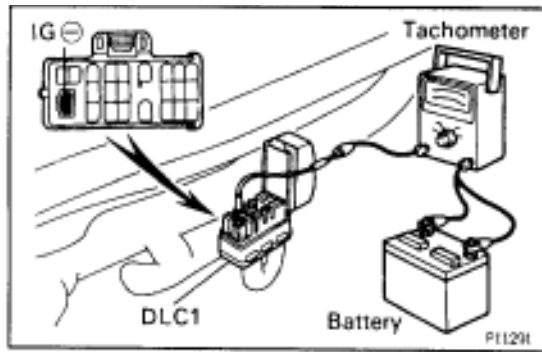


IGNITION SYSTEM





(2JZ-GE) PRECAUTION

1. With a tachometer connected to the system, connect the tester probe of the tachometer to terminal IG \ominus of the DLC1.
2. As some tachometers are not compatible with this ignition system, we recommend that you confirm the compatibility of your unit before use.
3. Never allow the tachometer terminals to touch ground as it could result in damage to the igniter and/or ignition coil.
4. Do not disconnect the battery while the engine is running.
5. Check that the igniter is properly grounded to the body.

PREPARATION SST (SPECIAL SERVICE TOOLS)

	09240-00020 Wire Gauge Set	Distributor
---	----------------------------	-------------

RECOMMENDED TOOLS

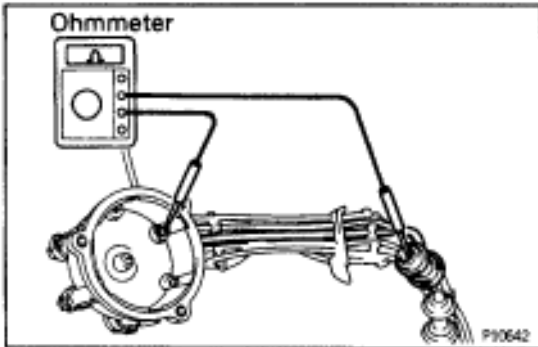
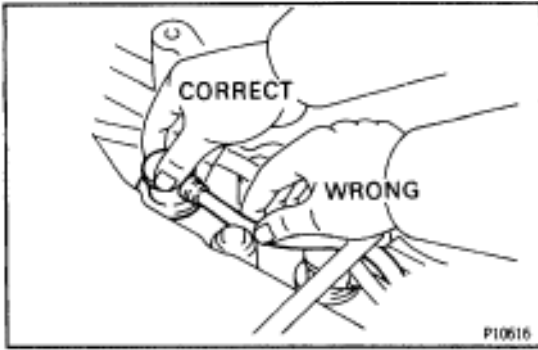
	09082-00050 TOYOTA Electrical Tester Set ◆	
	09200-00010 Engine Adjust Kit ◆	

EQUIPMENT

Megger insulation resistance meter	Spark plug
Spark plug cleaner	
Thermometer	

COOLANT

Item	Capacity	Classification				
Engine coolant (W/Heater) <table border="0" style="margin-left: 20px;"> <tr> <td>M/T</td> <td>7.3 liters (7.7 US qts, 6.4 Imp. qts)</td> </tr> <tr> <td>A/T</td> <td>8.3 liters (8.8 US qts, 7.3 Imp. qts)</td> </tr> </table>	M/T	7.3 liters (7.7 US qts, 6.4 Imp. qts)	A/T	8.3 liters (8.8 US qts, 7.3 Imp. qts)		Ethylene-glycol base
M/T	7.3 liters (7.7 US qts, 6.4 Imp. qts)					
A/T	8.3 liters (8.8 US qts, 7.3 Imp. qts)					



HIGH-TENSION CORDS INSPECTION

1. REMOVE THROTTLE BODY
(See throttle body removal in SFI System)
2. REMOVE NO.3 TIMING BELT COVER
3. REMOVE CYLINDER HEAD REAR COVER
4. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS AND IGNITION COIL

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.

5. REMOVE DISTRIBUTOR CAP WITHOUT DISCONNECTING HIGH-TENSION CORDS
6. INSPECT HIGH-TENSION CORD RESISTANCE

Using an ohmmeter, measure the resistance without disconnecting the distributor cap.

Maximum resistance:

25 k Ω per cord

If the resistance is greater than maximum, check the terminals. If necessary, replace the high-tension cord and/or distributor cap.

7. REINSTALL DISTRIBUTOR CAP
8. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS AND IGNITION COIL
9. REINSTALL CYLINDER HEAD REAR COVER
10. REINSTALL NO.3 TIMING BELT COVER
11. REINSTALL THROTTLE BODY
(See throttle body installation in SFI System)

SPARK PLUGS INSPECTION

NOTICE:

- Never use a wire brush for cleaning.
- Never attempt to adjust the electrode gap on used a spark plug.
- Spark plugs should be replaced every 100,000 km (60,000 miles).

1. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS
2. INSPECT ELECTRODE

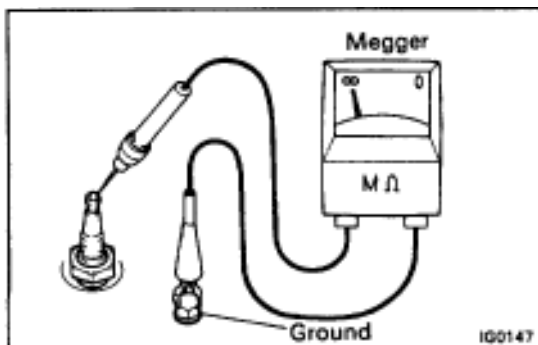
Using a megger (insulation resistance meter), measure the insulation resistance.

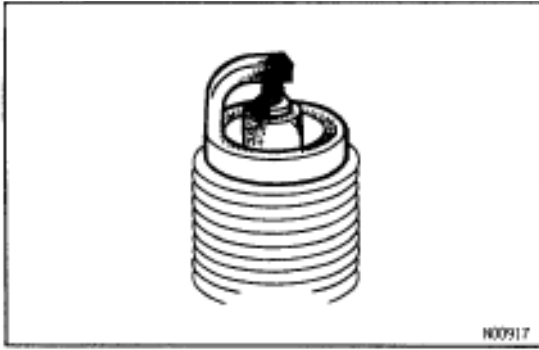
Standard correct insulation resistance:

10 M Ω or more

If the resistance is less than specified, proceed to step 7.

HINT: If a megger is not available, the following simple method of inspection provides fairly accurate results.



**Simple Method:**

- (a) Quickly race the engine 5 times to 4,000 rpm.
- (b) Remove the spark plug.
- (c) Visually check the spark plug.
If the electrode is dry...OK
If the electrode is wet...Proceed to step 4
- (d) Reinstall the spark plug.

3. REMOVE SPARK PLUGS

Using a 16 mm plug wrench, remove the 6 spark plugs.

4. VISUALLY INSPECT SPARK PLUGS

Check the spark plug for thread damage and insulator damage.

If abnormal, replace the spark plug.

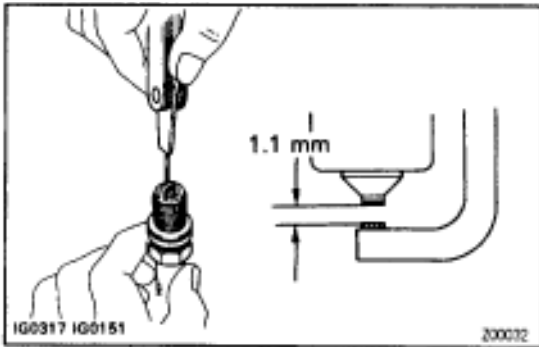
Recommended spark plug:

ND

PK16R11

NGK

BKR5EP11

**5. INSPECT ELECTRODE GAP**

Maximum electrode gap for used spark plug:

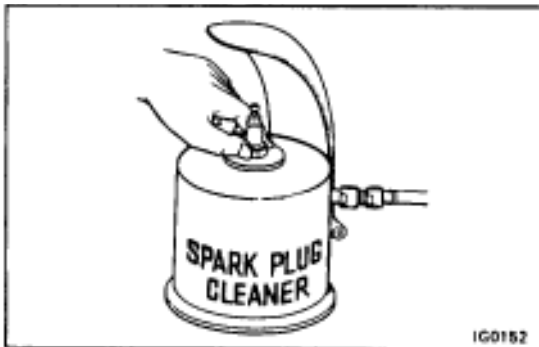
1.3 mm (0.051 in.)

If the gap is greater than maximum, replace the spark plug.

Correct electrode gap for new spark plug:

1.1 mm (0.043 in.)

NOTICE: If adjusting the gap of a new spark plug, bend only the base of the ground electrode. Do not touch the tip. Never attempt to adjust the gap on the used plug.

**6. CLEAN SPARK PLUGS**

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·cm², 85 psi)

Duration:

20 seconds or less

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

7. REINSTALL SPARK PLUGS

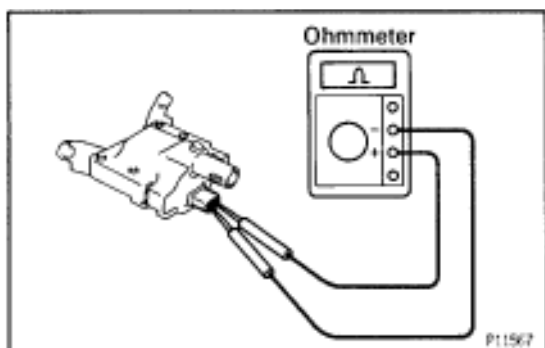
Torque: 18 N·m (180 kgf·cm, 13 ft·lbf)

8. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS

IGNITION COIL INSPECTION

NOTICE: "Cold" and "Hot" in the following 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. **DISCONNECT IGNITION COIL CONNECTOR**
2. **DISCONNECT HIGH-TENSION CORD FROM IGNITION COIL**
3. **INSPECT PRIMARY COIL RESISTANCE**



Using an ohmmeter, measure the resistance between the positive (+) and negative (-) terminals.

Primary coil resistance:

Cold:

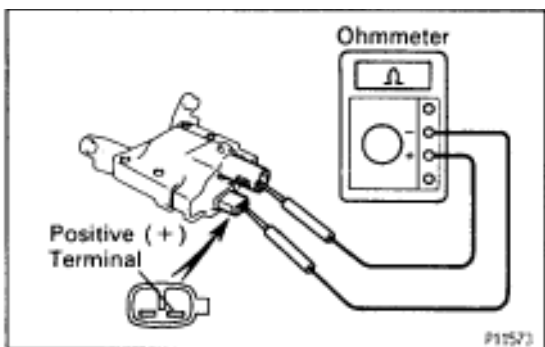
0.36–0.55 Ω

Hot:

0.45–0.65 Ω

If the resistance is not as specified, replace the ignition coil.

4. **INSPECT SECONDARY COIL RESISTANCE**



Using an ohmmeter, measure the resistance between the positive (+) and high-tension terminals.

Secondary coil resistance:

Cold:

9.0–15.4 $\text{k}\Omega$

Hot:

11.4–18.1 $\text{k}\Omega$

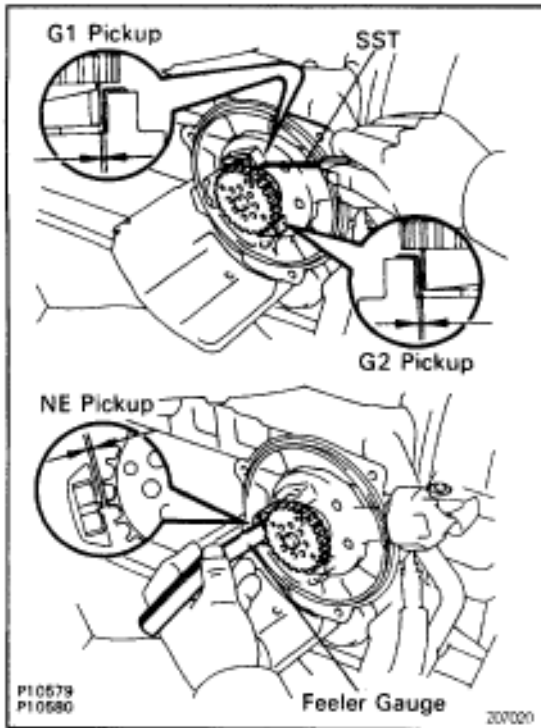
If the resistance is not as specified, replace the ignition coil.

5. **RECONNECT HIGH-TENSION CORD TO IGNITION COIL**
6. **RECONNECT IGNITION COIL CONNECTOR**

DISTRIBUTOR INSPECTION

NOTICE: "Cold" and "Hot" in the following 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. **REMOVE DISTRIBUTOR CAP WITHOUT DISCONNECTING HIGH-TENSION CORDS**
2. **REMOVE ROTOR**



3. INSPECT AIR GAP

Using SST (G1 and G2 pickups) and a feeler gauge (NE pickup), measure the air gap between the signal rotor and pickup coil projection.

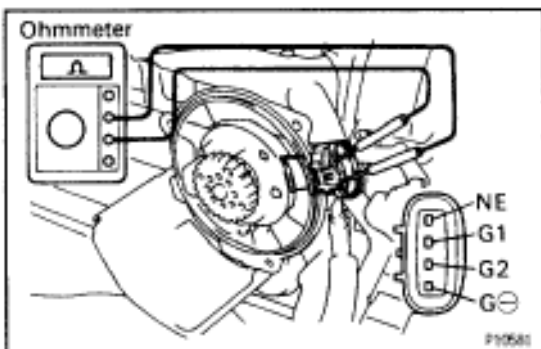
SST 09240-00020 for G1 and G2 pickups

Air gap:

0.2–0.5 mm (0.008–0.020 in.)

If the air gap is not as specified, replace the distributor housing assembly.

4. DISCONNECT DISTRIBUTOR CONNECTOR



5. INSPECT SIGNAL GENERATOR (PICKUP COIL) RESISTANCE

Using an ohmmeter, measure the resistance between terminals.

Pickup coil resistance:

Cold

G1 and G[⊖]

125 – 200 Ω

G2 and G[⊖]

125 – 200 Ω

NE and G[⊖]

155 – 250 Ω

Hot

G1 and G[⊖]

160 – 235 Ω

G2 and G[⊖]

160 – 235 Ω

NE and G[⊖]

190 – 290 Ω

If the resistance is not as specified, replace the distributor housing assembly.

6. RECONNECT DISTRIBUTOR CONNECTOR

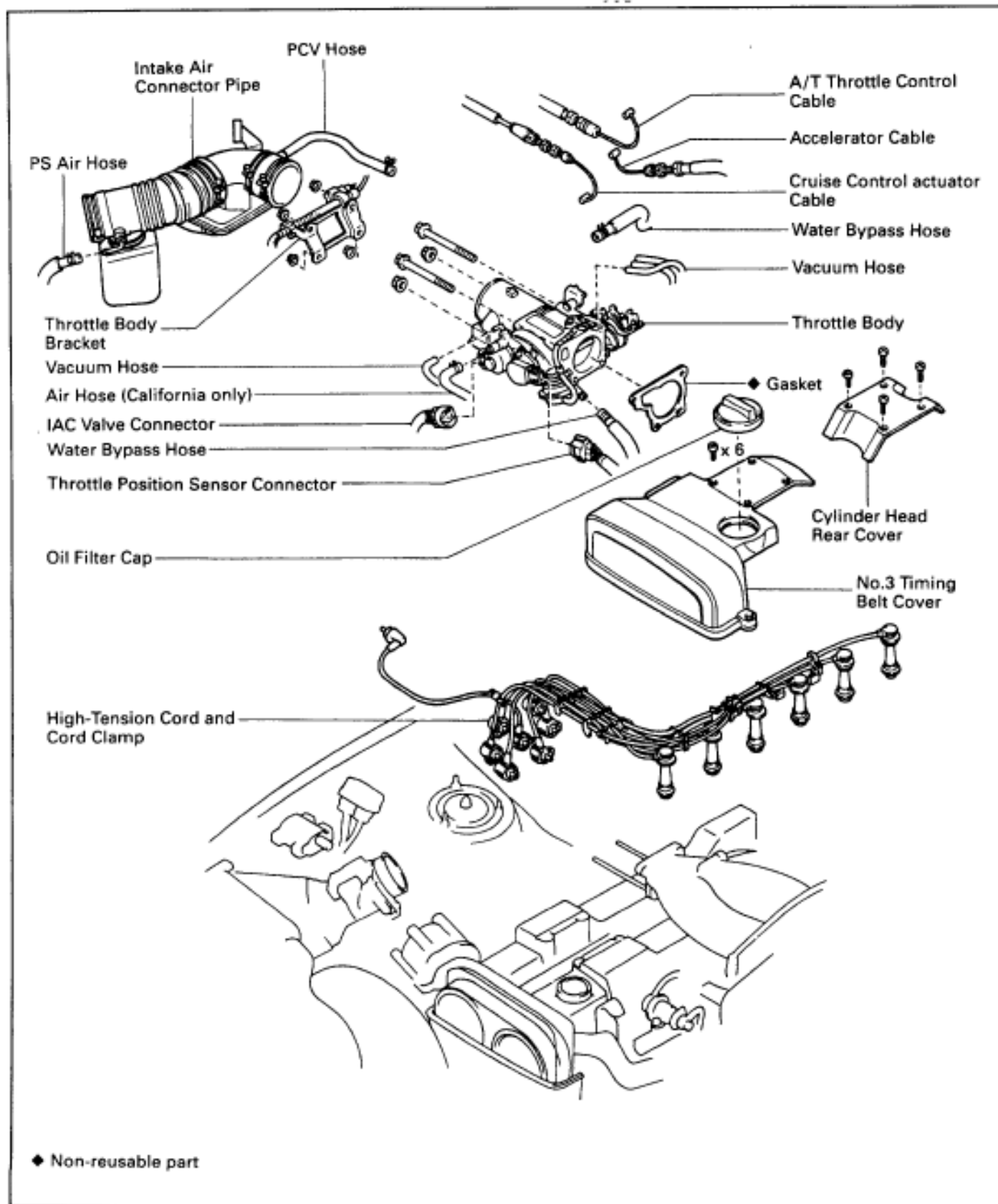
7. REINSTALL ROTOR

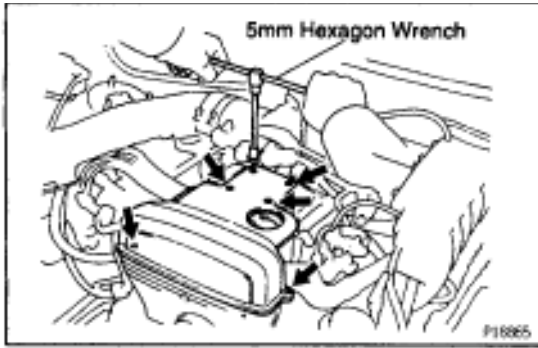
8. REINSTALL DISTRIBUTOR CAP

IGNITER INSPECTION

(See procedure Spark Test on page [IG-4](#))

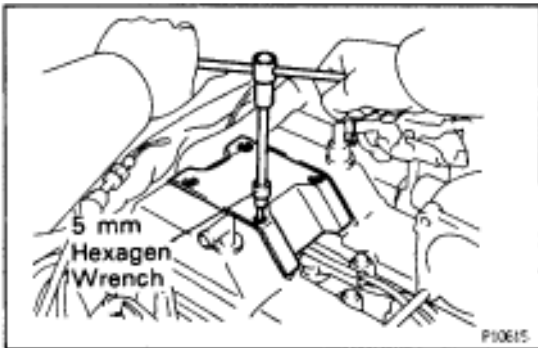
HIGH-TENSION CORD AND CORD CLAMP COMPONENTS FOR REMOVAL AND INSTALLATION





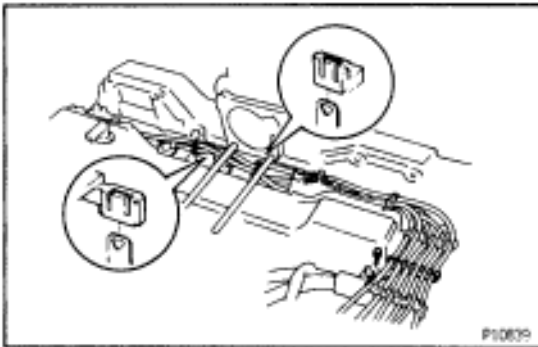
HIGH-TENSION CORDS AND CORD CLAMPS REMOVAL

1. **REMOVE THROTTLE BODY**
(See throttle body removal in SFI System)
2. **REMOVE NO.3 TIMING BELT COVER**
 - (a) Remove the oil filler cap.
 - (b) Using a 5 mm hexagon wrench, remove the 6 bolts and timing belt cover.
3. **REMOVE CYLINDER HEAD REAR COVER**
Using a 5 mm hexagon wrench, remove the 4 bolts and rear cover.

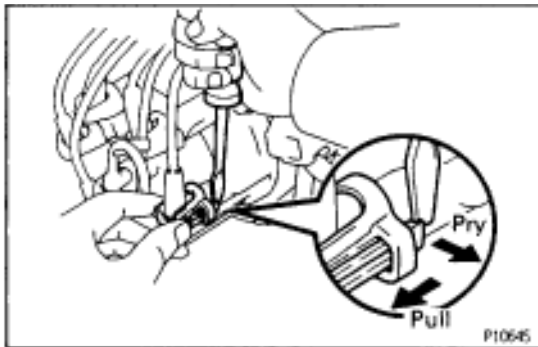


4. REMOVE HIGH-TENSION CORDS AND CORD CLAMPS ASSEMBLY

- (a) Disconnect the 2 high-tension cord clamps from the claws of the No.3 cylinder head cover.
- (b) Remove the bolt holding the high-tension cord clamp to No.2 cylinder head cover.

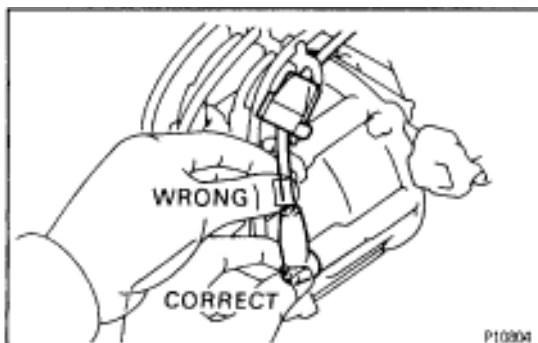


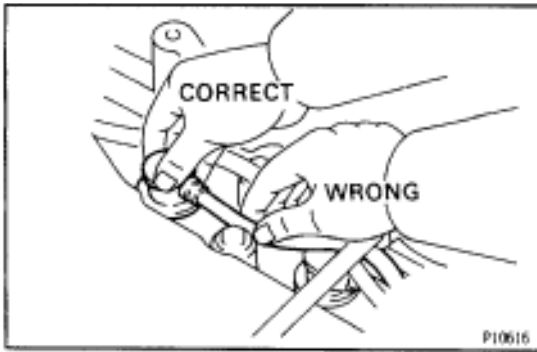
- (c) Disconnect the high-tension cords from the distributor and ignition coil.
 - Using a screwdriver, lift up the lock claw and disconnect the holder from the distributor (ignition coil).



- Disconnect the high-tension cord at the grommet. Do not pull on the cord.

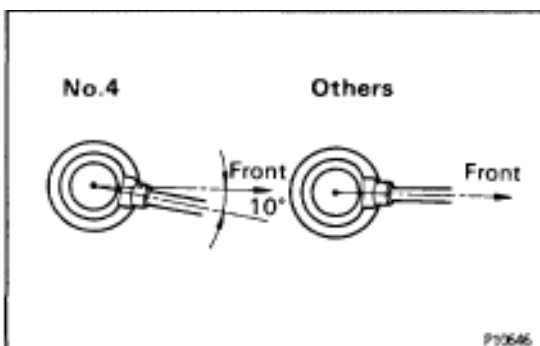
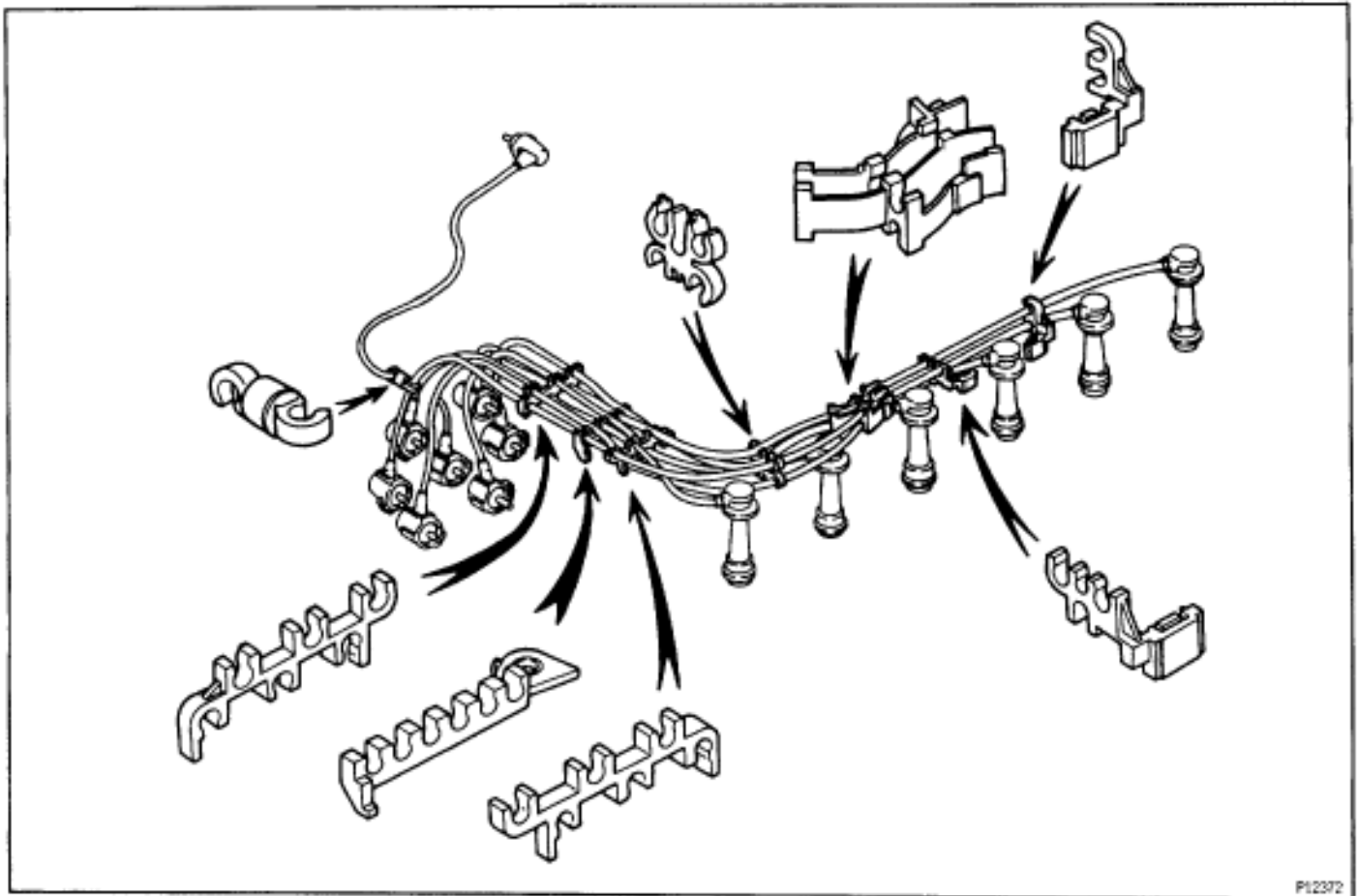
NOTICE: Pulling on or bending the cords may damage the conductor inside.





- (d) Disconnect the high-tension cords from the spark plugs. Disconnect the high-tension cords at the rubber boot. Do not pull on the cords.
NOTICE: Pulling on or bending the cords may damage the conductor inside.
- (e) Remove the 7 high-tension cords and 8 cord clamp assembly.

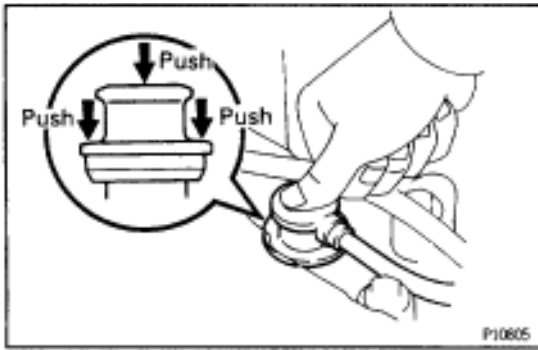
5. REMOVE CORD CLAMPS FROM HIGH-TENSION CORDS



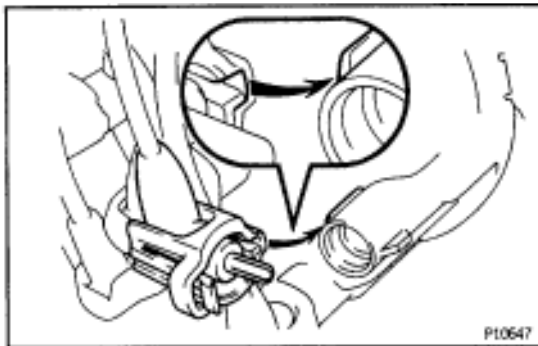
HIGH-TENSION CORDS AND CORD CLAMPS INSTALLATION

1. INSTALL HIGH-TENSION CORDS

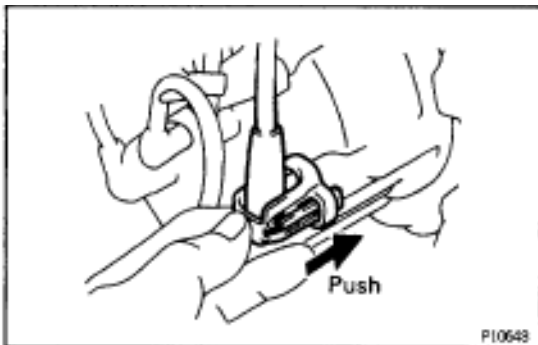
- (a) Connect the high-tension cords to the spark plugs.
- Face the cord of the high-tension cord as shown in the illustration.



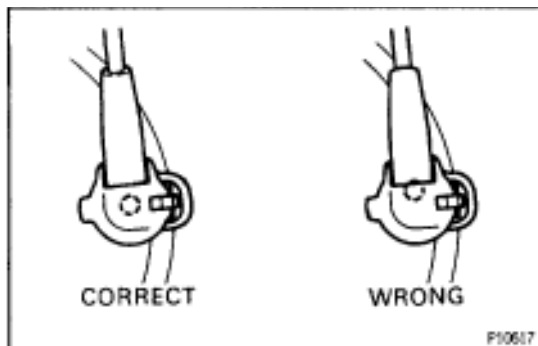
- Fit the high-tension cord by pushing the center and its outer ring.



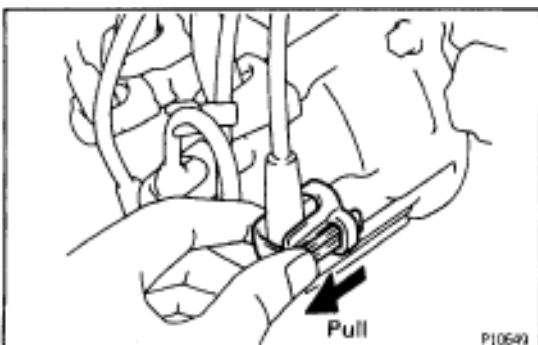
- (b) Connect the high-tension cords to the distributor and ignition coil.
- Align the spline of the distributor (ignition coil) with the spline groove of the holder.



- Push in the holder together with the grommet until the claw of the holder locks securely.

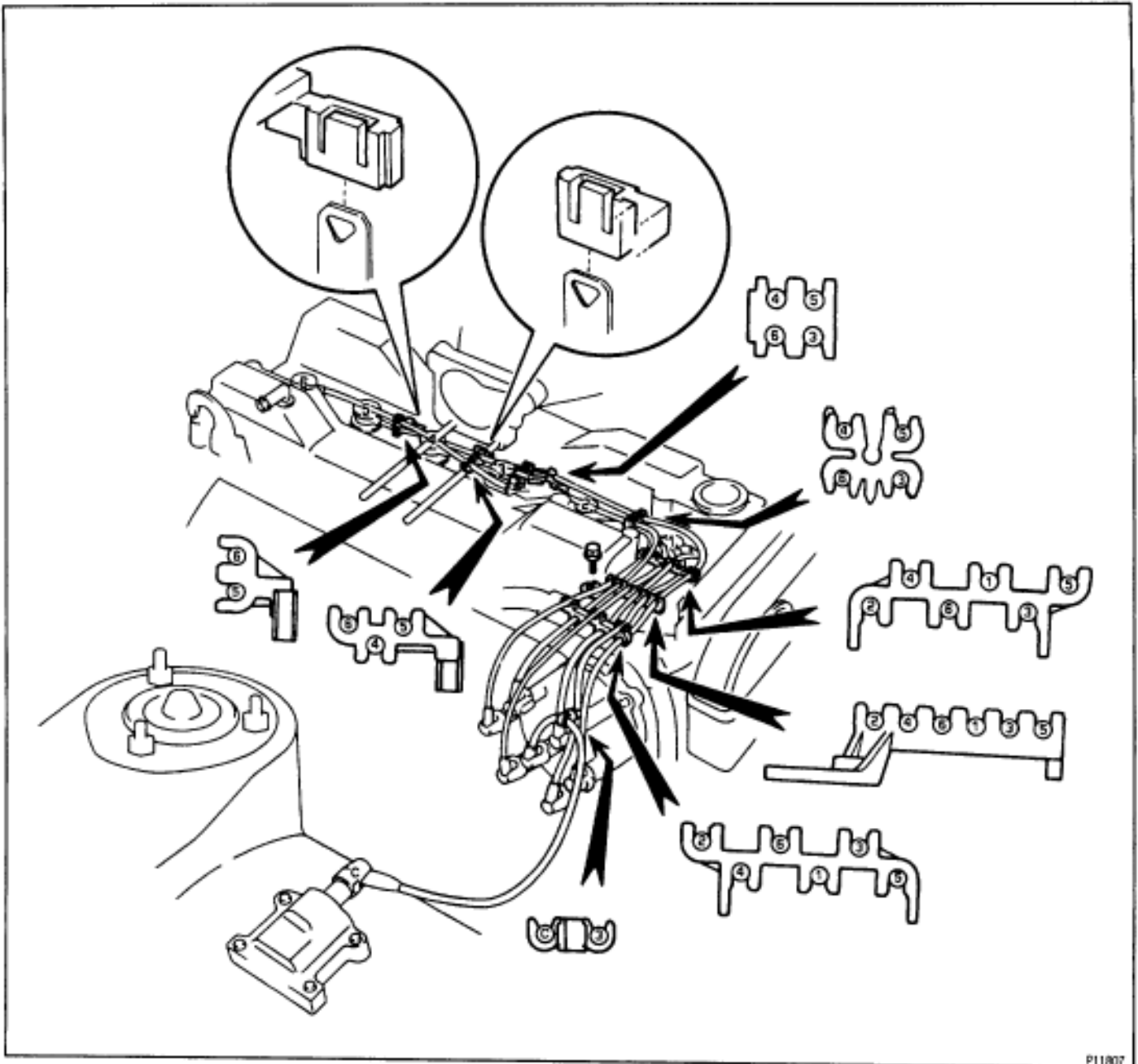


NOTICE: Check that holder is correctly installed to the grommet and distributor (ignition coil) as shown in the illustration.



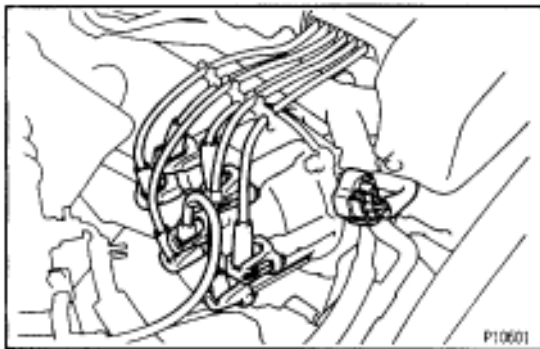
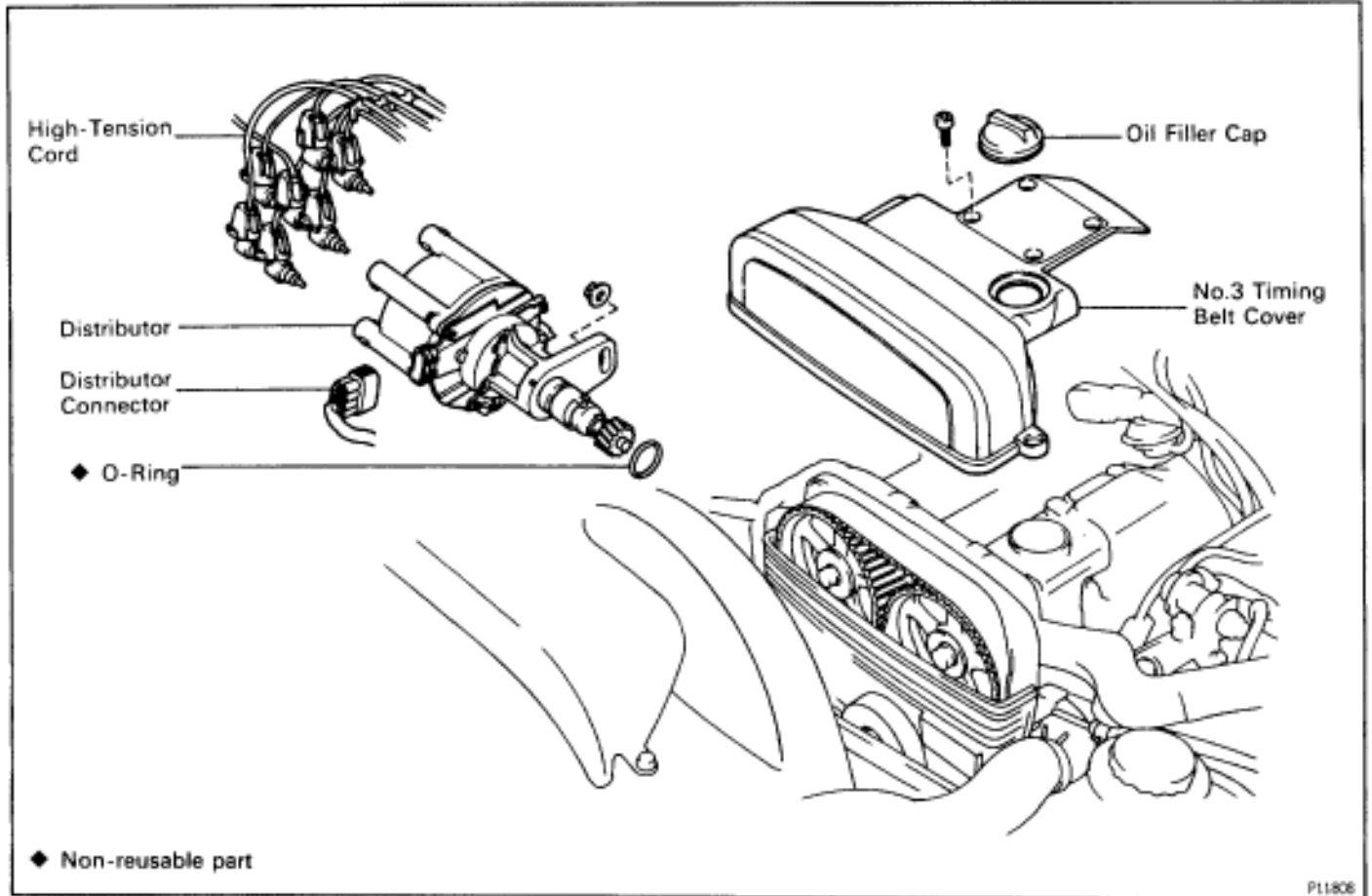
- Check that the lock claw of the holder is engaged by lightly pulling the holder.

- (c) Secure the high-tension cords with the 8 cord clamps as shown in the illustration.



2. INSTALL CYLINDER HEAD REAR COVER
3. INSTALL NO.3 TIMING BELT COVER
4. INSTALL THROTTLE BODY ASSEMBLY
(See throttle body installation in SFI System)
5. FILL WITH ENGINE COOLANT

DISTRIBUTOR COMPONENTS FOR REMOVAL AND INSTALLATION

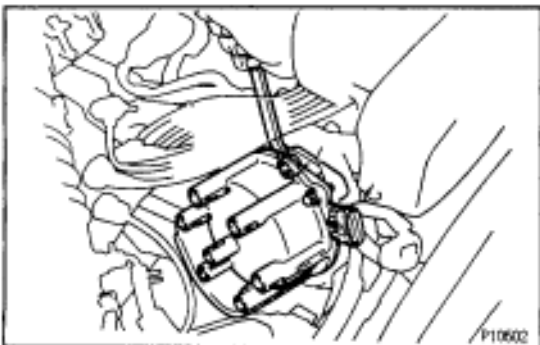


DISTRIBUTOR REMOVAL

1. DISCONNECT DISTRIBUTOR CONNECTOR
2. DISCONNECT HIGH-TENSION CORDS FROM DISTRIBUTOR

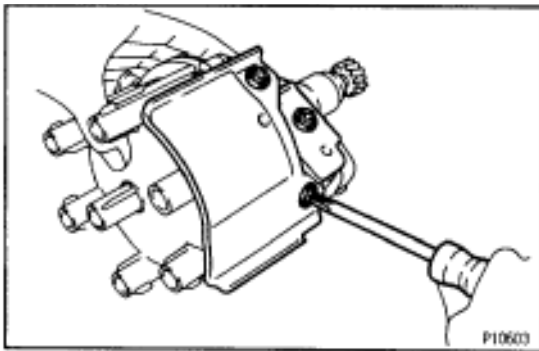
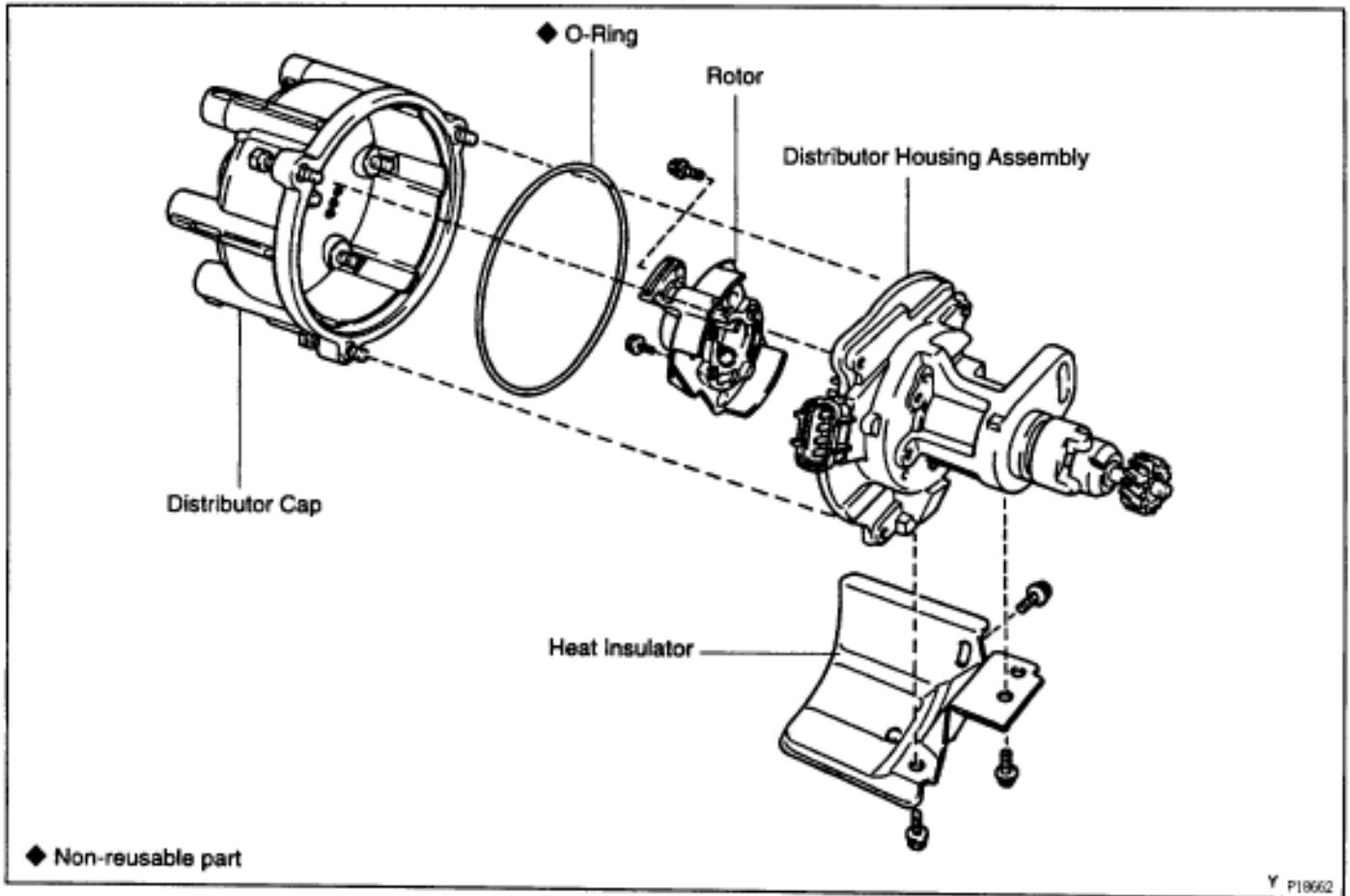
Disconnect the 7 high-tension cords from the distributor.

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



3. REMOVE DISTRIBUTOR
 - (a) Remove the nut.
 - (b) Pull out the distributor.
 - (c) Remove the O-ring from the distributor housing.

COMPONENTS FOR DISASSEMBLY AND ASSEMBLY

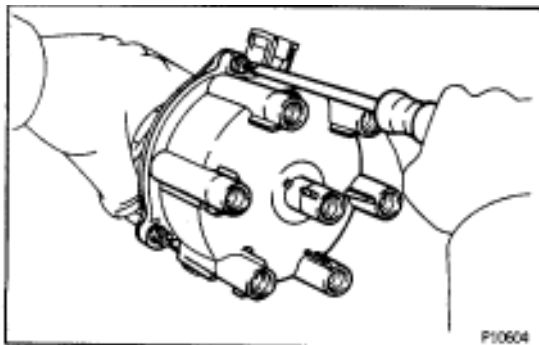


DISTRIBUTOR DISASSEMBLY

Assembly is in the reverse order of disassembly.

1. REMOVE HEAT INSULATOR

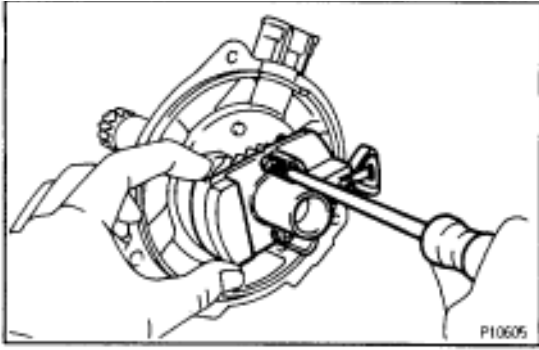
Remove the 3 screws and heat insulator.



2. REMOVE DISTRIBUTOR CAP

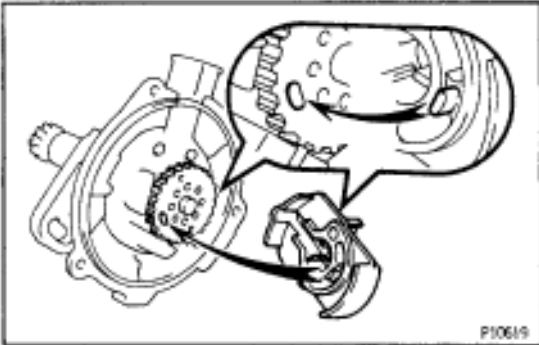
Loosen the 3 bolts, and remove the distributor cap and O-ring.

ASSEMBLY HINT: Use a new O-ring.

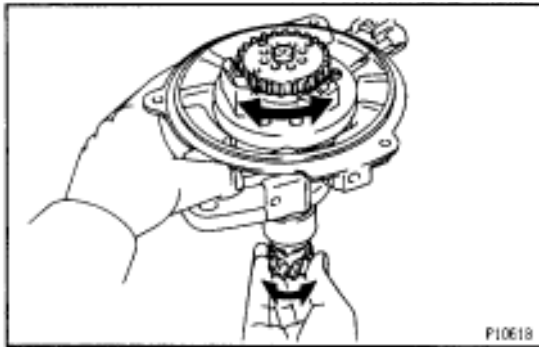


3. REMOVE ROTOR

Remove the 2 screws and rotor.



ASSEMBLY HINT: Align the hollow of the signal rotor with the protrusion of the rotor.

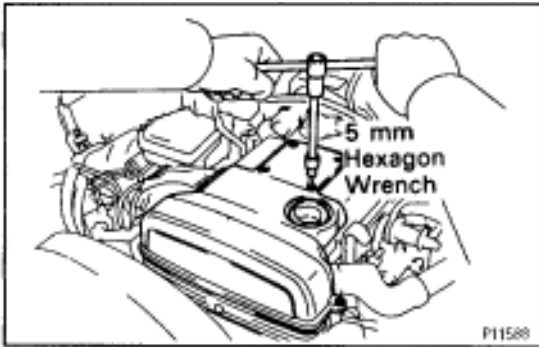


DISTRIBUTOR INSPECTION

INSPECT SHAFT

Turn the shaft and check that it is not rough or worn.

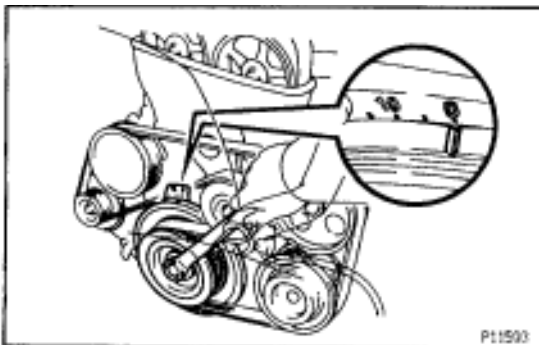
If it feels rough or worn, replace the distributor housing assembly.



DISTRIBUTOR INSTALLATION

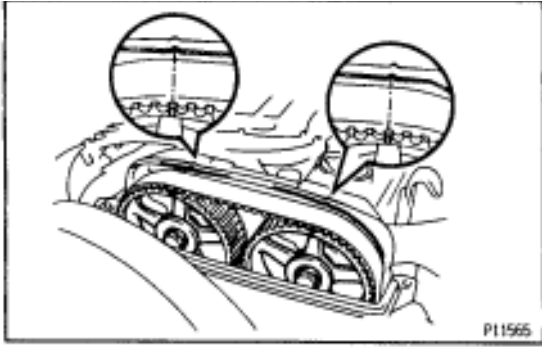
1. REMOVE NO.3 TIMING BELT COVER

- (a) Remove the oil filler cap.
- (b) Using a 5 mm hexagon wrench, remove the 6 bolts and timing belt cover.

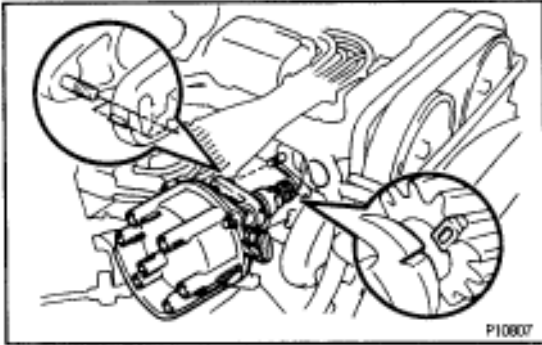


2. SET NO.1 CYLINDER TO TDC/COMPRESSION

- (a) Turn the crankshaft pulley, and align its groove with timing mark "O" of the No.1 timing belt cover.



- (b) Check that the timing marks of the camshaft timing pulleys and No.4 timing belt cover are aligned.
If not, turn the crankshaft 1 revolution (360°) and align the mark as above.



3. INSTALL DISTRIBUTOR

- (a) Install a new O-ring to the distributor housing.
(b) Apply a light coat of engine oil on the O-ring.
(c) Align the marks of the drive gear and distributor housing.
(d) Insert the distributor, aligning the protrusion of the flange with that of the stud bolt on the cylinder head.
(e) Install the distributor with the nut. Lightly tighten the nut.

4. REINSTALL NO.3 TIMING BELT COVER

5. CONNECT HIGH-TENSION CORDS TO DISTRIBUTOR

Connect the 7 high-tension cords to the distributor.

Firing order:

1 - 5 - 3 - 6 - 2 - 4

6. CONNECT DISTRIBUTOR CONNECTOR

7. ADJUST IGNITION TIMING

(See ignition timing inspection and adjustment)

SERVICE SPECIFICATIONS

SERVICE DATA

Firing order	-		1 - 5 - 3 - 6 - 2 - 4
High-tension cord	Resistance	Limit	25 k Ω per cord
Spark plug	Recommended spark plug	ND NGK	PK16R11 BKR5EP11
	Correct electrode gap for new plug		1.1 mm (0.043 in.)
	Maximum electrode gap for used plug		1.3 mm (0.051 in.)
Ignition coil	Primary coil resistance	at cold	0.36-0.55 Ω
		at hot	0.45-0.65 Ω
	Secondary coil resistance	at cold	9.0-15.4 k Ω
		at hot	11.4-18.1 k Ω
Distributor	Air gap		0.2-0.5 mm (0.008-0.020 in.)
	Pickup coil resistance	at cold G1-G \ominus	125-200 Ω
		G2-G \ominus	125-200 Ω
		NE-G \ominus	155-250 Ω
		at hot G1-G \ominus	160-235 Ω
		G2-G \ominus	160-235 Ω
		NE-G \ominus	190-290 Ω

TORQUE SPECIFICATIONS

Part tightened	N·m	kgf·cm	ft·lbf
Spark plug x Cylinder head	18	180	13