DTC P2101:00 [SKYACTIV-G 2.0]

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DTC P2101:00	Throttle valve actuator control motor circuit range/performance problem
DETECTION CONDITION	• The PCM turns the main relay on, but if the input voltage is **6.0 V or less**, then the PCM determines that the main relay control circuit voltage is low. • There is a system error in the electrical throttle control system of the PCM. **Diagnostic support note** • This is a continuous monitor (CCM). • The check engine light illuminates if the PCM detects the above malfunction condition during the first drive cycle. • FREEZE FRAME DATA (Mode 2)/Snapshot data is available. • The DTC is stored in the PCM memory.
FAIL-SAFE FUNCTION	• Restricts the upper limit of the engine speed. • Stops the drive-by-wire control (throttle valve is open at **approx. 8 °** by return spring force).
POSSIBLE CAUSE	• Main relay malfunction • Short to ground or open circuit in main relay power supply circuit: — Short to ground in wiring harness between the following terminals: • MAIN 200 A fuse—Main relay terminal D • MAIN 200 A fuse—Main relay terminal A — MAIN 200 A fuse and/or ENG.MAIN 40 A fuse malfunction — Open circuit in wiring harness between the following terminals: • Battery positive terminal—Main relay terminal D • Battery positive terminal—Main relay terminal A • ENGINE2 15 A fuse malfunction • Short to ground in wiring harness between the following terminals: — Main relay terminal C—PCM terminal 1CK — Main relay terminal C—PCM terminal 2S — Main relay terminal E—PCM terminal 2K • PCM connector or terminals malfunction • Open circuit in wiring harness between the following terminals: — Main relay terminal C—PCM terminal 1CK — Main relay terminal C—PCM terminal 2S — Main relay terminal E—PCM terminal 2K • TP sensor No.1 and/or related circuit malfunction • TP sensor No.1 malfunction • TP sensor No.2 and/or related circuit malfunction • TP sensor No.2 malfunction • PCM malfunction

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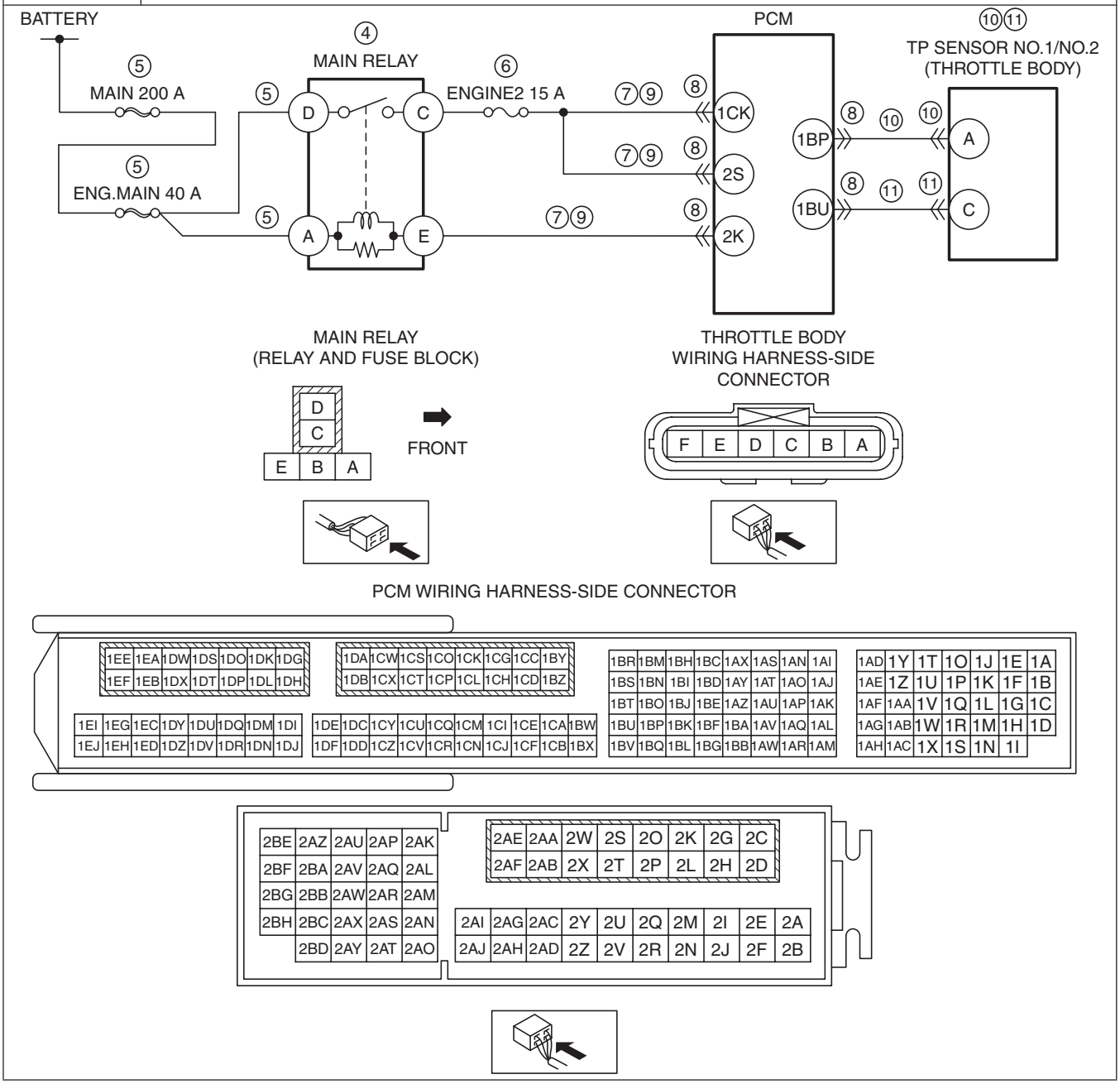

Diagnostic Procedure

STEP	INSPECTION		ACTION
1	**VERIFY FREEZE FRAME DATA (MODE 2)/ SNAPSHOT DATA HAS BEEN RECORDED** • Has the FREEZE FRAME DATA (Mode 2)/ snapshot data been recorded?	Yes	Go to the next step.
		No	Record the FREEZE FRAME DATA (Mode 2)/snapshot data on the repair order, then go to the next step.
2	**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.

STEP	INSPECTION		ACTION
3	**VERIFY RELATED PENDING CODE AND/OR DTC** • Switch the ignition to off, then to ON (engine off). • Perform the Pending Trouble Code Access Procedure and DTC Reading Procedure. (See ON-BOARD DIAGNOSTIC TEST [SKYACTIV-G 2.0].) • Are any other PENDING CODEs and/or DTCs present?	Yes	Go to the applicable PENDING CODE or DTC inspection. (See DTC TABLE [SKYACTIV-G 2.0].)
		No	Go to the next step.
4	**INSPECT MAIN RELAY** • Switch the ignition to off. • Remove the main relay. • Inspect the main relay. (See RELAY INSPECTION.) • Is there any malfunction?	Yes	Replace the main relay, then go to Step 12.
		No	Go to the next step.
5	**INSPECT MAIN RELAY POWER SUPPLY CIRCUIT FOR SHORT TO GROUND OR OPEN CIRCUIT** • Main relay is removed. • Measure the voltage at the following terminals (wiring harness-side): — Main relay terminal D — Main relay terminal A • Is the voltage **B+**?	Yes	Go to the next step.
		No	Inspect the MAIN 200 A fuse and ENG.MAIN 40 A fuse. • If the fuse is blown: — Repair or replace the wiring harness for a possible short to ground. — Replace the malfunctioning fuse. • If the fuse is deteriorated: — Replace the malfunctioning fuse. • If all fuses are normal: — Repair or replace the wiring harness for a possible open circuit. Go to Step 12.
6	**INSPECT ENGINE2 15 A FUSE** • Remove the ENGINE2 15 A fuse. • Inspect the ENGINE2 15 A fuse. • Is there any malfunction?	Yes	If the fuse is blown: • Repair or replace the wiring harness for a possible short to ground. • Replace the fuse. If the fuse is deteriorated: • Replace the fuse. Go to Step 12.
		No	Reinstall the ENGINE2 15 A fuse, then go to the next step.
7	**INSPECT MAIN RELAY CIRCUIT FOR SHORT TO GROUND** • Main relay is removed. • Inspect for continuity between the following terminals (wiring harness-side) and body ground: — Main relay terminal C — Main relay terminal E • Is there continuity?	Yes	If the short to ground circuit could be detected in the wiring harness: • Repair or replace the wiring harness for a possible short to ground. If the short to ground circuit could not be detected in the wiring harness: • Replace the PCM (short to ground in the PCM internal circuit). (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].) Go to Step 12.
		No	Go to the next step.
8	**INSPECT PCM CONNECTOR CONDITION** • Disconnect the PCM connector. • 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 12.
		No	Go to the next step.
9	**INSPECT MAIN RELAY CIRCUIT FOR OPEN CIRCUIT** • Main relay is removed. • Verify that the PCM connector is disconnected. • Inspect for continuity between the following terminals (wiring harness-side): — Main relay terminal C—PCM terminal 1CK — Main relay terminal C—PCM terminal 2S — Main relay terminal E—PCM terminal 2K • Is there continuity?	Yes	Go to the next step.
		No	Repair or replace the wiring harness for a possible open circuit, then go to Step 12.

STEP	INSPECTION		ACTION
10	**INSPECT TP SENSOR NO.1** • Reconnect all disconnected connectors. • Inspect the TP sensor No.1. (See THROTTLE POSITION (TP) SENSOR INSPECTION [SKYACTIV-G 2.0].) • Is there any malfunction?	Yes	Inspect the TP sensor No.1 related circuits and connectors. • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results. • If there is no malfunction: — Replace the throttle body. (See INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [SKYACTIV-G 2.0].) Go to Step 12.
		No	Go to the next step.
11	**INSPECT TP SENSOR NO.2** • Inspect the TP sensor No.2. (See THROTTLE POSITION (TP) SENSOR INSPECTION [SKYACTIV-G 2.0].) • Is there any malfunction?	Yes	Inspect the TP sensor No.2 related circuits and connectors. • If there is any malfunction: — Repair or replace the malfunctioning part according to the inspection results. • If there is no malfunction: — Replace the throttle body. (See INTAKE-AIR SYSTEM REMOVAL/ INSTALLATION [SKYACTIV-G 2.0].) Go to the next step.
		No	Go to the next step.
12	**VERIFY DTC TROUBLESHOOTING COMPLETED** • Make sure to reconnect all disconnected connectors. • Clear the DTC from the PCM memory using the M-MDS. (See AFTER REPAIR PROCEDURE [SKYACTIV-G 2.0].) • Perform the KOEO self test. (See KOEO/KOER SELF TEST [SKYACTIV-G 2.0].) • Is the same DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/INSTALLATION [SKYACTIV-G 2.0].) Go to the next step.
		No	Go to the next step.
13	**VERIFY AFTER REPAIR PROCEDURE** • Perform the “AFTER REPAIR PROCEDURE”. (See AFTER REPAIR PROCEDURE [SKYACTIV-G 2.0].) • Are any DTCs present?	Yes	Go to the applicable DTC inspection. (See DTC TABLE [SKYACTIV-G 2.0].)
		No	DTC troubleshooting completed.