Prestolite BID Ignition

1975-77 American Motors

DESCRIPTION & OPERATION

The Breakerless Inductive Discharge (BID) ignition system uses an Electronic Control Unit (ECU) to control system, a breakerlees distributor and an oil filled coil. When ignition switch is on, primary circuit is on and ignition coil is energized. As distributor shaft rotates, the distributor generates signals causing module to break primary current and induce secondary voltage in coil. A timing circuit in module turns primary circuit on again to energize coil for next spark cycle. The dwell is controlled by electronic module and is not adjustable.

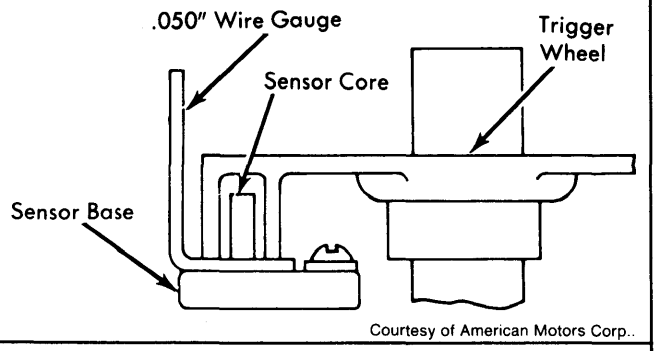

Fig. 1: Checking Installation of Trigger Wheel

ADJUSTMENTS

Trigger Wheel - Press trigger wheel onto distributor shaft until teeth of trigger wheel are .050-.060" from sensor base. *See Fig. 1.*

Sensor Position - 1) Install sensor positioning gauge over yoke making sure gauge is against flat of shaft. Move sensor to side until gauge can be positioned. Snug down retaining screw. Remove and then install gauge. If sensor is properly positioned, no sensor side movement should be detected when gauge is removed or installed.

2) Tighten screw and recheck sensor position. When trigger wheel is installed, sensor core should be positioned in center of trigger wheel legs and legs should not touch sensor core. *See Fig. 2.*

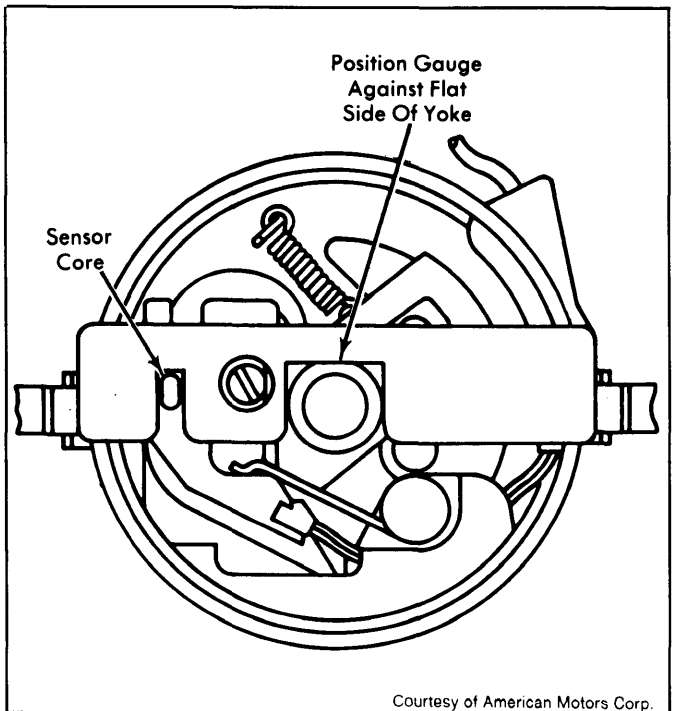

Fig. 2: Positioning Sensor Core

TESTING

NOTE: Before starting tests, make sure battery is fully charged and delivers 12-13 volts. Check all wiring and connectors for damage or loose connections. Replace any high tension wire which show signs of cracks or deterioration.

1) Disconnect high tension wire from one spark plug. Using an insulated pair of pliers, hold spark plug wire 1/2" away from engine. Crank engine and see if spark jumps gap. If spark does not jump gap, replace spark plug wire and go to next step.

2) Disconnect center distributor cap wire at cap and hold wire 1/2" away from engine. Crank engine and see if spark jumps gap. If spark does not jump gap, check for a faulty distributor cap or rotor.

3) If distributor assembly is okay and there is still no spark, disconnect Black and Dark Green primary wires from distributor. *See Fig. 3.* Connect Ignition Tester (J-25331) into wiring harness.

4) Turn ignition switch on. Cycle test button on tester and check for spark between wire and engine. If spark occurs, distributor sensor is faulty and should be replaced.

5) Using a voltmeter, check for battery voltage at coil positive terminal. If battery voltage is noticeably lower than battery voltage, check for high resistance in circuit between battery and coil (including ignition switch).

6) Connect voltmeter between coil negative terminal and ground. With ignition on, voltage reading should be between 5 and 8 volts. A reading under 5 volts or over 8 volts indicates a bad coil.

7) If voltage readings are okay, press test button on tester and observe voltmeter. Voltage should increase to battery voltage and drop to 5 to 8 volts when button is released.

8) If voltage does not change as indicated, electronic control unit is faulty and should be replaced. If there is still no spark, test coil resistance and open circuit voltage using coil tester or voltmeter.

IGNITION SYSTEM SPECIFICATIONS

Application	Specification
Sensor Resistance (@77°F)	1.6-2.4 Ohms
Ignition Coil	
Primary Resistance	1.25-1.40 Ohms
Secondary Resistance	9000-12,000 Ohms
Open Circuit Voltage (Minimum)	20,000 Volts

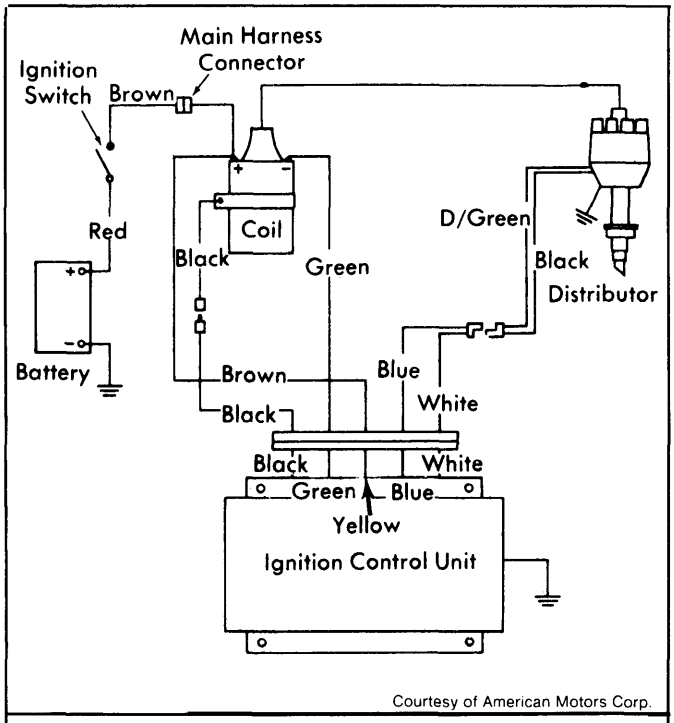

Fig. 3: Igniton System Wiring Schematic

Copyright (c) 2001 Mitchell Repair Information Company

1975-79 DISTRIBUTORS & IGNITION SYSTEMS
Prestolite BID Ignition (Cont.)

OVERHAUL

DISTRIBUTOR

Disassembly - 1) Remove distributor cap, rotor and dust shield. Using puller, remove trigger wheel. DO NOT press on inner small shaft, use a spacer over end of large shaft. Make sure jaws of puller are placed under shoulder of trigger wheel. *See Fig. 4.*

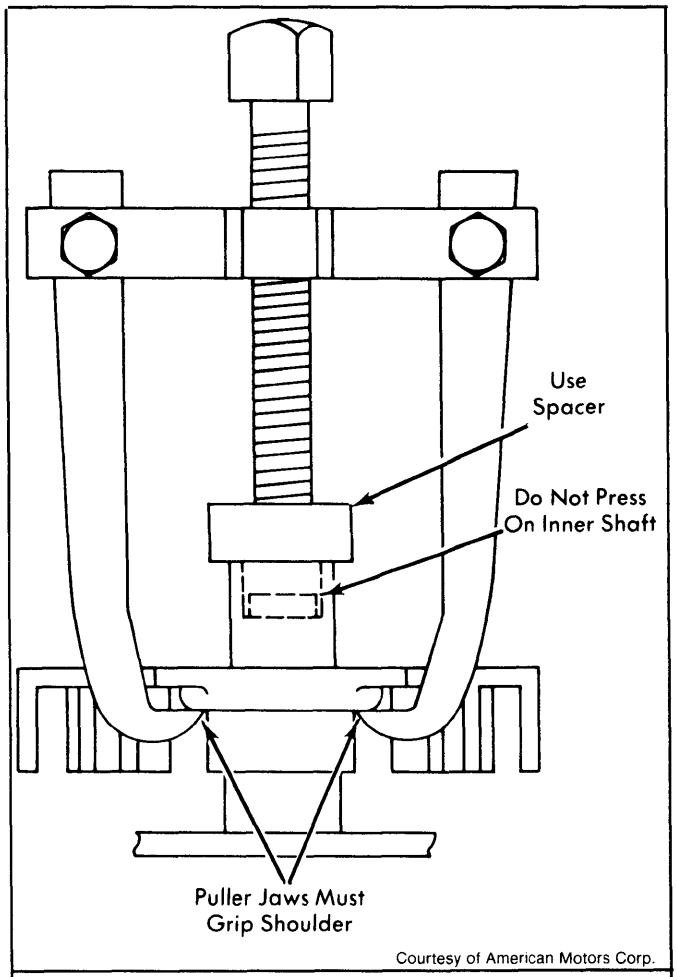

Fig. 4: Removing Trigger Wheel Using Puller

2) Loosen locking screw using needle nose pliers. Lift sensor lead grommet out of distributor bowl. Pull sensor leads out of slot and from around sensor spring pivot pin. Lift and release sensor spring, making sure it clears leads. Slide sensor off bracket.

3) Remove vacuum chamber only if replacement is required. Clean dirt and grease from distributor body. Materials used for sensor and vacuum chamber require no lubrication.

Reassembly - 1) If bearings were replaced, press upper bearing 3/32" below edge of support ribs in casting and lower bearing 3/32" inside end of casting. Install shaft, shims, gear and roll pin. End play should not exceed .010" and shaft must rotate freely.

2) Install sensor assembly on vacuum chamber bracket. Make certain that tip of sensor is located properly in summing bar. *See Fig. 6.* Place spring in its proper position on sensor, then route leads around pivot pin. Install grommet in distributor bowl while making certain leads will not be hooked by trigger wheel.

3) Place trigger wheel on shaft so sensor core is located midway between wheel teeth. See ADJUSTMENTS in this article. Tighten sensor locking screw. Support distributor shaft and press trigger wheel until it just touches a .050" wire gauge inserted between wheel teeth and sensor base. Add 4 drops of oil to felt wick. Install dust shield, rotor and distributor cap.

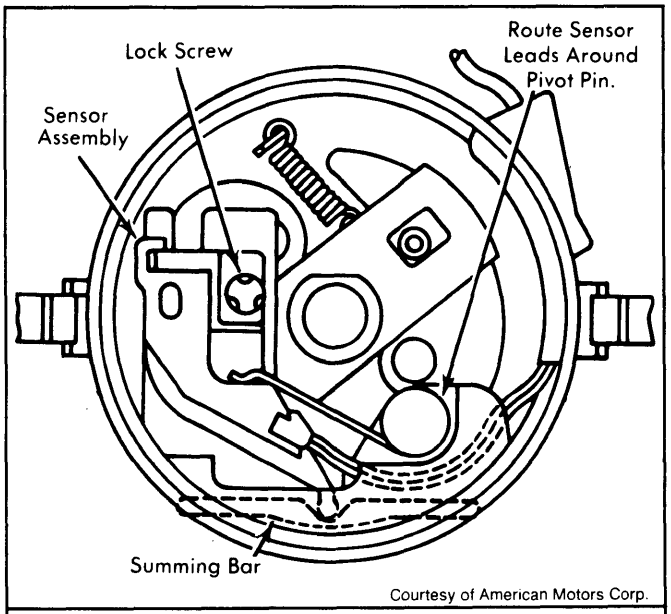

Fig. 6: Installing Sensor Assembly

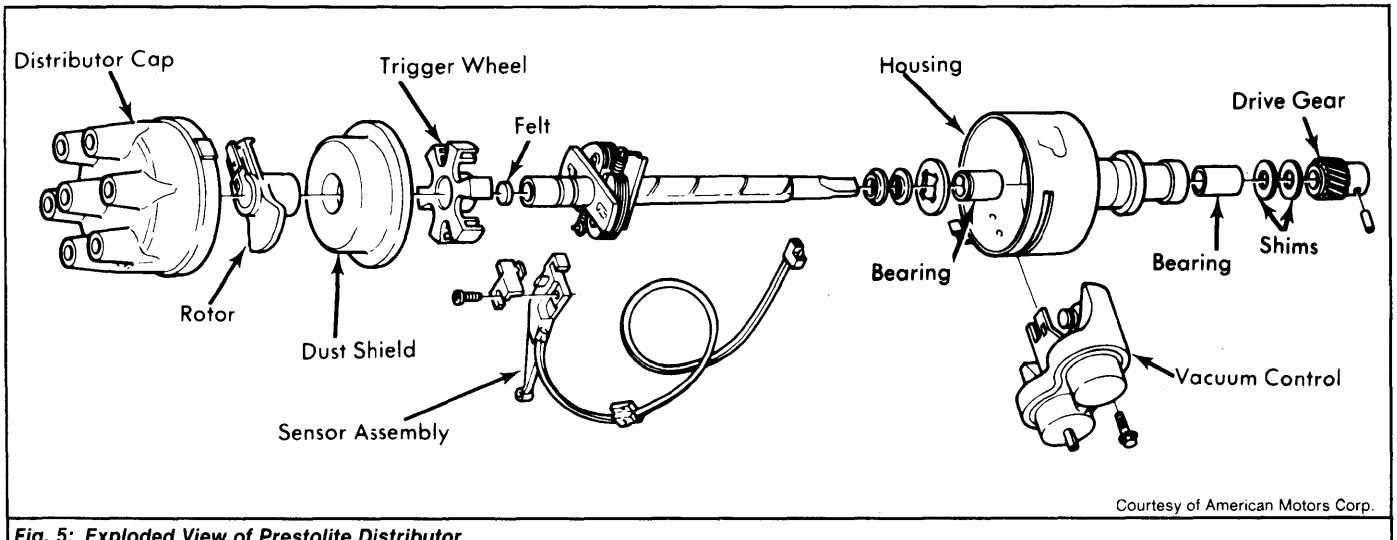

Fig. 5: Exploded View of Prestolite Distributor

Copyright (c) 2001 Mitchell Repair Information Company