

<b>DTC</b>	<b>P0101</b>	<b>Mass or Volume Air Flow Circuit Range/ Performance Problem</b>
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## CIRCUIT DESCRIPTION

Refer to DTC P0100, P0102 and P0103 on page [DI-522](#).

DTC No.	DTC Detecting Condition	Trouble Area
P0101	After engine is warmed up, conditions (a), (b), (c) and (d) continue for more than 10 seconds: (2 trip detection logic) (a) Throttle valve fully closed (b) Voltage output of the mass air flow meter is more than 2.2 V. (c) Engine coolant temperature is more than 70 °C (158 °F). (d) Engine speed is less than 2,000 rpm.	• Mass air flow meter
	Conditions (a), (b) and (c) continue for more than 10 seconds at engine speed: (2 trip detection logic) (a) Engine speed is more than 300 rpm. (b) Voltage output of the mass air flow meter is less than 1.0 V.	

## MONITOR DESCRIPTION

The MAF (Mass Air Flow) meter helps the ECM calculate the amount of air flowing through the throttle valve. The ECM uses this information to determine the fuel injection time and provide a proper air fuel ratio. Inside the MAF meter, there is a heated platinum wire exposed to the flow of intake air. By applying a specific current to the wire, the ECM heats this wire to a given temperature. The flow of incoming air cools the wire and an internal thermistor, affecting their resistance. To maintain a constant current value, the ECM varies the voltage applied to these components in the MAF meter. The voltage level is proportional to the air flow through the MAF meter. The ECM interprets this voltage as the intake air amount. If there is a defect in the MAF meter or an open or short circuit, the voltage level will deviate outside the normal operating range. The ECM interprets this deviation as a defect in the MAF meter and sets a DTC.

Example:

If the voltage is more than 2.2 V at idle or less than 1.0 V at idle OFF, the ECM interprets this as a defect in the MAF meter and sets a DTC.

## MONITOR STRATEGY

Related DTCs	P0101	Mass air flow meter rationality (Low voltage)
		Mass air flow meter rationality (High voltage)
Required sensors/components	Main sensors/components	Mass air flow meter
	Related sensors/components	Engine speed sensor, Engine coolant temperature sensor, Throttle position sensor
Frequency of operation	Continuous	
Duration	10 sec.	
MIL operation	2 driving cycles	
Sequence of operation	None	

## TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever this DTC is not present	See page <a href="#">DI-437</a>	
High voltage:		
Engine speed	–	2,000 rpm
Engine coolant temperature	70°C (158°F)	–
Low voltage:		
Engine speed	300 rpm	–
Fuel cut	OFF	

## TYPICAL MALFUNCTION THRESHOLDS

Detection Criteria	Threshold
Mass air flow meter voltage (High voltage)	More than 2.2 V (varies with throttle position sensor voltage)
Mass air flow meter voltage (Low voltage)	Less than 1.0 V (varies with throttle position sensor voltage)

## INSPECTION PROCEDURE

### HINT:

Read freeze frame data using the hand-held tester. 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, as well as other data from the time when a malfunction occurred.

1	Are there any other codes (besides DTC P0101) being output?
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### PREPARATION:

- (a) Connect the hand-held tester to the DLC3.
- (b) Turn the ignition switch ON and push the hand-held tester main switch ON.
- (c) When using hand-held tester, enter the following menu: DIAGNOSIS/ENHANCED OBD II/DTC INFO/CURRENT CODES.

### CHECK:

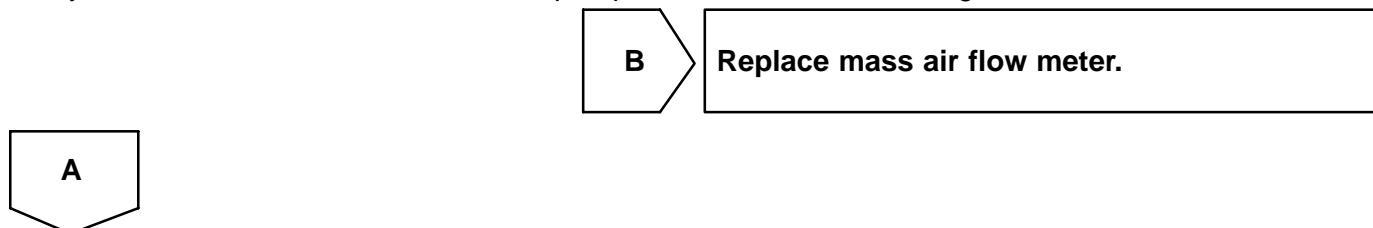
Read the DTC using the hand-held tester.

### RESULT:

Display (DTC output)	Proceed to
"P0101" and other DTCs	A
Only P0101	B

### HINT:

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



Go to relevant DTC chart (See page [DI-477](#)).