

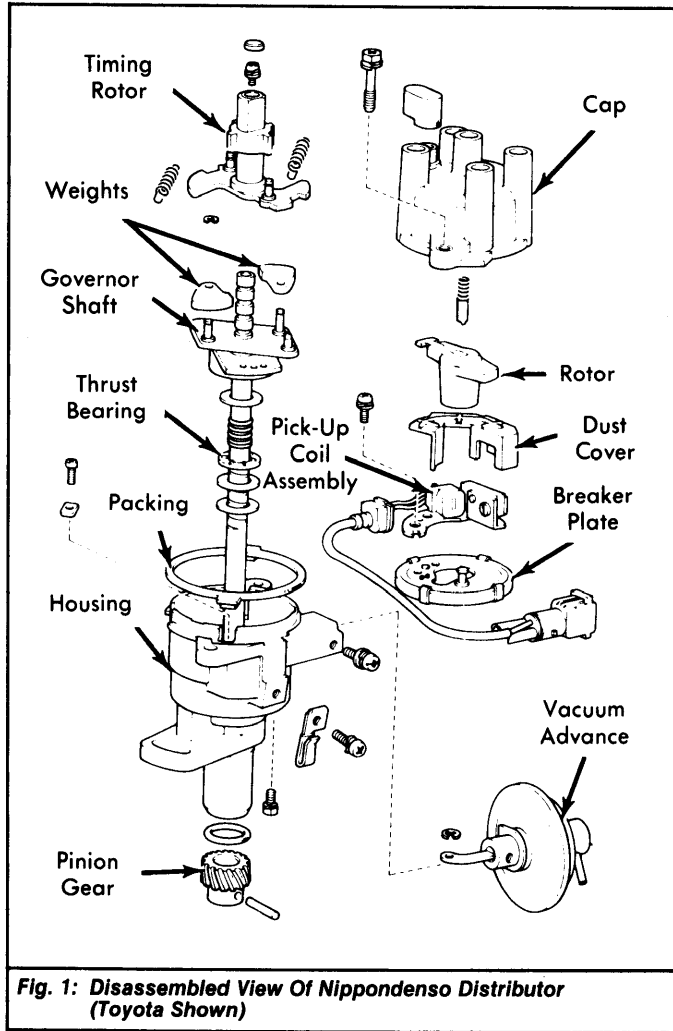
# 1974-79 DISTRIBUTORS & IGNITION SYSTEMS 4-71

## Nippondenso Electronic Ignition

**Subaru: 1978 Calif. Models (With Man. Trans.)**  
**1979 FWD Models**  
**Toyota: 1977 Calif. Celta**  
**1978-79 All Models**

### DESCRIPTION

Nippondenso Transistorized Ignition System includes a breakerless distributor, ignition coil, pick-up coil assembly, and ignition switch. The distributor consists of housing, rotor, and cap. The housing contains timing rotor (reluctor), magnet, and pick-up coil assembly. A transistorized ignitor (ignition control unit) is separate from the distributor. See Fig. 1.

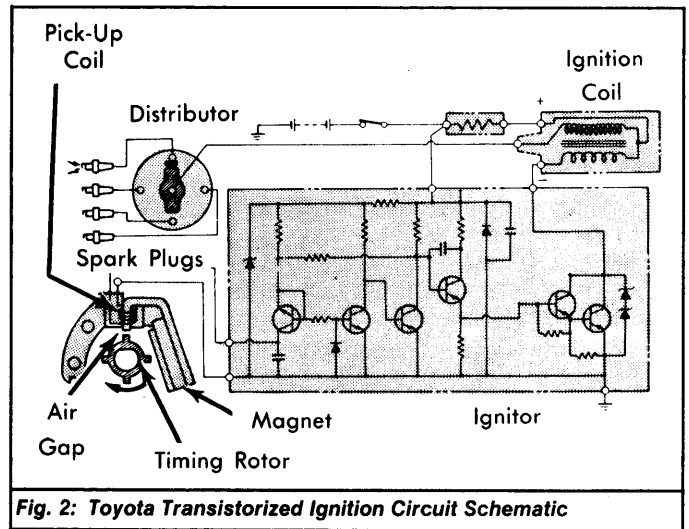


**Fig. 1: Disassembled View Of Nippondenso Distributor (Toyota Shown)**

### OPERATION

As the timing rotor turns with the distributor shaft, its teeth (one for each engine cylinder) pass the pick-up coil assembly. See Fig. 2. As the air gap changes with the passing of the teeth, the magnetic field varies creating a signal in the pick-up coil assembly.

The ignitor senses this signal and turns the ignition coil primary circuit on and off. This causes voltage to build and collapse, resulting in a voltage surge in the ignition coil secondary circuit that fires the spark plugs.



**Fig. 2: Toyota Transistorized Ignition Circuit Schematic**

### SPECIFICATIONS

#### CENTRIFUGAL & VACUUM ADVANCE

See appropriate DISTRIBUTOR ADVANCE SPECIFICATIONS table in this section.

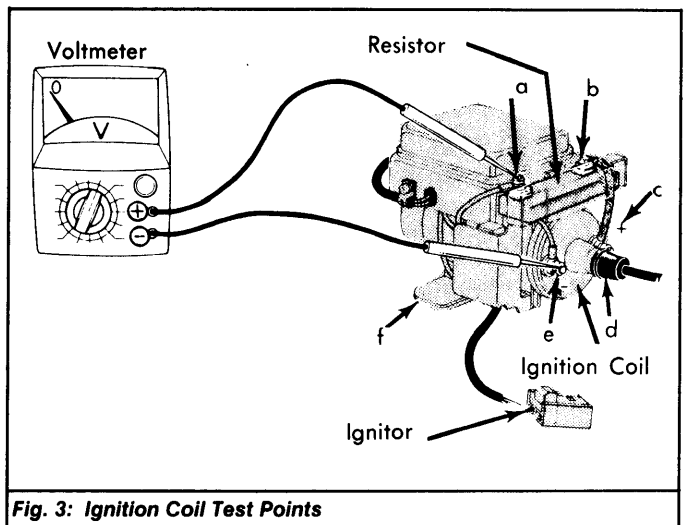
### ADJUSTMENT

#### PICK-UP COIL AIR GAP

Using a flat feeler gauge, check air gap. Gap should be .008-.016" (0.2-0.4 mm). If not, loosen screws and move pick-up coil against feeler gauge. Tighten screws and recheck air gap.

### TESTING

**NOTE:** Be sure all connections are correct, as reverse battery polarity within the system will damage the ignitor (ignition control unit). Do not disconnect battery while engine is running or transistors may be damaged. Do not allow water to enter ignitor. If a tachometer is connected to system, connect tachometer positive lead to coil negative terminal.



**Fig. 3: Ignition Coil Test Points**

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## IGNITION COIL TEST

**Primary Coil Resistance** - Connect ohmmeter leads to coil positive and negative primary terminals "c" and "e". Reading should be 1.3-1.7 ohms. See Fig. 3. If resistance is not within specifications, replace ignition coil.

**Secondary Coil Resistance** - Connect ohmmeter leads to coil's positive terminal "c" and secondary tower "d". Reading should be 12,000-16,000 ohms. If resistance is not within specifications, replace ignition coil.

**Resistor Test** - Connect ohmmeter leads to resistor terminals "a" and "b". Reading should be 1.2 ohms. If resistance is not within specifications, replace ignition coil.

**Insulation Resistance** - Connect ohmmeter leads between coil's positive terminal "c" and coil mounting bracket "f". Reading should be infinity. If resistance is not within specifications, replace ignition coil.

## IGNITOR TEST

1) Turn ignition on. Connect voltmeter positive probe to ignition coil positive terminal, and negative probe to coil negative terminal. Reading should be approximately 6 volts.

**NOTE: On some Toyota models, step 1) is replaced by a voltage check between ignition coil negative terminal "e" and resistor terminal "a". This reading should be 12 volts. Either check is acceptable.**

2) Unplug wiring connector from distributor. Using a 1.5 volt dry cell battery, connect positive battery pole to White wire of 2-pin connector. Connect battery negative pole to Pink wire terminal. See Fig. 4.

3) Again check oil voltage with the 1.5 volt battery installed. Voltage should be approximately zero (0) volts. Turn ignition off, remove test equipment, and reconnect wiring.

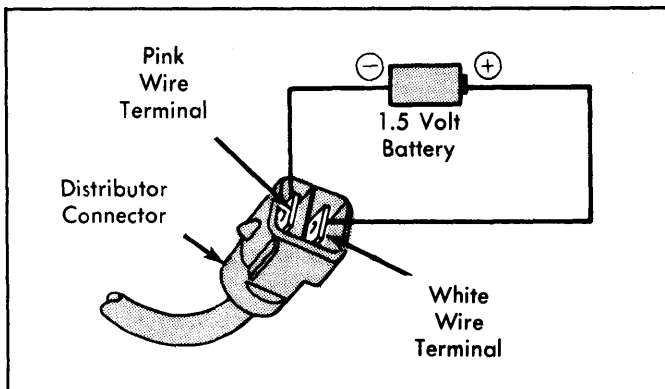


Fig. 4: Checking Coil Voltage with 1.5 Volt Battery (Toyota Shown)

## IGNITION SYSTEM

1) Turn ignition on. Connect negative lead of a voltmeter to ground and positive lead (in turn) to terminals "a" and "b". One reading should be battery voltage, the other one-half that voltage. See Fig. 3. If so, go to step 8).

2) If there was no voltage at either terminal in step 1), check wiring harness, connector, ignition switch and fuse between battery and resistor. Check for broken wires, poor connections, and battery condition.

3) If there was voltage at only one of the terminals in step 1), turn ignition on. Disconnect lead wire from terminal having no voltage. Check resistor terminal for voltage. If none, replace resistor. If voltage now exists, check wiring harness between resistor and positive terminal of ignition coil for short circuit. Repair or replace as necessary.

4) If there was voltage at both terminals, but one was not about one-half battery voltage, turn ignition on. Connect voltmeter negative lead to ground and positive lead to ignition coil negative terminal. Reading should be battery voltage.

5) If not, turn ignition on. Connect voltmeter negative lead to ground and positive lead to ignition coil positive terminal. Reading should be

battery voltage. If not, replace ignition coil. If battery voltage is shown, check wiring harness between resistor and ignition coil positive terminal. Check for broken wires, poor connections and repair as necessary.

6) If voltage at ignition coil negative terminal in step 4), was battery voltage, turn ignition off. Using an ohmmeter set in the x1 range, measure resistance between ignitor side and ground. Resistance should be less than 0.5 ohm. If resistance is more than 0.5 ohm, check ground wire for proper contact at regulator bracket. If resistance was less than 0.5 ohm, turn ignition off.

**NOTE: Do not use battery voltage (12 volts) for next test step or ignitor may be damaged.**

7) Disconnect 2-pin connector. Disconnect high tension wire at distributor and hold it about 1/4" (6 mm) from engine block. Turn ignition on. Check if spark jumps when a small voltage (1-6 volts) is applied intermittently on terminals No. 1 and 2 on ignitor side of 2-pin connector. See Fig. 5. If spark jumps gap, there is no problem with the ignition system. If no spark occurs, replace ignitor.

8) If in step 1), the voltage at one resistor terminal was one-half that of the other, turn ignition on. See Fig. 3. Connect negative lead of voltmeter to a known good ground and positive lead to ignition coil negative terminal. If reading is not below 0.5 volt, check wiring harness for shorts, check loose connections and repair as necessary. If no problem is found, perform steps 6) and 7).

9) If in step 8) reading was below 0.5 volts, turn ignition off and disconnect 2-pin connector. Using an ohmmeter set to the x100 range, connect leads to terminals No. 1 and 2 on distributor side of 2-pin connector. Reading should be 130-190 ohms (140-180 ohms on Subaru).

10) If resistance reading is incorrect, replace pick-up coil assembly. If correct, turn ignition off and check pick-up coil air gap. If air gap is not .008-.016" (0.2-0.4 mm), adjust as necessary. If air gap is correct, perform steps 6) and 7).

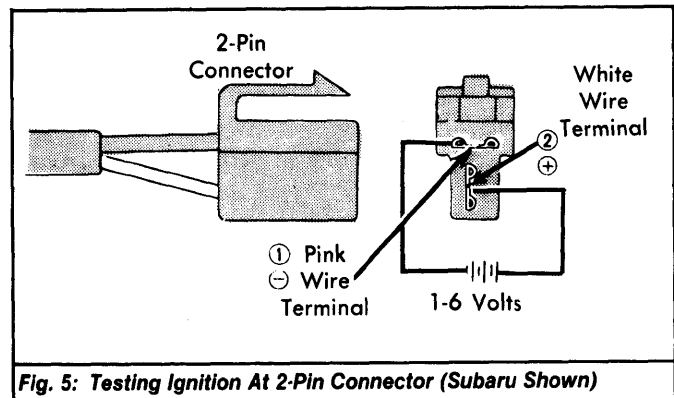


Fig. 5: Testing Ignition At 2-Pin Connector (Subaru Shown)

## OVERHAUL

### DISASSEMBLY

1) Remove distributor cap, rotor, dust cover and packing. Remove pick-up coil assembly, vacuum advance mechanism, breaker plate and drive pinion. See Fig. 1. Discard pinion.

2) Remove 2 screws from bottom of distributor housing and using a plastic hammer, carefully drive out shaft. Remove thick washer, bearing, thin washer, spring, and Blue washer from shaft. Remove governor springs, timing rotor (reluctor), weight snap rings and weights.

### REASSEMBLY

Reassemble distributor in reverse order of disassembly. Lightly grease timing rotor (reluctor) inner surface. Install on shaft, aligning "12" mark with stop. Install long spring on "14" side of timing rotor. Install Blue washer, spring, thin washer, bearing and thick washer on shaft in order. Install new pinion gear. Adjust pick-up coil air gap.