

DATSUN GASOLINE EXHAUST GAS RECIRCULATION

200SX 510
 210 810
 280ZX Pickup
 310

DESCRIPTION

The exhaust gas recirculation system (EGR), recirculates exhaust gases into the combustion chamber to reduce combustion temperatures. The reduction in temperature acts to reduce oxides of nitrogen (NOx) emissions. The system consists of an EGR control valve, thermal vacuum valve, and various connecting hoses and tubes. In addition, all 210, 310, 510 & Pickup models are equipped with venturi vacuum transducer (VVT) valve and a vacuum delay valve. Minor differences exist between application of thermal vacuum valves on all models.

OPERATION

Exhaust gases are directed from exhaust manifold, through EGR tube and into EGR control valve. The BPT/VVT valve monitors exhaust pressure in order to control intake manifold vacuum applied to EGR control valve. The EGR control valve regulates actual amount of exhaust gas to be recirculated into intake manifold. Open/Close operation of EGR control valve is directed by the thermal vacuum valve which operates on carburetor vacuum and engine coolant temperature. EGR system does not operate at idle or under full throttle (heavy load) conditions, when coolant temperature is low (thermal vacuum valve closed), or when exhaust pressure is low.

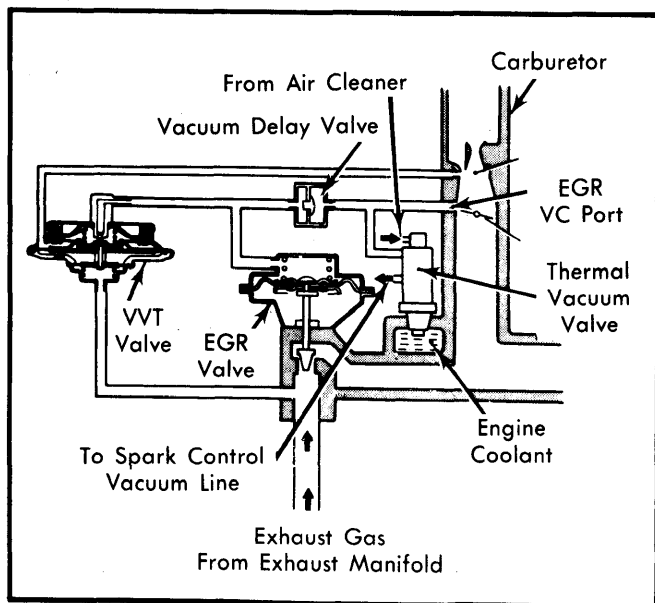


Fig. 1 210, 310, 510 & Pickup EGR System

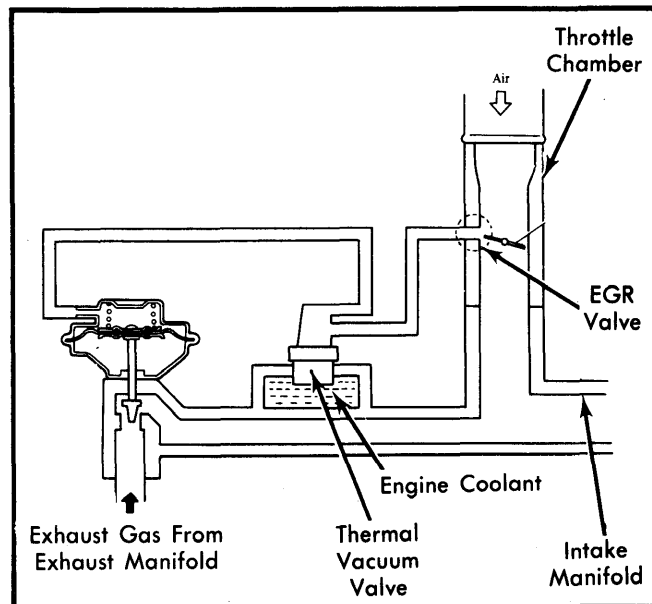


Fig. 2 200SX, 280ZX & 810 EGR System

TESTING

EGR SYSTEM

- 1) With engine stopped, visually inspect entire EGR system and clean as necessary. Replace hoses that are cracked or broken. Inspect EGR valve for signs of binding or sticking by moving valve diaphragm upwards with finger.
- 2) With engine running, check operation of EGR valve and thermal vacuum valve by placing finger on diaphragm of EGR valve and checking diaphragm movement.
- 3) With engine coolant temperature below "Closed" value shown in following table, increase engine speed to 3000-3500 RPM. EGR valve diaphragm should remain closed.
- 4) With engine coolant temperature above "Open" value shown in table, increase engine speed to 3000-3500 RPM. EGR valve diaphragm should open and allow exhaust gas recirculation.
- 5) If EGR valve does not operate as indicated, disconnect EGR valve-to-thermal vacuum valve vacuum hose at EGR valve. Increase engine speed to 3000-3500 RPM and check for vacuum at end of disconnected hose.
- 6) If vacuum is present, check EGR, VVT, thermal vacuum, and vacuum delay valves on 310 models. If vacuum is present, on all other models, replace EGR valve. If vacuum is weak or not present, replace thermal vacuum valve.

DATSUN GASOLINE EXHAUST GAS RECIRCULATION (Cont.)

Thermal Vacuum Valve Specifications

Application	Valve Closed °F (°C)	Valve Open °F (°C)
200SX	Below 95 (35)	Above 95 (35)
210 & 310	Above 140 (60)	Below 140 (60)
280ZX & 810	131-203 (55-95)	①
510 & Pickup	②	59-140 (15-60)

① - Below 131 (55) & Above 203 (95).
 ② - Below 59 (15) & Above 140 (60).

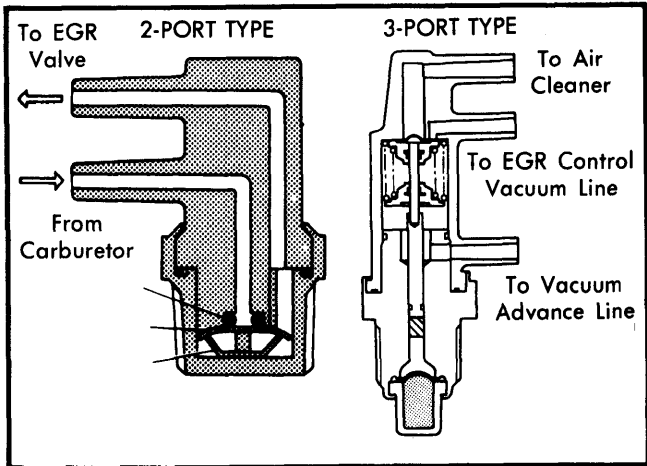


Fig. 5 Thermal Vacuum Valves

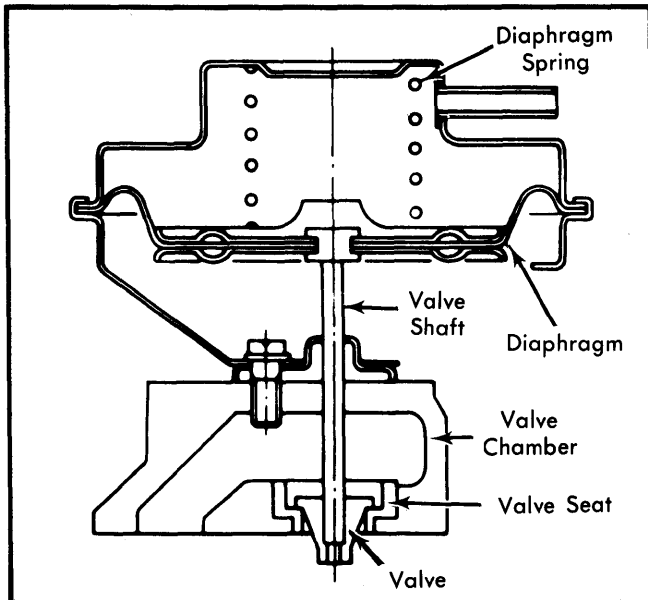


Fig. 3 Datsun EGR Valve (All Models)

EGR VALVE

1) Remove EGR valve from engine and inspect it for damage. Apply vacuum to EGR valve and watch diaphragm movement. Diaphragm should move to full open position and should remain in this position for at least 30 seconds after vacuum is shut off.

2) Before reinstalling EGR valve, clean mating surface with a wire brush and compressed air, and remove foreign matter from around valve and port.

THERMAL VACUUM VALVE

NOTE - A 3-port thermal vacuum valve is used on California 210 & 310 models in place of a 2-port valve, used on all other models. The bottom port of the 3-port valve is used for distributor advance.

1) Drain engine coolant and remove thermal vacuum valve from engine with vacuum hoses attached.

2) Submerge valve and thermometer in a container of water. Heat water and observe temperature. Apply vacuum to top port and check that valve opens and closes according to water temperatures specified in "Thermal Vacuum Valve Specifications" table. If valve does not operate as specified, replace it.

NOTE - Do not allow water to enter thermal vacuum valve during test.

VVT VALVE

Remove VVT valve from engine. Apply slight pressure to one port and slight vacuum to other port. If any leakage is noted, replace valve.

NOTE - VVT valve must be replaced with identical part. Ensure part numbers match.

VACUUM DELAY VALVE

Remove vacuum delay valve. Apply air pressure to EGR valve side of vacuum delay valve. Air should flow through valve. When air pressure is applied to thermal vacuum valve side of delay valve, resistance should be felt.

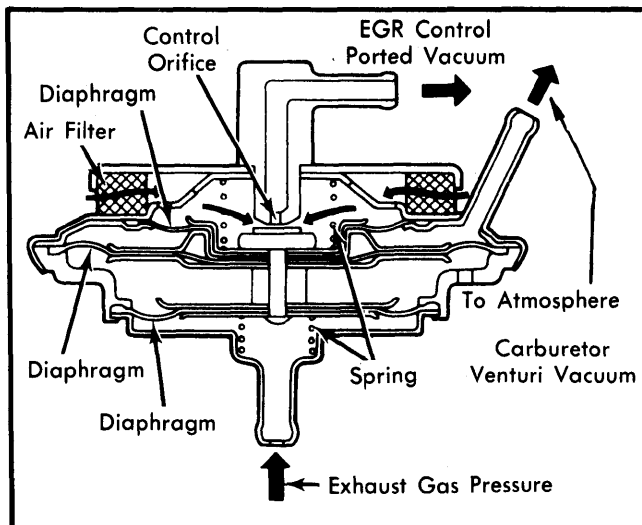


Fig. 4 Datsun VVT Valve (210, 310, 510 & Pickup)