DATSUN INTAKE MANIFOLD VACUUM CONTROL SYSTEM

200SX
510
Pickup

DESCRIPTION

The Intake Manifold Vacuum Control system is installed to reduce HC emissions during deceleration. The system consists of a vacuum control valve mounted on the intake manifold of 200SX models. All other models are equipped with a fender mounted boost control unit and carburetor mounted air by-pass control unit. In addition, all California models are equipped with altitude compensators.

OPERATION

200SX – The vacuum control valve consists of a diaphragm and control valve. When intake manifold vacuum exceeds a pre-determined value, the diaphragm opens the control valve and allows air to by-pass the throttle chamber directly into the intake manfold.

All Other Models – The boost control unit is nitrogen filled and contains a diaphragm and control valve. When intake manifold vacuum exceeds a pre-determined value, the diaphragm opens the control valve. This allows manifold vacuum to act upon the air by-pass control unit.

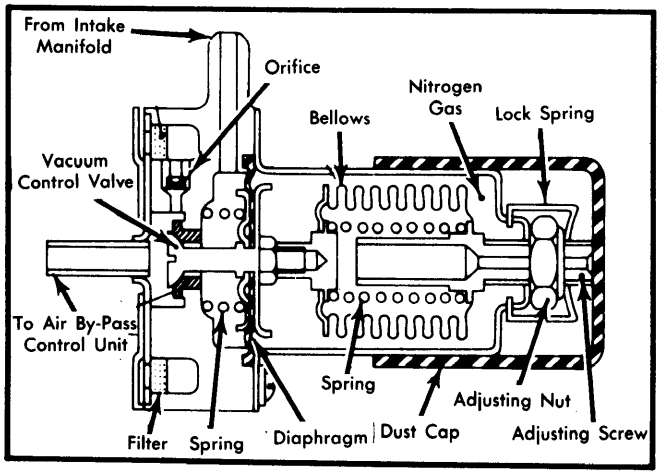

Fig. 1 510 And Pickup Boost Control Unit Schematic

The air by-pass control unit consists of a diaphragm and air control valve. When intake manifold vacuum by-passes the boost control unit, it activates the diaphragm. The diaphragm opens the air control valve which supplies additional air into the intake manifold.

The amount of air entering the manifold is controlled by servo-action of the air control valve and vacuum control valve. Manifold vacuum can be kept very close to the pre-determined value during deceleration by this tightly controlled circuit.

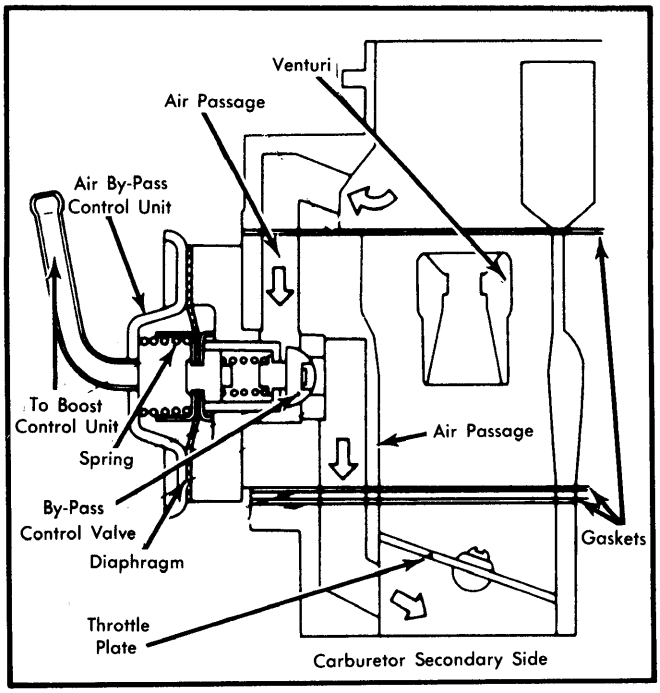

Fig. 2 Air By-Pass Control Unit Schematic

TESTING & ADJUSTING

VACUUM CONTROL VALVE (200SX MODELS ONLY)

1) With engine at normal operating temperature and transmission in neutral, disconnect vacuum hose (3-way connector) from air regulator.

2) Accelerate engine to 3500-4000 RPM and allow engine to return to idle. Manifold vacuum should be felt at air hose. If vacuum is not felt at end of hose, replace vacuum control valve.

BOOST CONTROL UNIT

Checking Boost Control Unit Operating Pressure – 1) To check pressure, engine should be at normal operating temperature, idle speed set to specifications and transmission in neutral. Connect a tachometer to engine and a vacuum gauge to intake manifold.

2) Run engine under no load and note vacuum reading. Increase engine speed to 1500-2000 RPM, then quickly close the throttle. Manifold vacuum should increase to 23.6 in. Hg or more and then gradually decrease to level noted at idle.

Boost Control Unit Operating Pressures (At Sea Level)

Application	Pressure (In. Hg)
510	
Man. Trans.	22.8-24.4
Auto. Trans.	21.3-22.8
Pickup	22.8-24.4

DATSUN INTAKE MANIFOLD VACUUM CONTROL SYSTEM (Cont.)

3) If boost control unit operating pressure at idle is not as specified in "Boost Control Unit Operating Pressures" table, proceed as follows:

Adjusting Boost Control Unit Operating Pressure – 1) Turn adjusting nut as necessary until operating pressure is obtained. See *Fig. 3*. Turning adjusting nut clockwise decreases operating pressure and counterclockwise increases pressure.

2) After setting pressure to specified range, accelerate engine and check adjustment. If lower than specified level, turn adjusting nut until specification is correct. Accelerate engine again and check adjustment. If engine speed cannot be decreased to idle when checking control unit operating pressure, proceed as follows:

3) Turn adjusting nut counterclockwise so operating pressure is .98 in. Hg higher than specified, then turn adjusting nut clockwise so pressure drops to specification.

4) If operating pressure cannot be observed in step **3)**, turn adjuster counterclockwise so operating pressure is 1.97 in. Hg higher than specified, then turn adjuster ½ turn clockwise so pressure drops to specifications.

NOTE – *The boost control unit operating pressure must be set to specifications after above adjustment procedure, even if engine speed cannot be decreased to idling RPM.*

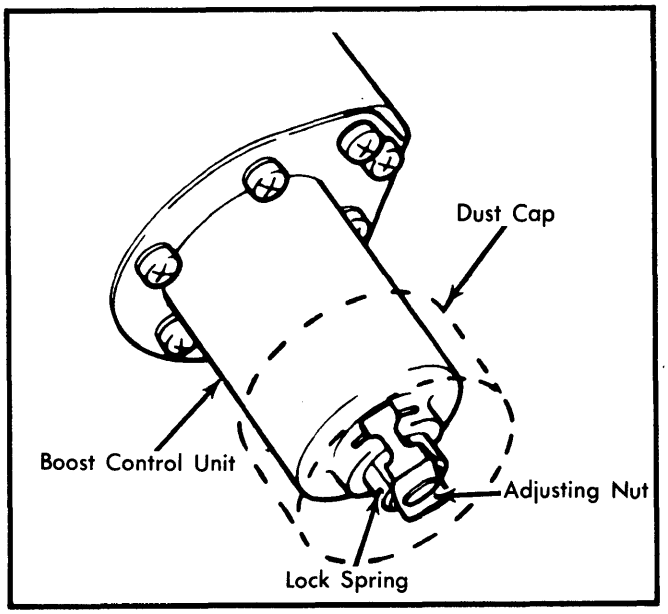

Fig. 3 Adjusting Boost Control Unit Operating Pressure

5) If operating pressure cannot be adjusted, unit must be replaced as an assembly. Ensure model numbers and identification marks match when replacing unit.