1974-79 EXHAUST EMISSION SYSTEMS
BMW Transmission Controlled Spark

1979 Models

DESCRIPTION

The Transmission Controlled Spark (TCS) system is used to reduce exhaust emissions by controlling distributor vacuum advance. Through the use of various switches and valves, this system allows vacuum advance only when the transmission is in 4th gear. The system consists of a top gear switch, electromagnetic switching valve, and a thermo valve (320i only).

OPERATION

When transmission is shifted into 4th gear, the top gear switch on the transmission sends an electrical signal to the electromagnetic switching valve. This signal activates the switching valve, closing the vent passage and allowing full vacuum to the advance side of the distributor vacuum unit. In all other gear positions, the switching valve interrupts the vacuum normally directed to the vacuum advance unit and, at the same time, opens the vent passage so that vacuum can be released.

On 320, a thermo valve is added to this system to cut-off vacuum to the switching valve until engine coolant temperature reaches approximately 91°F (33°C).

TESTING

TOP GEAR SWITCH

1) With ignition switch in the "ON" position and engine stopped, shift transmission into 4th gear. Disconnect electrical connector from electromagnetic switching valve.

2) Connect a test light to terminals of switching valve connector. Test light should come on when transmission is in 4th gear and go out when transmission is shifted out of 4th gear. If not, top gear switch is defective and should be replaced.

ELECTROMAGNETIC SWITCHING VALVE

NOTE: 633CSi and 733i models are equipped with two or three electromagnetic switching valves. The switching valve for the transmission controlled spark system can be identified by the Black cap.

1) With ignition switch in the "ON" position and engine stopped, shift transmission into 4th gear. Disconnect switching valve-to-distributor advance unit vacuum hose.
2) Disconnect remaining switch valve vacuum hose at thermo valve (320i) or at throttle housing (633CSi and 733i) and blow air into hose.
3) Switching valve is okay if air passes through it with transmission in 4th gear but is blocked when transmission is shifted out of 4th gear. If not, switching valve is defective and should be replaced.

THERMO VALVE

320i - Disconnect vacuum hoses from thermo valve and blow air through valve. Thermo valve is okay if air flow is blocked when engine coolant is below 91°F (33°C) and flows freely when coolant is above 109°F (43°C). If not, thermo valve is defective and should be replaced.

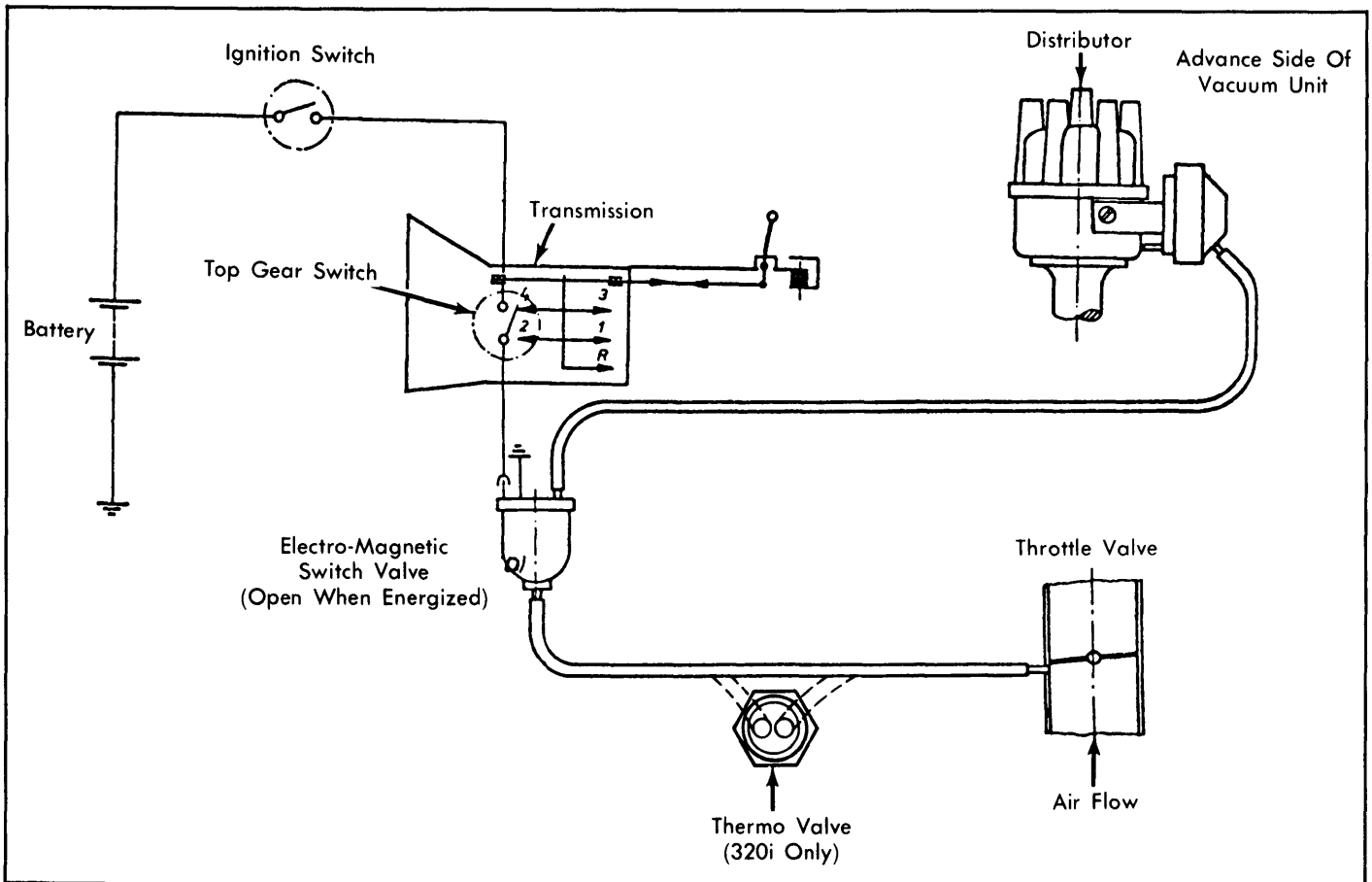

Fig. 1: Schematic of BMW Transmission Controlled Spark System

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