



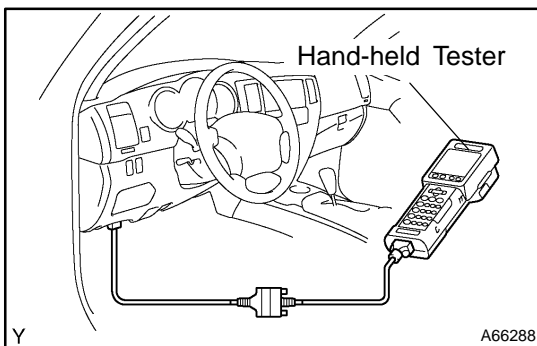
## PRE-CHECK

### 1. DIAGNOSIS SYSTEM

#### (a) Description

- When troubleshooting OBD II vehicles, the only difference from the usual troubleshooting procedure is that you need to connect the vehicle to the OBD II scan tool complying with SAE J1978 or the hand-held tester, and read off various data output from the vehicle's ECM.
- OBD II regulations require that the vehicle's on-board computer illuminates the Malfunction Indicator Light (MIL) on the instrument panel when the computer detects a malfunction in the emission control system/components or in the powertrain control components which affect vehicle emissions, or a malfunction in the computer. In addition to the MIL illuminating when a malfunction is detected, the applicable Diagnostic Trouble Codes (DTCs) prescribed by SAE J2012 are recorded in the ECM memory (See page 05-17).

If the malfunction does not reoccur in 3 consecutive trips, the MIL goes off automatically but the DTCs remain recorded in the ECM memory.



- To check the DTC, connect the hand-held tester or OBD II scan tool to the Data Link Connector 3 (DLC3) of the vehicle. The hand-held tester or OBD II scan tool also enables you to erase the DTC and check the freeze frame data and various forms of engine data (for operating instructions, see the OBD II scan tool's instruction book). The DTC includes SAE controlled codes and manufacturer controlled codes. SAE controlled codes must be set as prescribed by the SAE, while manufacturer controlled codes can be set freely by a manufacturer within the prescribed limits (see the DTC chart on page 05-17).
- The diagnosis system operates in the normal mode during normal vehicle use. It also has a check mode for technicians to simulate malfunction symptoms and troubleshoot it. Most DTCs use the 2 trip detection logic\* to prevent erroneous detection, and to ensure a thorough malfunction detection. By switching the ECM to the check mode when troubleshooting, a technician can cause the MIL to illuminate for a malfunction that is only detected once or momentarily (hand-held tester only) (see step 3).

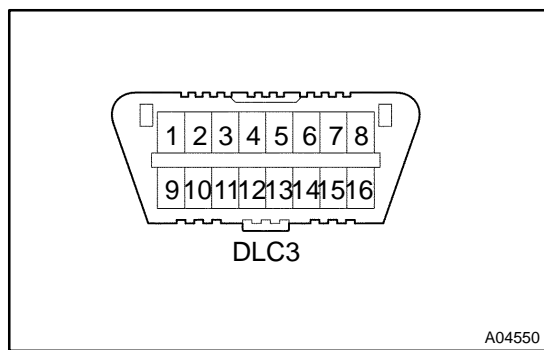
- \*2 trip detection logic:  
When a malfunction is first detected, the malfunction is temporarily stored in the ECM memory (1st trip). If the same malfunction is detected again during the second drive test, this second detection causes the MIL to illuminate (2nd trip) (However, the ignition switch must be turned OFF between the 1st trip and 2nd trip).
- Freeze frame data:  
The freeze frame data records the engine conditions (fuel system, calculated load, engine coolant temperature, fuel trim, engine speed, vehicle speed, etc.) when a malfunction is detected. When troubleshooting, it is useful for determining whether the vehicle was running or stopped, the engine was warmed up or not, the air-fuel ratio was lean or rich, etc. at the time of the malfunction.

Priorities for troubleshooting:

If troubleshooting priorities for multiple DTCs are given in the applicable DTC chart, these priorities should be followed.

If no instructions are given, perform troubleshooting for those DTCs according to the following priorities.

- (1) DTCs other than fuel trim malfunction (DTCs P0171, P0172, P0174 and P0175) and misfire (DTCs P0300 - P0306).
- (2) Fuel trim malfunction (DTCs P0171, P0172, P0174 and P0175).
- (3) Misfire (DTCs P0300 - P0306).



- (b) Check the DLC3.  
The vehicle's ECM uses the ISO 9141-2 for communication protocol. The terminal arrangement of the DLC3 complies with SAE J1962 and matches the ISO 9141-2 format.

Terminal No.	Connection/Voltage or Resistance	Condition
7	Bus + Line/Pulse generation	During transmission
4	Chassis Ground - Body Ground/1 $\Omega$ or less	Always
5	Signal Ground - Body Ground/1 $\Omega$ or less	Always
16	Battery Positive - Body Ground/9 to 14 V	Always

**HINT:**

If the display shows **UNABLE TO CONNECT TO VEHICLE** when you have connected the cable of the OBD II scan tool or the hand-held tester to the DLC3, turned the ignition switch ON and operated the scan tool, there is a problem on the vehicle side or tool side.

- If the communication is normal when the tool is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If the communication is still impossible when the tool is connected to another vehicle, the problem is probably in the tool itself, so consult the Service Department listed in the tool's instruction manual.

**(c) Inspect the battery voltage.****Battery Voltage: 11 to 14 V**

If voltage is below 11 V, recharge the battery before proceeding.

**(d) Check the MIL.**

- (1) The MIL comes on when the ignition switch is turned ON and the engine is not running.

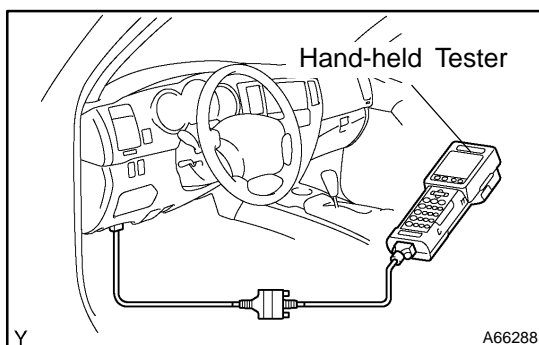
**HINT:**

If the MIL does not illuminate, troubleshoot the MIL circuit (See page [05-252](#) ).

- (2) When the engine is started, the MIL should go off. If the lamp remains on, it means that the diagnosis system has detected a malfunction or abnormality in the system.

**2. Normal Mode:****DTC CHECK****NOTICE:**

- If there is no DTC in the normal mode, check the 1st trip DTC using the **Continuous Test Results** function (Mode 7 for SAE J1979) on the OBD II scan tool or the hand-held tester.
- **Hand-held tester only:**  
When the diagnosis system is switched from the normal mode to the check mode, all the DTCs and freeze frame data recorded in the normal mode will be erased. So before switching modes, always check the DTCs and freeze frame data, and note them down.



- (a) Checking DTCs using the OBD II scan tool or hand-held tester.
  - (1) Connect the OBD II scan tool or hand-held tester to DLC3.
  - (2) Turn the ignition switch ON.

- (3) Use the OBD II scan tool or the hand-held tester to check the DTCs and freeze frame data and note them down (for operating instructions, see the OBD II scan tool's instruction book).

If there is no DTC in the normal mode, check the 1st trip DTC using the Continuous Test Results function (Mode 7 for SAE J1979) on the OBD II scan tool or the hand-held tester.

- (4) See page 05-17 to confirm the details of the DTCs.

**NOTICE:**

- **When simulating a symptom with the OBD II scan tool (excluding hand-held tester) to check the DTCs, use the normal mode. For code on the DTC chart subject to "2 trip detection logic", perform either of the following actions.**
- **Turn the ignition switch OFF after the symptom is simulated once. Then repeat the simulation process again. When the problem has been simulated twice, the MIL lights up and the DTCs are recorded in the ECM.**
- **Check the 1st trip DTC using Mode 7 (Continuous Test Results) for SAE J1979.**

- (b) When using the OBD II scan tool or hand-held tester:  
Clearing the DTCs.

- (1) Connect the OBD II scan tool or hand-held tester to DLC3.
- (2) Turn the ignition switch ON.
- (3) When operating an OBD II scan tool (complying with SAE J1978) or hand-held tester to erase the codes, the DTCs and freeze frame data will be erased. (See the OBD II scan tool's instruction book for operating instructions.)

- (c) When not using the OBD II scan tool or hand-held tester:  
Clearing the DTCs.

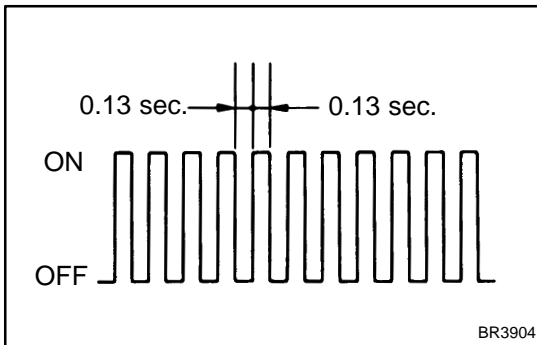
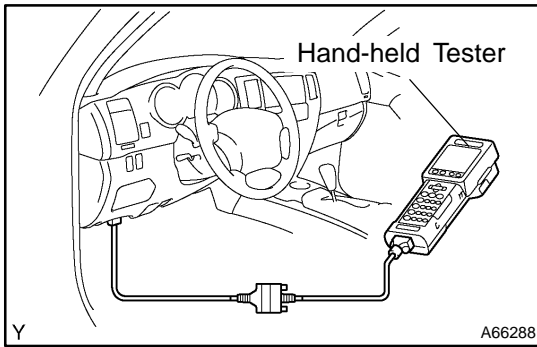
- (1) Disconnecting the battery terminal or remove the EFI and ETCS fuse from engine room R/B for 60 seconds or more.

### 3. Check Mode: DTC CHECK

**HINT:**

Hand-held tester only:

Compared to the normal mode, the check mode has more sensing ability to detect malfunctions. Furthermore, the same diagnostic items which are detected in the normal mode can also be detected in the check mode.



- (a) Procedure for Check Mode using the hand-held tester.
  - (1) Check the initial conditions.
    - Battery positive voltage 11 V or more
    - Throttle valve fully closed
    - Transmission in the P or N position
    - A/C switched OFF
  - (2) Turn the ignition switch OFF.
  - (3) Connect the hand-held tester to the DLC3.
  - (4) Turn the ignition switch ON.
  - (5) Switch the hand-held tester from the normal mode to the check mode (check that the MIL flashes).

**NOTICE:**

**If the hand-held tester switches the ECM from the normal mode to the check mode or vice-versa, or if the ignition switch is turned from ON to ACC or OFF during the check mode, the DTC and freeze frame data will be erased.**

- (6) Start the engine (MIL goes off after the engine starts).
- (7) Simulate the conditions of the malfunction described by the customer.

**NOTICE:**

**Leave the ignition switch ON until you have checked the DTC, etc.**

- (8) After simulating the malfunction conditions, use the hand-held tester diagnosis selector to check the DTC and freeze frame data, etc.

**HINT:**

Be sure not to turn the ignition switch OFF, as turning it OFF switches the diagnosis system from the check mode to the normal mode, which erases all the DTCs, etc.

- (9) After checking the DTC, inspect the applicable circuit.
- (b) When using the OBD II scan tool or hand-held tester: Clearing the DTCs.
  - (1) Connect the OBD II scan tool or hand-held tester to DLC3.
  - (2) Turn the ignition switch ON.
  - (3) When operating an OBD II scan tool (complying with SAE J1978) or hand-held tester to erase the codes, the DTCs and freeze frame data will be erased. (See the OBD II scan tool's instruction book for operating instructions.)
- (c) When not using the OBD II scan tool or hand-held tester: Clearing the DTCs.
  - (1) Disconnecting the battery terminal or remove the EFI and ETCS fuse from engine room R/B for 60 seconds or more.

#### 4. FAIL-SAFE CHART

If any of the following codes is recorded, the ECM enters into the fail-safe mode.

DTC No.	Fail-Safe Operation	Fail-Safe Deactivation Conditions
P0031 P0032 P0037 P0038 P0051 P0052 P0057 P0058	The heater circuit in which the abnormality is detected is turned off	Ignition switch OFF
P0100 P0102 P0103	Ignition timing is calculated from engine speed and a throttle angle	Returned to normal condition
P0110 P0112 P0113	Intake air temp. is fixed at 20°C (68°F)	Returned to normal condition
P0115 P0117 P0118	Engine coolant temp. is fixed at 80°C (176°F)	Returned to normal condition
P0120 P0122 P0123 P0220 P0222 P0223 P2135	Fuel cut intermittently when idle	Returned to normal condition and ignition switch OFF
P0121	Fuel cut intermittently when idle	Returned to normal condition and ignition switch OFF
P0325 P0327 P0328 P0330 P0332 P0333	Max. timing retardation	Ignition switch OFF
P0351 P0352 P0353 P0354 P0355 P0356	Fuel cut	Returned to normal condition
P2102 P2103	Fuel cut intermittently when idle	Returned to normal condition and ignition switch OFF
P2111 P2112	Fuel cut intermittently when idle	
P2119	Fuel cut intermittently when idle	

#### 5. CHECK FOR INTERMITTENT PROBLEMS

Hand-held tester only:

By putting the vehicle's ECM in the check mode, the 1 trip detection logic is possible instead of the 2 trip detection logic and the sensitivity to detect open circuits is increased. This makes it easier to detect intermittent problems.

- (1) Clear the DTCs (See step 2).
- (2) Set the check mode (See step 3).
- (3) Perform a simulation test (See page 01-25 ).
- (4) Check the connector and terminal (See page 01-35 ).
- (5) Handle the connector (See page 01-35 ).

## 6. DATA LIST

### HINT:

According to the DATA LIST displayed by the hand-held tester or the OBD II scan tool, you can read the value of the switch, sensor, actuator and so on without parts removal. Reading the DATA LIST as a first step of troubleshooting is one of the method to shorten the labor time.

### NOTICE:

**The values given below for "Normal Condition" are representative values. So, a vehicle may still be normal even if its value differs from those listed here. So, do not solely depend on the "Normal Condition" here when deciding whether a part is faulty or not.**

- Warm up the engine.
- Turn the ignition switch OFF.
- Connect the hand-held tester or the OBD II scan tool to the DLC3.
- Turn the ignition switch ON.
- Push the "ON" button of the hand-held tester or the OBD II scan tool.
- Select the item "DIAGNOSIS/ENHANCED OBD II/DATA LIST".
- According to the display on tester, read the "DATA LIST".

Hand-held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
INJECTOR	Injection period of the No. 1 cylinder/ Min.: 0 ms, Max.: 32.64 ms	Idling: 1.6 - 2.4 ms	—
IGN ADVANCE	Ignition timing advance for No. 1 cylinder/ Min.: -64 deg., Max.: 63.5 deg.	Idling: BTDC 7 - 24°	—
CALC LOAD	Calculated load by engine ECM/ Min.: 0 %, Max.: 100 %	• Idling: 11.4 - 16.4 % • Racing without load (2,500 rpm): 13.1 - 18.9 %	—
MAF	Air flow rate from MAF sensor/ Min.: 0 gm/s, Max.: 655 gm/s	• Idling: 3.2 - 4.7 gm/s • Racing without load (2,500 rpm): 13.1 - 18.9 gm/s	—
ENGINE SPD	Engine speed/ Min.: 0 rpm, Max.: 16383 rpm	Idling: 650 - 750 rpm	—
COOLANT TEMP	Coolant temperature/ Min.: -40 °C, Max.: 140 °C	After warming up: 80 - 95 °C (176 - 203 °F)	If the value is "-40 °C" or "140 °C", sensor circuit is open or shorted.
INTAKE AIR	Intake air temperature/ Min.: -40 °C, Max.: 140 °C	Equivalent to Ambient Temp.	
THROTTLE POS	Absolute throttle position sensor/ Min.: 0 %, Max.: 100 %	• Throttle fully closed: 10 - 24 % • Throttle fully open: 64 - 96 %	Read the value when ignition switch ON (Do not start engine).
CTP SW	Closed throttle position switch/ ON or OFF	• Throttle fully closed: ON • Throttle open: OFF	—
VEHICLE SPD	Vehicle speed/ Min.: 0 km/h, Max.: 255 km/h	Actual vehicle speed	Speed indicated on speedometer
ACCEL POS #1	Accelerator pedal position sensor No.1 output voltage/ Min.: 0 V, Max.: 5 V	• Accelerator pedal released: 0.5 - 1.1 V • Accelerator pedal depressed: 2.6 - 4.5 V	Read the value when ignition switch ON (Do not start engine).
ACCEL POS #2	Accelerator pedal position sensor No.2 output voltage/ Min.: 0 V, Max.: 5 V	• Accelerator pedal released: 1.2 - 2.0 V • Accelerator pedal depressed: 3.4 - 5.3 V	Read the value when ignition switch ON (Do not start engine).
THROTTLE POS #2	Throttle position sensor No.2 output voltage/ Min.: 0 V, Max.: 5 V	• Throttle fully closed: 2.1 - 3.1 V • Throttle fully open: 4.5 - 5.5 V	Read the value when ignition switch ON (Do not start engine).

Hand-held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
THROTTLE TARGT	Target position of throttle valve/ Min.: 0 V, Max.: 5 V	Idling: 0.4 - 1.1 V	—
THROTTLE OPN DUTY	Throttle motor opening duty ratio/ Min.: 0 %, Max.: 100 %	Throttle fully closed: 0 %	<ul style="list-style-type: none"> <li>• When accelerator pedal is depressed, duty ratio is increased.</li> <li>• Read the value when ignition switch ON (Do not start engine)</li> </ul>
THROTTLE CLS DUTY	Throttle motor closed duty ratio/ Min.: 0 %, Max.: 100 %	Throttle fully closed: 0 %	<ul style="list-style-type: none"> <li>• When accelerator pedal is released quickly, duty ratio is increased.</li> <li>• Read the value when ignition switch ON (Do not start engine)</li> </ul>
THROTTLE MOT	Whether or not throttle motor control is permitted/ ON or OFF	Idling: ON	Read the value when ignition switch ON (Do not start engine)
+BM	Whether or not electric throttle control system power is inputted/ ON or OFF	Idling: ON	—
ACCEL IDL POS	Whether or not accelerator pedal position sensor is detecting idle/ ON or OFF	Idling: ON	—
THROTTLE IDL POS	Whether or not throttle position sensor is detecting idle/ ON or OFF	Idling: ON	—
FAIL #1	Whether or not fail safe function is executed/ ON or OFF	ETCS has failed: ON	—
FAIL #2	Whether or not fail safe function is executed/ ON or OFF	ETCS has failed: ON	—
THROTTLE INITIAL	Throttle fully closed learning value Min.: 0 V, Max.: 5 V	0.5 - 0.9 V	—
ACCEL LEARN VAL	Accelerator fully closed learning value Min.: 0 V, Max.: 5 V	0.4 - 0.8 V	—
THROTTLE MOT	Throttle motor current Min.: 0 A, Max.: 20 A	Idling: 0 - 3.0 A	—
O2S B1 S2	Heated oxygen sensor output voltage of the bank 1 sensor 2/ Min.: 0 V, Max.: 1.275 V	Driving (50 km/h, 31 mph): 0.1 - 0.9 V	—
O2S B2 S2	Heated oxygen sensor output voltage of the bank 2 sensor 2/ Min.: 0 V, Max.: 1.275 V	Driving (50 km/h, 31 mph): 0.1 - 0.9 V	—
AFS B1 S1	A/F sensor output voltage of the bank 1 sensor 1/ Min.: 0 V, Max.: 7.999 V	Idling 2.8 - 3.8 V	—
AFS B2 S1	A/F sensor output voltage of the bank 2 sensor 1/ Min.: 0 V, Max.: 7.999 V	Idling 2.8 - 3.8 V	—
VAPOR PRESS	Vapor Pressure/ Min.: -4.125 kPa, Max.: 2.125 kPa	Fuel tank cap removed: 0 kPa	—
SHORT FT #1	Short term fuel trim of bank 1/ Min.: -100 %, Max.: 100 %	0 ± 20 %	—
LONG FT #1	Long term fuel trim of bank 1/ Min.: -100 %, Max.: 100 %	0 ± 20 %	—
SHORT FT #2	Short term fuel trim of bank 2/ Min.: -100 %, Max.: 100 %	0 ± 20 %	—



## DIAGNOSTICS - SFI SYSTEM (1GR-FE)

Hand-held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
LONG FT #2	Long term fuel trim of bank 2/ Min.: -100 %, Max.: 100 %	$0 \pm 20 \%$	—
O2FT B1 S2	Short term fuel trim associated with the bank 1 sensor 2/ Min.: -100 %, Max.: 100 %	$0 \pm 20 \%$	Same as SHORT FT #1
O2FT B2 S2	Short term fuel trim associated with the bank 2 sensor 2/ Min.: -100 %, Max.: 100 %	$0 \pm 20 \%$	Same as SHORT FT #2
AF FT B1 S1	Short term fuel trim associated with the bank 1 sensor 1/ Min.: 0, Max.: 1.999	<ul style="list-style-type: none"> <li>Lean: <math>0 \leq \text{AF FT B1 S1} &lt; 1</math></li> <li>Stoichiometric Air-Fuel Ratio=1</li> <li>Rich: <math>1 \leq \text{AF FT B1 S1} &lt; 1.999</math></li> </ul>	—
AF FT B2 S1	Short term fuel trim associated with the bank 2 sensor 1/ Min.: 0, Max.: 1.999	<ul style="list-style-type: none"> <li>Lean: <math>0 \leq \text{AF FT B2 S1} &lt; 1</math></li> <li>Stoichiometric Air-Fuel Ratio=1</li> <li>Rich: <math>1 \leq \text{AF FT B2 S1} &lt; 1.999</math></li> </ul>	—
FUEL SYS #1	Fuel system status (Bank1) / OL or CL or OL DRIVE or OL FAULT or CL FAULT	Idling after warming up: CL	<ul style="list-style-type: none"> <li>• OL: Open Loop-has not yet satisfied conditions to go closed loop.</li> <li>• CL: Closed Loop-using heated oxygen sensor(s) as feed back for fuel control.</li> <li>• OL DRIVE: Open loop due to driving conditions. (fuel enrichment)</li> <li>• OL FAULT: Open loop due to detected system fault.</li> <li>• CL FAULT: Closed loop, but fault with at least one heated oxygen sensor may be using single heated oxygen sensor for fuel control.</li> </ul>
FUEL SYS #2	Fuel system status (Bank2) / OL or CL or OL DRIVE or OL FAULT or CL FAULT		
FC IDL	Idle fuel cut/ ON or OFF	Fuel cut operation: ON	—
MIL	MIL status/ ON or OFF	MIL ON: ON	—
STARTER SIG	Starter signal/ ON or OFF	Cranking: ON	—
A/C SIG	A/C signal/ ON or OFF	A/C ON: ON	—
PNP SW [NSW]	Park/neutral position switch signal/ ON or OFF	P or N position: ON	—
ELECT LOAD SIG	Electrical load signal/ ON or OFF	Defogger switch ON: ON	—
STOP LIGHT SW	Stop light switch/ ON or OFF	<ul style="list-style-type: none"> <li>• Brake pedal depressed: ON</li> <li>• Brake pedal released: OFF</li> </ul>	—
PS OIL PRESS SW	Power steering signal/ ON or OFF	<ul style="list-style-type: none"> <li>• During controlling the steering wheel: ON</li> <li>• During non-controlling the steering wheel: OFF</li> </ul>	—
PS SIGNAL	Power steering signal/ ON or OFF	<ul style="list-style-type: none"> <li>• After engine start: OFF</li> <li>• After steer the steering: ON</li> </ul>	—
INTAKE CTL VSV1	VSV status for intake control (bank1)/ ON or OFF	VSV operation: ON	—
FUEL PUMP SP CTL	Fuel pump speed control status/ ON or OFF	<ul style="list-style-type: none"> <li>• Idling: ON</li> <li>• Cranking: OFF</li> </ul>	—
FUEL PUMP / SPD	Fuel pump/speed status/ ON/H or OFF/M,L	Idling: ON	—
A/C MAG CLUTCH	A/C magnet clutch status/ ON or OFF	A/C magnet clutch ON: ON	—

Hand-held Tester Display	Measurement Item/Range (Display)	Normal Condition *	Diagnostic Note
EVAP VSV	VSV status for EVAP control/ ON or OFF	VSV operating: ON	—
VVT CTRL B2	VVT control status (bank 2)/ ON or OFF	VVT system operation: ON	—
VVT CTRL B1	VVT control status (bank 1)/ ON or OFF	VVT system operation: ON	—
IGNITION	Ignition counter/ Min.: 0, Max.: 800	0 - 800	—
CYL #1, #2, #3, #4, #5, #6	Misfire ratio of the cylinder 1 - 8/ Min.: 0 %, Max.: 50 %	0 %	This item is displayed in only idling
MISFIRE LOAD	Engine load for first misfire range/ Min.: 0g/rev, Max.: 3.98 g/rev	Misfire 0: 0 g/rev	—
MISFIRE RPM	Engine RPM for first misfire range/ Min.: 0g/rpm, Max.: 6,375 rpm	Misfire 0: 0 rpm	—
FC TAU	Fuel Cut TAU: Fuel cut during very light load/ ON or OFF	Fuel cut operating: ON	—
CHECK MODE	Check mode/ ON or OFF	Check mode ON: ON	—

\*: If no conditions are specifically stated for "Idling", it means the shift lever is at the N or P position, the A/C switch is OFF and all accessory switches are OFF.

## 7. ACTIVE TEST

### HINT:

Performing the ACTIVE TEST using the hand-held tester or the OBD II scan tool allows the relay, VSV, actuator and so on to operate without parts removal. Performing the ACTIVE TEST as a first step of troubleshooting is one of the method to shorten the labor time.

It is possible to display the DATA LIST during the ACTIVE TEST.

- Warm up the engine.
- Turn the ignition switch OFF.
- Connect the hand-held tester or the OBD II scan tool to the DLC3.
- Turn the ignition switch ON.
- Push the "ON" button of the hand-held tester or the OBD II scan tool.
- Select the item "DIAGNOSIS/ENHANCED OBD II/ACTIVE TEST".
- According to the display on tester, perform the "ACTIVE TEST".

Hand-held Tester Display	Test Details	Diagnostic Note
INJ VOL	[Test Details] Control the injection volume Min.: -12.5 %, Max.: 24.8 % [Vehicle Condition] Engine speed: 3,000 rpm or less	—
A/F CONTROL	[Test Details] Control the injection volume -12.5 or 25 % (Change the injection volume to -12.5 % or 25 %.) [Vehicle Condition] Engine speed: 3,000 rpm or less	The following procedure of A/F CONTROL enables user to check its output (show its graph indication) of heated oxygen sensor: Select O2S B1 S1 and press button "4" after selecting "ACTIVE TEST/A/F CONTROL/USER DATA".
FUEL PMP SP CTL	[Test Details] Control the fuel pump speed ON or OFF	—
INTAKE CTL VSV1	[Test Details] Activate the VSV for intake control. ON or OFF	—

CAN CTRL VSV	[Test Details] Activate the VSV for canister control ON or OFF	—
EVAP VSV (ALONE)	[Test Details] Activate the VSV for EVAP control ON or OFF	—
A/C MAG CLUTCH	[Test Details] Control the A/C magnet clutch ON or OFF	—
FUEL PUMP / SPD	[Test Details] Control the fuel pump ON or OFF	—
VVT CTRL B1	[Test Details] Active the VVT system (Bank 1). ON or OFF	<ul style="list-style-type: none"> <li>• ON: Rough idle or engine stall.</li> <li>• OFF: Normal engine speed.</li> </ul>
VVT CTRL B2	[Test Details] Active the VVT system (Bank 2). ON or OFF	<ul style="list-style-type: none"> <li>• ON: Rough idle or engine stall.</li> <li>• OFF: Normal engine speed.</li> </ul>
TC/TE1	[Test Details] Connect the TC and TE1 ON or OFF	—
FC IDL PROHBT	[Test Details] Control the idle fuel cut prohibit ON or OFF	—

## BASIC INSPECTION

When the malfunction code is not confirmed in the DTC check, troubleshooting should be carried out in all the possible circuits considered as causes of the problems. In many cases, by carrying out the basic engine check shown in the following flow chart, the location causing the problem can be found quickly and efficiently. Therefore, using this check is essential in the engine troubleshooting.

### 1 CHECK BATTERY POSITIVE VOLTAGE

#### NOTICE:

Carry out this check under the engine stoppage condition.

	OK	NG
Voltage	11 V or more	Less than 11 V

NG

CHARGE OR REPLACE BATTERY

OK

### 2 CHECK IF ENGINE IS CRANKED

NG

PROCEED TO PROBLEM SYMPTOMS TABLE  
ON PAGE [05-28](#)

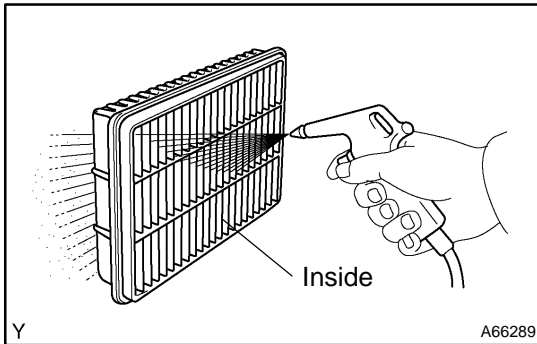
OK

### 3 CHECK IF ENGINE STARTS

NG

GO TO STEP 7

OK

**4 CHECK AIR FILTER**

- (a) Visually check that the air filter is not excessively dirty or oily.

**NOTICE:**

If necessary, clean the filter with compressed air. First blow from the inside thoroughly, then blow from the outside of the filter.

**NG****REPAIR OR REPLACE****OK****5 CHECK IDLE SPEED (See page 14-1 )****NG****PROCEED TO PROBLEM SYMPTOMS TABLE ON PAGE 05-28****OK****6 CHECK IGNITION TIMING (See page 14-1 )****NG****PROCEED TO PAGE 18-1 AND CONTINUE TO TROUBLESHOOT****OK****PROCEED TO PROBLEM SYMPTOMS TABLE ON PAGE 05-28****7 CHECK FUEL PRESSURE (See page 11-5 )****NG****PROCEED TO PAGE 11-5 AND CONTINUE TO TROUBLESHOOT****OK****8 CHECK FOR SPARK (See page 18-3 )****NG****PROCEED TO PAGE AND CONTINUE TO TROUBLESHOOT****OK****PROCEED TO PROBLEM SYMPTOMS TABLE ON PAGE 05-28**