DATSUN 1973 240Z ENGINE MODIFICATION

Datsun 240Z (1973)

NOTE — Air Injection is also used with this system.

DESCRIPTION

Several systems are used on the Datsun 240 Z for the control of exhaust emissions. These are as follows:

Throttle Opener Control System — Opens throttle valves of carburetor during deceleration to maintain a burnable mixture in engine and reduce exhaust emissions. Components used in this system are a throttle opener solenoid, a servo diaphragm, a vacuum control valve and a speed switch (Man. Trans.) or an inhibitor switch (Auto. Trans.).

Spark Timing Control System — Provides greater control over ignition timing of engine to reduce emissions and is used only on models equipped with automatic transmissions. Components used in this system are a thermo switch, relay and a dual point distributor.

Air Injection System — Used to reduce exhaust emissions by afterburning in exhaust manifold. *For additional information, see "Datsun Air Injection System" in this section.*

Exhaust Gas Recirculation (EGR) — Reduces NOx emissions by lowering peak combustion temperatures. *For additional information, see appropriate story in EXHAUST EMISSION Section.*

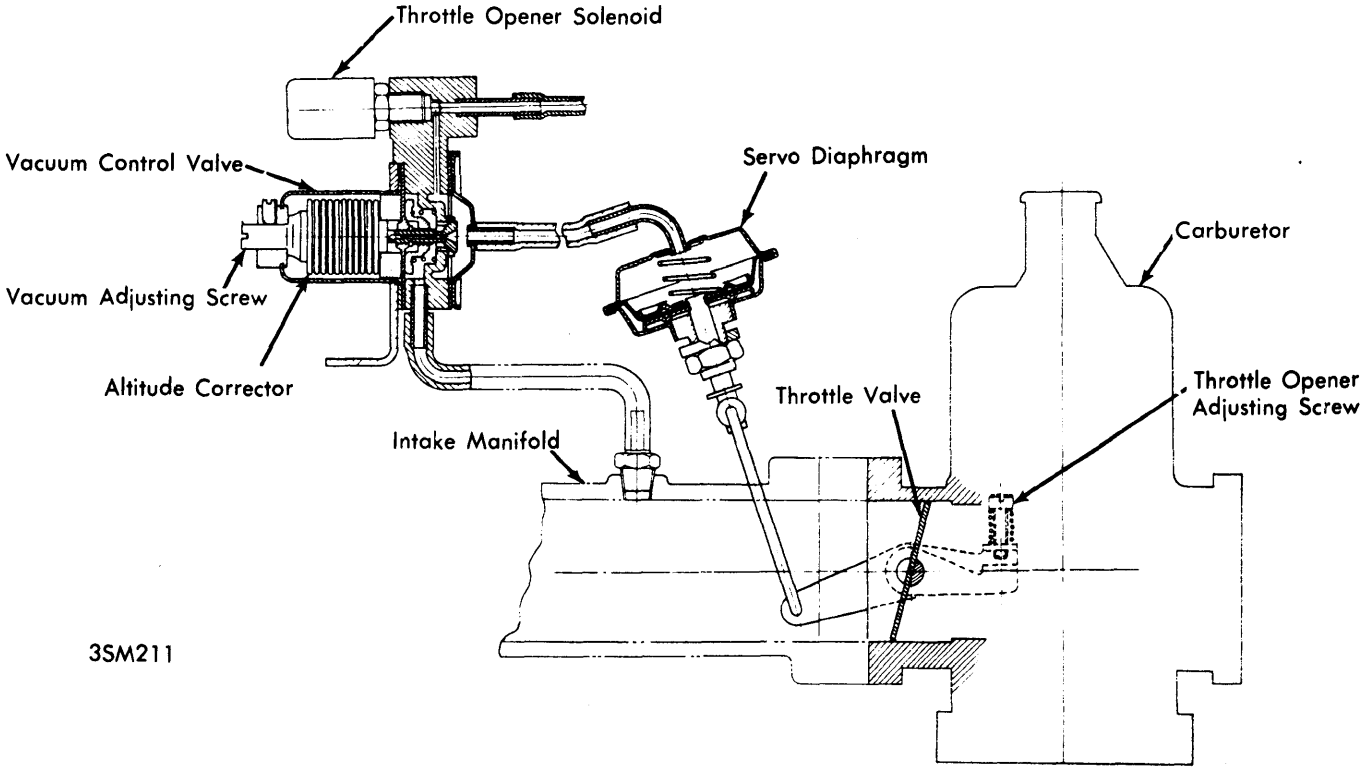
Automatic Temperature Control Air Cleaner — Provides heated air to carburetor to permit smooth engine operation with leaner mixtures. *For additional information, see appropriate story in EXHAUST EMISSION Section.*

OPERATION

Throttle Opener Control System — At moment manifold vacuum increases upon deceleration, control valve opens to transfer manifold vacuum to servo diaphragm chamber and throttle valve of carburetor opens slightly. As car speed decreases, manifold vacuum decreases until a preset point is obtained and throttle opener allows throttle to return to idle position. An altitude corrector is provided with a slight preload to compensate for variation of atmospheric pressure.

Throttle Opener Solenoid — This device overrides throttle positioner when car speed is below 13 MPH (Man. Trans.) or when transmission is in "N" or "P" (Auto. Trans.). On manual transmission models, solenoid is controlled by a speed sensitive switch which is closed below 13 MPH. On automatic transmission models, solenoid is controlled by an inhibitor switch which is closed when transmission is in "P" or "N" position. When solenoid is energized, vacuum from throttle positioner vacuum control valve is allowed to bleed to atmosphere. This releases throttle positioner and allows engine to return to normal idle. When solenoid is de-energized, valve in solenoid closes which allows throttle positioner to function normally.

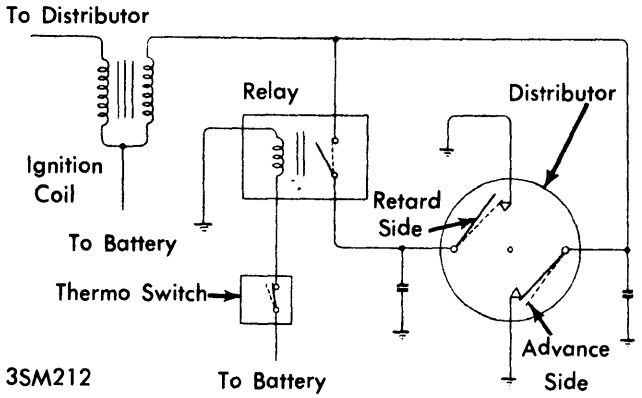
Spark Timing Control System — This system, used on models with automatic transmission only, uses a dual point distrubutor to provide an "Advanced" and "Retarded" ignition setting. The difference between these two timings is 10° at the crankshaft. The "Advanced" timing is used to give optimum engine performance at low temperatures, while "Retarded" position helps reduce exhaust emissions. Retarded points operate whenever passenger compartment temperature is over 41-52°F, while



THROTTLE OPENER CONTROL SYSTEM

DATSUN 1973 240Z ENGINE MODIFICATION (Cont.)

advanced set only operates at temperatures below 30°F. Operation of retarded points is controlled by a thermo switch which operates through a relay.

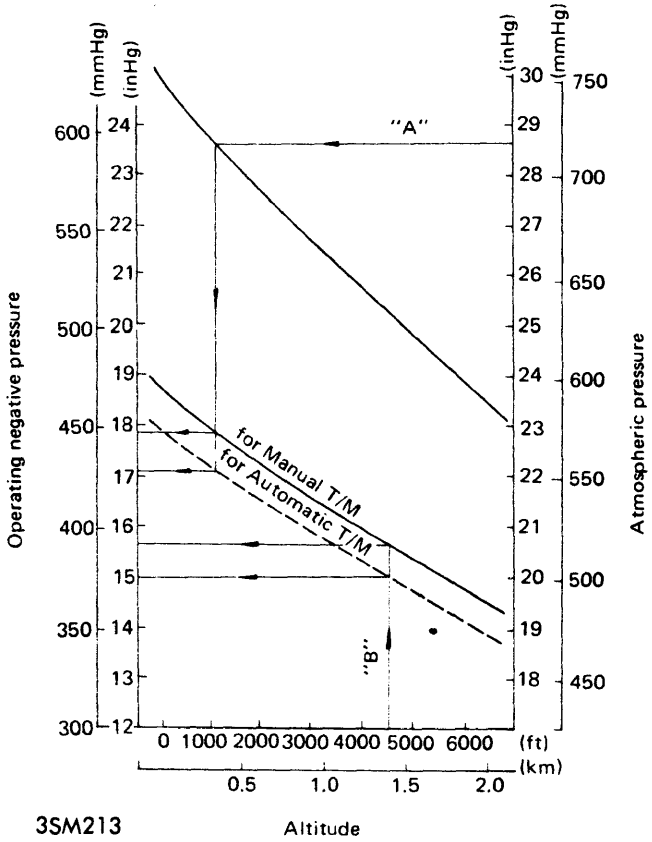


SPARK TIMING CONTROL SYSTEM (AUTO. TRANS. ONLY)

TESTING

Throttle Opener Control System – This system is set at the factory and adjustment is not normally required. If adjustment is needed, proceed as follows:

1) With engine at normal operating temperature and choke fully open, connect vacuum gauge to intake manifold, and tachometer to engine. Disconnect wiring harness to throttle opener solenoid to ensure solenoid is OFF.



CONTROL VALVE OPERATING NEGATIVE PRESSURE (OPERATING VACUUM)

2) Connect servo diaphragm vacuum hose to intake manifold. With high vacuum, servo diaphragm should raise engine speed to 1650-1850 RPM. If RPM is not correct, adjust by turning adjusting screw clockwise to raise RPM and counterclockwise to lower RPM.

3) When atmospherice pressure is known, operating pressure is found, on chart, by following the arrow in line "A" from atmosphere to operating pressure. When altitude is known, operating pressure is found by following arrow in line "B" from altitude to operating pressure.

4) Disconnect servo diaphragm vacuum hose from intake manifold and connect it to vacuum control valve. Connect vacuum hose of control valve to intake manifold. Place transmission in "P" or "N" (Auto. Trans.) or neutral (Man. Trans.). Increase engine speed to 3000 RPM under no load and release throttle rapidly.

5) Adjust vacuum control valve adjusting screw so that operating pressure is held for a few seconds as engine speed decreases from 3000 RPM to 1000 RPM as shown on chart.

Phase Difference of Dual Point Distributor – Disconnect wire from retard side of distributor. With engine idling, adjust timing to 15° BTDC at 600 RPM. Reconnect retard side wire and check that timing is now 5° BTDC. If phase difference is not correct, loosen adjuster plate set screws (two) and rotate adjuster plate as required. Ignition is retarded when plate is turned counterclockwise.

Thermo Switch – Switch is located on right side of dash near horn relay. Disconnect wires from switch and connect ohmmeter. Meter should read zero when temperature inside passenger compartment is above 55°F. If not, replace switch.

ADJUSTMENTS

Following adjustments should be performed in the order indicated:

Idle Speed – With engine at normal operating temperature, remove air cleaner cover and oil damper caps. Check that suction pistons in carburetors can be raised smoothly. Check damper oil level and add engine oil if necessary. Loosen balance adjusting screw and throttle opener adjusting screw completely. Adjust idle to 750 RPM by turning idle speed adjusting screw with transmission in "N". On automatic transmission models shift to "D" and check that idle speed decreases to 600 RPM.

Ignition Timing – Set ignition timing to specifications by rotating distributor with transmission in "N" (Man. Trans.) or "D" (Auto. Trans.). If idle speed changes when timing is set, repeat idle speed and timing adjustments.

Model	Ignition Timing
Man. Trans.	7° BTDC
Auto. Trans. (Retard)	5° BTDC
(Advance)	15° BTDC

Throttle Positioner Adjustment – Connect servo diaphragm directly to intake manifold fitting to by-pass vacuum control valve. Adjust throttle opener adjusting screw until engine speed is approximately 1400 RPM.

Balancing Carburetors – Use a suitable carburetor balancing tool and adjust balance adjusting screw so that air intake of both carburetors is balanced at specified idle speed. Reinstall air cleaner cover.

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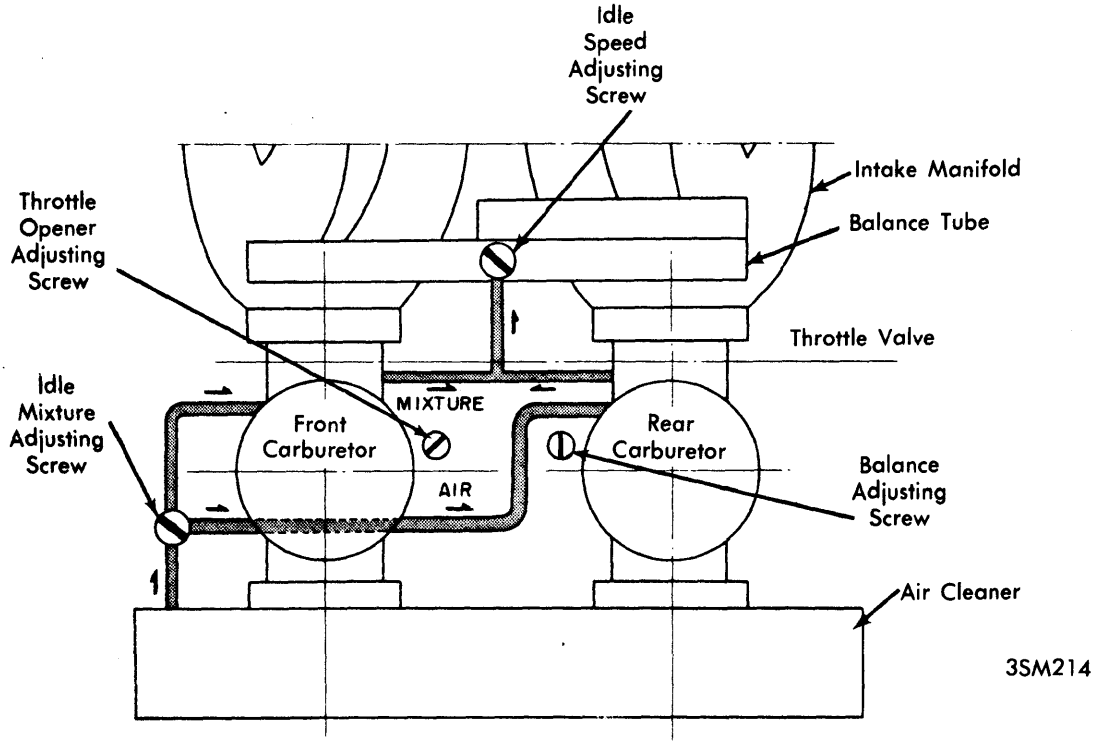
Mixture Adjustment – Disconnect check valve inlet hose and plug check valve. Using CO meter, adjust CO to 1-1.6% (Man. Trans.) or .6-1.2% (Auto. Trans.) with engine running at 1400 RPM. Recheck throttle positioner adjustment and reconnect all vacuum hoses. Reconnect check valve inlet hose to original position and check that CO is below 3% at idle speed with air injection operating.



CARBURETOR ADJUSTMENT