

DTC	P0400	EXHAUST GAS RECIRCULATION FLOW
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DTC	P0403	EXHAUST GAS RECIRCULATION CONTROL CIRCUIT
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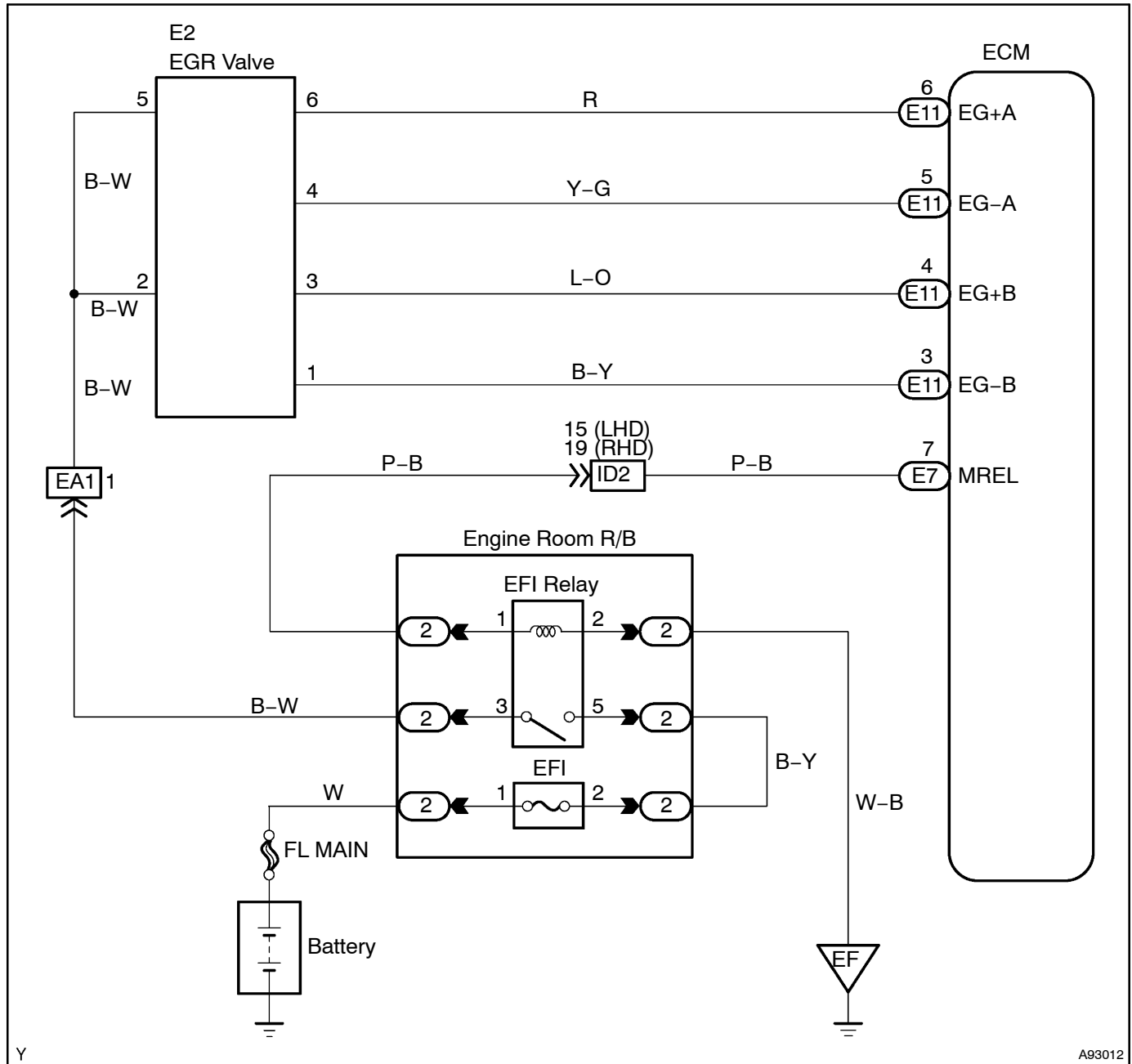
CIRCUIT DESCRIPTION

The EGR system recirculates exhaust gases, and which are controlled to the proper volume to be suited every driving condition. The recirculated gas mingles with the intake air, therefore the EGR system can slow down engine combustion and let the combustion temperature down. This helps reduce a nitrogen oxides (NOx) emission.

In order to increase a circulatory efficiency, the ECM adjusts the lift amount of the EGR valve and intake shutter valve (throttle valve).

DTC No.	DTC Detection Condition	Trouble Area
P0400	Mass air flow rate is not changed when turning on EGR valve (2 trip detection logic)	<ul style="list-style-type: none"> • EGR valve assy • Open or short in EGR circuit • EGR passage • ECM
P0403	EGR valve assy motor malfunction	

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:

Read freeze frame data using the intelligent tester II. 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, and other data from the time the malfunction occurred.

1 CHECK OTHER DTC OUTPUT (IN ADDITION TO P0400 AND/OR P0403)

- Connect the intelligent tester II to the DLC3.
- Turn the ignition switch to ON and turn the intelligent tester II ON.
- Select the following menu items: Powertrain / Engine and ECT / DTC.
- Read DTCs.

Result:

Display (DTC Output)	Proceed To
P0400 and/or P0403 is output	A
P0400 and/or P0403 and other DTCs are output	B

HINT:

If any DTCs other than P0400 and/or P0403 are output, troubleshoot those DTCs first.

B

GO TO RELEVANT DTC CHART
(See page 05-458)

A

2 READ VALUE OF INTELLIGENT TESTER II (MASS AIR FLOW RATE)

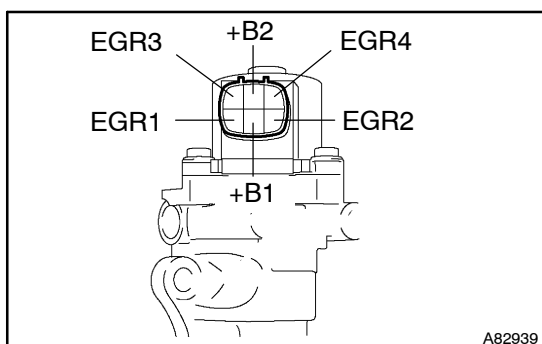
- Connect the intelligent tester II to the DLC3.
- Start the engine and turn the intelligent tester II ON.
- Warm up the engine until the engine coolant temperature reaches between 75°C (167°F) and 90°C (194°F).
- On the intelligent tester II, select the following menu items: Powertrain / Engine and ECT / Data List / MAF.
- Check the mass air flow (MAF) rate during idling.
Standard: MAF rate is between 4 g/s and 16 g/s
- Operate the EGR valve using the intelligent tester II, make the valve opening 0, and check the MAF rate during idling.
Standard: MAF rate is between 10 g/s and 16 g/s

NG

REPLACE EGR VALVE ASSY
(See page 14-91 of Pub. No. RM864E AVENSIS
VERSO/ PICNIC REPAIR MANUAL)

OK

3 INSPECT EGR VALVE ASSY



- Disconnect E2 EGR valve connector.
- Measure the resistance between the terminals of the EGR valve.

Standard:

Tester Connection	Specified Condition
+B1 – EGR1	19.6 ± 1.4 Ω
+B1 – EGR2	19.6 ± 1.4 Ω
+B2 – EGR3	19.6 ± 1.4 Ω
+B2 – EGR4	19.6 ± 1.4 Ω

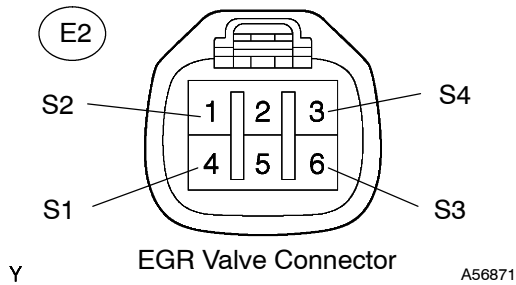
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REPLACE EGR VALVE ASSY
(See page 14-91 of Pub. No. RM864E AVENSIS
VERSO/ PICNIC REPAIR MANUAL)

OK

4 CHECK HARNESS AND CONNECTOR(EGR VALVE ASSY - ECM)

Wire Harness Side:



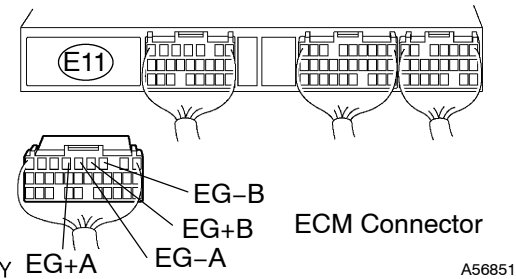
- (a) Disconnect the E2 EGR valve connector.
- (b) Disconnect the E11 ECM connector.
- (c) Check the resistance.

Standard (Check for open):

Tester Connection	Specified Condition
EG+A (E11-6) - S3 (E2-6)	Below 1 Ω
EG-A (E11-5) - S1 (E2-4)	
EG+B (E11-4) - S4 (E2-3)	
EG-B (E11-3) - S2 (E2-1)	

Standard (Check for short):

Tester Connection	Specified Condition
EG+A (E11-6) or S3 (E2-6) - Body ground	10 kΩ or higher
EG-A (E11-5) or S1 (E2-4) - Body ground	
EG+B (E11-4) or S4 (E2-3) - Body ground	
EG-B (E11-3) or S2 (E2-1) - Body ground	

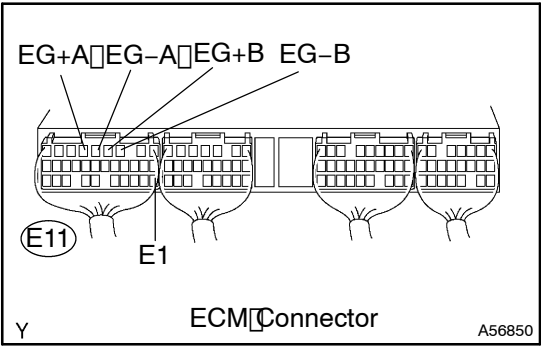


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**REPAIR OR REPLACE HARNESS OR
CONNECTOR**

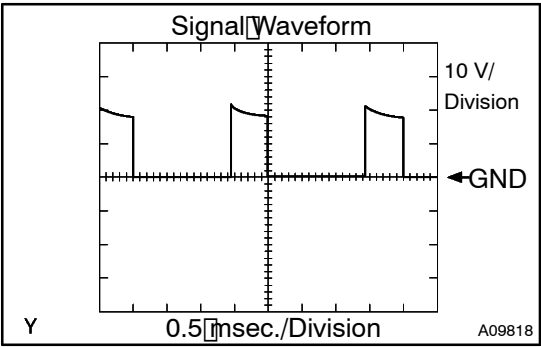
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5 INSPECT ECM (EGR VALVE ASSY) VOLTAGE



- (a) Inspect using the oscilloscope.
(b) During idling, check the waveform between the specified terminals of the E11 ECM connector.
- Standard:**

Tester Connection	Specified Condition
EG+A (E11-8) - E1 (E11-22)	Correct waveform is as shown
EG-A (E11-5) - E1 (E11-22)	
EG+B (E11-4) - E1 (E11-22)	
EG-B (E11-3) - E1 (E11-22)	



NG

REPLACE ECM (See page 10-30)

OK

6 CHECK FOR DEPOSIT (EGR VALVE ASSY)

NG

REMOVE FOREIGN OBJECT AND CLEAN EGR VALVE

OK

7 CHECK FOR DEPOSIT (EGR PASSAGE)

NG

REPAIR OR REPLACE

OK

8 CHECK FOR EXHAUST GAS LEAKS

NG

REPAIR EXHAUST GAS LEAKAGE POINT

OK

REPLACE ECM (See page 10-30)