DATSUN DIESEL EXHAUST GAS RECIRCULATION

810 Diesel

DESCRIPTION

The Exhaust Gas Recirculation (EGR) system is designed to control the formation of NOx emission by recirculating the exhaust gas into the intake manifold passage through the control valve. The EGR system is composed of the EGR control valve (mounted on the intake manifold), the throttle body, the solenoid valves, and the EGR control unit (behind left kick panel).

OPERATION

The EGR flow is determined by the position of the throttle and EGR valves. Information is signaled to the EGR control unit by the potentiometer (engine load), revolution sensor (RPM) and water temperature sensor (engine coolant). The control unit signals the solenoid valves to open or close, determining vacuum levels at EGR control valve and throttle diaphragm. To assure good driveability and safe operation, the EGR system is deactivated when coolant temperature is either low or extremely high.

EGR System Operation

Throttle Valve	EGR Valve	EGR Flow Rate
Closed	Open	High
Open	Open	Low
Open	Closed	Zero

TESTING

SYSTEM

System Check – **1)** Check vacuum hoses and electrical harness connectors. With engine off, check EGR control valve and throttle body diaphragm/rod for binding or sticking.

2) With engine cold, the EGR control valve should not operate and throttle valve should be open when engine is revved. If the control valve operates or the throttle valve is closed, check water temperature sensor. If sensor is functioning properly, replace faulty EGR control unit.

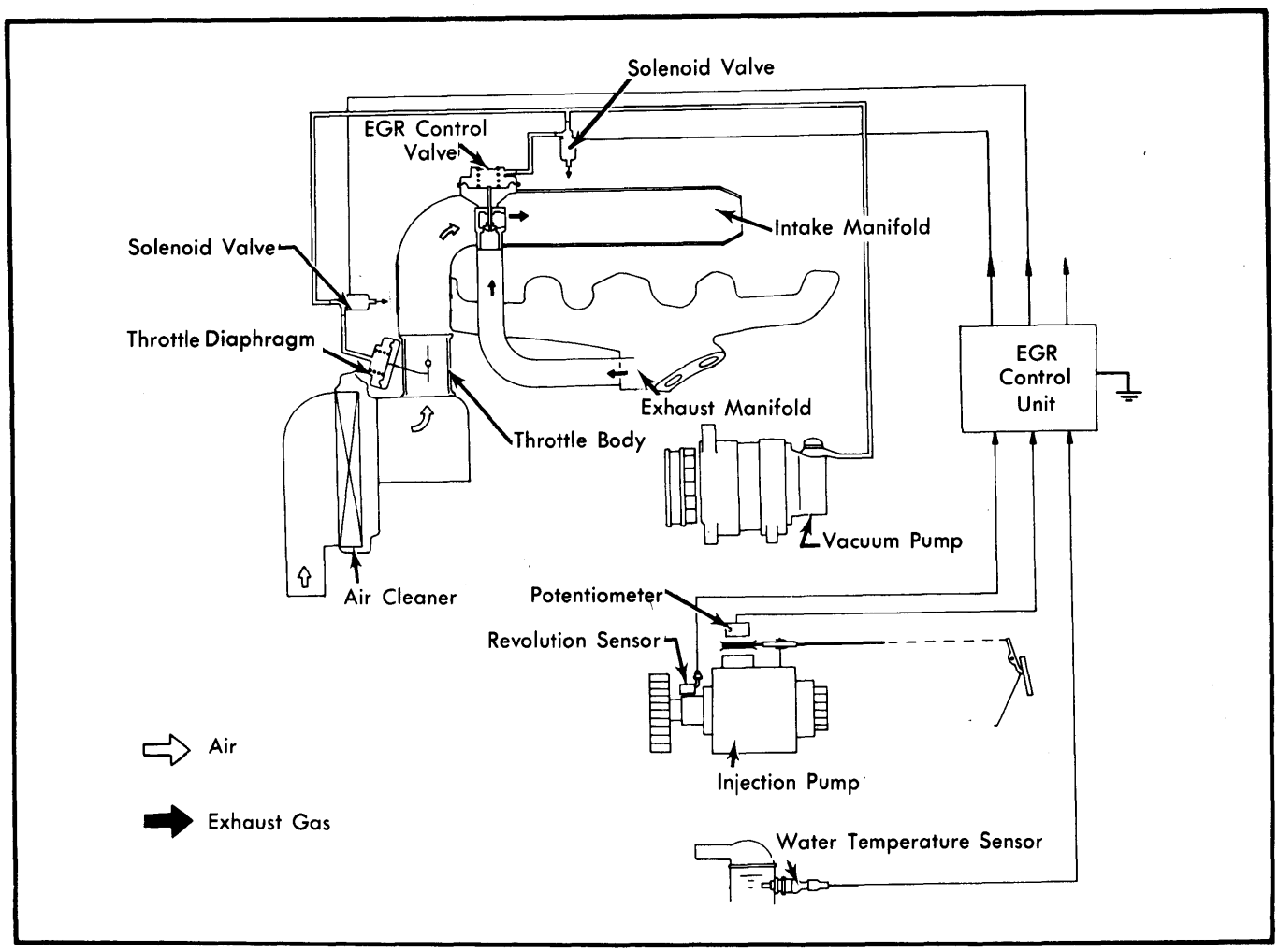

Fig. 1 Components of EGR Control System

DATSUN DIESEL EXHAUST GAS RECIRCULATION (Cont.)

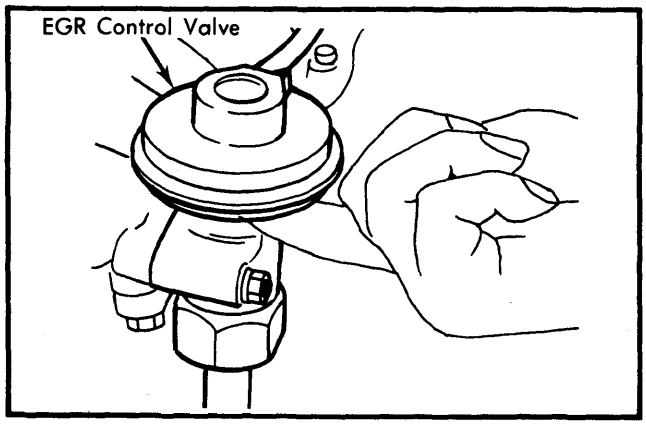

Fig. 2 Checking EGR Control Valve

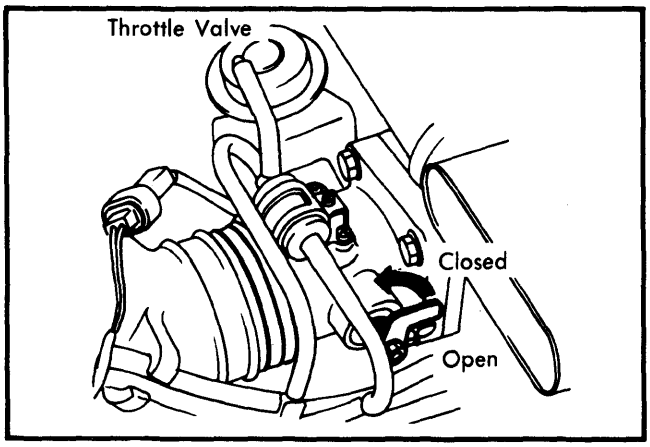

Fig. 3 Checking Throttle Valve Position

3) With engine idling at normal operating temperature, EGR control valve should open and throttle valve should be closed. While gradually increasing engine speed, the throttle valve should open and the control valve should close. If not, check each valve individually.

4) Disconnect harness connector at each solenoid valve and, with engine idling, apply battery voltage to the terminals in one connector. Repeat test with other solenoid valve. When voltage is applied, the EGR valve should operate and the throttle valve should close. If EGR and throttle valves are operating properly, check revolution sensor, potentiometer and electrical connections.

5) If these systems are okay, replace EGR control unit. If the EGR and throttle valves do not operate as described, check solenoid valves, EGR control valve and throttle diaphragm.

COMPONENTS

EGR Control Valve – **1)** Remove EGR control valve. Visually inspect for wrinkles or other damage to valve body.

2) Apply vacuum to control valve with a hand-operated vacuum pump. Valve should move to full open position and remain there for at least 30 seconds after vacuum is cut off.

Throttle Body (Diaphragm) – **1)** Remove throttle body. Visually inspect for damage.

2) Apply vacuum to throttle diaphragm with a hand-operated vacuum pump. Throttle valve should move to a fully closed position and remain there for at least 30 seconds after vacuum is cut off.

Solenoid Valves – **1)** Remove solenoid valves. Check air passages by drawing air and blowing through valve at designated points. Air flow should exist from B to C, and should be blocked from A to C and A to B. *See Fig. 4.*

2) Apply battery voltage at harness connectors and check air flow again. Flow should now exist from A to B, but not from A to C or B to C.

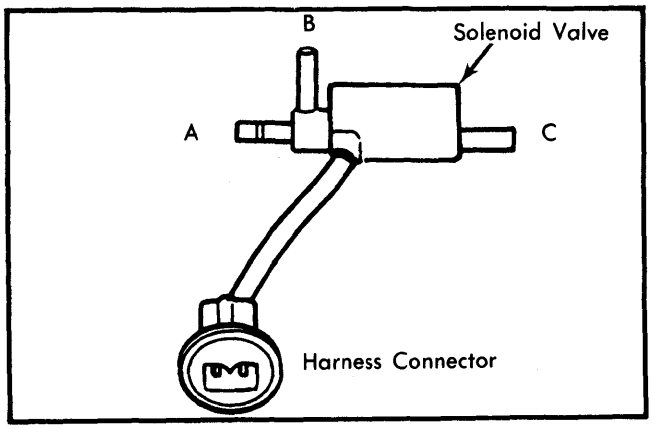

Fig. 4 Solenoid Valve Check Points

Revolution Sensor – Disconnect revolution sensor wiring harness at connector and attach ohmmeter. If ohmmeter shows no resistance, replace sensor.

Potentiometer – **1)** Disconnect potentiometer wiring harness and check resistance between terminals in connector.

2) Connect ohmmeter between Black terminal and Blue/Yellow terminal. Resistance reading should change when the opening angle of the control lever on the fuel injection pump is changed.

3) With ohmmeter between Black terminal and Blue/Red terminal, test results should be the same as previous test.

Water Temperature Sensor – Remove sensor from engine. Attach ohmmeter and place sensor tip in water. When water temperature is 66°-70° F (19°-21° C), resistance should be 2100 to 2900 ohms.

REMOVAL & INSTALLATION

EGR CONTROL VALVE

Removal – Remove retaining nut securing EGR tube to control valve and disconnect tube. Disconnect vacuum hose and remove control valve to intake manifold retaining nuts. Remove valve.

Installation – Reverse removal procedures to install. Make sure that the guide tube that the EGR valve fits over is installed correctly. There is a notch on one end of the mounting flange of the tube which should be installed towards the rear of the vehicle.