# **IGNITION SYSTEM**

# **ON-VEHICLE INSPECTION**

NOTICE:

"Cold" and "Hot" in these sentences express the temperature of the coils themselves. "Cold" is from -10 °C (14°F) to 50°C (122°F) and "Hot" is from 50°C (122°F) to 100°C (212°F).

# 1. INSPECT IGNITOR AND SPARK TEST

Check that the spark occurs.

- (1) Disconnect high-tension cords from spark plug.
- (2) Remove the spark plug.
- (3) Install the spark plug to each high-tension cord.
- (4) Ground the spark plug.
- (5) Check if spark occurs while engine is being cranked.

#### NOTICE:

#### To prevent excess fuel being injected from the injectors during this test, do not crank the engine for

#### more 5 – 10 seconds at a time.

If the spark does not occur, do the test as follows:

SPARK TEST	]	
	ı [	Connect occuraty
	BAD	Connect securely.
V OK		
CHECK RESISTANCE OF HIGH-TENSION		
CORD (See step 2) Maximum resistance: 25 kO per cord	BAD	Replace the cord(s).
V OK	J [	
CHECK POWER SUPPLY TO IGNITION COIL		
AND IGNITOR	_	Check wiring between ignition switch
2. Check that there is battery voltage at	BAD	
ignition coil positive (+) terminal.	J	
VK CHECK RESISTANSE OF IGNITION COIL	ן ו	
(See step 4)		Poplace ignition coil
Resistance: Cold Hot	BAD	Replace ignition coll.
<b>Secondary</b> $9.3 - 16.0 \Omega$ $11.7 - 18.8 \Omega$		
V OK	J	
CHECK RESISTANSE OF CAMSHAFT	[	
(See step 5)		Poplaco concor
Cold Hot	BAD	Replace sensol.
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	J	
CHECK RESISTANSE OF CRANKSHAFT	] [	
POSITION SENSOR		
Cold Hot	BAD	Replace sensor.
Resistance: 1,630 – 2,740 Ω 2,065 – 3,225 Ω		
	ا ۱ ،	
CHECK IGT SIGNAL FROM ECM		Check wiring between ECM, and ignitor.
	BAD	and then try another ECM.
TRY ANOTHER IGNITOR	] [	

- (6) Using a 16 mm plug wrench, install the spark plugs.
- Torque: 18 N·m (195 kgf·cm, 15 ft·lbf)
- (7) Reinstall the ignition coil with ignitor.

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### 2. INSPECT HIGH-TENSION CORDS

- (a) Remove the air cleaner hose.
- (b) Disconnect the high–tension cords at the rubber boot. Do not pull on the high–tension cords.

#### NOTICE:

Pulling on or bending the cords may damage the conductor inside.



(c) Using an ohmmeter, measure the high-tension cord resistance.

### Maximum resistance: 25 k $\Omega$ per cord

If the resistance is greater than maximum, check the terminals. If necessary, replace the high–tension cord.

(d) Reconnect and install the high-tension cords as shown in the illustration.





- **INSPECT SPARK PLUGS**
- Disconnect the 3 high-tension cords.
- (b) Remove the 3 ignition coils.
- Using a 16 mm plug wrench, remove the 6 spark plugs. (C)

(d) Clean the spark plugs.

lator damage.

If abnormal, replace the spark plug. **Recommended spark plug:** 

DENSO made

NGK made

If the electrode has traces of wet carbon, allow it to dry and then clean with a spark plug cleaner.

# Air pressure: Below 588 kPa (6 kgf/cm<sup>2</sup>, 85 psi) Duration: 20 seconds or less

HINT:

(e)

If there are traces of oil, remove it with gasoline before using the spark plug cleaner.

Visually check the spark plug for thread damage and insu-

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2003 TOYOTA TACOMA (RM1002U)

SPARK PLUG

CLEANER



- (f) (g)
- Adjust the electrode gap.

Carefully bend the outer electrode to obtain the correct electrode gap.

Correct electrode gap: 1.1 mm (0.043 in.)

- Using a 16 mm plug wrench, reinstall the spark plugs. Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)
- (h) Reinstall the 3 ignition coils.
- (i) Reconnect the 3 high-tension cords.
- 4. **INSPECT IGNITION COIL**
- (a) Remove the air cleaner hose.
- (b) Disconnect the high-tension cords and ignition coil connectors from the ignition coils.



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(c) Inspect the primary coil resistance.
Using an ohmmeter, measure the resistance between the positive (+) and negative (-) terminals.
Primary coil resistance:

Cold	0.67 – 1.05 Ω
Hot	0.85 – 1.23 Ω

If the resistance is not as specified, replace the ignition coil.(d) Remove the ignition coils.

 (e) Inspect the secondary coil resistance. Using an ohmmeter, measure the resistance between the positive (+) and high-tension terminals.
Secondary coil resistance:

Cold	9.3 – 16.0 Ω
Hot	11.7 – 18.8 Ω

If the resistance is not as specified, replace the ignition coil. (f) Reinstall the ignition coils.

- (g) Reconnect the ignition coil connectors and the high-tension cords.
- (h) Reinstall the air cleaner hose.



## 5. INSPECT CAMSHAFT POSITION SENSOR

- (a) Disconnect the sensor connector.
- (b) Using an ohmmeter, measure the resistance between the terminals.

# **Resistance:**

Cold	835 – 1,400 Ω
Hot	1,060 – 1,645 Ω

If the resistance is not as specified, replace the sensor (See page IG-9).

(c) Reconnect the camshaft position sensor connector.



# INSPECT CRANKSHAFT POSITION SENSOR

- (a) Remove the sensor connector (See page IG-10).
- (b) Using an ohmmeter, measure the resistance between the terminals.

#### Resistance:

Cold	1,630 – 2,740 Ω
Hot	$2,065 - 3,225 \ \Omega$

(c) Reinstall the sensor.