BREAKERLESS IGNITION SYSTEM TROUBLE DIAGNOSIS PROCEDURE

ENGINE SURGE OR ERRATIC MASS CONDITION

When the above condition exists, unless the following checks are performed first, it is likely that major components will be replaced unnecessary, and the problem will not be remedied.

All the wiring should be visually inspected for brittle or cracked insulation, broken strands, and loose or corroded connections. The secondary leads in the coil and distributor cap should be checked to make sure they are pressed all the way down in their inserts. Rubber boots should be tight in place over connections. The outside of the distributor cap and the coil tower should be inspected for cracks which would allow leakage of high voltage to ground. Also, remove the distributor cap so the rotor and inside of the cap can be checked for cracks and carbonized paths.

An engine surge condition much more severe than produced by lean carburetion may be due to the two distributor pickup coil leads being reversed in the connector body, or may be due to an intermittent open in the distributor pickup coil.

ENGINE HARD START OR WILL NOT RUN CONDITION

Disconnect any one spark plug lead and crank engine while holding end of lead approximately ¼" from ground. CAUTION: Do not perform this test by disconnecting the coil to distributor secondary lead or damage to the amplifier may occur.

SPARK OCCURS

Reconnect spark plug lead. The problem is not in the primary circuits. Check fuel system, starting circuit, carburetion, also check secondary circuit as described under "Engine Surge or Erratic Miss."

NO SPARKS OCCURS

1. Reconnect spark plug lead.
2. Connect a tachometer between coil positive (+) terminal and the black/pink wire at the 3-wire connector on left side of firewall.
3. Place selector on 1000 R.P.M. scale, then crank the engine and look for tachometer deflection.

NO DEFLECTION

Make the following tests to determine location of open, short, or abnormally high resistance in circuit.

DEFLECTION

Pinpoint the system trouble by performing "Ignition Distributor Check" detailed below.

CIRCUIT RESISTANCE TEST
(Using Voltmeter)

1. Connect voltmeter between the ignition coil positive (+) terminal and a good ground location.
2. Turn ignition switch to "ON" position and observe voltmeter reading.

0 VOLTS

Indicates an open in ignition circuit between the battery positive terminal and the coil positive terminal. If connections are good, insert a jumper lead between the black/ pink and the black lead at amplifier connector.

- **READS 0 VOLTS** – Indicates an open in the harness to amplifier unit. Repair or replace the harness.
- **READS 5-7 VOLTS** – Indicates open in amplifier unit. Replace amplifier.

0-5 VOLTS

Indicates high starting by-pass resistance or high amplifier resistance. Move voltmeter lead from coil positive to black/pink wire at 3-terminal connector at firewall (use test prod).

- **METER READS OVER 7 VOLTS** – Resistance in amplifier too high – replace amplifier.
- **READS LESS THAN 6 VOLTS** – Resistance too high in starting by-pass wire. (Spec.: approx. 0.7 ohm)

5-7 VOLTS

This is the correct reading, however, when obtained at this stage of the check on a system that has not been functioning properly it would indicate improper triggering action of the distributor pickup coil or amplifier unit. Perform DISTRIBUTOR CHECK.

7-11 VOLTS

Indicates high resistance through coil and ground resistance wire. Move the voltmeter lead from the coil positive to the coil negative (-) terminal.

- **METER DROPS TO 3 VOLTS** – Ignition coil resistance high – replace.
- **DROPS TO 4-8 VOLTS** – Resistance wire has too high a value – replace. (Spec.: approx. 0.45 ohm)

BATTERY VOLTAGE (11-12 VOLTS)

Indicates open in primary circuit. Move voltmeter lead to negative coil terminal.

- **METER DROPS TO 0 VOLTS** – Indicates an open primary circuit in ignition coil. Replace coil.
- **STAYS AT 11-12 VOLTS** – Indicates open in ground resistor wire or connections. Repair or replace harness.

IGNITION DISTRIBUTOR CHECK

Check performance of the distributor pickup coil and the amplifier unit by employing either of the test methods described below.

OHMMETER METHOD

1. Detach distributor connector body from harness connector, and connect an ohmmeter to the distributor leads.
2. Slowly rotate magnetic pickup assembly through full advance travel and read ohmmeter. If reading is not within 500-700 ohms replace pickup assembly.
3. If the reading is within the 500-700 ohm range, disconnect one ohmmeter lead and connect to ground.
4. If reading is less than infinity, replace magnetic pickup assembly.
5. If reading is infinite, repair or replace the installed amplifier unit.

DISTRIBUTOR SUBSTITUTION METHOD

1. Detach distributor connector body from harness connector and connect a spare distributor to the harness connector.
2. Connect a tachometer between coil positive terminal and the black/pink wire at the 3-wire connector on left side of firewall.
3. With the ignition switch "ON," turn distributor shaft by hand and observe tachometer.
4. If tachometer needle deflects, replace magnetic pickup assembly in distributor installed in engine.
5. If there is no needle deflection, replace the installed amplifier unit.

NOTE: Components of the ignition pulse amplifier unit are not serviced separately – only the complete amplifier unit is available for service replacement.