1974-79 DISTRIBUTORS & IGNITION SYSTEMS
Marelli Electronic Ignition

Fiat: 1979 Brava, Spider 2000, Strada

DESCRIPTION

NOTE: Some Strada models may be equipped with Bosch electronic ignition systems.

The Marelli electronic ignition system consists of an ignition coil, electronic control module, and a breakerless distributor. *See Fig. 1.* The control module and ignition coil are mounted on a finned, cast aluminum base which not only cools the units, but also provides a system ground. *See Fig. 2.* Marelli distributors are equipped with centrifugal and vacuum advance mechanisms. A 4-tooth reluctor is mounted on distributor shaft and combines with the pickup coil assembly to provide control module with electrical signals. Control module analyzes the electrical signals from the distributor pickup coil assembly and provides the coil with proper dwell time and spark timing regardless of engine speed. The control module's current limiter provides a constant current flow to the primary circuit, preventing coil damage.

OPERATION

Primary voltage is supplied to ignition coil by the battery, through the ignition switch. There are no resistors in the Marelli system. As distributor shaft rotates, the teeth of reluctor pass stator pole in the pick-up coil assembly. This creates and collapses a magnetic field, causing an electrical signal or impulse, which is sent to the control module. As signal is received, control module opens and closes ignition coil primary circuit. This causes a high voltage surge in the coil secondary windings, firing the spark plugs.

SPECIFICATIONS

CENTRIFUGAL & VACUUM ADVANCE

See appropriate DISTRIBUTOR ADVANCE SPECIFICATIONS table in this section.

ADJUSTMENTS

PICK-UP COIL AIR GAP

Using a non-magnetic feeler gauge, check air gap between reluctor and stator pole piece of pick-up coil assembly. Air gap should be .012-.016" (.30-.40 mm). If not within specification, loosen retaining screws and move advance plate to adjust air gap. Tighten retaining screws and recheck air gap.

TESTING

CAUTION: When working around coil, do not ground wire lead to tachometer. Be careful not to disconnect high tension terminal of coil with engine running. Make all resistance checks with ignition OFF.

ROTOR RESISTANCE CHECK

Using an ohmmeter set at x1000 scale, check rotor resistance. Replace rotor if resistance varies considerably from 5000 ohms.

IGNITION SYSTEM CHECK

With ignition system in the "MAR" (run) position, inspect wiring and connectors. Ensure heat dissipater (module and coil base), power unit, and battery are properly grounded. Check that coil and distributor connectors are firmly attached to control module terminals.

SYSTEM INPUT VOLTAGE CHECK

1) With ignition key in "MAR" (run) position and engine not running, connect positive voltmeter lead to ignition coil positive (+B) terminal and negative lead to ground. Voltage reading should be 12 volts.
2) Move positive voltmeter lead to ignition coil negative terminal. Voltage should be within 0.3 volts of voltage recorded at coil positive terminal. If not as specified, proceed to IGNITION COIL RESISTANCE CHECK.

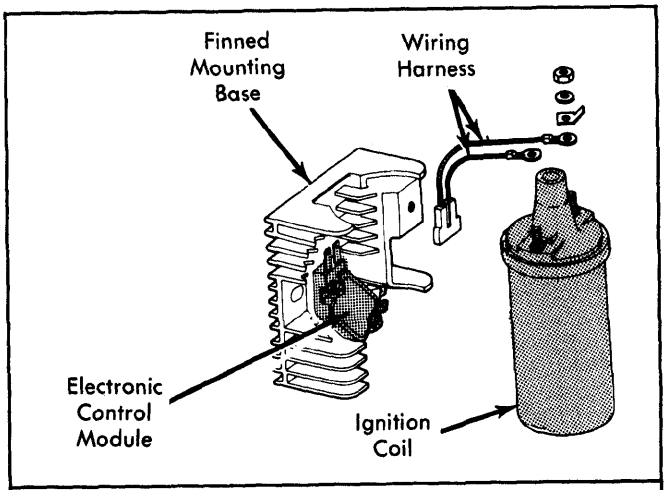

Fig. 2: Ignition Coil, Control Module & Base Assembly

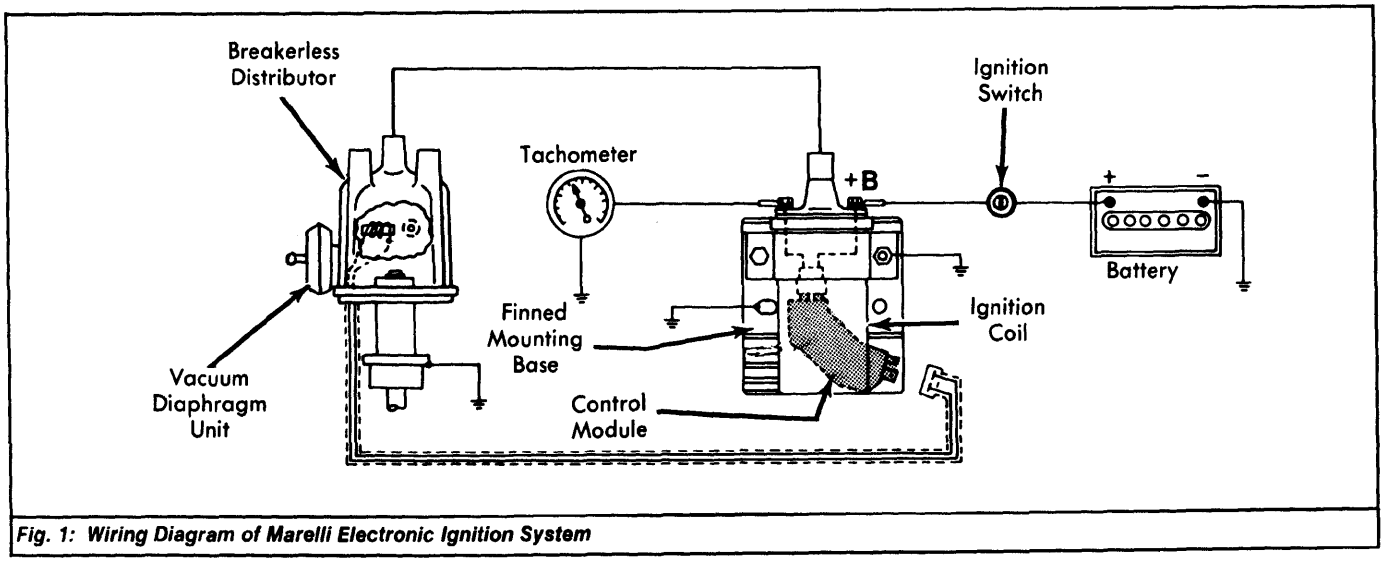

Fig. 1: Wiring Diagram of Marelli Electronic Ignition System

Marelli Electronic Ignition (Cont.)

IGNITION COIL RESISTANCE CHECK

1) Using an ohmmeter set to low scale, connect ohmmeter leads to positive and negative primary terminals of ignition coil. Resistance reading should be .75-.81 ohms.
2) Change ohmmeter to the x1000 scale and connect ohmmeter leads to coil negative terminal and coil tower. Resistance should be 10,000-11,000 ohms. If either reading is not to specifications, replace ignition coil.

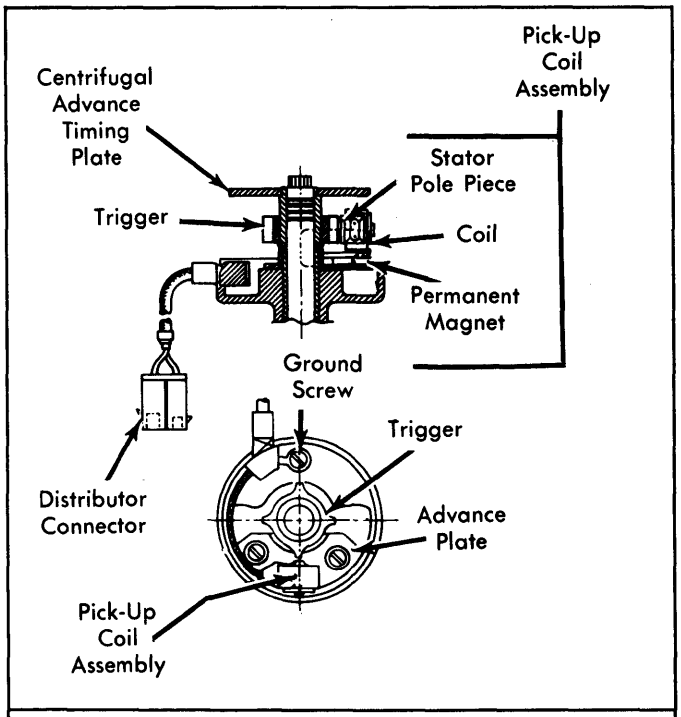

Fig. 3: Marelli Distributor Internal Components

PICK-UP COIL RESISTANCE CHECK

1) Turn ignition switch off. Disconnect 2-wire distributor connector. Connect an ohmmeter set to x100 scale with one lead touching each terminal of distributor harness connector.
2) Pick-up coil resistance should be 700-800 ohms. If not, replace pick-up coil assembly. If system works intermittently, be sure pick-up coil wire in distributor is properly grounded. *See Fig. 3.*

CONTROL MODULE CHECK

If results of all previous tests disclose no problem, but engine will not run, substitute a known good control module and attempt to start engine. If engine starts, replace control module.

OVERHAUL

DISASSEMBLY

1) Remove distributor cap and rotor. *See Fig. 4.* Remove pin securing pinion gear and lift shaft and centrifugal advance mechanism (with integral reluctor) from housing.
2) Remove pick-up coil ground screw and advance plate retaining screws. Disconnect vacuum diaphragm unit from peg on bottom of advance plate. Remove vacuum unit and pick-up coil assembly and advance plate from housing.

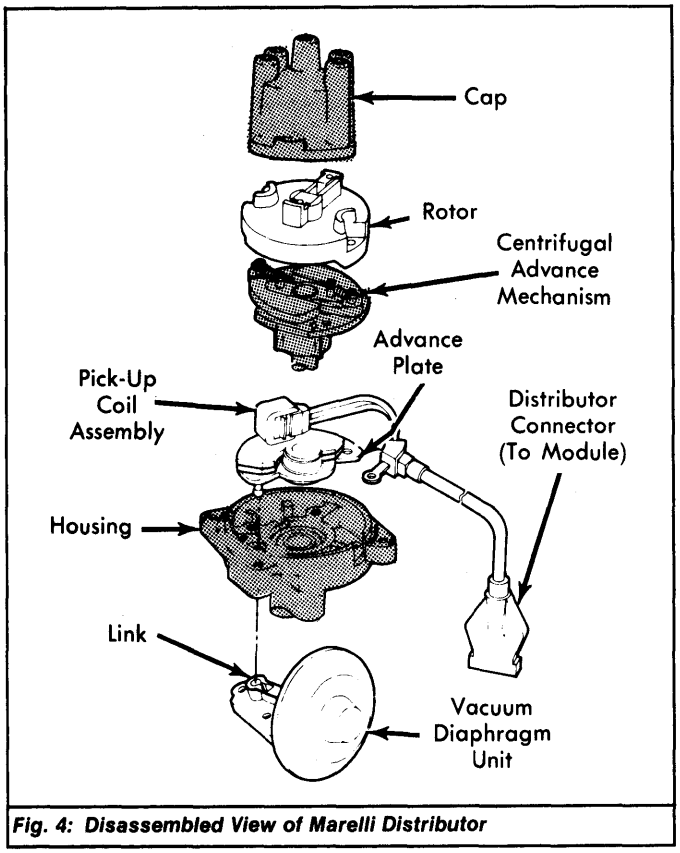

Fig. 4: Disassembled View of Marelli Distributor

REASSEMBLY

Install parts in reverse order of disassembly. Be sure pick-up coil ground screw is tight and that vacuum unit is secured to peg on bottom of advance plate.