DIDRW−01

DTC	P1440	Secondary Air Injection System Control Valve Circuit Bank 1

DTC	P1443	Secondary Air Injection System Control Valve Circuit Bank 2

CIRCUIT DESCRIPTION

Refer to DTC P0412 on page DI−656.

DTC No.	DTC Detection Condition	Trouble Area
P1440	AIV1 terminal voltage becomes less than half of the +B voltage while the VSV for air injection control is not operating. (1 trip detection logic)	• Open or short in VSV for air injection control circuit (Bank 1) • VSV power source • VSV for air injection control (Bank 1) • ECM
P1443	AIV2 terminal voltage becomes less than half of the +B voltage while the VSV for air injection control is not operating. (1 trip detection logic)	• Open or short in VSV for air injection control circuit (Bank 2) • VSV power source • VSV for air injection control (Bank 2) • ECM

MONITOR DESCRIPTION

The ECM detects an open or short in the circuit of the VSV for air injection control according to the AIV1 (AIV2) terminal voltage, stores the DTC, and then illuminates the MIL. When the AIV1 (AIV2) terminal voltage is less than half of the +B voltage while the VSV for air injection control is not operating, the ECM determines it as a malfunction.

MONITOR STRATEGY

Related DTCs	P1440	Secondary air injection system control valve circuit (Bank 1) range check
	P1443	Secondary air injection system control valve circuit (Bank 2) range check
Required sensors/components	VSV for air injection control	
Frequency of operation	Continuous	
Duration	0.5 sec.	
MIL operation	Immediate	
Sequence of operation	None	

TYPICAL ENABLING CONDITIONS

Item	Specification	
	Minimum	Maximum
The monitor will run whenever this DTC is not present	See page DI−437	
P1440:		
Engine	Running	
Air switching valve No. 2 (Bank 1)	Not operating	
P1443:		
Engine	Running	
Air switching valve No. 2 (Bank 2)	Not operating	

TYPICAL MALFUNCTION THRESHOLDS

Detection Criteria	Threshold
P1440:	
Air switching valve No. 2 (Bank 1) output terminal level	Low
P1443:	
Air switching valve No. 2 (Bank 2) output terminal level	Low

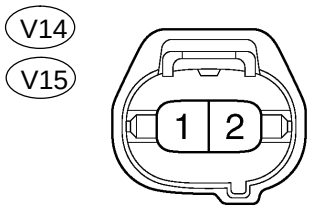
WIRING DIAGRAM

Refer to DTC P0412 on page DI−656.

INSPECTION PROCEDURE

1	**Check VSV for air injection control power source.**

Wire Harness Side:



VSV for Air Injection Control Connector

N B17440

PREPARATION:

(a) Disconnect the VSV for air injection control connector.

(b) Turn the ignition switch ON.

CHECK:

Measure the voltage between the terminal 1of VSV connector and body ground.

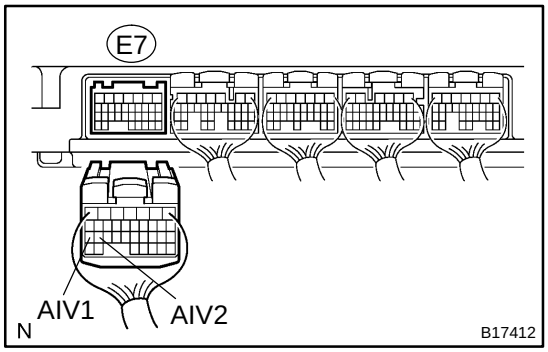
OK:

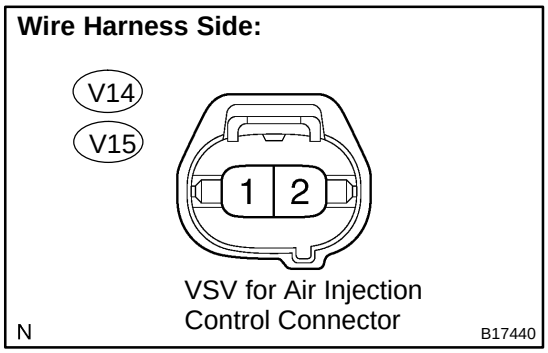
Standard: 9 V or more

NG → **Check and replace harness and connector.**

OK

2	**Check for open and short circuit in harness and connector between ECM and VSV for air injection control**





PREPARATION:

(a) Disconnect the E7 ECM connector.

(b) Disconnect the VSV for air injection control connector.

CHECK:

Measure the resistance between the VSV connector and ECM.

OK:

Standard:

Tester connection	Specified condition
E7−27 (AIV1) − V14−2	Below 1 Ω
E7−26 (AIV2) − V15−2	Below 1 Ω

CHECK:

Measure the resistance between the VSV connector and body ground.

OK:

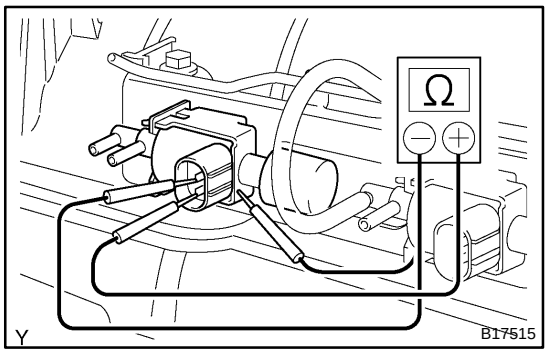
Standard:

Tester connection	Specified condition
E7−27 (AIV1) or V14−2 and Body ground	10 KΩ or higher
E7−26 (AIV1) or V15−2 and Body ground	10 KΩ or higher

NG → **Repair or replace harness or connector.**

OK

3	Check resistance of VSV for air injection control.



PREPARATION:

(a) Disconnect the connector from the VSV.

(b) Disconnect the 2 vacuum hoses from the VSV.

CHECK:

Measure the resistance between the VSV terminals.

OK:

Standard:

Tester Connection	Specified Condition
1 − 2	33 to 39 Ω at 20°C (68°F)
1 − Body ground	10 kΩ or higher
2 − Body ground	10 kΩ or higher

NG → **Replace VSV for air injection control.**

OK →

Replace ECM. (See page SF−82)