DTC	P2430	Secondary Air Injection System Air Flow / Pressure Sensor Circuit Bank1
DTC	P2431	Secondary Air Injection System Air Flow / Pressure Sensor Circuit Range / Performance Bank1
DTC	P2432	Secondary Air Injection System Air Flow / Pressure Sensor Circuit Low Bank1
DTC	P2433	Secondary Air Injection System Air Flow / Pressure Sensor Circuit High Bank1

ES

DESCRIPTION

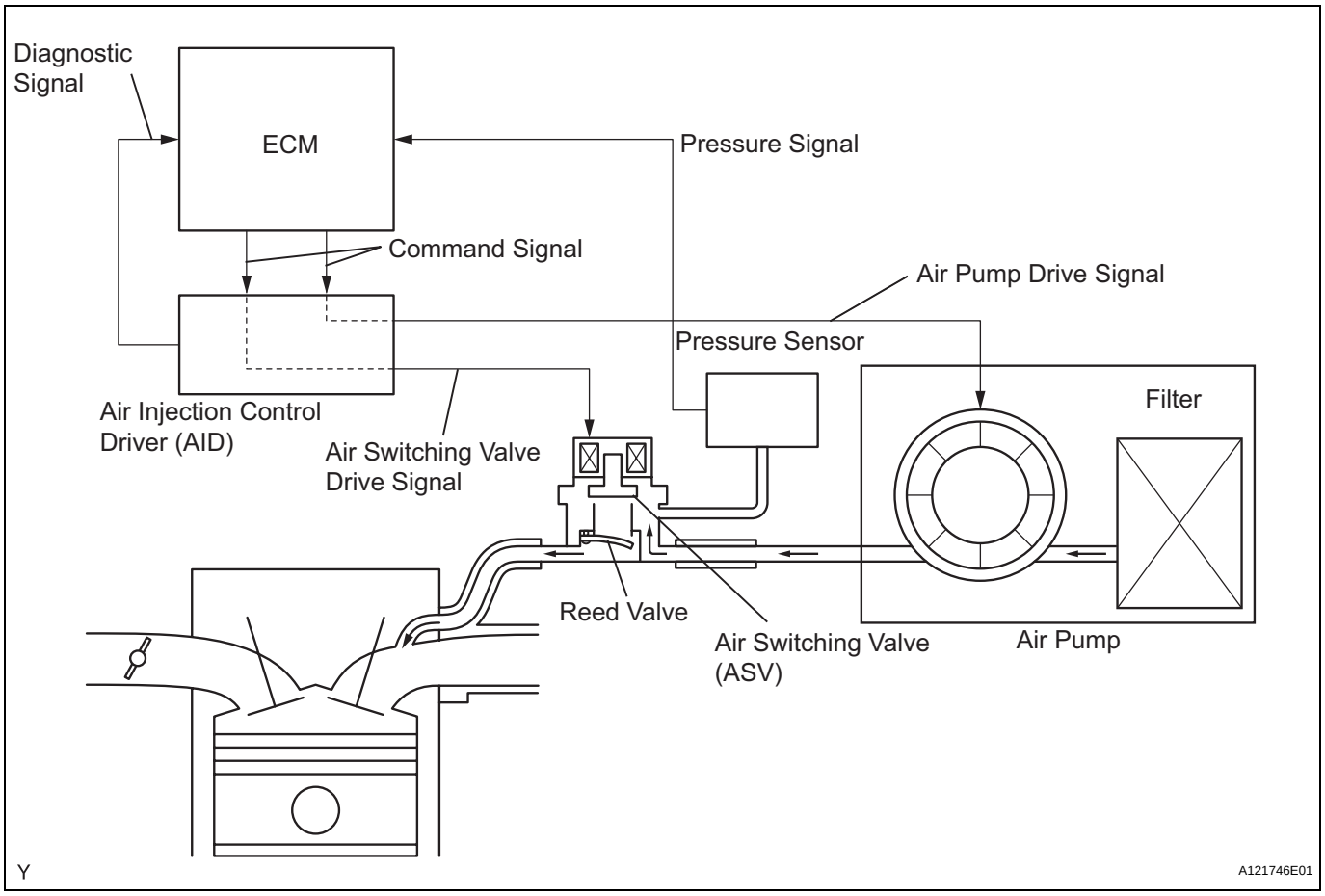
The Secondary Air injection (AIR) system consists of an air pump, the Air Switching Valve (ASV), a pressure sensor, the Air Injection Control Driver (AID) and the ECM. For a short time after cold engine starts, the AIR system pumps secondary air to the exhaust port of the cylinder head to purify the exhaust emissions. The secondary air is supplied by the air pump and is pumped to the exhaust port through the ASV.

The AID drives the ASV and the air pump according to command signals transmitted by the ECM. The pressure sensor detects the pressure in the secondary air passage when the AIR system is ON and OFF, and transmits pressure signal to the ECM.

The AID is not only equipped to drive the pump and valve, but also with a diagnosis function to detect malfunctions in the AIR system circuit.

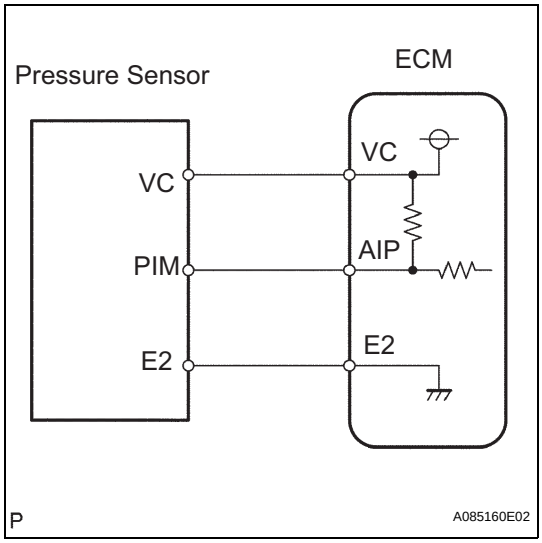
HINT:

As a large current is required to drive the air pump and ASV, an AID has been added to the previous system.



DTC No.	DTC Detection Conditions	Trouble Areas
P2430	While engine running, voltage output of pressure sensor indicates 0.1 V or less, or indicates 4.8V or more (1 trip detection logic	• Pressure sensor • Open or short in pressure sensor circuit • ECM
P2431	Pressure sensor indicates less than 45 kPa (338 mmHg), or more than 135 kPa (1,013 mmHg) (2 trip detection logic)	• Pressure sensor • Open or short in pressure sensor circuit • ECM
P2432	While engine running, voltage output of pressure sensor remains below 0.1 V (1 trip detection logic)	• Pressure sensor • Open or short in pressure sensor circuit • ECM
P2433	While engine running, voltage output of pressure sensor remains above 4.8 V (1 trip detection logic)	• Pressure sensor • Open or short in pressure sensor circuit • ECM

MONITOR DESCRIPTION



The ECM monitors the pressure in the secondary air passage using the pressure sensor located on the air switching valve in the secondary air injection system.
If there is a defect in the sensor or the sensor circuit, the voltage level deviates from the normal operating range, the ECM interprets this deviation as a malfunction in the pressure sensor or circuit and sets a DTC.

MONITOR STRATEGY

Related DTCs	P2430: Air flow/Pressure sensor circuit range check (Fluctuating) P2431: Air flow/Pressure sensor circuit rationality P2432: Air flow/Pressure sensor circuit range check (Low voltage) P2433: Air flow/Pressure sensor circuit range check (High voltage)
Required Sensors/Components (Main)	Pressure sensor
Required Sensors/Components (Related)	-
Frequency of Operation	Continuous
Duration	P2430, P2432, P2433: 0.5 seconds P2431: 5 seconds
MIL Operation	P2430, P2432 and P2433: Immediate P2431: 2 driving cycles
Sequence of Operation	None

TYPICAL ENABLING CONDITIONS

P2430, P2432 and P2433

Monitor runs whenever following DTCs not present	None
All of following conditions met:	-
Starter	OFF
Battery voltage	8 V or more
Ignition switch	ON

P2431 Case 1:

Monitor runs whenever following DTCs not present	None
All following conditions met for:	3 seconds or more
Secondary air injection system	Operating
Starter	OFF
Battery voltage	8 V or more
Ignition switch	ON

P2431 Case 2:

Monitor runs whenever following DTCs not present	None
All following conditions met for:	3 seconds or more
Secondary air injection system	Not operating
Starter	OFF
Battery voltage	8 V or more
Ignition switch	ON

TYPICAL MALFUNCTION THRESHOLDS

P2430:

Air pressure sensor voltage	Less than 0.1 V, or more than 4.8 V

P2432:

Air pressure sensor voltage	Less than 0.1 V

P2433:

Air pressure sensor voltage	More than 4.8 V

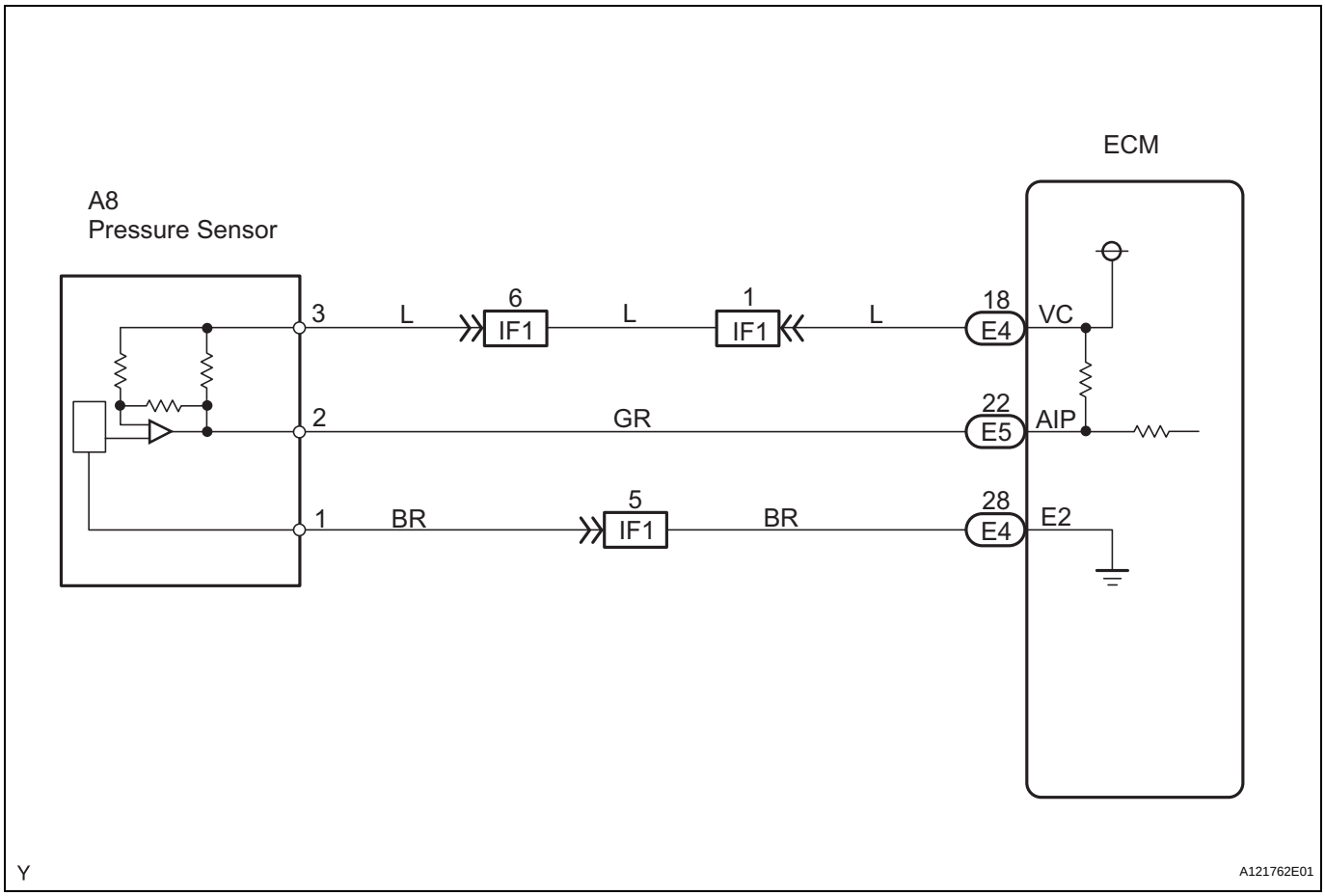
P2431:

Air Pressure	Less than 45 kPa (338 mmHg), or more than 135 kPa (1,013 mmHg)

COMPONENT OPERATING RANGE

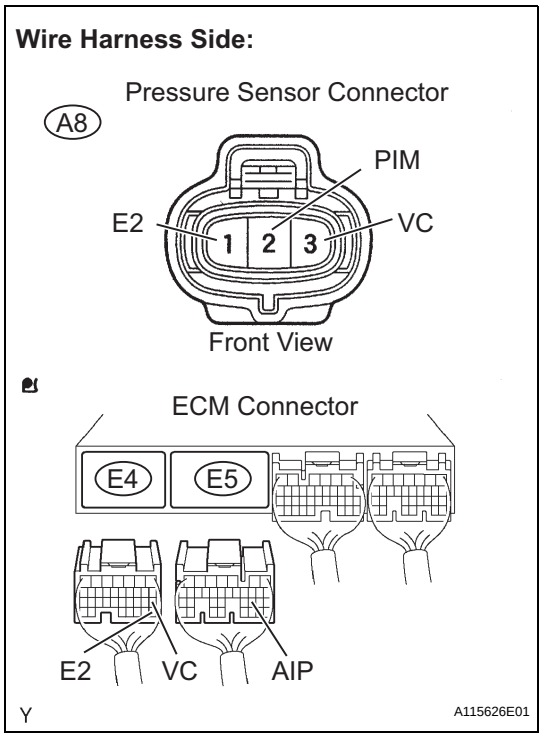
Air pressure sensor voltage	Between 0.1 V and 4.8 V

WIRING DIAGRAM



HINT:
Read freeze frame data using an intelligent tester. 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, if the air-fuel ratio was lean or rich, and other data, from the time the malfunction occurred.

1 CHECK HARNESS AND CONNECTOR (PRESSURE SENSOR - ECM)



(a) Disconnect the A8 pressure sensor connector.
(b) Disconnect the E4 and E5 ECM connectors.
(c) Check the resistance.

Standard Resistance (Check for open)

Tester Connections	Specified Conditions
Pressure sensor (A8-1) - E2 (E4-28)	Below 1 Ω
Pressure sensor (A8-2) - AIP (E5-22)	Below 1 Ω
Pressure sensor (A8-3) - VC (E4-18)	Below 1 Ω

Standard Resistance (Check for short)

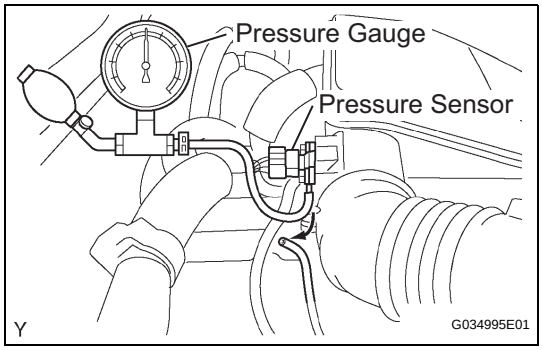
Tester Connections	Specified Conditions
Pressure sensor (A8-2) or AIP (E5-22) - Body ground	10 kΩ or higher
Pressure sensor (A8-3) or VC (E4-18) - Body ground	10 kΩ or higher

(d) Reconnect the pressure sensor connector.
(e) Reconnect the ECM connectors.

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

OK

2 INSPECT ECM (AIP VOLTAGE)



(a) Connect a pressure gauge to the air pressure sensor as shown in the illustration.
(b) Connect an intelligent tester to the DLC3.
(c) Turn the ignition switch to ON and turn the tester ON.
(d) Select the following menu items: DIAGNOSIS / ENHANCED OBD II / DATA LIST / AIR PMP PRS(A).
(e) Check that the pressure displayed on the tester fluctuates when applying the pressure to the pressure sensor with the pressure gauge.
HINT:
The tester displays the air pump pressure (AIR PMP PRS(A)) as absolute pressure.

NG → **REPLACE PRESSURE SENSOR (TURBO PRESSURE SENSOR)**

OK

REPLACE ECM