

IGNITION SYSTEM

ON-VEHICLE INSPECTION

IG062-02

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 SPARK TEST

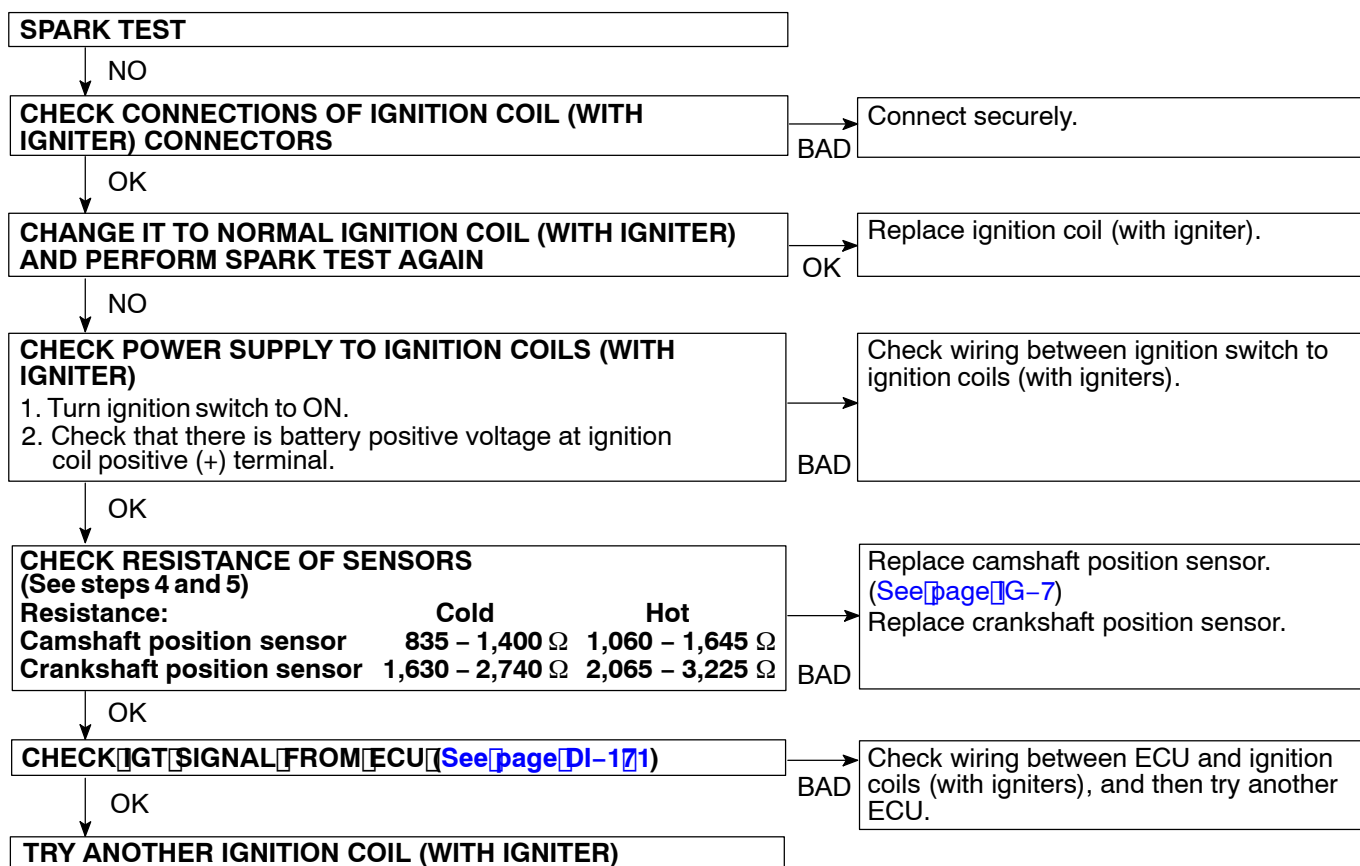
Check that the spark occurs.

- (1) Remove the ignition coil (See page IG-5).
- (2) Remove the spark plug.
- (3) Install the spark plug to the ignition coil, and connect the ignition coil connector.
- (4) Disconnect the 8 injector connectors.
- (5) Ground the spark plug.
- (6) See if spark occurs while engine is being cranked.

NOTICE:

To prevent gasoline from being injected from injectors during this test, crank the engine for no more than 5 – 10 seconds at time.

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

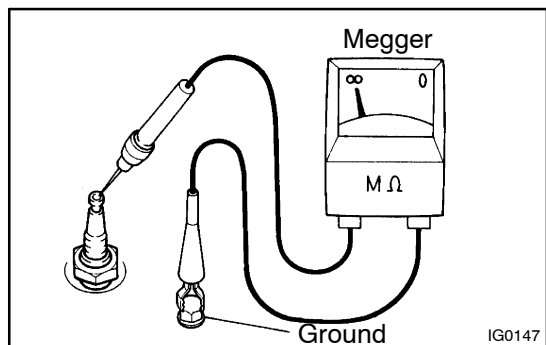


2. INSPECT SPARK PLUGS

NOTICE:

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

(a) Remove the 8 Ignition coils (See page IG-5).



(b) Inspect the electrode.

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

Standard correct insulation resistance:

10 MΩ or more

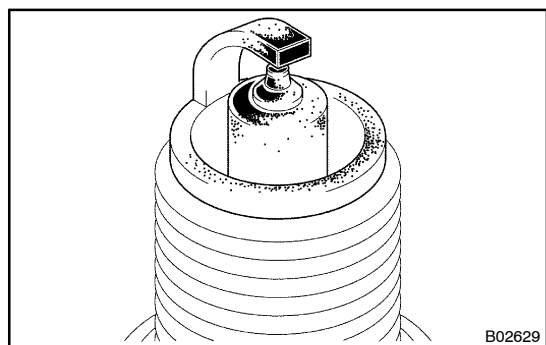
If the resistance is less than specified, proceed to step (d).

HINT:

If a megger is not available, these simple method of inspection provides fairly accurate results.

Simple Method:

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



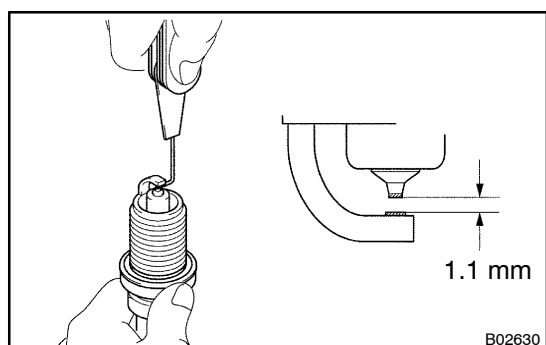
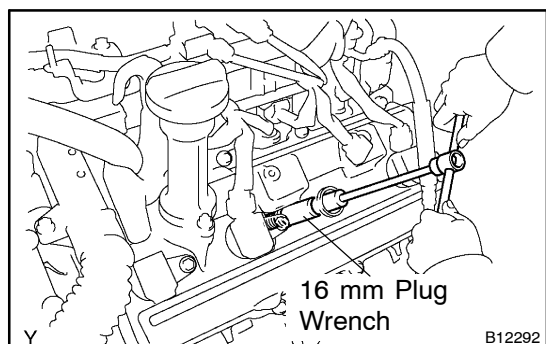
(c) Using a 16 mm plug wrench, remove the 8 spark plugs.

(d) Visually check the spark plug for thread damage and insulator damage.

If abnormal, replace the spark plug.

Recommended spark plug:

DENSO made	SK20R11
NGK made	IFR6A11



(e) Inspect the electrode gaps.

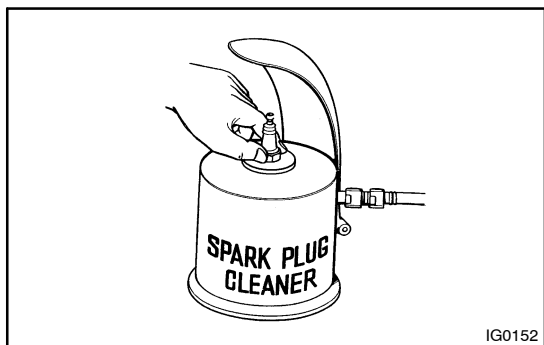
Standard electrode gap:

1.0 – 1.1 mm (0.0394 – 0.043 in.)

Maximum electrode gap:

1.2 mm (0.047 in.)

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



(f) Clean the 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:

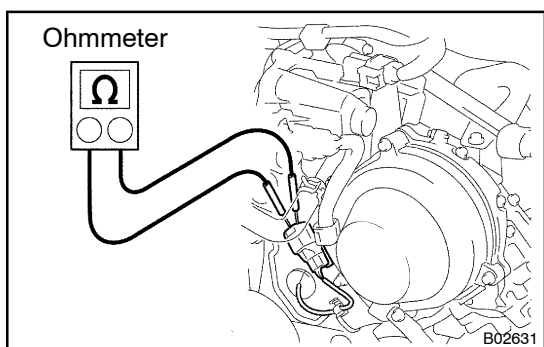
If there are traces of oil, remove it with gasoline before using the spark plug cleaner.

(g) Using a 16 mm plug wrench, install the 8 spark plugs.

Torque: 17.5 N·m (180 kgf·cm, 13 ft·lbf)

(h) Reinstall the 8 Ignition coil (See page IG-5)

3. INSPECT IGNITION COILS (WITH IGNITERS) (See step 1)



4. INSPECT CAMSHAFT POSITION SENSOR

(a) Remove the 2 bolts, 2 cap nuts and V-bank cover.

(b) Disconnect the sensor connector.

(c) Using an ohmmeter, measure the resistance between terminals.

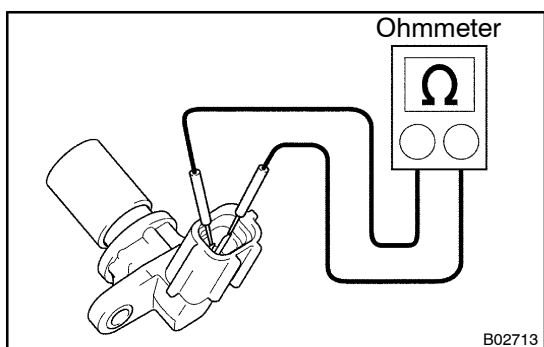
Resistance:

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

If the resistance is not as specified, replace the sensor (See page IG-7)

(d) Reconnect the sensor connector.

(e) Reinstall the V-bank cover with the 2 cap nuts.



5. INSPECT CRANKSHAFT POSITION SENSOR

(a) Remove the sensor (See page IG-9)

(b) Using an ohmmeter, measure the resistance between the terminals.

Resistance:

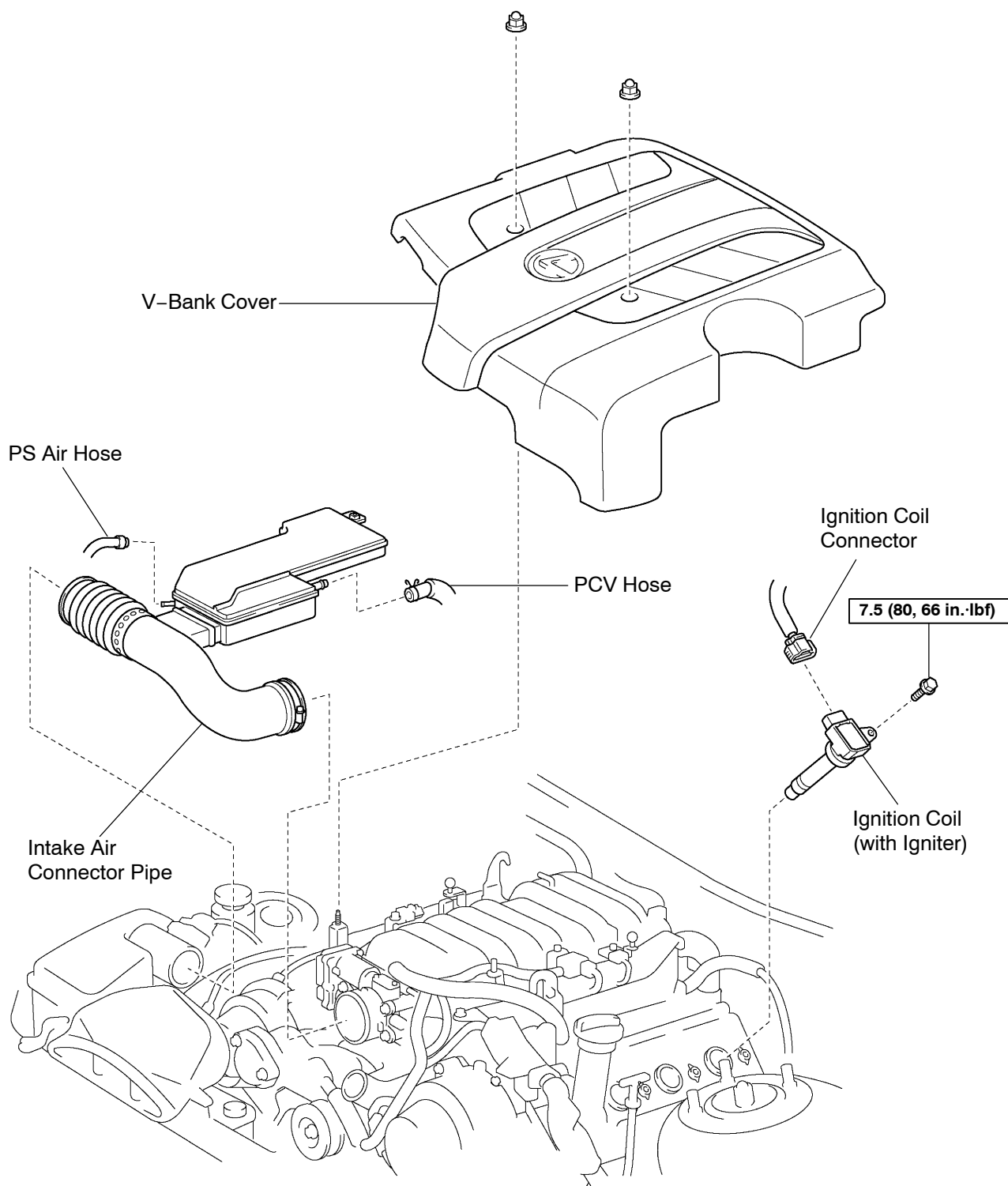
Cold	1,630 – 2,740 Ω
Hot	2,065 – 3,225 Ω

If the resistance is not as specified, replace the sensor.

(c) Reinstall the sensor (See page IG-9)

IGNITION COIL COMPONENTS

IG063-03



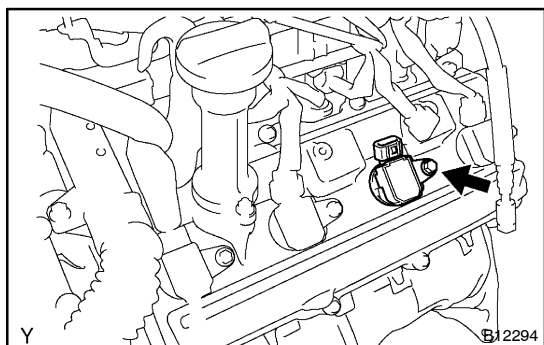
N·m (kgf·cm, ft·lbf) : Specified torque

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REPLACEMENT

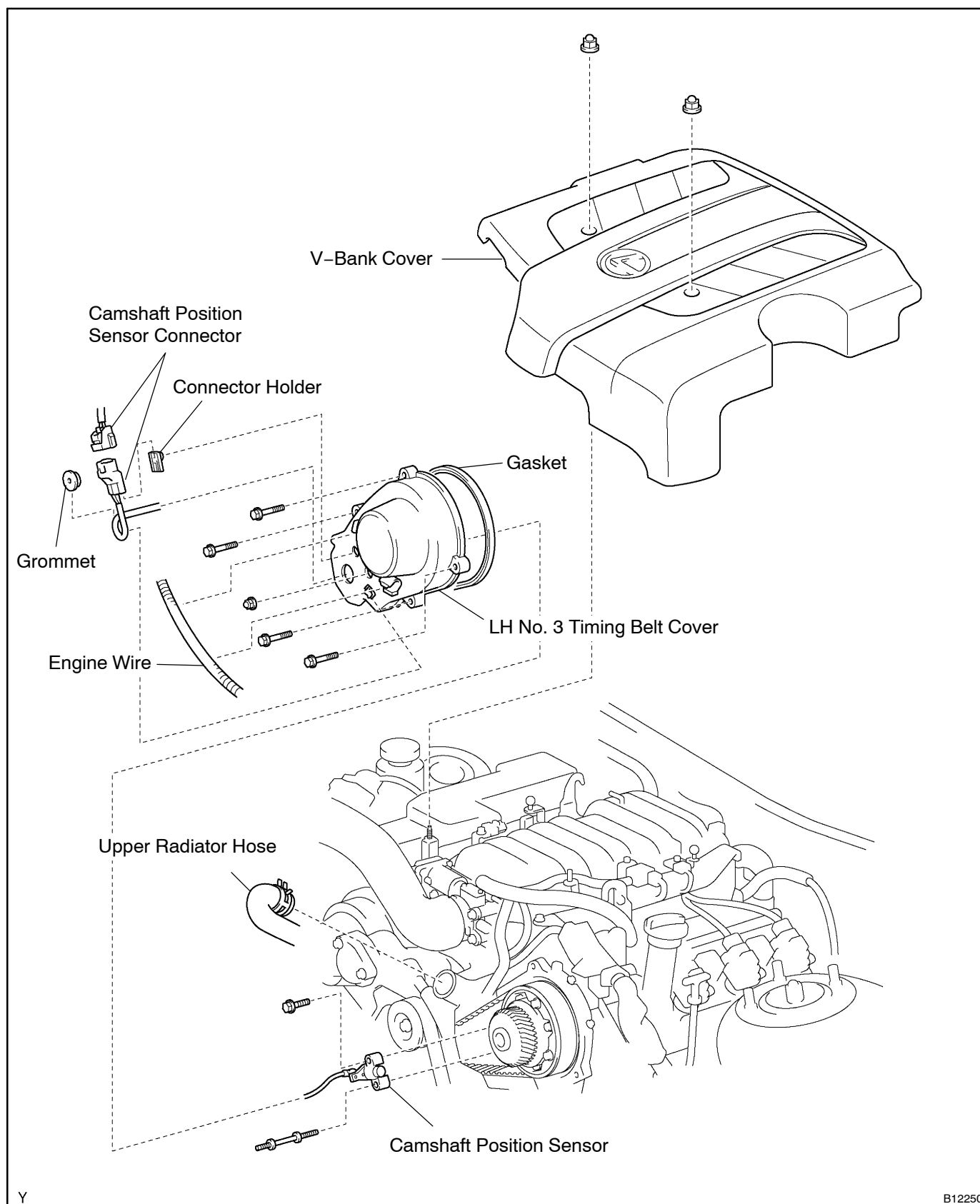
1. **REMOVE V-BANK COVER**
2. **REMOVE INTAKE AIR CONNECTOR PIPE**
3. **REMOVE IGNITION COILS**
 - (a) Disconnect the 8 ignition coil connectors.



- (b) Remove the bolt, and pull out the ignition coil. Remove the 8 ignition coils.
4. **REINSTALL NEW IGNITION COILS**
 - (a) Connect a new ignition coil to the spark plug, and attach the ignition coil to the cylinder head cover, and install the bolt. Install the 8 ignition coils.
Torque: 7.5 N·m (80 kgf·cm, 66 in·lbf)
 - (b) Connect the 8 ignition coil connectors.
5. **REINSTALL INTAKE AIR CONNECTOR PIPE**
6. **REINSTALL V-BANK COVER**

CAMSHAFT POSITION SENSOR COMPONENTS

IG085-02

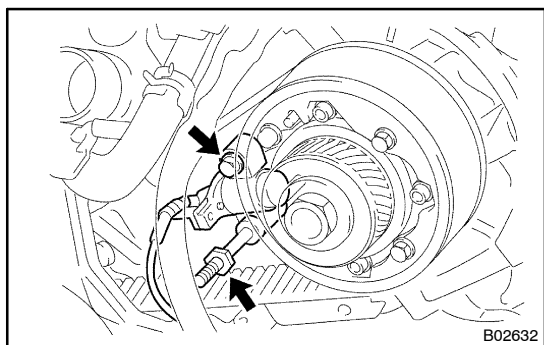


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REPLACEMENT

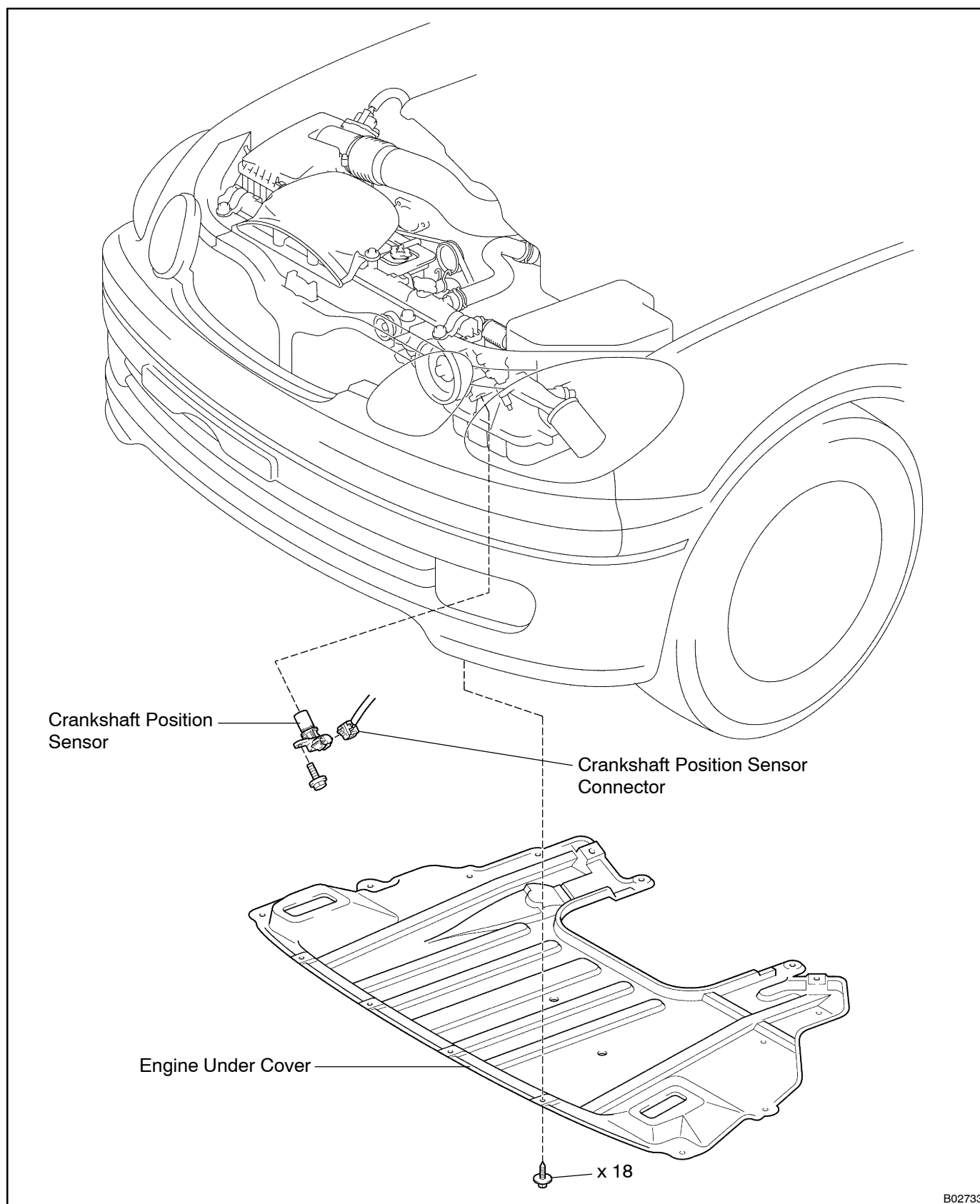
1. REMOVE V-BANK COVER
2. DRAIN ENGINE COOLANT
3. DISCONNECT UPPER RADIATOR HOSE FROM FRONT WATER BYPASS JOINT
4. REMOVE LH NO.3 TIMING BELT COVER
(See [page EM-15](#))



5. REMOVE CAMSHAFT POSITION SENSOR
Remove the bolt, stud bolt and camshaft position sensor.
6. REINSTALL NEW CAMSHAFT POSITION SENSOR
Install a new camshaft position sensor with the bolt and stud bolt.
Torque: 7.5 N·m (80 kgf·cm, 66 in.·lbf)
7. REINSTALL LH NO.3 TIMING BELT COVER
(See [page EM-22](#))
8. RECONNECT UPPER RADIATOR HOSE TO FRONT WATER BYPASS JOINT
9. REFILL WITH ENGINE COOLANT
(See [page CO-2](#))
10. START ENGINE AND CHECK FOR ENGINE COOLANT LEAKS
11. REINSTALL V-BANK COVER

CRANKSHAFT POSITION SENSOR COMPONENTS

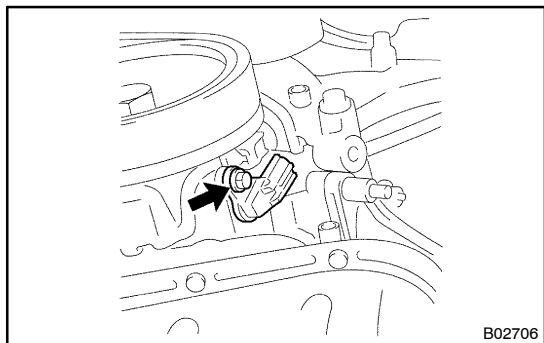
IG067-04



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REPLACEMENT

1. REMOVE ENGINE UNDER COVER



2. REMOVE CRANKSHAFT POSITION SENSOR

- (a) Disconnect the crankshaft position sensor connector.
- (b) Remove the bolt and crankshaft position sensor

3. REINSTALL NEW CRANKSHAFT POSITION SENSOR

- (a) Install a new crankshaft position sensor with the bolt.

Torque: 6.5 N·m (65 kgf·cm, 58 in·lbf)

- (b) Connect the crankshaft position sensor connector.

4. REINSTALL ENGINE UNDER COVER