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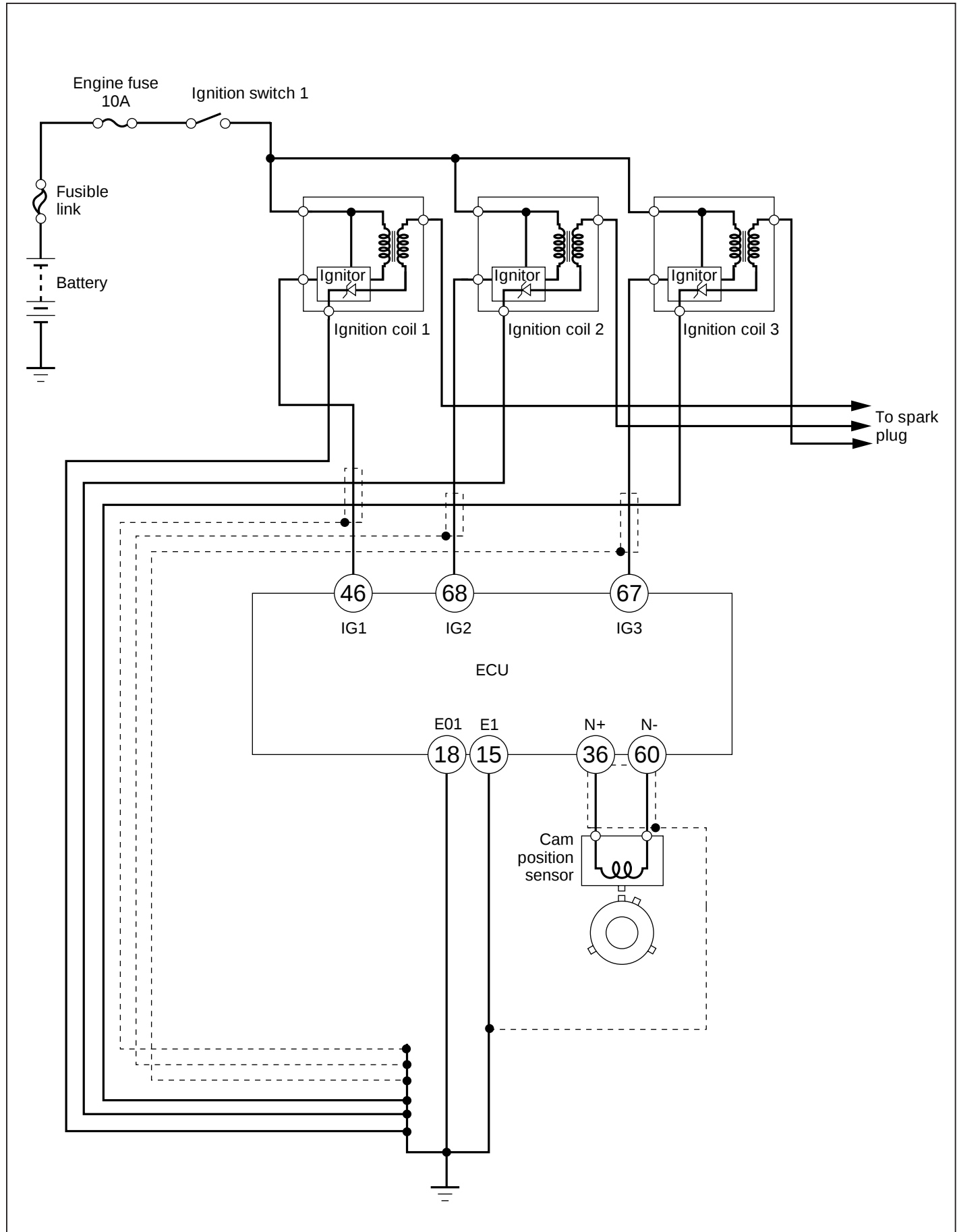
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IGNITION SYSTEM

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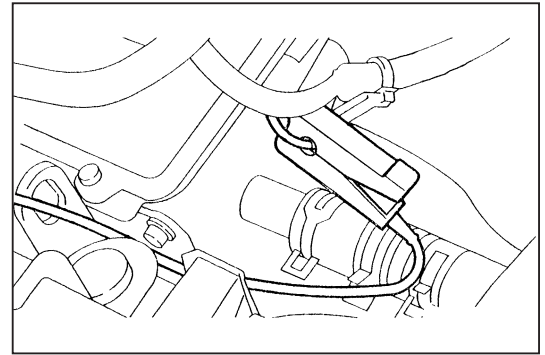
IGNITION SYSTEM CIRCUIT



SPARK TEST

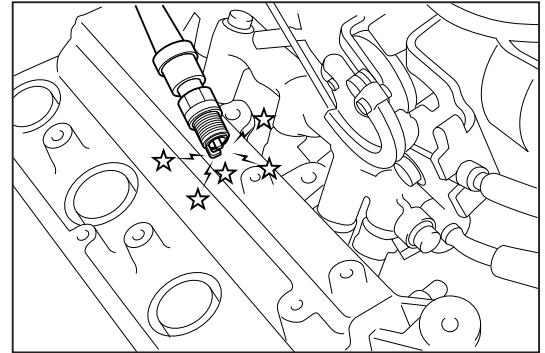
SPARK PLUG

1. Connect a timing light to the timing light connection wire.
NOTE:
 - Use a timing light which is capable of detecting the primary voltage.
2. Ensure that the timing light flashes while the engine is being cranked by the starter motor.
NOTE:
 - If the timing light will not flash, perform the following inspection.



MIG00003-00002

3. Remove the fuel pump relay from the relay box.
4. Remove the ignition coil cover from the cylinder head cover.
5. Disconnect the connector of the ignition coil.
6. Remove the ignition coil by removing the attaching bolt.
7. Remove the spark plug.
8. Connect a spark plug and connector to the ignition coil.
9. Check ignition sparks while the engine is being cranked by the starter motor.



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WARNING:

- Before performing this operation, check that no fuel is spilled inside the engine compartment. Remove any spilled fuel. Also, be sure to perform this operation at a well-ventilated place where no volatile liquid, gas, etc. exist nearby.

NOTE:

- If no ignition sparks occur, check power supply and replace the ignition coil.

10. Remove the spark plug.

CAUTION:

- Care must be exercised to avoid getting scalded, for the spark plugs may be still very hot.

11. Visually inspect the spark plug for electrode wear, thread or insulator damage.

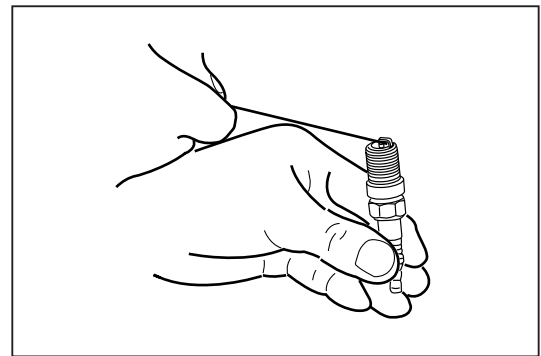
NOTE:

- Replace the spark plug if it exhibits damage.

12. Inspection of electrode gap
Measure the electrode gap, using the plug gap gauge.
Electrode Gap: 1.0 - 1.1 mm

NOTE:

- If the electrode gap of a used spark plug is not within the specification, replace the spark plug with a new one.
- If the electrode gap of a new spark plug is not within the specification, adjust the gap by bending the base of the ground electrode, being careful not to touch the tip.
- All four plugs should be the same heat range and be ones manufactured by the same manufacturer.



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13. Inspection of spark plug insulation resistance
More Than 20 MΩ

NOTE:

- If the insulation resistance is less than the specified value, replace the spark plug.

14. Install the spark plugs. Tighten them to the specified torque.

Tightening Torque: 14.7 - 21.6 N·m

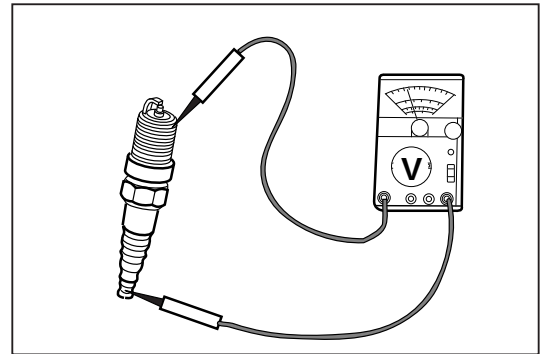
15. Install the ignition coil to the cylinder head cover with the attaching bolt.

Tightening Torque: 6.0 ± 1.8 N·m

16. Connect the ignition wire to the ignition coil.

17. Install the ignition coil cover to the cylinder head cover.

Tightening Torque: 5.5 ± 1.7 N·m



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POWER SUPPLY

1. Disconnect the connector of the ignition coil.
2. Measure the voltage between the terminals 1(GND) and 3(+B) of the wire harness connector side when the ignition switch is turned on.

Specified Value: Battery voltage

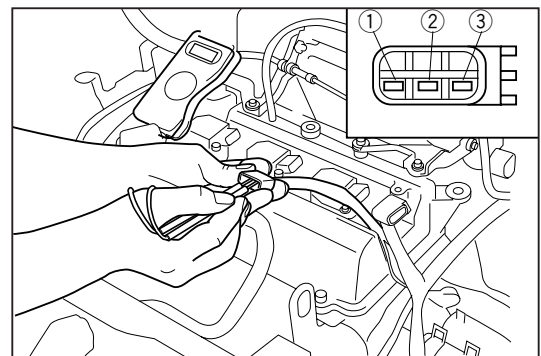
NOTE:

- If the voltage is not the specified value, check the fuse and wiring harness.

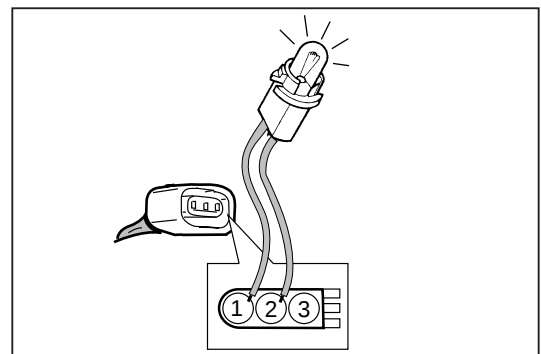
3. Connect a test lamp (12 V, 6 W) between the terminals 1(GND) and 2(IGt) of the wire harness connector side. Check to see if the lamp will illuminate while the engine is being cranked.

NOTE:

- Under this condition, the test lamp flashes. If the test lamp will not flash, check the outputs of the cam angle sensor and EFI ECU. (Refer to the EF section.)



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MIG00008-00007

CAM POSITION SENSOR

1. Disconnect the connector of the cam position sensor.
2. While cranking the engine, measure the output voltage between the connector terminals of the cam position sensor, using an oscilloscope.

NOTE:

- When the engine is cranked with the cam position sensor connector disconnected, the EFI diagnosis code No.13 is detected. After completion of the check, cancel this code.
(For canceling of the diagnosis code, refer to the EF section.)

3. Measure the resistance between each terminals of the connector.

Specified Value: $1100 \pm 150\Omega$

4. Remove the timing belt cover.
(Refer to the EM section.)

5. At all four points, check to see if the air gap between the signal rotor and the cam position sensor conforms to the specified value.

Specified Air Gap: $0.8 \pm 0.5 \text{ mm}$

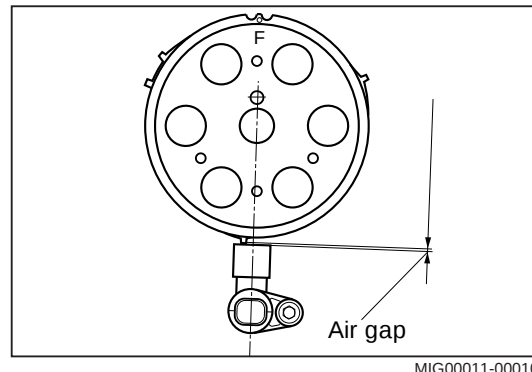
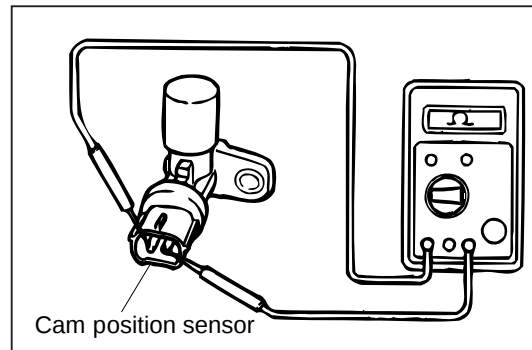
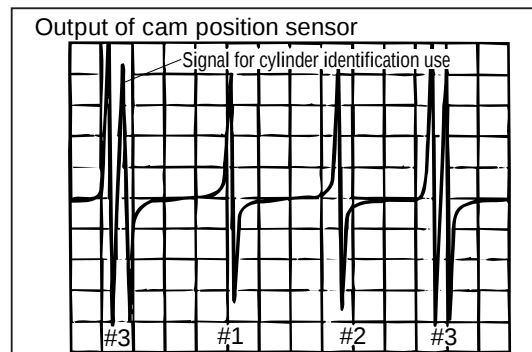
NOTE:

- No air gap adjustment is required.

6. Remove the cam position sensor.
(Refer to the EM section for the removal procedure.)
7. Visually check the cam position sensor for external damage and so forth.
If any abnormality exists, replace the sensor.
8. Install the cam position sensor by tightening the attaching bolt to the specified tightening torque.

Tightening Torque: $8.0 \pm 1.6 \text{ N}\cdot\text{m}$

9. Install the timing belt cover. (Refer to the EM section.)
10. Connect the connector of cam position sensor.



EFI ECU

While referring to the EF section, check that the output from the EFI ECU is normal, using the SST (09842-97201-000).

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CHARACTERISTICS OF ECU OUTPUT

The following table shows the standard voltage or resistance at ECU.

Item	Terminal	Condition	Standard voltage or resistance	Remedies
Power supply	⑧ — ⑮ ⑩ — ⑮	At all times	Battery voltage	Check stop fuse in the relay box.
	⑨ — ⑮ ⑩ — ⑮	Ignition switch is turned on.	Battery voltage	Check main relay in the fuse box.
Ground group	⑭ — ⑮ ⑮ — ⑮ ⑮ — ⑮	At all times	1 Ω or less	Check earth of wiring harness.
Cam position sensor	③⑥ — ⑥⑦	While the engine is being cranked by the starter motor.	0.2 - 0.6 V (AC range)	Check cam position sensor.
Ignition coil drive	④⑥ — ⑥⑦ ⑥⑦ — ⑮	Ignition switch is turned on.	3 V or less	Check ignition coil.

NOTE:

- If the measured voltage or resistance will not conform to the specified value, check the wiring harness.
- If the trouble has not been solved by repairing the wire harness or parts, replace the EFI ECU.

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IGNITION TIMING

1. Connect the test terminal and the ground terminal with a jumper wire of the diagnosis connector.
2. Connect a timing light to the timing light connection wire.

NOTE:

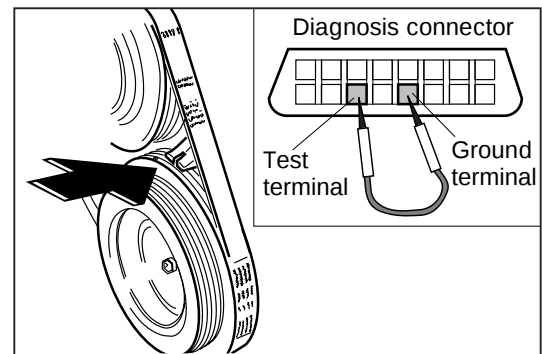
- Use a timing light which is capable of detecting the primary voltage.

3. Warm up the engine.
4. Check to see if the ignition timing mark of the crankshaft pulley is aligned with the indicator of the timing belt cover, using the timing light.

Ignition Timing: B.T.D.C. $5 \pm 2^\circ$ / Idle speed

NOTE:

- No ignition timing adjustment is required.



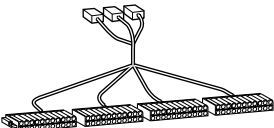
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SERVICE SPECIFICATIONS

Spark plug	Electrode gap	1.0 - 1.1 mm
	Insulation resistance	More than 20 MΩ
Cam position sensor	Air gap	0.8 ± 0.5 mm
	Insulation resistance	1100 ± 150 Ω
Ignition timing		B.T.D.C 5 ± 2°/Idle speed

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SSTs

Shape	Part number	Part name	Remarks
	09842-97201-000	EFI computer check sub-harness	

MIG00016-00000

TIGHTENING TORQUE

Tightening components	Tightening torque		Remarks
	N·m	kgf-m	
Spark plug × Cylinder head	14.7 - 21.6	1.5 - 2.2	
Cam position sensor × Cylinder head	8.0 ± 1.6	0.8 ± 0.16	
Ignition coil × Cylinder head cover	6.0 ± 1.8	0.6 ± 0.18	
Ignition coil cover × Cylinder head cover	5.5 ± 1.7	0.55 ± 0.17	

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