

# Engine Electrical Devices

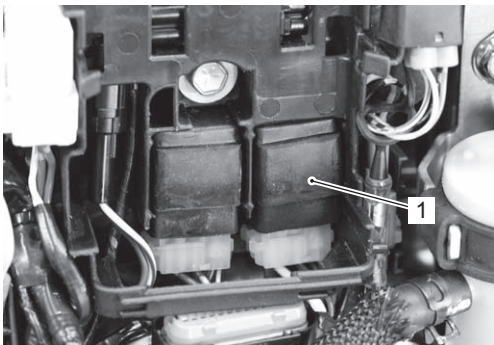
## General Description

### Sensor and Switch Description (Remote Control Model)

CENDK1121301003

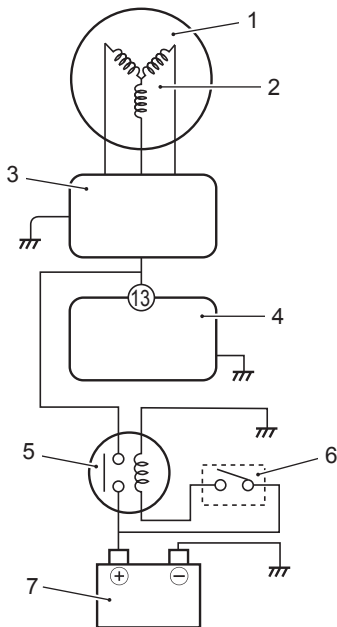
#### Main Relay

The main relay is installed in the electric parts holder. When energized by turning the ignition switch “ON”, charging circuit is formed which supplies charging current to the battery.



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1. Main relay



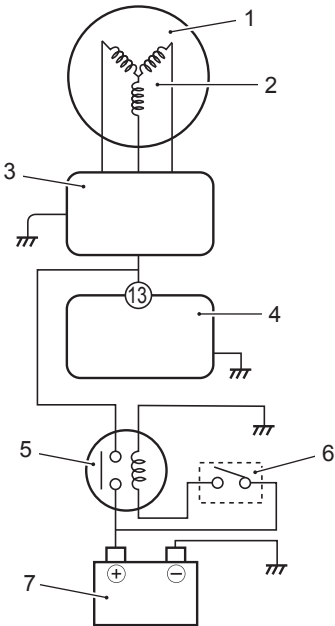
IDK112130008-01

1. Flywheel	5. Main relay
2. Battery charge coil	6. Ignition switch
3. Rectifier/Regulator	7. Battery
4. ECM	

### ECM Power Source (Remote Control Model)

CENDK1121301004

The AC output from the battery charge coil is rectified to DC power by the rectifier/regulator. The DC power inputs to ECM through ECM No.13 terminal, and it is supplied to the engine control system.



IDK112130001-03

1. Flywheel	5. Main relay
2. Battery charge coil	6. Ignition switch
3. Rectifier/Regulator	7. Battery
4. ECM	

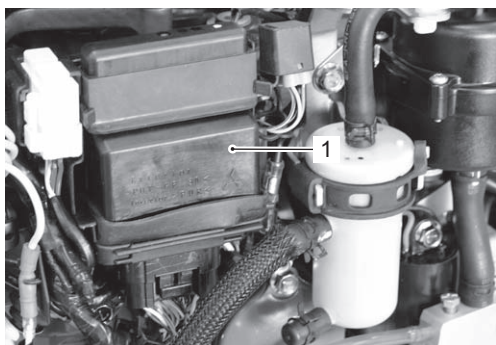
## Service Instructions

### Cylinder Temp. Sensor Removal and Installation (All Models)

CENDK1121306021

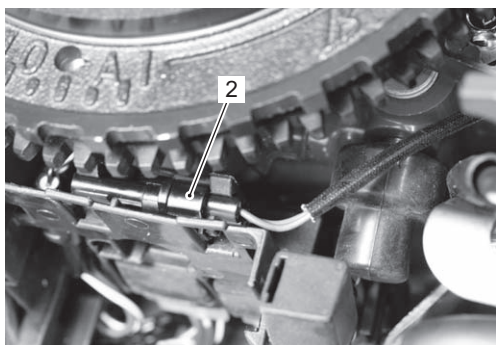
#### Removal

- 1) Remove the recoil starter.  
Refer to "Recoil Starter Removal and Installation" in related manual.
- 2) Disconnect lead wire connector from ECM (1), then remove ECM.



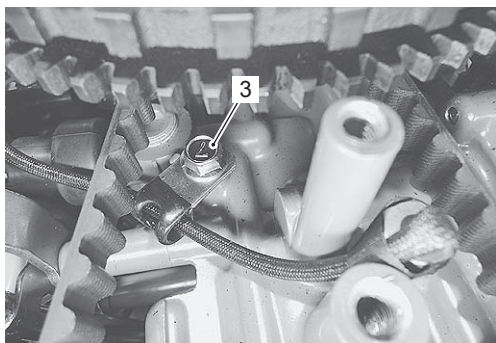
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- 3) Disconnect the cylinder temp. sensor lead wire connector (2).



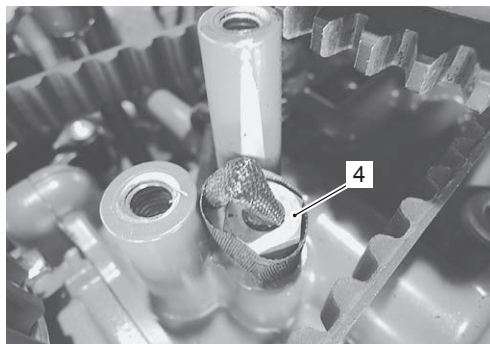
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- 4) Remove the bolt (3) securing lead wire clamp.



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- 5) Remove the tape securing sensor lead wire.  
Loosen and remove the cylinder temp. sensor (4).



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#### Installation

Installation is reverse order of removal.

- Clean mating surface of sensor and cylinder.
- Tighten sensor to specified torque.

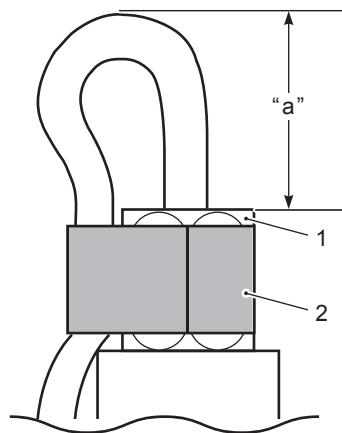
#### Tightening torque

**Cylinder temp. sensor (a): 9 N·m (0.9 kgf-m, 6.5 lbf-ft)**



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- Fix the sensor lead wire to sensor with heat-resisting tape as shown.



IDK112130007-01

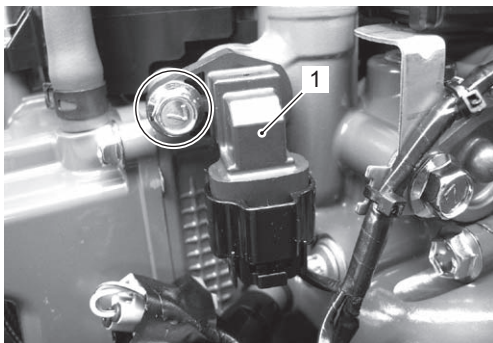
1. Cylinder temp sensor	"a": Approx. 15 mm
2. Taping	

- Connect connector to sensor securely.
- Check to ensure that all removed parts are back in original position.
- Check that sensor lead wire is routed properly and away from hot or rotating parts.  
Refer to "Wiring Harness Routing Diagram" in related Manual.

**CMP Sensor Inspection (Remote Control Model)**

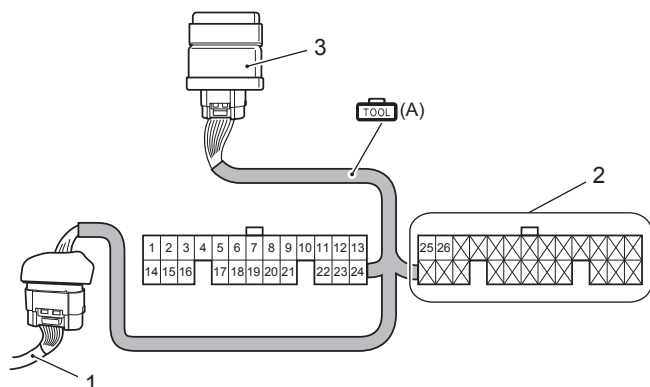
CENDK1121306018

- 1) Turn the ignition switch "OFF".
- 2) Remove the bolt and CMP sensor (1).



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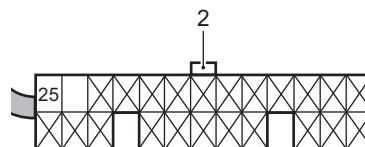
- 3) Connect the 26-pin test cord between ECM and wire harness as shown in figure.

**Special tool****TOOL (A): 09930-88940 (26-pin test cord)**

IDK112130002-01

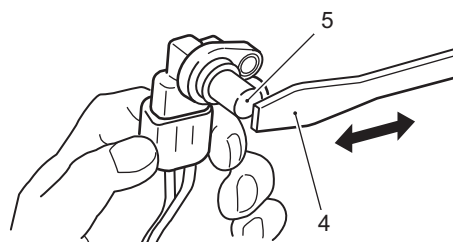
1. Wire harness	2. Black connector	3. ECM
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- 4) Connect the tester probe ("+", Red) to No.25 terminal.
- 5) Connect the tester probe ("-", Black) to No.7 terminal (or to body ground).

**Special tool****TOOL : 09930-99320 (Digital tester)****Tester knob indication****DC Voltage ( --- )****26-pin test cord (Black connector)**

IDK111130011-02

- 6) Turn the ignition switch "ON".
- 7) Measure the voltage when the tip of a steel screwdriver is brought near and then pulled away from the sensor tip.

**When screwdriver is brought near****Approx. 5 V****When screwdriver is pulled away****Approx. 0.3 V**

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4. Screw driver	5. CMP sensor
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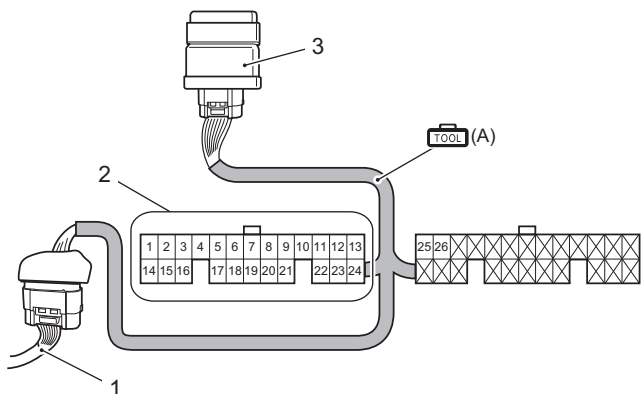
- 8) If the voltage does not change in the above test, check wire harnesses for open and short.  
If wire harnesses are in good condition, replace CMP sensor and recheck.
- 9) Reinstall CMP sensor.

## MAP Sensor Output Voltage Inspection (Remote Control Model)

CENDK1121306019

- 1) Turn the ignition switch "OFF".
- 2) Connect the 26-pin test cord between ECM and wire harness as shown in figure.

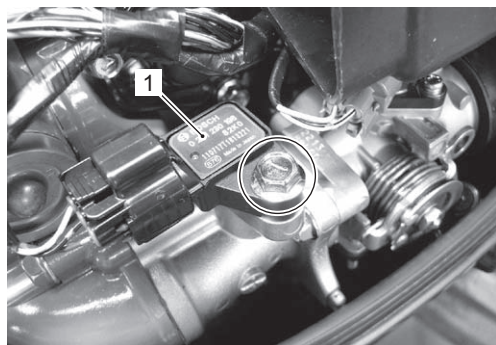
### Special tool

**TOOL (A): 09930-88940 (26-pin test cord)**


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1. Wire harness	2. White connector	3. ECM
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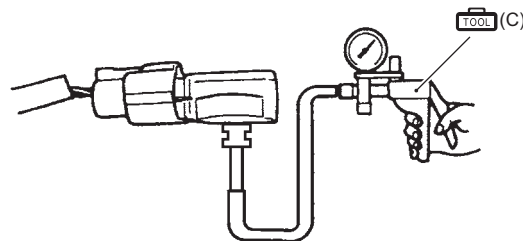
- 3) Remove the bolt and MAP sensor (1) from intake manifold.



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- 4) Connect vacuum pump gauge (with hose) to MAP sensor as shown in figure.

### Special tool

**TOOL (C): 09917-47011 (Vacuum pump gauge)**


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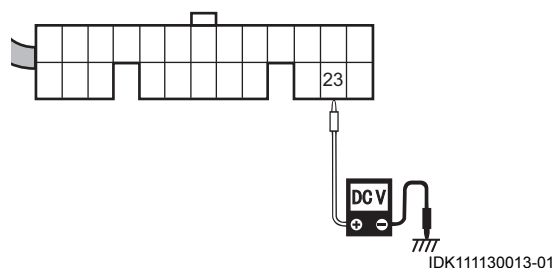
- 5) Turn the ignition switch "ON".
- 6) While applying negative pressure (vacuum) to MAP sensor, measure "23" terminal voltage.

### MAP sensor output voltage change

Negative pressure: kPa (kg/cm <sup>2</sup> , mmHg)	0 (0, 0)	40 (0.4, 300)	80 (0.8, 600)
"23" terminal voltage (V)	4.00	2.42	0.84

(At 759.8 mmHg, 101.3 kPa, 29.91 inHg  
barometric pressure.)

### 26-pin test cord (White connector)



IDK111130013-01

### Special tool

**TOOL : 09930-99320 (Digital tester)**

### Tester knob indication

**DC Voltage ( --- )**


- 7) If out of specification, Check wire harnesses for open and short. If wire harnesses are in good condition, replace MAP sensor and recheck.
- 8) Reinstall MAP sensor.  
Refer to "MAP Sensor Removal and Installation" in related manual.

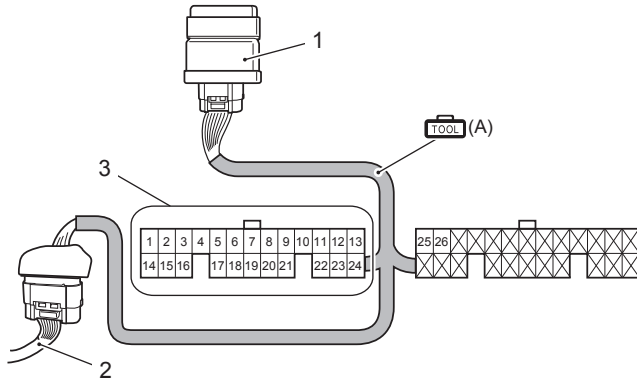
**TPS Inspection (Remote Control Model)**

CENDK1121306020

- 1) Turn the ignition switch "OFF".
- 2) Connect the 26-pin test cord between ECM and wire harness as shown in figure.

**Special tool**

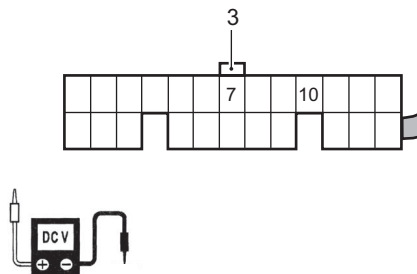
 (A): 09930-88940 (26-pin test cord)



IDK112130003-01

1. ECM	2. Wire harness	3. White connector
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- 3) Connect tester probe ("+", Red) to No.10 terminal.
- 4) Connect tester probe ("-", Black) to No.7 terminal (or to body ground)

**26-pin test cord (White connector)**

IDK111130015-01


- 5) Turn the ignition switch "ON".
- 6) Check for sensor output voltage.  
Slowly move the throttle control lever to open, and check if voltage changes linearly within specification, according to throttle valve opening angle.

**Sensor output voltage**

FCT position: Approx. 0.7 V

WOT position: Approx. 4.0 V

**Special tool**

 : 09930-99320 (Digital tester)

**Tester knob indication**

DC Voltage ( --- )

**NOTICE**

The throttle body will lose its original performance if it has been disassembled and reassembled.

Do not try to adjust or remove any of the throttle body component parts (Throttle position sensor, throttle valve, throttle stop screw, etc.).

These components have been factory adjusted to precise specifications.

- 7) If out of specification, check wire harness for open and short. If wire harnesses are in good condition, replace the throttle body and recheck.