DATSUN FUEL SHUT-OFF SYSTEM

210 (Calif. Only)
310 (Calif. Only)
510
Pickup

DESCRIPTION

The Fuel Shut-Off system is used to reduce HC emissions and fuel consumption during deceleration. This system is vacuum actuated and consists of an anti-dieseling solenoid valve, vacuum switch, neutral switch (Man. Trans. only), clutch pedal switch (Man. Trans. only) and an inhibitor switch (Auto. Trans. only). A throttle valve switch is also installed on 210 and 310 models (Man. Trans. only).

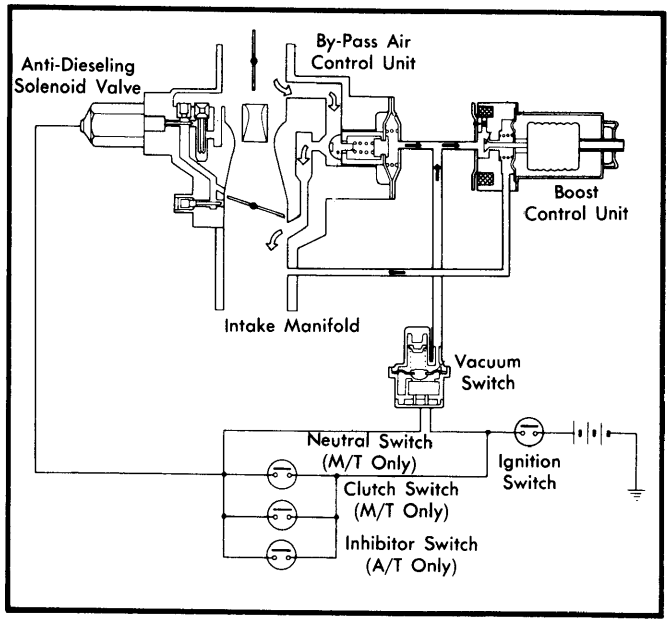

Fig. 1 Schematic of Fuel Shut-Off System (510 & Pickup Models)

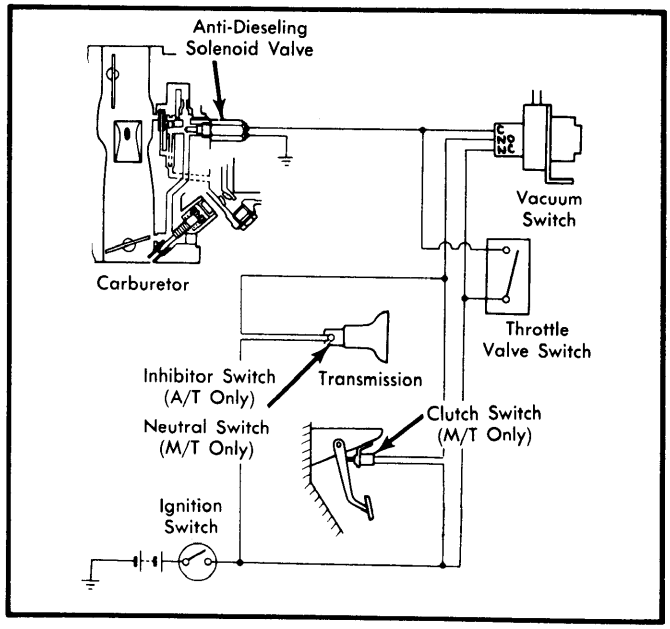

Fig. 2 Schematic of Fuel Shut-Off System (210 & 310 Models)

OPERATION

During deceleration, when intake manifold vacuum exceeds a pre-determined level, the fuel shut-off vacuum switch sends a signal to the anti-dieseling solenoid valve, shutting off the flow of fuel. Whenever manifold vacuum is below this pre-determined level, the system is inoperative. The system is also controlled by the clutch switch and gear position switches (neutral switch and inhibitor switch) so that system can be deactivated under certain conditions, even though vacuum is above the pre-determined level. The throttle valve switch is installed on 210 and 310 models (Man. Trans. only) to control the fuel shut-off system during pre-determined engine RPM.

ANTI-DIESELING SOLENOID VALVE

The anti-dieseling solenoid valve is installed on the carburetor (primary slow side). When electrical current flows through the solenoid, the needle valve is retracted, allowing fuel to flow through primary slow system. When current does not flow through solenoid valve, the needle valve is seated to prevent fuel flow.

VACUUM SWITCH

This switch is located on the intake manifold of 210 and 310 models or fender well of 510 and pickup models. When intake manifold vacuum drops below pre-determined value during deceleration, the switch causes an electrical signal to flow through the anti-dieseling valve, deactivating the fuel shut-off system.

NEUTRAL DETECTING SWITCH (MAN. TRANS. ONLY)

This switch is turned "ON" when shift lever is in neutral, and turns "OFF" in all other shift lever positions.

INHIBITOR SWITCH (AUTO. TRANS. ONLY)

This switch is turned "ON" when shift lever is in "N" or "P" range and turns "OFF" in all other shift lever positions.

THROTTLE VALVE SWITCH (210 & 310 MAN. TRANS. ONLY)

Installed on the carburetor, this switch turns "OFF" when throttle valve closes below a clearance of .019-.025" (.49-.63 mm) and turns "ON" when throttle valve exceeds this clearance. Throttle valve clearance corresponds to engine operating speeds of 1900-2100 RPM. Below this pre-determined RPM, the switch is "OFF" and fuel is shut off.

CLUTCH PEDAL SWITCH (MAN. TRANS. ONLY)

Located on the clutch pedal bracket, the clutch pedal switch turns "ON" when clutch pedal is depressed and turns "OFF" when pedal is released.

TESTING & ADJUSTMENTS

FUEL SHUT-OFF SYSTEM

1) Perform following test with engine at normal operating temperature and air conditioner "OFF" (if equipped).

DATSUN FUEL SHUT-OFF SYSTEM (Cont.)

2) Start engine and run at idle. Disconnect anti-dieseling solenoid valve connector. Engine should stall. If not, replace solenoid assembly. Reconnect solenoid connector and restart engine.

3) On 210 and 310 models, connect a voltmeter to test connector terminals specified in *Fig. 3*. On 510 and pickup models, connect a voltmeter to harness side of solenoid connector and to ground. Connect solenoid side of connector directly to positive post of battery.

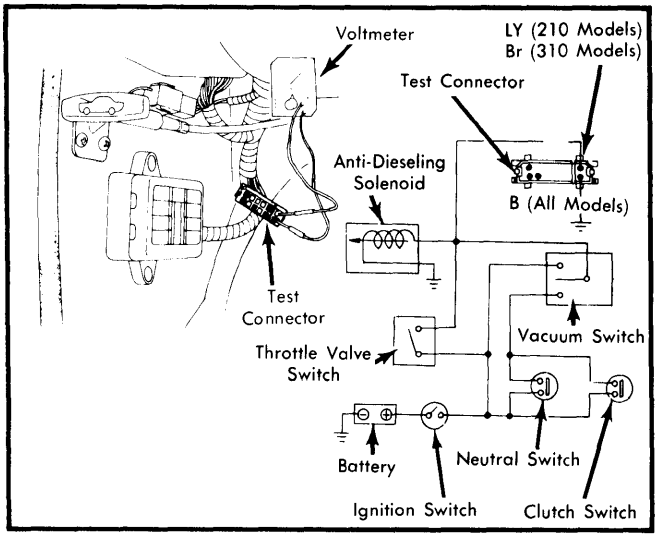

Fig. 3 Fuel Shut-Off System Test (210 & 310 Models)

4) On all models with manual transmission, depress clutch pedal and shift transmission into 4th or 5th gear. On all models with automatic transmission, place transmission shift lever in "N" or "P". Increase engine speed to 3000 RPM then quickly close throttle valve and check voltage.

5) Voltmeter should read zero during acceleration and 12 volts during deceleration. Next, shift manual transmission into neutral and repeat test.

6) Voltmeter should read zero during acceleration and deceleration. If not, check neutral detecting switch and clutch switch (manual transmission) or inhibitor switch (automatic transmission) harness and connections. Replace defective part.

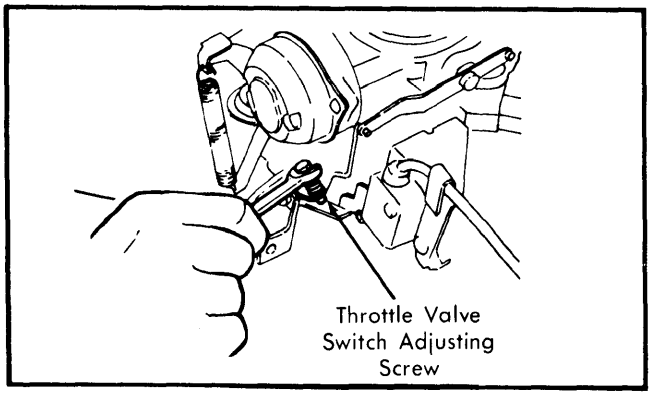

Fig. 4 Adjusting Throttle Valve Switch (210 & 310 Models)

7) On 210 and 310 models, turn ignition "OFF" and disconnect throttle valve switch connector. Connect voltmeter to throttle switch connector. Start engine and slowly increase speed while noting voltmeter reading.

8) Throttle valve switch should turn "ON" when engine speed reaches 1900-2100 RPM. Slowly decrease engine speed and note RPM at which throttle switch turns "OFF". Throttle should turn "OFF" below 1900 RPM.

VACUUM SWITCH

1) Ensure engine is at normal operating temperature. Install a "T" fitting and quick-response vacuum gauge to vacuum line between vacuum switch and intake manifold.

2) Disconnect electrical switch connection at vacuum switch and connect a voltmeter to vacuum switch.

3) Start engine and run under no-load. Increase engine speed to 3000 RPM, then quickly close throttle valve while noting vacuum gauge and voltmeter readings.

4) Vacuum should rise quickly to 23.6 in. (600 mm) Hg or more as throttle is closed. Voltage should drop from 12 to 0 volts as throttle is closed.

5) On 210 and 310 models, voltage should be read between terminals "C" and "NO" during acceleration and no reading should be present at terminals "C" and "NC". During idle speed, current should be read between "C" and "NC" and no current at "C" and "NO". *See Fig. 5.*

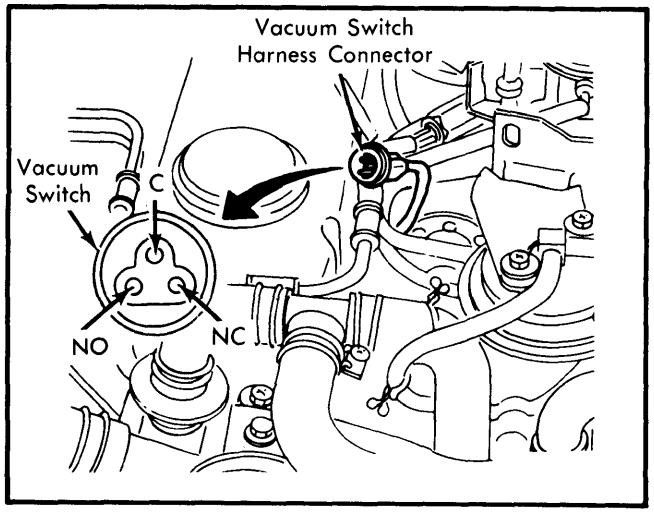

Fig. 5 Testing Vacuum Switch (210 & 310 Models)

6) Check vacuum switch operating pressure with engine at idle. Operating pressure should be 23.6 in. (600 mm) Hg. If not, replace vacuum switch.

NOTE – *The vacuum switch on 510 and pickup models is supplied vacuum by the boost control unit. Before replacing vacuum switch, ensure boost control operating pressure is correct. See "Datsun Intake Manifold Vacuum Control" system article for more information.*