CHRYSLER CORP. ELECTRONIC IGNITION

Chrysler Corp.

NOTE — *If vehicle is equipped with the Electronic Spark Control System, also refer to the Chrysler Corp. Electronic Spark Control System article in this Section.*

DESCRIPTION

All Federal 4 and 6 cylinder engines and Federal 2-Bbl. 318" V8 engines use Chrysler Corp. Electronic Ignition. This system consists of an electronic control unit, a distributor with a reluctor and magnetic pick-up (4-cylinder engines use a Hall Effect pick-up) and vacuum advance, a coil and a ballast resistor (except on 4 cylinder models).

The V8 and 6 cylinder engines use a control unit with a 4 pin connector. The 4 cylinder engines use a 5 pin connector on the control unit. All 4 cylinder engines have a distributor with a 3 wire connector, all V8 and 6 cylinder engines use a 2 wire connector at the distributor.

NOTE — *There is no terminal "3" on ignition module of 6-cylinder and V8 models.*

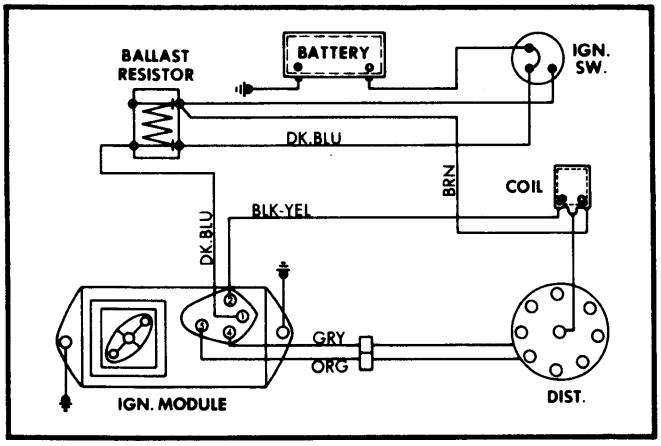

Fig. 1 Chrysler Corp. Electronic Ignition Wiring Diagram for V8 and 6-Cyl. Engines (Note: No Pin "3" on Module)

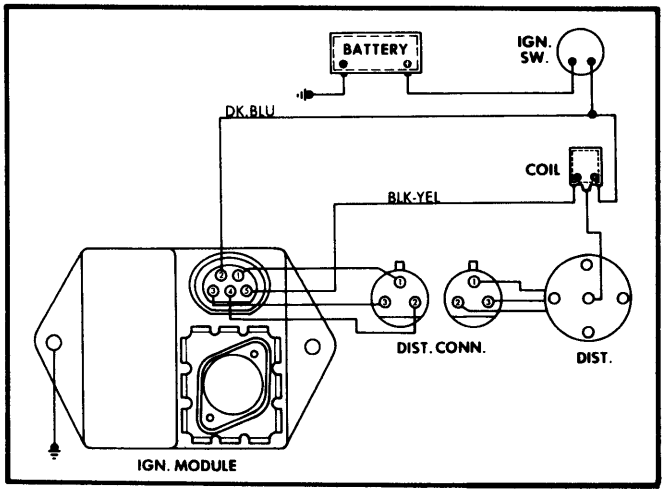

Fig. 2 Chrysler Corp. Electronic Ignition Wiring Diagram for 4-Cyl. Models

OPERATION

DISTRIBUTOR

The distributor has a toothed wheel called a reluctor in place of a conventional cam. The points are replaced by a permanent magnet, a pick-up coil and a pole piece. Signals generated by the distributor are sent to the control unit through a pair of leads. No moving parts contact each other in the distributor and there is no need for regular adjustment.

A weak magnetic field is created near the coil by the magnet. This field is strengthened when the reluctor teeth pass through it, sending a signal to the control unit. The control unit cuts off current flow through the coil primary. The amount of time current is allowed to flow through the primary (dwell) is determined by the control unit and is not adjustable.

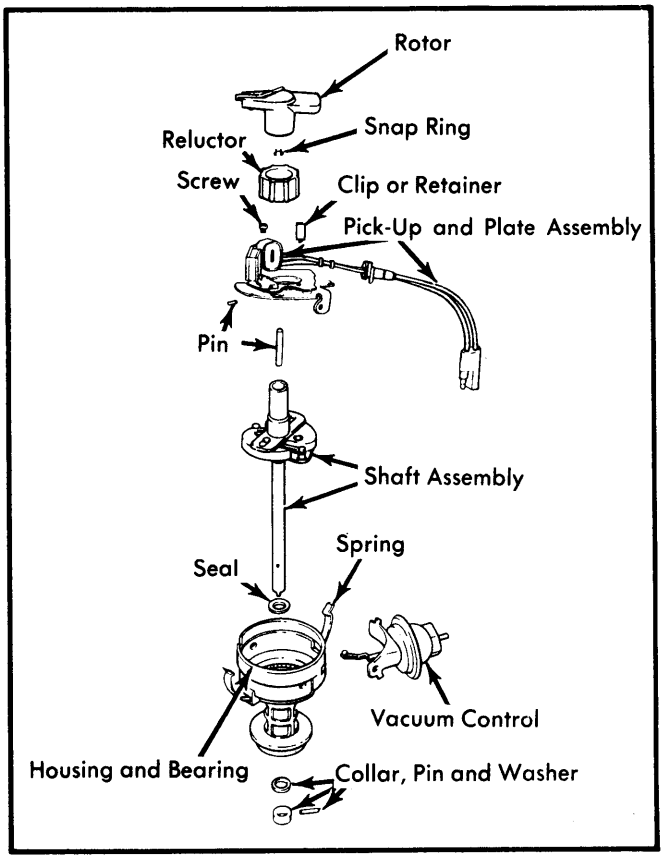

Fig. 3 Exploded View of Distributor Used on V8 Engines

CONTROL UNIT

The electronic control unit is located in a metal housing on the firewall or fenderwell. A switching transistor is exposed on top for cooling. The control unit is connected to the rest of the system by a wiring harness and a 4 pin plug (4 cylinder models use a 5 pin plug). The control unit functions when the ignition is switched to "START" or "ON". It allows current to flow through the primary side of the coil, creating a magnetic field.

BALLAST RESISTOR

The ballast resistor is used on V8 or 6 cylinder engines only. During cranking, the ballast resistor is bypassed, allowing full

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battery voltage to the coil. In low speed operation, the ballast resistor limits voltage to the coil, protecting it from overheating. As engine speed increases, the ballast resistor allows the coil to charge faster to prevent voltage loss.

ADJUSTMENT

PICK-UP COIL AIR GAP

NOTE – *There is no air gap adjustment on the Hall Effect pick-up on the 4 cylinder models.*

To set air gap, loosen pick-up hold down screw and align one reluctor blade with pick-up pole. Install a .006" non-magnetic feeler gauge between reluctor blade and pick-up pole. See *Fig. 4*. Move pick-up until contact is made between pick-up, feeler gauge, and reluctor blade. Tighten pick-up hold-down screw. Remove feeler gauge. No force should be required to remove feeler gauge. Check air gap with .008" non-magnetic feeler gauge. Apply vacuum to vacuum 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 one side of reluctor, distributor shaft is probably bent.

NOTE – *Do not force feeler gauge into air gap.*

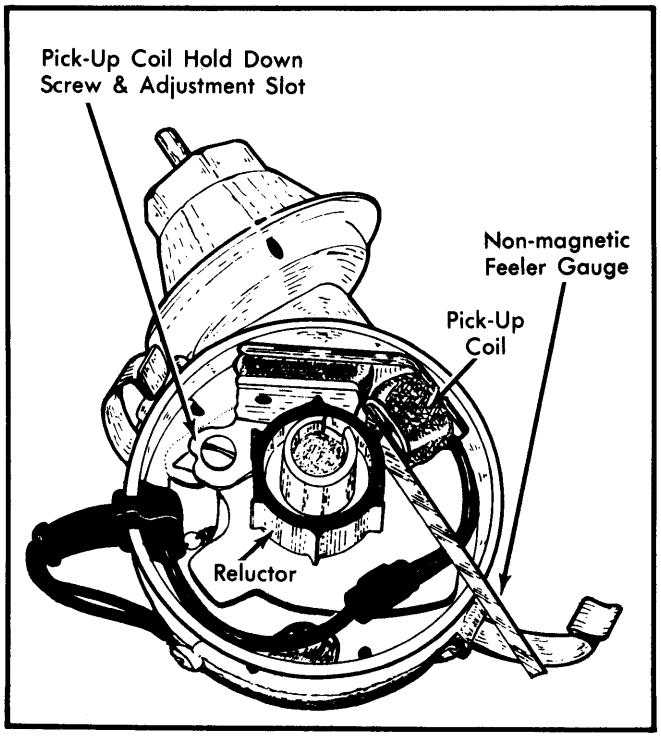

Fig. 4 Checking Air Gap Between Reluctor and Pick-up

TESTING

NOTE – *If a suitable tester (C-41 with adapter C-4166-1 or C-4166-A, or tester C-4503 with adapter C-4503) is available, use tester and follow manufacturer's instructions. If tester is not available, proceed as follows:*

Check that all secondary cables, primary wire at coil and ballast resistor are not loose and not cracked excessively. Use a voltmeter with a 20,000 ohm/volt rating and an ohmmeter which uses a 1½ volt battery for its operation. Check calibration of both meters. Check and record battery voltage reading using voltmeter. Proceed with following tests.

WIRING HARNESS & CONNECTOR

CAUTION – *When removing or installing wiring connector, ignition switch must be in "OFF" position.*

Measure voltage across battery terminals, record this measurement. Turn ignition switch "OFF", then disconnect harness connector from control unit. Connect voltmeter negative lead to a good ground and then turn ignition "ON". Make checks as follows.

1) Connect voltmeter positive lead to harness connector pin 1 (pin 2 on 4-cyl.). Reading should be battery voltage. If not, check and repair wire/components from harness connector back to battery. *Refer to Fig. 1 or Fig. 2.*

2) Connect voltmeter to harness connector pin 2 (pin 5 on 4-cyl.). Voltmeter reading should be battery voltage. If reading is not to specifications, check and repair wire or components from harness connector through coil and ignition switch back to battery.

3) If reading jumps to battery voltage on the positive side of the coil, make primary and secondary checks on coil. If coil is bad, replace it. Also check ballast resistor on V8 and 6 cylinder models. To make this check, disconnect wires from resistor, then make an ohmmeter reading. Resistance should be 1.1 to 1.3 ohms. If reading is not as specified, replace resistor.

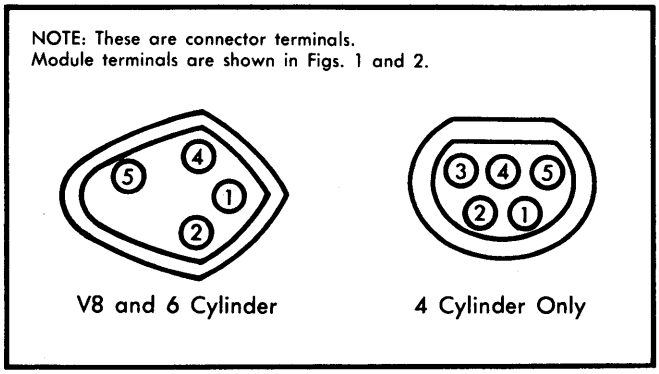

Fig. 5 Identification of Wiring Harness Connector Terminals

DISTRIBUTOR PICK-UP COIL

1) On V8 and 6 cylinder models only, turn ignition switch "OFF". Disconnect control unit connector. Connect ohmmeter leads to pin numbers "4" and "5" of harness connector. See *Fig. 5*. Ohmmeter reading should be 150-900 ohms. If reading is not to specifications, make same check at distributor 2-wire connector. If reading is still not correct, pick-up coil is bad and needs to be replaced.

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

3) On 4 cylinder models use the same procedure but use pins "1" and "3" on module connector.

ELECTRONIC CONTROL UNIT GROUND CIRCUIT

1) On V8 and 6 cylinder models, connect one ohmmeter lead to a known good ground and the other lead to control unit pin "5". Ohmmeter should show full continuity. If not, make sure control unit is making good contact at hold-down bolts. If it is, replace control unit.

2) On 4 cylinder models, disconnect distributor 3-wire connector. Connect ohmmeter lead to pin "2" on harness side of connector and the other lead to a known good ground. Full continuity should be indicated. If not, unplug connector at control unit. Connect ohmmeter lead to control unit pin "4". If correct reading is obtained here, make sure control unit is making good contact at hold-down bolts. If reading is still not correct, replace control unit.

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 on V8 and 6 cylinder models. Models with 4 cylinder engines have a coil designed to operate without an external resistor. When testing coil for output, include resistor tests (if coil uses a resistor). Also inspect coil for external cracks and arcing. Test coil according to coil tester instructions. Replace coil and ballast resistor, if used, that do not meet specifications.

Primary Resistance @70-80°F

Prestolite	1.60-1.70 Ohms
Essex	
V8 and 6-Cyl.	1.34-1.55 Ohms
4-Cyl.	1.41-1.62 Ohms

Secondary Resistance @70-80°F

Prestolite	9400-11,700 Ohms
Essex	
V8 and 6-Cyl.	9000-12,200 Ohms
4-Cyl.	8000-11,200 Ohms

Ballast Resistance @ 70-80°F

V8 and 6-Cyl.	1.1-1.3 Ohms
4-Cyl.	Not Used

OVERHAUL

DISASSEMBLY

V8 & 6-Cyl. Models – **1)** Remove distributor, rotor and vacuum control unit. Remove reluctor. Some reluctors may be pulled off with fingers, however, if this is not possible pry up from bottom with two screwdrivers. Be careful not to damage or distort teeth on reluctor.

2) 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.

3) 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. 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.

4-Cyl. Models – **1)** Remove distributor cap. Then remove distributor from engine. Clamp distributor in vise with soft jaws. Remove rotor from shaft. Remove Hall Effect assembly.

2) Place distributor so pin in drive gear can be driven out, then remove drive gear. Pull shaft up through distributor housing. Remove wires from housing by pinching clip together and pulling wires out.

REASSEMBLY

V8 & 6-Cyl. Models – **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) On V8 engines, install distributor shaft retainer and pin. On 6 cylinder engines, install lower thrust washer and original gear on lower end of shaft and install roll pin. If gear is not in good condition, replace it.

3) On all models, install lower plate, upper plate, and pick-up coil assembly. Attach vacuum advance unit arm to pick-up plate and install attaching screws.

4) Position reluctor keeper pin into place on reluctor sleeve. Slide reluctor down reluctor sleeve and press firmly into place. Make sure keeper pin is in place. Lubricate felt pad in top of reluctor sleeve and install rotor.

4-Cylinder Models – **1)** Lubricate bushings with oil. Install shaft into distributor housing. Install gear and then roll pin on shaft.

2) Install Hall Effect assembly being careful to place lead retainer in its locating hole before attaching distributor cap. Install Hall Effect assembly retaining clips.

3) Install vacuum unit and linking pin. Make sure linking pin is located properly. Install vacuum unit retaining screws and tighten. Install Hall Effect rotor on distributor shaft.