

# IGNITION SYSTEM

## 1988 Toyota Celica

1988 DISTRIBUTORS & IGNITION SYSTEMS  
Toyota Electronic Ignition

Celica

### DESCRIPTION

The electronic ignition system consists of a breakerless distributor, an ignitor, a pick-up coil, ignition coil, and related wiring. Distributor contains a reluctor, breaker plate, and pick-up coil assembly.

Toyota Celica models use an Electronic Spark Advance (ESA). The engine Electronic Control Unit (ECU) uses data supplied by various engine sensors to provide optimum ignition timing under all conditions.

Some Toyota models use an Integrated Ignition Assembly (IIA) that has the ignition coil and ignitor mounted on the distributor.

NOTE: For more information on computer diagnosis and wiring diagrams, see TOYOTA COMPUTER CONTROL SYSTEM article in COMPUTERIZED ENGINE CONTROLS section.

### OPERATION

#### ESA SYSTEMS

The Electronic Control Unit (ECU) is pre-programmed with data for optimum ignition timing under any engine operating condition. Using data from engine sensors (RPM, engine temperature, etc.), the ECU triggers ignition system to provide a spark at precisely the right instant. The ignition system operates on the same principles as a non-ESA system except all timing advance is controlled by the computer rather than by vacuum and mechanical advance mechanisms.

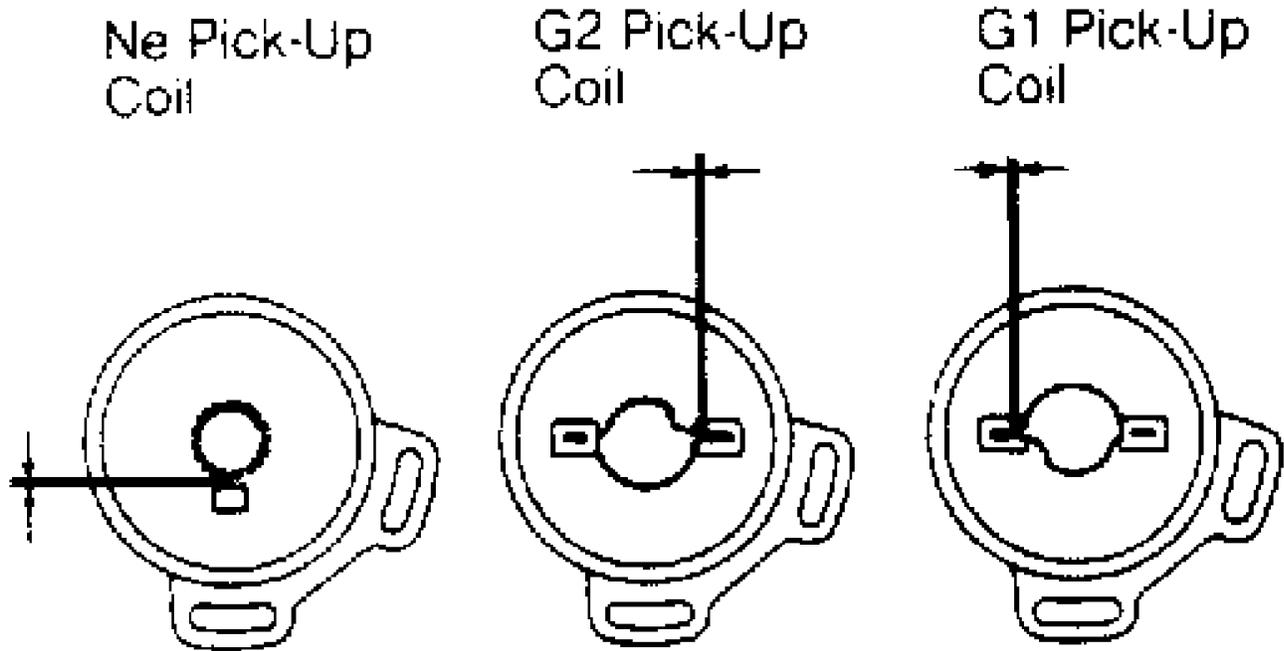
The ECU uses a tachometer signal from the ignition system to detect engine speed and trigger the fuel injectors. Some ignition system problems can be detected by the ECU and will result in a trouble code No. 12, 13 or 14 being set in the computer memory.

### ADJUSTMENTS

#### AIR GAP

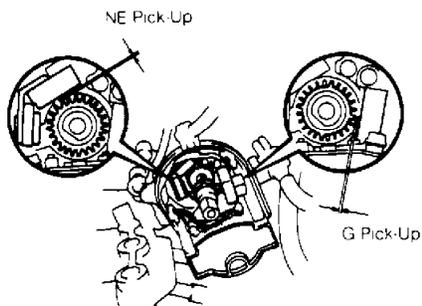
1) Using a flat, non-magnetic feeler gauge, check air gap between pick-up coil and reluctor. See Figs. 1 and 2. Air gap should be within .008-.016" (.20-.40 mm).

2) If air gap is incorrect, remove ignition coil (if equipped) and replace distributor assembly.



CAMRY (4-CYLINDER), CELICA (3S-GE),  
 PICKUP/4RUNNER (V6) & SUPRA  
 (CAMSHAFT POSITION SENSOR ON  
 TURBOCHARGED SUPRA)

Fig. 1: Checking Pick-Up Coil Air Gap on Celica (3S-GE)  
 Courtesy of Toyota Motor Sales U.S.A., Inc.



CAMRY (V6), CELICA (3S-FE),  
 MR2 (4A-GZE) & SUPRA (NON-TURBO)

Fig. 2: Checking Pick-Up Coil Air Gap on Celica (3S-FE)  
 Courtesy of Toyota Motor Sales U.S.A., Inc.

**TROUBLE SHOOTING**

## ENGINE CRANKS BUT WILL NOT START

Check for faulty spark plug(s), ignition coil, ignitor, distributor, and ignition system wiring. Repair or replace parts as necessary. Check ignition timing and adjust if necessary.

## HESITATION & POOR ACCELERATION

Check for faulty spark plug(s) and ignition system wiring. Repair or replace parts as necessary. Check ignition timing and adjust if necessary.

## ROUGH IDLE, STALLS

Check for faulty spark plug(s), ignition coil, ignitor, distributor, and ignition system wiring. Repair or replace parts as necessary. Check ignition timing and adjust if necessary.

## TESTING

### SPARK TEST

1) Disconnect high-tension wire from distributor. On models with integral ignition coil, disconnect a high-tension spark plug wire. On all models, hold wire about 1/2" away from ground. If a spark plug wire was disconnected, connect a spark plug to wire and ground the plug.

CAUTION: On fuel injected models, crank engine for no more than 2 seconds.

2) Crank engine and check for sparks. If sparks occur, check for other source of starting problem. If no sparks occur, check connection of ignition coil, ignitor and distributor.

3) If connections are good, check resistance of high-tension wires. If resistance is out of specification, replace wires. See IGNITION HIGH-TENSION WIRE RESISTANCE table. If wires are okay, go to step 4).

4) Check the power supply to ignition coil and ignitor. Place ignition switch in "ON" position. Check for voltage at ignition coil positive terminal. If voltage is present, go to step 5). If not, check wiring between ignition switch, coil, and ignitor.

5) Check ignition coil resistance. See IGNITION COIL RESISTANCE TESTS in this article. If coil resistance is correct, go to step 5). If not, replace ignition coil.

6) Check pick-up coil resistance. See PICK-UP COIL RESISTANCE TEST in this article. If resistance is correct, go to step 7). If not, remove coil and replace distributor assembly.

7) Check air gap between reluctor and pick-up coil. If air gap is incorrect, remove coil and replace distributor assembly.

8) Check ignition (IGT) signal from ECU if air gap is correct. See TOYOTA COMPUTER CONTROL SYSTEM article in COMPUTERIZED ENGINE CONTROLS article. If ignition signal is okay, try another ignitor.

### IGNITION HIGH-TENSION WIRE RESISTANCE

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Application	Ohms
All Models .....	25 k/ohms Maximum Per Wire

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## IGNITION COIL RESISTANCE TESTS

### Primary Coil Resistance

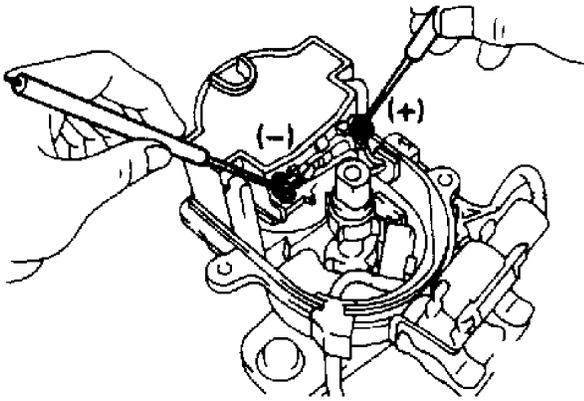
Disconnect ignition coil so it is isolated from remainder of system. Measure resistance between coil positive (+) and negative (-) terminals. See IGNITION COIL RESISTANCE table. See Fig. 3.

### Secondary Coil Resistance

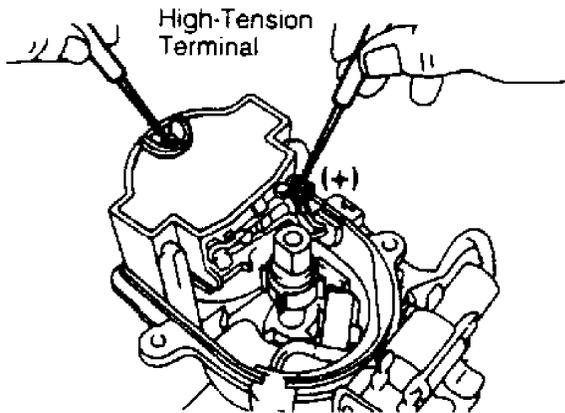
Disconnect ignition coil so it is isolated from remainder of system. Measure resistance between coil positive (+) terminal and to coil tower. See IGNITION COIL RESISTANCE table. See Fig. 3.

### Coil Insulation Resistance

Isolate coil from remainder of system. Measure resistance between ignition coil positive (+) terminal and distributor housing. Reading should exceed 10 megohms (infinity).



PRIMARY RESISTANCE



SECONDARY RESISTANCE

Fig. 3: Checking Integrated Ignition Coil Resistance  
Courtesy of Toyota Motors Sales U.S.A., Inc.

Application	Primary (Ohms)	Secondary (Ohms)
3S-FE Engine .....	.38-.46 .....	7700-10,400
3S-GE Engine .....	.41-.50 .....	10,200-13,800

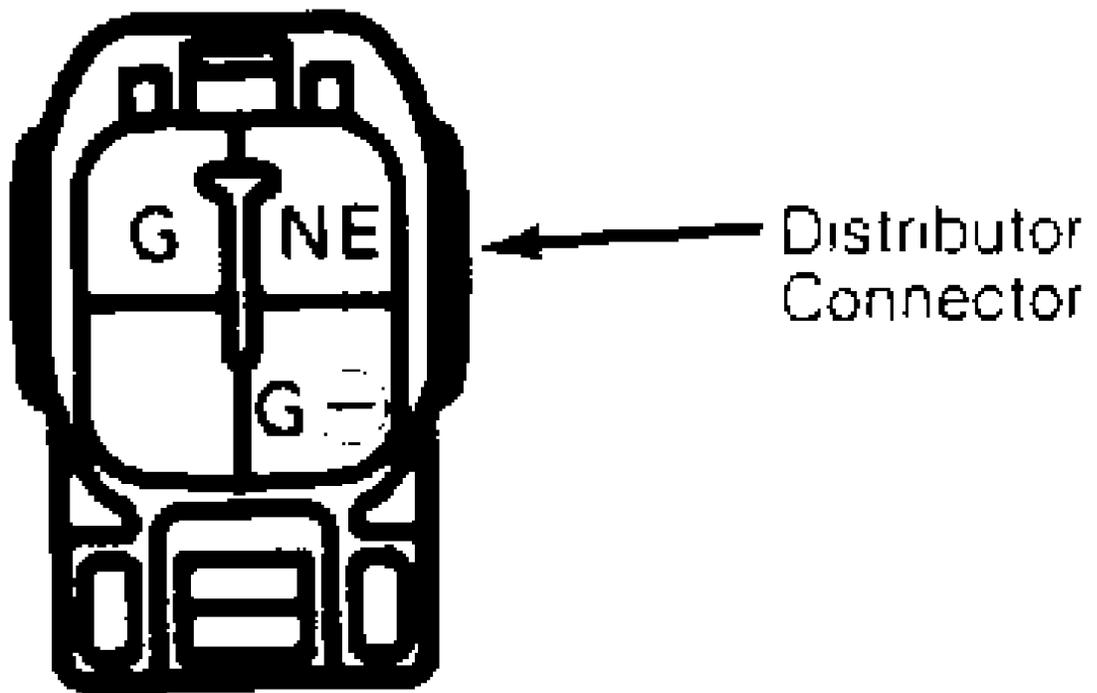
### IGNITION WIRE RESISTANCE TEST

Ignition wire resistance should be less than 25,000 ohms per cord, maximum.

### PICK-UP COIL RESISTANCE TEST

1) On models with 3 wires in distributor connector, measure pick-up coil resistance between terminals "G" and "G(-)", and between "NE" and "G(-)". See Figs. 4 and 5. If resistance is incorrect, remove ignition coil and replace distributor assembly.

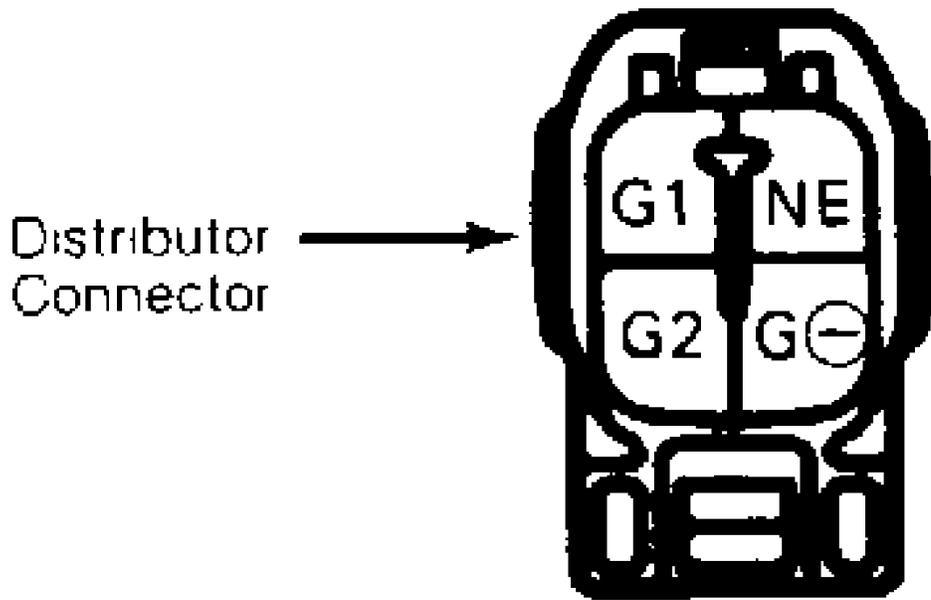
2) On models with 4 wires in distributor connector, measure pick-up coil resistance between terminals "G1" and "G(-)", between "G2" and "G(-)", and between "NE" and "G(-)". See Figs. 4 and 5. If resistance is incorrect, replace distributor assembly.



**CAMRY (4-CYLINDER), CELICA (3S-FE)  
& LAND CRUISER**

Fig. 4: Celica (3S-FE) Pick-Up Coil Connector  
Courtesy of Toyota Motor Sales U.S.A., Inc.

NOTE. On turbocharged Supra, connector is for camshaft position sensor.



CAMRY (V6), CELICA (3S-GE),  
MR2 (SUPERCHARGED), PICKUP &  
4RUNNER (V6) & SUPRA

Fig. 5: Celica Pick-Up Coil Connector  
Courtesy of Toyota Motor Sales U.S.A., Inc.

TOYOTA PICK-UP COIL RESISTANCE

Application	Ohms
Celica .....	140-180

**OVERHAUL**

NOTE: Distributors on all engines not illustrated must be replaced as an assembly.

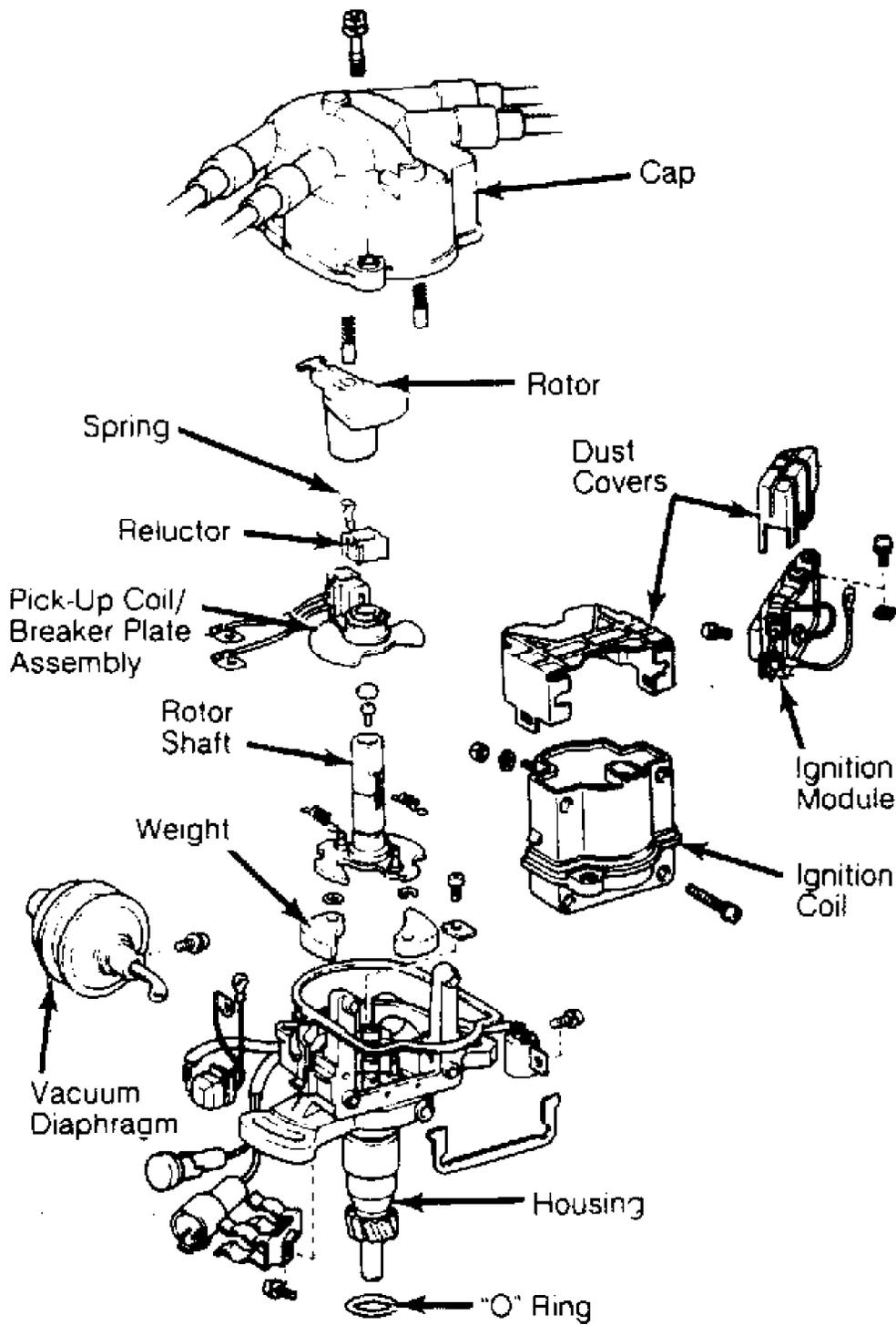


Fig. 6: Exploded View of Typical Integrated Ignition Distributor  
 Courtesy Toyota Motor Sales U.S.A., Inc.