

4-34 1974-79 DISTRIBUTORS & IGNITION SYSTEMS Ducellier Electronic Ignition

Peugeot: 1979 504

DESCRIPTION

The Ducellier electronic ignition system consists of a Ducellier breakerless distributor, a Delco-Remy ignition coil and amplifier module, an ignition switch and necessary wiring.

The distributor contains both centrifugal and vacuum advance mechanisms, a pick-up coil and a reluctor (polarity wheel). See Fig. 1. The ignition coil and amplifier are both mounted to a common light alloy base that provides both good grounding and cooling of the amplifier module. Silicone grease, which comes with the module and is applied between the module and base, gives improved heat transfer. Since both units are grounded through the common base, all mounting bolts should be snug.

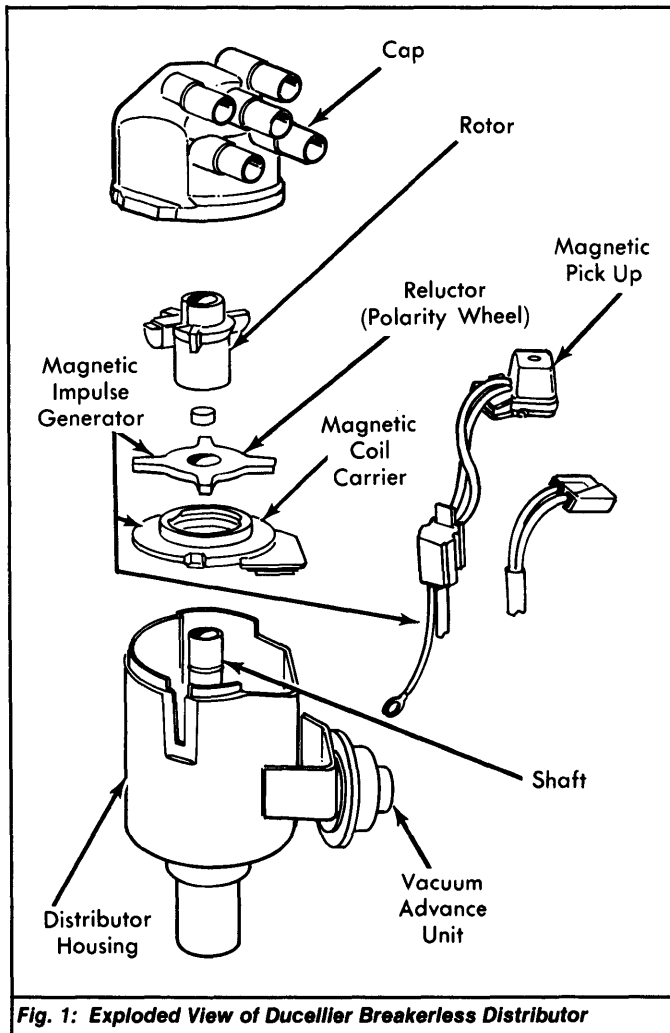


Fig. 1: Exploded View of Ducellier Breakerless Distributor

The ignition coil is encased in epoxy resin instead of oil. The amplifier module receives, amplifies and sends electronic signals to provide proper spark timing.

OPERATION

The distributor contains an electronic pulse generator, consisting of a pick-up coil and a reluctor (polarity wheel). As the distributor shaft turns, the reluctor teeth approach and pass the magnetic pick-up coil. This causes signals to be transmitted to the amplifier module, which in turn, opens and closes a transistorized switch in the module. This turns the primary circuit of the ignition coil on and off. When the circuit is switched off, a high voltage surge occurs in the secondary circuit, firing the spark plugs.

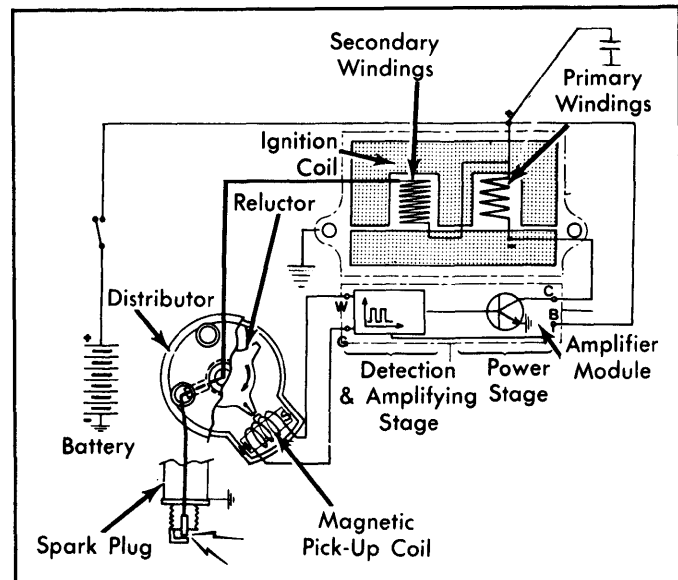


Fig. 2: Schematic of Ducellier Electronic Ignition System

The amplifier module has 4 terminals. Terminals "W" and "G" are connected to the distributor magnetic pulse generator (pick-up coil). Terminal "B" is connected to the coil positive terminal, and terminal "C" to the coil negative terminal. See Fig. 3. The unit is grounded through one of its mounting bolts through the alloy base.

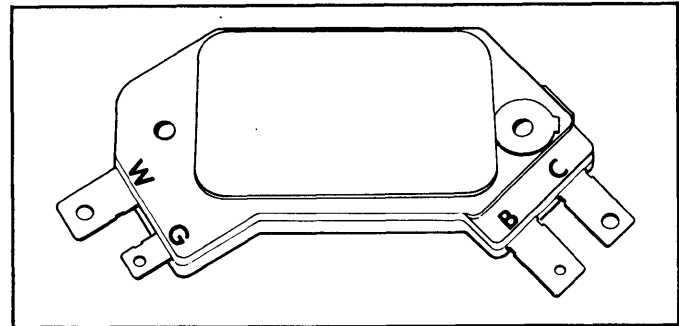


Fig. 3: Amplifier Module Connector Terminals

SPECIFICATIONS

CENTRIFUGAL & VACUUM ADVANCE

See appropriate DISTRIBUTOR ADVANCE SPECIFICATIONS table in this section.

ADJUSTMENTS

RELUCTOR-TO-PICK-UP COIL AIR GAP

Loosen magnetic pick-up coil mounting screws. Position reluctor tooth in line with pick-up coil pole piece. Using a non-magnetic feeler gauge move pick-up coil against feeler gauge and tighten screws. Air gap should be .012-.020" (.30-.50 mm).

TESTING

NOTE: Before testing components, be sure battery is properly charged, all wires are sound, and connections are secure. Inspect distributor cap and rotor for cracks or carbontracking. Turn ignition off when connecting test equipment or when replacing parts.

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SPARKING TEST

- 1) Remove distributor cap and position reluctor with one tooth on each side of pick-up coil. See Fig. 4. Remove high tension lead from distributor cap and turn ignition on.
- 2) Hold the high tension lead with a pair of pliers about .4" (10 mm) from a known good ground. The ground should be as far from the coil and amplifier assembly as possible.
- 3) Alternately pass the blade of a screwdriver back and forth over the pick-up coil pole piece. A spark should occur at gap each time screwdriver passes pole piece.
- 4) If no spark occurs, suspect the magnetic pick-up coil, ignition coil or amplifier module. If spark occurs, but engine does not run properly, check distributor cap, rotor, high tension cables and battery condition.

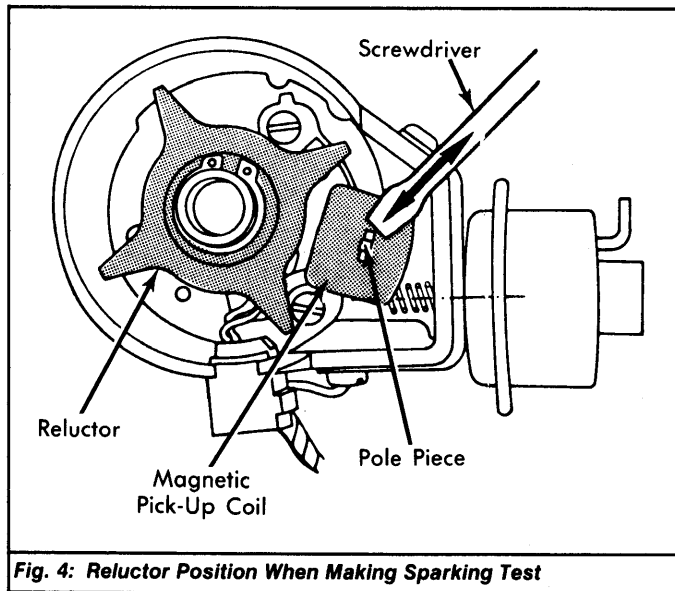


Fig. 4: Reluctor Position When Making Sparking Test

PICK-UP COIL RESISTANCE TEST

- 1) Turn ignition switch off. Disconnect connector for terminals "W" and "G" at amplifier module. Using an ohmmeter set in the x100 scale, check the resistance between distributor connector terminals. See Fig. 5.
- 2) Reading should be 900-1100 ohms. If resistance is not within specifications, replace magnetic pick-up coil. If resistance is high, check for corroded contacts.

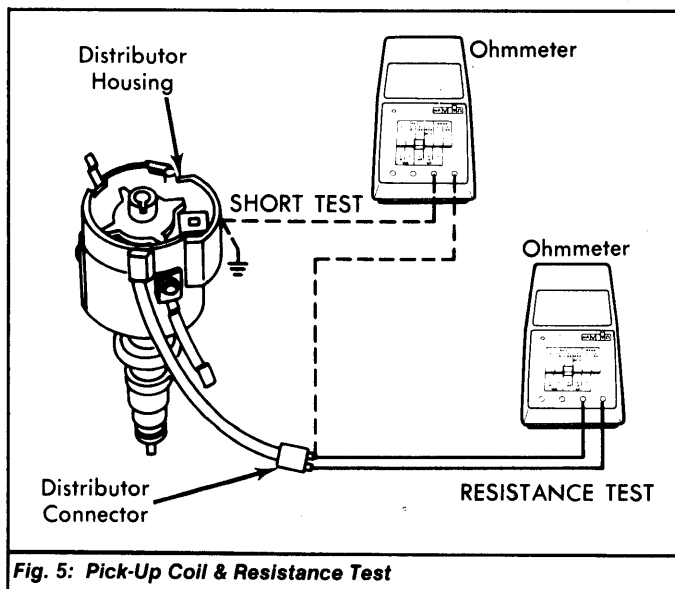


Fig. 5: Pick-Up Coil & Resistance Test

PICK-UP COIL SHORT TEST

Using an ohmmeter, connect leads to either distributor connector terminal and engine ground. An infinity reading should exist. If not, replace magnetic pick-up coil and harness assembly. See Fig. 5.

ELECTRICAL CIRCUIT TEST

- 1) Connect a 12-volt test lamp between the coil positive terminal and ground. Turn ignition on. Test lamp should light. If not, check feed wire to coil. See Fig. 6.
- 2) Connect test lamp between coil negative terminal and ground. Turn ignition switch on. Test lamp should again light. If not, check if coil primary circuit is broken or if amplifier module's power transistor is shorted.

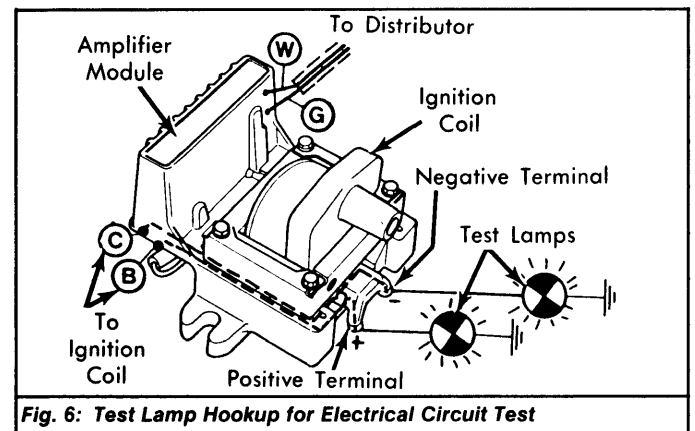


Fig. 6: Test Lamp Hookup for Electrical Circuit Test

IGNITION COIL RESISTANCE TEST

- 1) Using an ohmmeter set on low scale, connect leads to coil primary (positive and negative) terminals. Resistance should be .48-.64 ohms. See Fig. 7.
- 2) Connect ohmmeter set in the x1000 scale to the coil positive terminal and its secondary tower. Reading should be 9,000-11,000 ohms. If either reading is not to specifications, replace ignition coil.

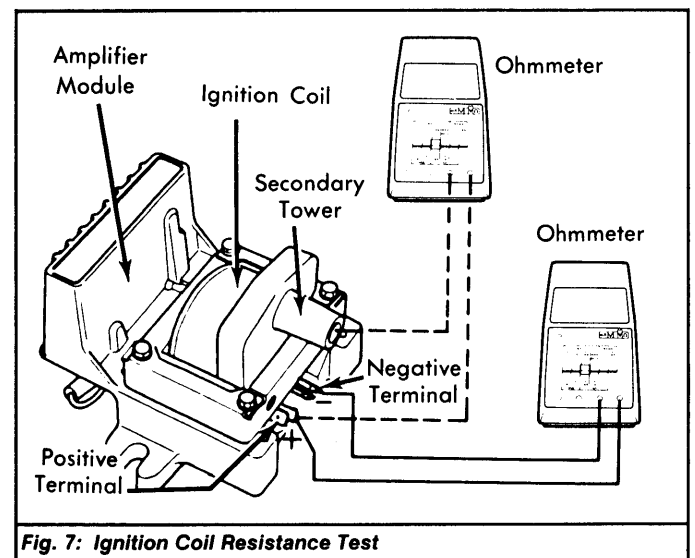


Fig. 7: Ignition Coil Resistance Test

AMPLIFIER MODULE TEST

- 1) Disconnect distributor harness connector from amplifier module "W" and "G" terminals. Disconnect high tension lead from distributor cap. Turn ignition switch on. Hold high tension lead with a pair of pliers and position it .4" (10 mm) from a known good engine ground.
- 2) Use a jumper wire to feed terminal "G" of amplifier module with successive impulses from battery positive terminal. At each impulse, a

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spark should jump the gap to ground. If not, repeat same test with a new amplifier module. If spark jumps gap, replace module.

OVERHAUL

DISASSEMBLY

1) Remove distributor cap, rotor, and plastic protector. Remove screw side of distributor. Pull upward on electrical connector to remove it from distributor housing. Remove 2 screws securing magnetic pick-up coil. See Fig. 1.

2) Lift out pick-up coil assembly. Remove reluctor, vacuum advance unit, electromagnetic coil carrier. Remove drive pinion from distributor shaft and pull shaft and centrifugal advance mechanism from housing.

REASSEMBLY

To reassemble, reverse disassembly procedure.