

DIAGNOSTIC TEST MODE [LF]

B3E010200102T02

- To meet EOBD regulations, the following diagnostic test modes have been adopted.

Diagnostic test mode	Item
Mode 01	Sending diagnostic data (PID data monitor/On-board system readiness test)
Mode 02	Sending freeze frame data
Mode 03	Sending emission-related malfunction code (DTC)
Mode 04	Clearing/resetting emission-related malfunction information
Mode 06	Sending intermittent monitoring system test results (DMTR)
Mode 07	Sending continuous monitoring system test results (pending code)
Mode 09	Request vehicle information

Sending Diagnostic Data

PID data monitor

- The PID data monitor items are shown below.

PID data monitor table

Support item	Unit	
Monitor status since DTCs cleared	No unit	
Fuel system loop status	Refer to list below.	
LOAD	%	
ECT	°C	°F
Short term fuel trim	%	
Long term fuel trim	%	
MAP	kPa	
Engine speed	rpm	
Vehicle speed	km/h	mph
Spark advance	°	
IAT	°C	°F
MAF	g/s	
Absolute TP	%	
O2S location	No unit	
Input voltage from front HO2S	V	
Input voltage from rear HO2S	V	
OBD requirement according to vehicle design	No unit	
Time since engine start	s	
Distance travelled while MIL is activated	km	miles
EGR valve control signal	%	
Purge solenoid valve control signal	%	
Number of warm-ups since DTCs cleared	No unit	
Distance travelled since DTCs cleared	km	miles

BARO	kPa	
Estimated catalyst converter temperature	°C	°F
Monitor status this DC	No unit	
PCM voltage	V	
Absolute load value	%	
Commanded equivalence ratio	No unit	
Relative TP	%	

Meaning of fuel system loop status

- The following information is displayed on the tester.
 - Feedback stops: ECT is lower than the determined feedback zone.
 - Feedback operating: HO2S being used for feedback is normal.
 - Feedback stops: Open loop due to driving condition
 - Feedback stops: Open loop due to detected system fault
 - Feedback operating: Malfunction occurred in HO2S (rear) system

On-board system readiness test

- The items supported by the on-board system readiness test are shown below.

Continuous monitoring system

- HO2S heater
- Fuel system
- Misfire
- CCM

Intermittent monitoring system

- HO2S
- Catalyst

Sending Freeze Frame Data

- The Freeze Frame Data monitor items are shown below.

Freeze Frame Data monitor table

Support item	Unit	
DTC that caused required Freeze Frame Data storage	No unit	
Fuel system loop status	Refer to list below.	
LOAD	%	
ECT	°C	°F
Short term fuel trim	%	
Long term fuel trim	%	
MAP	kPa	
Engine speed	rpm	
Vehicle speed	km/h	mph
Spark advance	°	
IAT	°C	°F
MAF	g/s	
Absolute TP	%	

Time since engine start	s
EGR valve control signal	%
Purge solenoid valve control signal	%
Number of warm-ups since DTCs cleared	No unit
Distance travelled since DTCs cleared	km miles
BARO	kPa
Estimated catalyst converter temperature	°C °F
PCM voltage	V
Absolute load value	%
Commanded equivalence ratio	No unit
Relative TP	%

Meaning of fuel system loop status

- The following information is displayed on the tester.
 - Feedback stops: ECT is lower than the determined feedback zone.
 - Feedback operating: HO2S being used for feedback is normal.
 - Feedback stops: Open loop due to driving condition
 - Feedback stops: Open loop due to detected system fault
 - Feedback operating: Malfunction occurred in HO2S (rear) system

Sending Emission-related Malfunction Code

- The DTCs are shown below.

DTC table

×: Applicable
 -: Not applicable

DTC No.	Condition	MIL	DC	Monitor item	Memory function
P0031	Front HO2S heater circuit low input	ON	2	HO2S heater	×
P0032	Front HO2S heater circuit high input	ON	2	HO2S heater	×
P0037	Rear HO2S heater circuit low input	ON	2	HO2S heater	×
P0038	Rear HO2S heater circuit high input	ON	2	HO2S heater	×
P0101	MAF sensor circuit range/performance problem	ON	2	CCM	×
P0102	MAF sensor circuit low input	ON	1	CCM	×
P0103	MAF sensor circuit high input	ON	1	CCM	×
P0107	MAP sensor circuit low input	ON	1	CCM	×
P0108	MAP sensor circuit high input	ON	1	CCM	×
P0111	IAT sensor circuit range/performance problem	ON	2	CCM	×
P0112	IAT sensor circuit low input	ON	1	CCM	×
P0113	IAT sensor circuit high input	ON	1	CCM	×
P0117	ECT sensor circuit low input	ON	1	CCM	×
P0118	ECT sensor circuit high input	ON	1	CCM	×
P0121	TP sensor stuck closed	ON	2	CCM	×
P0122	TP sensor circuit low input	ON	1	CCM	×
P0123	TP sensor circuit high input	ON	1	CCM	×
P0125	Excessive time to enter closed loop fuel control	ON	2	CCM	×

P0132	Front HO2S circuit high input	ON	2	HO2S	x
P0133	Front HO2S circuit problem	ON	2	HO2S	x
P0134	Front HO2S no activity detected	ON	2	HO2S	x
P0138	Rear HO2S circuit high input	ON	2	HO2S	x
P0140	Rear HO2S no activity detected	ON	2	HO2S	x
P0300	Random misfire detected	Flash/ON	1 or 2	Misfire	x
P0301	Cylinder No.1 misfire detected	Flash/ON	1 or 2	Misfire	x
P0302	Cylinder No.2 misfire detected	Flash/ON	1 or 2	Misfire	x
P0303	Cylinder No.3 misfire detected	Flash/ON	1 or 2	Misfire	x
P0304	Cylinder No.4 misfire detected	Flash/ON	1 or 2	Misfire	x
P0327	KS circuit low input	ON	1	CCM	x
P0328	KS circuit high input	ON	1	CCM	x
P0335	CKP sensor circuit problem	ON	1	CCM	x
P0340	CMP sensor circuit problem	ON	1	CCM	x
P0403	EGR valve (stepper motor) circuit problem	ON	2	CCM	x
P0420	Catalyst system efficiency below threshold	ON	2	Catalyst	x
P0443	Purge solenoid valve circuit problem	ON	2	CCM	x
P0480	Cooling fan control circuit problem	OFF	1	Other	x
P0500	VSS circuit problem	ON	2	CCM	x
P0505	IAC system problem	OFF	-	Other	-
P0506	Idle control system RPM lower than expected	ON	2	CCM	x
P0507	Idle control system RPM higher than expected	ON	2	CCM	x
P0511	IAC valve circuit problem	ON	1	CCM	x
P0602	PCM programming error	ON	1	CCM	x
P0610	PCM vehicle options error	ON	1	CCM	x
P0661	Variable intake-air solenoid valve circuit low input	OFF	1	Other	x
P0662	Variable intake-air solenoid valve circuit high input	OFF	1	Other	x
P0703	Brake switch input circuit problem	ON	2	CCM	x
P0704	CPP switch input circuit problem	ON	2	CCM	x
P0850	Neutral switch input circuit problem	ON	2	CCM	x
P1260	Immobilizer system problem	OFF	1	Other	-
P2006	Variable tumble shutter valve stuck closed	ON	2	CCM	x
P2009	Variable tumble solenoid valve circuit low input	ON	2	CCM	x
P2010	Variable tumble solenoid valve circuit high input	ON	2	CCM	x
P2096	Target A/F feedback system too lean	ON	2	Fuel system	x
P2097	Target A/F feedback system too rich	ON	2	Fuel system	x
P2177	Fuel system too lean at off idle	ON	2	Fuel system	x
P2178	Fuel system too rich at off idle	ON	2	Fuel system	x
P2187	Fuel system too lean at idle	ON	2	Fuel system	x
P2188	Fuel system too rich at idle	ON	2	Fuel system	x
P2195	Front HO2S signal stuck lean	ON	2	HO2S	x

P2196	Front HO2S signal stuck rich	ON	2	HO2S	x
P2228	BARO sensor circuit low input	ON	1	CCM	x
P2229	BARO sensor circuit high input	ON	1	CCM	x
P2502	Charging system voltage problem	OFF	1	Other	x
P2503	Charging system voltage low	OFF	1	Other	x
P2504	Charging system voltage high	OFF	1	Other	x
P2507	PCM B+ voltage low	ON	1	CCM	x

Sending Continuous Monitoring System Test Results

- These appear when a problem is detected in a monitored system.

1-drive cycle type

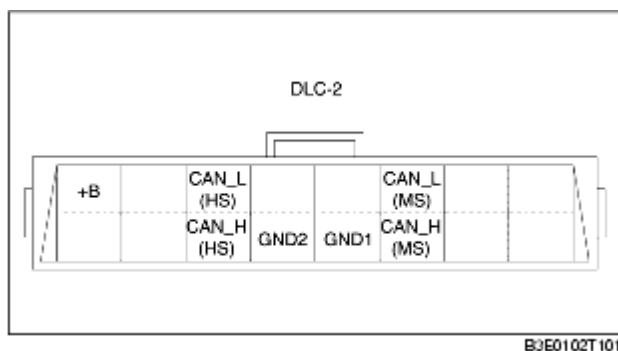
- If any problems are detected in the first drive cycle, pending codes will be stored in the PCM memory, as well as DTCs.
- After pending codes are stored, if the PCM determines that the system is normal in any future drive cycle, the PCM deletes the pending codes.

2-drive cycle type

- The code for a failed system is stored in the PCM memory in the first drive cycle. If the PCM determines that the system returned to normal or the problem was mistakenly detected, and deletes the pending code. If the problem is found in the second drive cycle too, the PCM determines that the system has failed, and stores the pending codes, and the DTCs.
- After pending codes are stored, if the PCM determines that the system is normal in any future drive cycle, the PCM deletes the pending codes.

DLC-2 Outline

- The DLC-2 located in the driver compartment is a service connector defined by EOBD regulations.
- The following are functions for each terminal.



Terminal name	Function
B+	Battery positive voltage
CAN_H (HS)	CAN communication line (HS)
CAN_L (HS)	CAN communication line (HS)
GND1	Ground (chassis)
GND2	Ground (signal)
CAN_H (MS)	CAN communication line (MS)
CAN_L (MS)	CAN communication line (MS)