1982 Exhaust Emission Systems

DATSUN FUEL SHUT-OFF SYSTEM

Pickup, Sentra, Stanza, 210, 310

DESCRIPTION

The fuel shut-off system is used to reduce HC emissions and fuel consumption during deceleration. The system consists of an anti-dieseling solenoid valve, a vacuum switch (Pickup, Non-M.P.G. Sentra, 210 and 310), a neutral switch (Man. Trans. Exc. Stanza), clutch switch (Man. Trans. Exc. Stanza), and an inhibitor switch (Auto. Trans. Exc. Stanza).

In addition, a speed detecting switch with amplifier and a fuel shut-off relay is used on Sentra (Exc. M.P.G.), 210 and 310. An electronic control unit and relay is used on Sentra M.P.G. An engine revolution switch and throttle valve switch is used on Stanza.

OPERATION

PICKUP, SENTRA (EXC. M.P.G.), 210 & 310

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 Sentra, 210 and 310 to control the fuel shut-off system during pre-determined vehicle speeds.

SENTRA M.P.G.

This system does not operate under cold engine or no-load conditions to prevent engine from stalling. The recovery system from fuel shut-off is also operated when engine speed is below 2000 RPM. The throttle valve switch, attached to the carburetor, actuates in response to throttle valve movement and sends signals to the electronic control unit.

STANZA

The system is operated when engine revolution sensor detects engine speed at higher than 2200 RPM and the throttle valve switch detects that the throttle valve is closed. As engine speed decreases below 1600 RPM, the system does not operate even if the throttle valve is kept closed.

COMPONENT OPERATION

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

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.)

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.

Inhibitor Switch (Auto. Trans.)

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 & Amplifier

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

Clutch Switch (Man. Trans.)

Located on the clutch pedal bracket, the clutch switch is activated when clutch pedal is depressed and deactivated when pedal is released. When switch is on, electrical current flows through the vacuum switch.

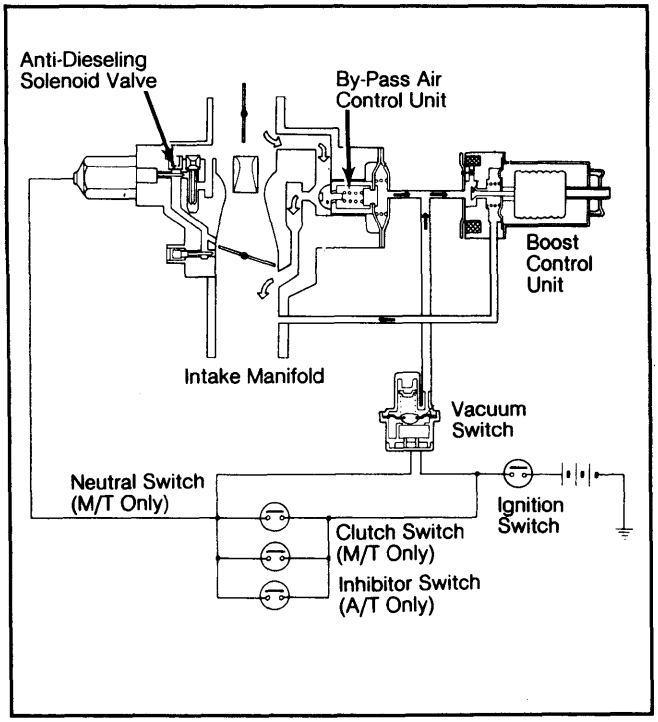
TESTING

SYSTEM CHECK

Pickup

Visually check fuel shut-off system for proper installation of components and for proper routing of vacuum hoses and wires. If okay, check individual components.

Fig. 1: Datsun Pickup Fuel Shut-off System



Sentra (M.P.G.)

Fuel shut-off system is controlled by the electronic control unit. *Refer to "Datsun Electronically Controlled Carburetor" article in this section.*

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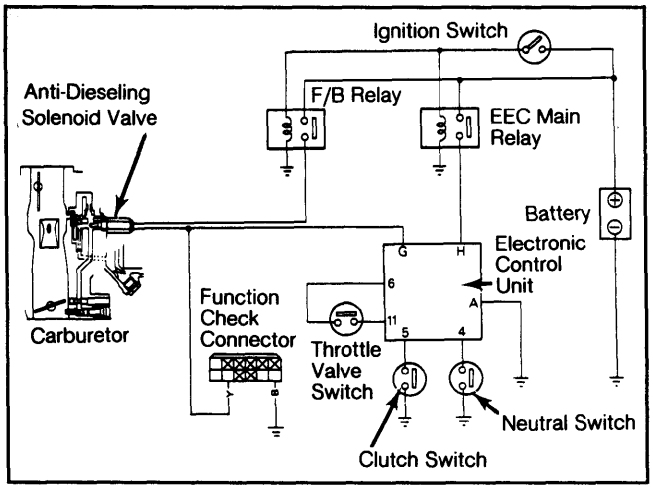
DATSUN FUEL SHUT-OFF SYSTEM (Cont.)

Fig. 2: Datsun Sentra (M.P.G.) Fuel Shut-Off System



Sentra (Exc. M.P.G.) & 310

1) Visually check fuel shut-off system for proper installation of components and for proper routing of vacuum hoses and wires. Connect circuit tester to the function check connector.

2) Disconnect fuel shut-off relay. Turn ignition switch "ON". Voltage should be present across Green/Red (Brown on 310) and Black wires with clutch pedal depressed or transmission in neutral. Reconnect fuel shut-off relay.

3) Start engine and warm to normal operating temperature. Disconnect anti-dieseling solenoid valve connector or vacuum switch connector. Engine should run rough or stall. If not, replace anti-dieseling solenoid valve.

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

5) Connect voltmeter across Brown and Black terminals at function test connector. With engine running, place transmission in top position. Raise vehicle speed to 50 MPH, then quickly release accelerator.

6) If voltmeter reads 0 volts at speeds above 40 MPH (45 MPH on 310) and 12 volts below 40 MPH (45 on 310), fuel shut-off system is operating properly and test is complete. If readings are not correct, continue with individual component testing.

Fig. 3: Datsun Sentra (Exc. M.P.G.) Fuel Shut-Off System

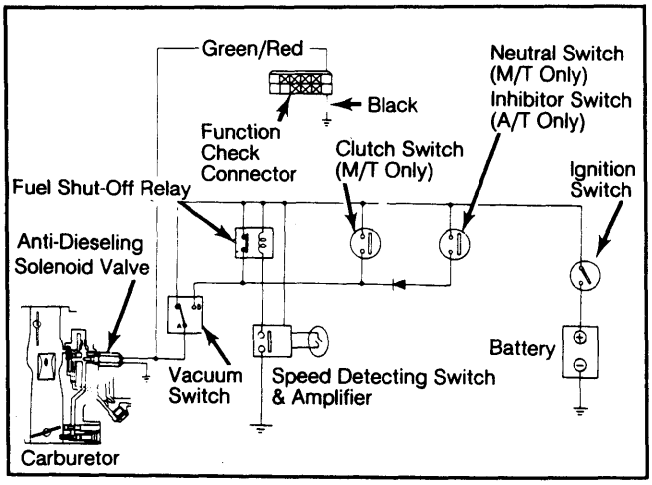
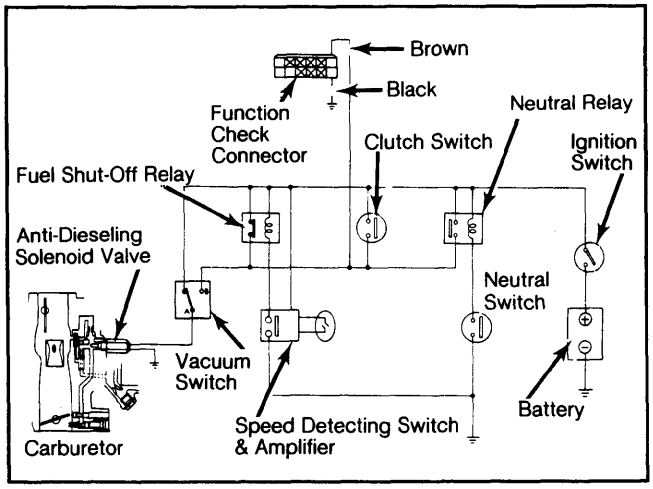


Fig. 4: Datsun 310 Fuel Shut-Off System

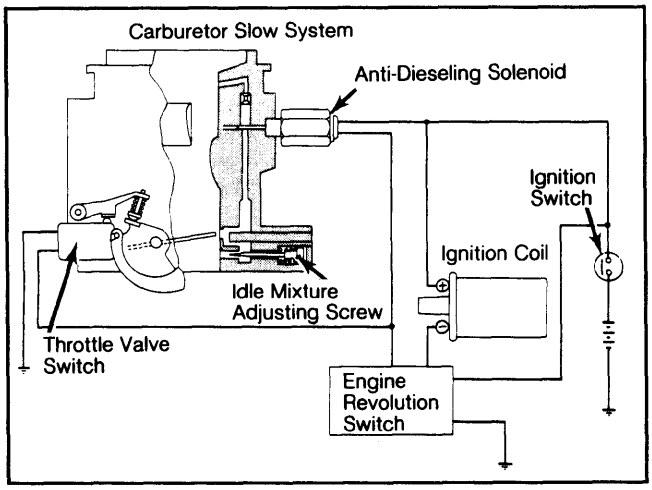


Stanza

1) Disconnect harness connector on carburetor. Reconnect Red wire and Black wire only. Start engine. Increase engine speed to 2500 RPM. Engine should stop.

2) If not, check engine revolution switch harness connections and repair as necessary. If connections are okay, replace engine revolution switch.

Fig. 5: Datsun Stanza Fuel Shut-Off System



210

1) Visually check fuel shut-off system for proper installation of components and for proper routing of vacuum hoses and wires.

2) Start engine and warm to normal operating temperature. Disconnect anti-dieseling solenoid valve connector or vacuum switch connector. Engine should run rough or stall. If not, replace anti-dieseling solenoid valve.

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

4) With engine running, place transmission in top position (Man. Trans.) or in "D" (Auto. Trans.). Raise vehicle speed to 50 MPH, then quickly release accelerator. Check for voltage across Blue/Yellow and Black wires.

5) If voltmeter reads 0 volts at speeds above 45 MPH and 12 volts below 45 MPH, fuel shut-off system

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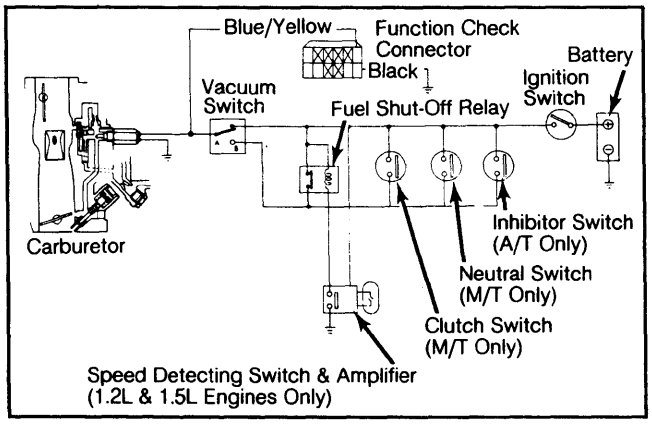
DATSUN FUEL SHUT-OFF SYSTEM (Cont.)

is operating properly and test is complete. If readings are not correct, continue with individual component testing.

Fig. 6: Datsun 210 Fuel Shut-Off System



VACUUM SWITCH

Pickup

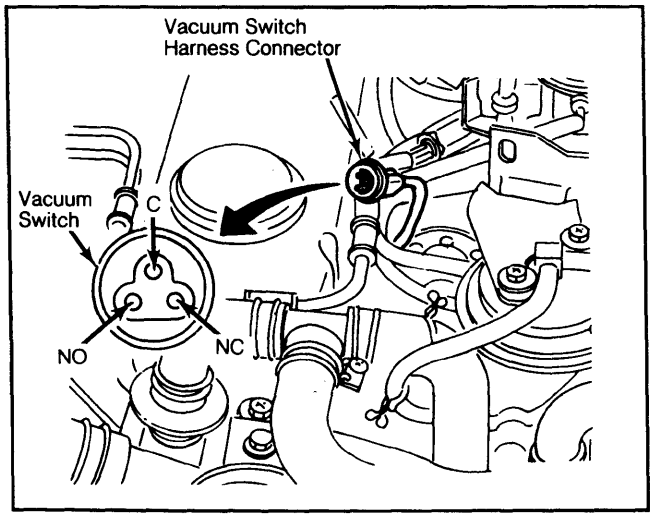
1) Connect a vacuum gauge to vacuum fitting on intake manifold. Start engine. With engine running at idle and low manifold vacuum, vacuum switch is on and voltage is sent to anti-dieseling solenoid valve.

2) With engine speed at 2500-3000 RPM and manifold vacuum above 24 in. Hg, vacuum switch is off thus deactivating anti-dieseling solenoid valve. If vacuum switch does not operate as described, replace it.

Sentra (Exc. M.P.G.), 210 & 310

1) Disconnect vacuum hose and vacuum switch connector. Using vacuum pump, apply 23 in Hg vacuum to vacuum hose. Check that there is continuity between C and NC and no continuity between C and NO. *See Fig. 7.*

Fig. 7: Vacuum Switch Test Connections



Sentra (Exc. M.P.G.), 210 and 310 only.

2) Disconnect vacuum pump. Check that there is continuity between C and NO and no continuity between C and NC. Reconnect hose and connector.

NEUTRAL SWITCH

Pickup, Sentra (Exc. M.P.G.), 210, & 310

1) Remove wiring harness at neutral switch on transmission and connect ohmmeter to it. With transmission in neutral, ohmmeter should show continuity.

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

INHIBITOR SWITCH

Pickup, Sentra (Exc. M.P.G.), 210 & 310

1) Disconnect wiring harness at inhibitor switch on transmission and connect ohmmeter to it. With transmission in "P" or "N" position, ohmmeter should show continuity.

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

CLUTCH SWITCH

Pickup, Sentra (Exc. M.P.G.), 210 & 310

1) Disconnect wires from clutch switch on clutch pedal bracket and connect ohmmeter to it. With clutch disengaged, ohmmeter should show continuity.

2) With clutch engaged, ohmmeter should show no continuity. If clutch switch does not operate as described, replace it.

SPEED DETECTING SWITCH

Sentra (Exc. M.P.G.), 210 & 310

If vacuum switch, neutral switch and inhibitor switch are function properly, but system still fails, replace speed detecting switch.