Chrysler Corp. Electronic Ignition

DESCRIPTION

System is composed of a magnetic pick-up distributor, an Electronic Control Unit (ECU), wire harness, coil and a special dual ballast resistor. The primary circuit consists of battery, ignition switch, dual ballast resistor, primary winding of ignition coil and power switching transistor in ECU. The secondary circuit consists of the coil secondary winding, distributor cap and rotor and spark plugs.

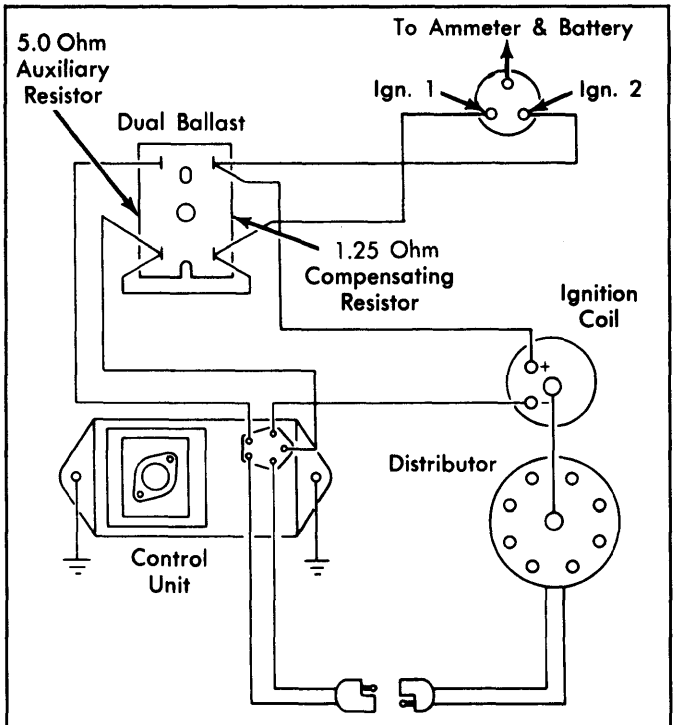


Fig. 1: Electronic Ignition System Wiring Diagram

OPERATION

DISTRIBUTOR

The reluctor rotating with distributor shaft produces a voltage pulse in magnetic pick-up. This pulse is transmitted through pick-up coil to power switching transistor in ECU and causes transistor to interrupt current flow through coil primary circuit. This break in primary circuit induces high voltage in coil secondary circuit and fires a spark plug. The length of time switching transitor allows current flow (dwell) is determined by electronic circuitry in ECU. Dwell is not adjustable.

DUAL BALLAST RESISTOR

The dual ballast resistor serves to maintain constant primary current with various engine speeds. The normal side (1.25 ohms) of dual ballast resistor is a compensating resistance in ignition primary circuit. During low speed operation current is maintained in this side of ballast resistor for a longer period of time, causing it to heat up, and resistance to increase. As engine speed increases the amount of time current is maintained in this side of resistor is shortened, causing it to cool off and resistance to decrease. This action raises voltage in primary circuit. This side of dual ballast resistor is by-passed during engine cranking. The auxiliary side of resistor (5.0 ohms) maintains a constant voltage to ECU.

ADJUSTMENT

PICK COIL AIR GAP

1) Loosen pick-up hold down screw and align one reluctor blade with pick-up pole. Using a .006" non-magnetic feeler gauge between

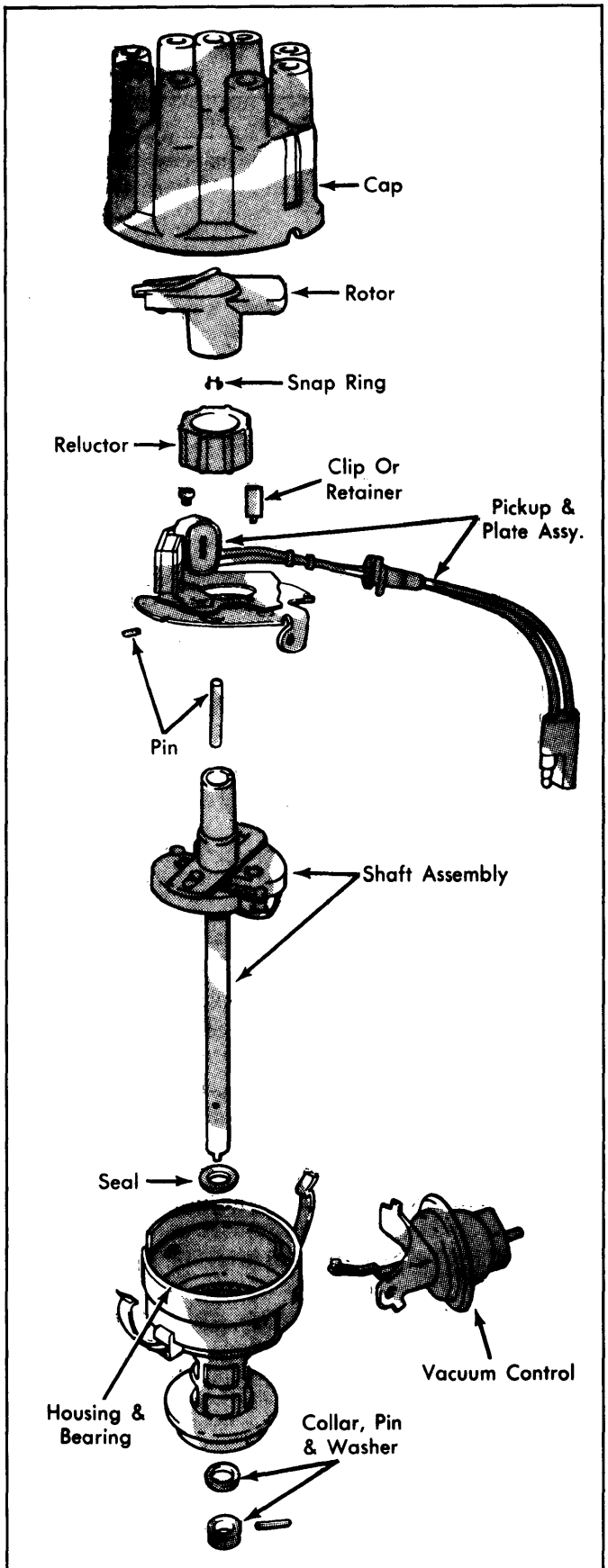


Fig. 2: Exploded View of V8 Electronic Ignition Distributor

reluctor blade and pick-up pole, adjust air gap. *See Fig. 2.* Tighten pick-up hold down screw. Remove feeler gauge. No force should be required for removal. Check air gap with .008" feeler gauge to ensure accuracy.

NOTE: Do not force feeler gauge into air gap.

2) Apply external vacuum to vacuum advance unit and rotate distributor shaft. Pick-up pole should not hit reluctor teeth. Gap is not properly adjusted if hitting occurs. If hitting occurs on only one side of reluctor, distributor shaft is probably bent.

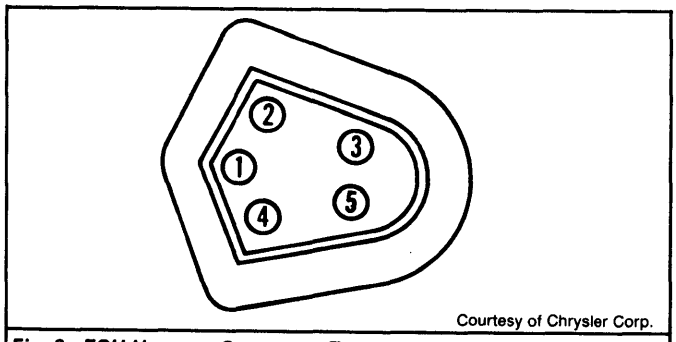
TESTING

NOTE: If Tester (C-4166) with Adapter (C-4166-1 or C-4166-A) is available, use tester and follow manufacturer's instructions. If tester is not available, use testing procedures below.

WIRING HARNESS & CONNECTOR

1) With ignition switch off, remove wiring connector from ECU. Turn ignition switch on and connect negative lead of voltmeter to a good ground. Connect voltmeter positive lead to terminal No. 1, then No. 2 and No. 3 of harness connector. *See Fig. 3.*

2) Reading should be within one volt of battery voltage at each terminal with all accessories off. If not within limits, check for proper electrical connections and system ground.



Courtesy of Chrysler Corp.

Fig. 3: ECU Harness Connector Terminal Identification

DISTRIBUTOR PICK-UP COIL

1) Turn ignition off. Using an ohmmeter, check resistance across terminals No. 4 and 5 of ECU connector. *See Fig. 3.* Ohmmeter resistance reading should be 150-900 ohms.

2) If reading is not within limits, disconnect dual lead connector coming from distributor. Check resistance at dual lead connector to distributor. If reading is not 150-900 ohms, replace pick-up coil assembly in distributor. If reading is within limits, check wiring harness between control unit and dual lead connector.

3) Connect one ohmmeter lead to a good ground and other lead to either connector distributor. Ohmmeter should show an open circuit. If ohmmeter shows a reading, pick-up coil is grounded in distributor and must be replaced.

ELECTRONIC CONTROL UNIT GROUND CIRCUIT

Connect one ohmmeter lead to a good ground and other lead to ECU pin No. 5. Ohmmeter should show continuity between ground and connector pin. If continuity does not exist, tighten bolts holding ECU to firewall. Recheck continuity. If continuity is still not present, replace ECU.

CENTRIFUGAL ADVANCE CURVE

Install distributor in test stand. It is important that appropriate adapter for checking electronic type distributors be used. Adjust tester speed control to operate distributor at speeds called for in distributor tables. If advance is not according to specifications, replace distributor shaft assembly (shaft, reluctor sleeve, governor weights).

IGNITION COIL

Coil is designed to operate with an external ballast resistor. When testing coil for output leave resistor connected. Inspect coil for external leaks and arcing. Test coil according to coil tester instructions. Replace coil or ballast resistor that does not meet specifications.

IGNITION COIL SPECIFICATIONS

Type	Resistance @ 70-80°F
Primary	
Chrysler Prestolite	1.60-1.79 Ohms
Chrysler Essex	1.34-1.55 Ohms
Secondary	
Chrysler Prestolite	9400-11,700 Ohms
Chrysler Essex	9000-12,200 Ohms
Ballast Resistor	
Coil Side	1.15-1.35 Ohms
Control Side	4.75-5.75 Ohms

OVERHAUL

DISTRIBUTOR

Disassembly - 1) Remove distributor, rotor, and vacuum advance unit. Remove reluctor, pry up from bottom with 2 screwdrivers (if necessary). Be careful not to damage or distort teeth on reluctor. Remove screws attaching lower plate to housing and lift out lower plate, upper plate, and pick-up coil as an assembly. Do not attempt to remove distributor cap clamp springs.

2) On 6-cylinder models, remove distributor drive gear retaining pin and slide gear off end of shaft. On V8 models, remove distributor shaft retaining pin and slide retainer off end of shaft.

3) On all models, use a file to clean burrs from around pin hole in shaft and remove lower thrust washer. Push shaft up and remove shaft through top of distributor body.

Reassembly - 1) Test operation of governor weights and inspect weight springs for distortion. Lubricate governor weights. Inspect all bearing surfaces and pivot pins for roughness, binding, or looseness. Lubricate and install upper thrust washer on shaft and slide shaft into distributor body.

2) Install distributor shaft retainer or gear and pin. Install lower plate, upper plate and pick-up coil assembly. Attach vacuum advance unit. Position reluctor keeper pin into place on reluctor sleeve. Slide reluctor down reluctor sleeve and press firmly into place. Install reluctor so that 2 arrows are on top.

3) In a clockwise distributor, arrow at keeper pin holding reluctor in place should point clockwise. In a counterclockwise distributor, arrow should point counterclockwise. If arrow at the distributor pin does not point in direction of distributor rotation, remove reluctor, turn reluctor 180 degrees and reinstall. Use care not to lose keeper pin. Lubricate felt pad in top of reluctor sleeve with a drop of light oil and install rotor.