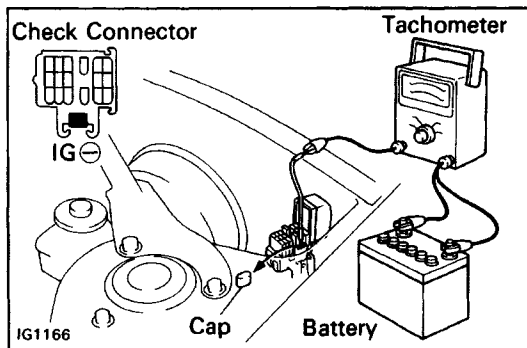

IGNITION SYSTEM



PRECAUTIONS

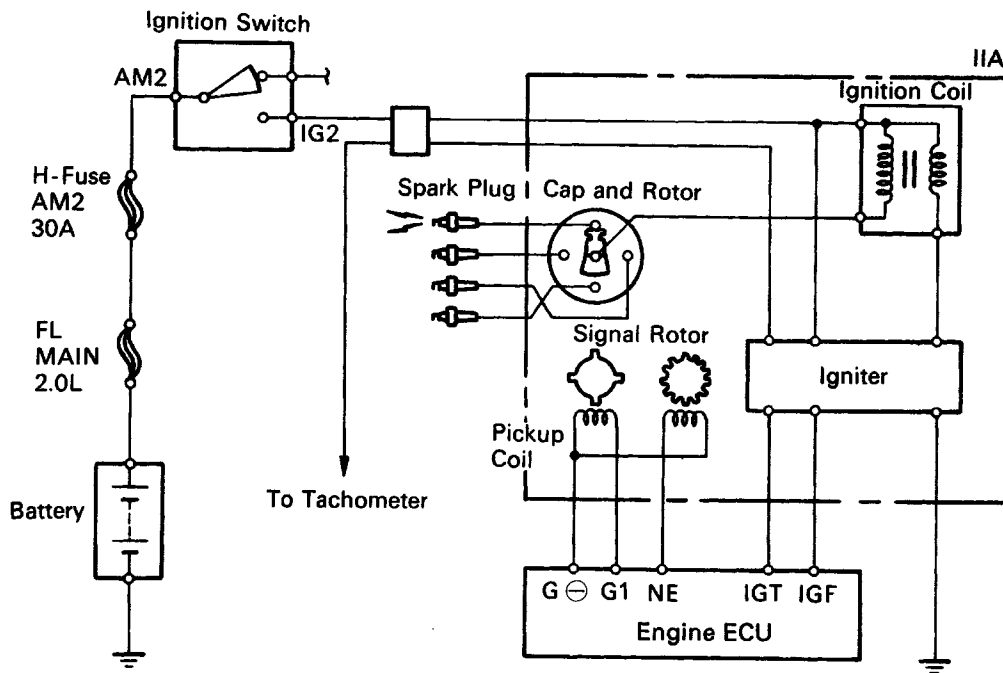
1. Do not leave the ignition switch on for more than 10 minutes if the engine will not start.
2. With a tachometer connected to the system, connect the test probe of the tachometer to terminal IGO of the check connector.
3. As some tachometers are not compatible with this ignition system, we recommend that you confirm the compatibility of your unit before use.
4. NEVER allow the tachometer terminal to touch ground as this could damage the igniter and/or ignition coil.
5. Do not disconnect the battery when the engine is running.
6. Check that the igniter is properly grounded to the body.

TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Engine will not start/ hard to start (cranks ok)	Incorrect ignition timing Ignition problems <ul style="list-style-type: none"> • Ignition coil • Igniter • Distributor • High-tension cords Ignition wiring disconnected or broken	Reset timing Inspect coil Inspect igniter Inspect distributor Inspect high-tension cords Inspect wiring	IG-25, 29, 37 IG-8, 13, 17 IG-9, 14, 19 IG-9, 13, 19 IG-7, 11, 16
Rough idle or stalls	Spark plug faulty Ignition wiring faulty Incorrect ignition timing Ignition problems <ul style="list-style-type: none"> • Ignition coil • Igniter • Distributor High-tension cords	Inspect plugs Inspect wiring Reset timing Inspect coil Inspect igniter Inspect distributor Inspect high-tension cords	IG-7, 11, 16 IG-25, 29, 37 IG-8, 13, 17 IG-9, 14, 19 IG-9, 13, 19 IG-7, 11, 16
Engine hesitates/ poor acceleration	Spark plug faulty Ignition wiring faulty Incorrect ignition timing	Inspect plugs Inspect wiring Reset timing	IG-7, 11, 16 IG-25, 29, 37
Engine dieseling (runs after ignition switch is turned off)	Incorrect ignition timing	Reset timing	IG-25, 29, 37
Muffler explosion (after fire) all the time	Incorrect ignition timing	Reset timing	IG-25, 29, 37
Engine backfires	Incorrect ignition timing	Reset timing	IG-25, 29, 37
Poor gasoline mileage	Spark plug faulty Incorrect ignition timing	Inspect plugs Reset timing	IG-7, 11, 16 IG-25, 29, 37
Engine overheats	Incorrect ignition timing	Reset timing	IG-25, 29, 37

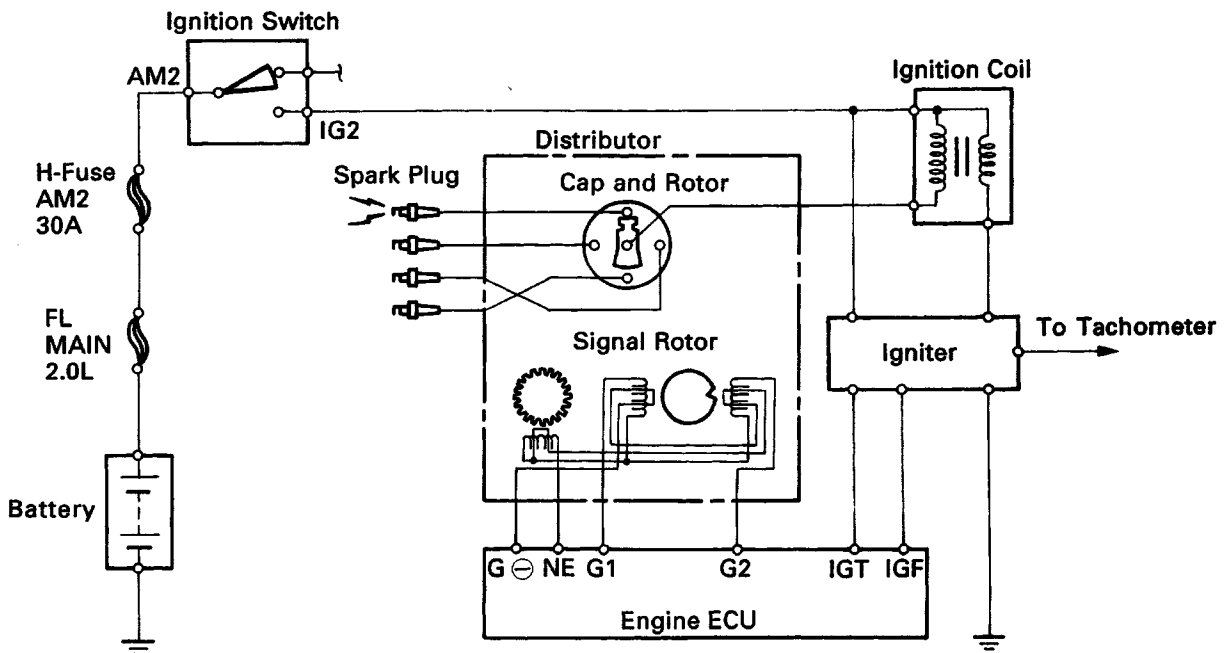
IGNITION SYSTEM CIRCUIT

4A-FE

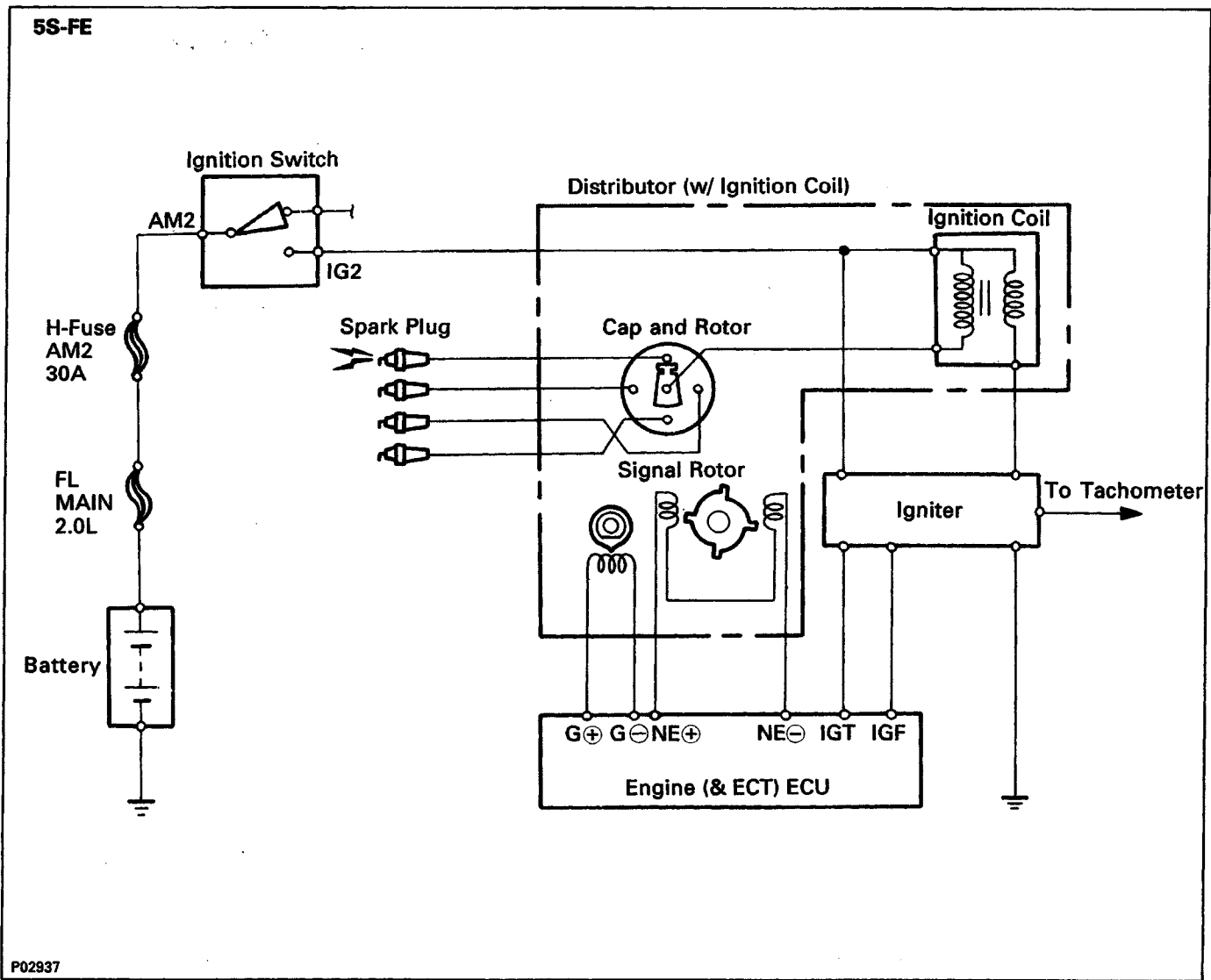


IG1310

3S-GTE



P02936



ELECTRONIC SPARK ADVANCE (ESA)

The ECU is programmed with data for optimum ignition timing under any and all operating conditions. Using data provided by sensors which monitor various engine functions (rpm, intake air volume, engine temperature, etc.) the microcomputer (ECU) triggers the spark at precisely the right instant.

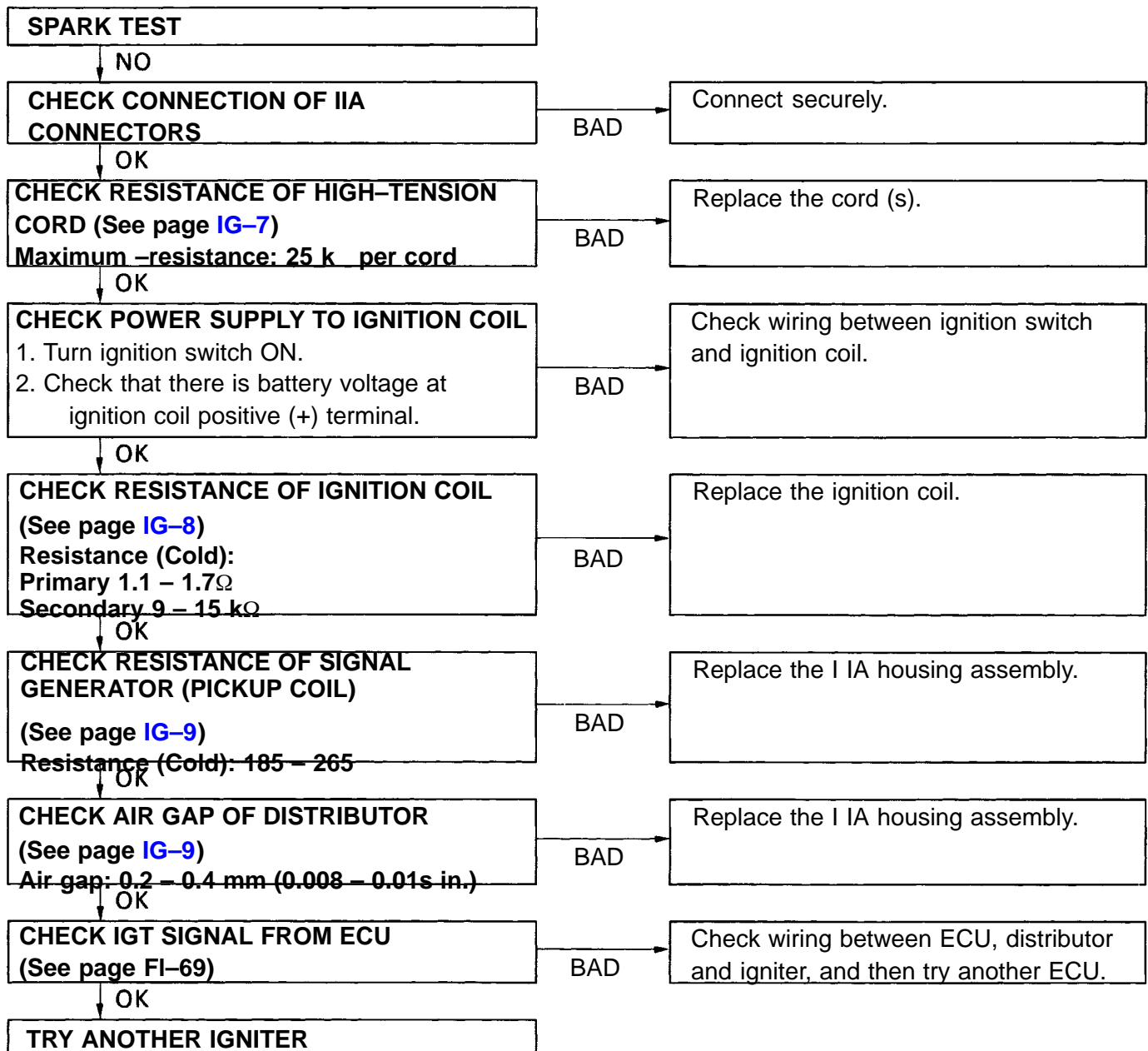
ON-VEHICLE INSPECTION (4A-FE)

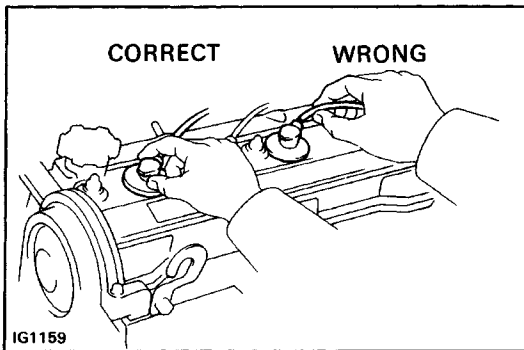
SPARK TEST

CHECK THAT SPARK OCCURS

- Disconnect the high-tension cords from the spark plugs. (See page IG-7)
 - Remove the spark plugs. (See page IG-7)
 - Install the spark plugs to the each high-tension cord.
 - Ground the spark plug.
 - Check if spark occurs while engine is being cranked.
- HINT: To minimize the amount of fuel injected into cylinders during this test, crank the engine for no more than 1 – 2 seconds at a time.

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





INSPECTION OF HIGH-TENSION CORDS

1. DISCONNECT HIGH-TENSION CORDS FROM 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.

2. REMOVE IIA CAP WITHOUT DISCONNECTING HIGH-TENSION CORDS

3. INSPECT HIGH-TENSION CORD RESISTANCE

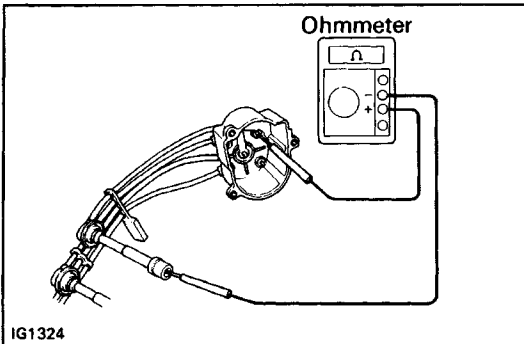
Using an ohmmeter, measure the resistance without disconnecting the IIA cap.

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 IIA cap.

4. REINSTALL IIA CAP

5. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS

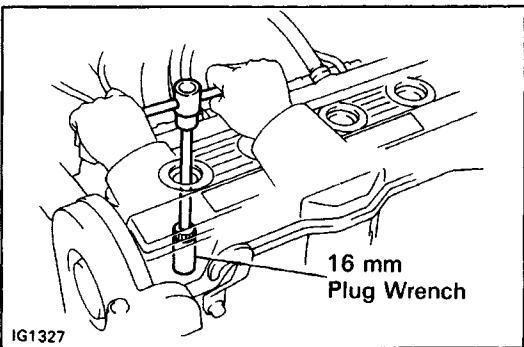


INSPECTION OF SPARK PLUGS

1. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS

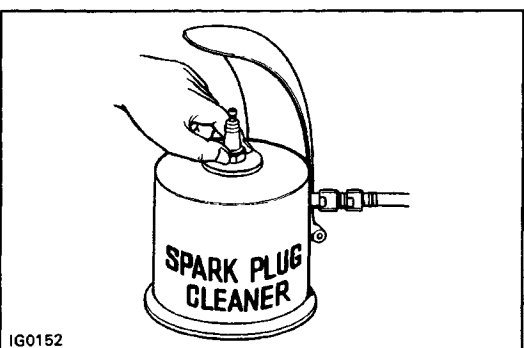
2. REMOVE SPARK PLUGS

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



3. CLEAN SPARK PLUGS

Using spark plug cleaner or wire brush, clean the spark plug.

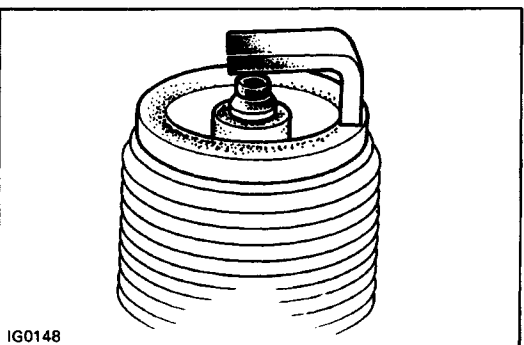


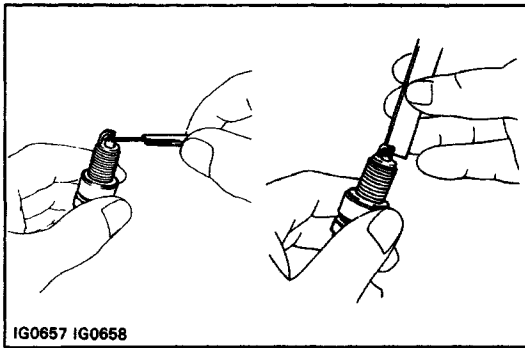
4. VISUALLY INSPECT SPARK PLUGS

Check the spark plug for electrode wear, thread damage and insulator damage.

If abnormal, replace the spark plug.

**Recommended spark plug: ND Q16R-U
NGK BCPR5EY**

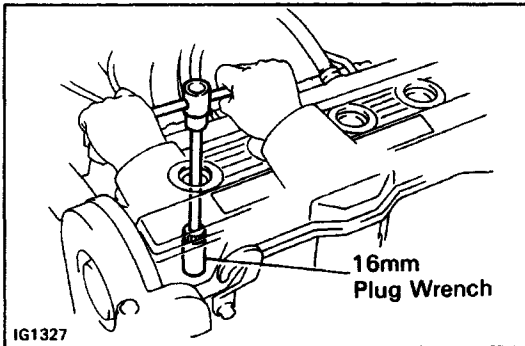




5. ADJUST ELECTRODE GAP

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

Correct electrode gap: 0.8 mm (0.31 in.)



6. INSTALL SPARK PLUGS

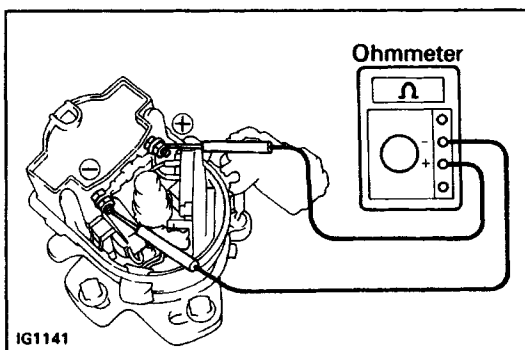
Using a 16 mm plug wrench, install the spark plug.

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

7. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS

INSPECTION OF IIA

1. DISCONNECT IIA CONNECTORS
2. REMOVE IIA CAP
3. REMOVE DISTRIBUTOR ROTOR
4. REMOVE IGNITION COIL AND IGNITER DUST COVERS



Ignition Coil

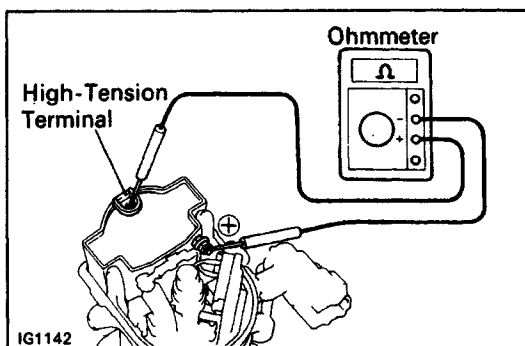
5. INSPECT PRIMARY COIL RESISTANCE

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

Primary coil resistance (Cold):

1.1 ~ 1.7 at -10 ~ +40°C (14 ~ 104°F)

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



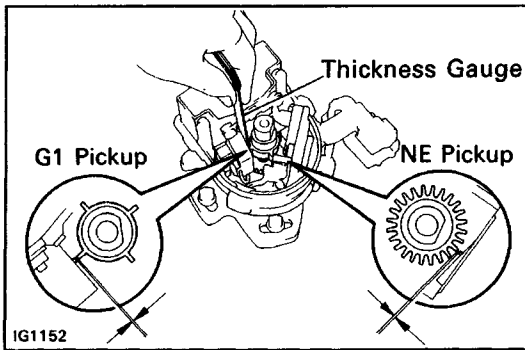
6. INSPECT SECONDARY COIL RESISTANCE

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

Secondary coil resistance (Cold):

9 ~ 15 k at -10 ~ +40°C (14 ~ 104°F)

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



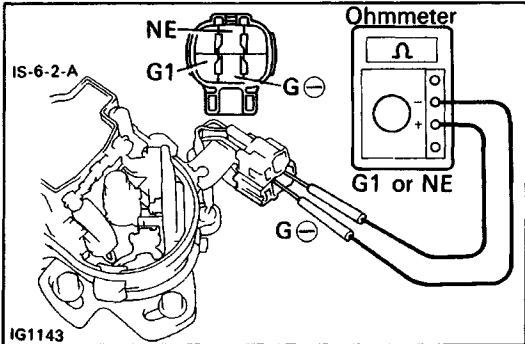
Distributor

7. INSPECT AIR GAP

Using a thickness gauge, measure the gap between the signal rotor and pickup coil projection.

Air gap: 0.2 – 0.4 mm (0.008 – 0.016 in.)

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



8. INSPECT SIGNAL GENERATOR (PICKUP COIL) RESISTANCE

Using an ohmmeter, measure the resistance between the terminals (G1 and G(-), NE and GE(-)).

Pickup coil resistance (Cold):

185 ~ 265 at -10 ~ +40°C (14 ~104°F)

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

9. REINSTALL IGNITION COIL AND IGNITER DUST COVERS

10. REINSTALL DISTRIBUTOR ROTOR

11. REINSTALL IIA CAP

12. RECONNECT IIA CONNECTORS

Igniter

(See procedure Spark Test on page [IG-6](#))

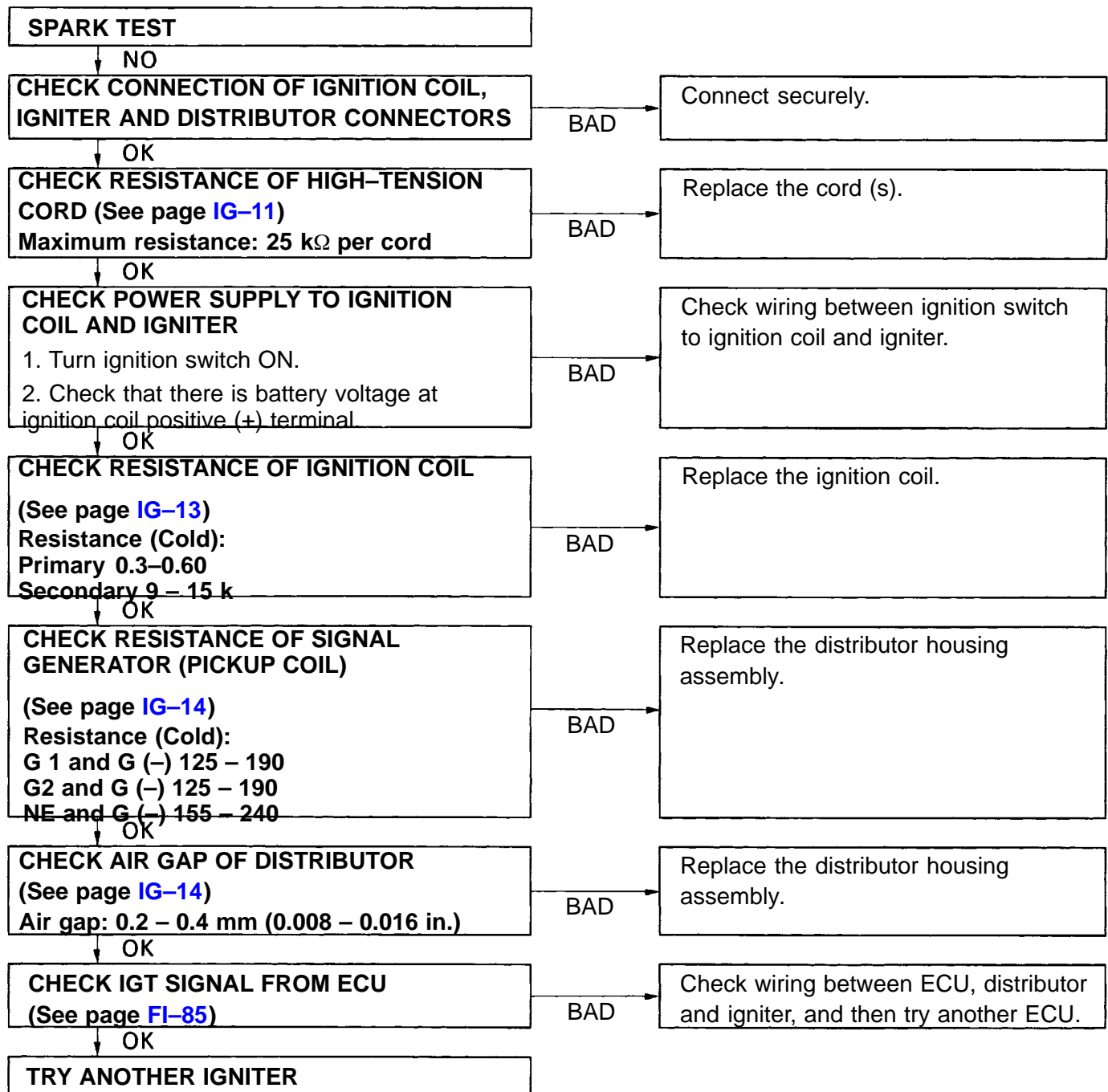
ON-VEHICLE INSPECTION (3S-GTE)

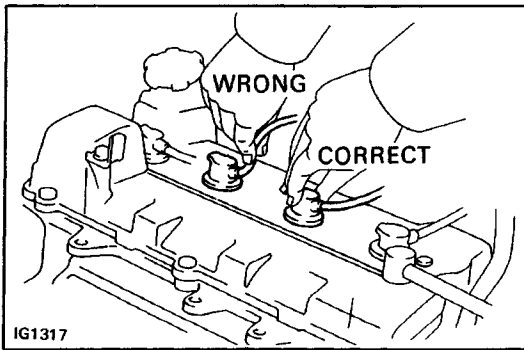
SPARK TEST

CHECK THAT SPARK OCCURS

- (a) Disconnect the high-tension cord from the distributor. (See page IG-11)
 - (b) Hold the end about 12.5 mm (0.50 in.) from the body of car.
 - (c) Check if spark occurs while engine is being cranked.
- HINT: To minimize the amount of fuel injected into the cylinders during this test, crank the engine for no more than 1 - 2 seconds at a time.

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





INSPECTION OF HIGH-TENSION CORDS

1. REMOVE INTERCOOLER

(See steps 13 to 15 on pages [TC-9](#) and 10)

2. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS

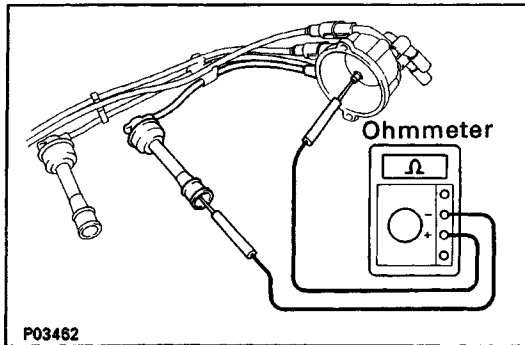
Disconnect the high-tension cords at the rubber boot.

DO NOT pull on the cords.

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

3. DISCONNECT HIGH-TENSION CORD FROM IGNITION COIL

4. REMOVE DISTRIBUTOR CAP WITHOUT DISCONNECTING HIGH-TENSION CORDS



5. 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.

6. REINSTALL DISTRIBUTOR CAP

7. RECONNECT HIGH-TENSION CORD TO IGNITION COIL

8. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS

9. REINSTALL INTERCOOLER

(See steps 11 to 15 on page [TC-17](#))

INSPECTION OF SPARK PLUGS

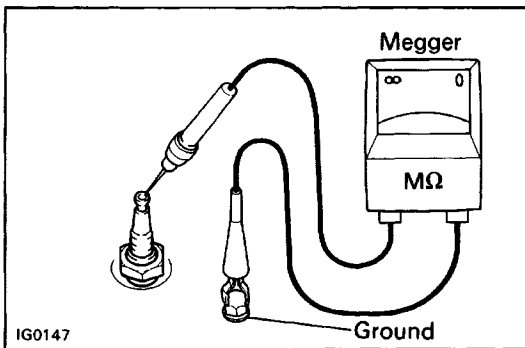
NOTICE:

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

1. REMOVE INTERCOOLER

(See steps 13 to 15 on pages [TC-9](#) and 10)

2. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS



3. INSPECT ELECTRODE

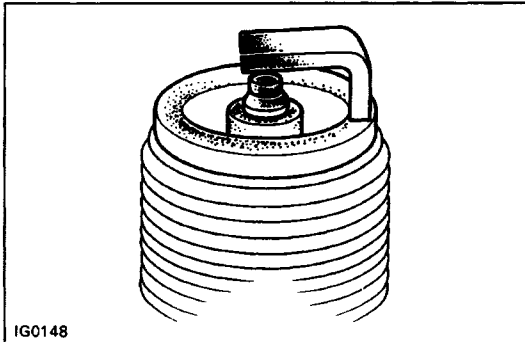
Using a megger (insulation resistance meter), measure the insulation resistance.

Standard correct insulation resistance:

10 M or more

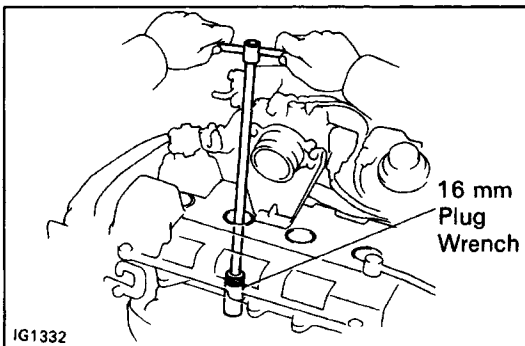
If the resistance is less than specified, proceed to step 4.

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



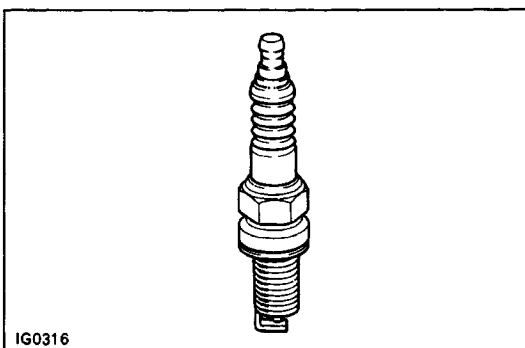
(Simple Method)

- (a) Quickly race the engine to 4,000 rpm five times.
- (b) Remove the spark plug. (See step 4)
- (c) Visually check the spark plug.
 - If the electrode is dry ... Okey
 - If the electrode is wet ... Proceed to step 5
- (d) Reinstall the spark plug.
 - (See step 8 on page [IG-13](#))



4. REMOVE SPARK PLUGS

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



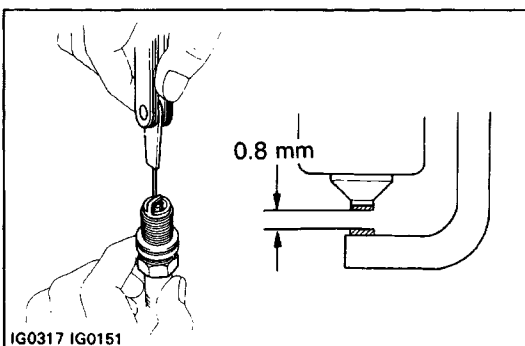
5. VISUALLY INSPECT SPARK PLUGS

Check the spark plug for thread damage and insulator damage.

If abnormal, replace the spark plug.

Recommended spark plug: ND PK20R8

NGK BKR6EP8



6. INSPECT ELECTRODE GAP

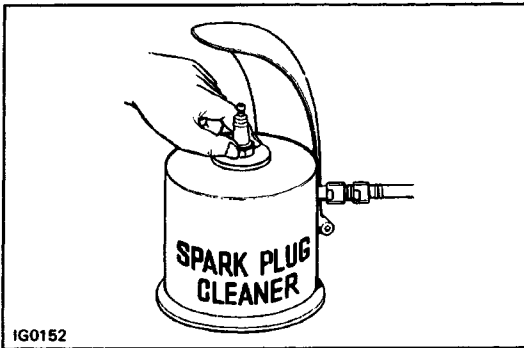
Maximum electrode gap: 1.0 mm (0.39 in.)

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

Correct electrode gap of new spark plug:

0.8 mm (0.31 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.



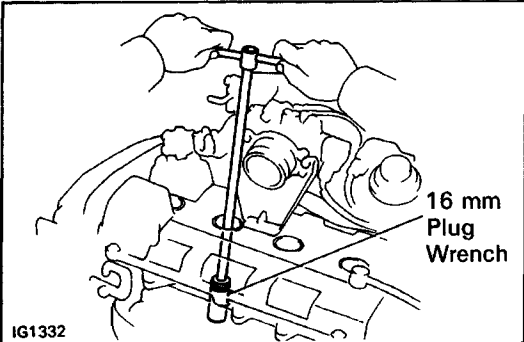
7. CLEAN SPARK PLUGS

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.



8. INSTALL SPARK PLUGS

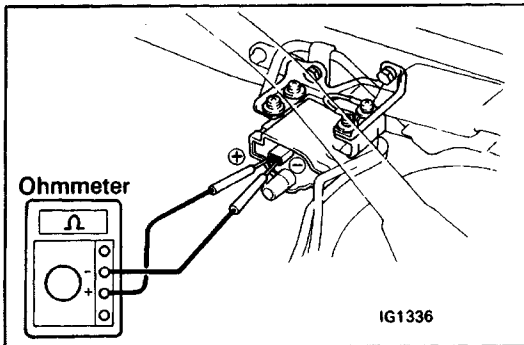
Using a 16 mm plug wrench, install the spark plug.

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

9. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS

10. REINSTALL INTERCOOLER

(See steps 11 to 13 on page [TC-17](#))



INSPECTION OF IGNITION COIL

1. DISCONNECT IGNITION COIL CONNECTOR

2. DISCONNECT HIGH-TENSION CORD

3. INSPECT PRIMARY COIL RESISTANCE

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

Primary coil resistance (Cold):

0.3 - 0.6 at -70 - +40°C (14 - 104°F)

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

4. INSPECT SECONDARY COIL RESISTANCE

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

Secondary coil resistance (Cold):

9 - 15 k at -10 - +40°C (74 - 104°F)

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

5. RECONNECT HIGH-TENSION CORD

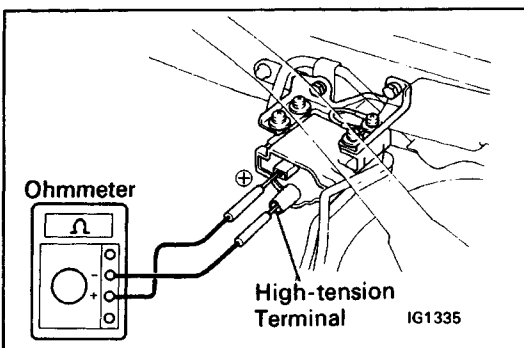
6. RECONNECT IGNITION COIL CONNECTOR

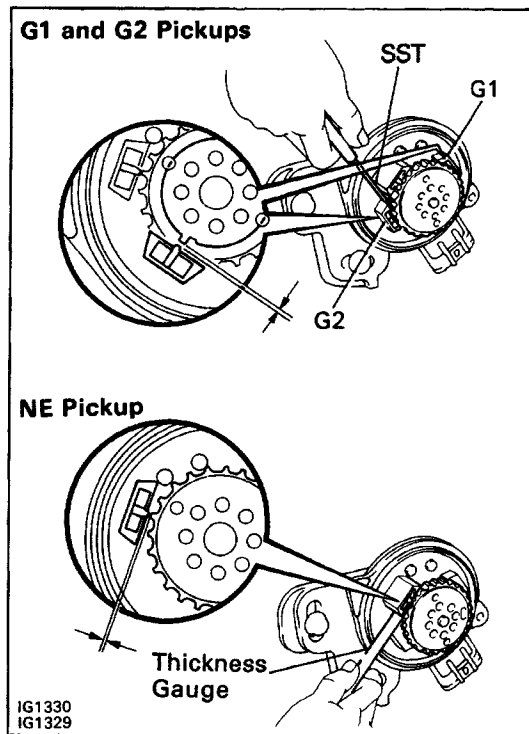
INSPECTION OF DISTRIBUTOR

1. DISCONNECT DISTRIBUTOR CONNECTOR

2. REMOVE DISTRIBUTOR CAP

3. REMOVE ROTOR





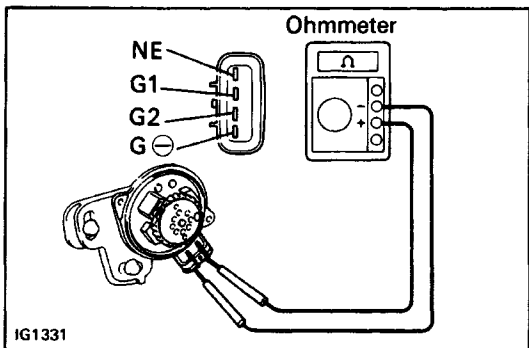
4. INSPECT AIR GAP

Using SST (G1 and G2 pickups) and a thickness 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 – 0.4 mm (0.008 – 0.016 in.)

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



5. INSPECT SIGNAL GENERATOR (PICKUP COIL) RESISTANCE

Using an ohmmeter, measure the resistance between terminals.

Pickup coil resistance (Cold):

G1 and G(-)

125 – 190 Ω at -10 – +40°C (14 – 104°F)

G2 and G(-)

125 – 190 Ω at -10 – +40°C (14 – 104°F)

NE and G (-)

155 – 240 Ω at -10 – +40°C (14 – 104°F)

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

6. REINSTALL ROTOR

7. REINSTALL DISTRIBUTOR CAP

8. RECONNECT DISTRIBUTOR CONNECTOR

INSPECTION OF IGNITER

(See procedure Spark Test on page [IG-10](#))

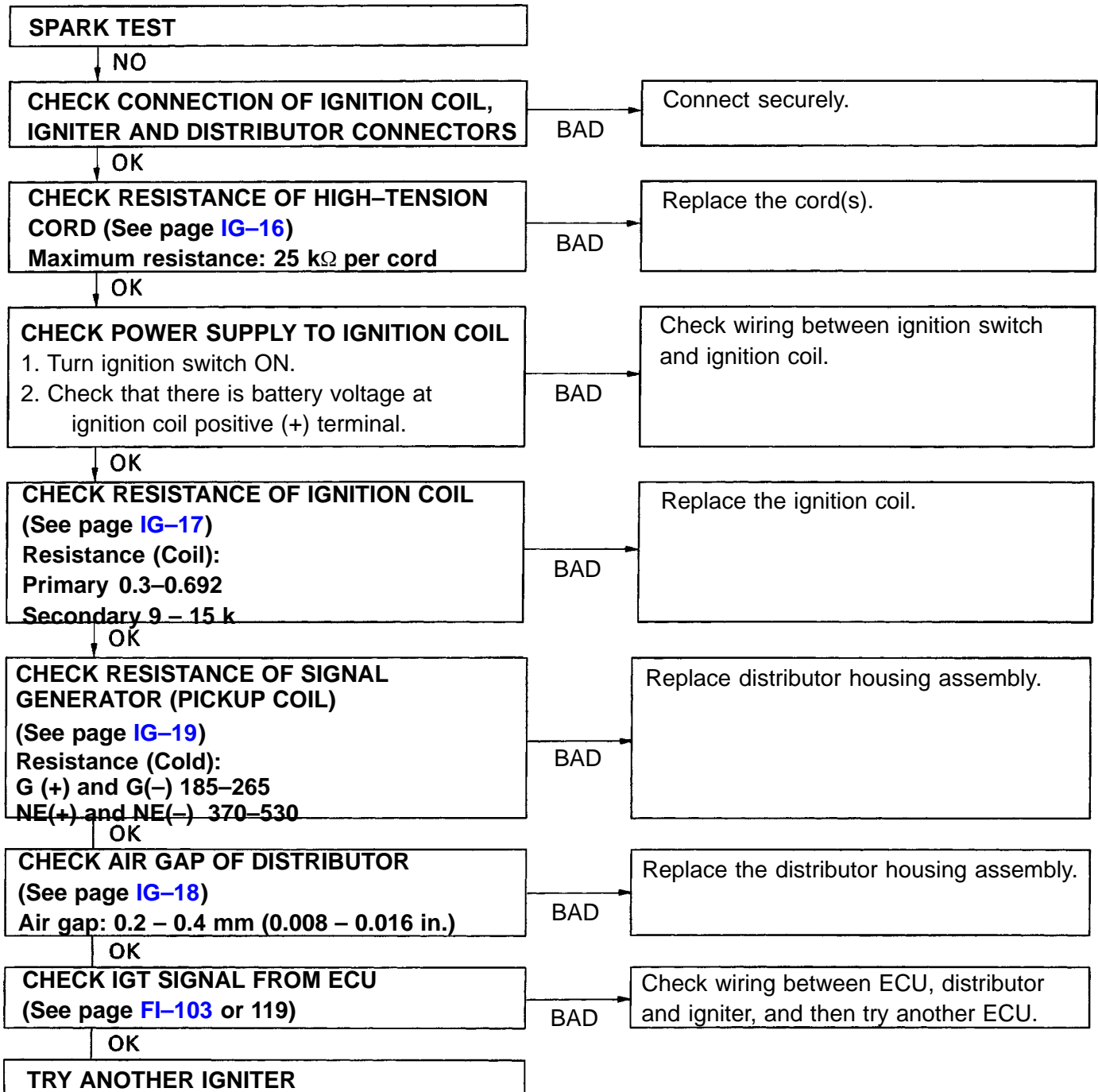
ON-VEHICLE INSPECTION (5S-FE)

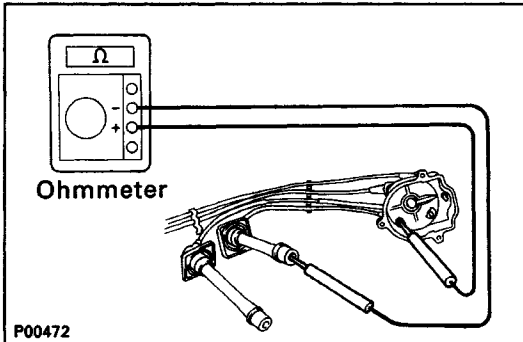
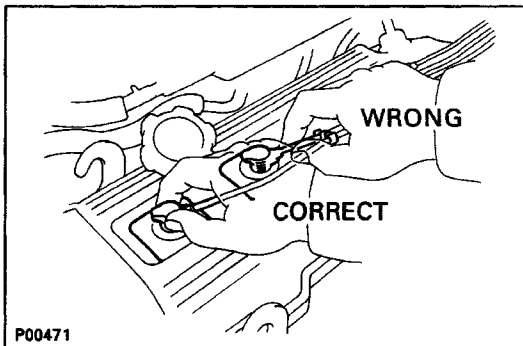
SPARK TEST

CHECK THAT SPARK OCCURS

- (a) Disconnect the high-tension cord from the distributor. (See page IG-16)
 - (b) Hold the end about 12.5 mm (0.50 in.) from the body of car.
 - (c) Check if spark occurs while engine is being cranked.
- HINT: To minimize the amount of fuel injected into the cylinders during this test, crank the engine for no more than 1 - 2 seconds at a time.

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





INSPECTION OF HIGH-TENSION CORDS

1. DISCONNECT HIGH-TENSION CORDS FROM 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.

2. DISCONNECT HIGH-TENSION CORD FROM IGNITION COIL (See step 3 on pages IG-30 and 31)

3. REMOVE DISTRIBUTOR CAP WITHOUT DISCONNECTING HIGH-TENSION CORDS

4. INSPECT HIGH-TENSION CORD RESISTANCE

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

Maximum resistance: 25 k per cord

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

5. REINSTALL DISTRIBUTOR CAP

6. RECONNECT HIGH-TENSION CORD TO IGNITION COIL (See step 3 on pages IG-32 and 33)

7. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS

INSPECTION OF SPARK PLUGS

NOTICE:

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

1. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS

2. INSPECT ELECTRODE

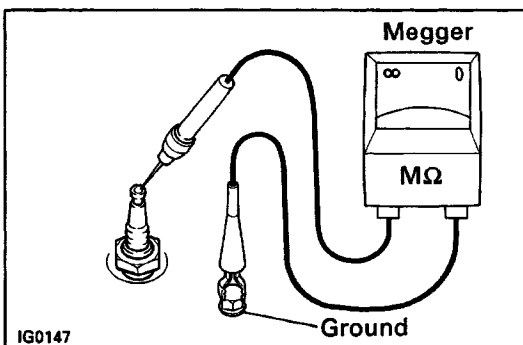
Using a megger (insulation resistance meter), measure the insulation resistance.

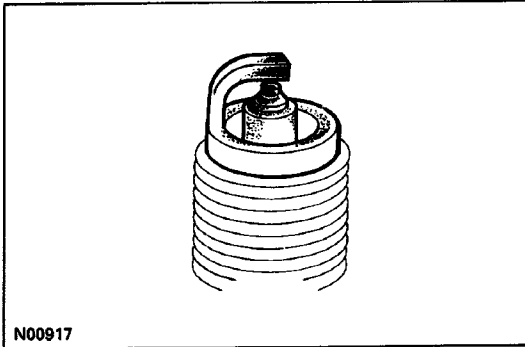
Standard correct insulation resistance:

10 M or more

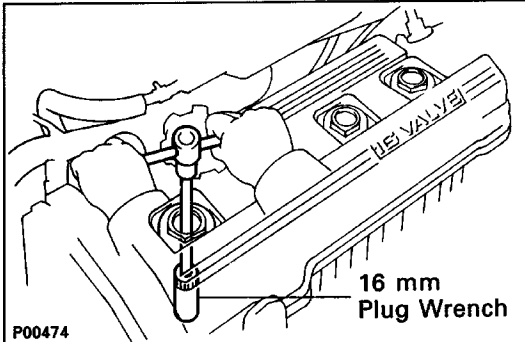
If the resistance is less than specified, proceed to step 4.

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

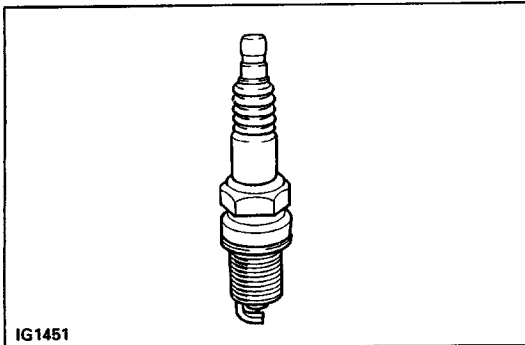


**(Simple Method)**

- (a) Quickly race the engine to 4,000 rpm five times.
- (b) Remove the spark plug. (See step 3)
- (c) Visually check the spark plug.
 - If the electrode is dry ... Okey
 - If the electrode is wet ... Proceed to step 4
- (d) Reinstall the spark plug.
 - (See step 7 on page IG-18)

**3. REMOVE SPARK PLUGS**

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

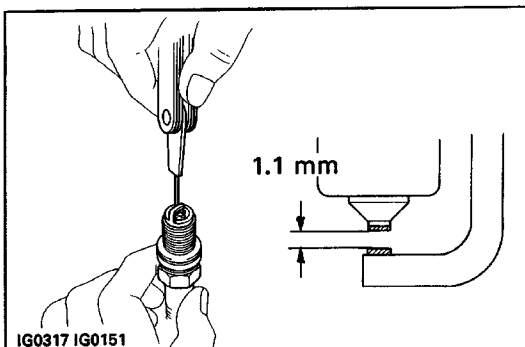
**4. VISUALLY INSPECT SPARK PLUGS**

Check the spark plug for thread damage and insulator damage.

If abnormal, replace the spark plug.

Recommended spark plug: ND PK20R11

NGK BKR6EP-11

**5. INSPECT ELECTRODE GAP**

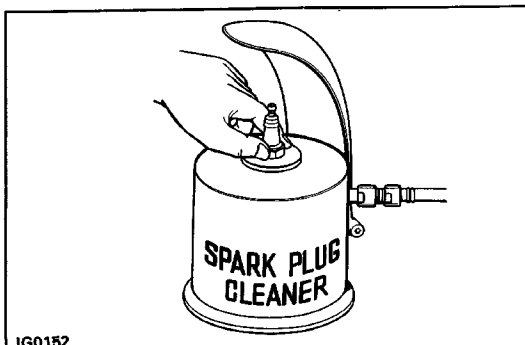
Maximum electrode gap: 1.3 mm 0.051 in.)

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

Correct electrode gap of 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.

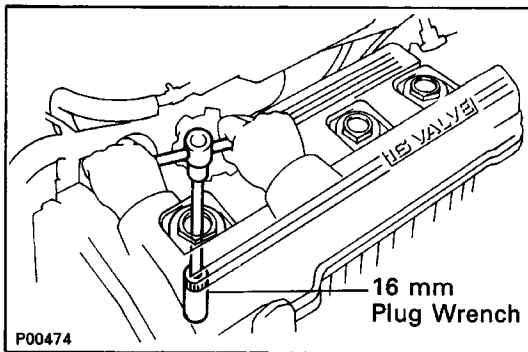
**6. CLEAN SPARK PLUGS**

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. INSTALL SPARK PLUGS

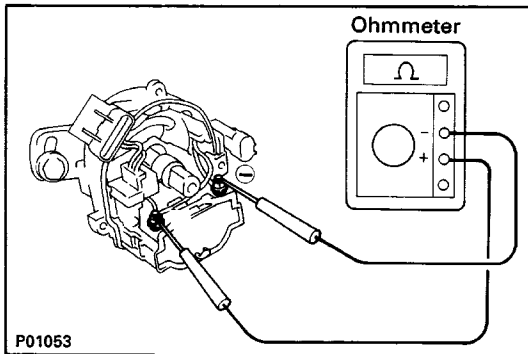
Using a 16 mm plug wrench, install the spark plug.

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

8. RECONNECT HIGH-TENSION CORDS TO SPARK PLUGS

INSPECTION OF DISTRIBUTOR

1. DISCONNECT DISTRIBUTOR CONNECTORS
2. DISCONNECT DISTRIBUTOR CAP
3. REMOVE ROTOR
4. REMOVE IGNITION COIL DUST COVER



Ignition Coil

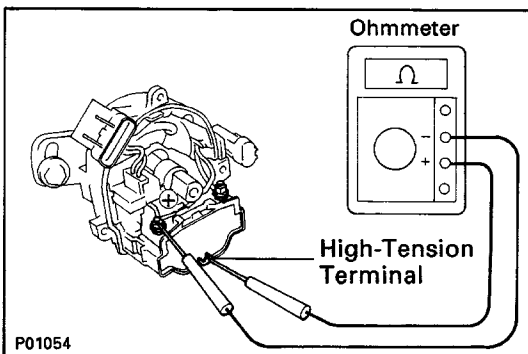
5. INSPECT PRIMARY COIL RESISTANCE

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

Primary coil resistance (Cold):

0.3 – 0.6 Ω at -10 – +40°C (14 – 104°F)

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



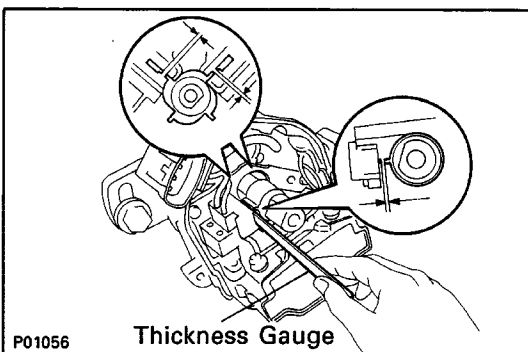
6. INSPECT SECONDARY COIL RESISTANCE

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

Secondary coil resistance (Cold):

9 – 15 k Ω at -10 – +40°C (14 – 104°F)

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



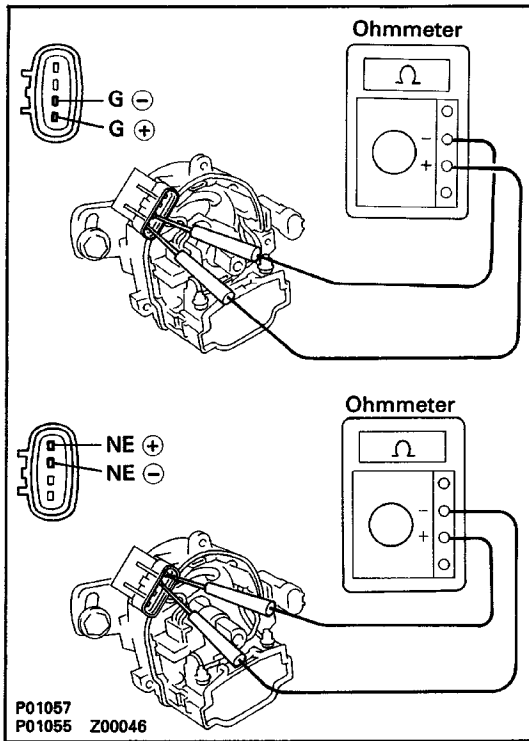
Distributor

7. INSPECT AIR GAP

Using a thickness gauge, measure the air gap between the signal rotor and pickup coil projection.

Air gap: 0.2 – 0.4 mm (0.008 – 0.016 in.)

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



8. INSPECT SIGNAL GENERATOR (PICKUP COIL) RESISTANCE

Using an ohmmeter, measure the resistance between the terminals G(+) and G(-), NE(+) and NE (-).

Pickup coil resistance (Cold):

G(+) and G (-)

185 – 265 Ω at -10 – +40°C (14 N 104°F)

NE (+) and NE (-)

370 – 530 Ω at -10 – +40°C (14 – 104°F)

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

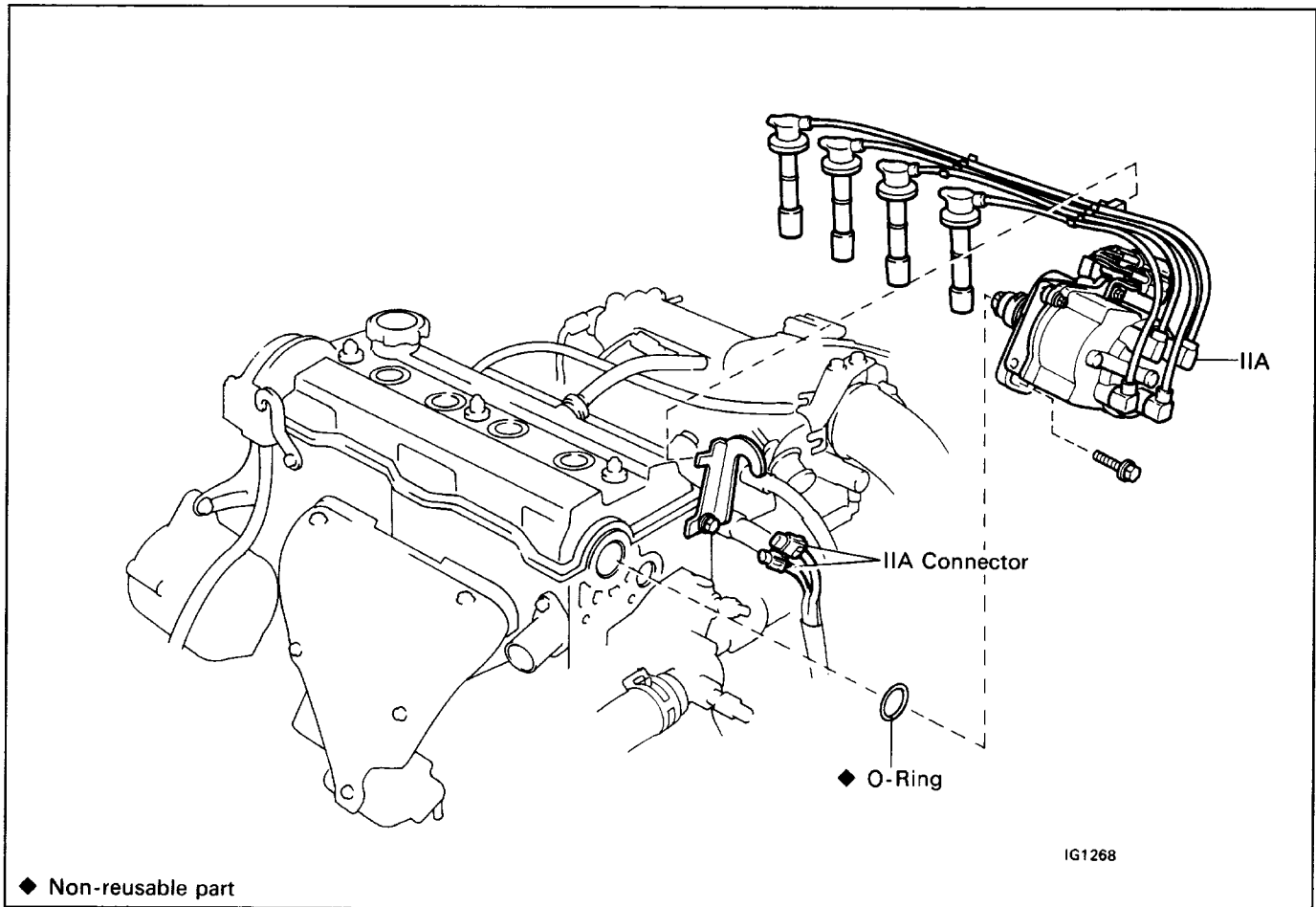
9. REINSTALL IGNITION COIL DUST COVER
10. REINSTALL ROTOR
11. REINSTALL DISTRIBUTOR CAP
12. RECONNECT DISTRIBUTOR CONNECTORS

INSPECTION OF IGNITER

(See Spark Test procedure on page [IG-15](#))

INTEGRATED IGNITION ASSEMBLY (IIA) (4A-FE)

REMOVAL OF IIA



1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

CAUTION: Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the "LOCK" position and the negative (-) terminal cable is disconnected from the battery.

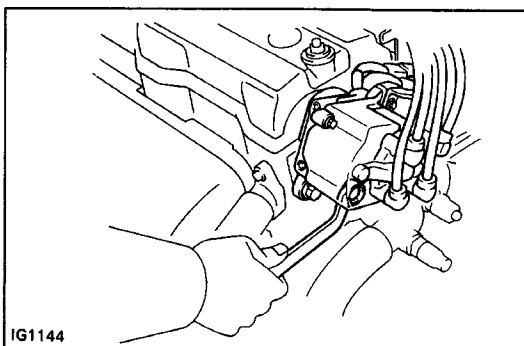
2. DISCONNECT IIA CONNECTORS

3. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS

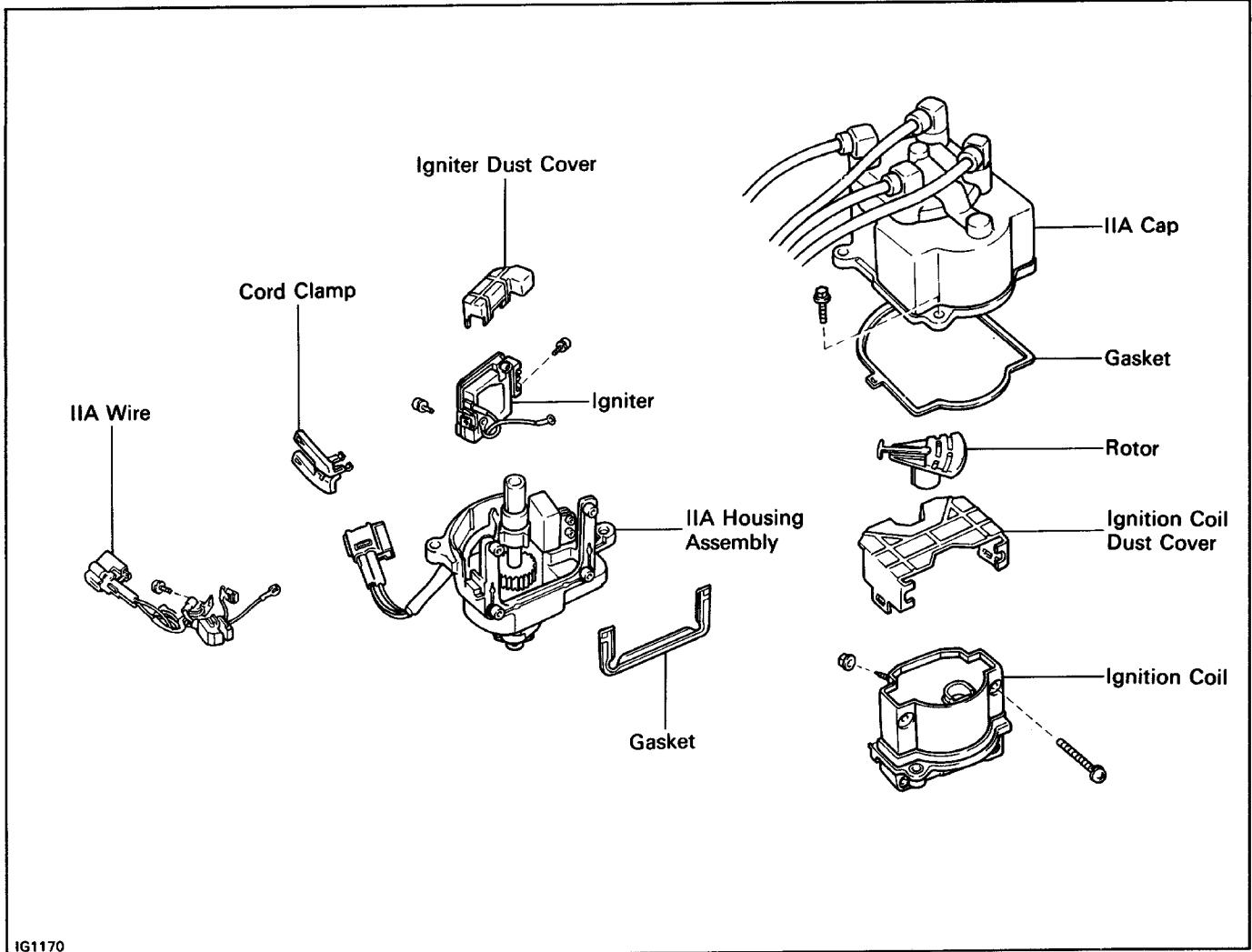
- (a) Disconnect the cord clamp from the engine hanger.
- (b) Disconnect the four high-tension cords from the spark plugs. (See page IG-7)

4. REMOVE IIA

- (a) Remove the two hold-down bolts, and pull out the IIA.
- (b) Remove the O-ring from the IIA housing.



COMPONENTS



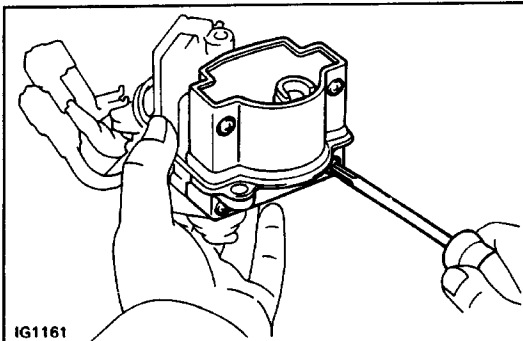
IG1170

DISASSEMBLY OF IIA

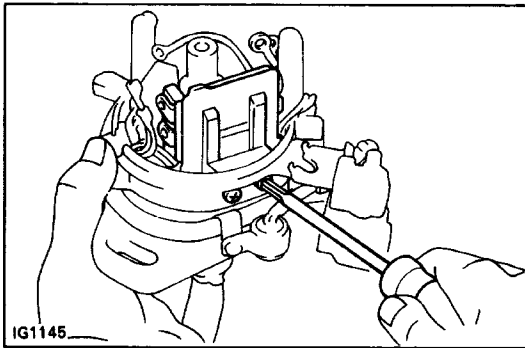
1. REMOVE IIA CAP WITHOUT DISCONNECTING HIGH-TENSION CORDS
2. REMOVE ROTOR
3. REMOVE IGNITION COIL DUST COVER
4. REMOVE IGNITER DUST COVER

5. REMOVE IGNITION COIL

- (a) Remove the two nuts, and disconnect the three wires from the ignition coil terminals.
- (b) Remove the four screws, ignition coil and gasket.

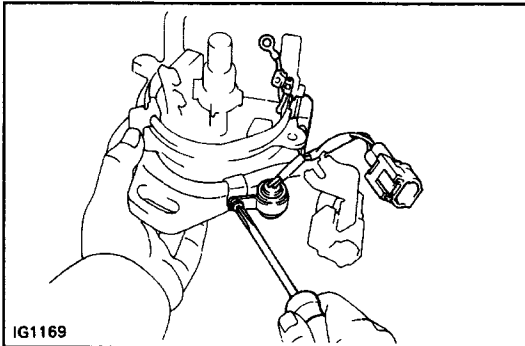


IG1161



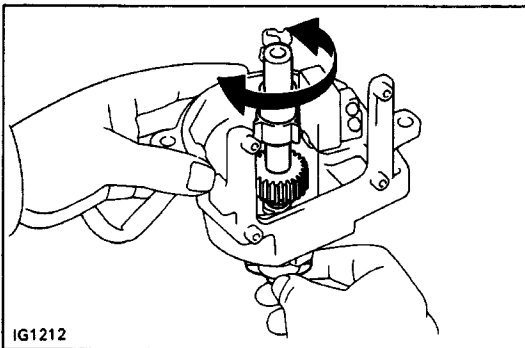
6. REMOVE IGNITER

- (a) Remove the two nuts, and disconnect the three wires from the igniter terminals.
- (b) Remove the two screws and igniter.



7. REMOVE IIA WIRE

- (a) Disconnect the connector from the cord clamp.
- (b) Disconnect the wire grommet from the IIA housing.
- (c) Remove the screw and IIA wire.

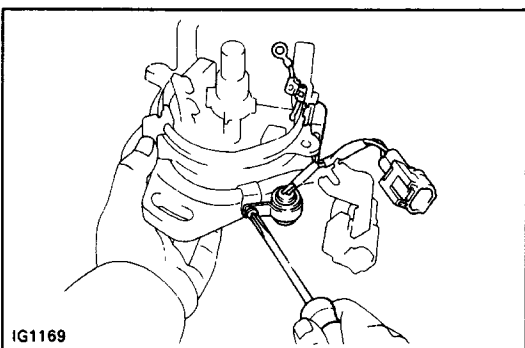


INSPECTION OF IIA

INSPECT GOVERNOR SHAFT

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

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

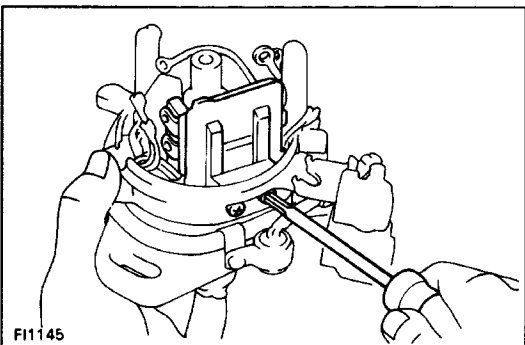


ASSEMBLY OF IIA

(See page [IG-21](#))

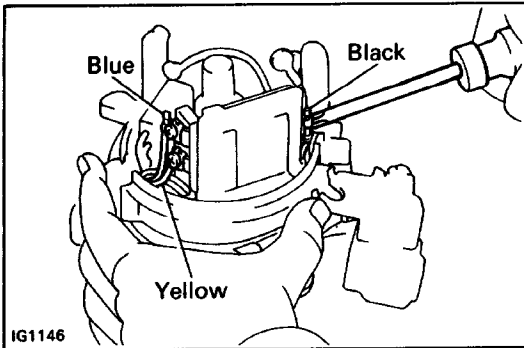
1. INSTALL IIA WIRE

- (a) Fit the wire grommet to the IIA housing.
- (b) Install the IIA wire with the screw.
- (c) Install the connector to the cord clamp.

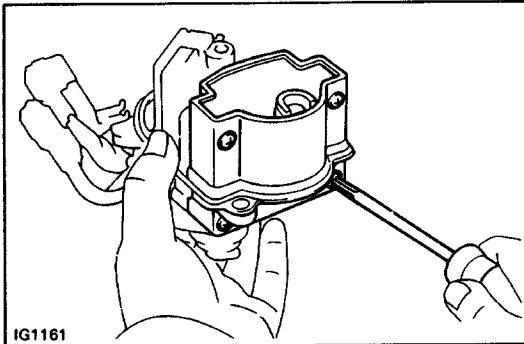


2. INSTALL IGNITER

- (a) Install the igniter with the two screws.

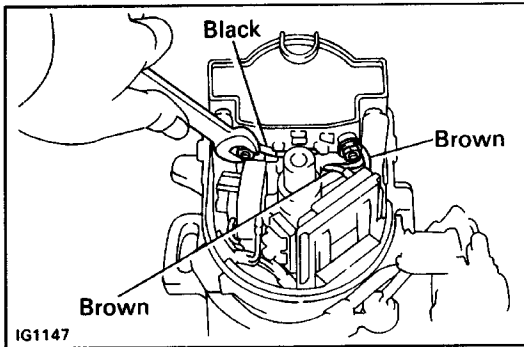


- (b) Connect the three wires to the igniter terminals with the three screws.

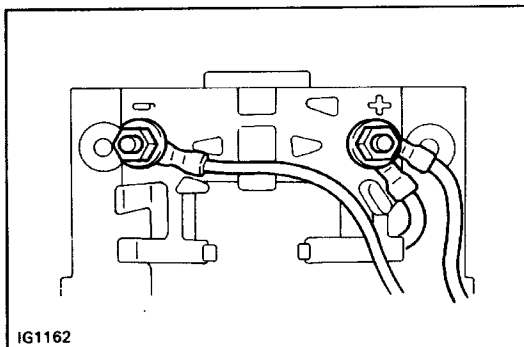


3. INSTALL IGNITION COIL

- (a) Install the gasket and ignition coil with the four screws.



- (b) Connect the three wires to the ignition coil terminals with the two nuts.



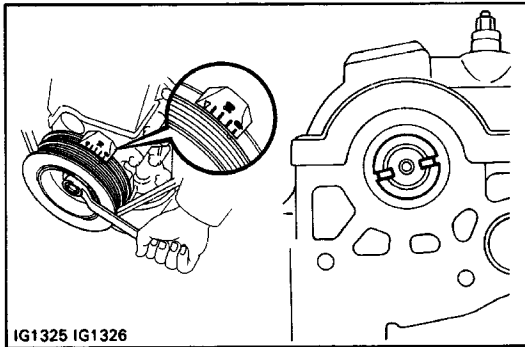
NOTICE:

- When connecting the wires to the ignition coil, insert both properly into their grooves found on the side of the ignition coil.
- Be sure the wires do not contact with signal rotor or IIA housing.

4. INSTALL IGNITION COIL DUST COVER

5. INSTALL ROTOR

6. INSTALL IIA CAP AND HIGH-TENSION CORDS

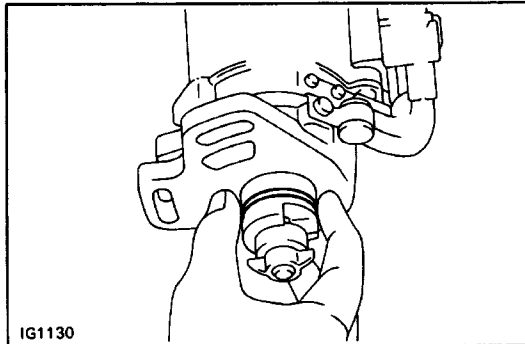


INSTALLATION OF IIA

(See page IG-20)

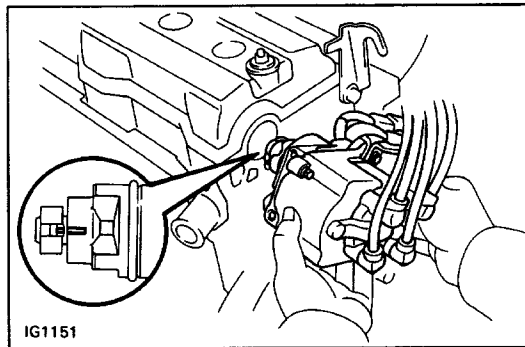
1. SET NO.1 CYLINDER TO TDC/COMPRESSION

Turn the crankshaft clockwise, and position the slit of the intake camshaft as shown in the illustration.



2. INSTALL IIA

- (a) Install a new O-ring to the housing.
- (b) Apply a light coat of engine oil on the O-ring.



- (c) Align the cutout of the coupling with the line of the housing.
- (d) Insert the IIA, aligning the center of the flange with that of bolt hole on the cylinder head.
- (e) Lightly tighten the two hold-down bolts.

3. CONNECT HIGH-TENSION CORDS TO SPARK PLUGS-

Firing order: 1 - 3 - 4 - 2

4. CONNECT IIA CONNECTORS

5. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY

6. WARM UP ENGINE

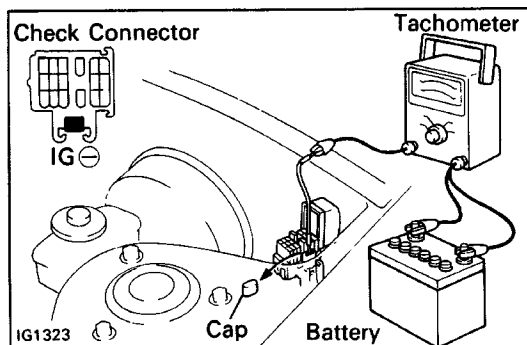
Allow the engine to warm up to normal operating temperature.

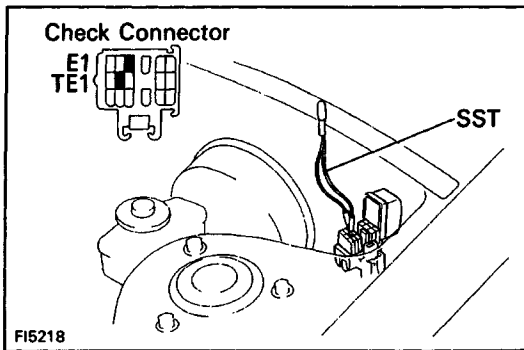
7. CONNECT TACHOMETER

Connect the test probe of a tachometer to terminal IGO of the check connector.

NOTICE:

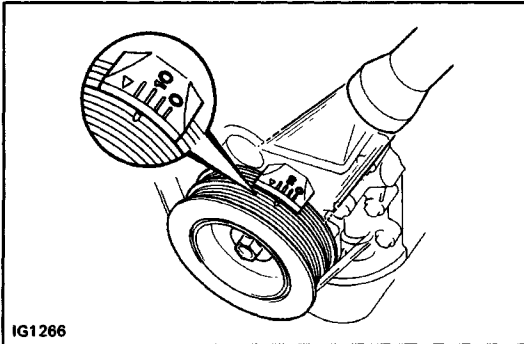
- **NEVER** allow the tachometer terminal to touch ground as it could result in damage to the igniter and/or ignition coil.
- As some tachometers are not compatible with this ignition system, we recommend that you confirm the compatibility of your unit before use.





8. ADJUST IGNITION TIMING

- (a) Using SST, connect terminals TE1 and E1 of the check connector.
SST 09843-18020



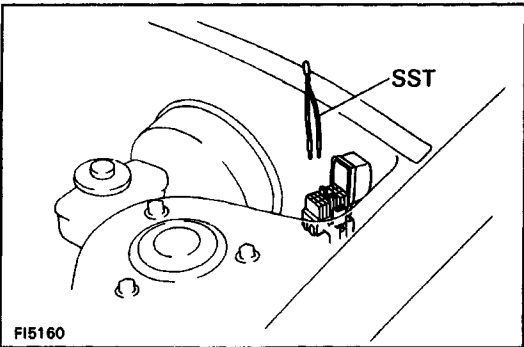
- (b) Using a timing light, check the ignition timing.

Ignition timing: 10° BTDC @ idle

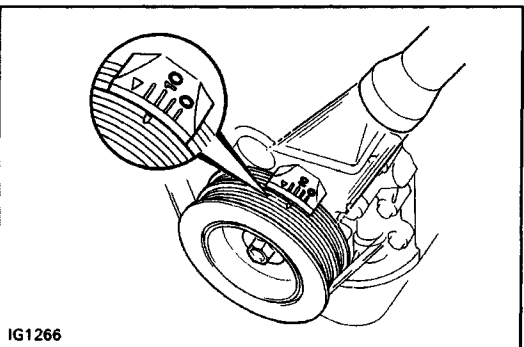
(Transmission in neutral range)

- (c) Loosen the two hold-down bolts, and adjust by turning the 11A.
(d) Tighten the hold-down bolts, and recheck the ignition timing.

Torque: 20 N·m (200 kgf·cm, 14 ft·lbf)



- (e) Remove the SST.
SST 09843-18020



9. FURTHER CHECK IGNITION TIMING

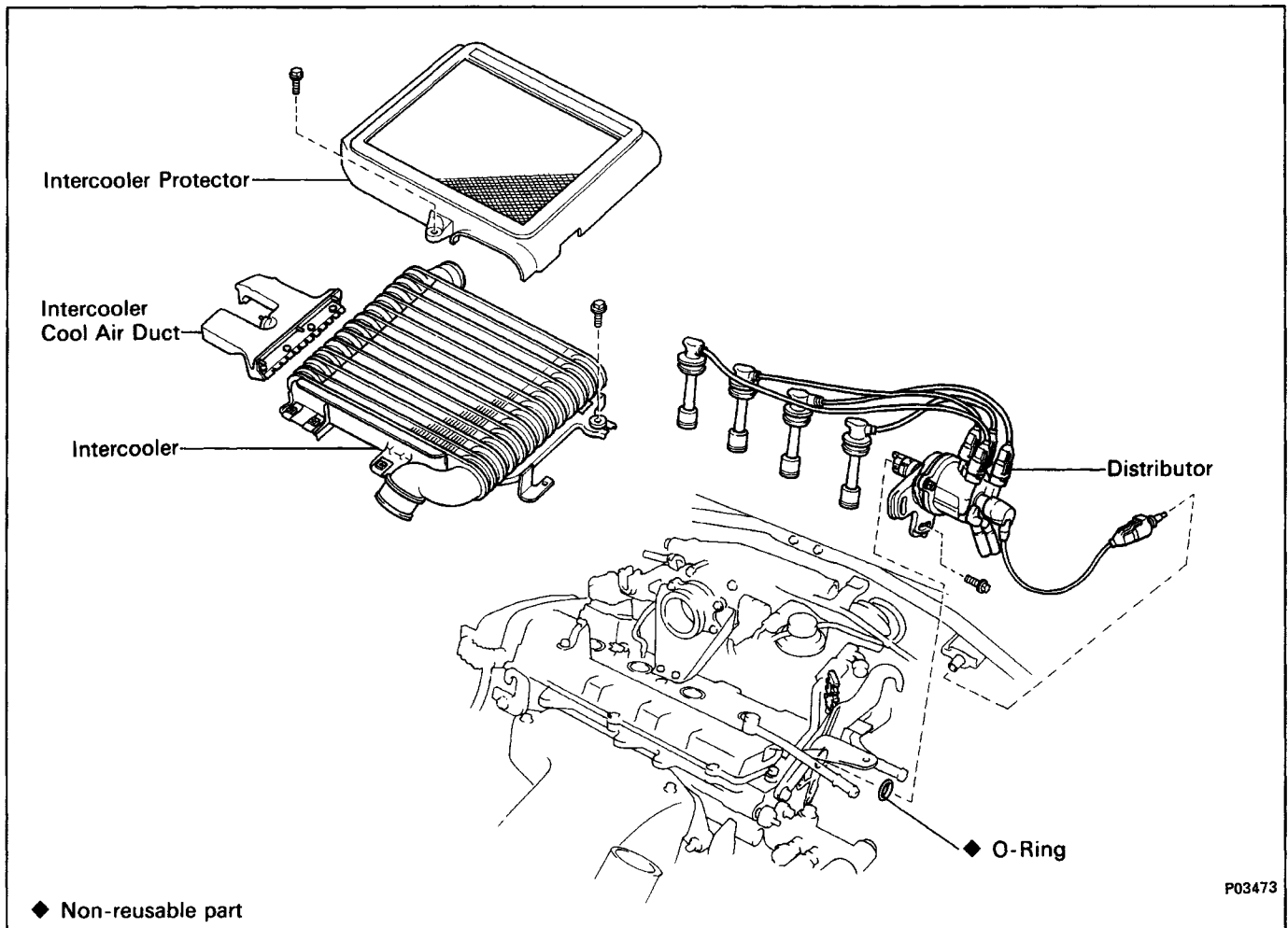
Ignition timing: 0 - 20° BTDC at idle

(Transmission in neutral range)

HINT: The timing mark moves in a range between 0° and 20°.

10. DISCONNECT TACHOMETER AND TIMING LIGHT FROM ENGINE

DISTRIBUTOR (3S-GTE) REMOVAL OF DISTRIBUTOR



1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

CAUTION: Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the "LOCK" position and the negative (-) terminal cable is disconnected from the battery.

2. REMOVE INTERCOOLER

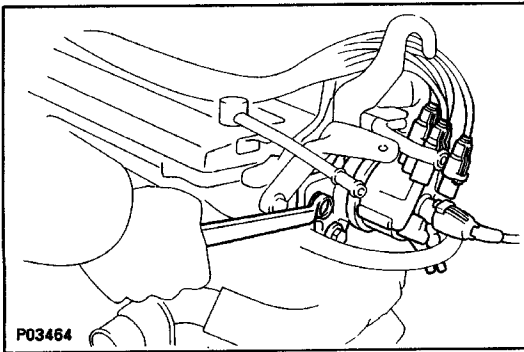
(See steps 13 to 15 on pages [TC-9](#) and 10)

3. DISCONNECT DISTRIBUTOR CONNECTOR

4. DISCONNECT HIGH-TENSION CORD FROM IGNITION COIL

5. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS

- (a) Disconnect the four high-tension cords from the cord clamp.
- (b) Disconnect the four high-tension cards from the spark plugs. (See page [IG-11](#))

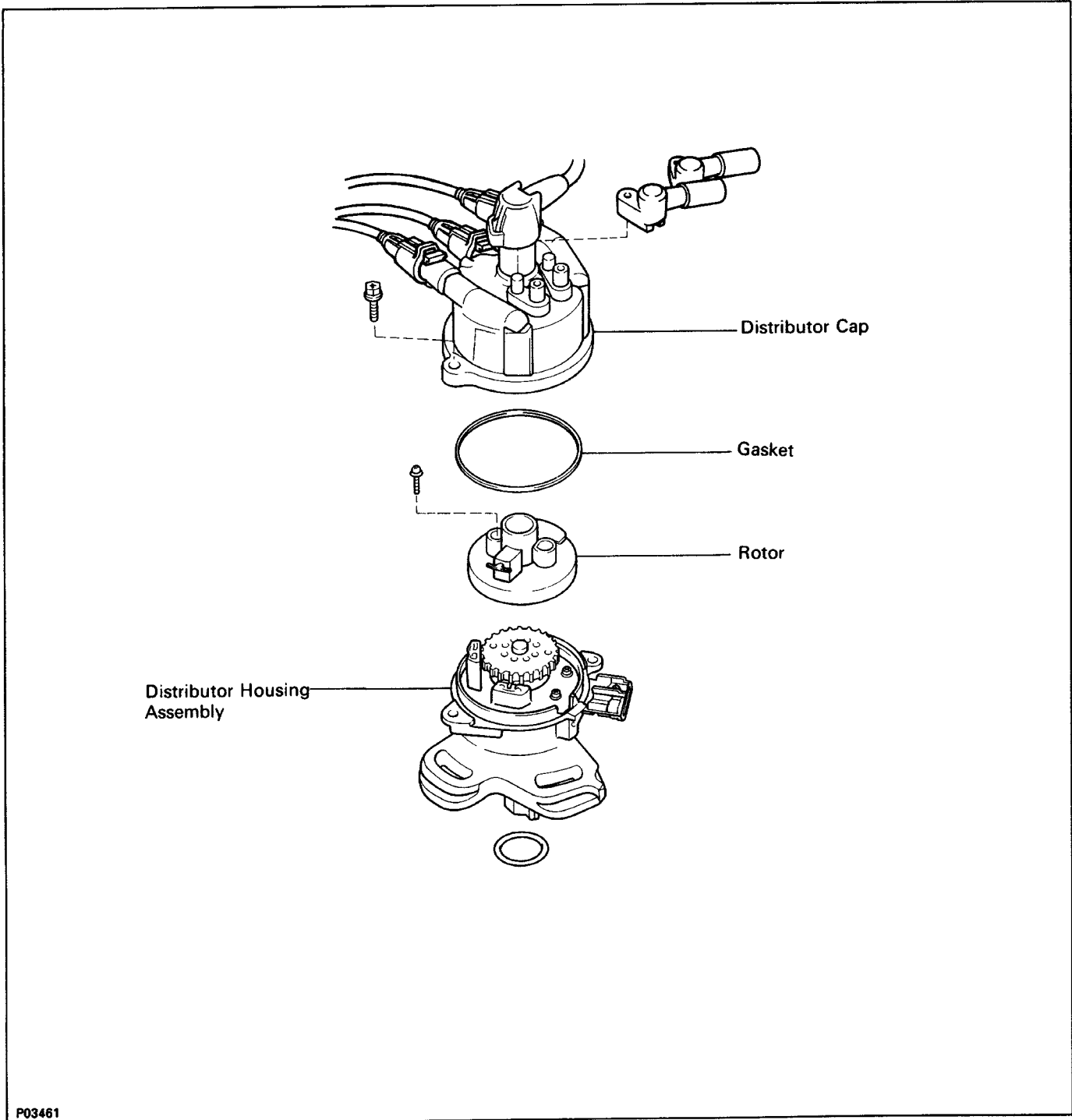


P03464

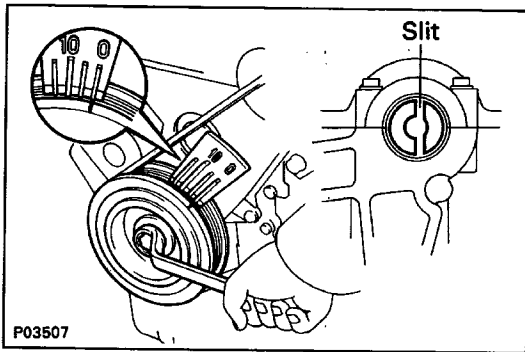
6. REMOVE DISTRIBUTOR

- (a) Remove the two hold-down bolts, and pull out the distributor.
- (b) Remove the O-ring from the distributor housing.

COMPONENTS



P03461

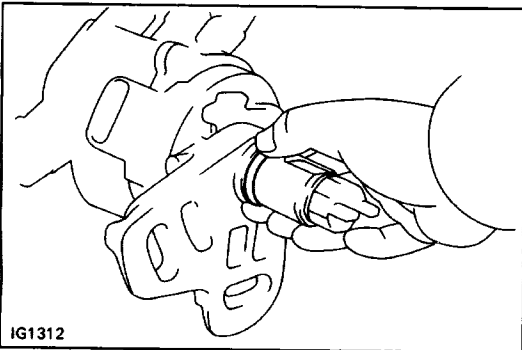


INSTALLATION OF DISTRIBUTOR

(See page [IG-26](#))

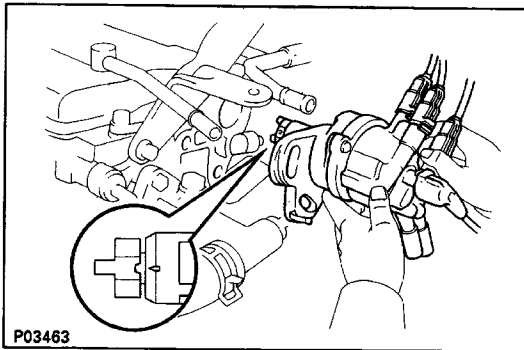
1. SET NO.1 CYLINDER TO TDC/COMPRESSION

Turn the crankshaft clockwise, and position the slit of the intake camshaft as shown.



2. INSTALL DISTRIBUTOR

- (a) Install a new O-ring to the housing.
- (b) Apply a light coat of engine oil on the O-ring.



- (c) Align the cutout portion of the coupling with the groove of the housing.
- (d) Insert the distributor, aligning the center of the flange with that of the bolt hole on the cylinder head.
- (e) Lightly tighten the two hold-down bolts.

3. CONNECT HIGH-TENSION CORD TO IGNITION COIL

4. CONNECT HIGH-TENSION CORDS TO SPARK PLUGS

- (a) Connect the four high-tension cords to the spark plugs.

Firing order: 1 - 3 - 4 - 2

- (b) Install the four high-tension cords to the cord clamp.

5. CONNECT DISTRIBUTOR CONNECTOR

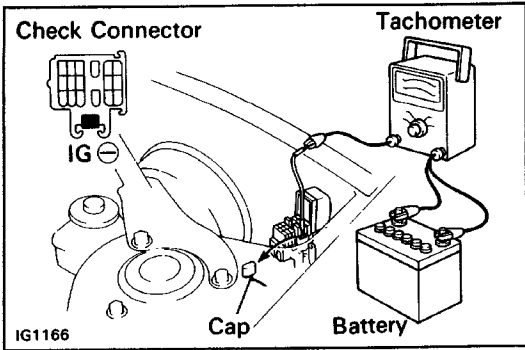
6. INSTALL INTERCOOLER

(See steps 11 to 15 on page [TC-17](#))

7. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY

8. WARM UP ENGINE

Allow the engine to warm up to normal operating temperature.

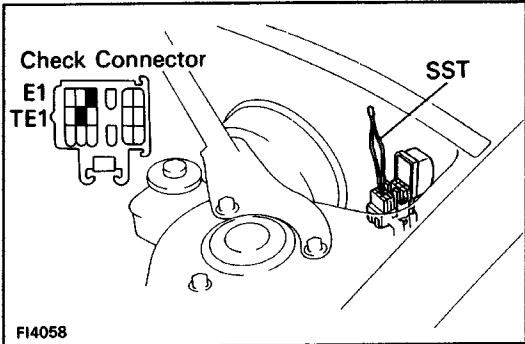


9. CONNECT TACHOMETER

Connect the test probe of a tachometer to terminal IG O of the check connector.

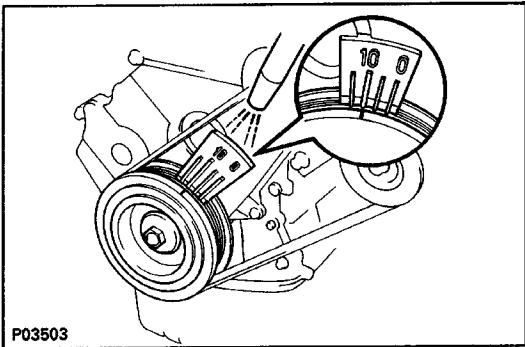
NOTICE:

- NEVER allow the tachometer terminal to touch ground as it could result in damage to the igniter and/or ignition coil.
- As some tachometers are not compatible with this ignition system, we recommend that you confirm the compatibility of your unit before use.



14. ADJUST IGNITION,TIMING

- (a) Using SST, connect terminals TE1 and E1 of the check connector.
SST 09843-18020



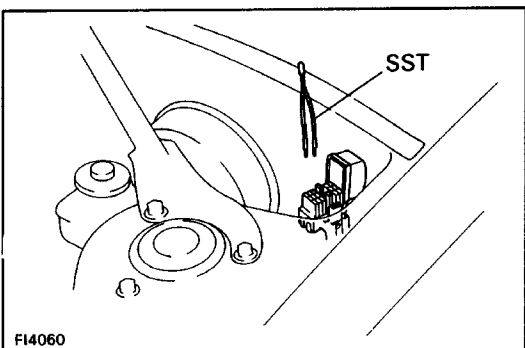
- (b) Using a timing light, check the ignition timing.

Ignition timing: 10° BTDC @ idle

(Transmission in neutral range)

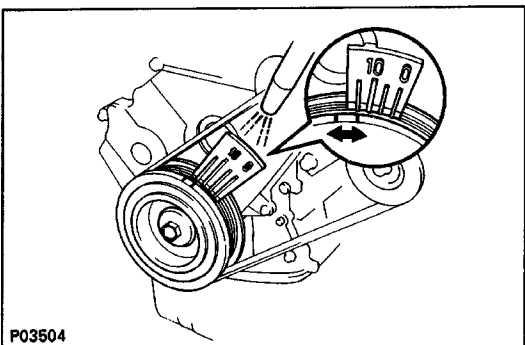
- (c) Loosen the two hold-down bolts, and adjust by turning the distributor.
(d) Tighten the two hold-down bolts, and recheck the ignition timing.

Torque: 39 N-m (400 kgf-cm, 29 ft-lbf)



- (e) Remove the SST.

SST 09843-18020



11. FURTHER CHECK IGNITION TIMING

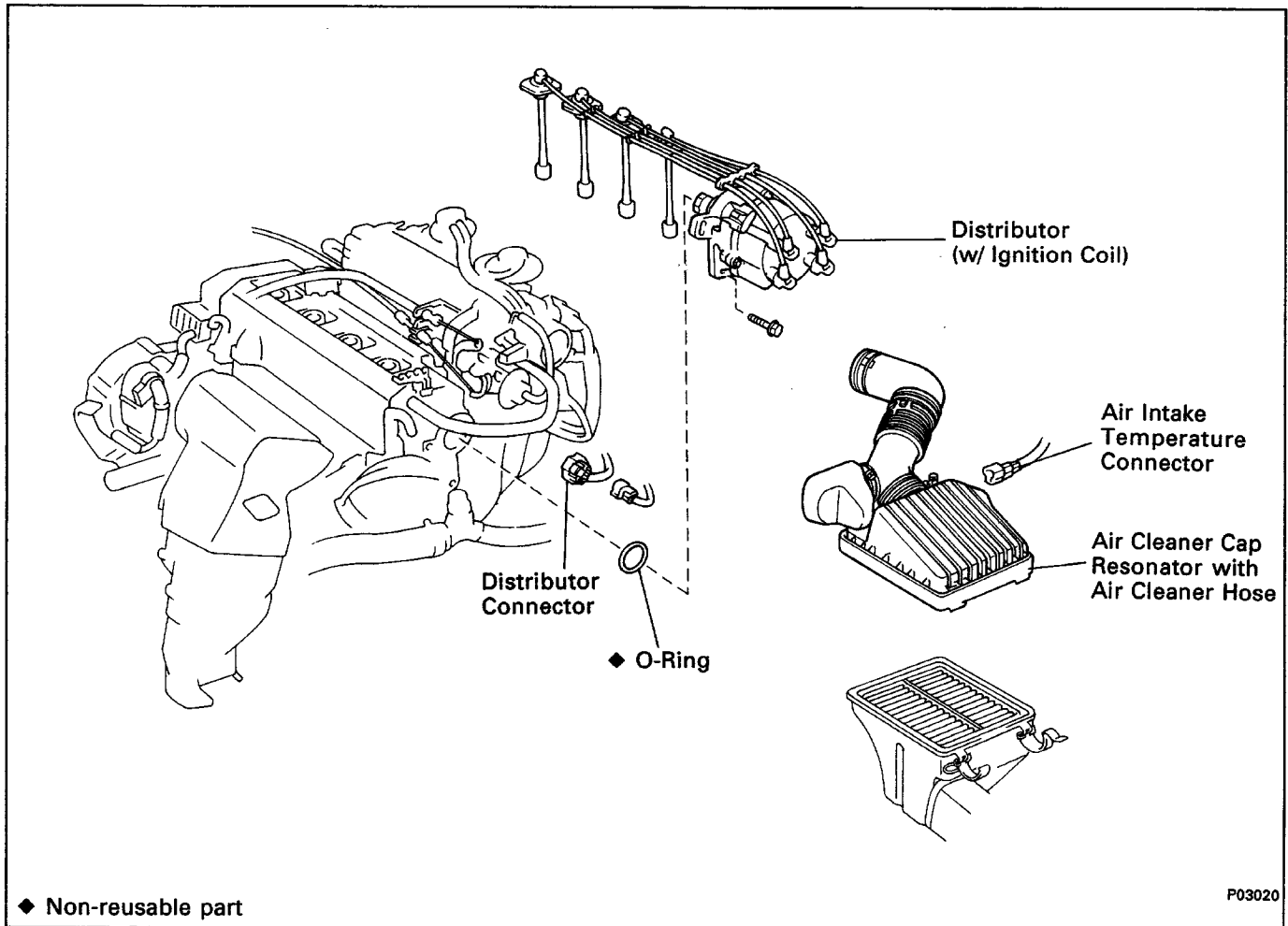
Ignition timing: 12 – 21 ° BTDC @ idle

(Transmission in neutral range)

HINT: The timing mark moves in a range between 12° and 21°.

12. DISCONNECT TACHOMETER AND TIMING LIGHT FROM ENGINE

DISTRIBUTOR (5S-FE) REMOVAL OF DISTRIBUTOR

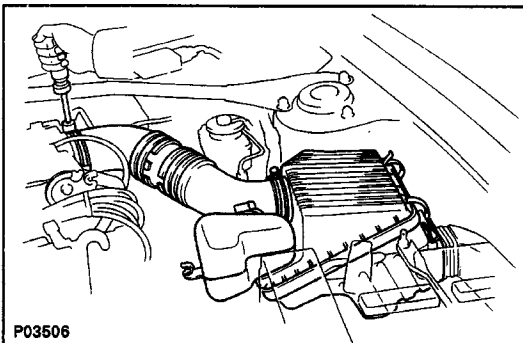


1. DISCONNECT CABLE FROM NEGATIVE TERMINAL OF BATTERY

CAUTION: Work must be started after approx. 20 seconds or longer from the time the ignition switch is turned to the "LOCK" position and the negative terminal cable is disconnected from the battery.

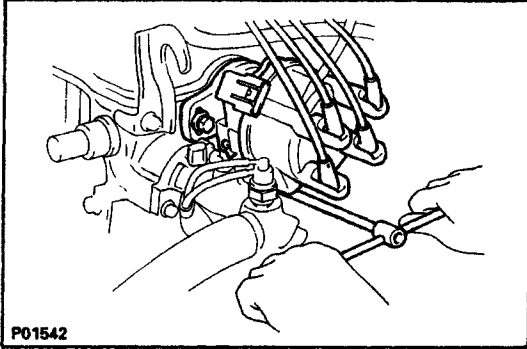
2. REMOVE AIR CLEANER CAP, RESONATOR AND AIR CLEANER HOSE

- Disconnect the air intake temperature sensor connector.
- Disconnect the cruise control actuator cable from the clamp on the resonator.
- Loosen the air cleaner hose clamp bolt.
- Disconnect the four air cleaner cap clips.
- Disconnect the air cleaner hose from the throttle body, and remove the air cleaner cap together with the resonator and air cleaner hose.



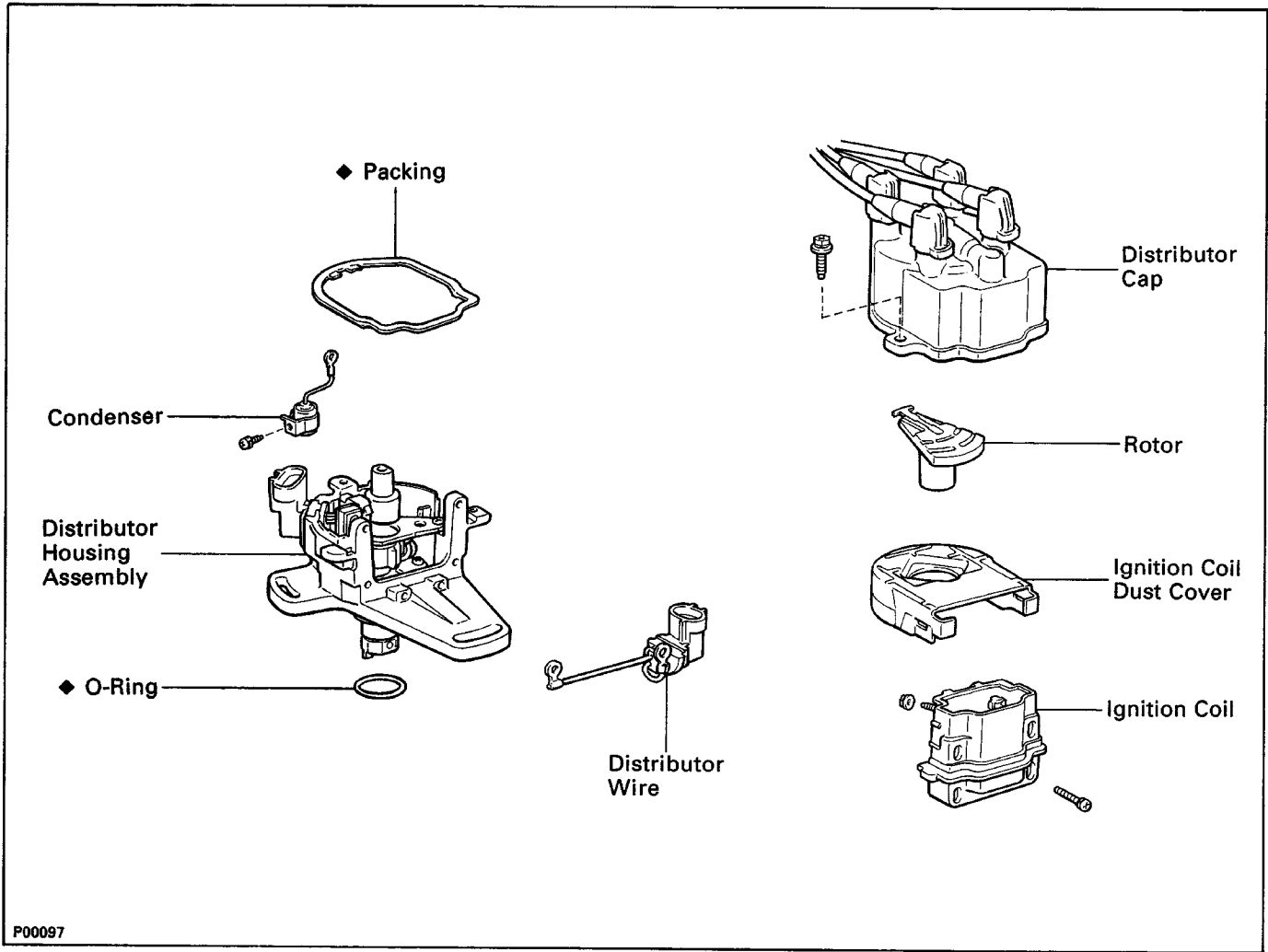
3. DISCONNECT DISTRIBUTOR CONNECTORS**4. DISCONNECT HIGH-TENSION CORDS FROM SPARK PLUGS**

- (a) Disconnect the four high-tension cords from the spark plugs.
- (b) Disconnect the high-tension cords from the clamp on the cylinder head cover.

**5. REMOVE DISTRIBUTOR**

- (a) Remove the two hold-down bolts, and pull out the distributor.
- (b) Remove the O-ring from the distributor housing.

COMPONENTS

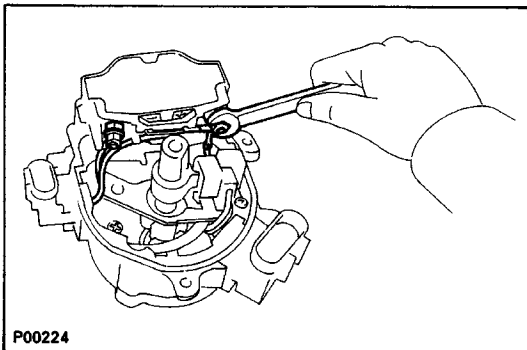


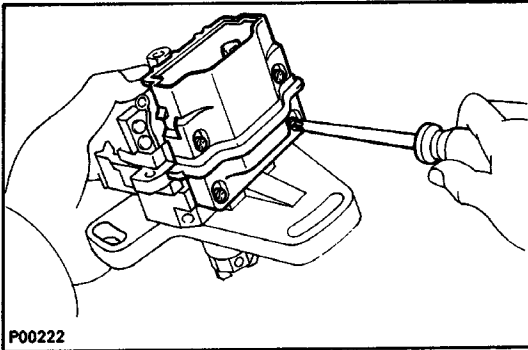
DISASSEMBLY OF DISTRIBUTOR

1. REMOVE DISTRIBUTOR CAP WITHOUT DISCONNECTING HIGH-TENSION CORDS
2. REMOVE ROTOR
3. REMOVE IGNITION COIL DUST COVER

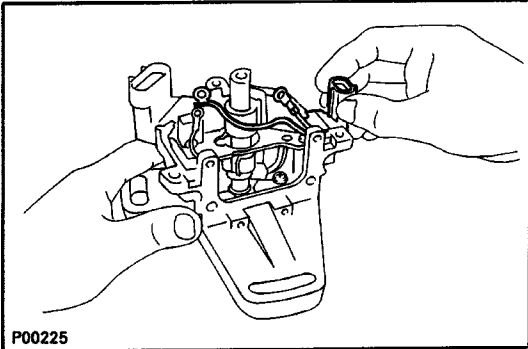
4. REMOVE IGNITION COIL

- (a) Remove the two nuts, and disconnect the three wires from the ignition coil terminals.



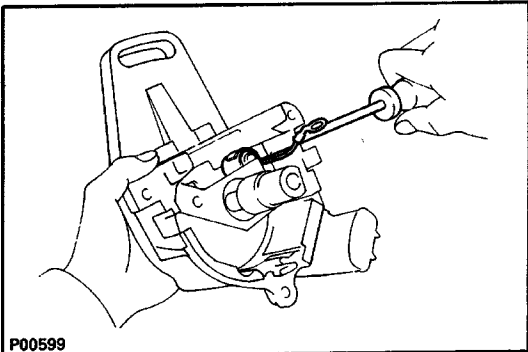


(b) Remove the four- screws and ignition coil.



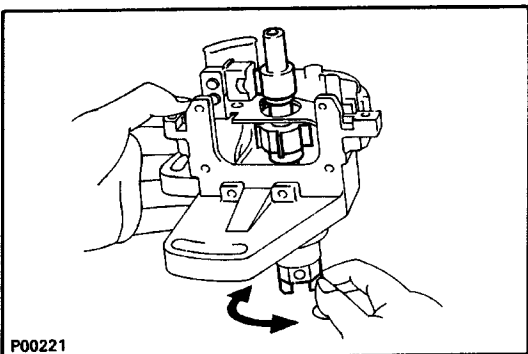
5. REMOVE DISTRIBUTOR WIRE

Remove the distributor wire from the distributor housing.



6. REMOVE CONDENSOR

Remove the screw and condenser.



DISTRIBUTOR INSPECTION

INSPECT SHAFT

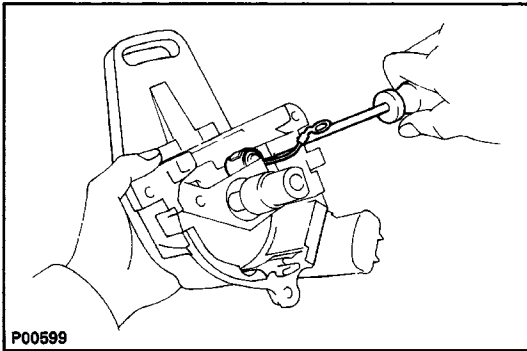
Turn the shaft and check that it is not rough or worn. If it feels rough or worn, replace the distributor housing assembly. .

DISTRIBUTOR ASSEMBLY

(See page IG-32)

1. INSTALL CONDENSOR

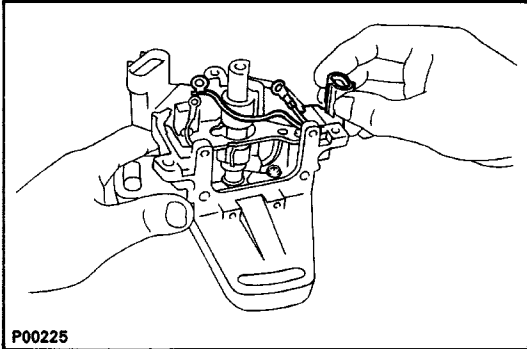
Install the condenser with the screw.



P00599

2. INSTALL DISTRIBUTOR WIRE

Install the grommet of the wire to the distributor housing.

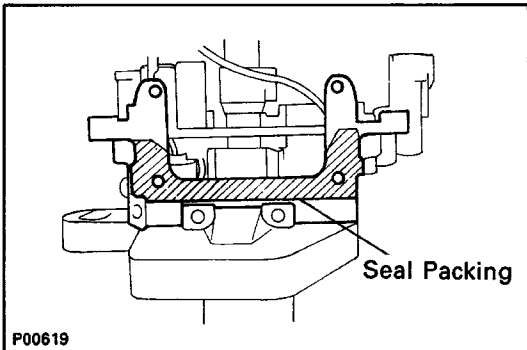


P00225

3. INSTALL IGNITION COIL

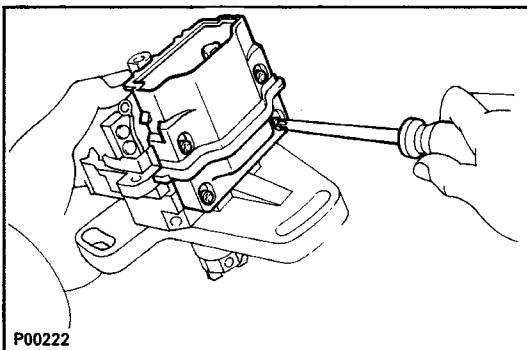
- (a) Remove any oil packing (FIPG) material.
- (b) Apply seal packing to the ignition coil installing surface of the housing as shown in the illustration.

Seal packing: Part No. 08826-00080 or equivalent



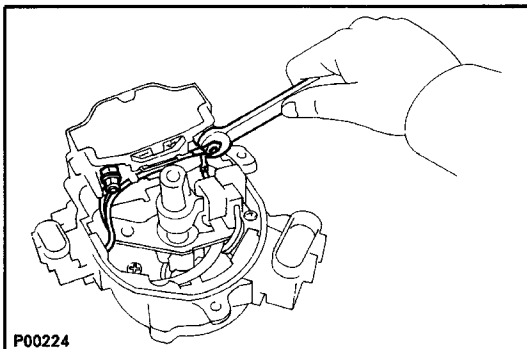
P00619

- (c) Install the ignition coil with the four screws.

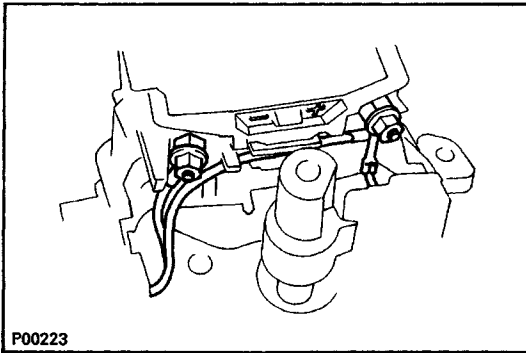


P00222

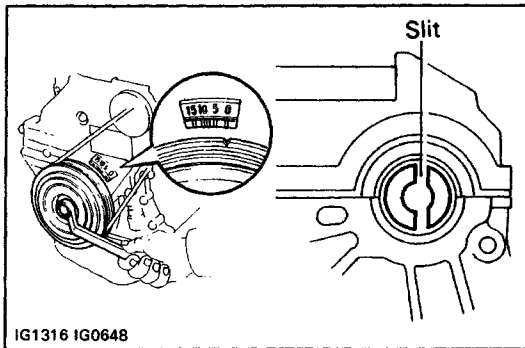
- (d) Connect the three wires to the ignition coil terminals with the two nuts.



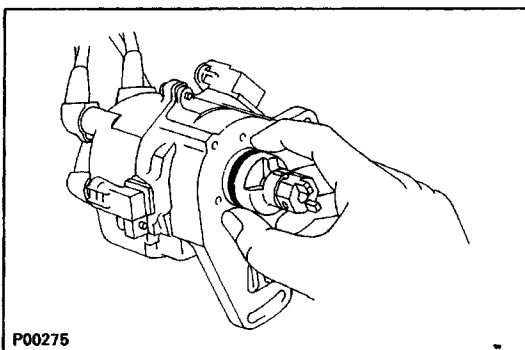
P00224

**NOTICE:**

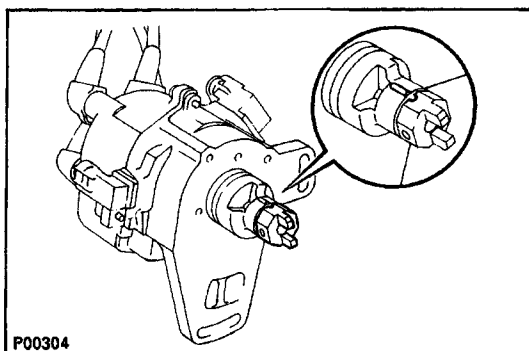
- When connecting the wires to the ignition coil, insert both properly into their grooves found on the side of the ignition coil.
- Be sure the wires do not contact with signal rotor or distributor housing.

4. INSTALL IGNITION COIL DUST COVER**5. INSTALL ROTOR****6. INSTALL DISTRIBUTOR CAP AND HIGH-TENSION CORDS****INSTALLATION OF DISTRIBUTOR**(See page [IG-30](#))**1. SET NO.1 CYLINDER TO TDC/COMPRESSION**

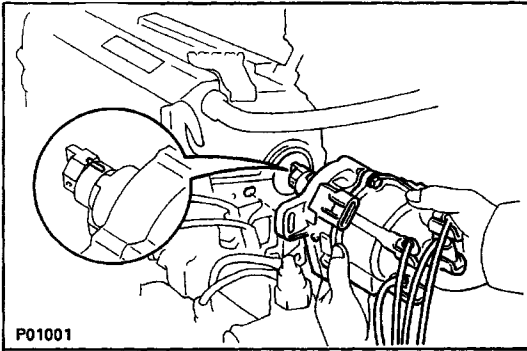
Turn the crankshaft clockwise, and position the slit of the intake camshaft as shown.

**2. INSTALL DISTRIBUTOR**

- Install a new O-ring to the housing.
- Apply a light coat of engine oil on the O-ring.



- Align the cutout portion of the coupling with the groove of the housing.

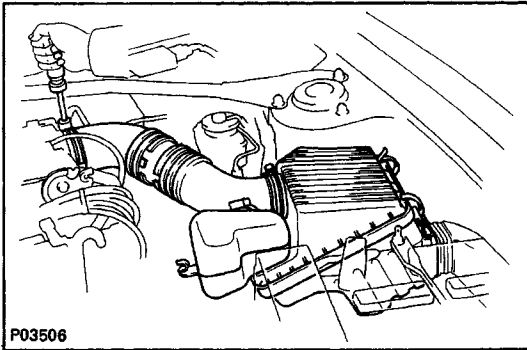


- (d) Insert the distributor, aligning the center of the flange with that of the bolt hole on the cylinder head.
- (e) Lightly tighten the hold-down bolts.
- (f) Install the high-tension cord clamp to the rear engine hanger.

3. CONNECT HIGH-TENSION CORDS TO SPARK PLUGS

Firing order: 1 - 3 - 4 - 2

4. CONNECT DISTRIBUTOR CONNECTORS



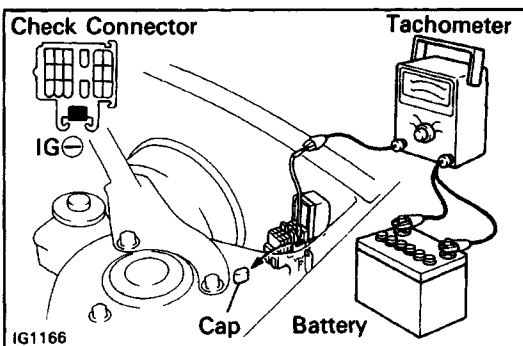
5. INSTALL AIR CLEANER CAP, RESONATOR AND AIR CLEANER HOSE

- (a) Connect the air cleaner hose to the throttle body.
- (b) Install the air cleaner cap together with the resonator and air cleaner hose.
- (c) Connect the air intake temperature sensor connector.
- (d) Connect the cruise control actuator cable to the clamp on the resonator.

6. CONNECT CABLE TO NEGATIVE TERMINAL OF BATTERY

7. WARM UP ENGINE

Allow the engine to warm up to normal operating temperature.

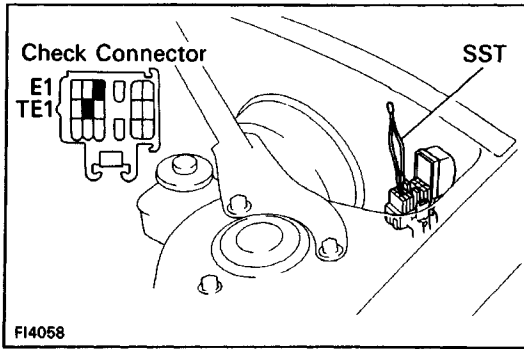


8. CONNECT TACHOMETER

Connect the test probe of a tachometer to terminal IG ED of the check connector.

NOTICE:

- NEVER allow the tachometer terminal to touch ground as it could result in damage to the igniter and/or ignition coil.
- As some tachometers are not compatible with this ignition system, we recommend that you confirm the compatibility of your unit before use.

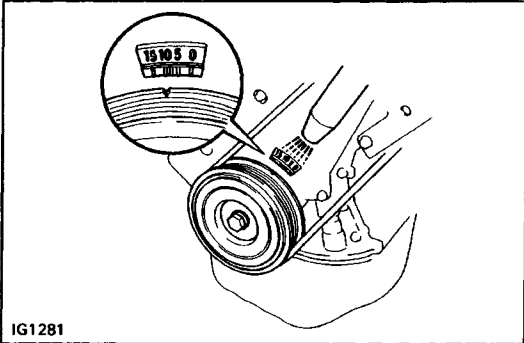


9. ADJUST IGNITION TIMING

- (a) Using SST, connect terminals TE1 and E1 of the check connector.

SST 09843-18020

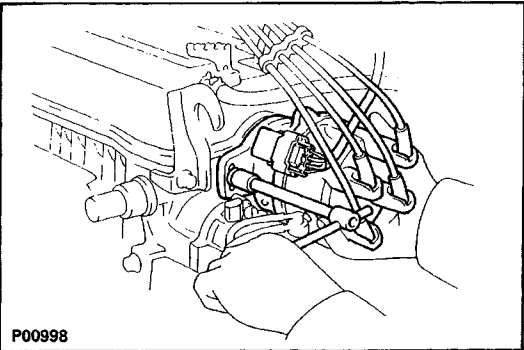
HINT: After engine rpm are kept at 1,000 – 1,300 rpm for 5 seconds, check that they return to idle speed.



- (b) Using a timing light, check the ignition timing.

Ignition timing: 10° BTDC @ idle

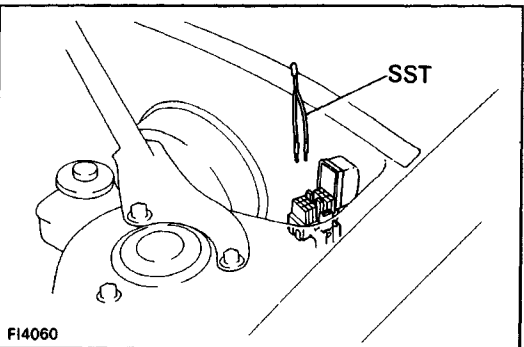
(Transmission in neutral range)



- (c) Loosen the hold-down bolts, and adjust by turning the distributor.

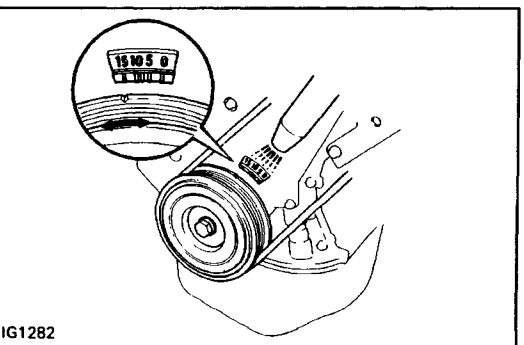
- (d) Tighten the hold-down bolts, and recheck the ignition timing.

Torque: 19 N-m (195 kgf-cm, 14 ft-lbf)



- (e) Remove the SST.

SST 09843-18020



10. FURTHER CHECK IGNITION TIMING

Ignition timing: 13 – 22° BTDC @ idle

(Transmission in neutral range)

HINT: The timing mark moves in a range between 13° and 22°.

11. DISCONNECT TACHOMETER AND TIMING LIGHT FROM ENGINE