
Introduction

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Foreword

THIS MANUAL CONTAINS INFORMATION ABOUT ON-BOARD DIAGNOSTIC (OBD) II FOR 1996 TO 2003 MODELS.

Applicable models: PRIZM and VIBE

This manual covers OBD II information and readiness code patterns. Systems of vehicle are described in separate each sections of this manual. OBD II information for each of these system is included within it's section.

Please refer to the individual repair manual for each model for troubleshooting and repair procedures.

DTC Chart

DTC	Document Title	See Page
P0100	Mass Airflow Sensor	Ce-1
P0101	Mass Airflow Sensor Range/Performance	Ce-2
P0105	Manifold Air Pressure Sensor	Ce-3
P0106	Manifold Air Pressure Sensor Range/Performance	Ce-4
P0110	Intake Air Temperature Sensor	Ce-6
P0115	Engine Coolant Temperature Sensor	Ce-8
P0116	Engine Coolant Temperature Sensor Range/Performance	Ce-10
P0120	Throttle Position Sensor	Ce-13
P0121	Throttle Position Sensor Range/Performance	Ce-14
P0125	Excessive Time to Closed Loop	Fu-1
P0128	Thermostat	Th-1
P0130	Front Oxygen Sensor (Bank 1)	Ho-3
P0133	Oxygen Sensor Slow Response (Bank 1)	Ho-5
P0135	Oxygen Sensor Heater (Bank 1 sensor 1)	Ho-1
P0136	Rear Oxygen Sensor (Bank 1)	Ho-7
P0141	Oxygen Sensor Heater (Bank 1 sensor 2)	Ho-1
P0150	Front Oxygen Sensor (Bank 2)	Ho-3
P0153	Oxygen Sensor Slow Response (Bank 2)	Ho-5
P0156	Rear Oxygen Sensor (Bank 2)	Ho-7
P0171	Too Lean/Rich Fuel Trim	Fu-2
P0172		
P0300	Misfire Detected	Mi-
P0301		
P0302		
P0303		
P0304		
P0325	Knock Sensor	Ce-15
P0335	Crankshaft Position Sensor	Ce-19
P0340	Camshaft Position Sensor	Ce-17
P0401	EGR Flow Insufficient	Eg-1
P0402	EGR Flow Excessive	Eg-3
P0420	Catalyst Deterioration	Ca-1
P0440	EVAP Monitor Introduction	Ev-1
P0441		
P0442		
P0446		
P0450		
P0451		
P0500	Vehicle Speed Sensor	Ce-20
P0505	Idle Speed Control System	Co-1
P0710	Transmission Fluid Temp. Sensor "A" Circuit	Ct-6
P0711	Transmission Fluid Temp. Sensor "A" Performance	Ct-8
P0750	Shift Solenoid "A" Performance (Shift Solenoid Valve S1)	Cm-1

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P0753	Shift Solenoid "A" Electrical (Shift Solenoid Valve S1)	Cm-15
P0755	Shift Solenoid "B" Performance (Shift Solenoid Valve S2)	Cm-18
P0758	Shift Solenoid "B" Electrical (Shift Solenoid Valve S2)	Cm-33
P0765	Shift Solenoid "D" Performance (Shift Solenoid Valve S4)	Cm-36
P0768	Shift Solenoid "D" Control Circuit (Shift Solenoid Valve S4)	Cm-40
P0770	Torque Converter Clutch Solenoid Performance (Shift Solenoid Valve SL)	Cm-45
P0773	Torque Converter Clutch Circuit Electrical (Shift Solenoid Valve SL)	Cm-51
P1300	Igniter	Co-3
P1305		
P1310		
P1315		
P1346	Variable Valve Timing (VVT) System Malfunction	Co-5
P1349	Valve Timing Advance/Retard	Co-4
P1520	Brake Switch "B" Circuit High	Ct-13
P1600	Power Supply for ECM	Ce-21
P1656	OCV (Oil Control Valve) for VVT (Variable Valve Timing)	Co-6
P1690	OCV (Oil Control Valve) for VVTL (Variable Valve Timing and Lift)	Co-7
P1692	VVTL (Variable Valve Timing and Lift) System Malfunction	Co-8
P1693		
P1725	Input/Turbine Speed Sensor Circuit No Signal	Ct-10
P1730	Intermediate Shaft Speed Sensor "A"	Ct-12
P1760	Pressure Control Solenoid "D" Electrical (Shift Solenoid Valve SLT)	Cm-42
P1780	Transmission Range Sensor Circuit Malfunction (PRNDL Input)	Ct-1
	Park/Neutral Switch Input Circuit	
P1790	Shift/Timing Solenoid (Shift Solenoid Valve ST)	Cm-38

Introduction

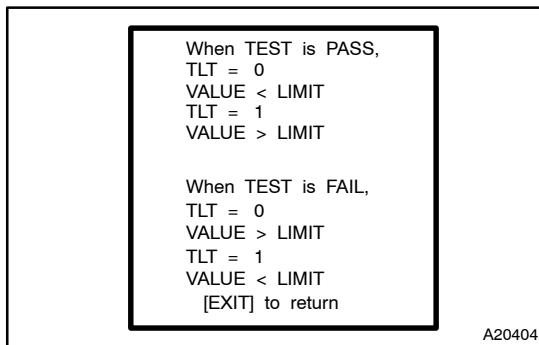
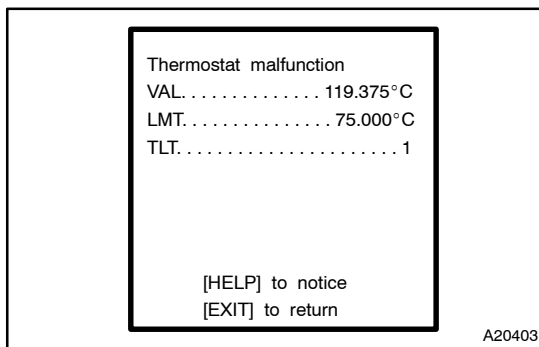
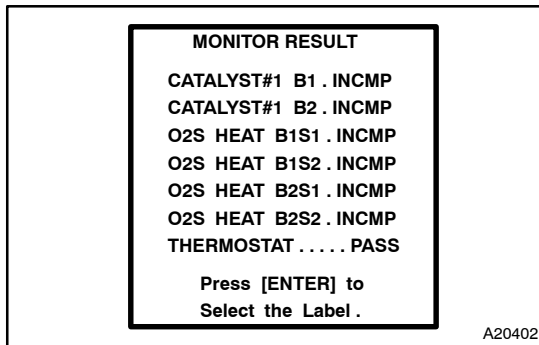
Continued:

DTC	Component/System	Monitor disablement (X: disabled)																												
		P0750-P0770	P0750-P0770	P0753-P0773	P1100	P1120,P1121	P1125,P1128	P1126	P1129	P1130,P1150	P1130,P1150	P1133,P1153	P1135,P1155	P1300-P1340	P1345,P1350	P1349,P1354	P1400,P1401	P1405,P1406	P1410	P1411	P1430	P1511,P1512	P1600	P1605	P1652-P1662	P1656,P1663	P1692,P1693	P1700-P1730	P1755-P1770	P1780
P0100, P0101	MAF sensor	X																												
P0105, P0106	MAP sensor	X																												
P0110	IAT sensor	X																												
P0115, P0116	ECT sensor	X	X																											
P0120, P0121	TP sensor	X																												
P0125	Closed loop	X																												
P0128	Thermostat																													
P0130-P0153	Fr O2S	X																												
P0135-P0161	Fr O2S heater	X																												
P0136, P0156	Rr O2S																													
P0141-0167	Rr O2S heater																													
P0171-P0174	Fuel system	X																												
P0300-P0308	Misfire	X																												
P0325, P0330	Knock sensor	X																												
P0335, P0336	CKP sensor	X																												
P0340	CMP sensor	X																												
P0385	CKP sensor 2	X																												
P0401	EGR system (closed)	X																												
P0402	EGR system (open)	X																												
P0420, P0430	Catalyst																													
P0440-P0446	EVAP system																													
P0450, P0451	EVAP press sensor																													
P0500	VSS	X	X																											
P0505	ISC valve																													
P0510	Idle switch	X																												
P0710	Trans fluid temp sensor																													
P0715-P0725	Input speed sensor																													
P0750-P0770	Trans solenoid (function)																													
P0753-P0773	Trans solenoid (range)	X	X																											
P1100	BARO sensor	X																												
P1120, P1121	Accel position sensor																													
P1125, P1128	Throttle motor																													
P1126	Electronic magnet clutch																													
P1129	Electronic throttle system																													
P1130, P1150	A/F sensor (rationality)	X																												
P1130, P1150	A/F sensor (open)	X																												
P1133, P1153	A/F sensor (slow response)	X																												
P1135, P1155	A/F sensor heater																													
P1300-P1340	Ignitor	X																												
P1345, P1350	VVT sensor1,2																													
P1349, P1354	VVT system1,2																													
P1400, P1401	Sub-TP sensor																													
P1405, P1406	Turbo press sensor																													
P1410, P1411	Lift sensor																													
P1430	Pressure sensor (HC adsorber)																													
P1511, P1512	Turbo VSV																													
P1600	Battery																													
P1605	Knock control module	X																												
P1652-P1662	Turbo VSV1-4																													
P1656, P1663	VVT VSV1,2	X																												
P1692, P1693	VVTL																													
P1700-P1730	Output speed sensor	X																												
P1755-P1770	Trans solenoid(SLU-SLD)	X																												
P1780	Shift lever position switch																													
P1780	PNP switch	X																												

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Checking Monitor Status



HINT:

"MONITOR RESULT" indicates normal or malfunction of each component and system when judgment has done.

How to read data:

- Connect the scan tool to the DLC3.
- Enter "MONITOR RESULT" from the "DIAGNOSIS/ENHANCED OBD II/MONITOR INFO/MONITOR RESULT" menu on the hand-held tester. You will see "Test ID" and "INCMP, Pass or Fail" on the MONITOR RESULT screen.

HINT:

- INCMP: The judgement has not been done yet.
 - PASS: Normal is detected.
 - FAIL: Malfunction is detected.
- Select a Test ID from the list that you want and press the ENTER button. You will see the screen as follows:
 - VAL (TEST VALUE) [Test Data] [Unit]
 - LMT (TEST LIMIT) [Test Limit] [Unit]
 - TLT [Test Limit Type]

- By pressing the "HELP" button, you can see more information as follows:

HINT:

- Monitor test results can be viewed in the Monitor Results screen.
- Mode 06 data indicates the latest malfunction judgement result of this diagnostic.
- TEST VALUE indicates the detection parameter value (Example: P0128 Thermostat Malfunction = Engine coolant temperature) at the time of malfunction (or normal) judgement is done.
- TEST LIMIT indicates a threshold of malfunction judgement (Example: P0128 Thermostat Malfunction = 75°C).
- When the monitor runs, the monitored Parameter's VALUE is recorded. The value is then compared to the Test LIMIT to determine if the result is PASS or FAIL.
- By comparing the Parameter VALUE to the Test LIMIT, it is possible to determine the degree of failure.
- In rare cases, the monitor may have passed even with a DTC set and MIL illuminated. The monitor may have failed on a previous trip, and then passed on the most recent trip. This would indicate an intermittent problem may be the cause of the DTC.

Decoding Mode 06 Data

HINT:

- Mode 06 data indicates monitor results (Test Data) and thresholds (Test Limit) for each diagnostic item when judging whether a component and system is normal or malfunctioning.
- Test ID stands for the components or systems in each diagnosis test. Comp ID stands for the divisional description for each Test ID.

Readiness Code Patterns

Purpose of the Readiness Tests

The On-Board Diagnostic (OBD II) system is designed to monitor the performance of emission-related components and report any detected abnormalities in the form of Diagnostic Trouble Codes (DTCs). Since the various components need to be monitored during different driving conditions, the OBD II system is designed to run separate monitoring programs called Readiness Monitors. Many state emissions inspection and maintenance (I/M) programs require that vehicles complete their Readiness Monitors prior to beginning an emissions test.

NOTE:

A diagnostic trouble code for a subsystem or component within a subsystem will not set until the associated readiness monitor is complete.

The readiness monitor status will be reset to incomplete if:

- S The battery is disconnected.
- S DTCs have been cleared.
- S The monitor drive cycle has not been completed.

The monitor status can be checked using an OBDII scan tool. When using hand-held tester, monitor status can be found in the Enhanced OBDII Extended Data List or under CARB OBDII. In the event that any monitors show incomplete, follow the appropriate Readiness Monitor Drive Pattern to change the readiness status to "complete".

Steps	Readiness Code Patterns
1	EGR Monitor
2	Catalyst Monitor
3	EVAP Monitor (Fuel tank pressure monitor)
4	EVAP Monitor (Vacuum monitor)
5	Heated Oxygen Sensor Monitor
6	Oxygen Sensor Heater

CAUTION:

Strict observance of posted speed limits, traffic laws, and road conditions are required when performing these drive patterns.

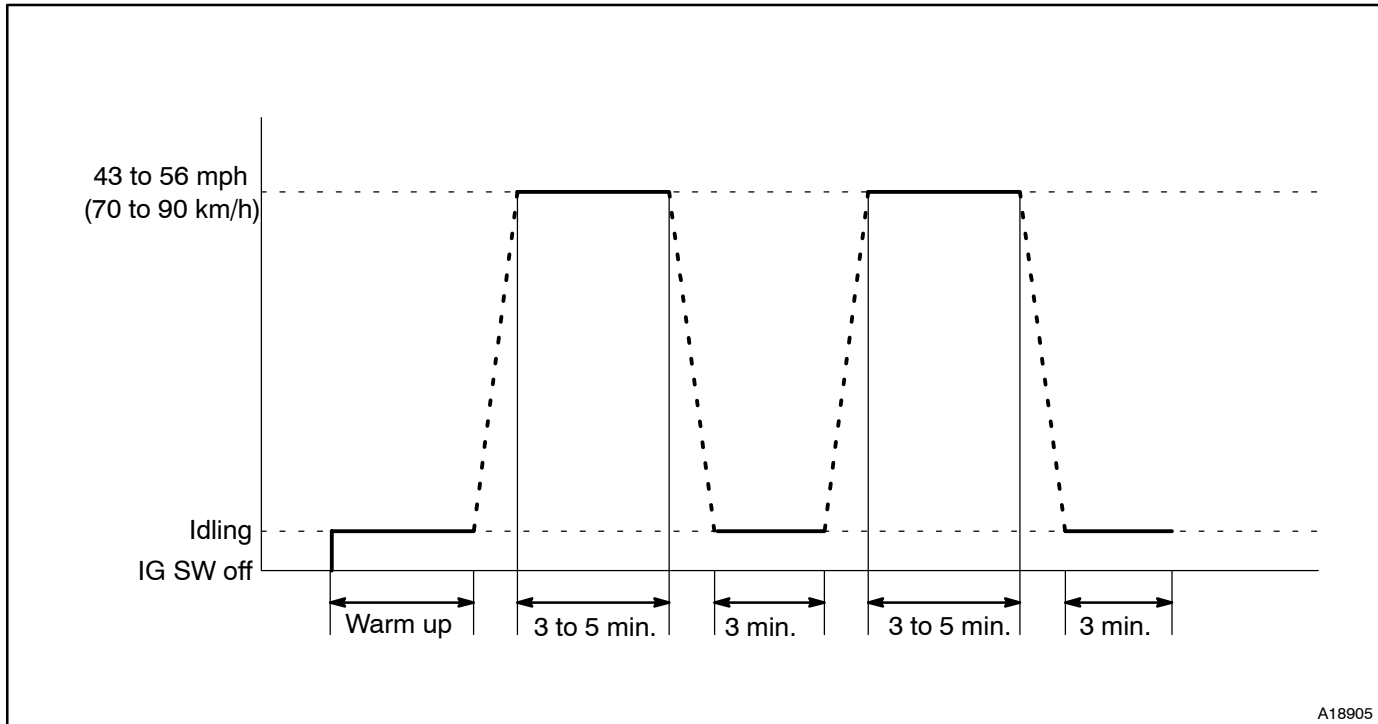
NOTE:

These drive patterns represent the fastest method to satisfy all necessary conditions which allow the specific readiness monitor to complete.

In the event that the drive pattern must be interrupted (possibly due to traffic conditions or other factors) the drive pattern can be resumed and, in most cases, the readiness monitor will still set to complete.

To ensure rapid completion of readiness monitors, avoid sudden changes in vehicle load and speed (driving up and down hills and/or sudden acceleration).

1. EGR Monitor



Preconditions

The monitor will not run unless:

- MIL is OFF
- Altitude is 7,870 feet (2,400 m) or less
- Intake Air Temperature (IAT) is 14°F (-10°C) or higher
- Engine Coolant Temperature (ECT) is 167°F (75°C) or higher

Drive Pattern

- (a) Connect the OBDII scan tool to the DLC3 to check monitor status and preconditions.
- (b) If IAT is less than 50°F (10°C) when starting the engine, idle the engine for approximately 10 minutes.
- (c) Drive vehicle at 43 – 56 mph (70 – 90 km/h) for a period of 3 – 5 minutes.

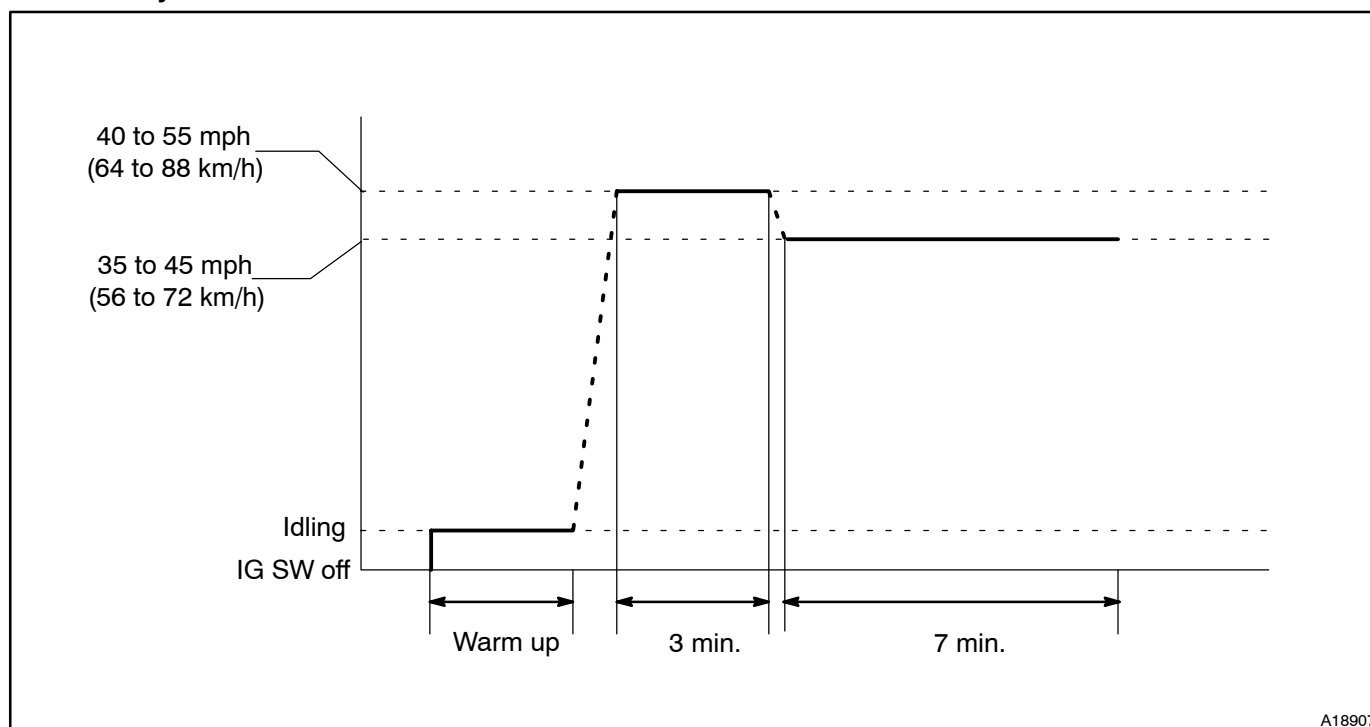
NOTICE:

Do not allow the Throttle Position (TP) to exceed 30%.

Drive with smooth throttle operation and avoid sudden acceleration.

- (d) Stop vehicle and let engine idle for 3 – 5 minutes.
- (e) Repeat steps "c" and "d" once.
- (f) If readiness status does not switch to complete, ensure preconditions are met, turn ignition off, and then repeat steps "c" through "e".

2. Catalyst Monitor



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Preconditions

The monitor will not run unless:

- MIL is OFF
- Intake Air Temperature (IAT) is 14°F (-10°C) or higher*
- Engine Coolant Temperature (ECT) is 176°F (80°C) or higher

* **NOTE for 2002 MY and later:**

The readiness test can be completed in cold ambient conditions (less than 14°F/-10°C), if the drive pattern is repeated a second time after cycling the ignition off.

Drive Pattern

- Connect the OBDII scan tool to the DLC3 to check monitor status and preconditions.
- Drive vehicle at 40 – 55 mph (64 – 88 km/h) for approximately 3 minutes.

NOTICE:

Drive with smooth throttle operation and avoid sudden acceleration.

If IAT is less than 50°F (10°C) when starting engine, continue to drive vehicle at 40 – 55 mph (64 – 88 km/h) for approximately 4 minutes.

- Drive vehicle at 35 – 45 mph (56 – 72 km/h) for approximately 7 minutes.

NOTICE:

Drive with smooth throttle operation and avoid sudden deceleration as much as possible (avoid sudden, full closure of the throttle).

- If readiness status does not switch to complete, ensure preconditions are met, turn ignition off, and then repeat steps "b" through "c".

3. EVAP Monitor (Fuel tank pressure monitor)

IMPORTANT

To complete the "Internal Pressure Readiness" monitor, you must perform a "Cold Soak" procedure prior to conducting the driving pattern procedure.

Cold Soak Preconditions

The monitor will not run unless:

- MIL is OFF
- Fuel level is approximately 1/2 to 3/4
- Altitude is 7,870 feet (2,400 m) or less

Cold Soak Procedure

- Start the engine and allow coolant temperature to reach 176°F (80°C) or higher
- Let vehicle cold cold soak for 8 hours or until the difference between IAT and ECT is less than 13°F (7°C)

Examples:

Scenario 1

ECT = 75°F (24°C)

IAT = 60°F (16°C)

Difference between ECT and IAT is 15°F (8°C)

→ The monitor will not run because difference between ECT and IAT is greater than 13°F (7°C)

Scenario 2

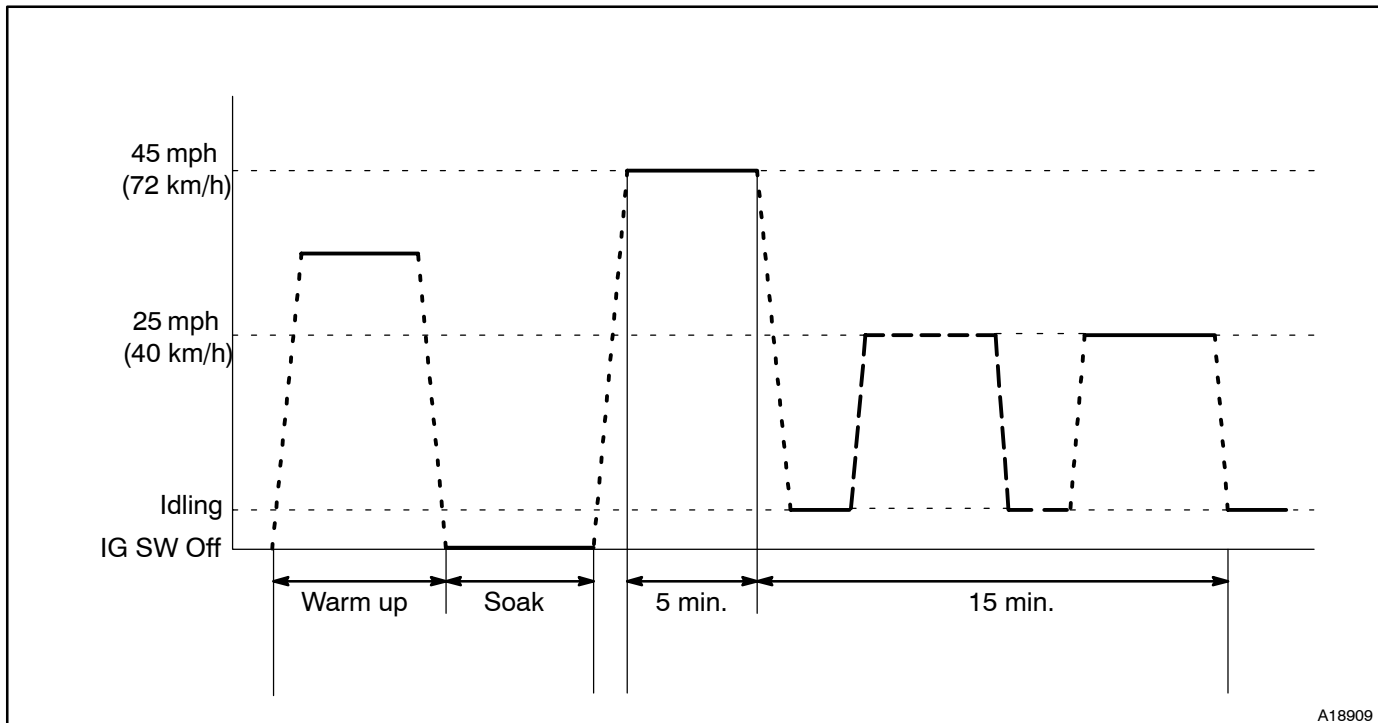
ECT = 70°F (21°C)

IAT = 68°F (20°C)

Difference between ECT and IAT is 2°F (1°C)

→ The monitor will run because difference between ECT and IAT is less than 13°F (7°C)

EVAP MONITOR DRIVING PATTERN



Preconditions

The monitor will not run unless:

- MIL is OFF
- Fuel level is approximately 1/2 to 3/4
- Altitude is 7,800 feet (2,400 m) or less
- Engine Coolant Temperature (ECT) is between 14°F and 95°F (-10°C and 35°C)
- Intake Air Temperature (IAT) is between 14°F and 95°F (-10°C and 35°C)
- Cold Soak Procedure has been completed
- Before starting the engine, the difference between ECT and IAT must be less than 13°F (7°C)

Examples:

Scenario 1

ECT = 75°F (24°C)

IAT = 60°F (16°C)

Difference between ECT and IAT is 15°F (8°C)

→ The monitor will not run because difference between ECT and IAT is greater than 13°F (7°C)

Scenario 2

ECT = 70°F (21°C)

IAT = 68°F (20°C)

Difference between ECT and IAT is 2°F (1°C)

→ The monitor will run because difference between ECT and IAT is less than 13°F (7°C)

Drive Pattern

(c) Connect the OBDII scan tool to the DLC3 to check monitor status and preconditions.

NOTICE:

Do not turn the ignition off until drive pattern is complete.

(d) Release pressure in fuel tank by removing and then reinstalling the fuel tank cap.

(e) Start the engine and immediately begin driving as directed.

NOTICE:

Drive on smooth roads to minimize fuel sloshing.

(f) Drive vehicle at approximately 45 mph (72 km/h) for about 5 minutes.

(g) Drive vehicle at approximately 25 mph (40 km/h) for about 15 minutes and include a minimum of two stops for approximately 30 seconds.

(h) The monitor should complete within approximately 20 minutes. If it does not, ensure preconditions are met, repeat step "e".

4. EVAP Monitor (Vacuum monitor)

IMPORTANT

To complete the "Internal Pressure Readiness" monitor, you must perform a "Cold Soak" procedure prior to conducting the driving pattern procedure.

Cold Soak Preconditions

The monitor will not run unless:

- MIL is OFF
- Fuel level is approximately 1/2 to 3/4
- Altitude is 7,870 feet (2,400 m) or less

Cold Soak Procedure

Let vehicle cold soak for 8 hours or until the difference between IAT and ECT is less than 13°F (7°C)

Examples:

Scenario 1

ECT = 75°F (24°C)

IAT = 60°F (16°C)

Difference between ECT and IAT is 15°F (8°C)

→ The monitor will not run because difference between ECT and IAT is greater than 13°F (7°C)

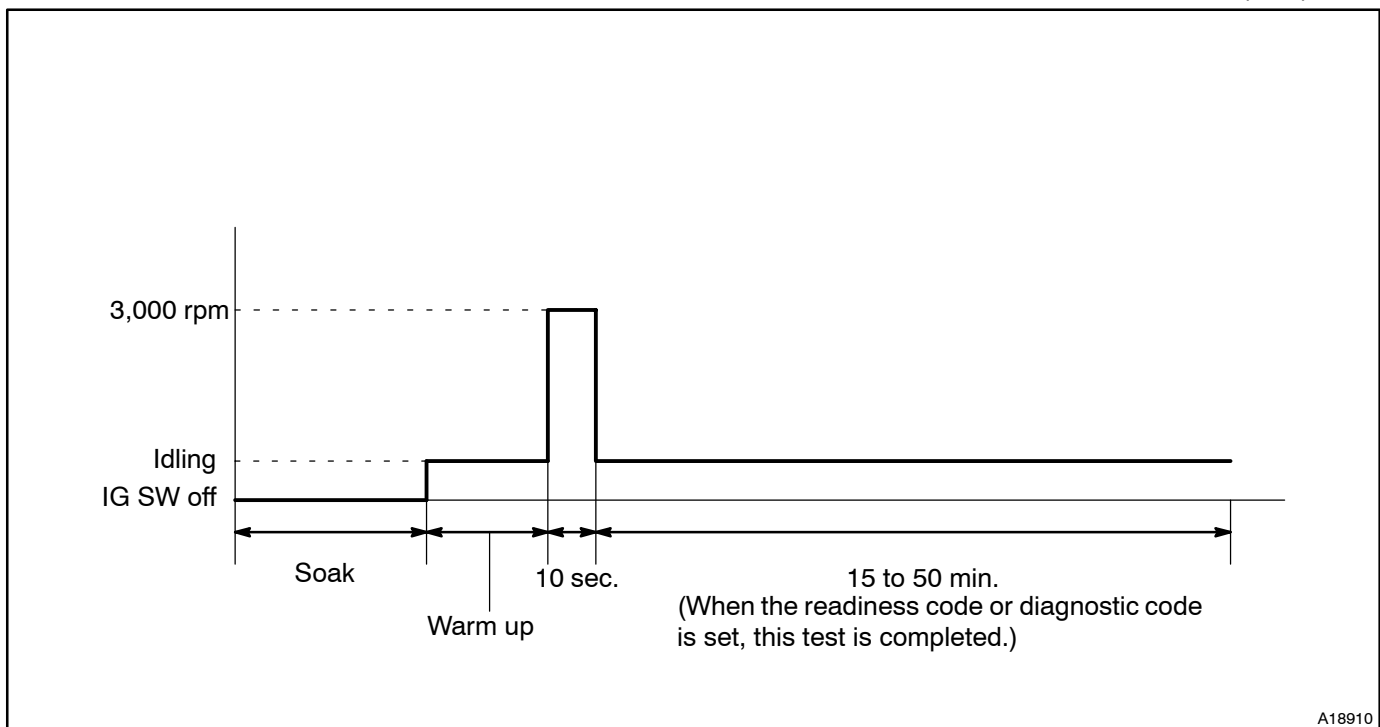
Scenario 2

ECT = 70°F (21°C)

IAT = 68°F (20°C)

Difference between ECT and IAT is 2°F (1°C)

→ The monitor will run because difference between ECT and IAT is less than 13°F (7°C)



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Preconditions

The monitor will not run unless:

- MIL is OFF
- Fuel level is approximately 1/2 to 3/4
- Altitude is 7,870 feet (2,400 m) or less*
- Engine Coolant Temperature (ECT) is between 40°F and 95°F (4.4°C and 35°C)
- Intake Air Temperature (IAT) is between 40°F and 95°F (4.4°C and 35°C)*
- Cold Soak Procedure has been completed

Introduction

- Before starting the engine, the difference between ECT and IAT must be less than 13°F (7°C)

Examples:

Scenario 1

ECT = 75°F (24°C)

IAT = 60°F (16°C)

Difference between ECT and IAT is 15°F (8°C)

→ The monitor will not run because difference between ECT and IAT is greater than 13°F (7°C)

Scenario 2

ECT = 70°F (21°C)

IAT = 68°F (20°C)

Difference between ECT and IAT is 2°F (1°C)

→ The monitor will run because difference between ECT and IAT is less than 13°F (7°C)

*** NOTE for 2002 and later MY vehicles:**

The readiness test can be completed in cold ambient conditions (less than 40°F/4.4°C) and/or at high altitudes (more than 7,870 feet/2,400 m) if the drive pattern is repeated a second time after cycling the ignition off.

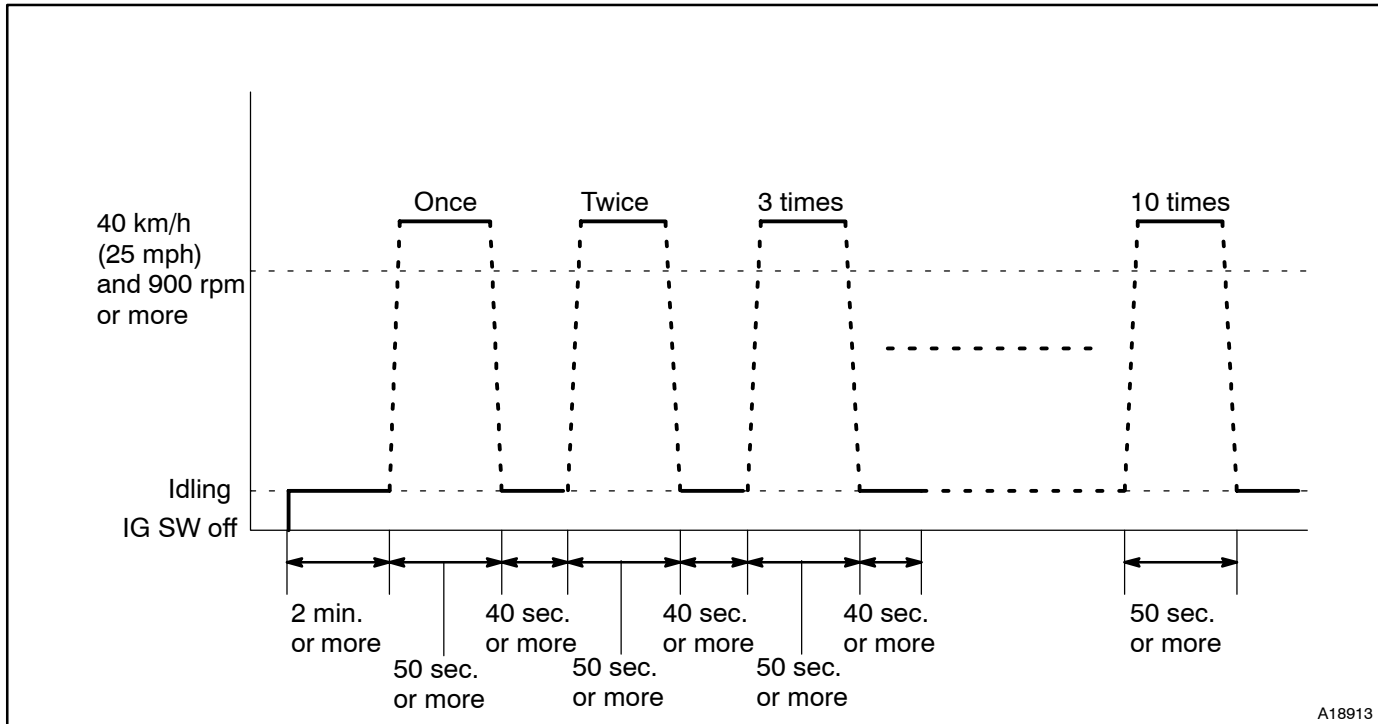
Drive Pattern

- Connect the OBDII scan tool to the DLC3 to check monitor status and preconditions.
- Release pressure in fuel tank by removing and then reinstalling the fuel tank cap.
- Start the engine and allow to idle until ECT is 167°F (75°C) or higher.
- Run the engine at 3,000 rpm for about 10 seconds.
- Allow engine to idle with the A/C ON (to create a slight load) for 15 – 50 minutes.

NOTICE: If vehicle is not equipped with A/C

- **Securely set the parking brake.**
- **Block the drive wheels with wheel chocks.**
- **Allow vehicle to idle in drive for 15 – 50 minutes.**

5. Heated Oxygen Sensor Monitor



Preconditions

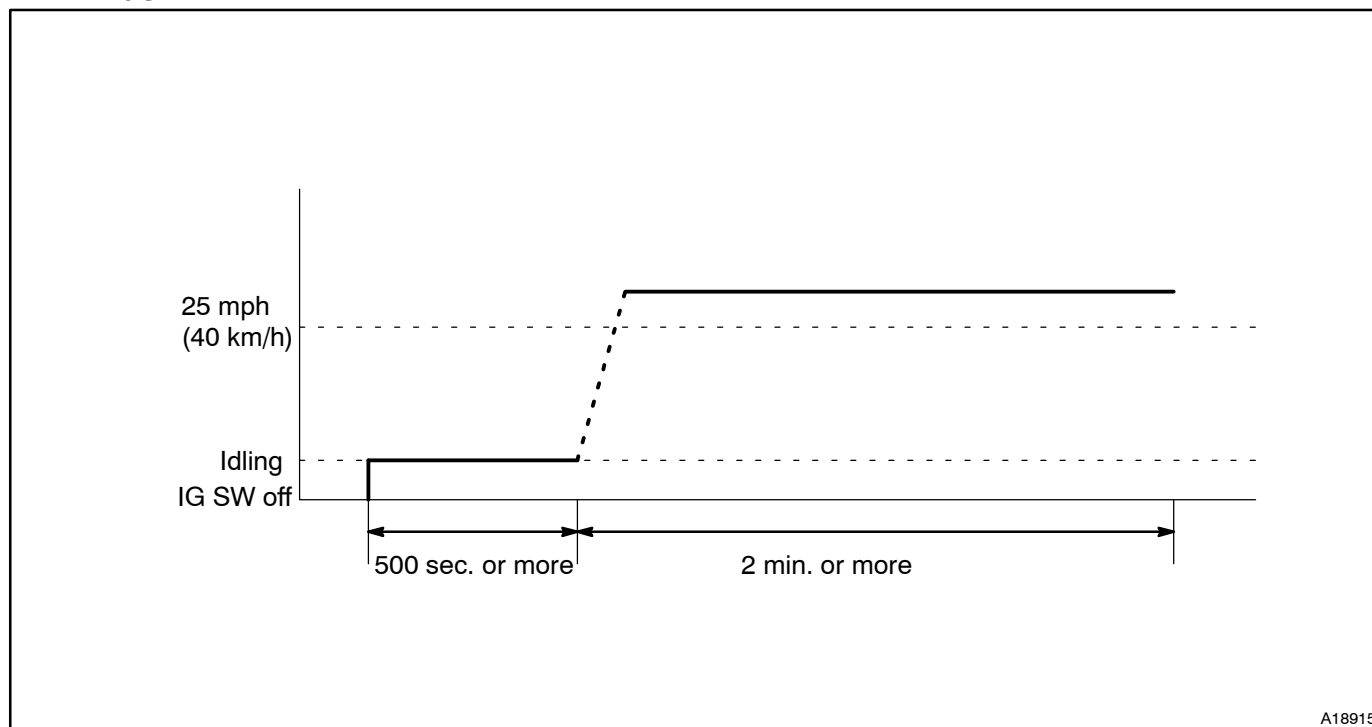
The monitor will not run unless:

- MIL is OFF

Drive Pattern

- Connect the OBDII scan tool to the DLC3 to check monitor status and preconditions.
- Start the engine and allow to idle for 2 minutes or more.
- Drive vehicle at 25 mph (40 km/h) or more for at least 50 seconds.
- Stop vehicle and allow engine to idle for 40 seconds or more.
- Perform steps "c" and "e" ten times.
- If readiness status does not switch to complete, ensure preconditions are met, turn ignition off and then repeat steps "a" through "e".

6. Oxygen Sensor Heater Monitor



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Preconditions

The monitor will not run unless:

- MIL is OFF

Drive Pattern

- Connect the OBDII scan tool to the DLC3 to check monitor status and preconditions.
- Start the engine and allow to idle for 9 minutes.
- Drive vehicle at 25 mph (40 km/h) or more for at least 2 minutes.
- If readiness status does not switch to complete, ensure preconditions are met, turn ignition off and then repeat steps "b" and "c".

OBD II Monitor Strategies Chart

Section	Document	Contents	DTC	See Page
Components Engine Inputs	MAF sensor	Mass Airflow Sensor	P0100	Ce-1
		Mass Airflow Sensor Range/Performance	P0101	Ce-2
	MAP Sensor	Manifold Air Pressure Sensor	P0105	Ce-3
		Manifold Air Pressure Sensor Range/Performance	P0106	Ce-4
	IAT Sensor	Intake Air Temperature Sensor	P0110	Ce-6
	ECT Sensor	Engine Coolant Temperature Sensor	P0115	Ce-8
		Engine Coolant Temperature Sensor Range/Performance	P0116	Ce-10
	Throttle Position Sensor	Throttle Position Sensor	P0120	Ce-13
		Throttle Position Sensor Range/Performance	P0121	Ce-14
	Knock Sensor	Knock Sensor	P0325	Ce-15
	Camshaft Position Sensor	Camshaft Position Sensor	P0340	Ce-17
	Crankshaft Position Sensor	Crankshaft Position Sensor	P0335	Ce-19
Vehicle Speed Sensor	Vehicle Speed Sensor	P0500	Ce-20	
ECM	Power Supply for ECM	P1600	Ce-21	
Components Engine Outputs	Idle Speed Control System	Idle Speed Control System	P0505	Co-1
	Igniter	Igniter (Cylinder No. 1)	P1300	Co-3
		Igniter (Cylinder No. 2)	P1305	
		Igniter (Cylinder No. 3)	P1310	
		Igniter (Cylinder No. 4)	P1315	
	VVT System	Valve Timing Advance/Retard	P1349	Co-4
		VVT System Malfunction	P1346	Co-5
		OCV for VVT	P1656	Co-6
	VVTL System	OCV for VVTL	P1690	Co-7
		VVTL System Malfunction	P1692	Co-8
P1693				
Heated Oxygen Sensor	Oxygen Sensor Heater	Oxygen Sensor Heater	P0135	Ho-1
		P0141		
	Oxygen Sensor	Front Oxygen Sensor	P0130	Ho-3
			P0150	
		Oxygen Sensor Slow Response	P0133	Ho-5
			P0153	
Rear Oxygen Sensor	P0136	Ho-7		
	P0156			
Thermostat	Thermostat	Thermostat	P0128	Th-1
Fuel System	Closed Loop Control	Excessive Time to Closed Loop	P0125	Fu-1
	Fuel Trim	Too Lean/Rich Fuel Trim	P0171	Fu-2
			P0172	

Introduction

Section	Document	Contents	DTC	See Page
Misfire	Misfire Detected	Misfire Detected	P0300	Mi-1
			P0301	
			P0302	
			P0303	
			P0304	
EGR System	EGR System	EGR Flow Insufficient	P0401	Eg-1
		EGR Flow Excessive	P0402	Eg-3
Catalyst	Catalyst Monitor	Catalyst Deterioration	P0420	Ca-1
EVAP System	EVAP System Introduction			Ev-1
	Fuel Tank Pressure Monitor	EVAP Leak	P0440	Ev-6
		VSV for EVAP	P0441	Ev-8
		VSV for Vapor Pressure Sensor	P0446	Ev-10
	Vacuum Monitor	EVAP Leak (0.040 in)	P0440	Ev-12
		EVAP Leak (0.020 in)	P0442	
		VSV for EVAP	P0441	Ev-14
		CCV or VSV for Bypass Valve	P0446	Ev-15
	Vapor Pressure Sensor	Vapor Pressure Sensor	P0450	Ev-17
		Vapor Pressure Sensor Range/Performance	P0451	Ev-18
Component Transmission Input	Shift Range	Transmission Range Sensor Circuit Malfunction (PRNDL Input)	P1780	Ct-1
		Park/Neutral Switch Input Circuit		
	Transmission Temp. Sensor	Transmission Fluid Temp. Sensor "A" Circuit	P0710	Ct-6
		Transmission Fluid Temp. Sensor "A" Performance	P0711	Ct-8
	Speed Sensor	Input/Turbine Speed Sensor Circuit No Signal	P1725	Ct-10
		Intermediate Shaft Speed Sensor "A"	P1730	Ct-12
	Brake Switch	Brake Switch "B" Circuit High	P1520	Ct-13
Component Transmission Output	Solenoid	Shift Solenoid "A" Performance (Shift Solenoid Valve S1)	P0750	Cm-1
		Shift Solenoid "A" Electrical (Shift Solenoid Valve S1)	P0753	Cm-15
		Shift Solenoid "B" Performance (Shift Solenoid Valve S2)	P0755	Cm-18
		Shift Solenoid "B" Electrical (Shift Solenoid Valve S2)	P0758	Cm-33
		Shift Solenoid "D" Performance (Shift Solenoid Valve S4)	P0765	Cm-36
		Shift/Timing Solenoid (Shift Solenoid Valve ST)	P1790	Cm-38
		Shift Solenoid "D" Control Circuit (Shift Solenoid Valve S4)	P0768	Cm-40

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Section	Document	Contents	DTC	See Page
Component Transmission Output	Solenoid	Pressure Control Solenoid "D" Electrical (Shift Solenoid Valve SLT)	P1760	Cm-42
		Torque Converter Clutch Solenoid Performance (Shift Solenoid Valve DSL)	P0770	Cm-45
		Torque Converter Clutch Circuit Electrical (Shift Solenoid Valve DSL)	P0773	Cm-51

Introduction

Terms

1. Definition of terms

Each monitor description follows a standardized format using these terms:

Terminology	Definition
Duration	Once the "Enabling Conditions" are satisfied this is the length of time that a monitored value exceed threshold limits before the ECM will set a DTC.
Frequency of operation	The number of times that the ECM runs this monitor per driving cycle. "Once per driving cycle" means that the ECM detects malfunction only one time during a single driving cycle. "Continuous" means that the ECM detects malfunction every time the monitored value(s) exceed or deviate from the thresholds during a single driving cycle.
Typical Malfunction Thresholds	The specified value(s) for a diagnostic test. The ECM will set a DTC when values exceed or below these limits.
MIL operation	MIL ON timing after a DTC is set. "Immediate" means that the ECM illuminates MIL the instant the ECM detects a malfunction and sets a DTC. "2 driving cycle" means that the ECM illuminates the MIL if the same malfunction is detected in the 2nd driving cycle.
Monitor description	The method and procedures that the ECM uses to detect malfunctions.
Related DTCs	This DTC plus other DTCs that are related to this system.
Required sensors/components	The sensors are used by the ECM to detect malfunctions.
Sequence of operation	Monitor priority when multiple components or sensors are involved. While another sensor diagnostic is in progress, the next sensor or component will not be monitored until the previous diagnostic is concluded.
Typical Enabling Conditions	Preconditions that must be met before the ECM will begin a diagnostic test. With all preconditions satisfied, the ECM sets the DTC when a monitored value(s) exceeds the malfunction threshold(s).

2. Part and system name list

This reference list indicates the part names used in this manual along with their definitions.

TOYOTA/LEXUS name	Definition
Variable Valve Timing sensor, VVT sensor	Camshaft position sensor
Variable valve timing system, VVT system	Camshaft timing control system
Oil control valve for Variable Valve Timing, OCV for VVT, VVT OCV	Camshaft timing oil control valve
Variable timing and lift, VVTL	Camshaft timing and lift control
Engine speed sensor	Crankshaft position sensor
Knock sensor	Engine knock sensor
Internal control module, Control module, Engine control ECU, PCM	Powertrain control module
FC idle	Deceleration fuel cut
Idle air control	Idle speed control
CCV, Canister closed valve	Evaporative emissions canister vent valve
VSV for EVAP	Evaporative emissions canister purge valve
VSV for bypass valve, VSV for vapor pressure sensor	Evaporative emission pressure switching valve
Vapor pressure sensor	Fuel tank pressure sensor
Charcoal canister, Canister	Evaporative emissions canister
ORVR system	On-board refueling vapor recovery system
Intake manifold runner control	Intake manifold turning system
Intake manifold runner valve, IMRV, IACV (runner valve)	Intake manifold turning valve

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Intake control VSV	Intake manifold turning solenoid valve
O2 sensor	Heater oxygen sensor
Oxygen sensor pumping current circuit	Oxygen sensor output signal
Oxygen sensor reference ground circuit	Oxygen sensor signal ground
Accel position sensor	Accelerator pedal position sensor
Throttle actuator control motor, Actuator control motor, Electronic throttle motor, Throttle control motor	Electronic throttle actuator
Electronic throttle control system, Throttle actuator control system	Electronic throttle control system
Throttle/pedal position sensor, Throttle/pedal position switch, Throttle position sensor/switch	Throttle position sensor
P/S pressure switch	Power-steering pressure switch
Speed sensor, Vehicle speed sensor "A", Speed sensor for skid control ECU	Vehicle speed sensor
ATF temperature sensor, Trans. fluid temp. sensor, ATF temperature sensor "A"	Transmission fluid temperature sensor
Electronic controlled automatic transmission, ECT	Electronically controlled automatic transmission
Intermediate shaft speed sensor "A"	Counter gear speed sensor
Output speed sensor	Output shaft speed sensor
Input speed sensor, Input turbine speed sensor "A", Speed sensor (NT), Turbine speed sensor	Input turbine speed sensor
PNP switch, NSW	Park/neutral position switch
Pressure control solenoid	Transmission pressure control solenoid
Shift solenoid	Transmission shift solenoid valve
Transmission control switch, Shift lock control unit	Shift lock control module
Engine immobilizer system, Immobilizer system	Vehicle anti-theft system

3. Abbreviations list in this manual

Abbreviations	Meaning
A	
A/C	Air Conditioning
ACM	Active control engine mount
AFS	Air fuel ratio sensor
AP	Accelerator Pedal
A/T	Automatic Transmission (Transaxle)
ATF	Automatic Transmission Fluid
B	
B+	Battery Positive Voltage
BARO	Barometric Pressure
C	
CL	Closed Loop
Calif.	California
CCV	Canister Closed Valve (Chacoal Canister Vent)
CPU	Central Processing Unit
D	
DLC1	Data Link Connector 1
DLC2	Data Link Connector 2
DLC3	Data Link Connector 3

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DTC	Diagnostic Trouble Code
DTM	Diagnostic Test Mode
E	
ECT	Engine Coolant Temperature
ECT	Electronically Controlled automatic Transmission
ECM	Engine Control Module
ECU	Electronic Control Unit
EEPROM	Electrically Erasable Programmable Read Only Memory
E/G	Engine
EVAP	Evaporative Emissions
F	
FC	Fan Control
Fed.	Federal
FEEPROM	Flash Electrically Erasable Programmable Read Only Memory
FEPROM	Flash Erasable Programmable Read Only Memory
Fr	Front
G	
GND	Ground
GSA	Gear Shift Actuator
H	
HC	Hydrocarbons
HPU	Hydraulic Power Unit
I	
IAC	Idle Air Control
IAT	Intake Air Temperature
ISC	Idle Speed Control
L	
LH	Left-Hand
M	
MAF	Mass Airflow
MAP	Manifold Air Pressure
min.	Minute(s)
M/T	Manual Transmission (Transaxle)
MY	Model Year
N	
NVRAM	Non-Volatile Random Access Memory
O	
OBD	On-Board Diagnostic
OCV	Oil Control Valve
O/D	Overdrive
OP	Open Loop
P	
PCM	Powertrain Control Module
PNP	Park/Neutral Position
PROM	Programmable Read Only Memory
PS, P/S	Power Steering

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PSP	Power Steering Pressure
R	
RAM	Random Access Memory
rev.	Revolution(s)
RH	Right-Hand
RM	Relay Module
ROM	Read Only Memory
rpm, RPM	Revolution Per Minutes
Rr	Rear
S	
SAE	Society of Automotive Engineers Inc.
sec.	Second(s)
STD	Standard
SMT	Sequential Manual Transmission
SRI	Service Reminder Indicator
SRT	System Readiness Test
ST	Scan Tool
SW	Switch
T	
TCM	Transmission Control Module
THA	Intake air temperature
T/M	Transmission
TP	Throttle Position
TR	Transmission Range
V	
VR	Voltage Regulator
VSS	Vehicle Speed Sensor
VSV	Vacuum Switching Valve
VVT	Variable Valve Timing (System)
VVTL	Variable Valve Timing and Lift (System)
W	
w/	With
w/o	Without