DTC	P0100	MASS OR VOLUME AIR FLOW CIRCUIT

DTC	P0102	MASS OR VOLUME AIR FLOW CIRCUIT LOW INPUT

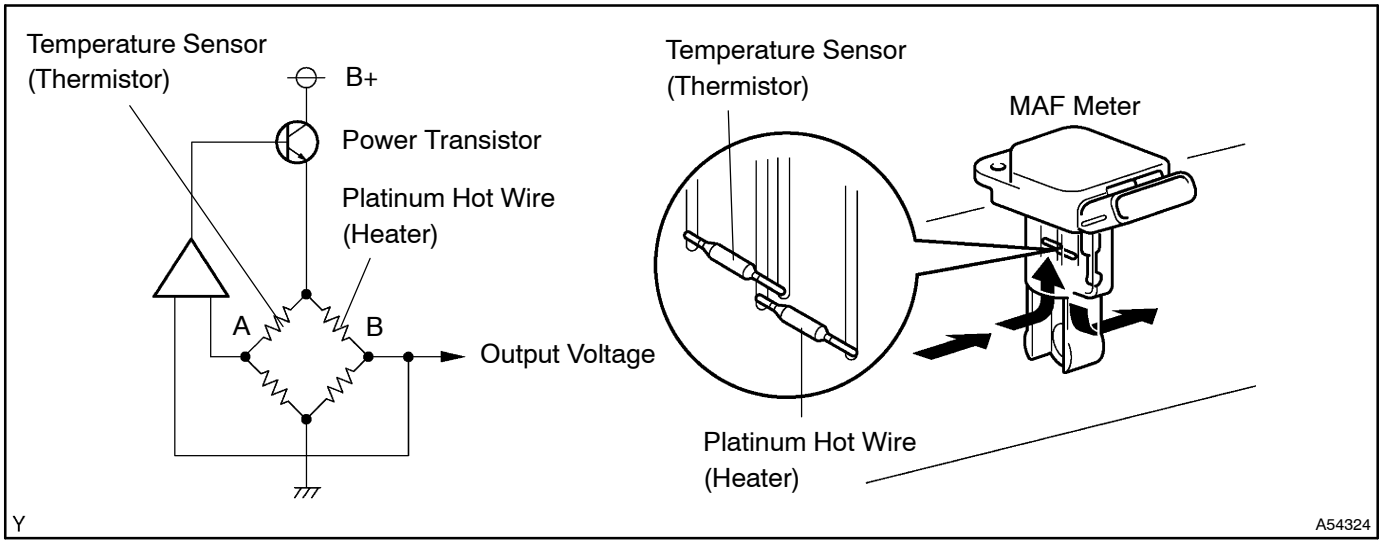
DTC	P0103	MASS OR VOLUME AIR FLOW CIRCUIT HIGH INPUT

CIRCUIT DESCRIPTION

The Mass Air Flow (MAF) meter measures 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 airflow through the sensor. The ECM interprets this voltage as the intake air amount.

The circuit is constructed so that the platinum hot wire and temperature sensor provide a bridge circuit, with the power transistor controlled so that the potential of A and B remains equal to maintain the set temperature.



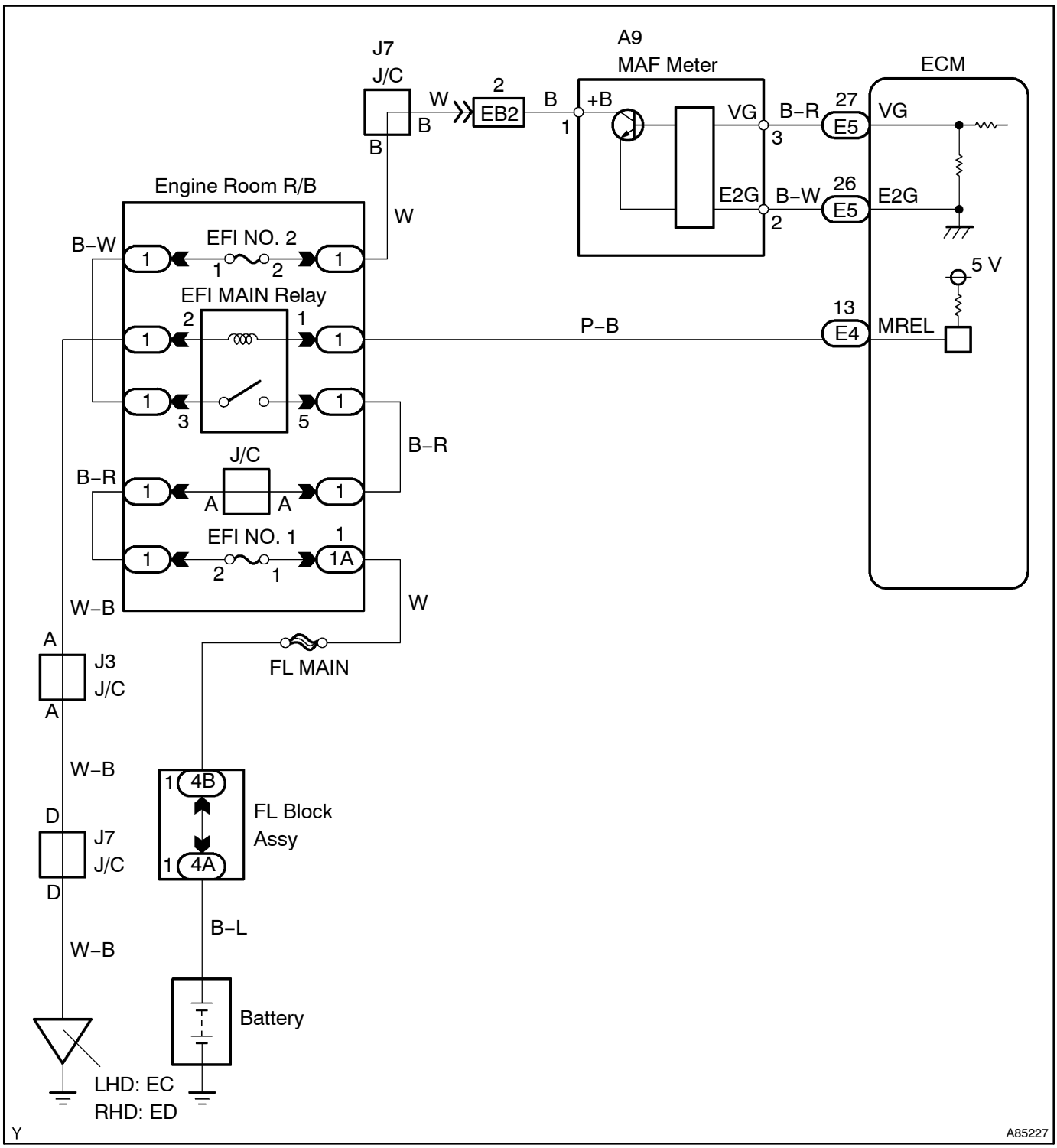
DTC No	DTC Detection Condition	Trouble Area
P0100	Open or short in MAF meter circuit for more than 3 seconds (1 trip detection logic)	• Open or short in MAF meter circuit • MAF meter • ECM
P0102	Open or short in MAF meter circuit for more than 3 seconds (1 trip detection logic)	• Open or short in MAF meter circuit • MAF meter • ECM
P0103	Open in MAF meter circuit for more than 3 seconds (EVG circuit) Short in MAF meter circuit for more than 3 seconds (+B circuit) (1 trip detection logic)	• Open or short in MAF meter circuit • MAF meter • ECM

MONITOR DESCRIPTION

If there is a defect in the sensor 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:
When the sensor voltage output is less than 0.2 V or more than 4.9 V and if either condition continues for more than 3 seconds.
This monitor runs for 3 seconds (the first 3 seconds of engine idle) after the engine is started (1 trip detection logic).
HINT:
After confirming DTC P0100, P0102 or P0103, confirm the MAF by using the Data List on the Intelligent Tester II.

MAF (g/second)	Malfunction
0.0	• MAF meter power source circuit open • VG circuit open or short
271.0 or more	• E2G circuit open

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using the Intelligent Tester II. 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	READ VALUE OF INTELLIGENT TESTER II

(a) Connect the Intelligent Tester II to the DLC3.
(b) Allow the engine to idle.
(c) Select the item "Enter / Diagnosis / OBD·MOBD / Power train / Engine and ECT / Data List / All Data / MAF".
(d) Read the MAF.

Result:

MAF (g/second)	Proceed to
0.0	A
271.0 or more	B
MAF greater than 1 but less than 270.0 (*1)	C

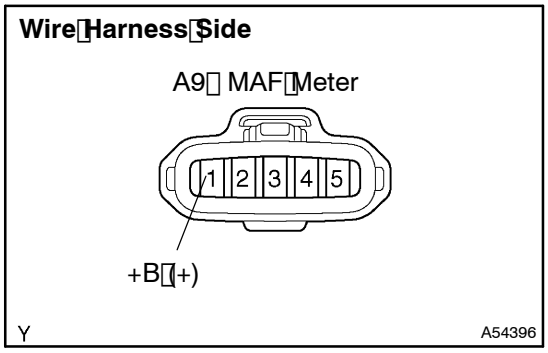
*1: The value must change when the throttle valve is opened or closed.

B → **Go to step 6**

C → **CHECK FOR INTERMITTENT PROBLEMS (See page 05–11)**

A

2	CHECK MAF METER (POWER SOURCE)



(a) Turn the ignition switch ON.
(b) Disconnect the A9 MAF meter connector.
(c) Measure the voltage between the terminal of the wire harness side connector and body ground.

Standard:

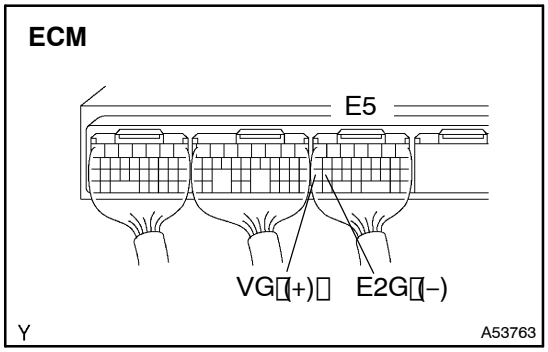
Tester Connection	Specified Condition
A9–1 (+B) – Body ground	9 to 14 V

(d) Reconnect the MAF meter connector

NG → **Go to step 5**

OK

3 INSPECT ECM (VG VOLTAGE)



(a) Start the engine.
(b) Measure the voltage between the specified terminals of the E5 ECM connector.

HINT:
The shift lever position should be P or N and the A/C switch should be turned OFF.

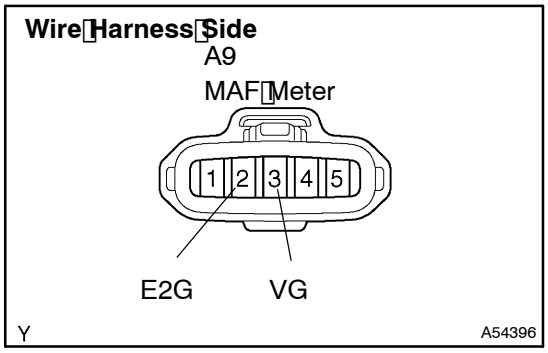
Standard:

Tester Connection	Condition	Specified Condition
E5–27 (VG) – E5–26 (E2G)	Engine is idling	0.5 to 3.0 V

OK ⇒ **REPLACE ECM (See page 10–21)**

NG

4 CHECK WIRE HARNESS (MAF METER – ECM)

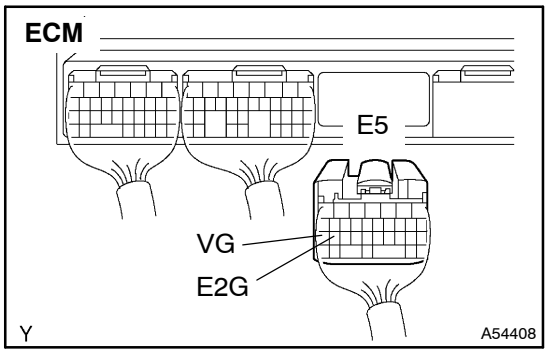


(a) Disconnect the A9 MAF meter connector.
(b) Disconnect the E5 ECM connector.
(c) Measure the resistance between the wire harness connectors.

Standard:

Tester Connection	Specified Condition
A9–2 (E2G) – E5–26 (E2G)	Below 1 Ω
A9–3 (VG) – E5–27 (VG)	Below 1 Ω
A9–2 (E2G) or E5–26 (E2G) – Body ground	10 kΩ or higher
A9–3 (VG) or E5–27 (VG) – Body ground	10 kΩ or higher

(d) Reconnect the ECM connector.
(e) Reconnect the MAF meter connector.

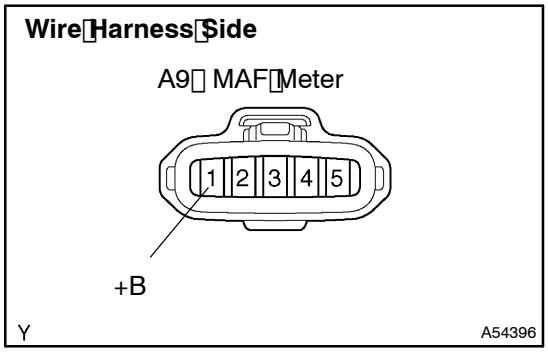


NG ⇒ **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE MAF METER

5 CHECK WIRE HARNESS (MAF METER – EFI MAIN RELAY)

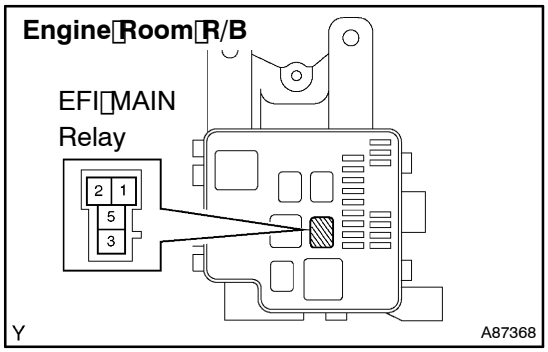


(a) Disconnect the A9 MAF meter connector.
(b) Remove the EFI MAIN relay from the engine room Relay Block (R/B).
(c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
A9–1 (+B) – EFI MAIN relay terminal 3 of R/B	Below 1 Ω
A9–1 (+B) or EFI MAIN relay terminal 3 of R/B – Body ground	10 kΩ or higher

(d) Reinstall the EFI MAIN relay.
(e) Reconnect the MAF meter connector.

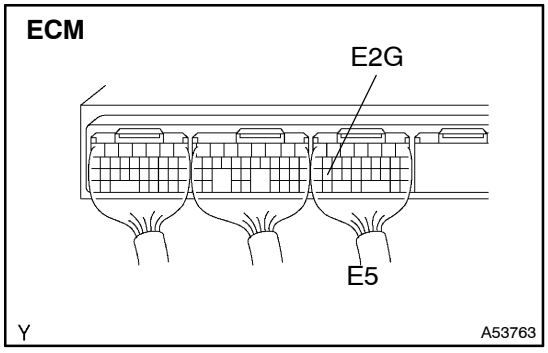


NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

INSPECT ECM POWER SOURCE CIRCUIT (See page 05–220)

6 INSPECT ECM (SENSOR GROUND)



(a) Measure the resistance between the specified terminals of the E5 ECM connector and the body ground.

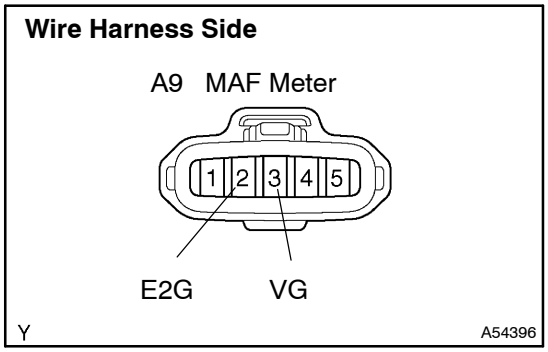
Standard:

Tester Connection	Specified Condition
E5–26 (E2G) – Body ground	Below 1 Ω

NG → **REPLACE ECM (See page 10–21)**

OK

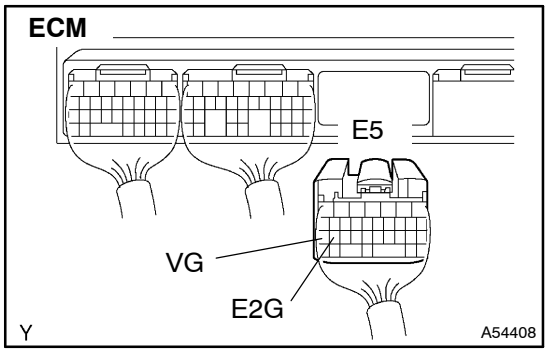
7 CHECK WIRE HARNESS (MAF Meter – ECM)



(a) Disconnect the A9 MAF meter connector.
(b) Disconnect the E5 ECM connector.
(c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
A9–2 (E2G) – E5–26 (E2G)	Below 1 Ω
A9–3 (VG) – E5–27 (VG)	Below 1 Ω
A9–2 (E2G) or E5–26 (E2G) – Body ground	10 kΩ or higher
A9–3 (VG) or E5–27 (VG) – Body ground	10 kΩ or higher



(d) Reconnect the ECM connector.
(e) Reconnect the MAF meter connector.

NG → **REPAIR OR REPLACE HARNESS AND CONNECTOR**

OK

REPLACE MAF METER