

DTC	P2111	Throttle Actuator Control System - Stuck Open
DTC	P2112	Throttle Actuator Control System - Stuck Closed

SYSTEM DESCRIPTION

The throttle actuator is operated by the ECM, and opens and closes the throttle valve using gears. The opening angle of the throttle valve is detected by the Throttle Position (TP) sensor, which is mounted on the throttle body. The TP sensor provides feedback to the ECM in order that it can control the throttle actuator, and therefore the throttle valve, appropriately in response to driver inputs.

HINT:

This ETCS (Electronic Throttle Control System) does not use a throttle cable.

DTC No.	DTC Detection Conditions	Trouble Areas
P2111	ECM signals throttle actuator to close, but stuck (1 trip detection logic)	<ul style="list-style-type: none"> • Throttle actuator • Throttle body assembly • Throttle valve
P2112	ECM signals throttle actuator to open, but stuck (1 trip detection logic)	

MONITOR DESCRIPTION

The ECM determines that there is a malfunction in the ETCS when the throttle valve remains at a fixed angle despite a high drive current from the ECM. The ECM illuminates the MIL and sets a DTC. If the malfunction is not repaired successfully, a DTC is set when the accelerator pedal is fully depressed and released quickly (to fully open and close the throttle valve) after the engine is next started.

MONITOR STRATEGY

Related DTCs	P2111: Throttle actuator stuck open P2112: Throttle actuator stuck closed
Required Sensors/Components (Main)	Throttle actuator
Required Sensors/Components (Related)	-
Frequency of Operation	Continuous
Duration	0.5 seconds
MIL Operation	Immediate
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

ALL:

Monitor runs whenever following DTCs not present	None
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P2111 (Throttle actuator stuck open):

All of following conditions met	-
System guard*	ON
Throttle motor current	2 A or more
Throttle motor close duty	80 % or more

P2112 (Throttle actuator stuck closed):

All of following conditions met	-
System guard*	ON
Throttle motor current	2 A or more
Throttle motor open duty	80 % or more
* System guard set when following conditions met	-
Throttle motor	ON

Motor duty calculation	Executing
TPS fail determination	Fail determined
Motor current-cut operation	Not executing
Actuator power supply voltage	4 V or more
Motor fail determination	Fail determined

TYPICAL MALFUNCTION THRESHOLDS

P2111 (Throttle actuator stuck open):

TP sensor voltage change for 0.016 seconds	Less than 0.1 V for 0.5 seconds or more
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P2112 (Throttle actuator stuck closed):

TP sensor voltage change for 0.016 seconds	Less than 0.1 V for 0.5 seconds or more
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FAIL-SAFE

When either of these DTCs, as well as other DTCs relating to ETCS (Electronic Throttle Control System) malfunctions, is set, the ECM enters fail-safe mode. During fail-safe mode, the ECM cuts the current to the throttle actuator off, and the throttle valve is returned to a 6° throttle angle by the return spring. The ECM then adjusts the engine output by controlling the fuel injection (intermittent fuel-cut) and ignition timing, in accordance with the accelerator pedal opening angle, to allow the vehicle to continue at a minimal speed.

If the accelerator pedal is depressed firmly and gently, the vehicle can be driven slowly.

Fail-safe mode continues until a pass condition is detected, and the ignition switch is then turned OFF.

WIRING DIAGRAM

Refer to DTC P2102 (See page [ES-280](#)).

HINT:

Read freeze frame data using an intelligent tester. Freeze frame data record the engine condition when malfunctions are detected. When troubleshooting, freeze frame data can help determine if the vehicle was moving or stationary, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, and other data, from the time the malfunction occurred.

1	CHECK ANY OTHER DTCs OUTPUT (IN ADDITION TO DTC P2111 or P2112)
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- (a) Connect an intelligent tester to the DLC3.
- (b) Turn the ignition switch ON.
- (c) Turn the tester ON.
- (d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
- (e) Read DTCs.

Result

Display (DTC Output)	Proceed To
P2111 or P2112	A
P2111 or P2112 and other DTCs	B

HINT:

If any DTCs other than P2111 or P2112 are output, troubleshoot those DTCs first.

B	GO TO DTC CHART
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A

2 INSPECT THROTTLE W/MOTOR BODY ASSEMBLY (VISUALLY CHECK THROTTLE VALVE)

- (a) Check for contamination between the throttle valve and the housing. If necessary, clean the throttle body. And check that the throttle valve moves smoothly.

OK:

Throttle valve is not contaminated with foreign objects and moves smoothly.

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REPLACE THROTTLE W/MOTOR BODY ASSEMBLY

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OK

3 CHECK WHETHER DTC OUTPUT RECURS (DTC P2111 OR P2112)

- (a) Connect an intelligent tester to the DLC3.
- (b) Turn the ignition switch ON.
- (c) Turn the tester ON.
- (d) Clear DTCs (See page [ES-38](#)).
- (e) Start the engine, and fully depress and release the accelerator pedal quickly (to fully open and close the throttle valve).
- (f) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DTC INFO / CURRENT CODES.
- (g) Read DTCs.

Result

Display (DTC Output)	Proceed To
No DTC	A
P2111 or P2112	B

B

REPLACE ECM

A

CHECK FOR INTERMITTENT PROBLEMS