

DATSUN THROTTLE OPENER CONTROL SYSTEM

210 (Federal Only)
310 (Federal Only)

DESCRIPTION

The function of the Throttle Opener Control System (TOCS) is to slightly open the carburetor throttle valve during deceleration to reduce hydrocarbon (HC) emissions. During deceleration, the intake manifold vacuum rises and the quantity of air/fuel mixture is not sufficient for normal combustion to continue. Thus, a large amount of unburned hydrocarbons is emitted. To prevent this, the throttle opener control valve opens the throttle valve and supplies an adequate amount of air/fuel mixture to maintain proper combustion.

The system consists of a servo diaphragm, vacuum control valve, throttle opener solenoid valve, speed detecting switch and amplifier. On models with automatic transmission, an inhibitor switch and relay are used in place of the speed detecting switch and amplifier on the manual transmission models. In addition, all models have an altitude corrector fitted to the vacuum control valve to automatically regulate the operating pressure in response to the altitude at which vehicle is operated.

OPERATION

When the manifold vacuum increases during deceleration, the vacuum control valve opens to transfer vacuum to the servo diaphragm chamber, and the carburetor throttle valve opens slightly. With the throttle valve open, fresh air is sucked into the combustion chamber, allowing for complete burning of the air/fuel mixture and a reduction in HC emissions.

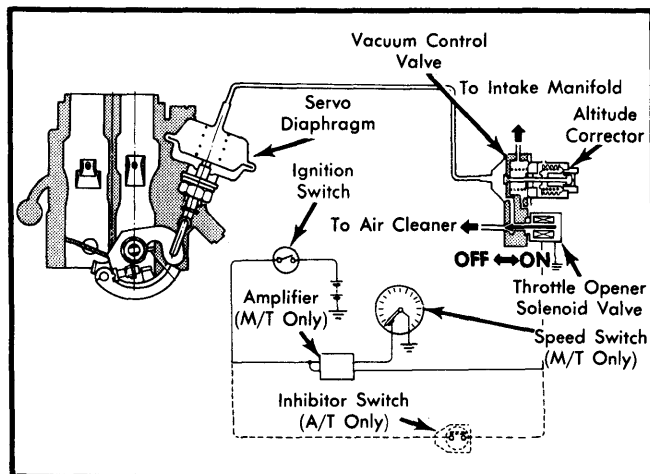


Fig. 1 Schematic of Datsun Throttle Opener Control System (TOCS)

THROTTLE OPENER SOLENOID VALVE

Manual Transmission Models — The throttle opener solenoid valve is controlled by a speed detecting switch, which is actuated by the speedometer needle. With vehicle speed below 10 MPH, the speed switch is activated, sending an electrical signal to the amplifier. The amplifier builds this signal to a degree large enough to actuate the throttle opener solenoid. With the solenoid actuated, the servo diaphragm is opened to the atmosphere and the diaphragm does not operate.

Automatic Transmission Models — With shift lever in "N" or "P", the inhibitor switch on the transmission is turned "ON", and the throttle opener solenoid is actuated. With solenoid actuated, the servo diaphragm is opened to the atmosphere and the diaphragm does not operate.

TESTING & ADJUSTMENTS

THROTTLE OPENER CONTROL SYSTEM

NOTE — During the following test procedures, the volt and ohmmeter must be connected to the system test connector to check voltage and continuity. See Fig. 2 for location of the test connector.

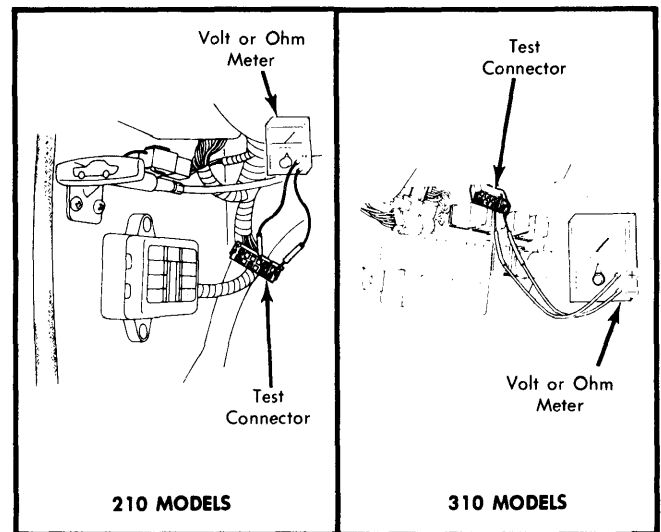


Fig. 2 Location of System Test Connector

Manual Transmission Models — 1) With ignition switch "OFF", check for continuity between the two test connector terminals specified in Fig. 3. If continuity does not exist, replace throttle opener control solenoid.

2) Next, turn ignition switch "ON" and check voltage across the same two terminals. Voltmeter should show battery voltage (12 volts) at this time. If not, check fuse and amplifier and replace defective part.

3) Keep ignition switch "ON" and disconnect speedometer cable from combination meter. Spin speedometer by hand and note voltmeter reading.

4) Voltmeter should show 12 volts with speedometer below 10 MPH and then drop to 0 volts with speedometer above 10 MPH. If not, check amplifier and speed detecting switch and replace defective part.

Automatic Transmission Models — 1) With ignition switch "OFF", check continuity between the two test connector terminals specified in Fig. 3. If continuity does not exist, replace throttle opener control solenoid.

2) Turn ignition switch "ON" and check voltage across the same two terminals, while shifting transmission selector lever through all positions.

3) Voltmeter should show 0 volts with selector lever in "N" and "P" positions, and 12 volts with lever in all other positions. If not, replace inhibitor switch.

1980 Exhaust Emission Systems

DATSUN THROTTLE OPENER CONTROL SYSTEM (Cont.)

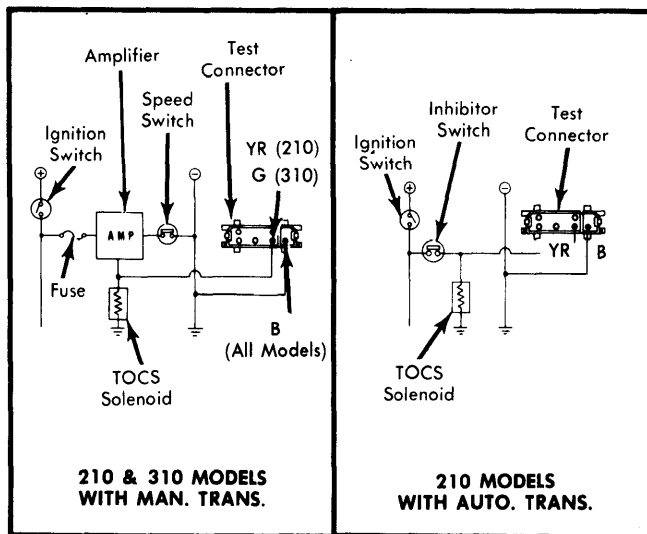


Fig. 3 Circuit Diagram for Throttle Opener Control System Tests

SERVO DIAPHRAGM

- 1) Connect a tachometer to engine, then start engine and allow it to reach normal operating temperature. Disconnect servo diaphragm-to-vacuum control valve vacuum hose at vacuum valve and connect it directly to intake manifold vacuum.
- 2) Servo diaphragm is operating properly if engine speed increases to 1900-2100 RPM when intake manifold vacuum is applied to servo diaphragm.
- 3) If necessary, adjust servo diaphragm adjusting screw to obtain specified RPM. Turn adjusting screw clockwise to increase engine speed and counterclockwise to decrease engine speed.

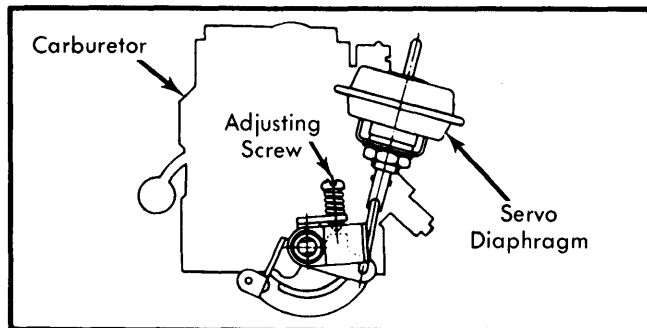


Fig. 4 View Showing Location of Servo Diaphragm Adjusting Screw

THROTTLE OPENER OPERATING PRESSURE

- 1) Disconnect throttle opener control solenoid electrical connector. Connect a vacuum gauge to intake manifold vacuum to check operating pressure. Start engine and allow it to reach normal operating temperature. Check and adjust engine idle speed.
- 2) Run engine under no load and note operating pressure shown on vacuum gauge. Next, increase engine speed to 3000-3500 RPM, then quickly close carburetor throttle valve and note vacuum gauge reading.
- 3) Manifold vacuum should quickly increase to 23.6 in. (600 mm) Hg or more, then gradually decrease to level noted at idle. Operating pressure (vacuum) should be 21.3-22.8 in. (541-579 mm) Hg at idle.
- 4) If necessary, turn adjusting nut on end of vacuum control valve to obtain specified operating pressure. Turn adjusting nut clockwise to increase pressure and counterclockwise to decrease pressure. See Fig. 5.

NOTE — When adjusting throttle opener operating pressure, turn adjusting nut in or out with lock spring in place. Always set lock spring properly to prevent changes in pressure.

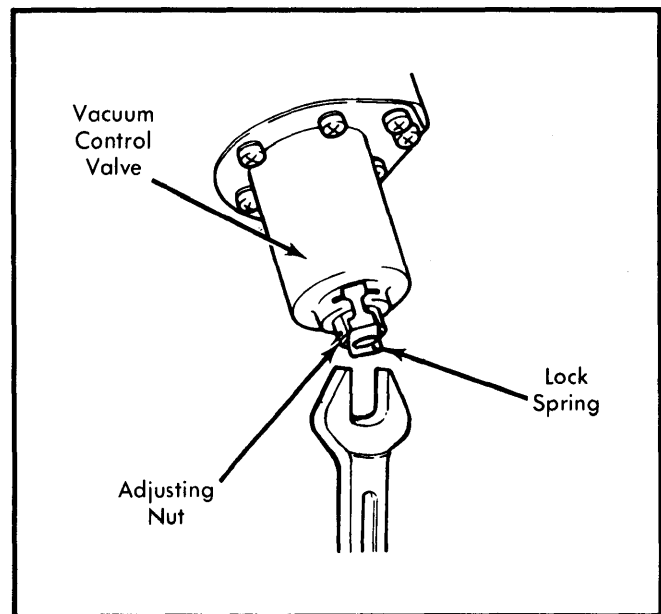


Fig. 5 Adjusting Throttle Opener Control System Operating Pressure