

# Table of Contents

<b>1. SAFETY PRECAUTIONS AND WARNINGS</b> .....	<b>1</b>
<b>2. GENERAL INFORMATION</b> .....	<b>2</b>
2.1 ON-BOARD DIAGNOSTICS (OBD) II.....	2
2.2 DIAGNOSTIC TROUBLE CODES (DTCs).....	2
2.3 LOCATION OF THE DATA LINK CONNECTOR (DLC) .....	3
2.4 OBD II READINESS MONITORS .....	3
2.5 OBD II MONITOR READINESS STATUS .....	4
2.6 OBD II DEFINITIONS .....	4
<b>3. USING THE SCAN TOOL</b> .....	<b>6</b>
3.1 TOOL DESCRIPTION.....	6
3.2 SPECIFICATIONS .....	7
3.3 ACCESSORIES INCLUDED .....	7
3.4 NAVIGATION CHARACTERS .....	7
3.5 KEYBOARD.....	8
3.6 POWER.....	8
3.7 DTC LOOKUP .....	8
3.8 SYSTEM SETUP .....	9
3.9 TOOL INFORMATION .....	15
3.10 BATTERY REPLACEMENT .....	15
3.11 VEHICLE COVERAGE .....	15
3.12 PRODUCT TROUBLESHOOTING.....	16
<b>4. REVIEW DATA</b> .....	<b>16</b>
<b>5. OBDII DIAGNOSTICS</b> .....	<b>18</b>
5.1 READING CODES .....	20
5.3 ERASING CODES.....	22
5.4 LIVE DATA .....	23
5.5 VIEWING FREEZE FRAME DATA.....	32
5.6 RETRIEVING I/M READINESS STATUS.....	32
5.7 O2 MONITOR TEST.....	34
5.8 ON-BOARD MONITOR TEST .....	35
5.9 COMPONENT TEST.....	37
5.10 VIEWING VEHICLE INFORMATION .....	38
5.11 MODULES PRESENT.....	39
<b>7. PRINT DATA</b> .....	<b>43</b>
<b>8. APPENDIX</b> .....	<b>45</b>
8.1 APPENDIX 1-- PID LIST .....	45
8.2 APPENDIX 2 -- IN-USE PERFORMANCE TRACKING DATA LIST.....	51
<b>9. WARRANTY AND SERVICE</b> .....	<b>53</b>
9.1 LIMITED ONE YEAR WARRANTY .....	53
9.2 SERVICE PROCEDURES .....	53

## **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.
- Put the transmission in PARK (for automatic transmission) or 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

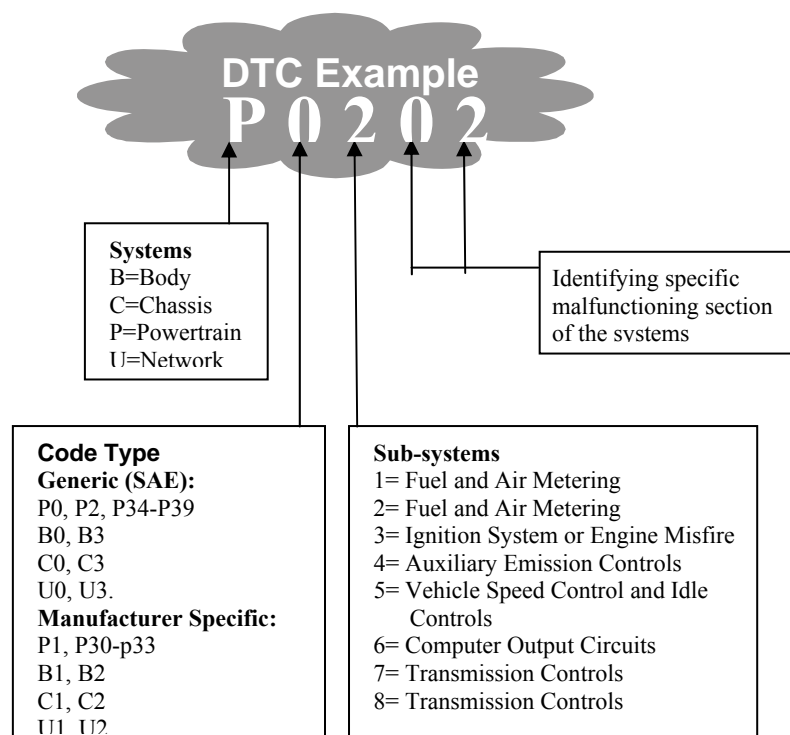
The first generation of On-Board Diagnostics (called OBD I) was developed by the California Air Resources Board (ARB) and implemented in 1988 to monitor some of the emission control components on vehicles. As technology evolved and the desire to improve the On-Board Diagnostic system increased, a new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

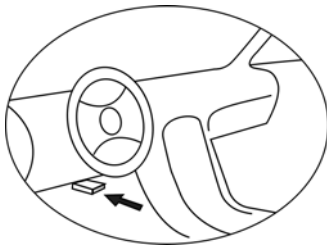
### 2.2 Diagnostic Trouble Codes (DTCs)

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 consists 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 with the vehicle's on-board computer. The DLC is usually located 12 inches from the center of the 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 OBD II system is 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 the 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 Status**

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 status is to allow inspectors to determine if the 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" after an appropriate drive cycle has been performed. The drive cycle that enables a monitor and sets readiness codes to "Ready" varies for each individual monitor. Once a monitor is set as "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 identify 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 diagnostics. 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.




**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 in 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 **LCD DISPLAY** -- Indicates test results. Backlit, 128 x 64 pixel display with contrast adjustment.
- ②  **ENTER BUTTON** -- Confirms a selection (or action) from a menu. Starts recording live data under manual trigger mode.
- ③  **ESC BUTTON** -- Cancels a selection (or action) from a menu or returns to the menu. It is also used to setup system, exit DTC Lookup screen, or stop data recording when pressed.
- ④  **LEFT SCROLL BUTTON** -- When look up DTC definitions, moves to previous character and views additional information on previous screens if DTC definition covers more than one screen; deselect all marked PID data when viewing or recording customized live data list; views previous frames of recorded data when playing back live data. It is also used to update DTC library when pressed.
- ⑤  **RIGHT SCROLL BUTTON** -- When look up DTC definitions, moves to next character and view additional information on next screens if DTC definition covers more than one screen; selects/deselects PID data when viewing or recording customized live data list, and views next frames of data when playing back live data.
- ⑥  **UP SCROLL BUTTON** -- Moves up through menu and submenu items in menu mode. When more than one screen of data is retrieved, moves up through the current screen to the previous screens for additional data.

- ⑦  **DOWN SCROLL BUTTON** -- Moves down through menu and submenu items in menu mode. When more than one screen of data is retrieved, moves down through the current screen to next screens for additional data. It is also used as the language setup hotkey when pressed.
- ⑧  **HELP BUTTON** -- Provides help information and Code Break function.
- ⑨  **POWER SWITCH** -- Turns on/off the scan tool when powered by cell battery; resets the scanner when powered by vehicle battery.
- ⑩ **OBD II CONNECTOR** -- Connects the scan tool to the vehicle's Data Link Connector (DLC).
- ⑪ **RUBBER BOOT** -- Protects the scan tool from drop, abrasion and etc.
- ⑫ **USB CONNECTOR** -- Connects the scan tool to the PC for printing and upgrading.

### 3.2 Specifications

- 1) Display: Backlit, 128 x 64 pixel display with contrast adjustment
- 2) Operating Temperature: 0 to 60°C (32 to 140 F°)
- 3) Storage Temperature: -20 to 70°C (-4 to 158 F°)
- 4) External Power: 8.0 to 18.0 V power provided via vehicle battery
- 5) Internal Power: 9V cell battery
- 6) Dimensions:

<b>Length</b>	<b>Width</b>	<b>Height</b>
178 mm (7.00")	95 mm (3.74")	35 mm (1.38")
7) NW: 0.38kg (0.84lb),      GW: 0.55 kg(1.21lb)		

### 3.3 Accessories Included

- 1) **User's Manual** -- Instructions on tool operations.
- 2) **CD** -- Includes user's manual, MaxiLink update software, and etc.
- 3) **OBD2 cable** -- Provides power to tool and communicates between tool and vehicle.
- 4) **USB cable** -- Used to upgrade the scan tool, and to print retrieved data.
- 5) **Carry case** -- A nylon case to store the scan tool when not in use.
- 6) **Cell battery** -- Supplies power to the scan tool when disconnected from vehicle DLC.

### 3.4 Navigation Characters

Characters used to help navigate the scan tool are:

- 1) "▶" -- Indicates current selection.
- 2) "⬇" -- A **DOWN** Arrow indicates additional information is available on next screens.



- 3) “▲”-- An UP Arrow indicates additional information is available on previous screens
- 4) “\$” -- Identifies the control module number from which data is retrieved.
- 5) “?” -- Indicates help or code breaker information is available.
- 6) “G” -- Indicates graphic viewing is available.
- 7) “🔋 ” -- Indicates battery volume.

### 3.5 Keyboard

No solvents such as alcohol are allowed to clean the keypad or display. Use a mild nonabrasive detergent and a soft cotton cloth. Do not soak the keypad as the keypad is not waterproof.

### 3.6 Power

#### Internal Battery Power

The scan tool has a 9V cell battery that provides power for off-car reviewing and analysis. Press the power key to turn on the scan tool. When the 🔋 icon appears, replace the battery as instructed in “Battery Replacement” on paragraph 3.10.

- *If the scan tool is stored for a long period of time, remove batteries to prevent battery leakage from damaging battery compartment.*

#### External Power

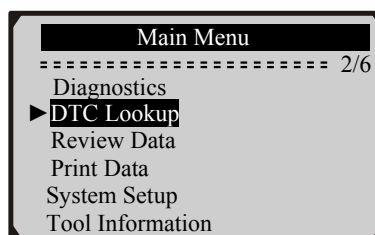
External power of the scan tool is provided via the vehicle Data Link Connector (DLC). Just follow the steps below to turn on the scan tool:

- 1) Connect the OBD II Cable to scan tool.
  - 2) Find DLC on vehicle.
- *A plastic DLC cover may be found for some vehicles and you need to remove it before plugging the OBD2 cable.*
- 3) Plug OBD II cable to the vehicle’s DLC.

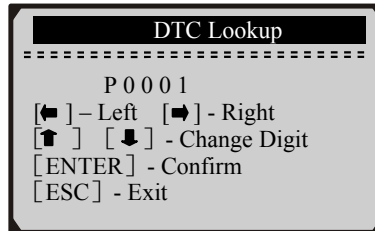
### 3.7 DTC Lookup

The DTC Lookup function is used to search for definitions of DTCs stored in the DTC library and for code breaker information.

- 1) From Main Menu, use the UP/DOWN scroll button to select DTC Lookup and press the ENTER button.



- The number “x/x” to the right indicates total number of items under this menu and sequence of highlighted item.
  - The “?” to the right indicates help information available. Press **HELP** button to view help information of selected item.
- 2) From **DTC Lookup** menu, use the **LEFT/RIGHT** button to move to the desired character, use the **UP/DOWN** button to change selected digit/character and press the **ENTER** button to confirm.



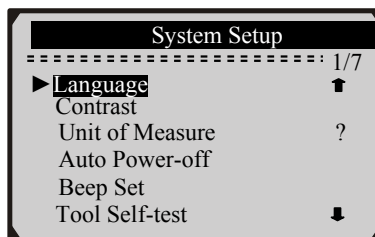
- 3) View the DTC definition on screen. When DTC definition covers more than one screen, use the **LEFT/RIGHT** button to view additional information on previous/next screens.
- For manufacturer specific codes, you need to select a vehicle make on an additional screen to look for DTC definitions.
  - If definition could not be found (SAE or Manufacturer Specific), the scan tool displays “DTC definition not found! Please refer to vehicle service manual!”
  - For code breaker information, you need to press the “?” Help button.
- 4) To view next or previous DTC in the built-in DTC library, use the **UP/DOWN** button.
- 5) To enter another DTC, press the **ESC** button to return to previous screen.
- 6) To exit to Main Menu, press the **ESC** button.

### 3.8 System Setup

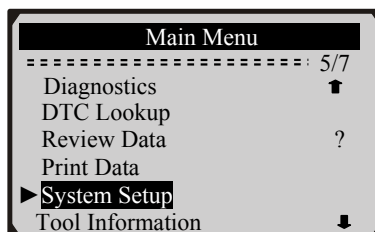
The scan tool allows you to make the following adjustments and settings:

- 1) **Language:** Selects the desired language.
  - 2) **Contrast:** Adjusts the contrast of the LCD display.
  - 3) **Unit of measure:** Sets the unit of measure to English or Metric.
  - 4) **Auto Power-Off:** Sets automatic power-off limits.
  - 5) **Beep Set:** Turns on/off beep.
  - 6) **Tool Self-test:** Checks if the LCD display and keyboard are working normally.
  - 7) **Update Mode:** Used for updating the scan tool.
- *Settings of the unit will remain until change to the existing settings is made.*

#### To enter the System Setup menu



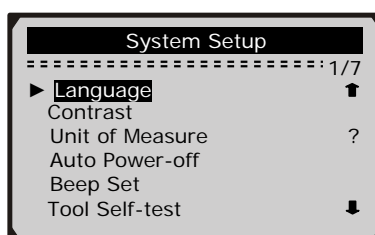
From the **Main Menu**, use the **UP/DOWN** scroll button to select **System Setup**, and press the **ENTER** button. Follow the instructions to make adjustments and settings as described in the following setup options.



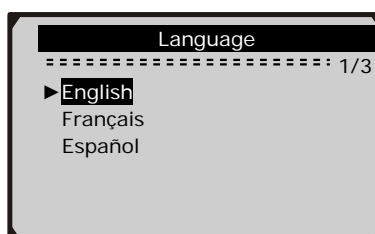
## Language Setup

- *English is the default language.*

- 1) From **System Setup** menu, use the **UP/DOWN** scroll button to select **Language**, and press the **ENTER** button.

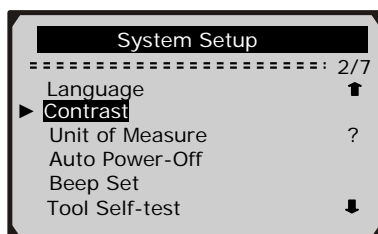


- 2) Use the **UP/DOWN** scroll button to select the desired language and press the **ENTER** button to save your selection and return to previous menu. We provide three language options currently.

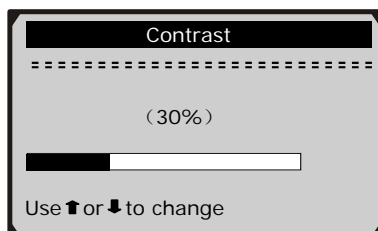


## Contrast Adjustment

- 1) From **System Setup** menu, use the **UP/DOWN** scroll button to select **Contrast**, and press the **ENTER** button.



- 2) From **Contrast** menu, use the **UP/DOWN** scroll button to increase or decrease contrast.

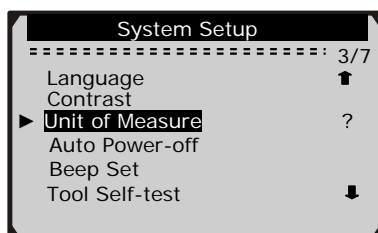


- 3) Press the **ENTER** button to save your settings and return to previous menu.

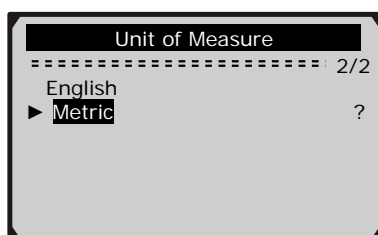
## Unit of Measurement

- *Metric is the default measurement unit.*

- 1) From **System Setup** menu, use the **UP/DOWN** scroll button to select **Unit of Measure** and press the **ENTER** button.



- 2) From **Unit of Measure** menu, use the **UP/DOWN** scroll button to select the desired unit of measurement.

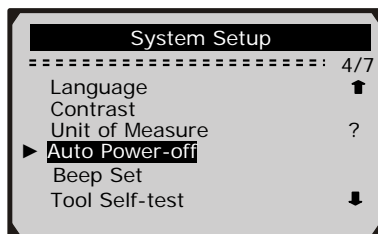


- 3) Press the **ENTER** button to save your selection and return to previous menu.

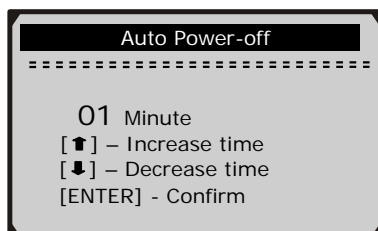
## Auto Power-off

- *The minimum automatic power-off time is 1 minute, and the maximum is 20 minutes.*
- *The Auto Power-Off function can be available only when the scanner is powered by cell battery.*

- 1) From **System Setup** menu, use the **UP/DOWN** scroll button to select **Auto Power-Off** and press the **ENTER** button.



- 2) From **Auto Power-off** menu, use the **UP/DOWN** scroll button to increase or decrease time.

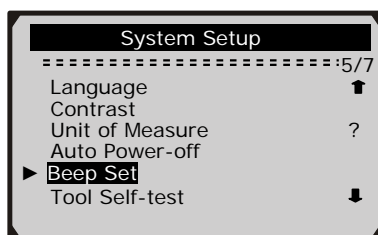


- 3) Press the **ENTER** button to save your setting and return to previous menu.

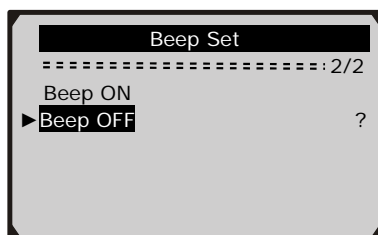
## Beep Set

- *The default setting is Beep On.*

- 1) From **System Setup** menu, use the **UP/DOWN** scroll button to select **Beep Set** and press the **ENTER** button.



- 2) From **Beep Set** menu, use the **UP/DOWN** scroll button to select Beep ON or Beep OFF to turn on/off the beep.



- 3) Press the **ENTER** button to save your selection and return to previous menu.

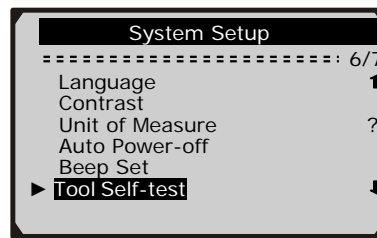
## Tool Self-test

The **Tool Self-test** function checks if the display and keyboard are working properly.

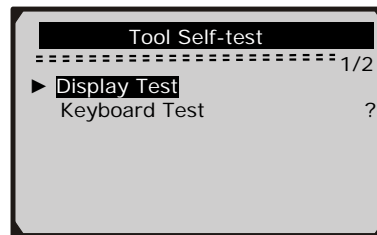
### A. Display test

The **Display Test** function checks if the LCD display is working normally.

- 1) From **System Setup** menu, use the **UP/DOWN** scroll button to select **Tool Self-test**, and press the **ENTER** button.



- 2) Select **Display Test** from **Tool Self-test** menu and press the **ENTER** button.

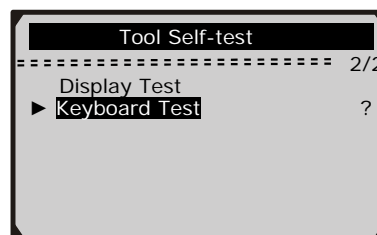


- 3) Press the **ENTER** button again to start test. Look for missing spots in the solid black characters.
- 4) When completed, press the **ESC** button to return.

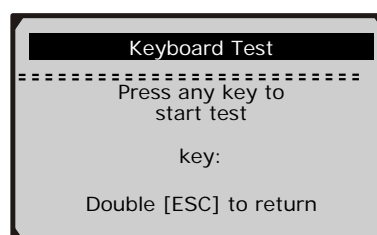
## B. Keyboard Test

**The Keyboard Test function verifies if the keys are functioning properly.**

- 1) Use the **UP/DOWN** scroll button to select **Keyboard Test** from the **Tool Self-test** menu, and then press the **ENTER** button.



- 2) Press any key to start test. When you press a key, the key name should be observed on the display. If the key name does not show up, then the key is not functioning properly.



- If you press and hold the power switch, the key name does not show on the screen, but resets the scanner when powered by vehicle battery, or turns off the scanner when

powered by cell battery. If it does not restart the scanner or power off the scanner, the key is not working properly.

- 3) Double press **ESC** to return to previous menu.

## Update Mode

**The Update Mode is used for updating the scan tool.**

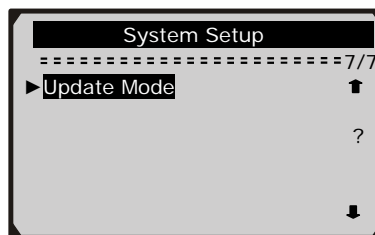
- *To update programs or DTC files, you need the following tools:*

MS609 scan tool

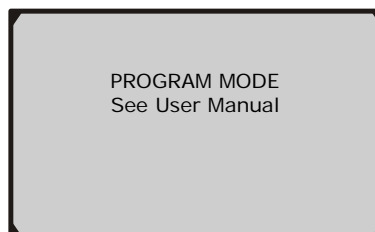
A PC or laptop with USB ports

A USB cable

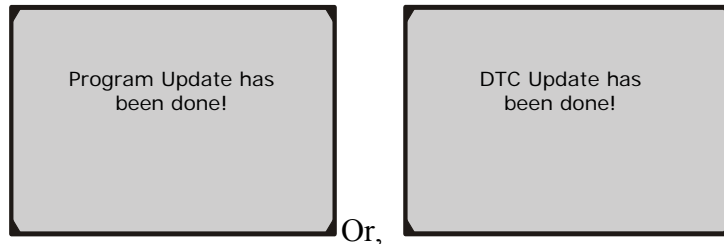
- 1) Install Maxi-Link applications through the included CD, or downloading the applications from our website: [www.auteltech.com](http://www.auteltech.com) or our distributors' site.
- 2) Download programs and/or DTC files from [www.auteltech.com](http://www.auteltech.com) or our distributors' website into your computer.
- 3) Connect your MS609 to your computer with a USB cable.
- 4) From **System Setup** menu, use the **UP/DOWN** scroll button to select **Update Mode** and press the **ENTER** button.



- Or, hold the Left button and Power button for several second to enter **Update Mode**.



- 5) Open Maxi-Link Software; select **Scan Tools – MS609 – Update**.
- 6) Click **“Select File”** on the Maxi-Link screen to locate update file.
- 7) Click **“update”** to start updating. When update is done, MS609 displays a notice.

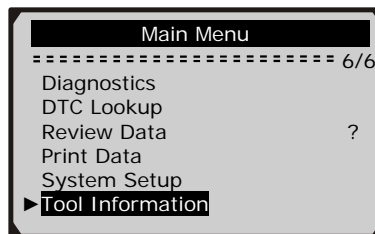


- 8) To exit the update mode, please power off the scan tool.

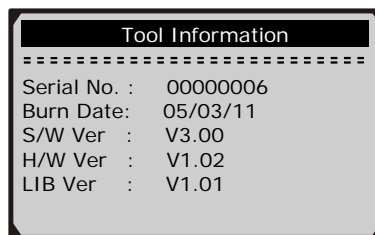
### 3.9 Tool Information

The **Tool Information** function allows viewing of some important information such as **serial number and software version number of the scanner.**


- 1) From **Main Menu**, use the **UP/DOWN** scroll button to select **Tool Information** and press the **ENTER** button; wait for the **Tool Information** screen to appear.



- 2) View tool information on screen.



### 3.10 Battery Replacement

The scan tool requires a 9V cell battery to operate when disconnected from vehicle power. When the icon  appears on the screen, replace the battery.

- 1) Locate the battery cover on the back of the scan tool.
- 2) Remove the battery cover screw and slide the battery cover off.
- 3) Remove discharged batteries and install a new 9V cell battery.
- 4) Reinstall battery cover by sliding battery cover on and installing screw.

### 3.11 Vehicle Coverage

The Maxiscan™ MS609 OBDII/EOBD Scanner is specially designed to work with all OBD II compliant vehicles, including those equipped with next-generation protocol -- Control Area Network (CAN). It is required by EPA that all 1996 and newer vehicles (cars and light trucks)



sold in the United States must be OBD II compliant and this includes all Domestic, Asian and European vehicles.

A small number of 1994 and 1995 model year gasoline vehicles are OBD II compliant. To verify if a 1994 or 1995 vehicle is OBD II compliant, check the Vehicle Emissions Control Information (VECI) Label which is located under the hood or by the radiator of most vehicles. If the vehicle is OBD II compliant, the label will designate “OBD II Certified”. Additionally, Government regulations mandate that all OBD II compliant vehicles must have a “common” sixteen-pin Data Link Connector (DLC).

For your vehicle to be OBD II compliant it must have a 16-pin DLC (Data Link Connector) under the dash and the Vehicle Emission Control Information Label must state that the vehicle is OBD II compliant.

### **3.12 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:

- ✓ Verify that the ignition is ON;
- ✓ Check if the scan tool’s OBD II connector is securely connected to the vehicle’s DLC;
- ✓ Verify that the vehicle is OBD2 compliant;
- ✓ Turn the ignition off and wait for about 10 seconds. Turn the ignition back to on and continue the testing;
- ✓ Verify the control module is not defective.

#### **Operating Error**

If the scan tool freezes, then an exception occurs or the vehicle’s ECU (Engine Control Unit) is too slow to respond to requests. You need to do the following to reset the tool:

- ✓ Press and hold the **POWER** button for at least 2 seconds to reset the scan tool.
- ✓ Turn the ignition off and wait for about 10 seconds. Turn the ignition back to on and continue the testing.

#### **Scan tool doesn’t power up**

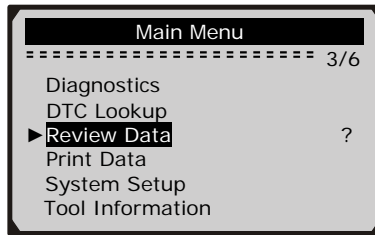
If the scan tool won’t power up or operates incorrectly in any other way, you need to do the following to check up:

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

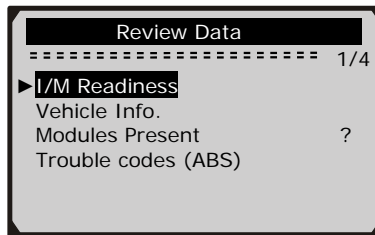
## **4. Review Data**

**The Review Data function allows viewing of data from last test recorded by the scan tool.**

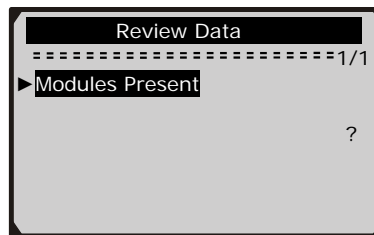
- 1) Use the **UP/DOWN** scroll button to select **Review Data** from **Main Menu**, and press the **ENTER** button



- 2) Use the **UP/DOWN** scroll button to select the desired item from **Review Data** menu, and press the **ENTER** button.

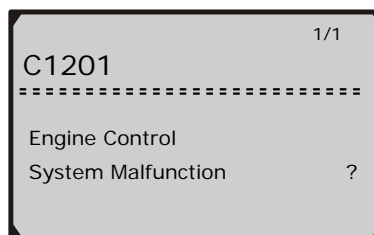


- If no data from previously tested vehicle is recorded, only **Module Present** data containing module ID and protocol type can be reviewed.



- Diagnostics results can be reviewed from this list only when any trouble code is detected in previous tests.

- 3) Review selected data on screen.



Note: Data stored in a language different from current system settings of the scan tool will not be reviewable. Please adjust the language settings accordingly. A reminder would pop up under such circumstances.

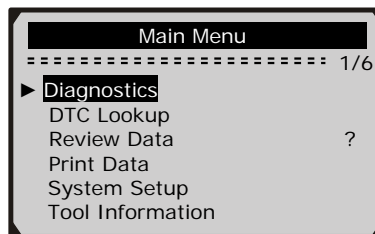


## 5. OBDII Diagnostics

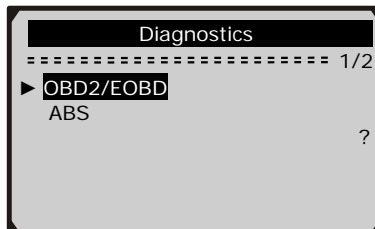
When more than one vehicle control module is detected by the scan tool, you will be prompted to select the module where the data may be retrieved. The most often to be selected are the Power train Control Module [PCM] and Transmission Control Module [TCM].

**CAUTION:** *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 the scan tool cable connector into the vehicle's DLC.
- 4) Turn the ignition on. Engine can be off or running.
- 5) Turn on the scan tool. Use the **UP/DOWN** scroll button to select **Diagnostics** from the **Main Menu**.



- 6) Press the **ENTER** button to wait for the Menu to appear.

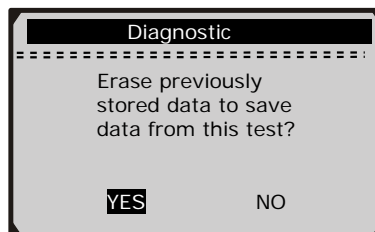


- 7) Select OBD2&EOBD and wait for a few seconds; a sequence of messages displaying the OBD2 protocols will be observed on the display until the vehicle protocol is detected.

- *If the scan tool fails to communicate with the vehicle's ECU (Engine Control Unit), a "LINKING ERROR!" message shows up on the display.*
- ✓ Verify that the ignition is ON;
- ✓ Check if the scan tool's OBD II connector is securely connected to the vehicle's DLC;
- ✓ Verify that the vehicle is OBD2 compliant;
- ✓ Turn the ignition off and wait for about 10 seconds. Turn the ignition back to on and repeat the procedure from step 5.
- *If the "LINKING ERROR" message does not go away, then there might be problems for the scan tool to communicate with the vehicle. Contact your local distributor or the manufacturer's customer service department for assistance.*

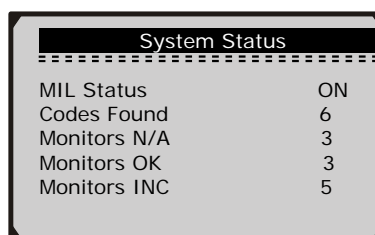
8) You will be prompted to erase previously stored data.

- *Review previously stored data thoroughly before erasing.*

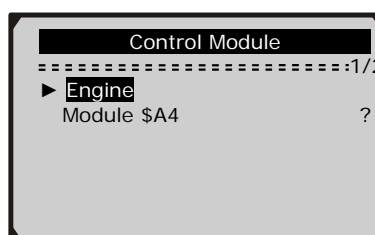


9) If you wish to erase the data, press the **ENTER** button; if you do not want to erase the data, press **ESC** to exit or use **LEFT/RIGHT** button to select **NO** and press **ENTER** to continue.

10) View a summary of system status (MIL status, DTC counts, Monitor status) on screen. Wait a few seconds or press any key for **Diagnostic Menu** to come up.



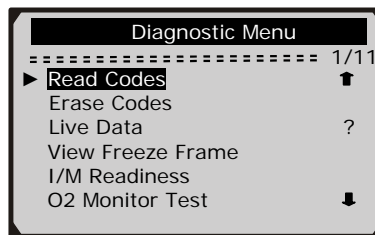
- If more than one module is detected, you will be prompted to select a module before testing.



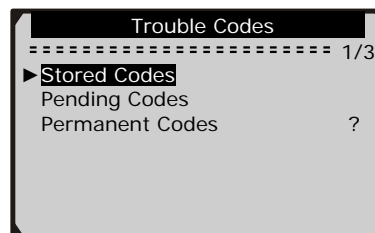
- Use the **UP/DOWN** scroll button to select a module and press the **ENTER** button.

## 5.1 Reading Codes

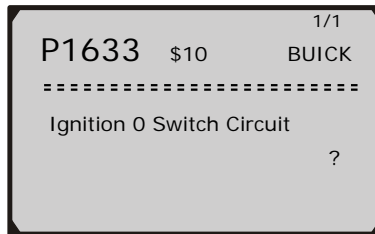
- ◆ *Reading Codes can be done with the key on engine off (KOEO) or with the key on engine running (KOER).*
  - ◆ *Stored Codes are also known as “hard codes” or “permanent codes”. These codes cause the control module to illuminate the malfunction indicator light (MIL) when emission-related fault occurs.*
  - ◆ *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.*
  - ◆ *Permanent codes are DTCs that are “confirmed” and are retained in the non-volatile memory of the server until the appropriate monitor for each DTC has determined that the malfunction is no longer present and is not commanding the MIL on.*
- 1) Use **UP/DOWN** scroll button to select **Read Codes** from **Diagnostic Menu** and press **ENTER** button.



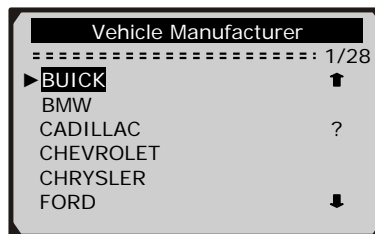
- 2) Use the **UP/DOWN** scroll button to select **Stored Codes** or **Pending Codes** from the **Trouble Codes** menu and press the **ENTER** button.



- If there is not any Diagnostic Trouble Code, the display indicates “**No (pending) codes are stored in the module!**” Wait a few seconds or press any key to return to previous screen.
  - Permanent Codes function is available for merely vehicles supporting the CAN protocols.
- 3) View DTCs and their definitions on screen.



- 4) If more than one DTC is found, use the **LEFT/RIGHT** scroll button to check all the codes.
  - If retrieved DTCs contain any manufacturer specific or enhanced codes, a “**Manufacturer specific codes are found! Press any key to select vehicle make!**” message comes up prompting you to select vehicle manufacturer to view DTC definitions. Use **UP/DOWN** scroll button to select manufacturer and then press **ENTER** button to confirm.

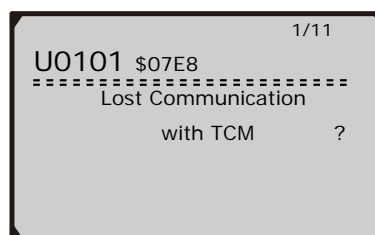


- If the manufacturer of your vehicle is not listed, use the **UP/DOWN** scroll button to select **Other** and press the **ENTER** button.

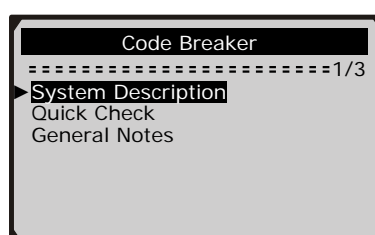
## 5.2 Code Breaker

**Code breaker function is used to provide descriptions of DTCs and helpful tips to deal with DTCs stored in “Stored Codes”.**

- 1) Repeat steps in the **Read Code** section to identify DTCs.



- 2) Press the **(?)** button to display **Code Break** menu.



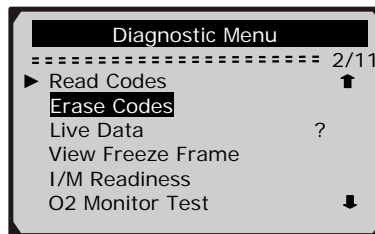
- 3) Click on **System Description and Quick Check** to read detailed descriptions of DTC.
- 4) Click on **General Notes** to view helpful repair information of DTCs.
- 5) To return to previous screen, press **ESC** button.

### 5.3 Erasing Codes

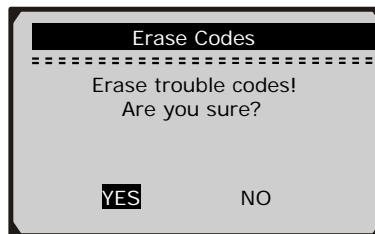
**CAUTION:** Erasing the Diagnostic Trouble Codes may allow the scan tool to delete not only the codes from the vehicle's on-board computer, but also "Freeze Frame" data and manufacturer specific enhanced data. Further, the I/M Readiness Monitor Status for all vehicle monitors is reset to Not Ready or 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.

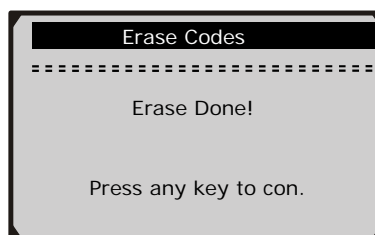
- 1) Use the **UP/DOWN** scroll buttons to select **Erase Codes** from **Diagnostics Menu** and press the **ENTER** button.



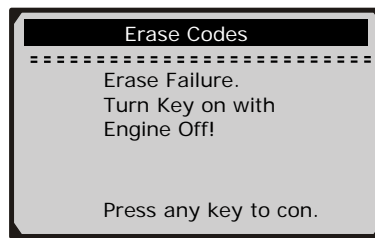
- 2) A warning message comes up asking for your confirmation.



- If you do not want to proceed with erasing codes, press **ESC** button or use **LEFT/RIGHT** scroll button to select **NO** to exit. A message of "**Command Cancelled!**" show ups. Wait a few seconds or press any key to return to **Diagnostic Menu**.
- 3) Press the **ENTER** button to confirm.
    - If the codes are cleared successfully, an "**Erase Done!**" confirmation message shows on the display.



- If the codes are not cleared, then an “**Erase Failure. Turn Key on with Engine off!**” message appears.



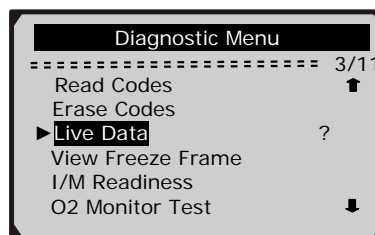
- 4) Press any button to return to **Diagnostic Menu**.

## 5.4 Live Data

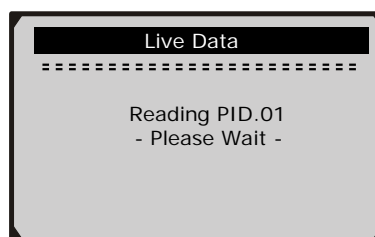
### Viewing Data

The **View Data** function allows viewing of live or real time PID data of vehicle’s computer module(s).

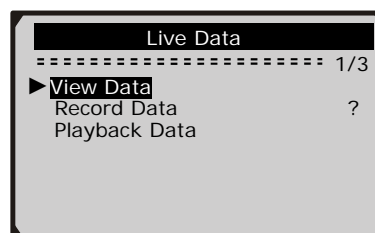
- 1) To view live data, use the **UP/DOWN** scroll button to select **Live Data** from **Diagnostic Menu** and press the **ENTER** button.



- 2) Wait a few seconds while the scan tool validates the PID MAP.



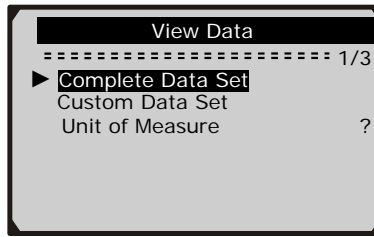
- 3) Use the **UP/DOWN** scroll button to select **View Data** from **Live Data** menu and press the **ENTER** button.



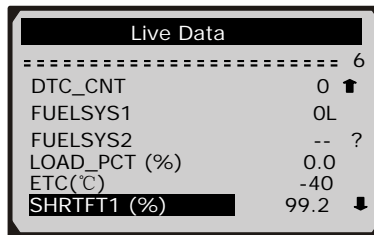
### Viewing Complete Data Set



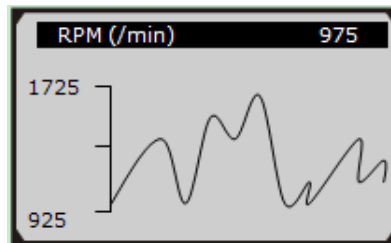
- 4) To view complete set of data, use **UP/DOWN** scroll button to select **Complete Data Set** from **View Data** menu and press the **ENTER** button.



- 5) View live PIDs on the screen. Use the **UP/DOWN** scroll button for more PIDs if an **↑** or **↓** arrow appears on the screen.



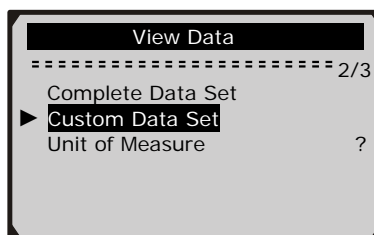
- The number “x” to the right of the screen indicates sequence of the highlighted item.
- To view full name of the highlighted PID, press the **⌂** button.
- If the “G” icon appears when a PID is highlighted, graphic information is available. Press **ENTER** to view graph.



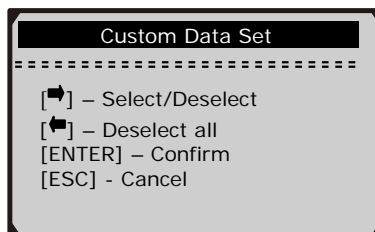
- 6) Press the **ESC** button to return to previous menu.

### Viewing Custom Data Set

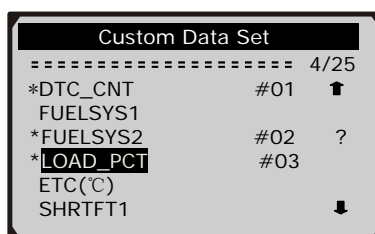
- 7) To view customized PID data, use the **UP/DOWN** scroll button to select **Custom Data Set** from **View Data** menu and press the **ENTER** button.



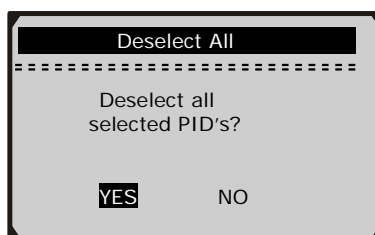
- 8) Observe on-screen instructions.



9) Use the **RIGHT** button to deselect/select data parameters, and use the **UP/DOWN** scroll button to move up and down. Selected parameters are marked with solid squares.

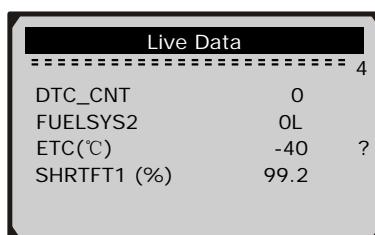


- The number “x” to the upper right corner of the screen indicates sequence of highlighted item; and “#x” are the order that the parameters are selected and will be displayed.
- If you want to deselect all marked items, press the **LEFT** button.
- A message comes up to ask for your confirmation.



- If you decide to deselect these items, press **ENTER**; if you decide not to, press **ESC** or use the **UP/DOWN** scroll button to select **NO** to continue PID selections.

10) Press the **ENTER** button to view selected PIDs on screen.



11) Use the **ESC** button to return to **View Data** menu.

## Recording Data

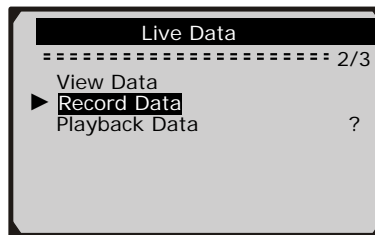
The Record Data function allows recording vehicle modules' Parameter Identification (PID) data to help diagnose intermittent vehicle problems. A recording includes 5 frames of live data before trigger event and several frames after trigger event.

There are two trigger modes used to record data:

- A. **Manual Trigger** - allows user to press the **ENTER** button to start recording.
- B. **DTC Trigger** - automatically records PID data when a fault that causes a DTC to set is detected by vehicle.

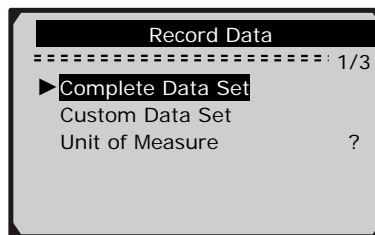
**CAUTION: DO NOT try to drive and operate the scan tool at the same time! Always have another person operate the scan tool while driving.**

- 1) To record live data, use the **UP/DOWN** scroll button to select **Record Data** from **Live Data** menu and press the **ENTER** button.

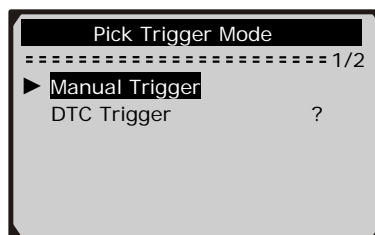


### Recording Complete Data Set

- 2) To record complete set of live data, use the **UP/DOWN** scroll button to select **Complete Data Set** from **Record Data** menu and press the **ENTER** button.

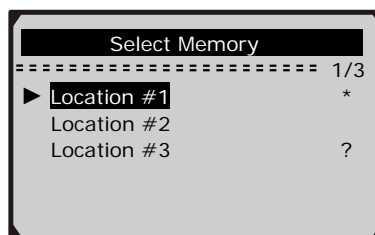


- 3) Use the **UP/DOWN** scroll button to select a trigger mode and press the **ENTER** button.

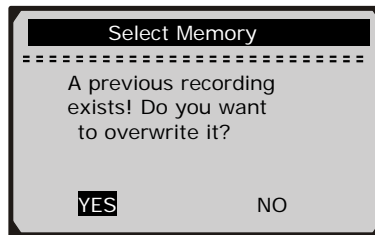


- If data from previously tested vehicle is not erased, data from current test will be stored in a temporary cache.

- 4) Use the **UP/DOWN** scroll button to select a memory location and press the **ENTER** button.



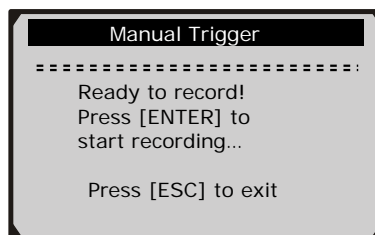
- The asterisk (\*) icon on the screen indicates that there is a previous recording in the memory location.
- If you select a location marked with an asterisk (\*) icon, a message prompting to overwrite old recording displays.



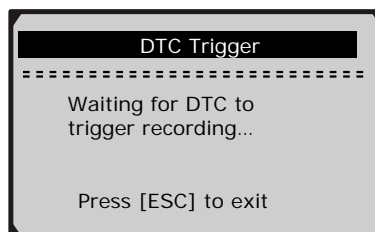
- If you wish to proceed with overwriting the old recording, press the **ENTER** button; if you do not wish to overwrite it, use the **LEFT/RIGHT** button to select **NO** or press the **ESC** button to pick another memory location.

5) Observe on-screen instructions.

- If **Manual Trigger** is selected, following screen shows:

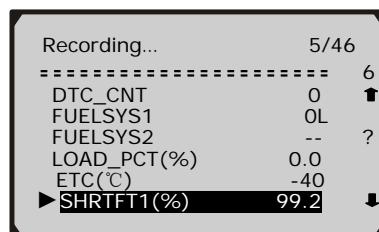


- If **DTC Trigger** is selected, following screen shows:



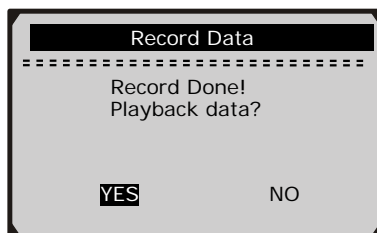
6) Wait for DTC to trigger recording or press **ENTER** to start recording.

- ◆ **Drive till a DTC is detected when DTC Trigger is selected. If no DTCs are detected, press ESC to exit recording.**



- The number “x/x...” to the upper right corner of the screen indicates the maximum frames that can be recorded and the number of recorded frames.

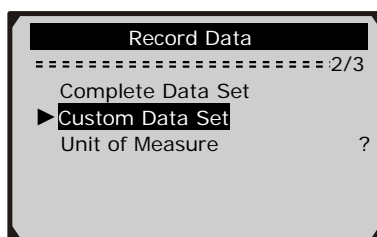
- 7) The scan tool keeps recording PID data until user presses the **ESC** button, selected memory location is full, or it completes recording. A message prompting to playback data shows on the screen.



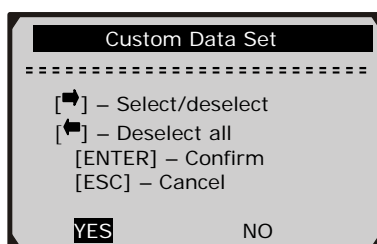
- If you wish to playback recorded data, press the **ENTER** button; if you do not wish to playback, press the **ESC** button, or use **LEFT/RIGHT** button to select **NO** and press the **ENTER** button to return to **Record Data** menu.

### Recording Custom Data Set

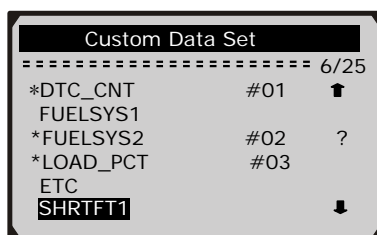
- 8) To record customized data, use the **UP/DOWN** scroll button to select **Custom Data Set** from **Record Data** menu and press the **ENTER** button.



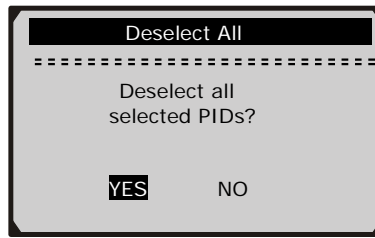
- 9) Observe on-screen instructions. Press the **Enter** button to continue; press the **ESC** button, or use **LEFT/RIGHT** button to select **NO** and press the **ENTER** button to return to **Record Data** menu.



- 10) Use the **RIGHT** button select/deselect data parameters. Selected parameters are marked with solid squares. Press the **ENTER** button to confirm.

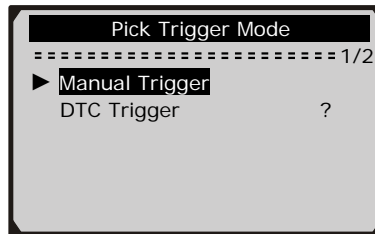


- If you wish to deselect all marked items, press **LEFT** button.
- A message comes up to ask for your confirmation.



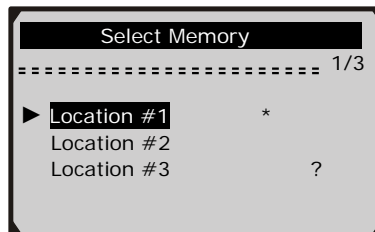
- If you decide to deselect these items, press **ENTER**; if you decide not to, press the **ESC** button, or use the **UP/DOWN** button to select **NO** and press **ENTER** to continue PID selections.

11) Use the **UP/DOWN** scroll button to select a trigger mode and press the **ENTER** button.

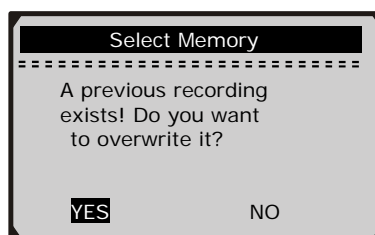


- If data from previously tested vehicle is not erased, data from current test will be stored in temporary cache.

12) Use the **UP/DOWN** scroll button to select a memory location and press the **ENTER** button.



- The asterisk (\*) icon on the screen indicates that there is a previous recording in the memory location.
- If you select a location marked with an asterisk (\*) icon, a message prompting to overwrite old recording is displayed.



- If you do not wish to proceed with overwriting old recording, press the **ENTER** button; if you do not wish to overwrite it, press the **ESC** button, or use the **LEFT/RIGHT** button to select **NO** and press **ENTER** to pick another memory location.

13) Observe on-screen instructions.

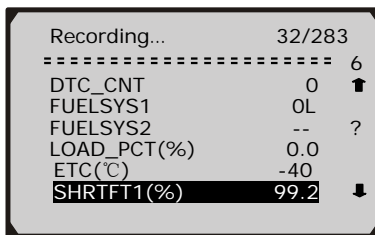
- If **Manual Trigger** is selected, following screen shows:



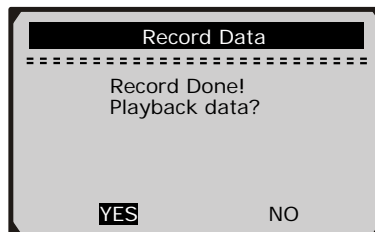
- If **DTC Trigger** is selected, following screen shows:



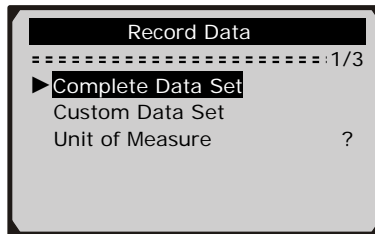
14) Wait for DTC to trigger recording or press **ENTER** to start recording.



15) The scan tool keep recording PID data until user presses **ESC** button, the selected memory location is full, or it completes recording. A message prompting to playback data shows on the screen.



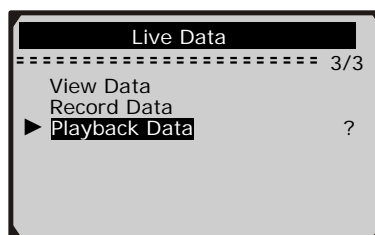
- If you wish to playback recorded data, press the **ENTER** button; if you do not wish to playback, press the **ESC** button, or use the **LEFT/RIGHT** button to select **NO** and press the **ENTER** button to return to **Record Data** menu.



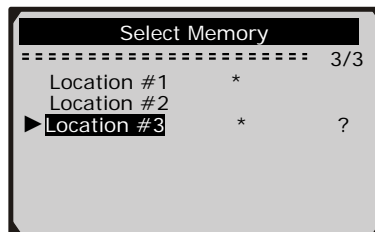
## Playback Data

The **Playback Data** function allows viewing of previously stored PID data.

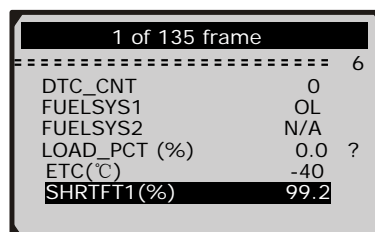
- 1) To playback recorded data, use the **UP/DOWN** scroll button to select **Playback Data** from **Live Data** menu and press the **ENTER** button.



- You are also allowed to playback recorded data immediately after recording.
- 2) Use the **UP/DOWN** button to select the memory location marked with an asterisk (\*) icon.



- If there is no recording in selected location, a message “**Not Supported or Stored No Data**” displays on the screen.
- 3) Use the **UP/DOWN** button to view recorded PIDs of each frame.



- 4) Use the **LEFT/RIGHT** button to view PIDs of next or previous frames.



6 of 135 frame	
DTC_CNT	0
FUELSYS1	OL
FUELSYS2	N/A
LOAD_PCT(%)	0.0 ?
ETC(°C)	-40
SHRTFT1(%)	99.2

## 5.5 Viewing Freeze Frame Data

- 1) To view freeze frame data, use the **UP/DOWN** scroll button to select **View Freeze Frame** from **Diagnostic Menu** and press the **ENTER** button.

Diagnostic Menu	
Read Codes	↑
Erase Codes	
Live Data	?
▶View Freeze Frame	
I/M Readiness	
O2 Monitor Test	↓

- 2) Wait a few seconds while the scan tool validates the PID MAP.
- 3) If retrieved information covers more than one screen, then a down arrow will appear. Use the **DOWN** scroll button, as necessary, until all the data have been shown up.

View Freeze Frame	
DTCFRZF	P1633 ↑
FUELSYS1	OL
FUELSYS2	--
LOAD_PCT (%)	0.0 ?
ECT(°C)	-40
SHRTFT1 (%)	99.2 ↓

- If there is no freeze frame data available, an advisory message “**No freeze frame data stored!**” shows on the display.
- 4) If you want to view full name of a PID, use the **UP/DOWN** scroll button to select the PID, and press the **HELP** button.

FUELSYS1
Fuel System 1 Status

- 5) Press **ESC** button to return to previous screen.

## 5.6 Retrieving I/M Readiness Status

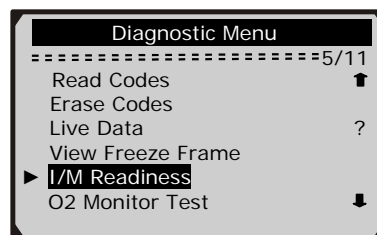
**I/M Readiness function is used to check the operations of the Emission System on OBD2 compliant vehicles. It is an excellent function to use prior to having a vehicle inspected for compliance to a state emissions program.**

**Some latest vehicle models may support two types of I/M Readiness tests:**

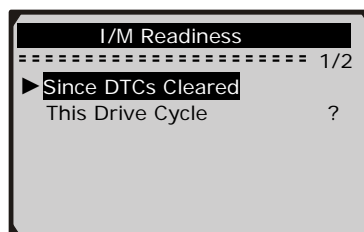
- A. *Since DTCs Cleared*** - indicates status of the monitors since the DTCs are erased.
- B. *This Drive Cycle*** - indicates status of monitors since the beginning of the current drive cycle.

**An I/M Readiness Status result of “NO” does not necessarily indicate that the vehicle being tested will fail the state I/M inspection. For some states, one or more such monitors may be allowed to be “Not Ready” to pass the emissions inspection.**

- **“OK”** -- Indicates that a particular monitor being checked has completed its diagnostic testing.
  - **“INC”** -- Indicates that a particular monitor being checked has not completed its diagnostic testing.
  - **“N/A”** -- The monitor is not supported on that vehicle.
- 1) Use the **UP/DOWN** scroll button to select **I/M Readiness** from **Diagnostic Menu** and press **ENTER** button.



- 2) Wait a few seconds while the scan tool validates the PID MAP.
- 3) If the vehicle supports both types of tests, then both types will be shown on the screen for selection.



- 4) Use the **UP/DOWN** scroll button, as necessary, to view the status of the MIL light (**“ON”** or **“OFF”**) and the following monitors:
- **Misfire monitor** -- Misfire monitor
  - **Fuel System Mon** -- Fuel System Monitor
  - **Comp. Component** -- Comprehensive Components Monitor
  - **Catalyst Mon** -- Catalyst Monitor

- **Htd Catalyst** -- Heated Catalyst Monitor
- **EVAP System Mon** -- Evaporative System Monitor
- **Sec Air System** -- Secondary Air Monitor
- **A/C Refrig Mon** -- A/C system Monitor
- **Oxygen Sens Mon** -- O2 Sensors Monitor
- **Oxygen Sens Htr** --O2 Sensor Heater Monitor
- **EGR System Mon** -- EGR System Monitor

Since DTCs Cleared		
MIL Status	OFF	↑
Misfire Monitor	OK	
Fuel System Mon	OK	?
Comp. Component	OK	
Catalyst Mon	INC	
Htd Catalyst	N/A	↓

5) If the vehicle supports readiness test of “**This Drive Cycle**”, a screen of the following displays:

This Drive Cycle		
MIL Status	OFF	↑
Misfire Monitor	OK	
Fuel System Mon	N/A	?
Comp. Component	OK	
Catalyst Mon	INC	
Htd Catalyst	N/A	↓

6) Press the **ESC** button to return to **Diagnostic Menu**.

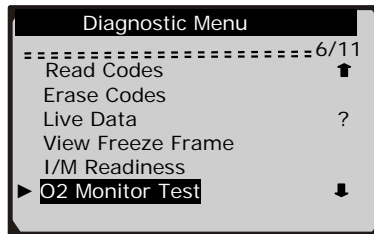
## 5.7 O2 Monitor Test

**OBD2 regulations set by SAE require that relevant vehicles monitor and tests on 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.**

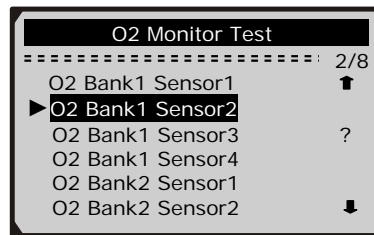
**The O2 Monitor Test function allows retrieval and viewing of O2 sensor monitor test results for the most recently performed tests from the vehicle's on-board computer.**

**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”.**

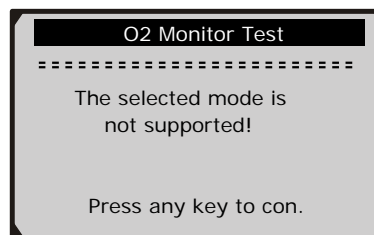
1) Use the **UP/DOWN** scroll button to select **O2 Monitor Test** from **Diagnostic Menu** and press **ENTER** button.



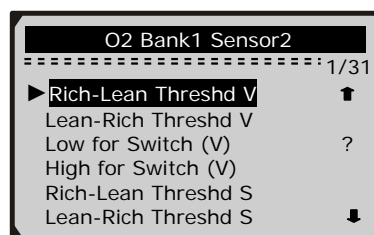
- 2) Wait a few seconds while the scan tool validates the PID MAP.
- 3) Use the **UP/DOWN** scroll button to select O2 sensor from **O2 Monitor Test** menu and press **ENTER** button.



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



- 4) View test results of selected O2 sensor.



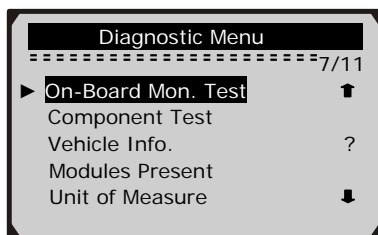
- 5) Use the **UP/DOWN** scroll button to view more screens of data if an **↑** or **↓** icon displays.
- 6) Press the **ESC** button to return to the previous menu.

## 5.8 On-Board Monitor Test

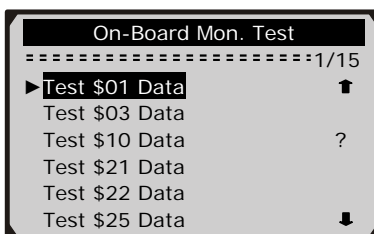
The On-Board Monitor Test is useful after servicing or after erasing a vehicle's control module memory. The On-Board Monitor Test for non-CAN-equipped vehicles retrieves and displays test results for emission-related power train components and systems that are not continuously monitored. The On-Board Monitor Test for CAN-equipped vehicles retrieves and displays test results for emission-related power train components and

systems that are and are not continuously monitored. Test and components IDs are determined by the vehicle manufacturer.

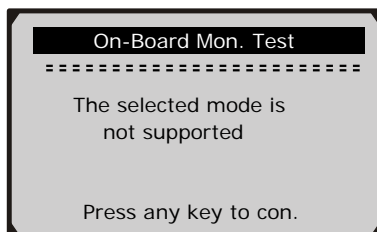
- 1) Use the **UP/DOWN** scroll button to select **On-Board Mon. Test** from **Diagnostic Menu** and press the **ENTER** button.



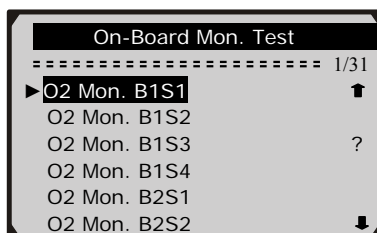
- 2) Wait a few seconds while the scan tool validates the PID MAP.
- 3) From **On-Board Mon. Test** menu, use the **UP/DOWN** scroll button to select a test to view and press the **ENTER** button.



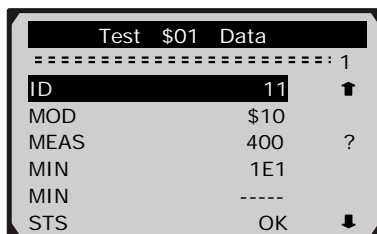
- If the vehicle under test does not support the mode, an advisory message will be displayed on the screen.



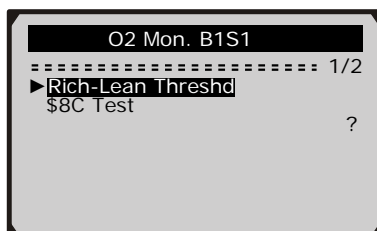
- For CAN-equipped vehicles, test selections can be as below:



- 4) Use the **UP/DOWN** scroll button to select the desired monitor from **On-Board Mon. Test** menu and press the **ENTER** button.
- 5) View test data on screen.



- For CAN-equipped vehicles, test results displayed can be as below:

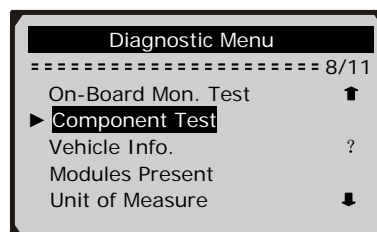


- 6) Press **ESC** button to return to the previous menus.

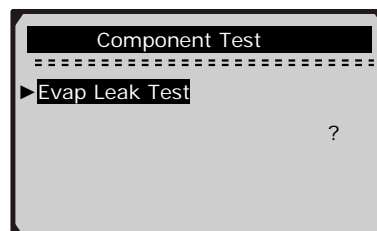
## 5.9 Component Test

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.

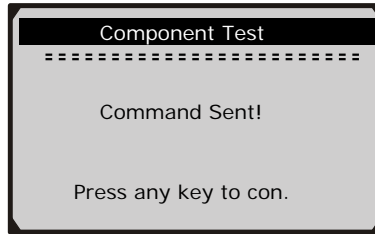
- 1) Use the **UP/DOWN** scroll button to select **Component Test** from **Diagnostic Menu** and press the **ENTER** button.



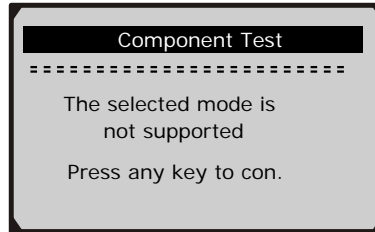
- 2) Wait for the scan tool to display the **Component Test** menu.



- 3) If the test has been initiated by the vehicle, a confirmation message will be displayed on the screen.



- 4) Some vehicles do not allow scan tools to control vehicle systems or components. If the vehicle under test does not support the EVAP Leak Test, an advisory message is displayed on the screen.

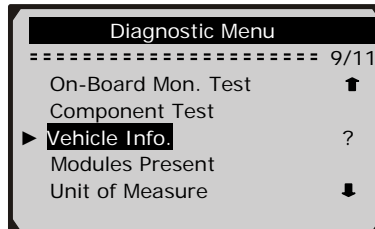


- 5) Wait a few seconds or press any key to return to previous screen.

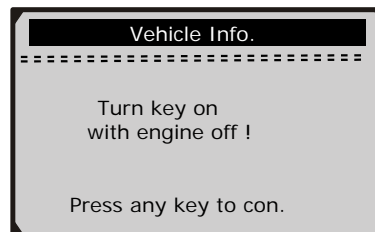
## 5.10 Viewing Vehicle Information

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

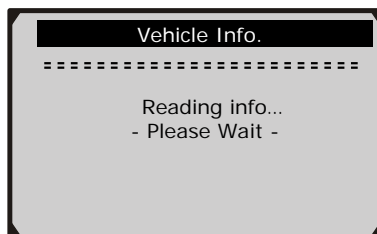
- 1) Use **UP/DOWN** scroll button to select **Vehicle Info.** from the **Diagnostic Menu** and press **ENTER** button.



- 2) An advisory message comes up to remind you. Wait a few seconds or press any key to continue.

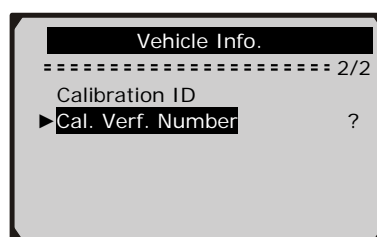


- 3) Wait a few seconds while the scan tool reads vehicle information.

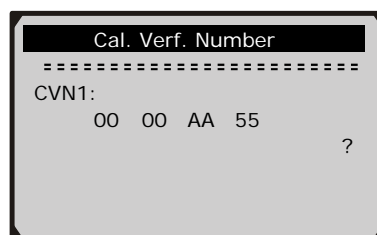


- If the vehicle does not support this mode, a message shows on the display warning that the mode is not supported.

4) From **Vehicle Info.** Menu, use the **UP/DOWN** scroll button to select an available item to view and press the **ENTER** button.



5) View retrieved vehicle information on screen.

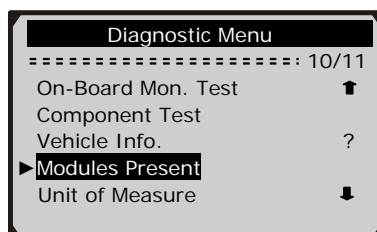


6) Press the **ESC** button to return previous menu

## 5.11 Modules Present

**The Modules Present function allows viewing of the module IDs and communication protocols for OBD2 modules in the vehicle.**

1) Use the **UP/DOWN** scroll button to select **Modules Present** from **Diagnostic Menu** and press **ENTER** button.



2) View modules present with their IDs and communication protocols.



Modules Present		
ID	Protocol	
\$00	ISO 9141-2	?

## 6. ABS Testing

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.
4. Turn the ignition on. Engine can be off or running.
5. Press the **ENTER** button to enter **Main Menu**. Use the **UP/DOWN** scroll button to select **Diagnostics** from the menu.

Main Menu		
===== 1/6		
▶ <b>Diagnostics</b>		
DTC Lookup		
Review Data		?
Print Data		
System Setup		
Tool Information		

- Press the **ENTER** button to wait for the Diagnostics menu to appear.

Diagnostics		
===== 2/2		
OBD2&EOBD		
▶ <b>ABS</b>		?

- Select ABS and wait for the Area menu to appear.

Area		
===== 1/3		
▶ <b>USA Vehicles</b>		
European Vehicles		
Asian Vehicles		?

- Selecting a vehicle is required to communicate with the vehicle and to correctly display DTC definitions.

During vehicle selection, the tool may ask for the following information:

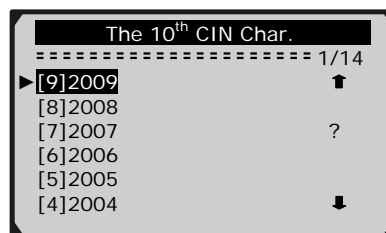
- Manufacture
- Model Year
- Vehicle Type
- Model Series
- Date of Manufacture
- Steering Type
- Fuel Type
- Market

**Example:** To run ABS test on **GM**, please do the following:

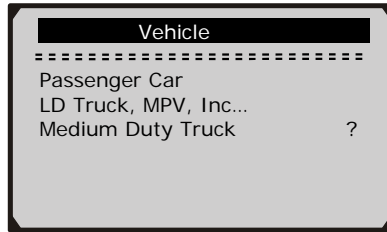
The following screen is for reference only:

VIN	Description
1	
2	
3	Make
4	Series (of passenger car)
5	Series (of truck)
6	Line Chassis
7	Chassis Type
8	Engine Type
9	
10	Model Year
...	

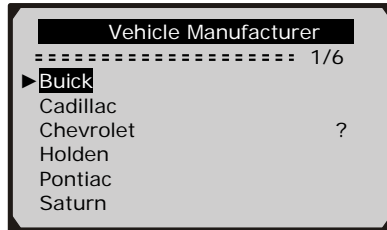
- Select ABS and wait for the Vehicle Menu to appear.
- Select GM and choose the correct Model Year.



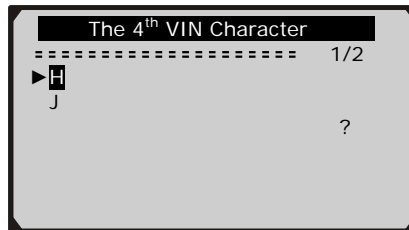
- Select your vehicle type.



- Choose your vehicle manufacture

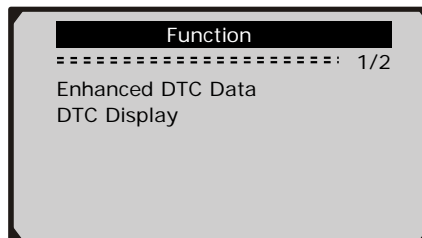


- Choose the correct series No. of your vehicle; wait for the System Menu to appear. (Please refer to the 4<sup>th</sup> VIN character for a passenger car, and the 5<sup>th</sup> VIN character for a truck.)

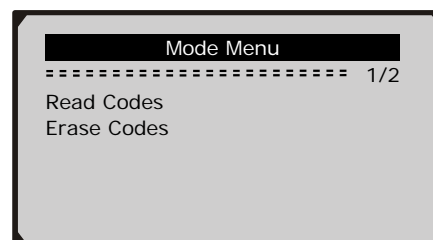


Note: You may not need to make all the selections, or have to select other features. For some vehicles, the tool will not ask for any information before turning to the Function menu.

- Wait for the Function menu.



- Click on “Enhanced DTC Data” to read enhanced code information.
- Click on “DTC Display” and wait for the following screen



- Click on “Read Codes” to read code information.

- Click on “Erase Codes” to delete code information.

## 7. Print Data

The **Print Data** function allows printing out diagnostic data recorded by the scan tool or customized test reports.

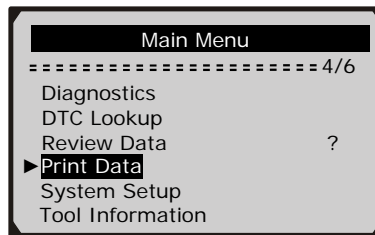
- To print out retrieved data, you need the following tools:

MS609 scan tool

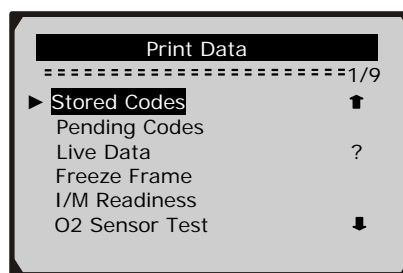
A PC or laptop with USB ports

A USB cable

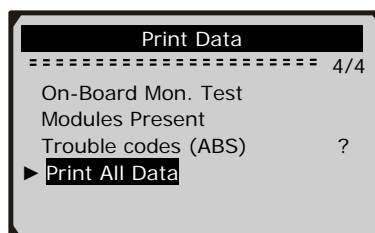
- 1) Install Maxi-Link applications through the included CD, or downloading the applications from our website: [www.auteltech.com](http://www.auteltech.com) or our distributors’ site.
- 2) Connect the scanner to computer with the USB cable supplied.
- 3) Launch Maxi-Link Tool Kit, and start printing application by selecting **Scan Tools → MS609 → Print**.
- 4) Use the **UP/DOWN** scroll button to select **Print Data** from **Main Menu**, and press the **ENTER** button.



- 5) Use the **UP/DOWN** scroll button to select the desired item to print from **Print Data** menu.



- To print all retrieved data, use the **UP/DOWN** scroll button to select **Print All Data** from **Print Data** menu.



6) Press the **ENTER** button to upload data to the computer.

7) Click the  button on Maxi-Link screen to print the data.

Note: Data stored in a language different from current system settings of the scan tool will not be printable. Please adjust language settings before printing. A reminder would pop up under such circumstances.



## 8. Appendix

### 8.1 Appendix 1-- PID List

<b>PID Abbreviation</b>	<b>Full Name</b>
DTC_CNT	DTC Stored Number
DTCFRZF	DTC
FUELSYS1	Fuel System 1 Status
FUELSYS2	Fuel System 2 Status
LOAD_PCT (%)	Calculated Load Value
ETC(°F)	Engine Coolant Temperature
ETC(°C)	Engine Coolant Temperature
SHRTFT1 (%)	Short Term Fuel Trim-Bank1
SHRTFT3 (%)	Short Term Fuel Trim-Bank3
LONGFT1 (%)	Long Term Fuel Trim-Bank1
LONGFT3 (%)	Long Term Fuel Trim-Bank3
SHRTFT2 (%)	Short Term Fuel Trim-Bank2
SHRTFT4 (%)	Short Term Fuel Trim-Bank4
LONGFT2 (%)	Long Term Fuel Trim-Bank2
LONGFT4 (%)	Long Term Fuel Trim-Bank4
FRP(kPa)	Fuel Rail Pressure(gauge)
FRP(psi)	Fuel Rail Pressure(gauge)
MAP(kPa)	Intake Manifold Absolute Pressure
MAP(inHg)	Intake Manifold Absolute Pressure
RPM(/min)	Engine RPM
VSS(km/h)	Vehicle Speed Sensor
VSS(mph)	Vehicle Speed Sensor
SPARKADV(\x82)	Ignition Timing Advance for #1
IAT(°F)	Intake Air Temperature
IAT(°C)	Intake Air Temperature
MAF(g/s)	Mass Air Flow Sensor
MAF(lb/min)	Mass Air Flow Sensor
TP (%)	Absolute Throttle Position

<b>PID Abbreviation</b>	<b>Full Name</b>
AIR_STAT	Commanded Secondary Air Status
O2SLOC	Location of O2 Sensors
O2B1S1(V)	O2 Sensor Output Voltage(B1S1)
SHRTFTB1S1 (%)	Short Term Fuel Trim(B1S1)
O2B1S2(V)	O2 Sensor Output Voltage(B1S2)
SHRTFTB1S2 (%)	Short Term Fuel Trim(B1S2)
O2B1S3(V)	O2 Sensor Output Voltage(B1S3)
SHRTFTB1S3 (%)	Short Term Fuel Trim(B1S3)
O2B1S4(V)	O2 Sensor Output Voltage(B1S4)
SHRTFTB1S4 (%)	Short Term Fuel Trim(B1S4)
O2B2S1(V)	O2 Sensor Output Voltage(B2S1)
SHRTFTB2S1 (%)	Short Term Fuel Trim(B2S1)
O2B2S2(V)	O2 Sensor Output Voltage(B2S2)
SHRTFTB2S2 (%)	Short Term Fuel Trim(B2S2)
O2B2S3(V)	O2 Sensor Output Voltage(B2S3)
SHRTFTB2S3 (%)	Short Term Fuel Trim(B2S3)
O2B2S4(V)	O2 Sensor Output Voltage(B2S4)
SHRTFTB2S4 (%)	Short Term Fuel Trim(B2S4)
O2B1S1(V)	O2 Sensor Output Voltage(B2S1)
SHRTFTB1S1 (%)	Short Term Fuel Trim(B2S1)
O2B1S2(V)	O2 Sensor Output Voltage(B1S2)
SHRTFTB1S2 (%)	Short Term Fuel Trim(B1S2)
O2B2S1(V)	O2 Sensor Output Voltage(B2S1)
SHRTFTB2S1 (%)	Short Term Fuel Trim(B2S1)
O2B2S2(V)	O2 Sensor Output Voltage(B2S2)
SHRTFTB2S2 (%)	Short Term Fuel Trim(B2S2)
O2B3S1(V)	O2 Sensor Output Voltage(B3S1)
SHRTFTB3S1 (%)	Short Term Fuel Trim(B3S1)
O2B3S2(V)	O2 Sensor Output Voltage(B3S2)

<b>PID Abbreviation</b>	<b>Full Name</b>
SHRTFTB3S2 (%)	Short Term Fuel Trim(B3S2)
O2B4S1(V)	O2 Sensor Output Voltage(B4S1)
SHRTFTB4S1 (%)	Short Term Fuel Trim(B4S1)
O2B4S2(V)	O2 Sensor Output Voltage(B4S2)
SHRTFTB4S2 (%)	Short Term Fuel Trim(B4S2)
OBDSUP	OBD Require To Which Vehicle Designed
O2SLOC	Location of O2 Sensors
RUNTM(sec)	Time Since Engine Start
MIL_DIST(km)	Distance Travelled While MIL Activated
MIL_DIST(mile)	Distance Travelled While MIL Activated
FRP(kPa)	FuelRail Pres. Relative To Manifold Vacuum
FRP(PSI)	FuelRail Pres. Relative To Manifold Vacuum
FRP(kPa)	Fuel Rail Pressure
FRP(PSI)	Fuel Rail Pressure
EQ_RATB1S1	Equivalence Ratio(wide range O2S)(B1S1)
O2B1S1(V)	O2 Sensor Voltage(wide range O2S)(B1S1)
EQ_RATB1S2	Equivalence Ratio(wide range O2S)(B1S2)
O2B1S2(V)	O2 Sensor Voltage(wide range O2S)(B1S2)
EQ_RATB1S3	Equivalence Ratio(wide range O2S)(B1S3)
O2B1S3(V)	O2 Sensor Voltage(wide range O2S)(B1S3)
EQ_RATB1S4	Equivalence Ratio(wide range O2S)(B1S4)
O2B1S4(V)	O2 Sensor Voltage(wide range O2S)(B1S4)
EQ_RATB2S1	Equivalence Ratio(wide range O2S)(B2S1)
O2B2S1(V)	O2 Sensor Voltage(wide range O2S)(B2S1)
EQ_RATB2S2	Equivalence Ratio(wide range O2S)(B2S2)
O2B2S2(V)	O2 Sensor Voltage(wide range O2S)(B2S2)
EQ_RATB2S3	Equivalence Ratio(wide range O2S)(B2S3)
O2B2S3(V)	O2 Sensor Voltage(wide range O2S)(B2S3)
EQ_RATB2S4	Equivalence Ratio(wide range O2S)(B2S4)
O2B2S4(V)	O2 Sensor Voltage(wide range O2S)(B2S4)



<b>PID Abbreviation</b>	<b>Full Name</b>
EQ_RATB1S1	Equivalence Ratio(wide range O2S)(B2S1)
O2B1S1(V)	O2 Sensor Voltage(wide range O2S)(B2S1)
EQ_RATB1S2	Equivalence Ratio(wide range O2S)(B1S2)
O2B1S2(V)	O2 Sensor Voltage(wide range O2S)(B1S2)
EQ_RATB2S1	Equivalence Ratio(wide range O2S)(B2S1)
O2B2S1(V)	O2 Sensor Voltage(wide range O2S)(B2S1)
EQ_RATB2S2	Equivalence Ratio(wide range O2S)(B2S2)
O2B2S2(V)	O2 Sensor Voltage(wide range O2S)(B2S2)
EQ_RATB3S1	Equivalence Ratio(wide range O2S)(B3S1)
O2B3S1(V)	O2 Sensor Voltage(wide range O2S)(B3S1)
EQ_RATB3S2	Equivalence Ratio(wide range O2S)(B3S2)
O2B3S2(V)	O2 Sensor Voltage(wide range O2S)(B3S2)
EQ_RATB4S1	Equivalence Ratio(wide range O2S)(B4S1)
O2B4S1(V)	O2 Sensor Voltage(wide range O2S)(B4S1)
EQ_RATB4S2	Equivalence Ratio(wide range O2S)(B4S2)
O2B4S2(V)	O2 Sensor Voltage(wide range O2S)(B4S2)
EGR_PTC (%)	Commanded EGR
EGR_ERR (%)	EGR Error
EVAP_PCT (%)	Commanded Evaporative Purge
FLI (%)	Fuel Level Input
WARM_UPS	Number of Warm-ups Since DTC Cleared
CLR_DIST(km)	Distance Since DTC Cleared
CLR_DIST(mile)	Distance Since DTC Cleared
EVAP_VP(Pa)	Evap System Vapor Pressure
EVAP_VP(inH2O)	Evap System Vapor Pressure
BARO(kPa)	Barometric Pressure
BARO(inHg)	Barometric Pressure
EQ_RAT11	Equivalence Ratio(wide range O2S)(B1S1)
O2S11(mA)	O2 Sensor Current(wide range O2S)(B1S1)
EQ_RAT12	Equivalence Ratio(wide range O2S)(B1S2)

<b>PID Abbreviation</b>	<b>Full Name</b>
O2S12(mA)	O2 Sensor Current(wide range O2S)(B1S2)
EQ_RAT13	Equivalence Ratio(wide range O2S)(B1S3)
O2S13(mA)	O2 Sensor Current(wide range O2S)(B1S3)
EQ_RAT14	Equivalence Ratio(wide range O2S)(B1S4)
O2S14(mA)	O2 Sensor Current(wide range O2S)(B1S4)
EQ_RAT21	Equivalence Ratio(wide range O2S)(B2S1)
O2S21(mA)	O2 Sensor Current(wide range O2S)(B2S1)
EQ_RAT22	Equivalence Ratio(wide range O2S)(B2S2)
O2S22(mA)	O2 Sensor Current(wide range O2S)(B2S2)
EQ_RAT23	Equivalence Ratio(wide range O2S)(B2S3)
O2S23(mA)	O2 Sensor Current(wide range O2S)(B2S3)
EQ_RAT24	Equivalence Ratio(wide range O2S)(B2S4)
O2S24(mA)	O2 Sensor Current(wide range O2S)(B2S4)
EQ_RAT11	Equivalence Ratio(wide range O2S)(B2S1)
O2S11(mA)	O2 Sensor Current(wide range O2S)(B2S1)
EQ_RAT12	Equivalence Ratio(wide range O2S)(B1S2)
O2S12(mA)	O2 Sensor Current(wide range O2S)(B1S2)
EQ_RAT21	Equivalence Ratio(wide range O2S)(B2S1)
O2S21(mA)	O2 Sensor Current(wide range O2S)(B2S1)
EQ_RAT22	Equivalence Ratio(wide range O2S)(B2S2)
O2S22(mA)	O2 Sensor Current(wide range O2S)(B2S2)
EQ_RAT31	Equivalence Ratio(wide range O2S)(B3S1)
O2S31(mA)	O2 Sensor Current(wide range O2S)(B3S1)
EQ_RAT32	Equivalence Ratio(wide range O2S)(B3S2)
O2S32(mA)	O2 Sensor Current(wide range O2S)(B3S2)
EQ_RAT41	Equivalence Ratio(wide range O2S)(B4S1)
O2S41(mA)	O2 Sensor Current(wide range O2S)(B4S1)
EQ_RAT42	Equivalence Ratio(wide range O2S)(B4S2)
O2S42(mA)	O2 Sensor Current(wide range O2S)(B4S2)
CATEMP11(°F)	Catalyst Temperature Bank1 Sensor1

<b>PID Abbreviation</b>	<b>Full Name</b>
CATEMP11(°C)	Catalyst Temperature Bank1Sensor1
CATEMP21(°F)	Catalyst Temperature Bank2Sensor1
CATEMP21(°C)	Catalyst Temperature Bank2Sensor1
CATEMP12(°F)	Catalyst Temperature Bank1Sensor2
CATEMP12(°C)	Catalyst Temperature Bank1Sensor2
CATEMP22(°F)	Catalyst Temperature Bank2Sensor2
CATEMP22(°C)	Catalyst Temperature Bank2Sensor2
VPWR(V)	Control Module Voltage
LOAD_ABS (%)	Absolute Load Value
EQ_RAT	Commanded Equivalence Ratio
TP_R (%)	Relative Throttle Position
AAT(°F)	Ambient Air Temperature
AAT(°C)	Ambient Air Temperature
TP_B (%)	Absolute Throttle Position B
TP_C (%)	Absolute Throttle Position C
APP_D (%)	Accelerator Pedal Position D
APP_E (%)	Accelerator Pedal Position E
APP_F (%)	Accelerator Pedal Position F
TAC_PCT (%)	Commanded Throttle Actuator Control
MIL_TIME	Minute run by Engine While MIL activated
CLR_TIME	Time since Diagnostic Trouble Code Clear

## 8.2 Appendix 2 -- In-use Performance Tracking Data List

<b>Abbreviation</b>	<b>Full Name</b>	<b>Definitions</b>
OBDCOND	<b>OBD Monitoring Conditions Encountered Counts</b>	OBD Monitoring Conditions Encountered Counts displays number of times that the vehicle has been operated in the specified OBD monitoring conditions (general denominator).
IGNCNTR	<b>Ignition Counter</b>	Ignition Counter displays the count of number of times that the engine has been started.
CATCOMP1	<b>Catalyst Monitor Completion Counts Bank 1</b>	Catalyst Monitor Completion Counts Bank 1 displays number of times that all conditions necessary to detect a catalyst system bank 1 malfunction have been encountered (numerator).
CATCOND1	<b>Catalyst Monitor Conditions Encountered Counts Bank 1</b>	Catalyst Monitor Conditions Encountered Counts Bank 1 displays number of times that the vehicle has been operated in the specified catalyst monitoring conditions (denominator).
CATCOMP2	<b>Catalyst Monitor Completion Counts Bank 2</b>	Catalyst Monitor Completion Counts Bank 2 displays number of time that all conditions necessary to detect a catalyst system bank 2 malfunction have been encountered (numerator).
CATCOND2	<b>Catalyst Monitor Conditions Encountered Counts Bank 2</b>	Catalyst Monitor Conditions Encountered Counts Bank 2 displays number of times that the vehicle has been operated in the specified catalyst monitoring conditions (denominator).
O2SCOMP1	<b>O2 Sensor Monitor Completion Counts Bank 1</b>	O2 Sensor Monitor Completion Counts Bank 1 displays number of time that all conditions necessary to detect an oxygen sensor bank 1 malfunction have been encountered (numerator).
O2SCOND1	<b>O2 Sensor Monitor Conditions Encountered Counts Bank 1</b>	O2 Sensor Monitor Conditions Encountered Counts Bank 1 displays number of times that the vehicle has been operated in the specified oxygen sensor monitoring conditions (denominator).
O2SCOMP2	<b>O2 Sensor Monitor Completion Counts Bank 2</b>	O2 Sensor Monitor Completion Counts Bank 2 displays number of time that all conditions necessary to detect an oxygen sensor bank 2 malfunction have been encountered (numerator).

O2SCOND2	<b>O2 Sensor Monitor Conditions Encountered Counts Bank 2</b>	O2 Sensor Monitor Conditions Encountered Counts Bank 2 displays number of times that the vehicle has been operated in the specified oxygen sensor monitoring conditions (denominator).
EGRCOMP	<b>EGR Monitor Completion Condition Counts</b>	EGR Monitor Completion Condition Counts displays number of time that all conditions necessary to detect an EGR system malfunction have been encountered (numerator).
EGRCOND	<b>EGR Monitor Conditions Encountered Counts</b>	EGR Monitor Conditions Encountered Counts displays number of times that the vehicle has been operated in the specified EGR system monitoring conditions (denominator).
AIRCOMP	<b>AIR Monitor Completion Condition Counts (Secondary Air)</b>	AIR Monitor Completion Condition Counts (Secondary Air) displays number of time that all conditions necessary to detect an AIR system malfunction have been encountered (numerator).
AIRCOND	<b>AIR Monitor Conditions Encountered Counts (Secondary Air)</b>	AIR Monitor Conditions Encountered Counts (Secondary Air) displays number of times that the vehicle has been operated in the specified AIR system monitoring conditions (denominator).
EVAPCOMP	<b>EVAP Monitor Completion Condition Counts</b>	EVAP Monitor Completion Condition Counts displays number of time that all conditions necessary to detect a 0.020" EVAP system leak malfunction have been encountered (numerator).
EVAPCOND	<b>EVAP Monitor Conditions Encountered Counts</b>	EVAP Monitor Conditions Encountered Counts displays number of times that the vehicle has been operated in the specified  EVAP system leak malfunction monitoring conditions (denominator).

## **9. Warranty and Service**

### **9.1 Limited One Year Warranty**

Autel warrants to its customers that this product will be free from all defects in materials and workmanship for a period of one (1) year from the date of the original purchase, subject to the following terms and conditions:

- 1) The sole responsibility of Autel under the Warranty is limited to either the repair or, at the option of Autel, replacement of the scan tool at no charge with Proof of Purchase. The sales receipt may be used for this purpose.
- 2) This warranty does not apply to damages caused by improper use, accident, flood, lightning, or if the product was altered or repaired by anyone other than the Manufacturer's Service Center.
- 3) Autel shall not be liable for any incidental or consequential damages arising from the use, misuse, or mounting of the scan tool. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.
- 4) All information in this manual is based on the latest information available at the time of publication and no warranty can be made for its accuracy or completeness. Autel reserves the right to make changes at any time without notice.

### **9.2 Service Procedures**

If you have any questions, please contact your local store, distributor or visit our website at [www.auteltech.com](http://www.auteltech.com).

If it becomes necessary to return the scan tool for repair, contact your local distributor for more information.