

BMW EGR SYSTEM

2002 (1972-73)
Bavaria (1972-73)
3.0 (1972-73)

DESCRIPTION

The BMW Exhaust Gas Recirculation (EGR) System routes a controlled amount of exhaust gases into intake manifold to reduce peak combustion temperatures and hence, NOx emissions. System consists of a vacuum controlled diaphragm valve assembly, a cyclone filter and various connecting hoses and pipes. In addition, six cylinder models also have an engine speed controlled spark advance system to further aid in the reduction of NOx emissions. This system consists of a double acting distributor vacuum unit, a two way magnetic valve connected to advance side of distributor unit, a speed sensing relay which controls two way valve, and various connecting hoses.

OPERATION

EGR System – Exhaust gases are recirculated through return tube to intake manifold as a function of engine load. Flow of exhaust gases is controlled by means of diaphragm valve. Vacuum at carburetor (forward carburetor on six cylinder models) port actuates diaphragm through a connecting tube. Cyclone filter serves to cool exhaust gases and to filter out any particles.

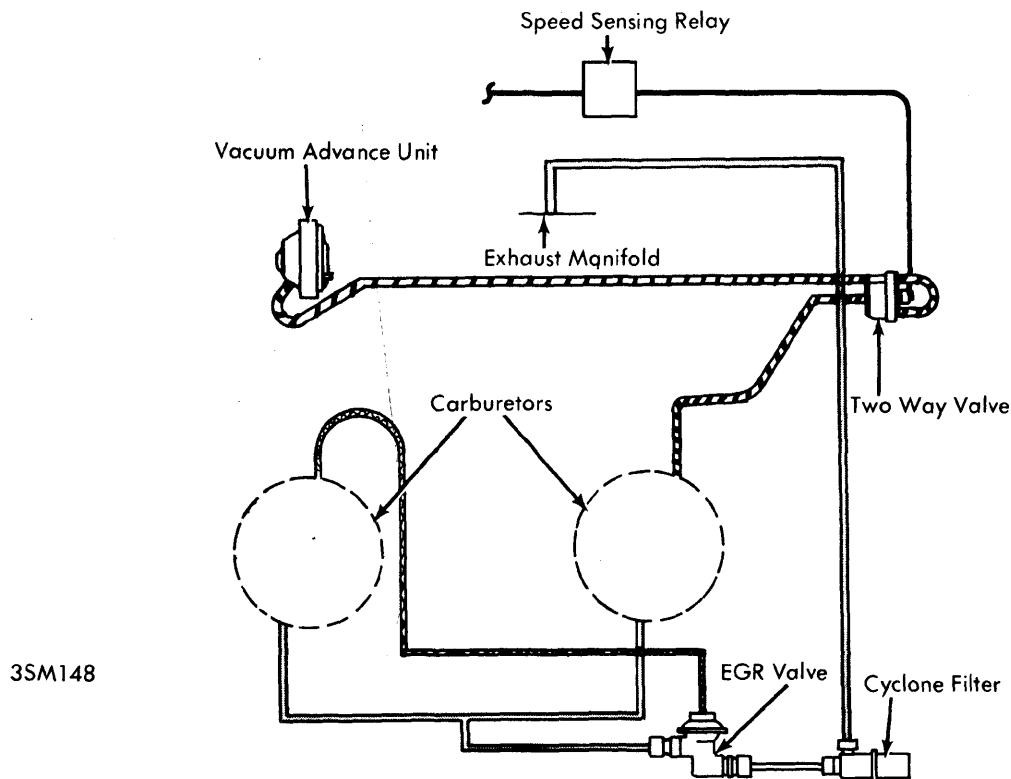
Spark Advance Control System (6 Cyl. Models) – At a speed of over 2500 ± 100 RPM, speed sensitive relay opens circuit to two way valve. This allows valve to pass vacuum to advance side of distributor, thus advancing ignition timing. As

engine speed drops below 2200 ± 100 RPM, relay closes, which causes valve to vent vacuum to the atmosphere. This eliminates vacuum advance. At increasing speeds, up to 2500 RPM, no vacuum advance is supplied.

TESTING

EGR System – With engine idling at 900 ± 50 RPM, remove EGR vacuum hose from carburetor and connect to 1.575" Hg (40 mm Hg) vacuum source. A quick check can also be made by sucking on hose with mouth. With vacuum applied, diaphragm valve plunger should retract and permit flow of exhaust gas to intake manifold. Engine should begin to run rough and speed should drop to about 600 RPM (4 cyl. models) or 700-750 RPM (6 cyl. models). If engine speed only drops slightly, check the following; System pipes and hoses may be partially clogged with deposits, stroke of diaphragm valve plunger may be reduced, or diaphragm valve assembly may be leaking exhaust gases.

EGR Valve – Remove EGR tube from intake manifold and plug opening. Leave all vacuum lines connected. Start engine and allow to idle. No exhaust gas should be emitted from valve. If exhaust gas is emitted, valve is defective and must be replaced. Increase engine speed until valve opens (about 2500 RPM for 4 cyl. models or 2000 RPM for 6 cyl. models). Exhaust gases should be emitted from valve under pressure, otherwise tube from exhaust manifold to valve is obstructed, or valve is defective. If valve does not open, check for vacuum at vacuum control hose. If vacuum is present and valve still does not operate, diaphragm may be leaking. Check by blowing with mouth. If pressure drop is noted, replace diaphragm assembly. If vacuum is present and diaphragm is not defective, plunger is jammed and valve must be replaced.



3SM148

EXHAUST GAS RECIRCULATION SYSTEM
(6 CYL. MODELS)

Exhaust Emission Systems

BMW EGR SYSTEM (Cont.)

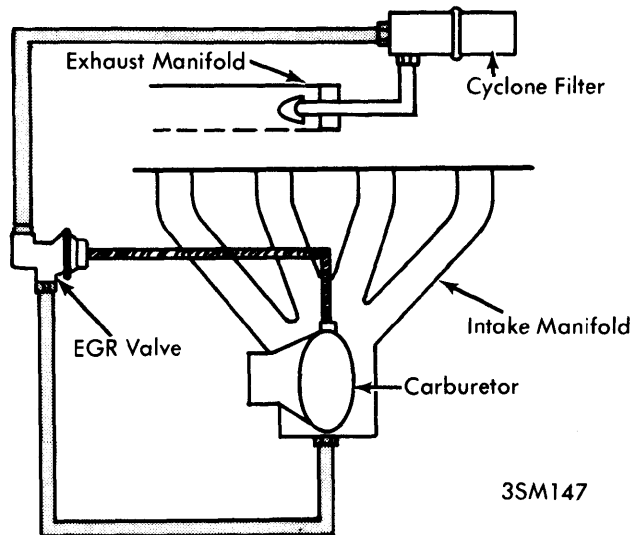
MAINTENANCE

Service EGR system every 16,000 miles as follows:

1) Remove and disassemble EGR system completely. Remove deposits in tubes, connectors, filter and valve by means of appropriate tools. Avoid damaging surfaces of components with sharp tools.

2) Test EGR valve as described above. Reassemble system using graphite grease on threads of tube assemblies. Start engine, if engine runs at idle speed, diaphragm valve assembly is closed. Sprinkle water on tube section connecting valve with intake manifold. If engine speed decreases, system is not tight. Open EGR valve by connecting to outside vacuum source and sprinkle tube from exhaust manifold to valve with water. If engine speed decreases, system is not tight.

EGR Valve & Filter – EGR valve and cyclone filter must be replaced every 56,000 miles of operation.



**EXHAUST GAS RECIRCULATION SYSTEM
(4 CYL. MODELS)**