1974-79 DISTRIBUTORS & IGNITION SYSTEMS
Hitachi Electronic Ignition

Datsun: 1974 260Z
1975-77 Calif. Models, 280Z & 280ZX
1978-79 All Models
Subaru: 1977-78 Calif. (With Auto. Trans.)

DESCRIPTION

The Hitachi electronic distributor consists of housing, rotor and distributor cap. An Integrated Circuit (IC) ignition unit is used. A reluctor with one external tooth for each cylinder, is pinned to rotor shaft assembly. *See Fig. 1.* The reluctor turns inside stator. Stator is a metal ring with one internal tooth for each cylinder. *See Fig. 1.* The stator, magnetic ring and pick-up coil assembly are attached to breaker plate assembly.

On some 1974-76 6-cylinder models, distributors use a dual pick-up coil. The dual pick-up coil distributors have a 6 degree phase between the 2 pick-up coils.

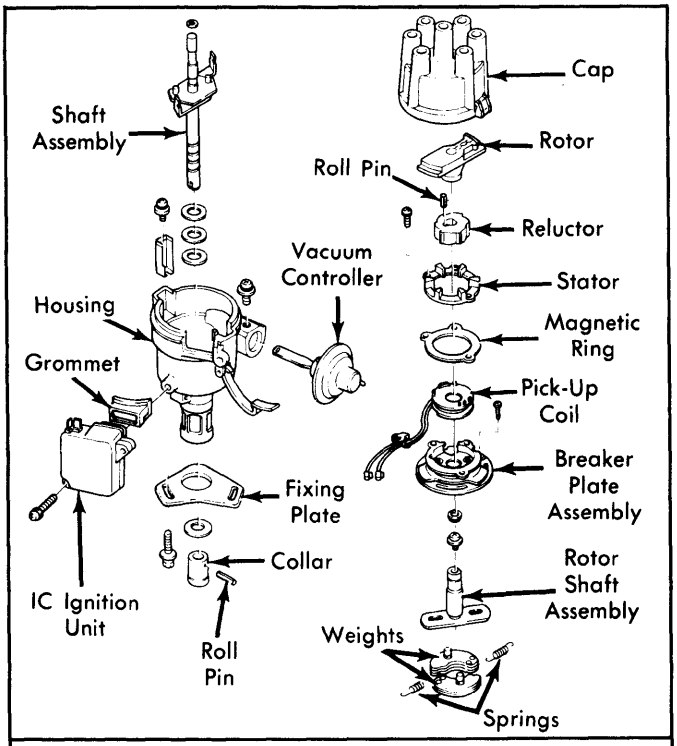

Fig. 1: Exploded View Of 1979 Datsun 6-Cylinder Hitachi Distributor (4-Cylinder Similar)

OPERATION

With ignition on, a magnetic field is created. As reluctor's external teeth approach and then pass stator's internal teeth, the field builds and collapses. This generates an electrical signal in the pick-up coil, which in turn is conducted to ignition unit. The ignition unit turns the current flow in ignition coil primary circuit on and off as the teeth pass each other. This results in a high voltage surge in the secondary circuit, which fires spark plugs.

The ignition unit contains 5 circuits that perform the following functions. The Spark Timing Signal Monitoring Circuit monitors and amplifies signal from distributor pick-up coil. The Lock-Preventing Circuit cuts off ignition coil primary current when ignition on and engine is not running.

The Duty Control Circuit controls ratio of ignition coil primary current on-off time (equivalent to dwell angle). The Power Switching Circuit makes or breaks primary circuit current of ignition coil. The Current Limiting Circuit controls current value so excessive current will not flow through power switching circuit. All 5 circuits are contained in ignition unit. Failure of any circuit requires replacement of the entire ignition unit.

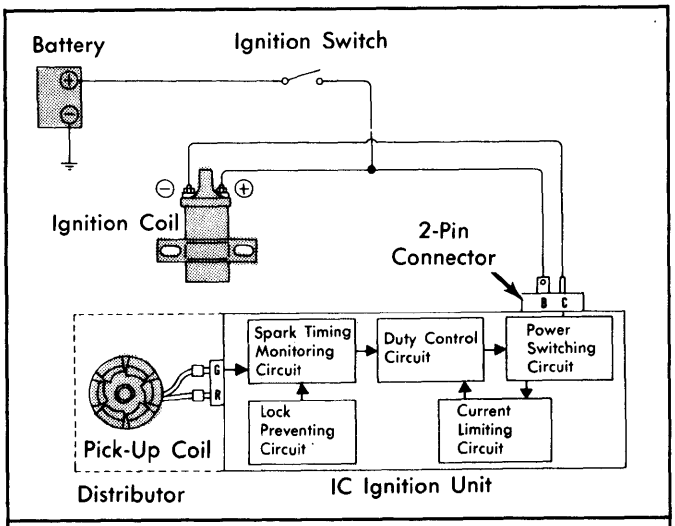

Fig. 2: 1979 Hitachi Ignition Unit Circuit Diagram

SPECIFICATIONS

CENTRIFUGAL & VACUUM ADVANCE

See appropriate DISTRIBUTOR ADVANCE SPECIFICATION table in this section.

ADJUSTMENTS

AIR GAP

When installing reluctor and stator, center stator around reluctor so there is equal air gap between each set of teeth. Tighten screws securing stator. Air gap should be .016" (.4 mm).

PHASE ANGLE

Dual Pick-Up Distributor - With coolant temperature switch for advance side disconnected and grounded, timing set to specification and engine idling, check that phase difference is 6 degrees. If not, correct by loosening adjuster plate screws 1/2 to 2 turns. Turn adjuster plate until correct phase angle is obtained. Turning adjusting plate clockwise increases phase angle and clockwise decreases phase angle.

NOTE: Graduations on adjuster plate refer to crankshaft degrees. One graduation equals 4 crankshaft degrees.

TESTING

SYSTEM SPARK CHECK

1) Turn ignition off. On 1979 Datsun 6-cylinder engines, disconnect EFI fusible link, 35-pin connector, and cold start valve harness connector. On 4-cylinder engines, disconnect anti-dieseling solenoid valve connector. This cuts off fuel supply to engine.
2) On all models, disconnect high tension cable from spark plug. Hold cable about 1/4" (6 mm) from engine block. Crank engine and check for sparks at cable-to-block gap.
3) If spark occurs, ignition system is okay. No further ignition checks are required. If no spark occurs, check high tension cables, wiring harnesses, distributor cap and rotor. Replace components as necessary. If okay, perform POWER SUPPLY CIRCUIT CHECK.

Hitachi Electronic Ignition (Cont.)

POWER SUPPLY CIRCUIT CHECK

1974-78 Models - 1) Disconnect wiring harness from ignition unit. Turn ignition on. Using a voltmeter, connect positive voltmeter lead to Black/White wire of harness and negative lead to Black wire.
2) Voltmeter should read battery voltage. If battery voltage is not present, check battery, battery cable connections and Black/White and Black wires for continuity.

1979 Models - 1) Turn ignition off. Disconnect ignition unit 2-pin connector from unit. Turn ignition on. Connect negative lead of voltmeter to ground and positive lead to Black/White wire terminal of connector. *See Fig. 3.*
2) Measure voltage and turn ignition off. If battery voltage is shown, but engine will not start, proceed to PRIMARY CIRCUIT CHECK. If battery voltage is not shown, check battery, wiring, fusible link, ignition switch and connectors for condition and continuity.

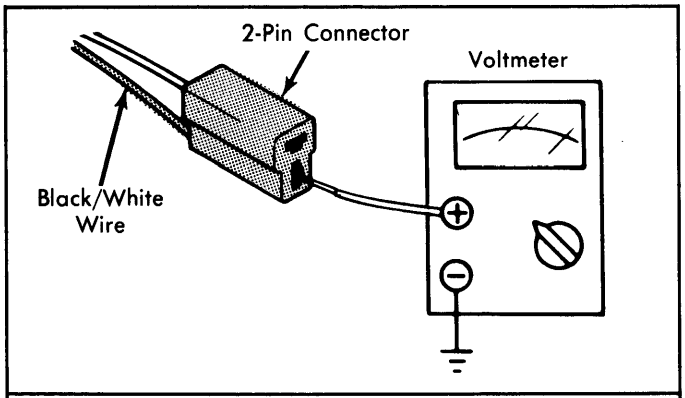

Fig. 3: Checking Power Supply Circuit Voltage (1979 Datsun)

PRIMARY CIRCUIT CHECK

1) Ensure ignition switch is off. Disconnect ignition unit 2-pin connector from unit. Turn ignition on. Connect negative lead of voltmeter to ground and positive lead to Blue wire terminal of connector. *See Fig. 4.* Measure voltage and turn ignition off.
2) If voltmeter reads battery voltage, proceed to IGNITION UNIT & PICK-UP COIL CHECK. If voltage is not within battery voltage, check condition and continuity of primary circuit wiring and connectors. If no problems are found, proceed to IGNITION COIL CHECK.

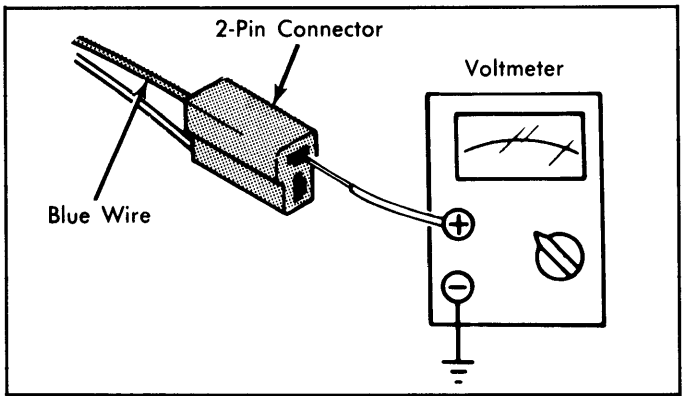

Fig. 4: 1979 Datsun Primary Circuit Voltage Check (Others Similar)

IGNITION COIL CHECK

1) Turn ignition off. Disconnect harness connector from ignition coil negative terminal. Using an ohmmeter set to x1 range, connect ohmmeter to coil primary terminals. Resistance reading should be 0.84-1.02 ohms.
2) Set ohmmeter to x1000 range. Connect ohmmeter leads to coil's positive terminal and coil tower. Resistance reading should be 8200-12,400 ohms. If either reading is not within specifications, replace ignition coil.

IGNITION UNIT & PICK-UP COIL CHECK

1) If power supply circuit, primary circuit and high tension cables test okay, either the ignition unit or pick-up coil is malfunctioning. Turn ignition off.
2) Remove distributor cap and rotor. Set ohmmeter to x100 scale and with all wires attached, touch both ohmmeter leads to pick-up coil terminals. Reverse probes on terminals.
3) Reading should be approximately 400 ohms. If so, pick-up coil is okay. Replace ignition unit. If reading is NOT approximately 400 ohms, go to next step.
4) Ensure 2-pin ignition unit connector is securely connected to unit. Turn ignition on. Connect negative lead of voltmeter to ground and positive lead to ignition coil negative terminal. Measure voltage and turn ignition off.
5) If no voltage (0 volts) is indicated, ignition unit is defective and must be replaced. However, pick-up coil condition is still unknown. Proceed to PICK-UP COIL CHECK.
6) If battery voltage is indicated, remove ignition unit. Using an ohmmeter set to x100 range, touch both ohmmeter leads to pick-up coil terminals. If ohmmeter reading is approximately 400 ohms, pick-up coil is okay and ignition unit is defective. If reading is not to specifications, pick-up coil is defective but condition of ignition unit is still unknown.
7) Replace faulty pick-up coil with a new one. Install original ignition unit and repeat SYSTEM SPARK CHECK. If spark occurs, ignition unit is okay. If no spark occurs, replace faulty ignition unit.

PICK-UP COIL CHECK

Turn ignition off. Remove ignition unit. Measure resistance between both pick-up coil terminals. *See Fig. 5.* If ohmmeter reads approximately 400 ohm, pick-up coil is okay. If not, replace faulty pick-up coil.

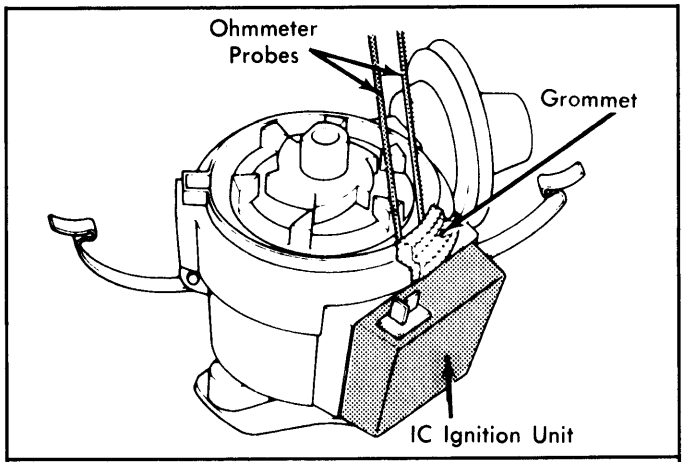

Fig. 5: 1979 Datsun Pick-Up Coil Resistance Check (Others Similar)

OVERHAUL

DISASSEMBLY

1) Remove distributor cap and rotor. Remove ignition unit by disconnecting harness, removing mounting screws, and disconnecting pick-up coil wires.
2) Remove stator and magnet. Remove vacuum controller and carefully pry reluctor from shaft. Remove roll pin, pick-up coil assembly, and breaker plate assembly. Remove pin and pinion gear. Remove rotor shaft and drive shaft assembly.

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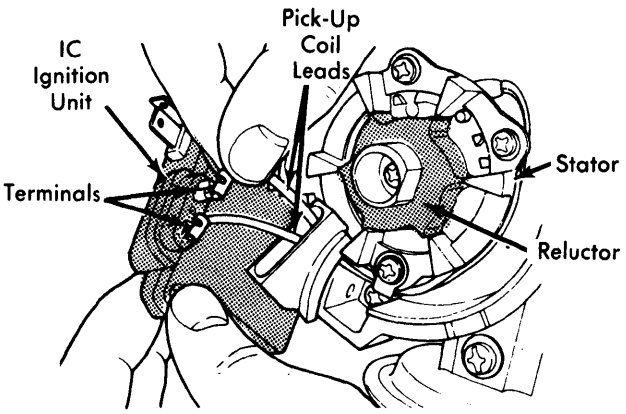

Fig. 6: 1979 Datsun Pick-Up Coil Terminals (Others Similar)

3) Mark rotor and drive shafts for reassembly reference. Remove packing and rotor shaft set screw. Mark one governor spring and its bracket; also one weight and its pivot pin. Remove weights and springs.

REASSEMBLY

1) To reassemble distributor, reverse disassembly procedure. Clean surfaces of ignition unit and distributor before assembly. Ensure pick-up coil leads are securely attached to ignition unit terminals. *See Fig. 6.*

2) Align match marks so parts are assembled to original positions. Be sure reluctor is centered in stator, before tightening stator screws. Drive in roll pin with its slit toward outer end of shaft. Grease top of rotor shaft. Check governor operation before installing distributor.