

1974-79 EXHAUST EMISSION SYSTEMS

Datsun Fuel Shut-Off System

3-103

**All Models (Except
260Z, 280Z, 280ZX, 810)**

DESCRIPTION

On 1974-77 models, a fuel shut-off solenoid is used on all models except 260Z, 280Z and 1977 810. System prevents dieseling (run on) after ignition is turned off. System consists of an electrically actuated solenoid which stops fuel flow to idle circuit.

On 1978 models, system consists of anti-dieseling solenoid, Neutral detecting switch, throttle valve switch, engine RPM switch, clutch pedal switch, and a vacuum switch. The fuel shut-off system is used to reduce fuel consumption during deceleration, and to prevent catalytic converter from overheating.

On 1979 210 models, system is electrically actuated and consists of an anti-dieseling solenoid valve, Neutral detecting switch, throttle valve switch, and an engine RPM switch. On 1979 Pickups, system is vacuum actuated and consists of an anti-dieseling solenoid valve, a Neutral detecting switch (Man. Trans.), a clutch pedal switch, inhibitor switch (Auto. Trans.) and a vacuum switch.

OPERATION

1978 MODELS

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 fuel flow. When 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, so that system can be deactivated, even though vacuum is above the pre-determined level.

1979 MODELS

On 210 models, when engine speed exceeds a pre-determined RPM during deceleration, the carburetor anti-dieseling solenoid valve closes, shutting off fuel flow. See Fig. 1. Whenever engine speed is below this pre-determined RPM, even during deceleration, the fuel shut-off system is inoperative. The system also does not operate when shift lever is in Neutral.

On Pickups, when intake manifold vacuum exceeds a pre-determined level deceleration, the fuel shut-off vacuum switch sends a signal to the anti-dieseling solenoid valve, shutting off fuel flow. See Fig. 2. 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, even though vacuum is above the pre-determined level.

NEUTRAL SWITCH

This switch is turned on when shift lever is in Neutral, and turns off in all other shift lever positions.

ENGINE RPM SWITCH

1979 210 Models - This switch turns off when engine RPM is above 2100 RPM, and turns on when engine speed drops below 1650 RPM. Switch is actuated by ignition system pulses. Switch is located on right side of dash panel, in passenger compartment.

THROTTLE VALVE SWITCH

1979 210 Models - Installed on carburetor, this switch turns on when engine speed is above 1150 RPM and turns off when below 1000 RPM.

CLUTCH PEDAL SWITCH

1979 Pickups - Located on clutch pedal bracket, the clutch pedal switch turns on when clutch pedal is depressed and turns off when pedal is released.

VACUUM SWITCH

1979 Pickups - This switch is made up of two diaphragms, a micro switch, and an altitude compensation bellows. When manifold vacuum rises above the preset level, it overcomes spring tension and actuates a diaphragm. This, in turn, actuates the control valve and transmits vacuum pressure to the vacuum chamber. When vacuum reaches the chamber, the other diaphragm activates to operate the micro-switch, thereby operating the anti-dieseling solenoid valve.

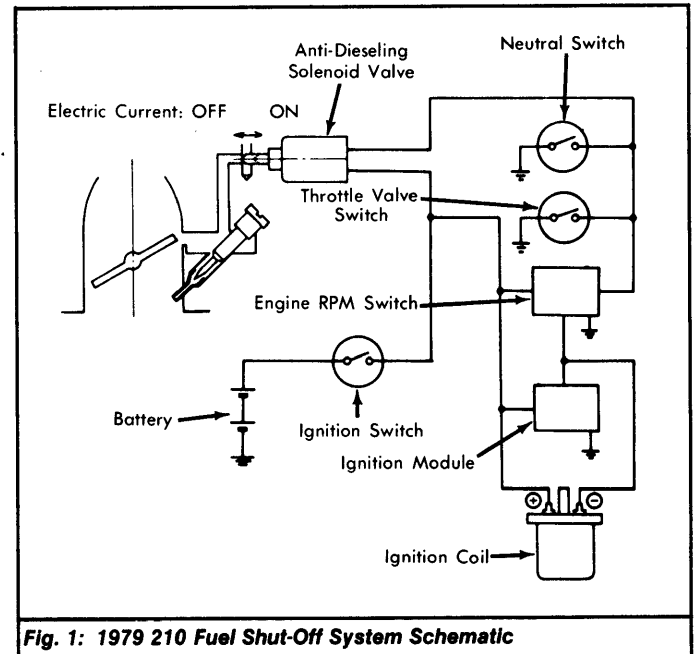


Fig. 1: 1979 210 Fuel Shut-Off System Schematic

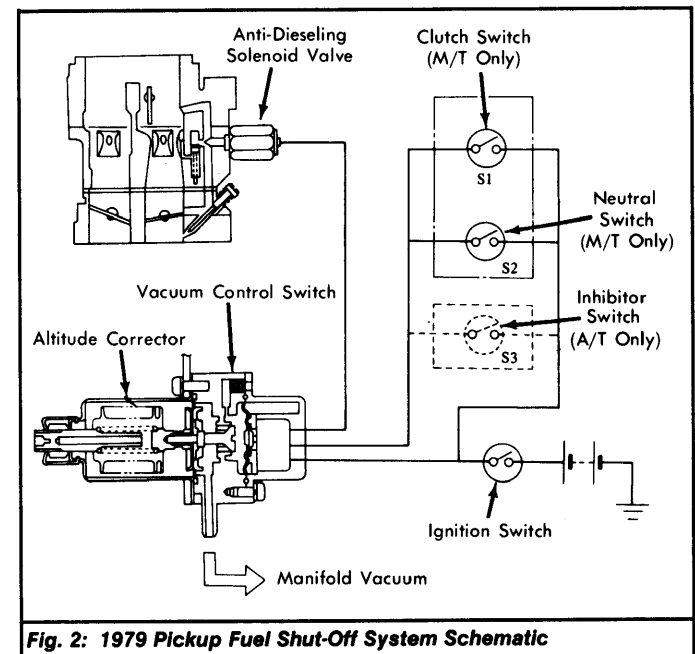


Fig. 2: 1979 Pickup Fuel Shut-Off System Schematic

TESTING

FUEL SHUT-OFF SOLENOID

1974-77 Models - 1) Disconnect fuel shut-off solenoid wire. Turn ignition on. Connect and disconnect fuel shut-off solenoid rapidly several times. Solenoid should make clicking sound. If not, replace fuel shut-off solenoid.

1974-79 EXHAUST EMISSION SYSTEMS

Datsun Fuel Shut-Off System (Cont.)

2) If engine diesels after ignition is turned off, solenoid is stuck open. Perform step 1) and check wiring. If wiring is okay, replace fuel shut-off solenoid.

FUEL SHUT-OFF SYSTEM

1978 Models - 1) With engine idling at normal operating temperature, disconnect anti-dieseling solenoid valve. Engine should stall. If not, replace solenoid assembly.

2) Connect anti-dieseling solenoid wire directly to positive battery terminal. On B210, go to next step. On Pickups, go to step 5).

3) Connect voltmeter to terminals "A" and "B" of function test connector. See Fig. 3. Depress clutch pedal and shift into high gear (Neutral on Auto. Trans.).

4) Increase engine speed to 3000 RPM, release throttle, and check voltage across terminals. If voltage is zero (0) during acceleration, and 12 volts during deceleration, fuel shut-off system is working properly.

5) Connect voltmeter to anti-dieseling solenoid harness and ground. Disconnect clutch pedal switch. Depress clutch pedal and shift into high gear (Neutral on Auto. Trans.).

6) Bring engine speed to 2500-3000 RPM and quickly release throttle. If voltmeter needle deflects from 12 to zero (0) volts, electrical circuit is working properly. If there is no deflection, either fuel shut-off vacuum switch or Neutral switch are not working properly.

7) To determine defective part, reconnect clutch pedal switch. Disconnect fuel shut-off vacuum switch connector. Connect ohmmeter to fuel shut-off vacuum switch. See Fig. 6.

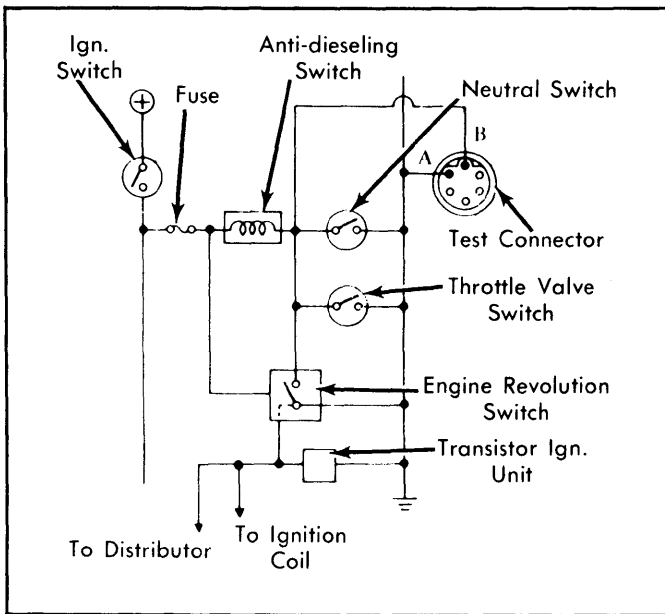


Fig. 3: 1978 B210 Fuel Shut-Off System Test

8) Raise engine speed to 2500-3000 RPM, quickly release throttle, and check continuity between terminals "A" and "B", and between terminals "A" and "C".

9) Fuel shut-off vacuum switch is working properly if polarity is reversed between terminals "A" and "B" and between "A" and "C". If not, vacuum switch is defective and should be replaced.

10) If all test are okay, repeat step 5). If voltmeter does not deflect from 12 volts to zero (0) volts, replace Neutral switch.

11) To check inhibitor relay (Auto. Trans.), apply 12 volts across terminals No. 1 and 4. See Fig. 7. Make sure continuity exists between terminals No. 2 and 3. With no voltage applied, check that no continuity exists between terminals No. 2 and 3. If not, replace relay.

12) On B210, disconnect throttle valve switch. Connect continuity tester to throttle valve switch connector. Start engine, increase engine speed slowly, and check speed at which throttle valve switch is turned on.

13) Decrease engine speed slowly and check speed at which throttle valve switch is turned off. See THROTTLE VALVE SWITCH SPECIFICATIONS table.

THROTTLE VALVE SWITCH SPECIFICATIONS

Engine Operation	Throttle Valve Switch	Engine RPM
Increase	On	950-1350
Decrease	Off	800-1200

1979 210 Models - 1) Warm engine to normal operating temperature. Turn A/C off (if equipped). Start and run engine at idle. Disconnect anti-dieseling solenoid valve connector. Engine should stall. If not, replace solenoid assembly.

2) Reconnect solenoid connector and restart engine. Connect a voltmeter to test connector terminals. See Fig. 4. Depress clutch pedal and shift transmission into 5th gear.

3) With clutch pedal depressed, increase engine speed to 3000 RPM. Quickly close throttle valve and check voltage. Voltmeter should read zero (0) during acceleration, 12 volts during deceleration.

4) Shift transmission into Neutral and repeat test. Voltmeter should read zero (0) during acceleration and deceleration. If not, check Neutral detecting switch, harness, and connections. Repair or replace as necessary.

5) Turn ignition off and disconnect throttle valve switch. Connect voltmeter to throttle switch connector. Start engine and slowly increase speed while noting voltmeter reading.

6) Throttle valve switch should turn on when engine speed reaches 950-1350 RPM. Slowly decrease engine speed and note RPM at which throttle turns off. Throttle switch should turn off at 800-1200 RPM. If not, adjust switch until it turns on/off at specified RPM. See Fig. 5.

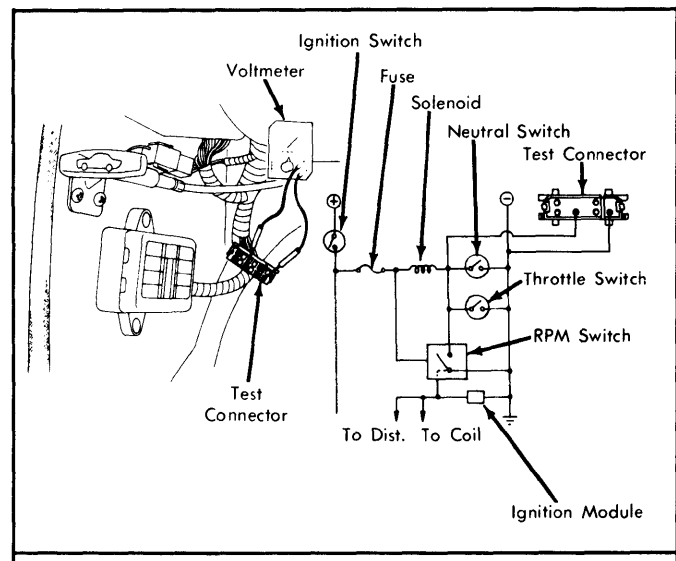


Fig. 4: 1979 210 Fuel Shut-Off System Test

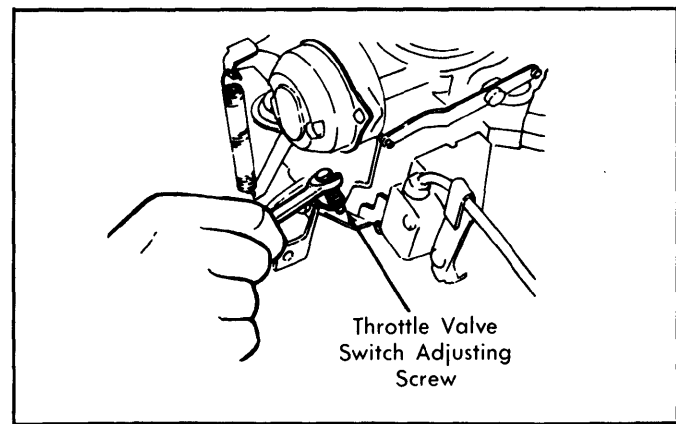


Fig. 5: Adjusting Throttle Valve Switch

1974-79 EXHAUST EMISSION SYSTEMS

Datsun Fuel Shut-Off System (Cont.)

1979 Pickups - 1) With engine idling at normal operating temperature, disconnect anti-dieseling solenoid valve. Engine should stall. If not, replace solenoid assembly.

2) Connect voltmeter to harness side of solenoid connector and to ground. Connect solenoid side of connector directly to positive battery terminal.

3) On models with manual transmission, disconnect clutch pedal switch. Depress clutch pedal and shift transmission into 4th gear. On models with automatic transmission, place transmission shift lever in Neutral.

4) On all models, increase engine speed to 2500-3000 RPM, then quickly close throttle valve. At this time, voltmeter needle should deflect from 12 to zero (0) volts. If not, either the fuel shut-off vacuum switch, Neutral switch (Man. Trans.), or inhibitor switch (Auto. Trans.) is defective.

5) To determine defective part, reconnect clutch pedal switch (Man. Trans.). Disconnect fuel shut-off vacuum switch. Connect an ohmmeter to vacuum switch terminals. See Fig. 6.

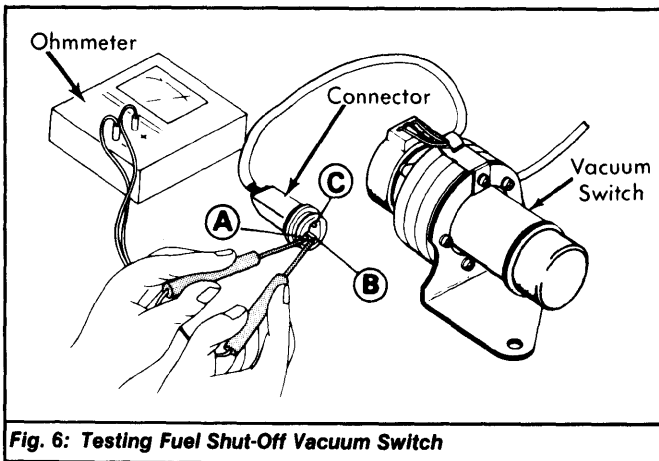


Fig. 6: Testing Fuel Shut-Off Vacuum Switch

6) Increase engine speed to 2500-3000 RPM, then quickly close throttle valve. At this time, check continuity between terminals "A" and "B", and between terminals "A" and "C" of vacuum switch connector.

7) Polarity should reverse between terminals "A" and "B" and between "A" and "C". If not, vacuum switch is defective and should be replaced.

8) Reconnect vacuum switch connector. Repeat test steps 2) through 4). If voltmeter needle does not deflect from 12 to zero (0) volts, Neutral switch (Man. Trans.) or inhibitor switch (Auto. Trans.) is defective and should be replaced.

9) To check inhibitor switch relay on automatic transmission models, remove relay from fender well, next to battery. Apply 12 volts across relay terminals No. 1 and 4. See Fig. 7.

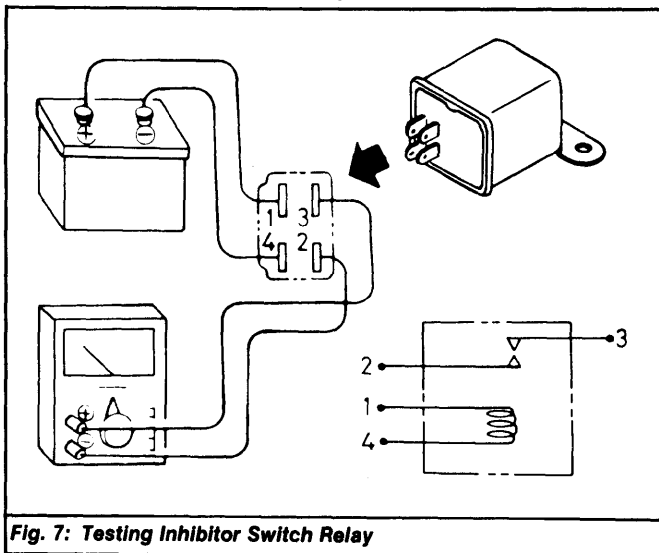


Fig. 7: Testing Inhibitor Switch Relay

10) Make sure continuity exists between terminals No. 2 and 3. Check that continuity does not exist between terminals No. 2 and 3 when no voltage is applied. If test results are as specified, inhibitor switch relay is functioning properly. If not, replace relay.

VACUUM SWITCH OPERATING PRESSURE

1978 Models - 1) With engine at normal operating temperature, disconnect Neutral switch (Man. Trans.) or inhibitor switch (Auto. Trans.). Place transmission in Neutral.

2) Disconnect anti-dieseling solenoid. Connect harness side of connector to a voltmeter and ground the other voltmeter lead. Connect solenoid valve side of connector directly to positive battery terminal.

3) Disconnect fuel shut-off vacuum switch-to-intake manifold vacuum hose. Install a vacuum "T" fitting in hose, then reconnect hose to switch. Connect vacuum gauge to "T" fitting.

4) Start and run engine. Increase engine speed to 2500-3000 RPM, quickly close throttle, and note vacuum gauge and voltmeter readings. Vacuum should rise quickly to at least 24 in. Hg as throttle is closed. Voltage readings should vary as shown in illustration. See Fig. 8.

5) If pressure is lower (higher) than specified, remove rubber cap from fuel shut-off vacuum switch and turn adjusting nut clockwise (counterclockwise) until correct pressure is obtained.

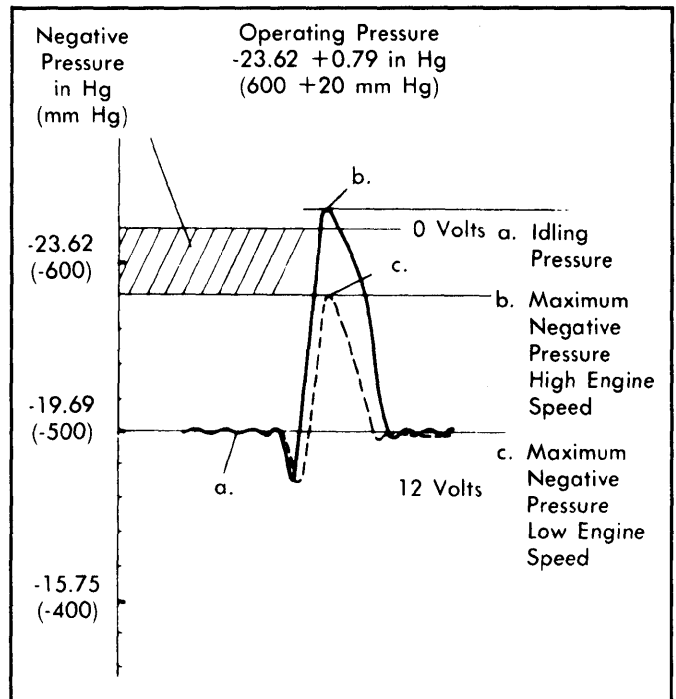


Fig. 8: 1978 Fuel Shut-Off Valve Operating Pressure

1979 Pickups - 1) With engine at normal operating temperature, disconnect Neutral switch (Man. Trans.) or inhibitor switch (Auto. Trans.). Place transmission in Neutral.

2) Disconnect anti-dieseling solenoid. Connect harness side of connector to a voltmeter and ground the other voltmeter lead. Connect solenoid valve side of connector directly to positive battery terminal.

3) Disconnect fuel shut-off vacuum switch-to-intake manifold vacuum hose. Install a vacuum "T" fitting in hose, then reconnect hose to switch. Connect vacuum gauge to "T" fitting.

4) Start and run engine. Increase engine speed to 2500-3000 RPM, quickly close throttle, and note vacuum gauge and voltmeter readings. Vacuum should rise quickly to at least 24 in. Hg as throttle is closed. Voltage should quickly drop from 12 to zero (0) volts as throttle is closed.

5) Check vacuum switch operating pressure with engine at idle. Operating pressure should be 23-24 in. Hg. If not, remove rubber cap from vacuum switch. See Fig. 9. Turn adjusting nut clockwise to increase operating pressure and counterclockwise to decrease pressure.

1974-79 EXHAUST EMISSION SYSTEMS

Datsun Fuel Shut-Off System (Cont.)

NOTE: After each operating pressure adjustment, race engine and recheck pressure to ensure adjustment is correct.

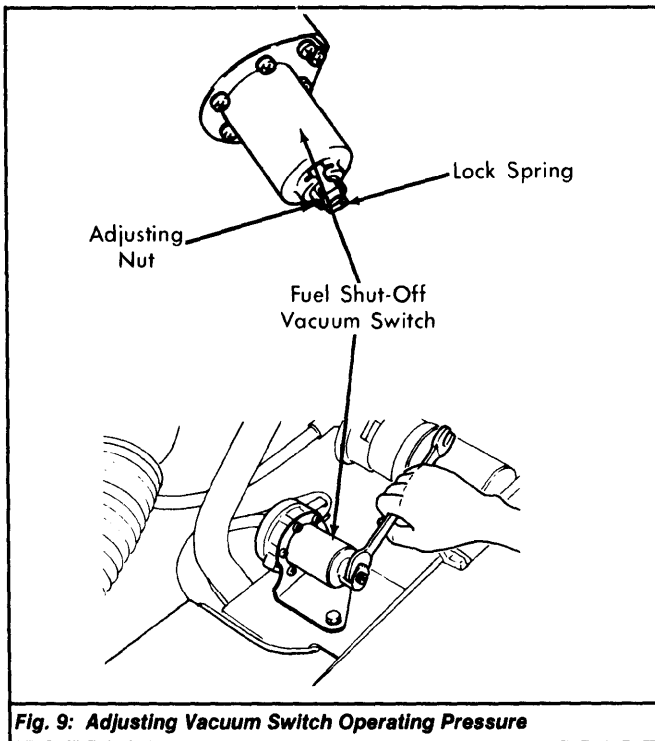


Fig. 9: Adjusting Vacuum Switch Operating Pressure