DATSUN MIXTURE RATIO FEEDBACK SYSTEM

280ZX (Calif. Models Only)
810 (Calif. Models Only)

DESCRIPTION

The Mixture Ratio Feedback System closely controls air/fuel ratio through the electronic fuel injection control unit from an exhaust gas sensor located in exhaust system. Major components of this system include an exhaust gas oxygen sensor, the electronic fuel injection control unit and 3-way catalytic converter.

OPERATION

EXHAUST GAS OXYGEN SENSOR

This unit is positioned in the exhaust manifold so it can sense exhaust gas composition as it comes from the engine. The sensor detects oxygen content in order to relay a signal to the electronic fuel injection control unit. Special construction allows the sensor to react to oxygen levels by generating a voltage signal which is inversely proportionate to the amount of oxygen. If the oxygen content of the exhaust gas is high, the voltage signal created by the sensor is low. If the oxygen content is low (indicating a rich mixture), the voltage signal is high.

ELECTRONIC FUEL INJECTION CONTROL UNIT

The Electronic Fuel Injection (EFI) Control unit consists mainly of 3 integrated circuits formed on a printed circuit board. The control unit receives electrical impulse signals from various engine sensors and exhaust sensors. Upon receiving impulse signals from the oxygen sensor, the control unit adjusts injection pulse width so mixture ratio will be within capabilities of 3-way catalytic converter. Control unit has an exhaust gas oxygen sensor monitor lamp for checking oxygen sensor. During engine warm-up, mixture ratio feedback system is inoperative until oxygen sensor reaches operating temperature.

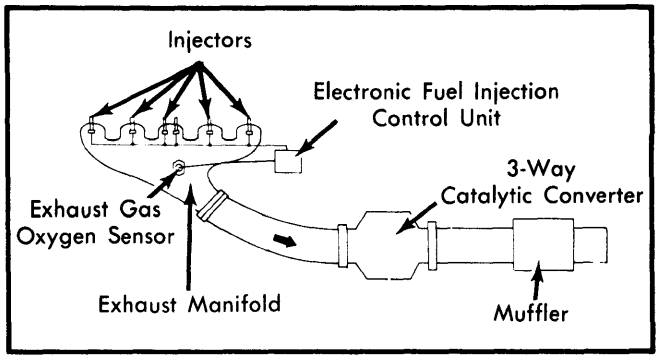

Fig. 1 280ZX and 810 Mixture Ratio Feedback System (California Models Only)

MAINTENANCE

EXHAUST GAS OXYGEN SENSOR

After 30,000 miles, an exhaust gas sensor warning lamp on instrument panel will glow to indicate need for inspection. After inspection, disconnect warning lamp harness connector so warning lamp will not glow. If 24-month time frame elapses before mileage interval, inspect sensor and disconnect warning lamp harness connector.

Removal & Installation – Disconnect battery ground cable. Disconnect exhaust gas sensor harness connector and remove sensor by turning counterclockwise. To install, reverse removal procedure.

TESTING & DIAGNOSIS

NOTE – *The following procedures should be performed with engine at normal operating temperature, air conditioning "OFF" (if equipped), ignition timing and idle speed set to specifications, air cleaner installed and transmission in neutral.*

EXHAUST GAS OXYGEN SENSOR HARNESS

1) Operate engine at 2000 RPM under no-load condition. Monitor lamp on control unit should flash more than 5 times in 10 seconds. If not, continue test. If good, go on to "EFI Control Unit".

2) Turn off engine and disconnect battery ground cable. Disconnect 35-pin EFI harness from control unit. Disconnect exhaust gas sensor harness connector and connect terminal to ground with jumper wire.

3) Check for continuity between terminal No. 31 of 35-pin connector and ground. If continuity does not exist, correct or replace EFI harness. If continuity does exist, reconnect 35-pin connector and battery ground cable.

EFI CONTROL UNIT

1) Remove jumper wire from exhaust gas sensor terminal and leave connector at sensor disconnected. Start engine and operate at 2000 RPM under no-load condition.

2) With exhaust gas sensor harness disconnected, monitor lamp on control unit should not glow. With harness connector terminal grounded, monitor lamp should glow.

3) If monitor lamp does not operate as described, replace control unit. If good, proceed to "Exhaust Gas Oxygen Sensor".

EXHAUST GAS OXYGEN SENSOR

CAUTION – *Ignition switch must be "OFF" to disconnect throttle valve switch harness. Throttle valve switch must be kept 4" (102 mm) away from high tension cable to prevent reception of external noise.*

1) Turn ignition "OFF". Insert CO probe more than 16" (406 mm) into tail pipe. Disconnect throttle valve switch harness connector and connect a jumper wire between harness connector terminal No. 24 and No. 30. See *Fig. 2.*

NOTE – *Connecting jumper wire between connector terminals short circuits enrichment system and allows idle mix to run at full load enrichment. This step is required to enrichen CO level at idle enough to be read by CO meter.*

DATSUN MIXTURE RATIO FEEDBACK SYSTEM (Cont.)

2) Disconnect and plug canister purge hose at intake manifold. Start engine and bring to normal operating temperature. Accelerate engine 2-3 times under no-load conditions and return to idle.

3) Check CO level. With full enrichment and exhaust gas sensor harness connector disconnected, CO level should be less than 5%. If CO level is correct and engine runs smoothly, replace exhaust gas sensor.

4) If CO level is correct and engine runs roughly, adjust CO level. See *Datsun Systems and Tune-Up Service Procedures Section.*

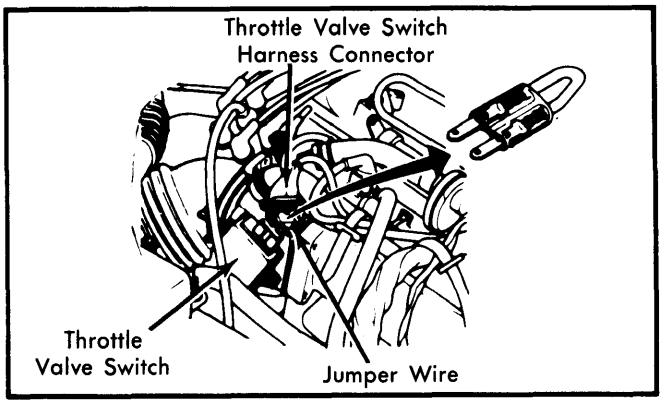

Fig. 2 Schematic of Jumper Wire Connection at Throttle Valve Switch Harness (280ZX Shown – 810 Similar)