1974-79 EXHAUST EMISSION SYSTEMS
BMW Vacuum Advance/Retard Systems

1974-77 Models

DESCRIPTION

VACUUM ADVANCE/RETARD SYSTEM

The 1974 Bavaria, 3.0CS, and Sedan are equipped with a dual vacuum advance/retard unit. The retard unit receives ported vacuum from carburetor throttle body. This port provides vacuum to retard unit at idle position and when throttle is held open by dashpot. As throttle is opened beyond this point, ignition retard is gradually deactivated. Thus, ignition timing is retarded during idle and deceleration. The vacuum advance unit is controlled by a speed sensor which operates a vacuum solenoid valve. In order to maintain low NOx levels, the vacuum advance system works only when engine speed exceeds 2500 RPM.

The 1974-76 2002 model vacuum advance/retard unit is controlled by a temperature sensor which actuates the vacuum solenoid valve in the vacuum line between advance diaphragm and vacuum source. System supplies vacuum for advance only when coolant temperature is below 149°F (65°C). Above this temperature, vacuum to advance unit is vented.

On 1976 Federal models, vacuum source is intake manifold. On 1975 and 1976 California models, vacuum source is a throttle operated tap, which supplies vacuum only at near idle positions.

In addition, the 1976 California manual transmission equipped models, have a vacuum retard unit that retards ignition timing only if vacuum advance unit is vented. Ignition timing retard occurs only at idle or low throttle openings after engine warms up.

VACUUM RETARD SYSTEM

The 1974 2002 tii, is equipped with a vacuum retard unit only. The retard unit receives its vacuum from intake manifold during deceleration and idle to help reduce exhaust emissions.

The distributor on all 1975-77 models is equipped with a vacuum retard unit. No vacuum advance unit is used. By retarding ignition timing, a larger throttle opening can be obtained, thus improving combustion.

On 1975-76 530i and 3.0Si California models, a vacuum solenoid valve is installed in the line to the retard unit. The vacuum solenoid valve is controlled by an engine speed sensor, which shuts off vacuum retard at engine speeds over 3000 RPM.

On all 1977 4-cylinder engines, the vacuum supply to the retard unit is controlled by a timing valve, which eliminates ignition retard until engine warms up.

TESTING

VACUUM RETARD SYSTEM

1975-76 530i & 3.0Si Models - With vacuum applied to vacuum retard unit (on distributor), check that ignition timing is retarded 13-15 degrees. On California models, test vacuum solenoid valve and coolant temperature switch.

VACUUM SOLENOID VALVE

Ensure that valve is open to vacuum flow when de-energized. Connect solenoid to 12-volt power source. Vacuum solenoid valve should close.

COOLANT TEMPERATURE SWITCH

1975-76 530i & 3.0Si Models - **1)** With coolant temperature below 113°F (45°C) and ignition on (engine off), unplug connector at vacuum solenoid valve. Probe connector terminal with test light. Test light should come on.
2) Start and run engine until coolant temperature is over 113°F (45°F). Test light at vacuum solenoid valve connector should go out. If test light does not work as indicated, temperature switch relay is defective.