DATSUN FUEL SHUT-OFF SYSTEM

210
310
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, a vacuum switch, a neutral switch (Man. Trans. only), clutch switch (Man. Trans. only), and an inhibitor switch (Auto. Trans. only). A speed detecting switch with amplifier and a fuel shut-off relay are installed on 210 and 310 models.

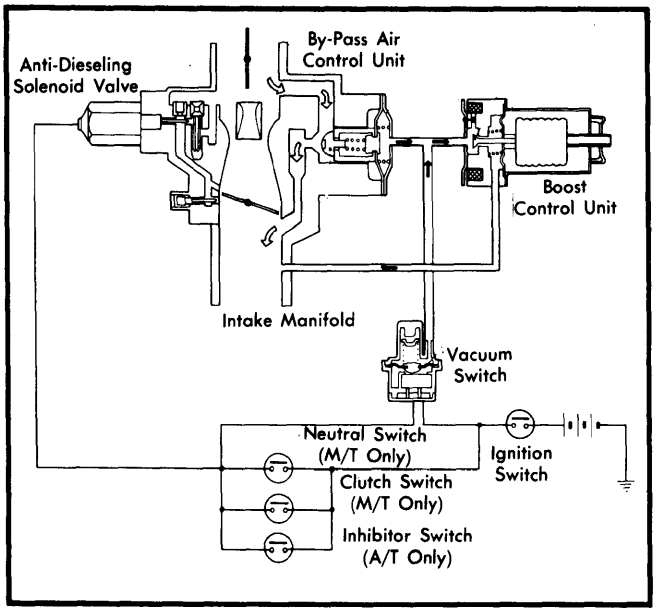

Fig. 1 Schematic of Fuel Shut-Off System (510 & Pickup Models)

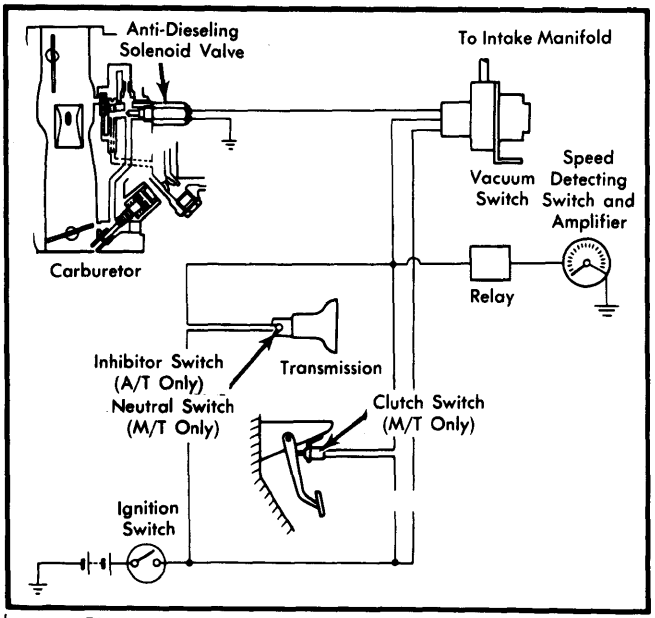

Fig. 2 Schematic of Fuel Shut-Off System (210 & 310 Models)

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 and inhibitor switch) so that system can be deactivated under certain conditions, even though vacuum is above the pre-determined level. The speed detecting switch with amplifier is installed on 210 and 310 models to control the fuel shut-off system during pre-determined vehicle speeds.

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 SWITCH (MAN. TRANS. ONLY)

When the transmission is in neutral, the neutral switch (located on the transmission case) is activated. This sends an electrical signal to deactivate the anti-dieseling solenoid valve. The neutral switch, located on the transmission, is activated when the transmission is in the "N" or "P" position. When activated, an electrical signal is sent to deactivate the anti-dieseling solenoid valve.

INHIBITOR SWITCH (AUTO. TRANS. ONLY)

Located on the transmission, the inhibitor switch causes electrical current to flow through the vacuum switch when transmission is in the "P" or "N" position.

SPEED DETECTING SWITCH WITH AMPLIFIER (210 & 310 MODELS ONLY)

The speed detecting switch with amplifier is mounted in the speedometer head. For additional information refer to "Datsun Mixture Ratio System" article in this section.

CLUTCH SWITCH (MAN. TRANS. ONLY)

Located on the clutch pedal bracket, the clutch switch turns "ON" when clutch pedal is depressed and turns "OFF" when pedal is released. When switch is on, electrical current flows through the vacuum switch.

DATSUN FUEL SHUT-OFF SYSTEM (Cont.)

TESTING & ADJUSTMENTS

System Check (210 & 310 Models only) – 1) Visually check fuel shut-off system for proper installation of components and for proper routing of vacuum hoses and wires.

2) With engine warm, disconnect anti-dieseling solenoid valve. Engine should stall. If it does not, replace anti-dieseling solenoid valve assembly.

3) Raise rear of vehicle high enough so that rear wheels are allowed to turn freely. Support with safety stands and block front wheels.

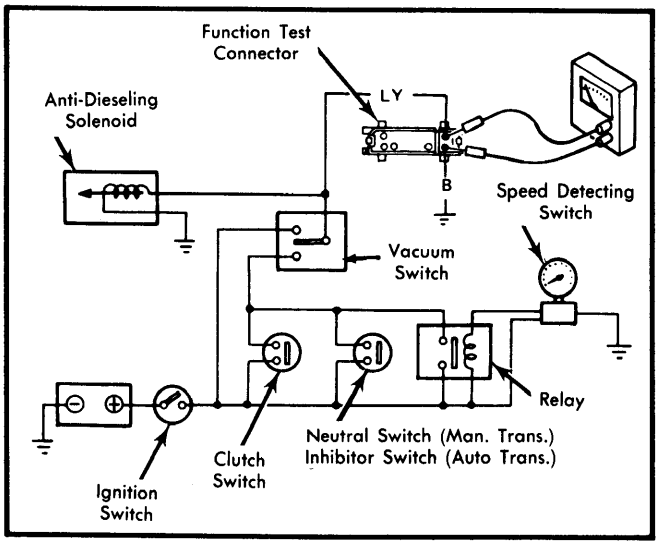

Fig. 3 Fuel Shut-Off System Test (210 & 310 Models)

4) Connect voltmeter across Blue/Yellow and Black terminals at function test connector (located under left side of instrument panel). Start engine and place transmission in "D" (Auto. Trans.) or top position (Man. Trans.).

5) Raise vehicle speed to 50 MPH then quickly release accelerator. If voltmeter reads 0 volts at speeds above 40 MPH and if voltmeter reads 12 volts below 40 MPH, fuel shut-off system is operating properly and test is complete. If readings are not correct, continue with individual component testing.

NOTE – *Be sure that vehicle speed does not exceed 55 MPH.*

Vacuum Switch (210 & 310 Models Only) – 1) Connect vacuum gauge to a vacuum fitting on intake manifold. Disconnect electrical connector from vacuum switch and, with a suitable connector, connect terminal C to terminal NC on engine side of harness.'

2) Start engine, increase engine speed to 3000-3500 RPM then release accelerator quickly. At this time manifold vacuum should raise to 23 in. Hg or above and then decrease when engine returns to idle.

3) Test for continuity at connector of vacuum switch side of harness. With manifold vacuum above 23 in. Hg, there should be continuity between C and NO terminals and no continuity between C and NC terminals.

4) With manifold vacuum below 23 in. Hg, there should be continuity between C and NC terminals and no continuity between C and NO terminals. If vacuum switch does not function as described, replace it.

Vacuum Switch (510 & Pickup Models only) – 1) Connect a vacuum gauge to a vacuum fitting on intake manifold and start engine.

2) With engine running at idle and low manifold vacuum, vacuum switch is "ON" and voltage is sent to anti-dieseling solenoid valve.

3) With engine speed at 2500-3000 RPM and manifold vacuum above 24 in. Hg, vacuum switch is "OFF" thus deactivatng anti-dieseling solenoid valve.

4) If vacuum switch does not operate as described, replace it.

Neutral Switch (All Models) – 1) Remove wiring harness at neutral switch (located on transmission case) and connect ohmmeter to neutral switch.

2) With transmission in neutral, ohmmeter should show continuity. With transmission in any other gear position, ohmmeter should show no continuity. If neutral switch does not operate as described, replace it.

Inhibitor Switch (All Models) – 1) Disconnect wiring harness at inhibitor switch on transmission. Connect ohmmeter to wires from inhibitor switch.

2) With transmission in "P" or "N" position, ohmmeter should show continuity. With transmission in any other position, ohmmeter should not show continuity. If inhibitor switch does not operate as described, replace it.

Clutch Switch (All Models) – 1) Disconnect wires from clutch switch (located on clutch pedal bracket) and connect an ohmmeter.

2) With clutch disengaged, ohmmeter should show continuity. With clutch engaged, ohmmeter should not show continuity. If clutch switch does not operate as described, replace it.

Speed Detecting Switch and Amplifier (210 & 310 Models only) – If vacuum switch, neutral switch and inhibitor switch are functioning properly, but system still fails, replace speed detecting switch.

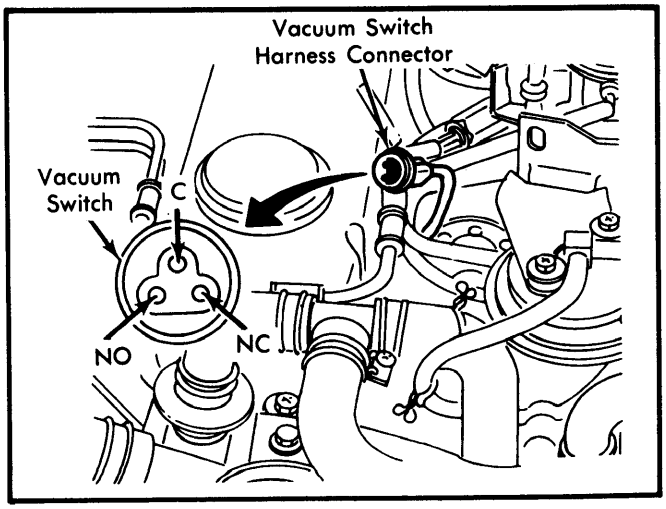

Fig. 4 Testing Vacuum Switch (210 & 310 Models)