

T-SB-0001-10 Rev1 January 7, 2010

MIL "ON" DTC P0138, P0158 and/or P0606 Diagnostic Tips

Service Category Engine/Hybrid System

Section Engine Control

Market USA



Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2005 – 2010	Avalon	
2007 – 2009	Camry	VDS(s): BK46K
2010	Camry	VDS(s): BK3EK
2008	Highlander	VDS(s): DS41A, DS42A, DS43A, ES41A, ES42A, ES43A
2009 – 2010	Highlander	VDS(s): BK3EH, DK3EH, DS41A, DS42A, DS43A, EK3EH, ES41A, ES42A, ES43A, XK3EH, YK3EH, ZK3EH
2006 – 2010	RAV4	VDS(s): BK31V, BK32V, BK34V, BK4DV, BK9DV, EK4DV, JK4DV, KK4DV, RK4DV, WK4DV, XK4DV, YK4DV, YK9DV, ZK31V, ZK32V, ZK33V, ZK34V, ZK35V, ZK4DV, ZK9DV
2007 – 2010	Sienna	VDS(s): BK22C, BK23C, BK29C, BK4CC, DK4CC, JK4CC, KK4CC, MK29C, YK4CC, ZA22C, ZA23C, ZK22C, ZK23C, ZK29C, ZK4CC
2009 – 2010	Venza	VDS(s): BK11A, BK3BB, ZK11A, ZK3BB

REVISION NOTICE

August 8, 2013 Rev1:

- Title has been updated to include DTC P0606.

Any previous printed versions of this bulletin should be discarded.

Introduction

Some vehicles may exhibit a MIL "ON" Diagnostic Trouble Code (DTC) P0138 and/or P0158 (Oxygen Sensor Circuit High Voltage Bank 1 or 2). In some instances a P2195 or P2197 (A/F Sensor Signal Stuck Lean) DTC may also be present. This condition may be caused by incorrect Air Fuel Ratio Sensor response. Additionally, a P0606 (ECM/PCM Processor) DTC may be present due to

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Introduction (Continued)

incorrect Oxygen Sensor operation. The following repair procedures should be used to properly diagnose and repair this condition.

NOTE

- Refer to Service Bulletin No. T-SB-0398-09, "*Engine Bank 1 and Bank 2 A/F and O2 Identification*" before proceeding to confirm diagnosis is performed on the correct engine bank.
- Before proceeding, check for any other applicable Service Bulletin(s). Do not apply this diagnostic procedure if there is an existing Service Bulletin for A/F or O2 sensor DTC(s).

Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
N/A	Not Applicable to Warranty	–	–	–	–

Diagnostic Procedure

HINT

For information on checking circuit open, short, or resistance test procedures please refer to the Technical Information System (TIS), applicable model and model year Repair Manual:

- 2005 Avalon:
General – Identification – "How to Troubleshoot ECU Controlled Systems: Electronic Circuit Inspection Procedure"
- 2006 / 2007 / 2008 / 2009 / 2010 Avalon:
General – Introduction – "Introduction: How to Troubleshoot ECU Controlled Systems: Electronic Circuit Inspection Procedure"
- 2007 / 2008 / 2009 / 2010 Camry:
General – Introduction – "Introduction: How to Troubleshoot ECU Controlled Systems: Electronic Circuit Inspection Procedure"
- 2008 / 2009 / 2010 Highlander:
General – Introduction – "Introduction: How to Troubleshoot ECU Controlled Systems: Electronic Circuit Inspection Procedure"
- 2006 / 2007 / 2008 / 2009 / 2010 RAV4:
General – Introduction – "Introduction: How to Troubleshoot ECU Controlled Systems: Electronic Circuit Inspection Procedure"
- 2007 / 2008 / 2009 / 2010 Sienna:
General – Introduction – "Introduction: How to Troubleshoot ECU Controlled Systems: Electronic Circuit Inspection Procedure"
- 2009 / 2010 Venza:
General – Introduction – "Introduction: How to Troubleshoot ECU Controlled Systems: Electronic Circuit Inspection Procedure"

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Diagnostic Procedure (Continued)

1. Check all DTCs.

Are DTC(s) other than P0138 or P0158 present?

- **YES** —
 - P2195 and/or P2197 DTC also present: Go to step 3.
 - P0606 DTC also present: Go to step 4.
- **NO** — Go to step 2.

2. Check the A/F and O2 sensor values for the appropriate bank DTC Freeze Frame Data (FFD).

Is the AFS Voltage B#S1 = 3.35~3.70V **AND** the O2S B#S2 = 0.70~0.90V?

- **YES** — Replace the appropriate bank **Air Fuel Ratio Sensor** ONLY (NOT O2 Sensor) to correct the P0138 or P0158 DTC condition.
- **NO** — Inspect the O2 B#S2 circuit for open, short, or high resistance. If no trouble is found, refer to TIS, applicable model and model year Repair Manual for P0138/P0158 diagnosis:
 - 2005 Avalon:
Engine/Hybrid System – Engine Control – “SFI System: Diagnosis System”
 - 2006 / 2007 / 2008 / 2009 / 2010 Avalon:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2007 / 2008 / 2009 / 2010 Camry:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2008 / 2009 / 2010 Highlander:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2006 / 2007 / 2008 / 2009 / 2010 RAV4:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2007 / 2008 / 2009 / 2010 Sienna:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2009 / 2010 Venza:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”

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Diagnostic Procedure (Continued)

3. Inspect Air Fuel Ratio Sensor for the appropriate bank.

Does the Air Fuel Ratio Sensor have an open or short on the A1A+ or A1A- wires?

- **YES** — Repair the harness and reevaluate the Air Fuel Ratio Sensor operation. Confirm the previous DTC(s) do not reset.
- **NO** — Replace the applicable bank Air Fuel Ratio Sensor ONLY to correct the P2195/P0138 or P2197/P0158 DTC condition. Test drive the vehicle to confirm none of the previous DTC(s) reset.

4. Inspect Oxygen Sensor 2 Freeze Frame Data (FFD) values.

Is the O2S B#S2 voltage more than 1.10v and/or the O2S Impedance B#S2 more than 300 ohms when engine is at normal operating temperature?

- **YES** — Inspect O2 B#S2 circuit for open, short, or high resistance. If no harness issues are found, replace the appropriate bank O2 Sensor ONLY to correct the P0606 DTC.
- **NO** — Follow the Repair Manual diagnostic procedure for P0138/P0158 DTC:
 - 2005 Avalon:
Engine/Hybrid System – Engine Control – “SFI System: Diagnosis System”
 - 2006 / 2007 / 2008 / 2009 / 2010 Avalon:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2007 / 2008 / 2009 / 2010 Camry:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2008 / 2009 / 2010 Highlander:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2006 / 2007 / 2008 / 2009 / 2010 RAV4:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2007 / 2008 / 2009 / 2010 Sienna:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”
 - 2009 / 2010 Venza:
Engine/Hybrid System – Engine Control – “2GR-FE Engine Control System: SFI System: Diagnosis System”

If the MIL “ON” condition continues to occur after this procedure, refer to the Repair Manual for further diagnostic procedures and specifications.