DTC P2502:00 [SKYACTIV-D 2.2]

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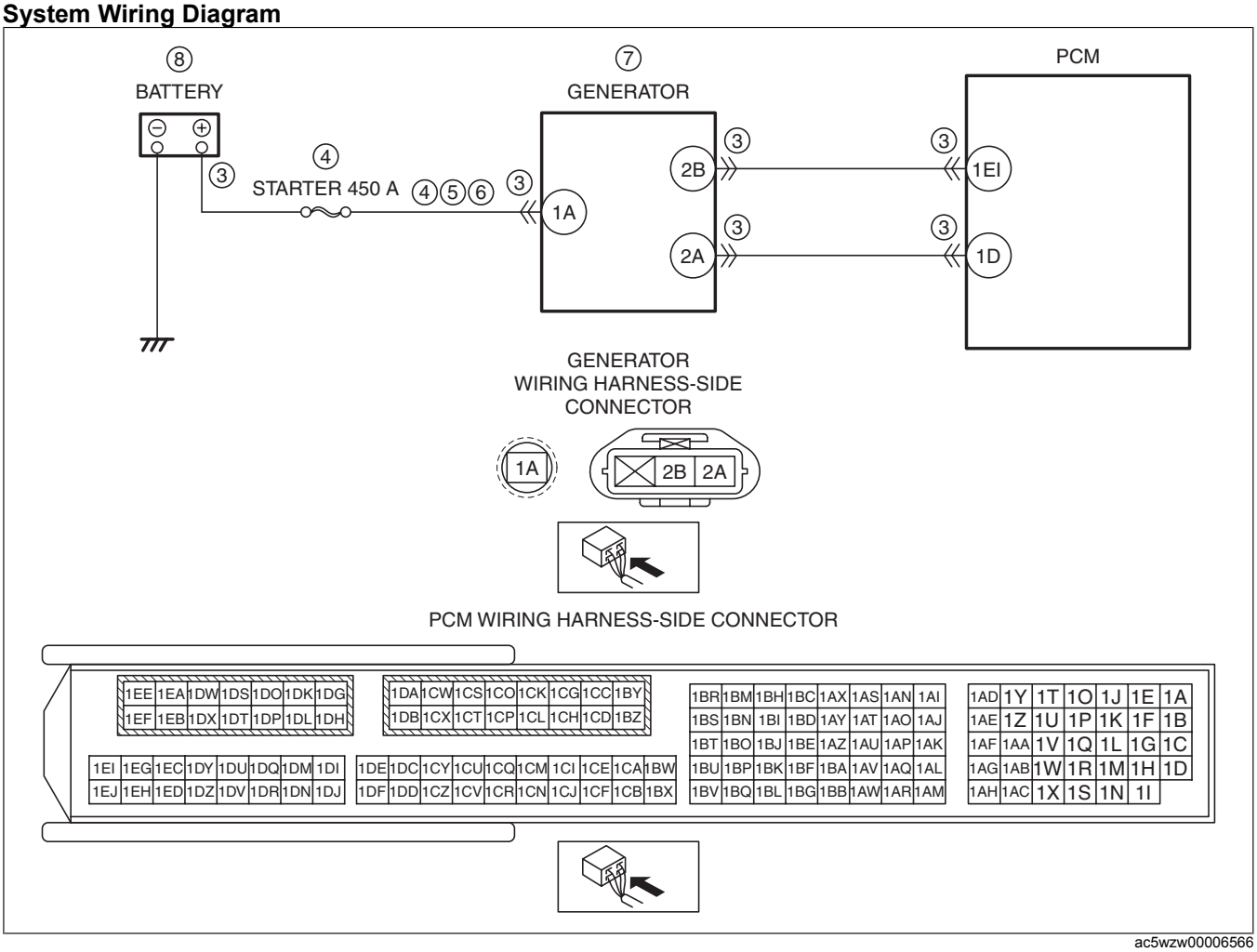
Details On DTCs

DESCRIPTION	Generator system: Malfunction in voltage generated by generator	
DETECTION CONDITION	Determination conditions	• The voltage generated by the generator is **17 V or higher** and the battery voltage is **11 V or less** for a continuous specified time.
	Preconditions	• While engine is running
	Malfunction determination period	• **5 s** period
	Drive cycle	• 1
	Self test type	• CMDTC self test
	Sensor used	• PCM • Generator
FAIL-SAFE FUNCTION	• Inhibits engine-stop by operating the i-stop function. • Generator control is inhibited.	
VEHICLE STATUS WHEN DTCs ARE OUTPUT	• Flashes i-stop warning light (amber). • A warning message is displayed on the TFT LCD in the instrument cluster. (With TFT LCD) • Illuminates charging system warning light. (Without TFT LCD) • If the vehicle continues to be driven while the DTC is detected the battery will be depleted. — A malfunction occurs with an electrical device and the vehicle stops. • The following vehicle conditions differ depending on the type of malfunction: — Vehicle shock may occur due to generator load. — Idling feel due to generator-stop may occur.	
POSSIBLE CAUSE	• Poor connection of the following parts: — Battery — Generator — PCM • Connector or terminal malfunction of the following parts: — Battery — Generator — PCM • Short to ground or open circuit in generator charge/discharge circuit — Short to ground in wiring harness between battery positive terminal and generator terminal 1A — STARTER 450 A fuse malfunction — Open circuit in wiring harness between battery positive terminal and generator terminal 1A • Generator malfunction • Battery malfunction • PCM malfunction	

System Wiring Diagram



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Function Explanation (DTC Detection Outline)

- When the charge/discharge circuit for the power supplying the vehicle is normal, the vehicle will operate normally. In this diagnostic, a low vehicle supply voltage is detected even though the generator is generating power, a malfunction in the charge/discharge circuit is detected, and verification of vehicle malfunctions/safety assurance is performed.

Repeatability Verification Procedure

1. Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-D 2.2].)
2. Start the engine.
3. Leave for **180 s** while idling with no electrical load.
4. Leave for **30 s** while idling with high electrical load.

PID Item/Simulation Item Used In Diagnosis

- Not applicable

Troubleshooting Diagnostic Procedure
Intention of troubleshooting procedure

- Step 1—6
  — Perform an inspection of each signal transmission system.
- Step 7
  — Perform a unit inspection of the generator.
- Step 8—10
  — Verify that the primary malfunction is resolved and there are no other malfunctions.

STEP	INSPECTION	RESULTS	ACTION
1	**PURPOSE: VERIFY RELATED SERVICE INFORMATION AVAILABILITY** • Verify related Service Information availability. • Is any related Service Information available?	Yes	Perform repair or diagnosis according to the available Service Information. • If the vehicle is not repaired, go to the next step.
		No	Go to the next step.
2	**PURPOSE: VERIFY IF POOR CONNECTION OF EACH PART AFFECTS DIAGNOSTIC RESULTS** • Switch the ignition off. • Inspect the connection condition (part installation condition, connector connection condition) for the following parts: — Battery — Generator — PCM • Is the connection condition (part installation condition, connector connection condition) for each part normal?	Yes	Go to the next step.
		No	Connect each part or the connector correctly, then go to Step 8.
3	**PURPOSE: VERIFY IF CONNECTOR DAMAGE OF EACH PART AFFECTS DIAGNOSTIC RESULTS** • Disconnect the connector of the following parts. — Battery — Generator — PCM • Inspect for poor connection (such as damaged/ pulled-out pins, corrosion). • Is there any malfunction?	Yes	Repair or replace the connector and/or terminals, then go to Step 8.
		No	Go to the next step.
4	**PURPOSE: INSPECT FUSE** • Remove the STARTER 450 A fuse. • Inspect the STARTER 450 A fuse. • Is there any malfunction?	Yes	If the fuse is burnt out: • Refer to the wiring diagram and verify whether or not there is a common connector between battery positive terminal and generator terminal 1A. **If there is a common connector:** — Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to ground. — Repair or replace the malfunctioning part. **If there is no common connector:** — Repair or replace the wiring harness which has a short to ground. — Replace the malfunctioning fuse. If the fuse is damaged: • Replace the fuse. Go to Step 8.
		No	Reinstall the STARTER 450 A fuse, then go to the next step.
5	**PURPOSE: VERIFY IF SHORT TO GROUND IN GENERATOR CHARGE/DISCHARGE CIRCUIT AFFECTS DIAGNOSTIC RESULTS** • Verify that the battery, generator and PCM connectors are disconnected. • Inspect for continuity between generator terminal 1A (wiring harness-side) and body ground. • Is there continuity?	Yes	Refer to the wiring diagram and verify whether or not there is a common connector between battery positive terminal and generator terminal 1A. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for a short to ground. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has a short to ground. Go to Step 8.
		No	Go to the next step.

STEP	INSPECTION	RESULTS	ACTION
6	**PURPOSE: VERIFY IF OPEN CIRCUIT IN GENERATOR CHARGE/DISCHARGE CIRCUIT AFFECTS DIAGNOSTIC RESULTS** • Verify that the battery, generator and PCM connectors are disconnected. • Inspect for continuity between battery positive terminal (wiring harness-side) and generator terminal 1A (wiring harness-side). • Is there continuity?	Yes	Go to the next step.
		No	Refer to the wiring diagram and verify whether or not there is a common connector between battery positive terminal and generator terminal 1A. **If there is a common connector:** • Determine the malfunctioning part by inspecting the common connector and the terminal for corrosion, damage, or pin disconnection, and the common wiring harness for an open circuit. • Repair or replace the malfunctioning part. **If there is no common connector:** • Repair or replace the wiring harness which has an open circuit. Go to Step 8.
7	**PURPOSE: DETERMINE INTEGRITY OF GENERATOR** • Inspect the generator. (See GENERATOR INSPECTION [SKYACTIV-D 2.2].) • Is there any malfunction?	Yes	Replace the generator, then go to the next step. (See GENERATOR REMOVAL/INSTALLATION [SKYACTIV-D 2.2].)
		No	Go to the next step.
8	**PURPOSE: VERIFY CONDITIONS OF BATTERY** • Inspect the battery. (See BATTERY INSPECTION [SKYACTIV-D 2.2].)	—	Follow the inspection instructions, then go to the next step.
9	**PURPOSE: VERIFICATION OF VEHICLE REPAIR COMPLETION** • Always reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-D 2.2].) • Implement the repeatability verification procedure. (See Repeatability Verification Procedure.) • Perform the DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-D 2.2].) • Is the same DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-D 2.2].) Go to the next step.
		No	Go to the next step.
10	**PURPOSE: VERIFY IF THERE IS ANY OTHER MALFUNCTION** • Is any other DTC or pending code stored?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-D 2.2].)
		No	DTC troubleshooting completed.