine speed to 3000 RPM, using throttle. Quickly release throttle lever and note speed at which current stops flowing to terminal. It should be 1050-1250 RPM. Remove voltmeter. Reconnect coupler.

3) With engine at idle speed, disconnect coupler at richer solenoid. Engine should continue to operate smoothly. Apply battery voltage to richer solenoid connection. Engine should operate roughly or stall.