DELCO-REMY ELECTRONIC MODULE RETARD IGNITION SYSTEM

Chevrolet (229" V6 Only)

DESCRIPTION

The Electronic Module Retard (EMR) ignition system is used on Camaro, Impala, Caprice and Malibu models using the 229" V6 engine.

Electronic Module Retard (EMR) system retards timing a fixed amount when engine coolant temperature is below 120°F.

The EMR distributor is easily identified, as it has a vacuum advance unit (none used on EST distributors). It also uses a 5-terminal HEI-EMR module (instead of the 7-terminal HEI-EST module) inside the distributor. See *Fig. 1*. Other components include an EMR vacuum switch, mounted near the front of the engine, and a "TACH" signal conditioner mounted at the front of the right fender, near the coolant recovery tank.

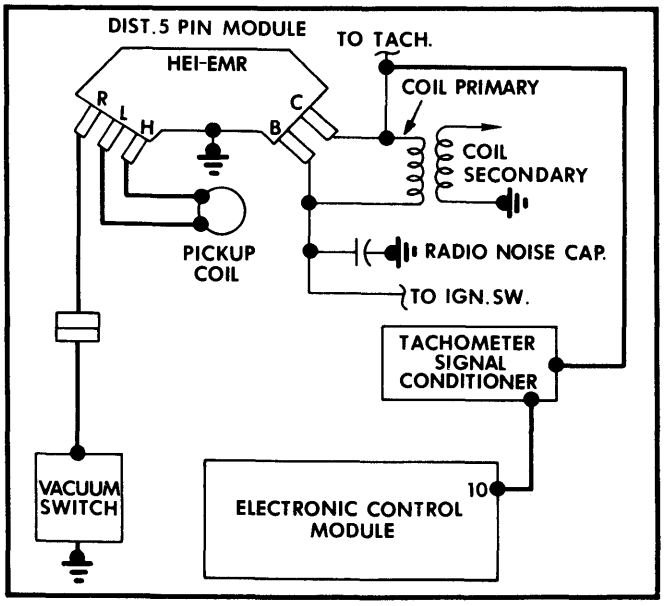

Fig. 1 Delco-Remy Electronic Module Retard Wiring Schematic

OPERATION

In most cases, the ignition system operates as a standard HEI system. The timer core, rotating inside the pick-up coil and pole piece assembly, generates an electrical signal to the HEI-EMR module. This signal turns on and off the primary circuit in the ignition coil. As the primary is turned on and off, a voltage surge occurs in the secondary, firing the spark plugs. Spark timing is varied by the vacuum advance unit to meet varying speed and load conditions.

In the above conditions the EMR vacuum switch (vacuum-operated electrical switch) is in the open position. There is no retard or delay in distributor firing.

At coolant temperatures below 120°F, the distributor thermal vacuum switch permits vacuum to be present at EMR vacuum switch. This closes an electrical switch, connecting the EMR circuit to ground. When the EMR circuit is grounded, the firing of spark plugs is delayed for a calibrated number of crankshaft degrees.

When temperature of the coolant reaches 120°F, the distributor thermal vacuum switch cuts off vacuum to the EMR vacuum switch. The electrical switch then opens the EMR circuit (removes ground), and spark plug firing occurs without delay, being controlled by speed and vacuum.

The Electronic Control Module (ECM) does not control spark timing as is the case with EST systems, but uses the distributor reference signal, modified by the "TACH" signal conditioner for other emission-related purposes. If the HEI-EMR module is removed and/or replaced for any reason, the ignition timing must be checked and set to specifications.

TESTING

NOTE – *For further information on testing the HEI-EMR ignition system, see Delco-Remy Electronic Spark Timing (EST) article in this section. When performing Pick-Up Coil Shorts and Resistance Check, use terminals "L" and "H". Also conduct Ignition Coil Resistance Check and Ignition System Check.*

EMR SYSTEM CHECK

1) Start engine and run at idle speed until it reaches normal operating temperature. Check ignition timing. Then disconnect EMR lead (terminal "R") of 5-terminal module.

2) If there was no timing change, ground distributor side of EMR lead. If timing retards, there is no trouble in EMR circuit.

3) If there is no timing change, however, check for an open or grounded EMR lead to distributor. If lead is OK, replace HEI-EMR module in distributor. If lead is not OK, repair or replace it as necessary.

OVERHAUL

Use same procedure as outlined in article in this section, entitled "Delco-Remy Electronic Spark Timing (EST)" under "Overhaul".