

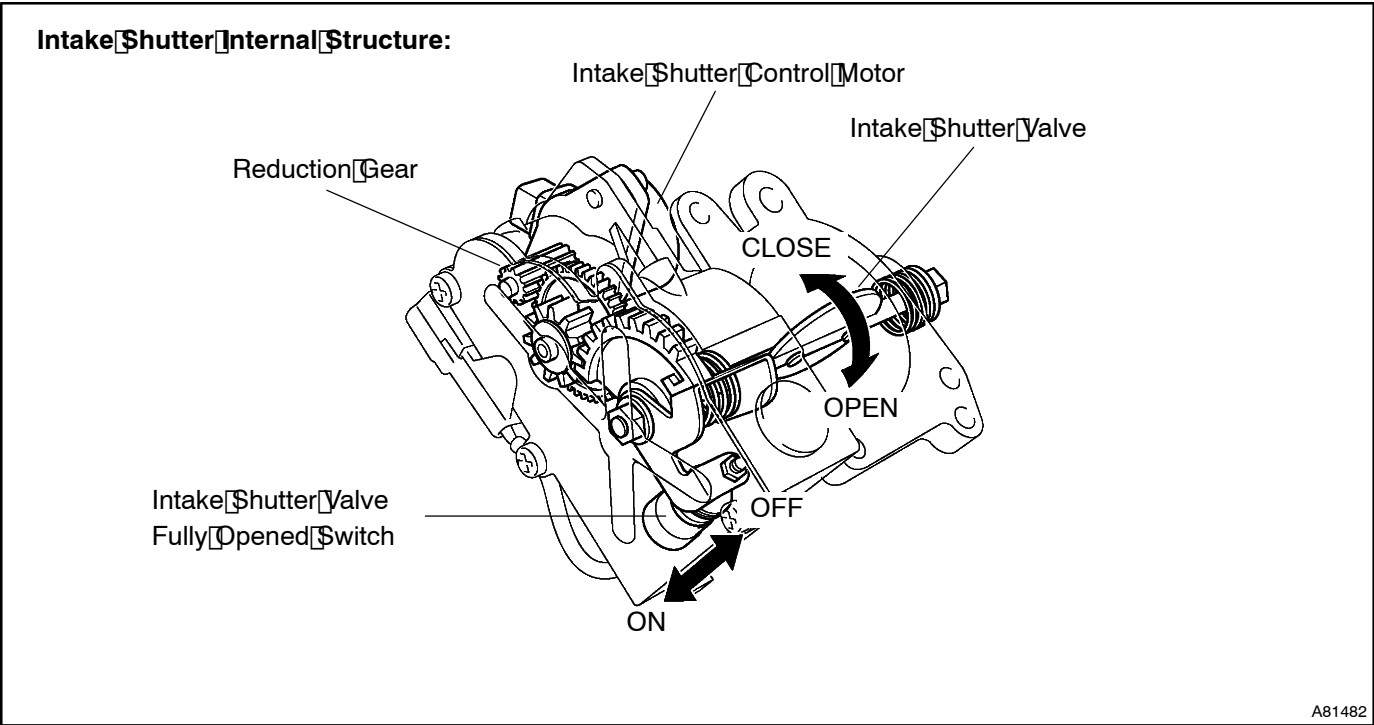
DTC	P0488	EXHAUST GAS RECIRCULATION THROTTLE POSITION CONTROL RANGE/PERFORMANCE
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HINT:
For more information on the intake shutter, see page 05-432.

CIRCUIT DESCRIPTION

The ECM opens and closes the intake shutter (throttle valve) using the step motor. Upon opening and closing the valve, the exhaust gas recirculation volume is properly controlled. Also, engine vibrations and noises will be suppressed by closing the valve when the engine is stopped.

HINT:
The ECM detects fully open position of the intake shutter valve by using the intake shutter valve fully opened switch which is mounted on the intake shutter.

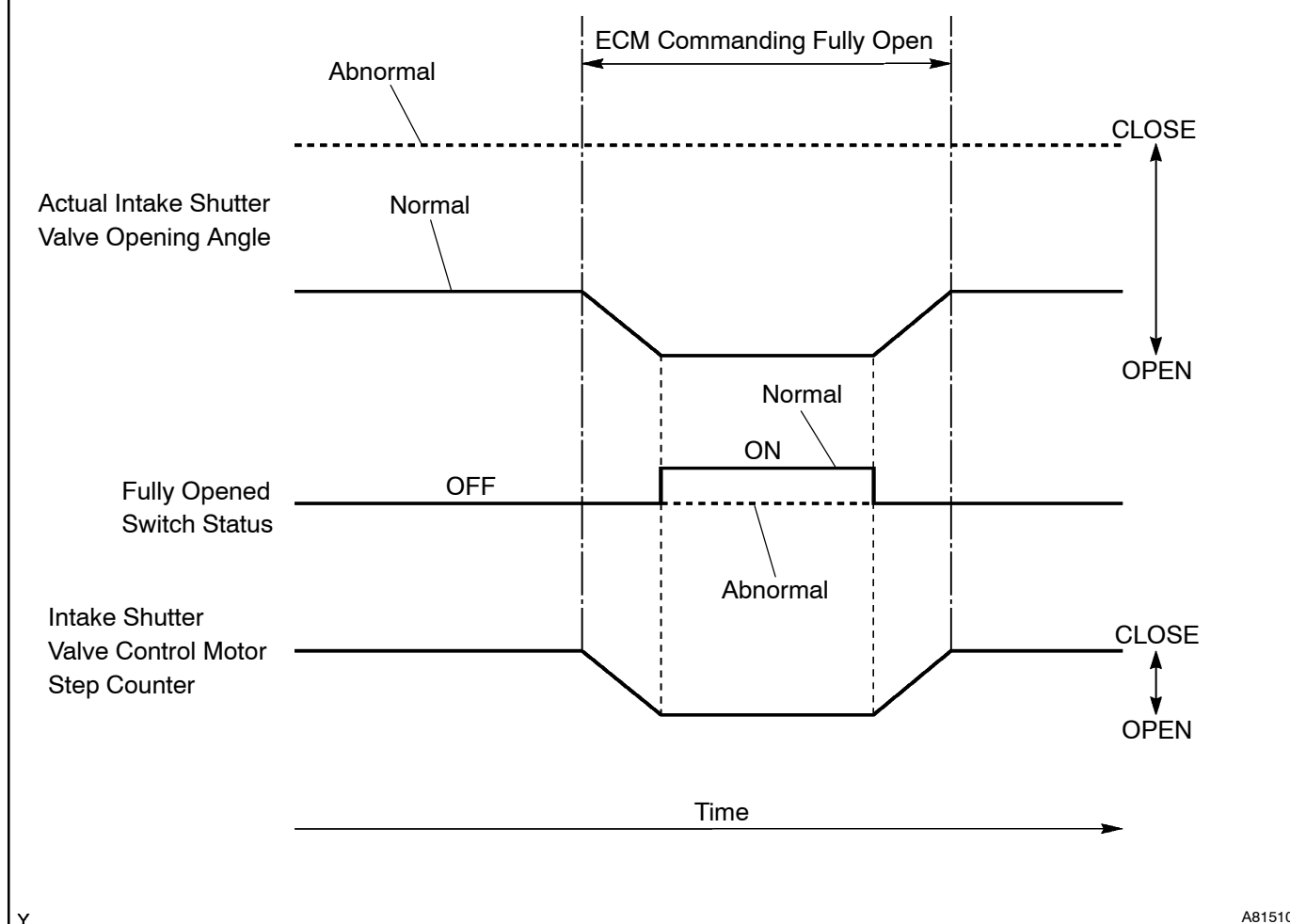


DTC No.	DTC Detection Condition	Trouble Area
P0488	Intake shutter valve fully opened switch is not turned on, despite the ECM commanding the intake shutter valve to fully open (1 trip detection)	<ul style="list-style-type: none">• Open or short in intake shutter control motor circuit• Open or short in intake shutter valve fully opened switch circuit• Intake shutter• ECM

MONITOR DESCRIPTION

This DTC will be set if the actual opening angle of the intake shutter valve varies from the target opening angle. The ECM forces the valve to fully open within 2 to 3 seconds after the ignition switch is turned to ON, and then checks if the intake shutter valve fully opened switch is turned ON. In addition, the ECM also forces the valve to fully open when accelerating the engine (high engine load) and checks if the switch is turned ON. When starting and/or accelerating the engine, the ECM sets this DTC if the switch is not turned ON. If the DTC is present, the ECM enters fail-safe mode and limits the engine power. The fail-safe mode continues until the ignition switch is turned to OFF.

Malfunction Detection:



MONITOR STRATEGY

Required sensors	Intake shutter valve fully opened switch
Frequency of operation	Continuous
Duration	3 seconds
MIL operation	1 driving cycle

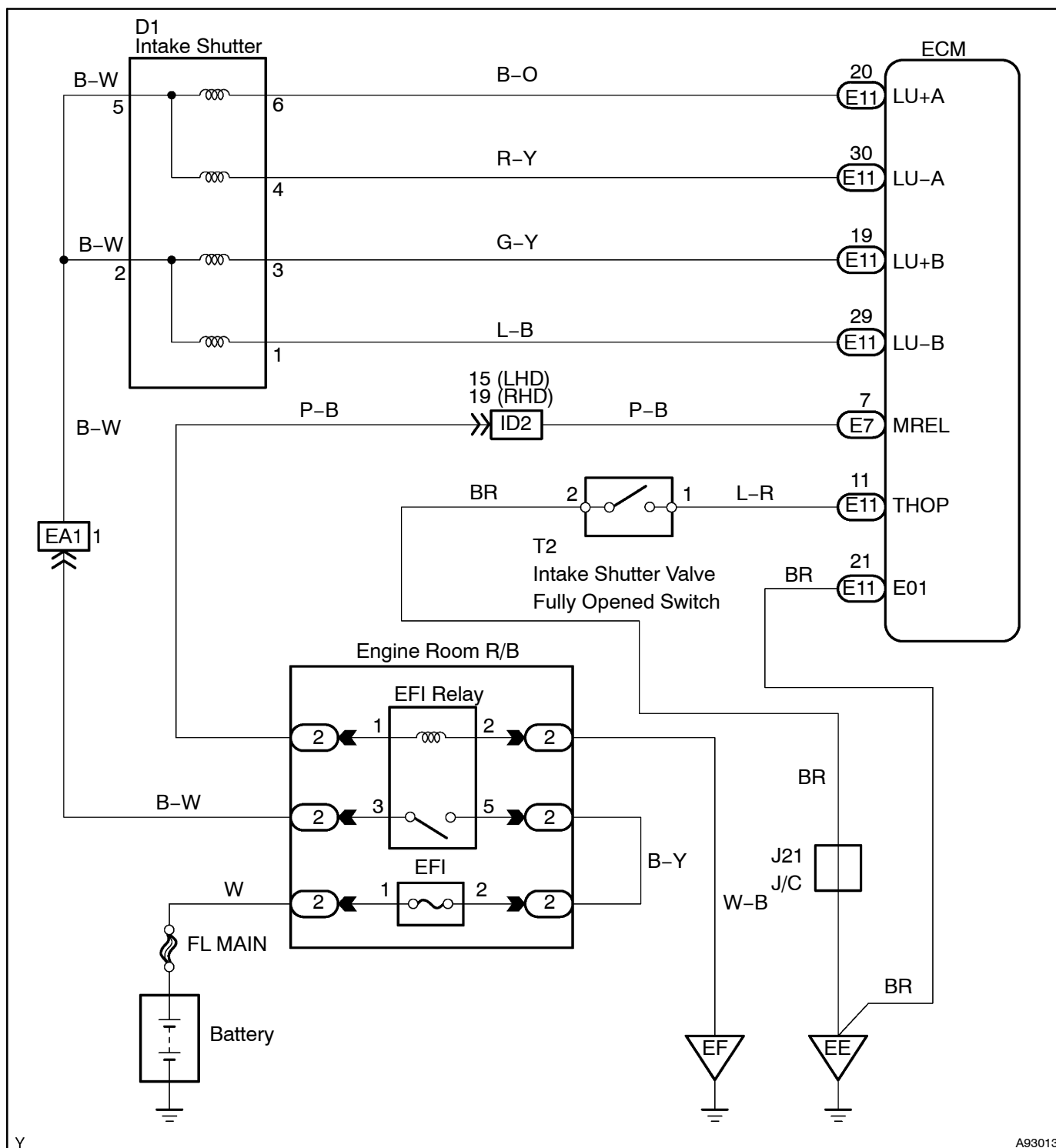
TYPICAL ENABLING CONDITIONS

Specification
Start the engine and let it idle for 30 seconds and accelerate the vehicle speed to 60 km/h (37 mph) with the accelerator pedal opened more than half angle

TYPICAL MALFUNCTION THRESHOLDS

Threshold
Intake shutter valve fully opened switch is not turned ON, despite the ECM commanding the intake shutter valve to open fully

WIRING DIAGRAM



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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 INTAKE SHUTTER ASSY

- (a) Visually check that the intake shutter valve moves within approximately 2 to 3 seconds after the ignition switch is turned to ON.

Result:

Intake Shutter Valve Condition	Proceed To
Does not move	A
Smoothly moves to full-open position	B

B

Go to step 6

A

2 CHECK INTAKE SHUTTER ASSY

- (a) Check if the intake shutter valve moves as the lever is rotated by hand.

Result:

Intake Shutter Valve Condition	Proceed To
Smoothly moved	A
Difficult to move smoothly	B

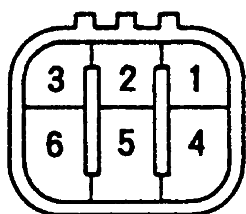
B

REPLACE INTAKE SHUTTER ASSY
(See page 10-14 of Pub. No. RM864E AVENSIS
VERSO/ PICNIC REPAIR MANUAL)

A

3 INSPECT INTAKE SHUTTER ASSY

Component Side:



Intake Shutter Assy

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- (a) Disconnect the D1 intake shutter connector.
(b) Measure the resistance between the terminals.

Standard:

Tester Connection	Specified Condition
1 - 2	18 to 22 Ω at 20°C (68°F)
2 - 3	
4 - 5	
5 - 6	

- (c) Reconnect the intake shutter connector.

NG

REPLACE INTAKE SHUTTER ASSY
(See page 10-14 of Pub. No. RM864E AVENSIS
VERSO/ PICNIC REPAIR MANUAL)

OK

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- Standard:**

$LU+A(E_{11}-20) - E_1(E_{11}-22)$
$LU-A(E_{11}-30) - E_1(E_{11}-22)$
$LU+B(E_{11}-19) - E_1(E_{11}-22)$
$LU-B(E_{11}-29) - E_1(E_{11}-22)$

REPLACE ECM (See page 10-30)

OK

5



- Standard (Check for open):**

LU+A (E11-20) – Intake shutter (D1-6)
LU-A (E11-30) – Intake shutter (D1-4)
LU+B (E11-19) – Intake shutter (D1-3)
LU-B (E11-29) – Intake shutter (D1-1)

Standard (Check for short):



Tester Connection
LU+A (E11-20) or Intake shutter (D1-6) – Body ground
LU-A (E11-30) or Intake shutter (D1-4) – Body ground
LU+B (E11-19) or Intake shutter (D1-3) – Body ground
LU-B (E11-29) or Intake shutter (D1-1) – Body ground

- NG

REPAIR OR CONNECTOR	REPLACE	HARNESS	OR
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OK

6 READ VALUE OF INTELLIGENT TESTER II

- Connect the intelligent tester II to the DLC3.
- Turn the ignition switch to ON and turn the intelligent tester II ON.
- Fully open the intake shutter valve by hand.
- On the intelligent tester II, select the following menu items: Powertrain / Engine and ECT / Data List / Accel Open SW.
- Read the value.

Result:

Switch Condition Display	Proceed To
OFF	A
ON	B

B**CHECK IF DTC OUTPUT RECURS****HINT:**

After clearing the DTC, start the engine and let it idle for 30 seconds. Then, accelerate the vehicle to 60 km/h (37 mph) by depressing the accelerator pedal more than half angle. Confirm that P0488 is not present.

A**7 CHECK HARNESS AND CONNECTOR(FULLY OPENED SWITCH – ECM)****Wire Harness Side:**

Intake Shutter Fully
Opened Switch Connector



Front View

Y

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- Disconnect T2 the intake shutter fully opened switch connector.
- Disconnect the E11 ECM connector.
- Check the resistance.

Standard (Check for open):

Tester Connection	Specified Condition
THOP (E11-11) – Intake shutter (T2-1)	Below 1 Ω

Standard (Check for short):

Tester Connection	Specified Condition
THOP (E11-11) or Intake shutter (T2-1) – Body ground	10 k Ω or higher

- Reconnect the ECM connector.
- Reconnect the intake shutter fully opened switch connector.

NG**REPAIR OR REPLACE HARNESS OR CONNECTOR**

Y

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OK**CHECK IF DTC OUTPUT RECURS (DTC P0488)****HINT:**

After clearing the DTC, start the engine and let it idle for 30 seconds. Then, accelerate the vehicle to 60 km/h (37 mph) by depressing the accelerator pedal more than half angle. Confirm that P0488 is not present.