



SERVICE MANUAL INFORMATION

**SB-18-023 TROUBLESHOOTING STARTER AND
ALTERNATOR WORKSHOP MANUAL
CORRECTION**

**GROUP: SERVICE MANUAL UPDATE
BULLETIN NO: SB-18-023
DATE: 9-6-2018
REF: SB-A-27-036**

SUBJECT VEHICLES: 2011MY-2018MY Conventional Trucks equipped with an J08E and COE Trucks equipped with an J05E.

The following is to inform you of the above caption. This service data should be attached to the relevant pages of the workshop manuals for maintenance and to use for servicing.

OVERVIEW:

Correction of troubleshooting of the starter and alternator.



MALFUNCTION OF STARTER

EN01H16F01030F03001016

1. Technical description

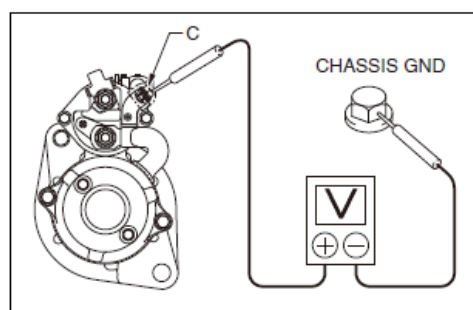
- Engine does not crank, or cranks slowly.

2. Preparation for inspect the starter.

- Wipe mud and the dust of the terminal at the time of the measurement, and secure the conduction of the tester.

INSPECTION PROCEDURE

1 Check the power supply of starter terminal C



- For MT models
Depress the clutch pedal fully to the floor.
For TRANS models
Set the transmission control lever to the "NEUTRAL" or "PARK" position.
- Set the starter switch to the "START" position.
- Use the electrical tester to measure the voltage between the starter terminal C and ground.

Measurement conditions	Tester connections	Standard values
Starter switch: START	Starter terminal C – Ground	8 – 16V

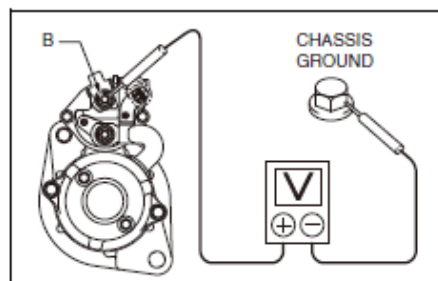
Do the measurements meet the standard value?

YES

NO

Go to step 2.

Go to step 6.

2 Check the power supply of starter terminal B

SAPH16F010300055

1. Use the electrical tester to measure the voltage between the starter terminal B and ground.

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK or ON	Starter terminal B – Ground	8 – 16V

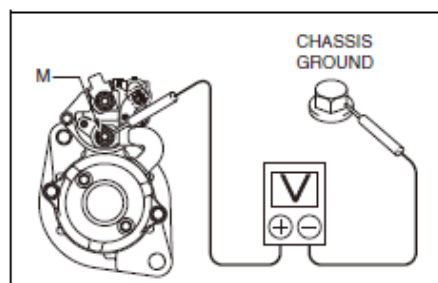
Do the measurements meet the standard value?

YES

NO

Go to step 3.

Go to step 5.

3 Check the power supply of starter terminal M

SAPH16F010300056

1. For MT models
Depress the clutch pedal fully to the floor.
For TRANS models.
Set the transmission control lever to the "NEUTRAL" or "PARK" position.
2. Set the starter switch to the "START" position.
3. Use the electrical tester to measure the voltage between the starter terminal M and ground.

Measurement conditions	Tester connections	Standard values
Starter switch: START	Starter terminal M – Ground	8 – 16V

Do the measurements meet the standard value?

YES

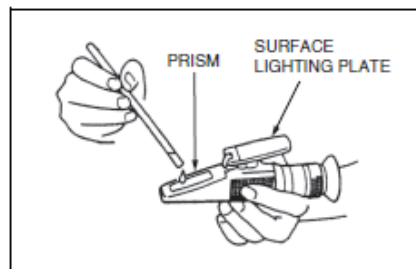
NO

Go to step 4.

Replace the starter.

4 Inspect the gravity of the battery fluid

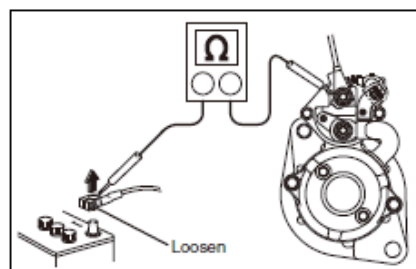
1. Use the gravity tester to measure the gravity of the battery.



SAPH16F010300057

Was any failure found?**YES****Replace the starter.****NO****Replace the battery.****5 Inspect disconnection of the wire harness between the connector of the starter terminal B and the battery + side connector**

1. Disconnect the wire harness connector of the battery + side.
2. Use the electrical tester to measure the resistance between the starter terminal B and the battery + side connector.



SAPH16F010300058

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK or ON	Starter B connector - battery + connector	Less than 1Ω

Do the measurements meet the standard value?**YES****Replace the battery.****NO****Repair or replace the harness.****6 Inspect operation of the starter relay**

1. For MT models
Depress the clutch pedal fully to the floor.
For TRANS models
Set the transmission control lever to the "NEUTRAL" or "PARK" position.
Standard: Operating noise sounds.

Do the measurements meet the standard value?

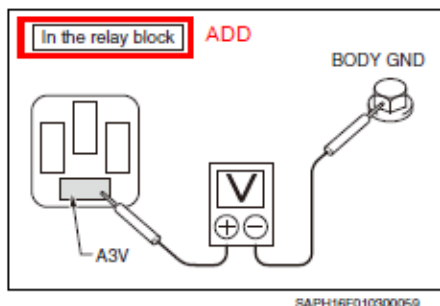
YES

NO

Go to step 7.

Go to step 8.

7 Inspect the voltage of the starter relay terminal A3V



SAPH116F010300059

1. Set the starter switch to the "LOCK" position.
2. Disconnect the starter relay.
3. Set the starter switch to the "ON" position.
4. Use the electrical tester to measure the voltage between the starter relay terminal A3V of the relay block No.2 and the ground.

Was any failure found?

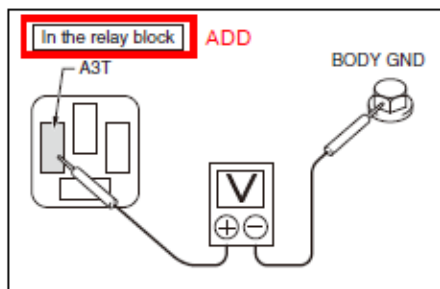
YES

NO

Replace the starter relay.

Replace the power supply fuse, or repair or replace the harness.

8 Inspect disconnection of wire harness between the starter relay terminal A3T and the starter cut relay terminal K03



SAPH116F010300060

1. Leave the starter relay disconnects.
2. For MT models
Depress the clutch pedal fully to the floor.
For TRANS models
Set the transmission control lever to the "NEUTRAL" or "PARK" position.
3. Set the starter switch to the "START" position.
4. Use the electrical tester to measure the voltage between the starter relay terminal A3T of the relay block No.2 and ground.

Was any failure found?

YES

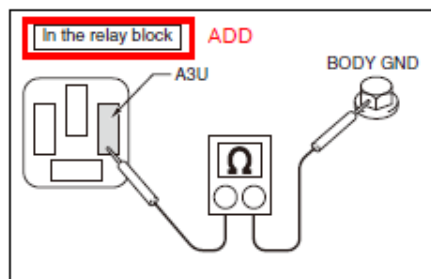
Go to step 9.

NO

Go to step 10.

9

Inspect disconnection of wire harness between the starter relay terminal A3U and GROUND



1. Leave the starter relay disconnects.
2. Set the starter switch to the "LOCK" position.
3. Use the electrical tester to measure the resistance between the starter relay terminal A3U of the relay block No.2 and ground.

Was any failure found?

YES

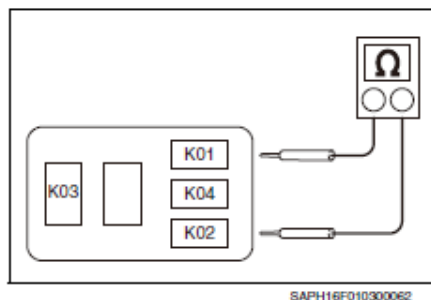
Replace the starter relay.

NO

Repair or replace the harness.

10

Inspect the starter cut relay



1. Set the starter switch to the "LOCK" position.
2. Disconnect the starter cut relay.
3. Use the electrical tester to measure the resistance between the terminals of the starter cut relay.

Measurement conditions	Tester connections
Starter switch: LOCK	Starter cut relay terminals K01 – K02
	Starter cut relay terminals K03 – K04

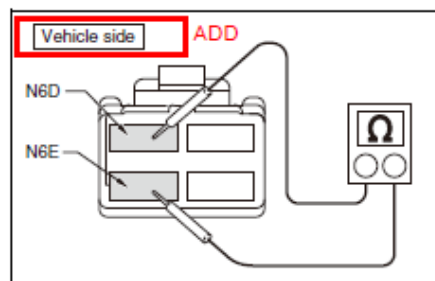
Was any failure found?

YES

For manual transmission: Go to step 11
For automatic transmission: Go to step 12

NO

Replace the tarter cut relay.

11 Inspect the clutch interlock switch

SAPH16F010300063

1. Set the starter switch to the "LOCK" position.
2. Disconnect the clutch interlock switch connector.
3. Use the electrical tester to measure the resistance between the terminals of the clutch interlock switch.

Measurement conditions	Tester connections
Starter switch: LOCK	Clutch interlock switch terminals: push button is free N6D – N6E
	Clutch interlock switch terminals: push the button N6D – N6E

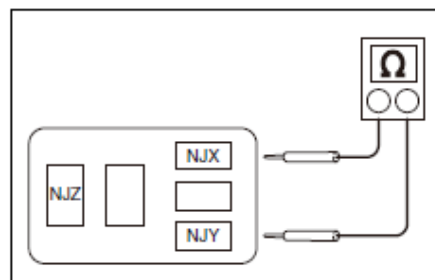
Was any failure found?

YES

Replace the engine ECU.

NO

Replace the clutch interlock switch.

12 Inspect the automatic transmission starter relay

SAPH16F010300064

1. Set the starter switch to the "LOCK" position.
2. Disconnect the automatic transmission starter relay.
3. Use the electrical tester to measure the resistance between the terminals of the starter cut relay.

Measurement conditions	Tester connections
Starter switch: LOCK	Automatic transmission starter relay terminals NJX – NJY
	Automatic transmission starter relay terminals NJZ – NK0

Was any failure found?

YES

Replace the engine ECU.

NO

Replace the automatic transmission starter relay.

MALFUNCTION OF ALTERNATOR

1. Technical description

- The alternator does not generate electricity.

2. Preparation for inspect the starter.

- Wipe mud and the dust of the terminal at the time of the measurement, and secure the conduction of the tester.

INSPECTION PROCEDURE

1 Check the charge light.

- Start the engine.
- Check if the charge light turns on or off.

Does the charge light turn on?

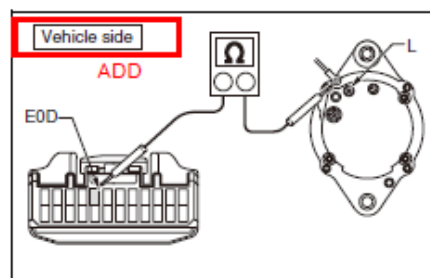
YES

Replace the alternator.
After replacement, confirm the function of the alternator.

NO

Go to step 2.

2 Check disconnection of the charge light circuit



SAPH16F010300065

- Set the starter switch to the "LOCK" position.
- Disconnect the combination meter 24pin connector.
- Disconnect the alternator L connector.
- Check connection of the wire harness between the alternator vehicle-side connector and the combination meter vehicle-side connector.

Measurement conditions	Tester connections
Starter switch: LOCK	Combination meter 24pin connector E0D – alternator connector L

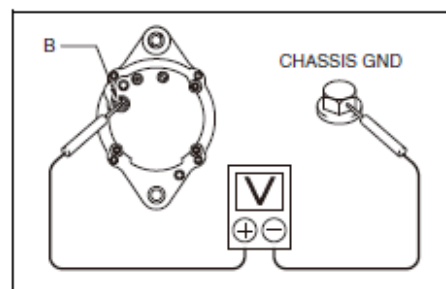
Was any failure found?

YES

Repair or replace the harness.

NO

Go to step 3.

3 Inspect voltage of the alternator

SAPH16F010300066

1. Start the engine.
2. Use the electrical tester to measure the voltage between the alternator terminal B and ground.

Measurement conditions	Tester connections	Standard values
Engine running	Alternator terminal B – Ground	14.2V $\pm$ 0.3V

Do the measurements meet the standard value?

YES

Go to step 4.

NO

Replace the alternator.
After replacement, confirm the function of the alternator.

4 Check charging capability of the battery

1. Check charging capability of the battery.

Can the battery be charged?

YES

Go to step 5.

NO

Replace the battery.

5 Check the Battery liquid

1. Check the battery liquid decreasing speed.

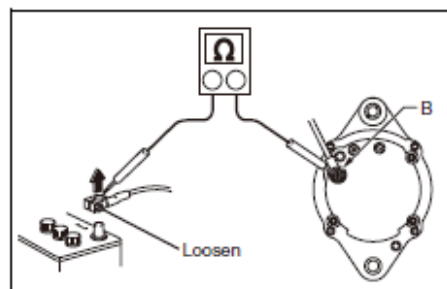
Does the battery liquid disappear in a short term?

YES

Replace the battery.

NO

Go to step 6.

6 Check disconnection of the wire harness

SAPH16F010300067

1. Set the starter switch to the "LOCK" position.
2. Disconnect the battery + connector.
3. Check connection of the wire harness between the alternator B connector and the battery + connector.

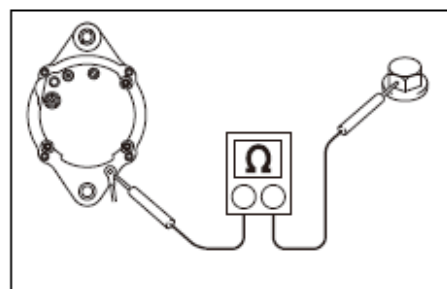
Measurement conditions	Tester connections	Standard values
Starter switch: LOCK	Alternator connector B – Battery connector +	1Ω or less

Was any failure found?**YES**

Repair or replace the wire harness or mega fuse.

NO

Go to step 7.

7 Check connection between the alternator and the chassis ground

SAPH16F010300068

1. Set the starter switch to the "LOCK" position.
2. Check connection between the alternator terminal G and the chassis ground.

Measurement conditions	Tester connections	Standard values
Starter switch: LOCK	Alternator terminal G – Ground	1Ω or less

Was any failure found?**YES**

Repair or replace the wire harness.
After replacement, confirm the function of the alternator.

NO

Replace the alternator.
After replacement, confirm the function of the alternator.