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1. Safety Precautions and Warnings

To prevent personal injury or damage to vehicles and/or the scan tool. Read this instruction manual first and observe the following safety precautions at a minimum whenever working on a vehicle.

- Always perform automotive testing in a safe environment.
- Wear safety eye protection that meets ANSI standards.
- Keep clothing, hair, hands, tools, test equipment, etc. Away from all moving or hot engine parts.
- Operate the vehicle in a well ventilated work area: Exhaust gases are poisonous.
- Put blocks in front of the drive wheels and never leave the vehicle unattended while running tests.
- Use extreme caution when working around the ignition coil, distributor cap, ignition wires and spark plugs. These components create hazardous voltages when the engine is running.
- NEUTRAL (for manual transmission) and make sure the parking brake is engaged.
- Keep a fire extinguisher suitable for gasoline/chemical/electrical fires nearby.
- Don't connect or disconnect any test equipment while the ignition is on or the engine is running.
- Keep the scan tool dry, clean, free from oil/water or grease. Use a mild detergent on a clean cloth to clean the outside of the scan tool, when necessary.

2.General Information

2.1 On-Board Diagnostics (OBD) II

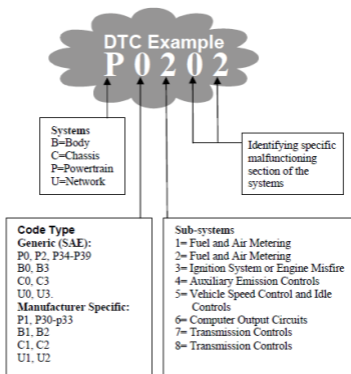
The first generation of On-Board Diagnostics (called OBD I) was developed by the California Air Resources Board (ARB) and implemented in 1988 to monitor some of the emission control components on vehicles. As technology evolved and the desire to improve the On-Board Diagnostics system increased. A new generation of On-Broad Diagnostic system was developed. This second generation of On-Broad Diagnostic regulations is called “OBD II”

The OBD II system is designed to monitor emission control systems and key engine components by performing either continuous or periodic tests of specific components and vehicle conditions. When a problem is detected, the OBD II system turns on a warning lamp (MIL) on the vehicle instrument panel to alert the driver typically by the phrase of “Check Engine” or “Service Engine Soon”. The system will also store important information about the detected malfunction so that a technician can accurately find and fix the problem. Here below follow three pieces of such valuable information:

- 1) Whether the Malfunction Indicator Light (MIL) is commanded ‘on ‘or ‘off’;**
- 2) Which, if any, Diagnostic Trouble Codes (DTCs) are stored;**
- 3) Readiness Monitor status.**

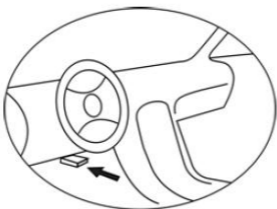
2.2 Diagnostic Trouble Codes (DTCs)

OBD II Diagnostic Trouble Codes are codes that are stored by the on-board computer diagnostic system in response to a problem found in the vehicle. These codes identify a particular problem area and are intended to provide you with a guide as to where a fault might be occurring within a vehicle. OBD II Diagnostic Trouble Codes consist of a five-digit alphanumeric code. The first character, a letter, identifies which control system sets the code. The other four characters, all numbers, provide additional information on where the DTC originated and the operating conditions that caused it to set. Here below is an example to illustrate the structure of the digits:



2.3 Location of the Data Link Connector (DLC)

The DLC (Data Link Connector or Diagnostic Link Connector) is the standardized 16-cavity connector where diagnostic scan tools interface is 12 inches from the center of instrument panel (dash), under or around the driver's side for most vehicles. If Data Link Connector is not located under dashboard, a label should be there telling location. For some Asian and European vehicles, the DLC is located behind the ashtray and the ashtray must be removed to access the connector, if the DLC cannot be found, refer to the vehicle's service manual for the location.



2.4 OBD II Readiness Monitors

An important part of a vehicle's OBDII system the Readiness Monitors, which are indicators used to find out if all of the emissions components have been evaluated by the OBD II system. They are running periodic tests on specific systems and components to ensure that they are performing within allowable limits.

Currently, there are eleven OBD II Readiness Monitors

(or/ I/M Monitors) defined by the U.S. Environmental Protection Agency (EPA). Not all monitors are supported by all vehicles and exact number of monitors in any vehicle depends on the motor vehicle manufacturer's emissions control strategy.

Continuous Monitors – Some of the vehicle components or systems are continuously tested by the vehicle's OBD II system, while others are tested only under specific vehicle operating conditions. The continuously monitored components listed below are always ready:

- 1) **Misfire**
- 2) **Fuel System**
- 3) **Comprehensive Components (CCM)**

Once the vehicle is running the OBD II system is continuously checking the above components, monitoring key engine sensors, watching for engine misfire, and monitoring fuel demands.

Non-Continuous Monitors – Unlike the continuous monitors, many emissions and engine system components require the vehicle to be operated under specific conditions before the monitor is ready. These monitors are termed non-continuous monitors and are listed below:

- 1) **EGR System**
- 2) **O2 Sensors**
- 3) **Catalyst**
- 4) **Evaporative System**

- 5) **O2 Sensor Heater**
- 6) **Secondary air**
- 7) **Heated Catalyst**
- 8) **A/C system**

2.5 OBD II Monitor Readiness Statuses

OBD II systems must indicate whether or not the vehicle's PCM's monitor system has completed testing on each component. Components that have been tested will be reported as "Ready", or "complete", meaning they have been tested by the OBD II system. The purpose of recording readiness states is to allow inspectors to determine if vehicle's OBD II system has tested all the components and/or systems.

The power train control module (PCM) sets a monitor to "Ready" or "Complete", it will remain in this state. A number of factors, including erasing of diagnostic trouble codes (DTCs) with a scan tool or a disconnected battery, can result in Readiness Monitors being set to "Not ready". Since the three continuous monitors are constantly evaluating, they will be reported as "Ready" all of the time. If testing of a particular supported non-continuous monitor has not been completed, the monitor status will be reported as "Not Complete" or "Not Ready."

In order for the OBD monitor system to become ready, the vehicle should be driven under a variety of normal operating conditions. These operating conditions may include a mix of highway driving and stop and go, city

type driving, and at least one overnight-off period. For specific information on getting your vehicle's OBD monitor system ready, please consult your vehicle owner's manual.

2.6 OBD II Definitions

Power train Control Module (PCM) -- OBD II

terminology for the on-board computer that controls engine and drive train.

Malfunction Indicator Light (MIL) -- Malfunction

Indicator Light (Service Engine Soon, Check Engine) is a term used for the light on the instrument panel. It is to alert the driver and/or the repair technician that there is a problem with one or more of vehicle's systems and may cause emissions to exceed federal standards. If the MIL illuminates with a steady light, it indicates that a problem has been detected and the vehicle should be serviced as soon as possible. Under certain conditions, the dashboard light will blink or flash. This indicates a severe problem and flashing is intended to discourage vehicle operation. The vehicle onboard diagnostic system can not turn the MIL off until necessary repairs are completed or the condition no longer exists.

DTC -- Diagnostic Trouble Codes (DTC) that identifies which section of the emission control system has malfunctioned.

Enabling Criteria -- Also termed Enabling Conditions. They are the vehicle-specific events or conditions that

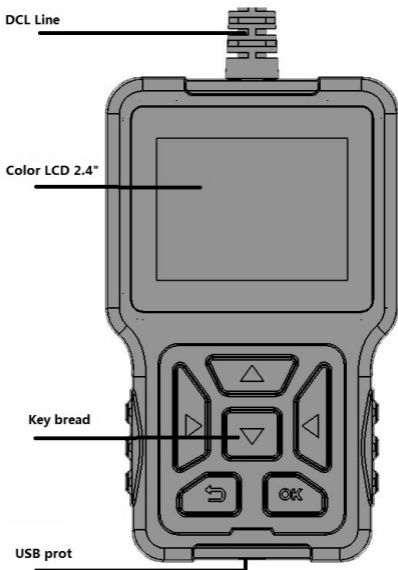
must occur within the engine before the various monitors will set, or run. Some monitors require the vehicle to follow a prescribed “drive cycle” routine as part of the enabling criteria. Drive cycles vary among vehicles and for each monitor in any particular vehicle.

OBD II Drive Cycle -- A specific mode of vehicle operation that provides conditions required to set all the readiness monitors applicable to the vehicle to the “ready” condition. The purpose of completing an OBD II drive cycle is to force the vehicle to run its onboard diagnosis. Some form of a drive cycle needs to be performed after DTCs have been erased from the PCM’s memory or after the battery has been disconnected. Running through a vehicle’s complete drive cycle will “set” the readiness monitors so that future faults can be detected. Drive cycles vary depending on the vehicle and the monitor that needs to be reset. For vehicle specific drive cycle, consult the vehicle’s Owner’s Manual. 7

Freeze Frame Data -- When an emissions related fault occurs, the OBD II system not only sets a code but also records a snapshot of the vehicle operating parameters to help identifying the problem. This set of values is referred to as Freeze Frame Data and may include important engine parameters such as engine RPM, vehicle speed, air flow, engine load, fuel pressure, fuel trim value, engine coolant temperature, ignition timing advance, or closed loop status.

3. Using the Scan Tool

3.1 Tool Description



① **DLC Line** -- Data Link Connector (DLC), Use to connect the scan tool to the vehicle;

② **Color LCD** -- Indicates test results. Color, 320 x 240 pixel display with contrast adjustment

③ **KEY BROAD** – include [▲] [▼] [◀]

[▶] [↺] [OK]

④ **USB PORT** -- Use to connect the scan tool to PC;

3.2 Specifications

A) Display: Color, 320 x 240 pixel display with contrast adjustment

B) Operation Temperature: -20 °C -- 75 °C

C) Storage Temperature: -40 °C -- 120 °C

D) Power: 8V -- 24V

E) Dimensions:

Length	Width	Height
130 mm	80 mm	25 mm

F) Weight

Net Weight: 200 g

Gross Weight: 300 g

3.3 Accessories Include

A) User's Manual – Instructions on tool operations.

3.4 Product Troubleshooting

Vehicle Linking Error

A communication error occurs if the scan tool fails to communicate with the vehicle's ECU (Engine Control

Unit). You need to do the following to check up:

- A) Verify that the ignition is ON;
- B) Check if the scan tool's OBD II connector is securely connected to the vehicle's DLC;
- C) Verify that the vehicle is OBD2 compliant;
- D) Turn the ignition off and wait for about 10 seconds.
Turn the
- E) Ignition back to on and continue the testing.
- F) Verify the control module is not defective

Scan tool doesn't power up

If the scan tool won't power up or operates incorrectly in any other way, you need to do the following to check up:



- A) Check if the scan tool's OBD II connector is securely connected to the vehicle's DLC;
- B) Check if the DLC pins are bent or broken. Clean the DLC pins if necessary.
- C) Check vehicle battery to make sure it is still good with at least 8.0 volts.

4. Software Function

CATION: Don't connect or disconnect any test equipment with ignition on or engine running.

1. Turn the ignition off.
2. Locate the vehicle's 16-pin Data Link Connector (DLC)
3. Plug into the scan tool cable connector to the vehicle's DLC ,the scan tool will be light. As shown below
4. Turn the ignition on. Engine can be off or running
5. Click any key to enter the Main Menu.



USE the key [] [] to select in the [Main Menu] ,

and press [] to select

4.1 System Configuration

Select [**Setup**] in the Main Menu and press [**OK**]. The screen will display the interface as shown below:

MENU		
LANGUAGE SETUP		
SYSTEM INFORMATION		
BEEPER		
UNIT OF MEASURE		
OK	1/1	BACK

The scanner allows you to make the following adjustments and settings;

1) [**LANGUAGE SETUP**]: Selects desired language.

Choose [**LANGUAGE**] and press [**OK**].

The screen will display the interface as shown below:

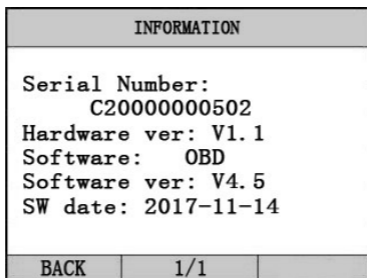
MENU		
ENGLISH		
SIMPLIFIED CHINESE		
TRADITIONAL CHINESE		
GERMAN		
SPANISH		
OK	1/1	BACK

You can press [][]key to choose the different

Language ,and then press [**OK**] to confirm. The system will Convert to the chosen language interface at once.

2) [**SYSTEM INFORMATION**]: show the system information

Choose [**SYSTEM INFORMATION**] and press [**OK**]. The screen will display the interface as shown below:





Press [] or [] to return the [**Main menu**]

3) [**BEEPER**]: ON / OFF the beep.

Choose [**BEEPER**] and press [**OK**], the screen will display the interface as shown below:



MENU		
OPEN		
CLOSE		
OK	1/1	BACK

Press [][] to select, and press **[OK]** to confirm.

4) [UNIT OF MEASURE]: change the units display mode.

Choose **[UNIT OF MEASURE]** and press **[OK]**, the screen will display the interface as shown below:

MENU		
METRIC UNITS		
ENGLISH UNITS		
OK	1/1	BACK



Press [][] to select, and press [**OK**] to confirm.

4.2 DTC LOOKUP

Select [**DAIGNOSE REVIEW**] in the Main Menu and press [**OK**]. The screen will display the interface as shown below:

DTC LOOKUP		
Please Input the DTC number:		
P 0 1 0 0		
[UP][DOWN]: Change		
[LEFT][RIGHT]: Select		
OK	1/1	BACK

Enter the DTC number.


[] and [] use to change the DTC number;

[] and [] use to Select.

press [**OK**] to confirm, it will show the DTC description.

As shown below:

DTC		
P0100 Mass or volume air flow a circuit		
	1/1	BACK

Press **[OK]** or  to return the **[Main menu]**

4.3 VIN Information

Select **[VIN Info.]** in Main Menu and press **[OK]**, the screen will display the VIN information , as shown below:

Vehicle Information		
Vehicle identification number (VIN)		
LSVAF45EXEN088822		
Calibration identification (CID)		
04E906057G 7066		
Calibration verification code (CVN)		
3751CCEF		
BACK	1/2	

4.4 Monitor

Select **[Monitor]** in Main Menu, and press **[OK]**, the tool will read the Monitor information and show on the screen, as shown below:

Monitor	
DTC state	OFF
DTC Number	0
Ready state completion	6
Ready state is not completed	4
Ready state does not support	2
Ignition type (fuel)	ignition
BACK	1/2

4.5 I/M Readiness

Select **[I/M Info.]** in Main Menu and press **[OK]**, the tool will read the I/M readiness status and display on the screen, as shown below:

I/M Readiness	
Misfire monitor	OK
Fuel system monitor	OK
Comprehensive component monitor	OK
Compression ignition monitor	N/A
Catalyst monitor	INC
Heated catalyst monitor	N/A
BACK	1/2

4.6 Battery test

Select [**Battery**] in Main Menu and press [**OK**], the tool will test the battery , and show the battery voltage on the screen, as shown below:

Battery	
Engine Coolant Temperature (° C)	67
Battery Voltage (V)	13.6
BACK	1/1

4.7 Review

Select **[Review]** in Main Menu and press **[OK]**, the tool will display the last test without connect vehicle.

5. Diagnostics

Select **[DIAGNOSE]** in **Main Menu** and press **[OK]**. The screen will display a sequence of messages displaying the OBDII protocols will be observed on display until the vehicle protocol is detected.

◆ **if the scan tool fails to communication with the vehicle's ECU, a "ERROR" message shows up on the display**

Communication error!

-- Please make sure:

1. System equipped?
2. Cable connect ok?

-- Maybe you can turn off the key, then turn on the key, and try again.

When the scanner communicate with the vehicle, the screen will display the **[Diagnostic Menu]**, as shown below:

MENU		
Read Trouble Code		
Erase Trouble Code		
Read Datastream		
I/M Readiness Status		
Freeze Frame Data		
Component test		
OK	1/2	BACK

Press [▲][▼] to select, [◀] and [▶] to Page, and press [OK] to confirm.

5.1 Read Trouble Code



- ◆ Reading Codes can be done with the key on engine off (KOEO) or with the key on engine running (KOER).
- ◆ Stored Codes are also known as “hard codes” or “permanent codes”. These codes cause the control module to illuminate the malfunction indicator lamp (MIL) when emission-related fault occurs.
- ◆ Pending Codes are also referred to as “maturing codes” or “continuous monitor codes”. They indicate problems that the control module has detected during the current or last driving cycle but are not considered serious yet. Pending Codes will not turn on the malfunction indicator lamp (MIL). If the fault does not

occur within a certain number of warm-up cycles, the code clears from memory.


select [**Read Trouble Code**] and press [**OK**] in [**Diagnostic Menu**]. If there are some codes, the screen will display the codes as show below:

MENU		
Read Current Code		
Read Pending Code		
Read Permanent Code		
OK	1/1	BACK

According to the above figure to select different item by

pressing [][], and press [**OK**] to confirm.

MENU		
P0602 Control Module Programming error		
P0614 ECM/TCM Incompatible		
OK	1/1	BACK

Press [OK] or  to return the [Diagnostic menu]

View DTCs and their definitions on screen.

- If there are no Diagnostic Trouble Codes present, the display indicates “No Trouble Code” Wait a few seconds or press any OK to return to Diagnostic Menu.
- The control module number, sequence of the DTCs, total number of codes detected and type of codes (Generic or Manufacturer specific) will be observed on the upper right hand corner of the display.

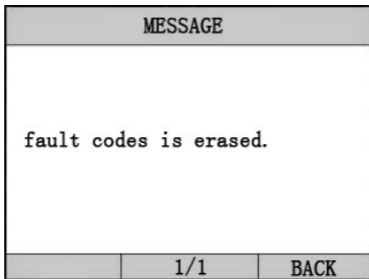
5.2 Erase Trouble Codes


CAUTION: Erasing the Diagnostic Trouble Codes may allow the scan tool to delete not only the codes from the vehicle’s on-board computer, but also “Freeze Frame” data and manufacturer specific

enhanced data. Further, the I/M Readiness Monitor Status for all vehicle monitors is reset to Not Ready or Not Complete status. Do not erase the codes before the system has been checked completely by a technician.

This function is performed with key on engine off (KOEO). Do not start the engine.

select [Erase Trouble Code] and press[OK] in [Diagnostic Menu]. the screen will display the interface as shown below:



Press [OK] or [] to return the [Diagnostic menu]

Notes:

** Before performing this function. Make sure to retrieve and record the trouble codes.*

** After clearing, you should retrieve trouble codes*

once more or turn ignition on and retrieve codes again. If there are still some trouble codes for hard troubles, please find the reason caused the trouble code firstly, and then solve the problem. Now, the trouble codes can be erased.

5.3 Read DataStream

The Read DataStream function allows viewing of live or real time PID data of vehicle's computer module(s).

Press [▲][▼] to select [Read DataStream] in [Diagnostic Menu] and press [OK] to confirm. The screen will display the interface as shown below.

MENU		
Display All Datastream		
Manually Select DataStream		
OK	1/1	BACK

Press [▲][▼] to select, [◀] and [▶] to Page,

and press **[OK]** to confirm.

Notes:

You can select show all datastream or only show the datastream which was selected by you.

Select **[Display All Datastream]**, and Press**[OK]** to enter datastream data model, the screen will display the interface as below:

Data model

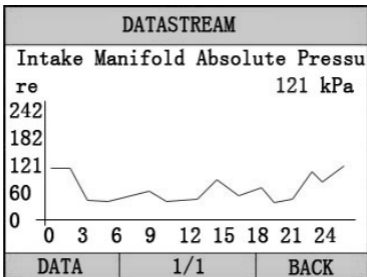
MENU		
DTCs Stroed in this ECU		1
Fuel System 1 Status	ON	
Engine RPM	760	
Intake Manifold Absolute Pressu re	121 kPa	
GRAPH	1/1	BACK

If appear **[GRAPH]**, Press **[OK]** to enter Graph mode.

Press **[↶]** to return **[Diagnostic Menu]**

the screen will display the interface as below:

Graph model



Press **[OK]** to return data model. Press **[↶]** to return **[DIAGNOSTIC MENU]**.

5.4 Component test

The Component Test function allows initiating a leak test for the vehicle's EVAP system. The scan tool itself does not perform the leak test, but commands the vehicle's on-board computer to start the test. Different vehicle manufacturers might have different criteria and methods for stopping the test once it has been started. Before starting the Component Test, refer to the vehicle service manual for instructions to stop the test.

select **[Component Test]** in the **[Diagnostic Menu]** and press **[OK]** to enter the activation function.

If the ECU support the function, the screen will show as

below:

MENU		
Evaporative system leak test		
OK	1/1	BACK

press **[OK]** to confirm, the screen will display the relative information about EVAP system. Some vehicles manufacturers do not allow external devices to control vehicles system. If the car support this function. It may display as below:

MESSAGE		
Operation is successful!		
	1/1	BACK





Press **[OK]** to return data model. Press **[←]** to return


5.5 Freeze Frame Data

When an emission-related fault occurs, certain vehicle conditions are recorded by the on-board computer. This information is referred to as freeze frame data. [freeze Frame data] is a snapshot of the operating conditions at the time of an emission-related fault.

select [Freeze Frame Data] in the [Diagnostic Menu] and press [OK], the screen will display the interface as shown below:

MENU		
DTC that caused required freeze frame data storage		P0602
Fuel System 1 Status		ON
Engine RPM		760
Intake Manifold Absolute Pressure		121 kPa
GRAPH	1/1	BACK

Press [][] to select, [] and [] to Page,

Press [] to return and press [OK] to confirm.

5.6 O2 Sensor Monitoring Test





-- OBD2 regulations set by SAE require that relevant vehicles monitor and test the oxygen (O2) sensors to identify problems related to fuel efficiency and vehicle emissions. These tests are not on-demand tests and they are done automatically when engine operating conditions are within specified limits. These test results are saved in the on-board computer's memory.


-- The O2 Monitor Test function allows retrieval and viewing of O2 sensor monitor test results for the most recently performed tests from the vehicle's on-board computer.

--- The O2 Monitor Test function is not supported by vehicles which communicate using a controller area network (CAN). For O2 Monitor Test results of CAN-equipped vehicles, see chapter "On-Board Mon. Test".

Select [**O2 Sensor Monitoring test**] in [**Diagnostic Menu**], and press [**OK**]. The screen will display as shown below:

MENU		
Bank 1- sensor 1		
OK	1/1	BACK

Press [][] to select, [] and [] to Page,





Press [] to return and press [**OK**] to confirm.

Notes:

If the vehicle does not support the mode, an advisory message will be displayed on the screen.

View test results of select O2 sensor

MENU		
Rich to lean sensor threshold voltage (constant)		2.52 V
Low sensor voltage for switch t ime clculation (constant)		5.20 V
GRAPH	1/1	BACK

Press [][] to select, [] and [] to Page,


Press [] to return.

5.7 Vehicle Information

The **Vehicle Info.** function enables retrieval of **Vehicle Identification No. (VIN)**, **Calibration ID(s)**, **Calibration Verification Nos. (CVNs)** and **In-use Performance tracking** on 2000 and newer vehicles that support **Mode 9**.

Select [**Vehicle information**] in the [**Diagnostic Menu**], and Press [**OK**]. The screen will display as shown below:

MESSAGE		
VIN: L23948AH98S973538		
CALID: L339EH150L3V5050		
CVN: F63F46B4		
	1/1	BACK

Press **[OK]** to return data model. Press **[**] to return **[Diagnostic Menu]**.

6. Update

Please visit the website: <http://www.szcreator.com>, and enter **download** page. You can download the file: CreatorUpdate.pdf. read the file, it will tell how to update the tool.

7. Service

If you have any question when you testing , you can connect with us.

Email: support@szcreator.com

Website: www.szcreator.com