1975-79 DISTRIBUTORS & IGNITION SYSTEMS
Motorcraft Solid State Ignition (SSI) System

1975-76 Ford Motor Co.
1978-79 Jeep

DESCRIPTION

Motorcraft Solid State Ignition (SSI) is a breakerless ignition system that controls secondary ignition voltage. System consists of an Electronic Control Module (ECM), breakerless distributor and oil filled ignition coil.

OPERATION

When ignition switch is on, current is supplied to the coil through a 1.3 ohm primary resistance wire. As distributor shaft rotates, the distributor generates signals causing module to break the primary current, inducing secondary voltage in coil. A timing circuit in module turns primary circuit on again to energize coil for next spark cycle. The dwell varies with engine speed and cannot be changed.

Electronic Control Module - The module uses 6 wires (7 wires on 1975 models). The Red and White wires are ignition feed. The White wire is ignition primary circuit with engine cranking and Red is ignition primary (1.3 ohm resistance) with engine running. The primary current is turned on and off by the control unit through the Green wire between module and coil.

The Orange and Purple wires transmit signal to the module from the distributor stator/magnetic pick-up coil. The Black/Green wire is the distributor ground circuit. The 1975 ECM has one additional power feed wire. A Blue fusible link wire protects ECM from voltage spikes. All other wires are identical.

Distributor - The distributor contains a pick-up coil which produces a magnetic field. The armature turning with the distributor shaft causes the field to collapse. The module senses the signal of the magnetic field and turns the ignition coil on and off.

Ignition Coil - The coil is oil filled. The "DEC" terminal (Green wire) connects to the ECM. The "BAT" terminal (Red wire) connects to the ignition switch, ballast resistor and the control module.

SYSTEM PRECAUTIONS

1) Silicone dielectric grease must be applied to all insulating areas at distributor, coil, and spark plug boots.

2) A ¾" clearance must be maintained at distributor cap mounting edge, spark plug wire terminals, and coil tower, to prevent high voltage arcing to ground.

3) To help prevent radio frequency interference, coat the entire brass rotor tip with silicone dielectric grease to a thickness of about ⅛". Do not remove this grease if discolored, because the grease will maintain its insulating properties.

TESTING

MODULE BIAS TEST

With ignition key, measure voltage at pin No. 4 (Red wire) to engine ground. Reading should be battery voltage. If not, repair Red voltage feed wire. *See Fig. 2.*

BATTERY SOURCE TEST

1) With all coil wires connected, connect a voltmeter between coil battery terminal and ground. Using a jumper wire, connect coil "DEC" terminal to ground. Ensure all lights and accessories are off. Turn on ignition. Reading should be 4.9-7.9 volts.

2) If voltage reading is less than 4.9 volts, check primary wiring and resistance wire for damage and repair (if necessary). If voltage is greater than 7.9 volts, replace resistance wire and retest.

CRANKING TEST

With engine cranking, measure voltage from pin No. 5 to engine ground. If voltage reading is not between 8-12 volts, repair voltage feed (White wire) to module. On 1975 models, perform same test on Blue wire. If voltage reading is not 8-12 volts, repair Blue wire.

DISTRIBUTOR TEST

1) Disconnect distributor connector. Connect a voltmeter between pins No. 3 and 5. Crank engine while observing voltmeter. Voltmeter should oscillate between 0-2.5 volts.

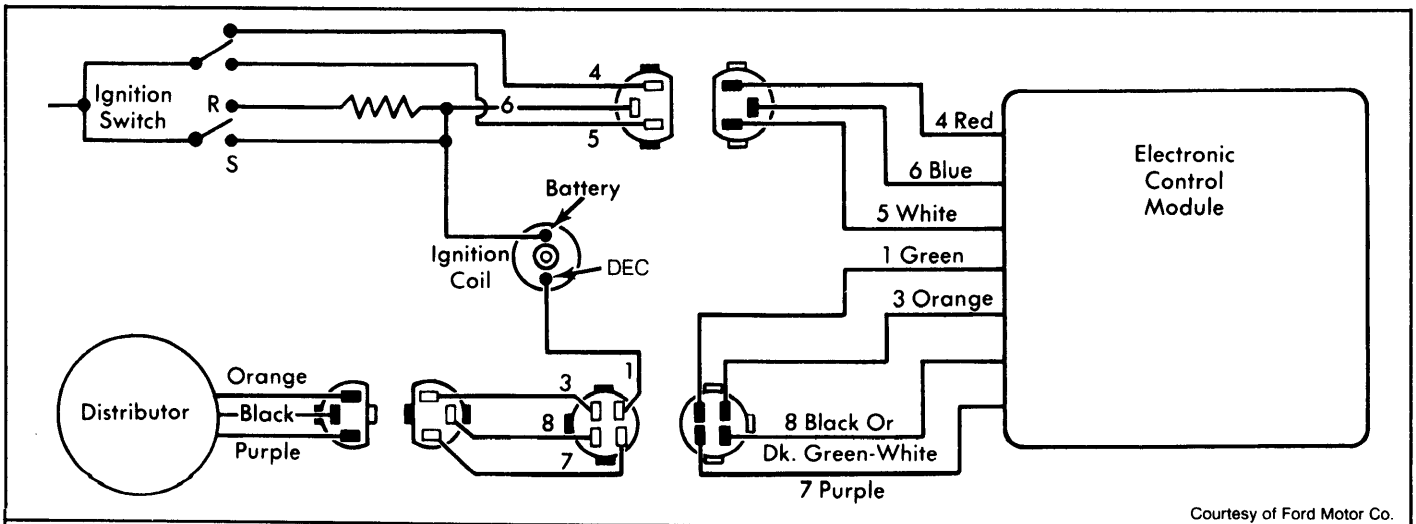
2) If voltmeter does not oscillate, remove distributor cap and visually check for damage. Ensure distributor rotor turns when engine is cranking. Ensure armature is tight on distributor shaft and that alignment pin is in place. Repair as necessary.

MAGNETIC PICK-UP TEST

With ignition key off, check resistance between pins No. 3 and 7. Ohmmeter reading should be 400-800 ohms. Check resistance between pin No. 8 and engine ground. Reading should be zero ohms. Check resistance between pin No. 3 and engine ground, and pin No. 7 and engine ground. Both readings should be more than 70,000 ohms. If any of the readings are not as indicated, replace pick-up unit.

IGNITION COIL TEST

With ignition off, check secondary resistance between pin No. 4 and coil tower. Reading should be 7000-13,000 ohms. Check primary resistance between pins No. 1 and 4. Reading should be 3-4 ohms. If readings are not as indicated, replace coil.



Courtesy of Ford Motor Co.

Fig. 1: Typical Solid State Ignition (SSI) Wiring Schematic (Wire Colors & Number Of Pins Used May Vary)

Motorcraft Solid State Ignition (SSI) System (Cont.)

PRIMARY RESISTANCE WIRE TEST

Check resistance between pin No. 4 and coil battery terminal. Reading should be 1-2 ohms. If reading is not within specification, repair power feed resistance wire.

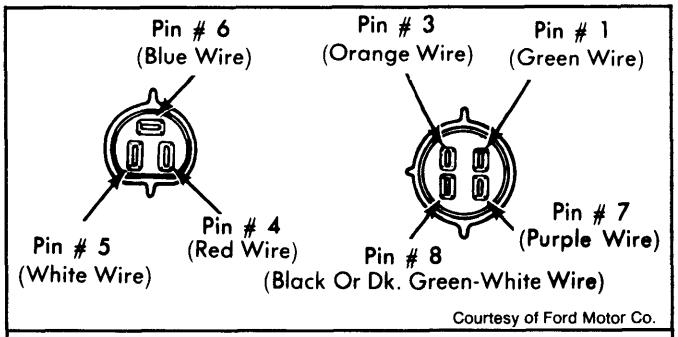


Fig. 2: SSI Wiring Harness Connectors (Harness Side)

OVERHAUL

DISTRIBUTOR

Disassembly & Reassembly - 1) Remove distributor cap and rotor. Disconnect distributor harness plug. Using a small gear puller or 2 screwdrivers, lift or pry armature from advance plate sleeve and remove roll pin. Remove wire retaining clip, then remove snap ring securing vacuum advance link to pick-up assembly. *See Fig. 3.* **2)** Remove pick-up assembly retaining screws and lift assembly from distributor. Lift vacuum advance arm from pick-up assembly and position against distributor housing. Remove vacuum advance diaphragm unit. Remove attaching screws and lift base plate assembly from distributor. To reassemble, reverse disassembly procedure.

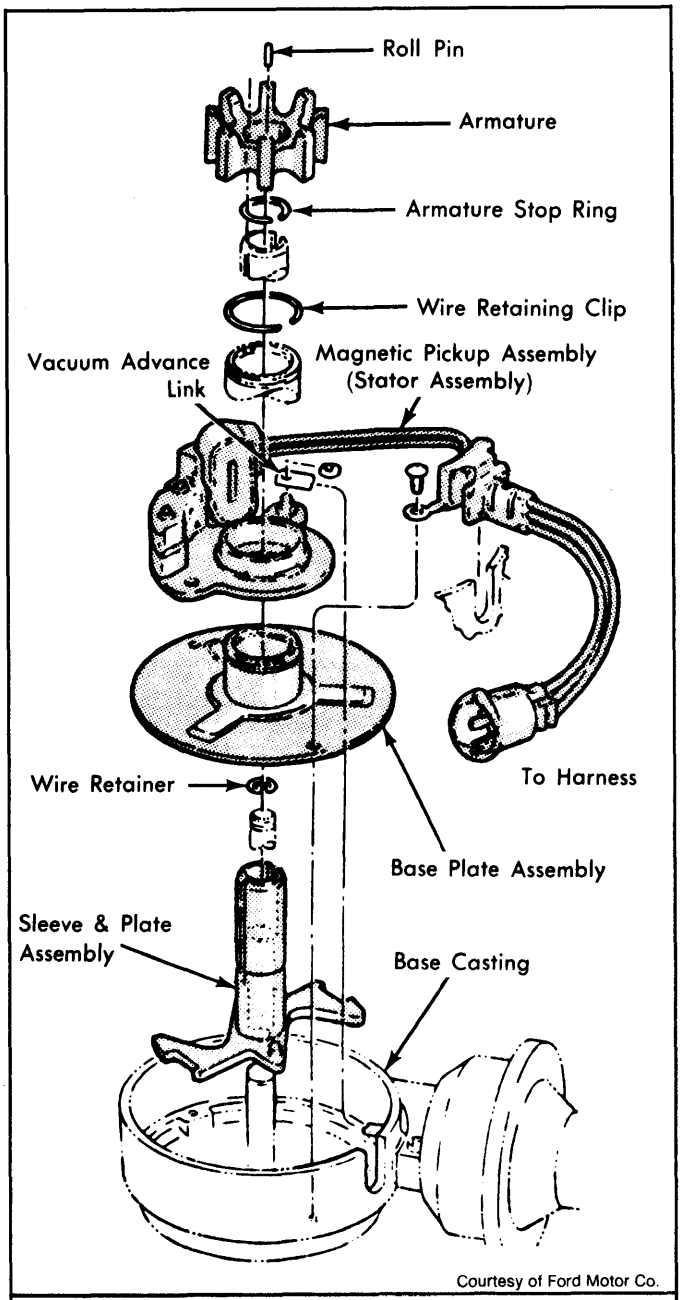


Fig. 3: Exploded View of SSI Distributor