

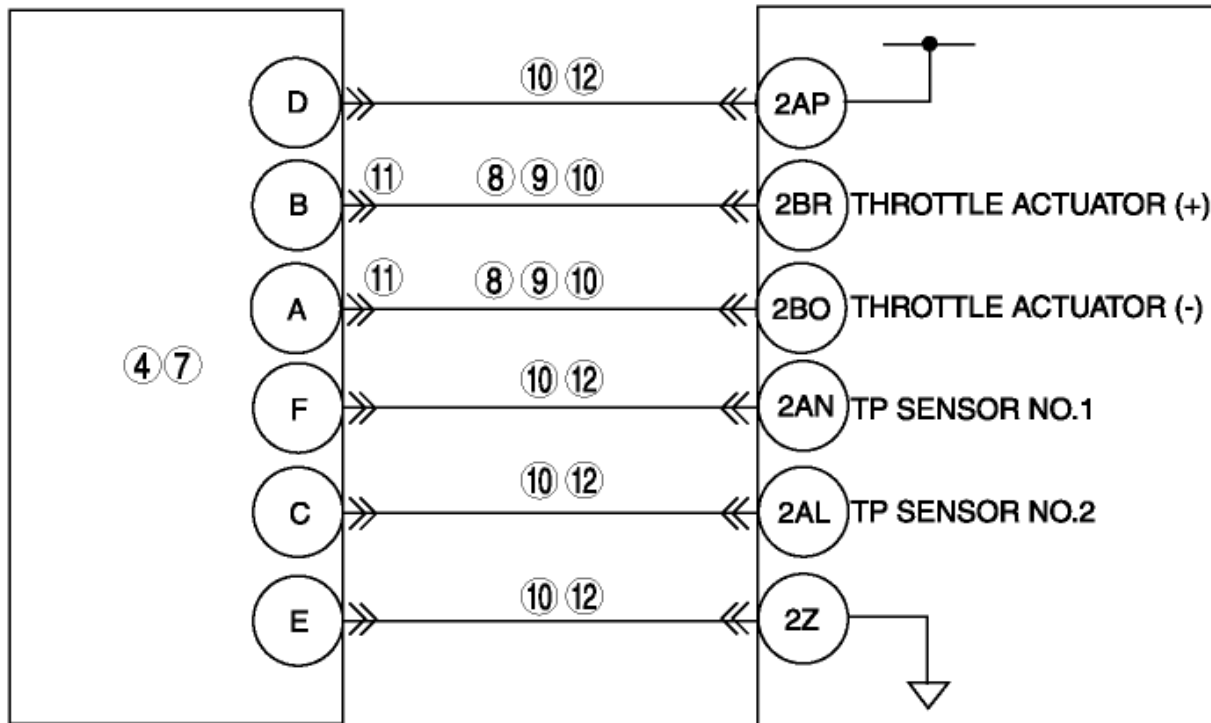
2012 - Mazda6 - Engine

DTC P2111:00 [MZI 3.7 V6]

DTC P2111:00	Throttle actuator control system - stuck open
DETECTION CONDITION	• This PCM fault status indicates the throttle plate is at a more angle than commanded.
POSSI BLE CAUSE	• Binding throttle body, stuck open • Throttle actuator malfunction • Open circuit between throttle body terminal A and PCM terminal 2BO • Open circuit between throttle body terminal B and PCM terminal 2BR • Short to ground between throttle body terminal A and PCM terminal 2BO • Short to ground between throttle body terminal B and PCM terminal 2BR • Short to TP sensor power supply between throttle body terminal A and PCM terminal 2BO • Short to TP sensor power supply between throttle body terminal B and PCM terminal 2BR • Throttle actuator control circuits are shorted to each other • Throttle actuator control circuits are cross-wired • TP sensor related circuit intermittent malfunction • PCM malfunction

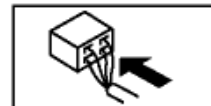
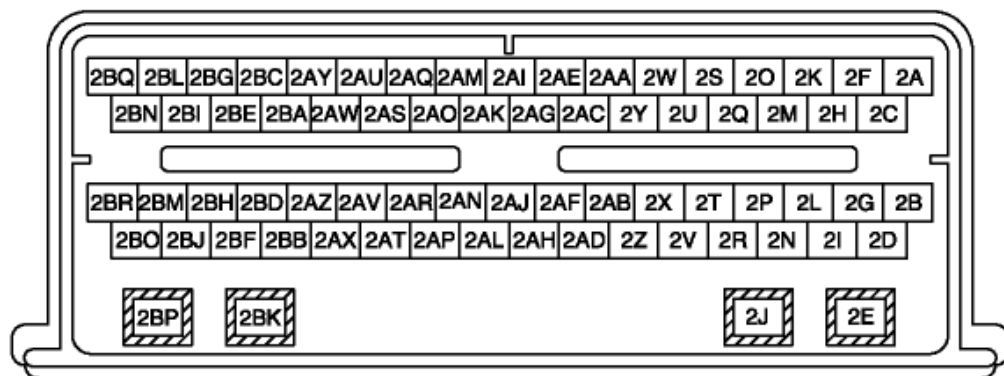
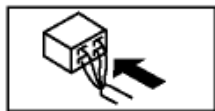
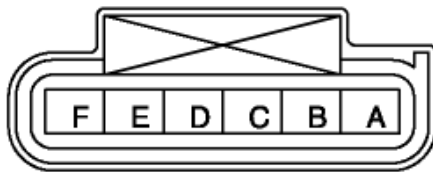
THROTTLE BODY

PCM



PCM WIRING HARNESS-SIDE CONNECTOR

THROTTLE BODY WIRING HARNESS-SIDE CONNECTOR



Diagnostic procedure

STEP	INSPECTION	ACTION
1	VERIFY FREEZE FRAME DATA HAS BEEN RECORDED Has FREEZE FRAME DATA been recorded?	Yes Go to the next step.
		No Record FREEZE FRAME DATA on the repair order, then go to the next step.
2	VERIFY RELATED REPAIR INFORMATION AVAILABILITY	Yes Perform repair or diagnosis according to the available Service Bulletins.

	• Verify related Service Bulletins and/or on-line repair information availability. • Is any related Service Bulletins available?	• If the vehicle is not repaired, go to the next step.
		No Go to the next step.
3	INSPECT THROTTLE POSITION OPEN CIRCUIT AND CLOSED VOLTAGES • Switch the ignition ON (Engine off). • Access the PCM and monitor the TP1 and TP2 PIDs. • Verify the following values of the PIDs when depressing the accelerator pedal to the floor and releasing. ▪ Pedal fully released: TP1 is 3.7—4.7 V ▪ Pedal fully released: TP2 is 0.3—1.9 V ▪ Pedal fully depressed: TP1 is 0.7—2.9 V ▪ Pedal fully depressed: TP2 is 4.1—4.7 V • Are both PIDs within the specification?	Yes Go to Step 5. No Go to the next step.
4	INSPECT FOR OBSTRUCTION OF THROTTLE BODY WARNING: • Substantial opening and closing torque is applied by this system. To prevent injury, be careful to keep fingers away from throttle mechanism when actuated. Failure to follow these instructions may result in personal injury. • Switch the ignition off. • Remove the air hose from the throttle body. • Visually inspect for throttle plate obstructions or sludge. • Slowly, push the throttle plate to wide open and release. • Does the throttle plate move freely to wide open and back?	Yes Go to Step 7. No Isolate and repair the obstruction. Then go to Step 13.
5	INSPECT TP SENSOR OPERATION • Switch the ignition ON (Engine off). • Access the PCM and monitor the TP1 and TP2 PIDs. • Slowly press the accelerator pedal from fully released to fully depressed while observing the voltage readings. • Use the chart as a reference. • Inspect the TP sensor. (See THROTTLE POSITION (TP) SENSOR INSPECTION [MZI 3.7 V6].) • Do all signal values smoothly change when the accelerator is depressed?	Yes Go to the next step. No Replace the throttle body. Then go to Step 13.

6	INSPECT IF MALFUNCTION IS IN TP SENSOR CIRCUIT OR THROTTLE ACTUATOR FOR INTERMITTENT CONCERN • Access the PCM and monitor the TP1 and TP2 PIDs. • Wiggle, shake, and bend the wiring harness from the TP to the PCM. • Are the voltages between 0.49—4.65 V?	Yes	Go to the next step.
		No	Repair or replace suspected part, then go to Step 13.
7	INSPECT THROTTLE ACTUATOR CONTROL MOTOR VISUALLY NOTE: • Make sure the throttle body connector is properly connected. • Switch the ignition off. • Inspect the throttle actuator control motor for damaged housing, wiring harness connector, and wiring harness. • Are there any concerns with the throttle actuator control motor hardware?	Yes	Replace the throttle body. Then go to Step 13.
		No	Go to the next step.
8	INSPECT THROTTLE ACTUATOR FOR SHORT OR OPEN CIRCUIT IN COMPONENT • Switch the ignition off. • Disconnect the throttle body connector. • Measure the resistance between throttle body terminal A and B on component side connector. • Is the resistance between 1—900 ohms?	Yes	Go to the next step.
		No	Replace the throttle body.
9	INSPECT THROTTLE ACTUATOR CIRCUIT FOR OPEN IN HARNESS • Throttle body connector is disconnected. • Disconnect the PCM connector. • Measure the resistance between following circuits: ▪ Throttle body terminal A (wiring harness-side) and PCM terminal 2BO (wiring harness-side) ▪ Throttle body terminal B (wiring harness-side) and PCM terminal 2BR (wiring harness-side) • Is the resistance less than 5 ohms?	Yes	Go to the next step.
		No	Repair open circuit.
10	INSPECT THROTTLE ACTUATOR CONTROL CIRCUIT FOR SHORT TO GROUND OR ETCREF/ ETCRTN CIRCUIT • Throttle body and PCM connectors are disconnected. • Switch the ignition off. • Measure resistance between the following circuits:	Yes	Go to the next step.
		No	Repair for a short circuit, then go to Step 13.

	▪ Throttle body terminal A (wiring harness-side) and PCM terminal 2BO (wiring harness-side) ▪ Throttle body terminal A (wiring harness-side) and body ground ▪ Throttle body terminal A and D (wiring harness-side) ▪ Throttle body terminal A and E (wiring harness-side) ▪ Throttle body terminal B (wiring harness-side) and PCM terminal 2BR (wiring harness-side) ▪ Throttle body terminal B (wiring harness-side) and body ground ▪ Throttle body terminal B and D (wiring harness-side) ▪ Throttle body terminal B and E (wiring harness-side) • Is the resistance greater than 10 kilohms?		
11	INSPECT THROTTLE ACTUATOR CONTROL CIRCUITS FOR SHORT EACH OTHER • Throttle body and PCM connectors are disconnected. • Switch the ignition off. • Measure resistance between throttle body terminal A and B. • Is the resistance more than 10 kilohms?	Yes	Go to the next step.
		No	Repair or replace suspected part, then go to Step 13.
12	INSPECT TP SENSOR CIRCUIT FOR INTERMITTENT CONCERN • Reconnect all disconnected connectors. • Access the PCM and monitor the TP1 and TP2 PIDs. • Wiggle, shake, and bend the wiring harness from the TP to the PCM. • Are the voltages between 0.49—4.65 V?	Yes	Go to the next step.
		No	Repair or replace suspected part, then go to the next step.
13	VERIFY TROUBLESHOOTING OF DTC P2111:00 HAS BEEN COMPLETED • Verify that all disconnected connectors reconnected. • Clear the DTC from the PCM memory using the M-MDS. • Start the engine and run it at idle. • Retrieve the DTC using the M-MDS. • Is the PENDING CODE for the DTC present?	Yes	Repeat the inspection from Step 1. • If the malfunction recurs, replace the PCM. (See PCM REMOVAL/ INSTALLATION [MZI 3.7 V6] .) Go to the next step.
		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE	Yes	Go to the applicable DTC inspection.

	• Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZI 3.7 V6] .) • Are any DTCs present?		(See DTC TABLE [MZI 3.7 V6] .)
		No	Troubleshooting completed.

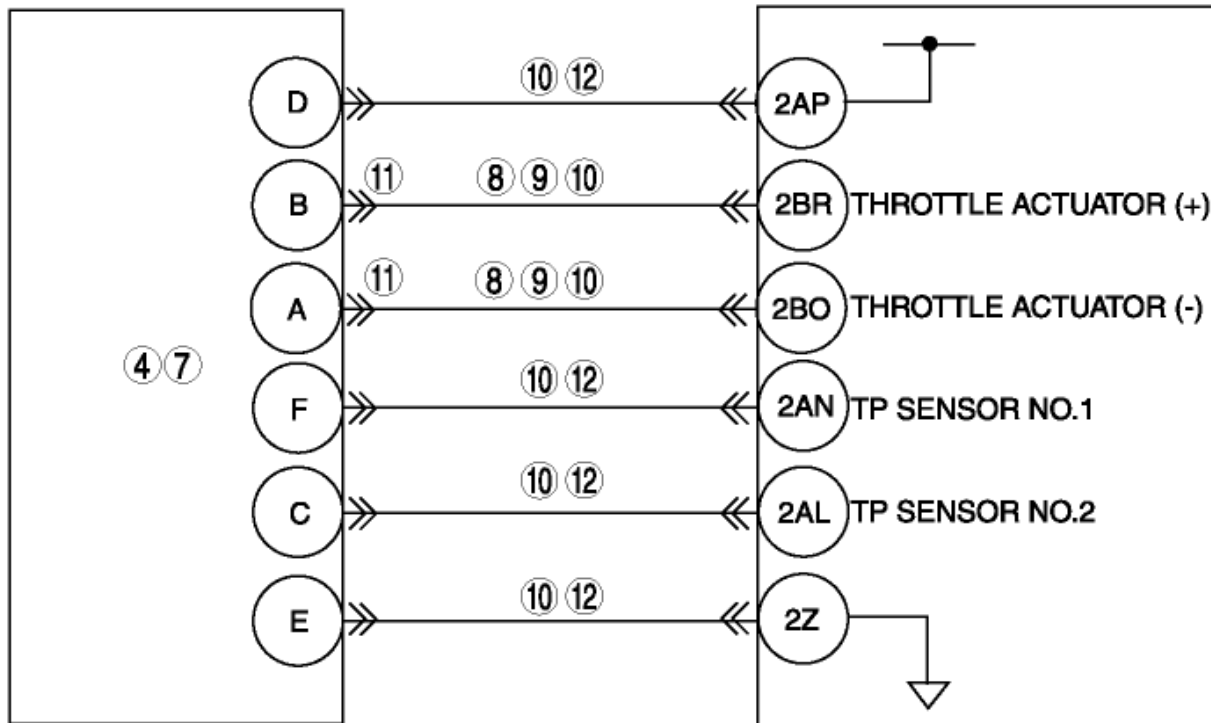
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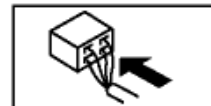
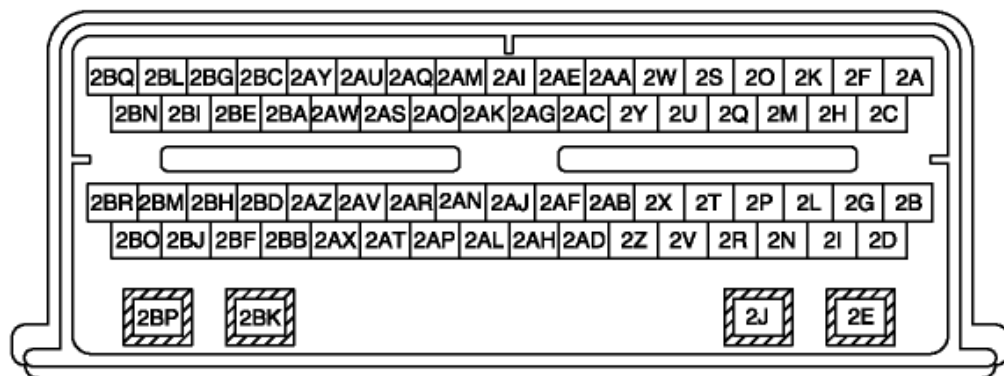
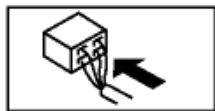
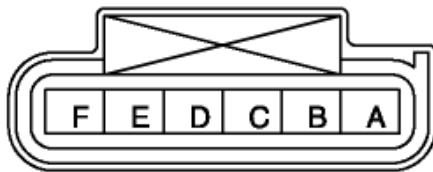
THROTTLE BODY

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5	INSPECT TP SENSOR OPERATION • Switch the ignition ON (Engine off). • Access the PCM and monitor the TP1 and TP2 PIDs. • Slowly press the accelerator pedal from fully released to fully depressed while observing the voltage readings. • Use the chart as a reference. • Inspect the TP sensor. (See THROTTLE POSITION (TP) SENSOR INSPECTION [MZI 3.7 V6].) • Do all signal values smoothly change when the accelerator is depressed?	YesGo to the next step. No Replace the throttle body. Then go to Step 13.

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8	INSPECT THROTTLE ACTUATOR FOR SHORT OR OPEN CIRCUIT IN COMPONENT • Switch the ignition off. • Disconnect the throttle body connector. • Measure the resistance between throttle body terminal A and B on component side connector. • Is the resistance between 1—900 ohms?	Yes Go to the next step. No Replace the throttle body.
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10	INSPECT THROTTLE ACTUATOR CONTROL CIRCUIT FOR SHORT TO GROUND OR ETCREF/ ETCRTN CIRCUIT • Throttle body and PCM connectors are disconnected. • Switch the ignition off. • Measure resistance between the following circuits:	Yes Go to the next step. No Repair for a short circuit, then go to Step 13.

	▪ Throttle body terminal A (wiring harness-side) and PCM terminal 2BO (wiring harness-side) ▪ Throttle body terminal A (wiring harness-side) and body ground ▪ Throttle body terminal A and D (wiring harness-side) ▪ Throttle body terminal A and E (wiring harness-side) ▪ Throttle body terminal B (wiring harness-side) and PCM terminal 2BR (wiring harness-side) ▪ Throttle body terminal B (wiring harness-side) and body ground ▪ Throttle body terminal B and D (wiring harness-side) ▪ Throttle body terminal B and E (wiring harness-side) • Is the resistance greater than 10 kilohms?		
11	INSPECT THROTTLE ACTUATOR CONTROL CIRCUITS FOR SHORT EACH OTHER • Throttle body and PCM connectors are disconnected. • Switch the ignition off. • Measure resistance between throttle body terminal A and B. • Is the resistance more than 10 kilohms?	Yes	Go to the next step.
		No	Repair or replace suspected part, then go to Step 13.
12	INSPECT TP SENSOR CIRCUIT FOR INTERMITTENT CONCERN • Reconnect all disconnected connectors. • Access the PCM and monitor the TP1 and TP2 PIDs. • Wiggle, shake, and bend the wiring harness from the TP to the PCM. • Are the voltages between 0.49—4.65 V?	Yes	Go to the next step.
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		No	Go to the next step.
14	VERIFY AFTER REPAIR PROCEDURE	Yes	Go to the applicable DTC inspection.

	• Perform the "AFTER REPAIR PROCEDURE". (See AFTER REPAIR PROCEDURE [MZI 3.7 V6] .) • Are any DTCs present?		(See DTC TABLE [MZI 3.7 V6] .)
		No	Troubleshooting completed.