

Air Injection System MIL "ON"

Service Category Engine/Hybrid System

Section Engine Control

Market USA

Toyota Supports
 ASE Certification 

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2005 – 2009	4Runner	VDS(s): BT14R, BT17R, ZT14R, ZT17R
2006 – 2007	Land Cruiser	
2005 – 2007	Sequoia	VDS(s): BT44A, BT48A, ZT34A, ZT38A
2005 – 2006	Tundra	VDS(s): BT441, BT481, DT441, DT481, ET341, ET381, JT321, KT421, RT341, RT381

REVISION NOTICE

October 17, 2013 Rev1:

- The entire bulletin has been updated to include DTC P2445 and diagnosis of the Air Injection Control Driver.
- Applicability has been updated to include 2006 – 2007 model year Land Cruiser vehicles.
- Parts Information has been updated.

Any previous printed versions of this bulletin should be discarded.

SUPERSESSION NOTICE

The information contained in this bulletin supersedes SB No. EG027-07.

- Information from EG027-07 has been combined with T-SB-0230-12.

Service Bulletin No. EG027-07 is Obsolete and any printed versions should be discarded. Be sure to review the entire content of this bulletin before proceeding.

Air Injection System MIL "ON"

Introduction

Some 2005 – 2009 model year 4Runner, 2006 – 2007 model year Land Cruiser, 2005 – 2007 model year Sequoia, and 2005 – 2006 model year Tundra vehicles equipped with the 2UZ-FE (4.7 L) engine may exhibit a MIL "ON" condition for the following Diagnostic Trouble Codes (DTCs):

- P0412 – Secondary Air Injection System Switching Valve "A" Circuit
- P0418 – Secondary Air Injection System Relay "A" Circuit
- P1440/P1443 – Secondary Air Injection System Control Valve Circuit Bank 1 / Bank 2
- P1441/P1444 – Secondary Air Injection System Switching Valve No. 2 Bank 1 / Bank 2 Stuck Open
- P2440 – Secondary Air Injection System Switching Valve Stuck Open Bank 1
- P1442/P1445 – Secondary Air Injection System Switching Valve No. 2 Bank 1 / Bank 2 Stuck Close
- P2441 – Secondary Air Injection System Switching Valve Stuck Close Bank 1
- P2445 – Secondary Air Injection System Pump Stuck Off Bank 1

This condition may be caused by debris passing through the air injection pump assembly and contaminating various components in the system. Use the following procedure to address this condition.

Parts Information

PART NUMBER		PART NAME	QTY
PREVIOUS	NEW		
17600-0F010		Pump Assembly, Air	1
17171-50030		Gasket, Intake Manifold to Head No. 1	2
25710-50020 25710-50021	25710-50022	Valve Assy, Air Switching	1*
25720-50010	25720-50011	Valve Assy, Air Switching, No. 1	1*
25720-50020		Valve Assy, Air Switching, No. 2	1*
17377-50010		Gasket, Air Tube	4**
89580-34010 89580-34011 89581-34040 89581-34041 89581-71010	89580-34012	Driver, Air Injection Control	1

* Replace ONLY If damaged by debris. Reuse parts when possible.

** 2 per valve.

Air Injection System MIL "ON"

Warranty Information

OP CODE	DESCRIPTION	MODEL	TIME	OFF	T1	T2
EG1215	R & R Air Pump Assy	4Runner	1.6	17600-0F010	8A	99
		Land Cruiser	2.2			
		Sequoia				
		Tundra				
Combo A	R & R Valve Assy, Air Switching*	All	+0.3			
Combo B	R & R Valve Assy, Air Switching, No. 1 and/or No. 2*	All	+0.5			
Combo C	R & R Air Injection Control Driver	All	+0.5			

* Replace ONLY If damaged by debris. Reuse parts when possible.

APPLICABLE WARRANTY

- This repair is covered under the Toyota Basic Warranty. This warranty is in effect for 36 months or 36,000 miles, whichever occurs first, from the vehicle's in-service date.
- For California specification vehicles sold and operated in California, Connecticut (starting with '08 MY), Maine, Massachusetts, New Jersey (starting with '09 MY), Oregon (starting with '09 MY), Pennsylvania (starting with '08 MY), Rhode Island (starting with '08 MY), Vermont, and Washington (starting with '09 MY), this repair is covered under the California Emission Warranty, which is 84 months or 70,000 miles, whichever occurs first, from the vehicle's in-service date.
- Warranty application is limited to occurrence of the specified condition described in this bulletin.

Required Tools & Equipment

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
Techstream 2.0*	ADE	TS2UNIT	1
TIS Techstream		TSPKG1	
Techstream Lite		TSLITEDLR01	

* Essential SST.

NOTE

- Only ONE of the Techstream units listed above is required.
- Software version 8.20.019 or later is required.
- Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.

Air Injection System MIL "ON"

Repair Procedure

1. Using Techstream, check if DTCs P0412, P0418, P1440/P1443, P1441/P1444, P1442/P1445, P2440, P2441, or P2445 are present.

If DTC is present, refer to the Technical Information System (TIS), applicable model and model year Repair Manual:

4Runner:

- [2005](#) 4Runner:
*Engine/Hybrid System – Engine Control – “SFI System (2UZ-FE): **P0412** Secondary Air Injection System Switching Valve “A” Circuit”*
- [2006](#) / [2007](#) / [2008](#) / [2009](#) 4Runner:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P0412**; Secondary Air Injection System Switching Valve “A” Circuit”*
- [2005](#) 4Runner:
*Engine/Hybrid System – Engine Control – “SFI System (2UZ-FE): **P0418** Air Injection System Relay “A” Circuit”*
- [2006](#) / [2007](#) / [2008](#) / [2009](#) 4Runner:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P0418**; Secondary Air Injection System Control “A” Circuit”*
- [2005](#) 4Runner:
*Engine/Hybrid System – Engine Control – “SFI System (2UZ-FE): **P1440, P1443** Secondary Air Injection System Control Valve Circuit Bank 2”*
- [2006](#) / [2007](#) / [2008](#) / [2009](#) 4Runner:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1440, P1443**; Secondary Air Injection Vacuum Switching Valve Circuit Malfunction Bank 1”*
- [2005](#) 4Runner:
*Engine/Hybrid System – Engine Control – “SFI System (2UZ-FE): **P1441, P1444, P2440** Secondary Air Injection System Switching Valve Stuck Open Bank 1”*
- [2006](#) / [2007](#) / [2008](#) / [2009](#) 4Runner:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1441, P1444, P2440**; Stuck Open in Secondary Air Injection Vacuum Switching Valve Bank 1”*
- [2005](#) 4Runner:
*Engine/Hybrid System – Engine Control – “SFI System (2UZ-FE): **P1442, P1445, P2441** Secondary Air Injection System Switching Valve Stuck Open Bank 1”*
- [2006](#) / [2007](#) / [2008](#) / [2009](#) 4Runner:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1442, P1445, P2441**; Stuck Close in Secondary Air Injection Vacuum Switching Valve Bank 1”*

Air Injection System MIL "ON"

Repair Procedure (Continued)

- [2005](#) 4Runner:
*Engine/Hybrid System – Engine Control – “SFI System (2UZ-FE): **P2445** Secondary Air Injection System Pump Stuck Off Bank 1”*
- [2006](#) / [2007](#) / [2008](#) / [2009](#) 4Runner:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P2445**; Secondary Air Injection System Pump Stuck On Bank 1”*

Land Cruiser:

- [2006](#) / [2007](#) Land Cruiser:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P0412**; Secondary Air Injection System Switching Valve “A” Circuit”*
- [2006](#) / [2007](#) Land Cruiser:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P0418**; Secondary Air Injection System Control “A” Circuit”*
- [2006](#) / [2007](#) Land Cruiser:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1440, P1443**; Secondary Air Injection Vacuum Switching Valve Circuit Malfunction Bank 1”*
- [2006](#) / [2007](#) Land Cruiser:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1441, P1444, P2440**; Stuck Open in Secondary Air Injection Vacuum Switching Valve Bank 1”*
- [2006](#) / [2007](#) Land Cruiser:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1442, P1445, P2441**; Stuck Close in Secondary Air Injection Vacuum Switching Valve Bank 1”*
- [2006](#) / [2007](#) Land Cruiser:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P2445**; Secondary Air Injection System Pump Stuck On Bank 1”*

Sequoia:

- [2005](#) Sequoia :
*Engine/Hybrid System – Engine Control – “Engine: **P0412** Secondary Air Injection System Air Switching Valve “A” Circuit”*
- [2006](#) / [2007](#) Sequoia:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P0412**; Secondary Air Injection System Switching Valve “A” Circuit”*

Air Injection System MIL "ON"

Repair Procedure (Continued)

- [2005](#) Sequoia:
*Engine/Hybrid System – Engine Control – “Engine: **P0418** Air Injection System Air Pump Malfunction”*
- [2006](#) / [2007](#) Sequoia:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P0418**; Secondary Air Injection System Control “A” Circuit”*
- [2005](#) Sequoia:
*Engine/Hybrid System – Engine Control – “Engine: **P1440, P1443** Secondary Air Injection System Control Valve Circuit Bank 2”*
- [2006](#) / [2007](#) Sequoia:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1440, P1443**; Secondary Air Injection Vacuum Switching Valve Circuit Malfunction Bank 1”*
- [2005](#) Sequoia:
*Engine/Hybrid System – Engine Control – “Engine: **P1441, P1444, P2440** Secondary Air Injection System Switching Valve Stuck Open Bank 1”*
- [2006](#) / [2007](#) Sequoia:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1441, P1444, P2440**; Secondary Air Injection Vacuum Switching Valve Circuit Malfunction Bank 1”*
- [2005](#) Sequoia:
*Engine/Hybrid System – Engine Control – “Engine: **P2445** Secondary Air Injection System Pump Stuck On Bank 1”*
- [2006](#) / [2007](#) Sequoia:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P2445**; Secondary Air Injection System Pump Stuck On Bank 1”*

Tundra:

- [2005](#) Tundra:
*Engine/Hybrid System – Engine Control – “Engine (2UZ-FE): **P0412** Secondary Air Injection System Air Switching Valve “A” Circuit”*
- [2006](#) Tundra:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P0412**; Secondary Air Injection System Switching Valve “A” Circuit”*
- [2005](#) Tundra:
*Engine/Hybrid System – Engine Control – “Engine (2UZ-FE): **P0418** Air Injection System Air Pump Malfunction”*
- [2006](#) Tundra:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P0418**; Secondary Air Injection System Control “A” Circuit”*

Air Injection System MIL "ON"

Repair Procedure (Continued)

- [2005](#) Tundra:
*Engine/Hybrid System – Engine Control – “Engine (2UZ-FE): **P1440, P1443** Secondary Air Injection System Control Valve Circuit Bank 2”*
 - [2006](#) Tundra:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1440, P1443**; Secondary Air Injection Vacuum Switching Valve Circuit Malfunction Bank 1”*
 - [2005](#) Tundra:
*Engine/Hybrid System – Engine Control – “Engine (2UZ-FE): **P1441, P1444, P2440** Secondary Air Injection System Switching Valve No. 2 Stuck Open Bank 1”*
 - [2006](#) Tundra:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1441, P1444, P2440**; Secondary Air Injection Vacuum Switching Valve Circuit Malfunction Bank 1”*
 - [2005](#) Tundra:
*Engine/Hybrid System – Engine Control – “Engine (2UZ-FE): **P1442, P1445, P2441** Secondary Air Injection System Switching Valve Stuck Close Bank 1”*
 - [2006](#) Tundra:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P1442, P1445, P2441**; Stuck Close in Secondary Air Injection Vacuum Switching Valve Bank 1”*
 - [2005](#) Tundra:
*Engine/Hybrid System – Engine Control – “Engine (2UZ-FE): **P2445** Secondary Air Injection System Pump Stuck Off Bank 1”*
 - [2006](#) Tundra:
*Engine/Hybrid System – Engine Control – “2UZ-FE Engine Control System: SFI System: **P2445** Secondary Air Injection System Pump Stuck On Bank 1”*
2. After repair, if any DTCs are displayed at this time, clear the DTC(s) and click *Data List*.
 3. Select *All Data*.
 4. Display the following parameters:
 - Secondary Air Control VSV
 - 2nd Air System Status
 - MIL

Air Injection System MIL "ON"

Repair Procedure (Continued)

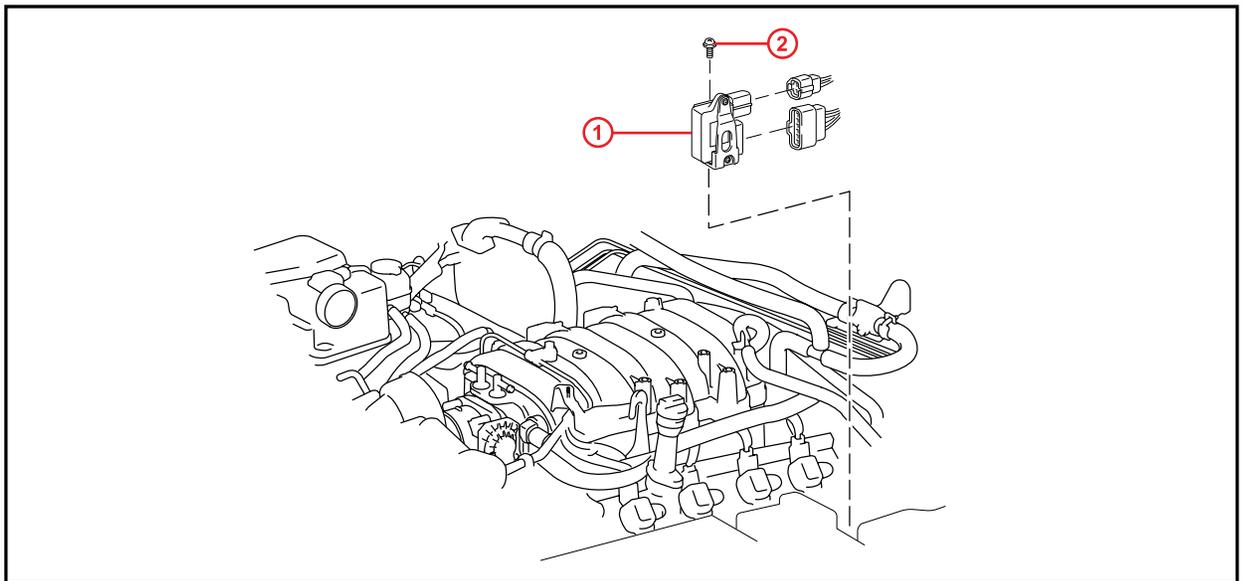
5. Start the engine and wait for air pump operation.
 - Secondary Air Control VSV = ON
 - 2nd Air System Status = ON

NOTE

If *Secondary Air Control VSV* and *2nd Air System Status* do not change to "ON," perform again after engine cools.

- If MIL illuminates, or a DTC is detected, proceed to step 6.
 - If MIL does not illuminate, or a DTC is not detected, proceed to step 8.
6. Using Techstream, check for DTCs. If P0418 and/or P2445 are present, replace the Air Injection Control Driver.

Figure 1.



1 Air Injection Control Driver

2 Specified Torque: 7.5 N*m (76 kgf*cm, 66 in*lbf)

7. If physical inspection is required through the Repair Manual diagnostic process, look for debris that may have contaminated the air injection system. The debris may consist of air injection pump filter material or fan blade fragments.
8. If such debris is found, replace the air injection pump. If not, go to step 10.
9. Additionally, determine if the debris can be removed from any secondarily affected parts and confirm they operate properly. If they do not operate properly, part replacement is required.
10. Clear the DTCs and road test the vehicle to confirm the condition has been corrected.