

DTC	P0101	MASS OR VOLUME AIR FLOW CIRCUIT RANGE/PERFORMANCE PROBLEM
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CIRCUIT DESCRIPTION

Refer to DTCs P0100 on page [05-579](#).

DTC No.	DTC Detection Conditions	Trouble Areas
P0101	<ul style="list-style-type: none"> • High voltage: Conditions (a), (b) and (c) continue for more than 10 seconds (2 trip detection logic): (a) Engine speed less than 2,000 rpm (b) Engine coolant temperature 70°C (158°F) or higher (c) Voltage output of Mass Air Flow (MAF) meter more than 2.2 V (varies with Throttle Position [TP] sensor voltage) • Low voltage: Conditions (a), (b) and (c) continue for more than 10 seconds (2 trip detection logic): (a) Engine speed more than 300 rpm (b) Voltage output of MAF meter less than 0.64 V (varies with TP sensor voltage) 	<ul style="list-style-type: none"> • MAF meter

MONITOR DESCRIPTION

The MAF meter is a sensor that measures the amount of air flowing through the throttle valve. The ECM uses this information to determine the fuel injection time and to provide an appropriate air–fuel ratio.

Inside the MAF meter, there is a heated platinum wire which is exposed to the flow of intake air. By applying a specific electrical current to the wire, the ECM heats it to a specific temperature. The flow of incoming air cools both the wire and an internal thermistor, affecting their resistance. To maintain a constant current value, the ECM varies the voltage applied to these components of the MAF meter. The voltage level is proportional to the airflow through the sensor, and the ECM uses it to calculate the intake air volume.

If there is a defect in the sensor, or an open or short in the circuit, the voltage level deviates from the normal operating range. The ECM interprets this deviation as a malfunction in the MAF meter and sets the DTC.

Example:

If the voltage is more than 2.2 V, or less than 0.64 V while idling, the ECM determines that there is a malfunction in the MAF meter and sets the DTC.

MONITOR STRATEGY

Related DTCs	P0101: MAF Meter Rationality (Low voltage) P0101: MAF Meter Rationality (High voltage)
Required sensors / components (Main)	MAF meter
Required sensors / components (Related)	Crankshaft position sensor, ECT sensor, Throttle position sensor
Frequency of operation	Continuous
Duration	10 seconds
MIL operation	2 driving cycles
Sequence operation	None

TYPICAL ENABLING CONDITIONS

All:

The monitor will run whenever this DTC is not present	See page 05-507
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MAF Meter Rationality (High voltage):

Engine RPM	Less than 2,000 rpm
ECT	70°C (158°F) or more

MAF Meter Rationality (Low voltage):

Engine RPM	More than 300 rpm
Fuel cut	OFF

TYPICAL MALFUNCTION THRESHOLDS

MAF Meter Rationality (High voltage):

MAF meter voltage	More than 2.2 V (Varies with throttle position sensor voltage)
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MAF Meter Rationality (Low voltage):

MAF meter voltage	Less than 0.64 V (Varies with throttle position sensor voltage) (1MZ-FE) Less than 0.57 V (Varies with throttle position sensor voltage) (3MZ-FE)
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WIRING DIAGRAM

Refer to DTC P0100 on page [05-579](#).

INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand-held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, 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 OTHER DTC OUTPUT(IN ADDITION TO DTC P0101)
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(a) Read the DTC using the hand-held tester or the OBD II scan tool.

Result:

Display (DTC Output)	Proceed to
P0101 and other DTCs are output	A
Only P0101 is output	B

HINT:

If any other codes besides P0101 are output, perform the troubleshooting for those codes first.

B

REPLACE MASS AIR FLOW METER

A

GO TO RELEVANT DTC CHART (See page [05-543](#))