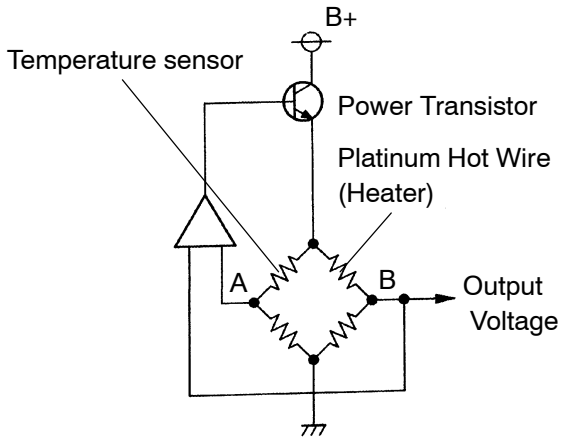
# DTC P0100/31 MASS AIR FLOW CIRCUIT MALFUNCTION

## CIRCUIT DESCRIPTION

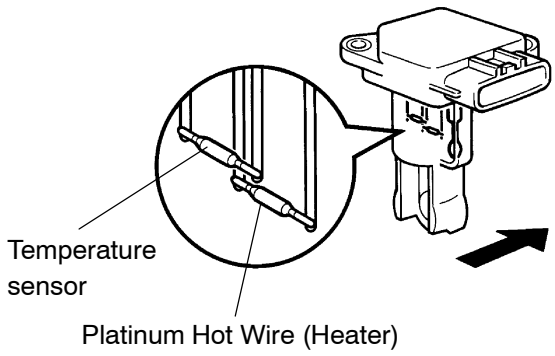
The air flow meter uses a platinum hot wire. The hot wire air flow meter consists of a platinum hot wire, temperature sensor and a control circuit installed in a plastic housing. The hot wire air flow meter works on the principle that the hot wire and temperature sensor located in the intake air bypass of the housing detect any changes in the intake air temperature.

The hot wire is maintained at the set temperature by controlling the current flow through the hot wire. This current flow is then measured as the output voltage of the air flow meter.

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.




FI6929
A09074




A53295

| DTC No. | DTC Detecting Condition | Trouble Area |
|---|---|---|
| P0100/31 | Open or short in air flow meter circuit with more than 3 sec. engine speed less than 4,000 rpm | • Open or short in air flow meter circuit<br>• Intake air flow meter<br>• ECM |

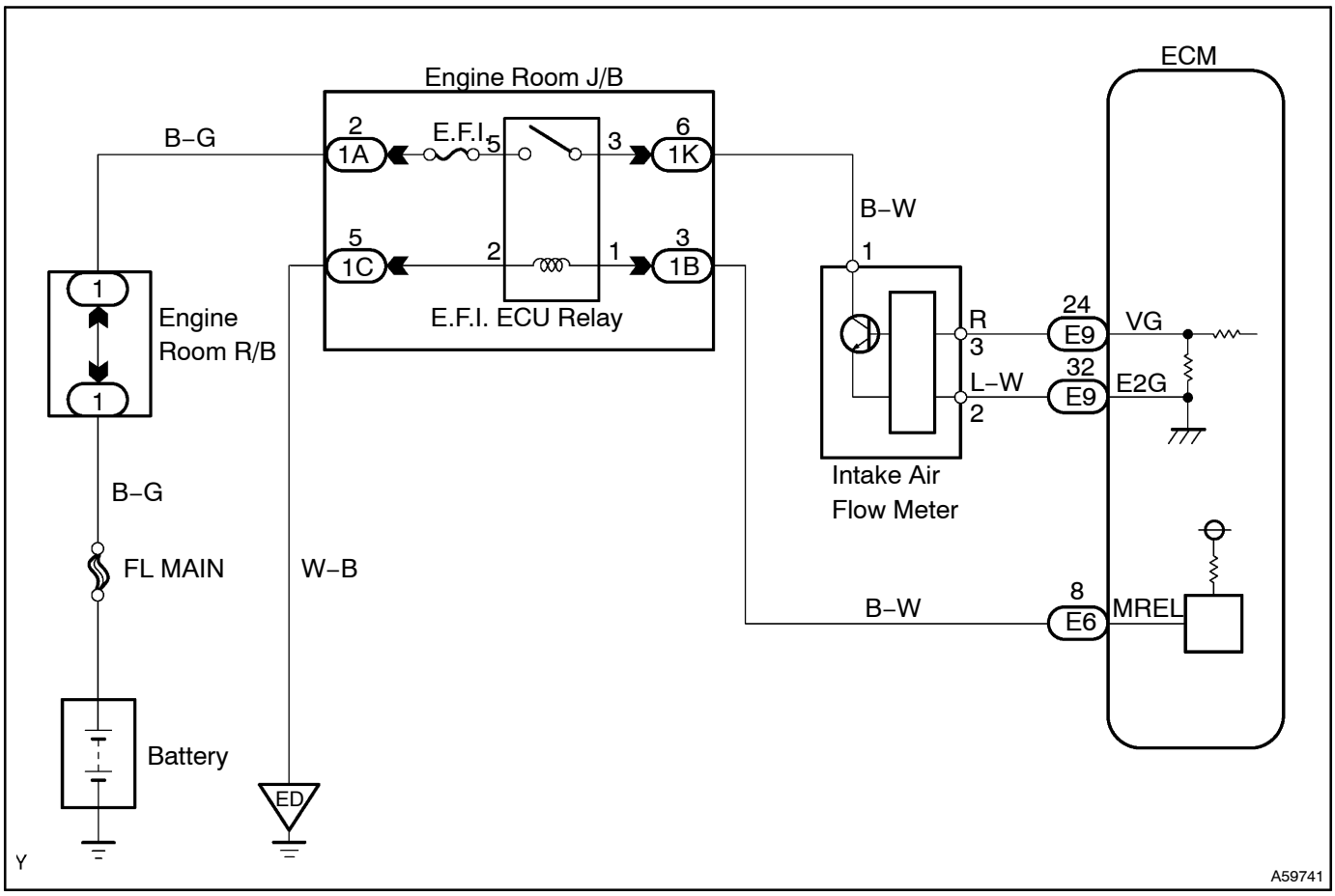
If the ECM detects DTC 0100, it operates the fail–safe function, keeping the ignition timing and injection volume constantly and making it possible to drive the vehicle.

HINT:

After confirming DTC P0100, use the hand–held tester to confirm the mass air flow ratio from the CURRENT DATA.

| Air Flow Value (g/s) | Malfunction |
|---|---|
| Approx. 0.0 | • Air flow meter power source circuit open<br>• VG circuit open or short |
| 160 or more | • EVG circuit open |

## WIRING DIAGRAM




## INSPECTION PROCEDURE

HINT:

Read freeze frame data using hand–held tester. Because freeze frame records the engine conditions when the malfunction is detected, when troubleshooting it is useful for determining whether the vehicle was running or stopped, the engine warmed up or not, the air–fuel ratio lean or rich, etc. at the time of the malfunction. Start the inspection from step 1 in case of using the hand–held tester and start form step 2 in case of not using the hand–held tester.

| 1 | READ VALUE OF HAND–HELD TESTER(MAF) |
|---|---|

(a) Read air flow rate on the hand–held tester.

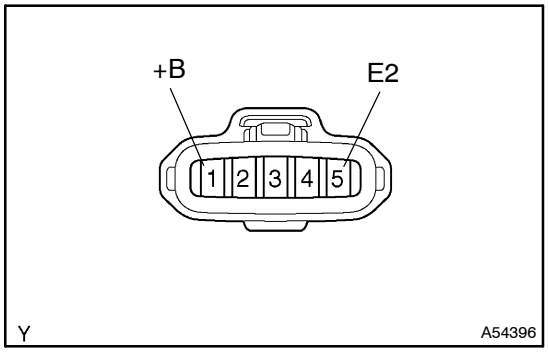
**Result:**

| | A | B |
|---|---|---|
| Air flow rate (g/s) | 0.0 | 160 or more |

**B** → **Go to step 5**

**A**

## 2 INSPECT INTAKE AIR FLOW METER SUB–ASSY

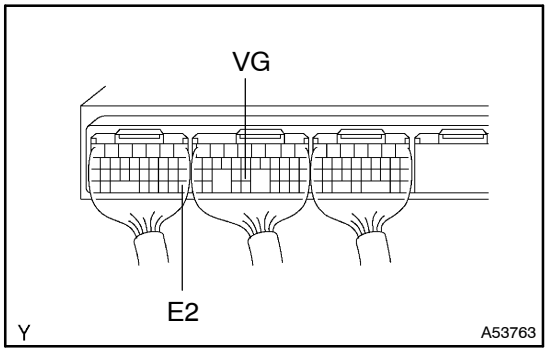



(a) Disconnect the intake air flow meter connector.
(b) Turn the ignition switch ON.
(c) Measure voltage between the terminals +B and E2 of the air flow meter harness side connector.
**Voltage: 9 – 14 V**

**NG** → **Go to step 7**

**OK**

## 3 INSPECT ECM



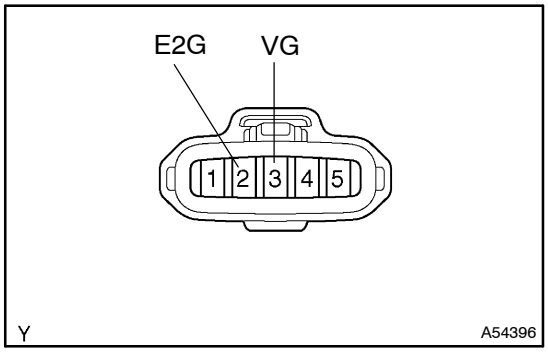

(a) Start the engine.
(b) Measure voltage between the terminals VG and E2 of the ECM connector while the engine is idling.
**Voltage: 0.5 – 3.0 V**

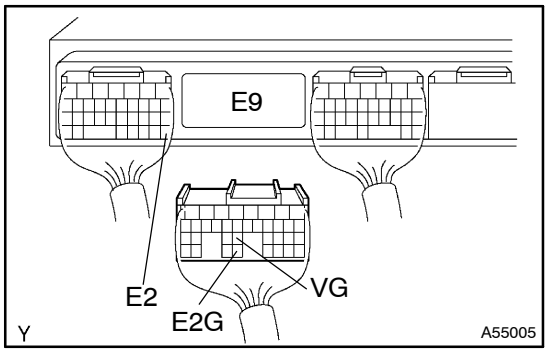
HINT:
The shift position should be P or N and A/C switch should be turned OFF.

**OK** → **CHECK AND REPLACE ECM**

**NG**

## 4 CHECK HARNESS AND CONNECTOR(ECM – INTAKE AIR FLOW METER)



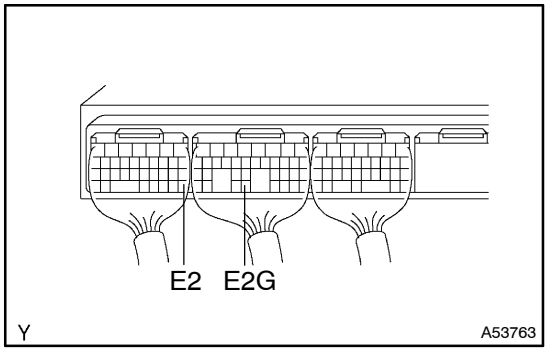

(a) Disconnect the intake air flow meter connector.
(b) Disconnect the ECM E9 connector.
(c) Check for open between the terminals VG of the intake air flow meter harness side connector and VG of the ECM connector.
**Resistance: 1 Ω or less**
(d) Check for open between the terminals E2G of the intake air flow meter harness side connector and E2G of the ECM connector.
**Resistance: 1 Ω or less**
(e) Check for short between the terminals VG and E2G of the ECM connector.
**Resistance: 1 MΩ or more**
(f) Check for short between the terminals E2G and E2 of the ECM connector.
**Resistance: 1 MΩ or more**

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

**OK**

**REPLACE INTAKE AIR FLOW METER SUB–ASSY**

## 5 INSPECT ECM

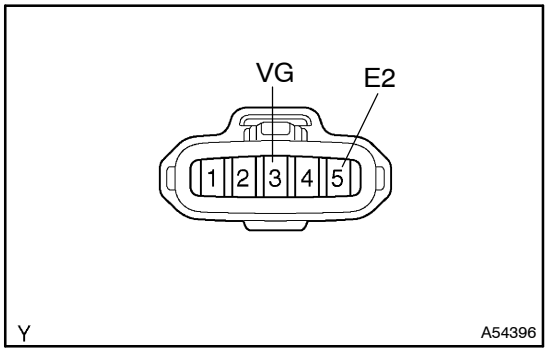


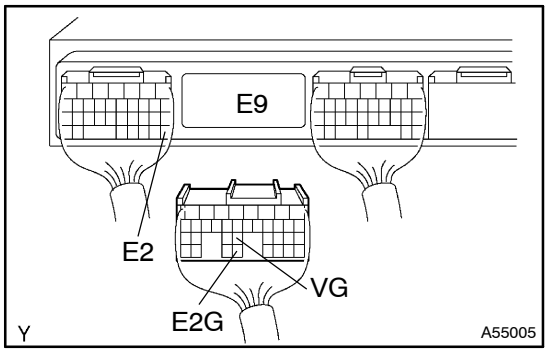

(a) Check for open between the terminals E2G and E2 of the ECM connector.
**Resistance: 1 Ω or less**

**NG** → **CHECK AND REPLACE ECM**

**OK**

| 6 | CHECK HARNESS AND CONNECTOR(ECM –INTAKE AIR FLOW METER) |
|---|---|



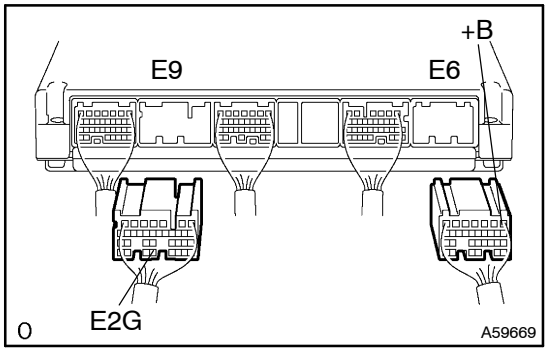

(a) Disconnect the intake air flow meter connector.
(b) Disconnect the ECM E9 connector.
(c) Check for open between the terminals VG of the intake air flow meter harness side connector and VG of the ECM connector.
**Resistance: 1 Ω or less**
(d) Check for open between the terminals E2 of the intake air flow meter harness side connector and E2 of the ECM connector.
**Resistance: 1 Ω or less**
(e) Connect the ECM connector.
(f) Check for short between the terminals VG and E2G of the ECM connector.
**Resistance: 1 MΩ or more**

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

**OK**

**REPLACE INTAKE AIR FLOW METER SUB–ASSY**

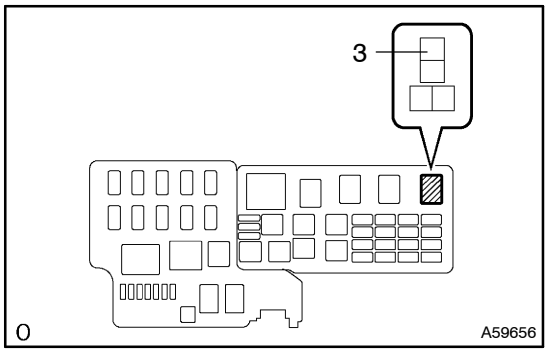
| 7 | CHECK HARNESS AND CONNECTOR(E.F.I. ECU RELAY – INTAKE AIR FLOW METER) |
|---|---|

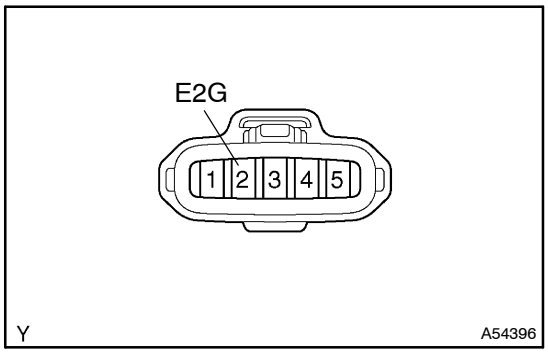



(a) Disconnect the battery negative (–) terminal.
(b) DIsconnect the ECM E6 connector.
(c) Check for open between the terminals +B of the ECM connector and 3 of the E.F.I. ECU relay installation relay block.
**Resistance: 1 Ω or less**

**NOTICE:**
**Do not insert the tester leads so hard in the procedure (c), or the holder may be damaged.**

(d) DIsconnect the ECM E9 connector.
(e) Check for open between the terminals E2G of the intake air flow meter harness side connector and E2G of the ECM connector.
**Resistance: 1 Ω or less**




**NG** → **CHECK AND REPLACE HARNESS AND CONNECTOR**

**OK**

**CHECK FOR ECM POWER SOURCE CIRCUIT**