

Air Injection Pump With Water Intrusion: MIL "ON" DTC P0418, P0419, and/or P244#

Service Category Engine/Hybrid System

Section Engine Control

Market USA

Toyota Supports ASE Certification 

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2008	Sequoia	
2007 – 2008	Tundra	

TSB REVISION NOTICE

- July 13, 2009 Rev1:

The entire content of this bulletin has been updated with the following changes:

- DTCs P2440, P2441, P2442, P2443 have been added.
- Diagnosis and inspection of the emission control valves has been added.

Any previous printed versions of this service bulletin should be discarded.

Introduction

Some 2007 – 2008 model year Tundra and 2008 model year Sequoia vehicles may exhibit a MIL "ON" condition with Diagnostic Trouble Codes (DTCs) P0418, P0419, P2440, P2441, P2442, P2443, P2440, P2441, P2442, P2443, P2445, and/or P2447. This concern may be caused by water intrusion into the air injection pump assemblies. Use the following procedure to address this condition.

Parts Information

ENGINE	PREVIOUS PART NUMBER	CURRENT PART NUMBER	PART NAME	QTY
–	90467-28007	Same	Clamp	1 or 2
–	17610-0S010	Same	Pump Assembly, Air	1 or 2
3UR-FE	25701-38060	Same	Valve Set, Emission Control	1
2UZ-FE	25710-50030	Same		1
	25710-50040	Same		1
1GR-FE	25710-31010	Same		1

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Production Change Information

This TSB applies to vehicles produced **BEFORE** the Production Change Effective VINs shown below.

MODEL	PLANT	ENGINE	DRIVETRAIN	WHEEL BASE*	PRODUCTION CHANGE EFFECTIVE VIN
Tundra	TMMI	2UZ-FE	2WD	3700 mm (145.7 in.)	5TB*T5#1*8S461496
			4WD		5TB*T5#1*8S464654
		3UR-FE	2WD		5TB*V5#1*8S483044
			4WD		5TB*V5#1*8S522381
	TMMTX	1GR-FE	2WD	3220 mm (126.8 in.)	5TF*U5#1*8X004083
				3700 mm (145.7 in.)	5TF*U5#1*8X016753
		2UZ-FE	2WD	3220 mm (126.8 in.)	5TF*T5#1*8X002390
				3700 mm (145.7 in.)	5TF*T5#1*8X026751
				4180 mm (164.6 in.)	5TF*T5#1*8X002147
			4WD	3220 mm (126.8 in.)	5TF*T5#1*8X002332
				3700 mm (145.7 in.)	5TF*T5#1*8X014476
				4180 mm (164.6 in.)	5TF*T5#1*8X002435
		3UR-FE	2WD	3220 mm (126.8 in.)	5TF*V5#1*8X003183
				3700 mm (145.7 in.)	5TF*V5#1*8X068126
				4180 mm (164.6 in.)	5TF*V5#1*8X006232
			4WD	3220 mm (126.8 in.)	5TF*V5#1*8X003283
				3700 mm (145.7 in.)	5TF*V5#1*8X081046
				4180 mm (164.6 in.)	5TF*V5#1*8X008674

* Wheel Base:

3220 mm = Regular Cab

3700 mm = Double Cab (Regular Bed), CrewMax

4180 mm = Double Cab (Long Bed)

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Production Change Information (Continued)

MODEL	PLANT	ENGINE	DRIVETRAIN	PRODUCTION CHANGE EFFECTIVE VIN
Sequoia	TMMI	2UZ-FE	2WD	5TD*T6#A*8S000363
			4WD	5TD*T6#A*8S000226
		3UR-FE	2WD	5TD*Y6#A*8S015040
			4WD	5TD*Y6#A*8S022885

Warranty Information

OP CODE	DESCRIPTION	TIME	QFP	T1	T2
EG8035	R & R Air Pump Assembly	1.5	17610-0S010	8A	99
EG9023	R & R Emission Control Valve Set	2.5	25701-##0#0		
EG9024	R & R Air Pump Assembly and Emission Control Valve Set	4.0	17610-0S010		

APPLICABLE WARRANTY

- This repair is covered under the Toyota Federal Emission Warranty. This warranty is in effect for 36 months or 36,000 miles, whichever occurs first, from the vehicle's in-service date.
- Op Code EG9023: For California specification vehicles sold, registered, and operated in California, Connecticut (starting with '08 MY), Maine, Massachusetts, Pennsylvania (starting with '08 MY), Rhode Island (starting with '08 MY), and Vermont, this repair is covered under the California Emission Warranty. This warranty is in effect for 36 months or 50,000 miles, whichever occurs first, from the vehicle's in-service date.
- Op Code EG8035 or EG9024: For California specification vehicles sold, registered, and operated in California, Connecticut (starting with '08 MY), Maine, Massachusetts, Pennsylvania (starting with '08 MY), Rhode Island (starting with '08 MY), and Vermont, this repair is covered under the California Emission Warranty. This warranty is in effect for 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.

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Required Tools & Equipment

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
TIS Techstream* NOTE: Software version 4.12.001 or later is required.	ADE	TSPKG1	1

* Essential SST.

NOTE

Additional TIS Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.

Repair Procedure

- Using TIS Techstream, check if DTCs P0418, P0419, P2440, P2441, P2442, P2443, P2445, and/or P2447 are present.
- Using TIS Techstream, perform the manual Air Injection Active Test (options 1 and 2) to verify if the signal from the air injection control driver is reaching the air pumps.

The pumps should be heard turning on at this point and there should be battery voltage on pin 2 of the pumps during this test. If there is NO voltage, refer to TSB No. [T-SB-0029-08](#), "Air Injection Control Driver."

- If during the test, voltage is present at the pump and the pump is NOT running, or the Air Pressure (gauge) value did NOT increase from 0 to 1 psi on TIS Techstream with the pump running, remove the air pump assemblies for inspection.

Refer to the Technical Information System (TIS), applicable model and model year Repair Manual:

2007 Tundra:

- Engine/Hybrid System – Emission Control – ["3UR-FE / 1GR-FE Emission Control: Air Pump: Removal"](#)
- Engine/Hybrid System – Emission Control – ["2UZ-FE Emission Control: Air Pump \(for Bank 2\): Removal"](#)

2008 Tundra:

- Engine/Hybrid System – Emission Control – ["3UR-FE / 1GR-FE Emission Control: Air Pump: Removal"](#)
- Engine/Hybrid System – Emission Control – ["2UZ-FE Emission Control: Air Pump \(for Bank 2\): Removal"](#)

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Repair Procedure (Continued)

2008 Sequoia:

- *Engine/Hybrid System – Emission Control – [“3UR-FE / 2UZ-FE Emission Control: Air Pump: Removal”](#)*
4. With the pumps removed from the vehicle, verify if there is liquid or evidence that liquid entered the pumps.
 - **YES** — If there is liquid evidence, go to step 5.
 - **NO** — If there is NO evidence of liquid, go to step 7.
 5. If liquid evidence is present, replace the two pump assemblies and install clamps on the inlet pipe to air pump hose joint as shown below in Figures 1 and 2.

NOTE

ONLY replace the Bank 2 pump on 2UZ-FE equipped vehicles.

Refer to TIS, applicable model and model year Repair Manual:

2007 Tundra:

- *Engine/Hybrid System – Emission Control – [“3UR-FE / 1GR-FE Emission Control: Air Pump: Installation”](#)*
- *Engine/Hybrid System – Emission Control – [“2UZ-FE Emission Control: Air Pump \(for Bank 2\): Installation”](#)*

2008 Tundra:

- *Engine/Hybrid System – Emission Control – [“3UR-FE / 1GR-FE Emission Control: Air Pump: Installation”](#)*
- *Engine/Hybrid System – Emission Control – [“2UZ-FE Emission Control: Air Pump \(for Bank 2\): Installation”](#)*

2008 Sequoia:

- *Engine/Hybrid System – Emission Control – [“3UR-FE / 2UZ-FE Emission Control: Air Pump: Installation”](#)*

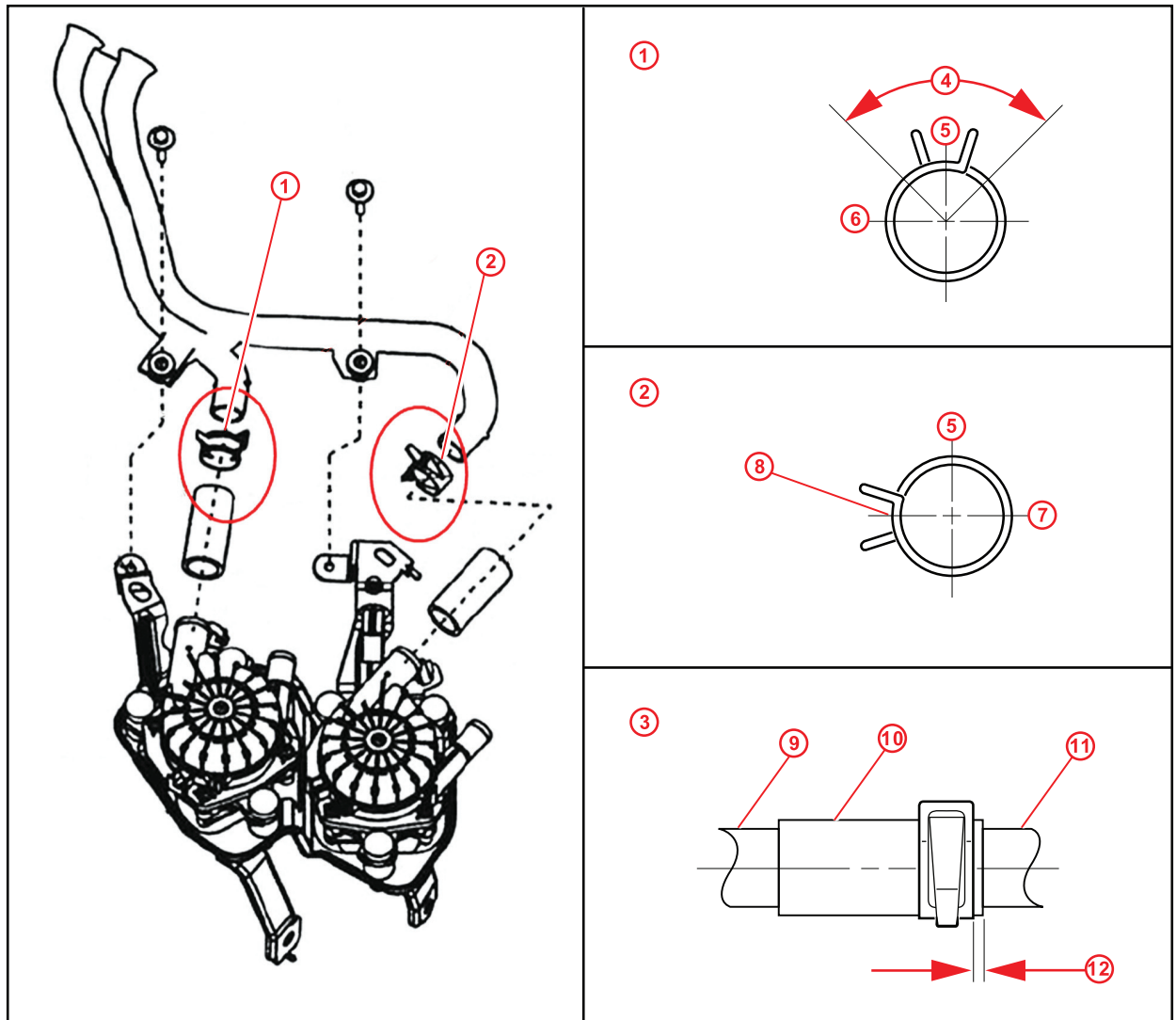
IMPORTANT

Make sure the clamp orientation is as shown in Figures 1 and 2.

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Repair Procedure (Continued)

Figure 1. 1GR-FE/3UR-FE Air Injection Pump Assembly (with clamps)



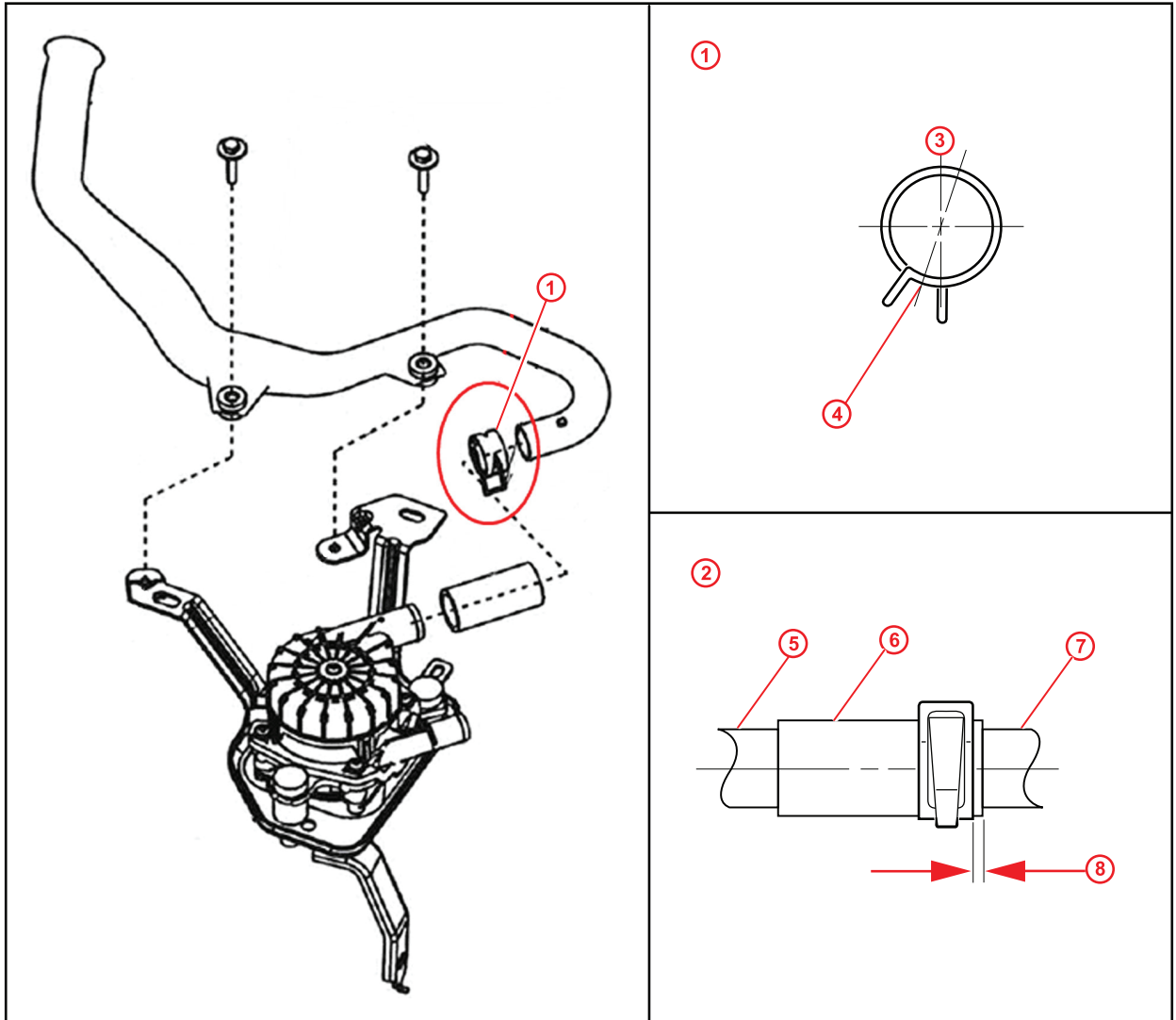
1	Clamp 1 Installation Orientation
2	Clamp 2 Installation Orientation
3	Clamp Installation Location (Typical)
4	90°
5	Upper
6	RH

7	LH
8	Hose Stopper Must Remain Within Clip Tabs
9	Air Pump
10	Air Hose
11	Inlet
12	Approximately 0 – 5 mm (0 – 0.2 in.)

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Repair Procedure (Continued)

Figure 2. 2UZ-FE Air Injection Pump Assembly (with clamps)



1	Clamp Installation Orientation
2	Clamp Installation Location
3	Upper
4	Hose Stopper Must Remain Within Clip Tabs

5	Air Pump
6	Air Hose
7	Inlet
8	Approximately 0 – 5 mm (0 – 0.2 in.)

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Repair Procedure (Continued)

6. In some instances where water may have entered the system, DTCs P2440/P2441/P2442/P2443 may set.

Refer to TIS, applicable model and model year Repair Manual to diagnose and inspect the emission control valves, if necessary:

2007 Tundra:

- *Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”](#)*

2008 Tundra:

- *Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”](#)*

2008 Sequoia:

- *Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”](#)*

7. If there is NO liquid found in the air pump assemblies, or the DTCs are still present after replacement, inspect the air injection system.

Refer to TIS, applicable model and model year Repair Manual:

2007 Tundra:

- P0412/P0415:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE Engine Control System: SFI System: P0412: Secondary Air Injection System Switching Valve A Circuit”](#) (P0415: Secondary Air Injection System Switching Valve “B” Circuit)

- P0418/P0419:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE Engine Control System: SFI System: P0418: Secondary Air Injection System Control A Circuit”](#) (P0419: Secondary Air Injection System Control “B” Circuit)

- P2440 – P2443

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”](#)

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Repair Procedure (Continued)

- P2445/P2447:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE](#) Engine Control System: SFI System: P2444: Secondary Air Injection System Pump Stuck On Bank 1” (P2445: Secondary Air Injection System Pump Stuck Off Bank 1, P2447: Secondary Air Injection System Pump Stuck Off Bank 2)

2008 Tundra:

- P0412/P0415:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE](#) Engine Control System: SFI System: P0412: Secondary Air Injection System Switching Valve A Circuit” (P0415: Secondary Air Injection System Switching Valve “B” Circuit)

- P0418/P0419:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE](#) Engine Control System: SFI System: P0418: Secondary Air Injection System Control A Circuit” (P0419: Secondary Air Injection System Control “B” Circuit)

- P2440 – P2443

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE](#) Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”

- P2445/P2447:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE / 1GR-FE](#) Engine Control System: SFI System: P2444: Secondary Air Injection System Pump Stuck On Bank 1” (P2445: Secondary Air Injection System Pump Stuck Off Bank 1, P2447: Secondary Air Injection System Pump Stuck Off Bank 2)

2008 Sequoia:

- P0412/P0415:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE](#) Engine Control: SFI System: P0412: Secondary Air Injection System Control A Circuit” (P0415: Secondary Air Injection System Switching Valve “B” Circuit)

- P0418/P0419:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE](#) Engine Control: SFI System: P0418: Secondary Air Injection System Control A Circuit” (P0419: Secondary Air Injection System Control “B” Circuit)

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Repair Procedure (Continued)

- P2440 – P2443

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE Engine Control System: SFI System: P2440–P2443 Secondary Air Injection System Switching Valve Stuck Bank 1”](#)

- P2445/P2447:

Engine/Hybrid System – Engine Control – [“3UR-FE / 2UZ-FE Engine Control: SFI System: P2444: Secondary Air Injection System Pump Stuck On Bank 1” \(P2445: Secondary Air Injection System Pump Stuck Off Bank 1, P2447: Secondary Air Injection System Pump Stuck Off Bank 2\)](#)

8. Clear the DTC(s) and road test the vehicle to confirm the condition has been corrected.