Autel.us
Automotive Intelligence

AutoLink PRO™

USER'S MANUAL

Professional OBD-II Scanner

AL510

www.Autel.us

Table of Contents

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.

1.1 Start-up Screen

This initial start-up screen appears momentarily when the tool is first plugged in. The lower identification line reveals the version of the software. Use this version number to verify that the tool has the most up to date software.

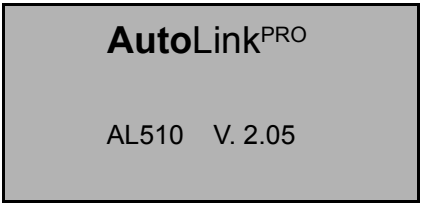


Figure 1-1: The AL510 initial start-up screen with software version #.

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 (CARB) 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 “Check Engine” or “Service Engine Soon”. The system will also store important information about the detected malfunction so that a technician can accurately find and fix the problem. Here below follow three pieces of such valuable information:

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

2.2 Diagnostic Trouble Codes (DTCs)

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

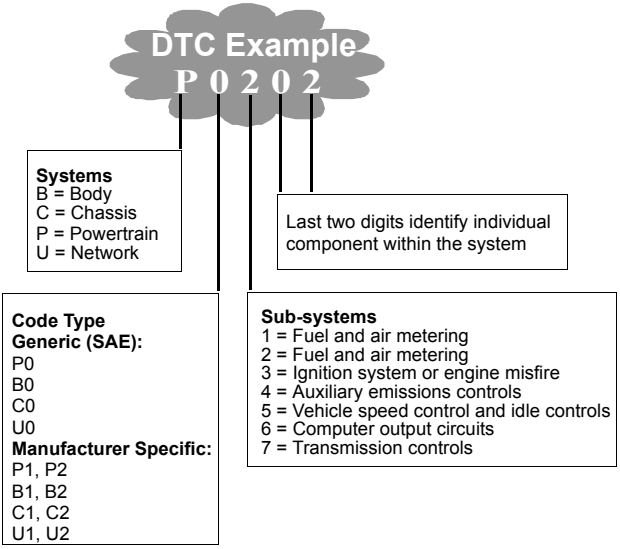
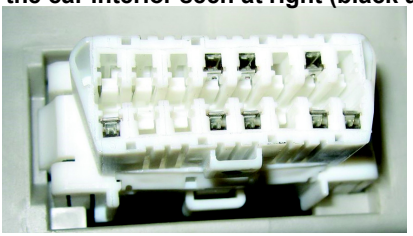


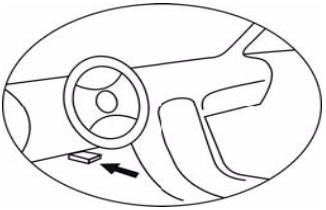
Figure 1-2: Explanation of a diagnostic trouble code.

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 the Data Link Connector is not located under the dashboard, a label should be there revealing its 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.

Figure 1-3: The DLC connector (left) can be found in the area of the car interior seen at right (black arrow).





2.4 OBD II Readiness Monitors

Readiness Monitors 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 - exhaust Gas Recirculation for reducing greenhouse gases.**
2. **O2 Sensors - monitor and adjust air/fuel mixture.**
3. **Catalyst - reduces exhaust emissions.**
4. **Evaporative System - monitors the integrity of the fuel tank system.**
5. **O2 Sensor Heater - brings 02 sensor to correct operating temperature.**
6. **Secondary air - reduces exhaust emissions.**
7. **Heated Catalyst - brings catalyst to correct operating temperature.**
8. **A/C system - monitors system for freon leaks.**

2.5 OBD II Monitor Readiness Status

OBD II systems must indicate whether or not the vehicle's PCM's monitoring has completed testing on each emission component.

Components that have been OBD II tested will be reported as “OK”. The purpose of recording readiness status is to allow inspectors to determine if the vehicle’s OBD II system has tested all the emissions systems. This is handy to know before bringing vehicle to a state emissions testing facility.

The powertrain control module (PCM) sets a monitor to “OK” after an appropriate drive cycle has been performed. The drive cycle that enables a monitor and sets readiness codes to “OK” varies for each individual monitor. Once a monitor is set as “OK”, it will remain in this state. A number of factors, including erasing of diagnostic trouble codes (DTCs) with a code reader or a disconnected battery, can result in Readiness Monitors being set to “INC” (incomplete). Since the three continuous monitors are constantly evaluating, they will be reported as “OK” all of the time. As long as there are no DTCs stored in memory, the vehicle is running in accordance with the OBD II guidelines. If testing of a particular supported non-continuous monitor has not been completed or not tested, the monitor status will be reported as “INC” (incomplete).

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

Powertrain Control Module (PCM) -- the OBD II terminology for the on-board computer that controls the engine and the 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) these 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.

2.7 OBD II Modes of Operation

Here is a basic introduction to the OBD II communication protocol.

Mode byte: The first byte in the stream is the mode number. There are 9 modes for diagnostic requests, so this first byte is from 1 to 9. The first byte in the response data bytes is this same number plus 64. For example, a mode 1 request would have the first data byte = 1, and the response would have the first data byte = 65. Here is a brief description of the modes:

Mode $01 - **Identifies the Powertrain information and shows current data available to the scan tool.** This data includes: DTCs set, status of on-board tests, and vehicle data such as engine RPM, temperatures, ignition advance, speed, air flow rates, and closed loop status for fuel system.

Mode $02 - **Displays Freeze Frame data.** Same data as in mode 1, but it was captured and stored when a malfunction occurred and a DTC was set. Some of the PIDs for mode one are not implemented in this mode.

Mode $03 - **Displays the type of powertrain or emission related DTCs stored by a 5 digit code identifying the faults.** There may be more than one response message if there are more trouble codes than will fit in the data bytes of the response message, or if there are more than one ECU computer responding.

Mode $04 - **Used to clear DTCs and Freeze Frame data**. This clears all diagnostic trouble codes that may be set including freeze frame data and readiness monitors.

Mode $05 - **Oxygen Sensor Test Results.** This mode displays the oxygen sensor monitor screen and the test results gathered about the oxygen sensor.

There are nine numbers available for diagnostics:

1. $01 Rich-to-Lean O2 sensor threshold voltage
2. $02 Lean-to-Rich O2 sensor threshold voltage
3. $03 Low sensor voltage threshold for switch time measurement
4. $04 High sensor voltage threshold for switch time measurement
5. $05 Rich-to-Lean switch time in ms
6. $06 Lean-to Rich switch time in ms
7. $07 Minimum voltage for test
8. $08 Maximum voltage for test
9. $09 Time between voltage transitions in ms

Mode $06 - **Non-Continuously Monitored Systems test results.** There are typically a minimum value, a maximum value, and a current value for each non-continuous monitor. This data is optional, and it is defined by a given vehicle maker if it's used.

Mode $07 - **Request for DTCs (pending) from Continuously Monitored Systems after a single driving cycle has been performed to determine if repair has fixed a problem**. This is used by service technicians to verify repair was performed properly and after clearing diagnostic trouble codes.

Mode $08 - **This Special Control Mode requests control of the on-board system, test, or component bi-directionally (where applicable)**. This mode is manufacturer specific.

Mode $09 - **Reports vehicle information.** This information includes vehicle VIN number and calibration information stored in the vehicle ECUs.

Table 1: Comparison of AutoLink Tool Capabilities

Mode	**Auto**Link AL309	**Auto**Link **Pro** AL510
Mode 1	■	■ *
Mode 2	■	■
Mode 3	■	■
Mode 4	■	■
Mode 5		■
Mode 6		■
Mode 7	■	■
Mode 8		■
Mode 9	■	■

* With on-screen graphing

3. Using the Scan Tool

3.1 Tool Description - **Auto**Link AL 510Pro®

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 looking 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. Also, it updates DTC library when pressed.

5. **RIGHT SCROLL BUTTON** -- When looking up DTC definitions, moves to next character and views 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. Also, it is the language setup hot key when pressed.

8. **HELP BUTTON** -- Provides help information when pressed.

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, etc.

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:

Length	Width	Height
178 mm (7.00")	95 mm (3.74")	35 mm (1.38")

7) NW: 0.70kg (1.54lb), GW: 1.0kg(2.20lb)

3.3 Accessories Included

1) **User's Manual** -- Instructions on tool operations.
2) **CD** -- Includes user's manual, DTC lookup software, etc.
3) **OBD II 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.

Updating the Auto Link **AL 510** Pro®

a. Attach the USB cable (seen in Figure 1-2).

b. Go to www.autel.us and click on **Downloads**.

c. Click on Software Update for AutoLink Pro 510 and follow on-screen instructions.

Figure 1-4: USB update cable attached to the tool.

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 screen.

3.**"▲"** -- An **UP** Arrow indicates additional information is available on previous screen.

4.**"$"** -- Identifies the control module number from which data is retrieved.

5.**"?"** -- Indicates help information is available.

6.**"G"** -- Indicates graphic viewing is available.

7.**"▯"** -- Indicates battery volume.

3.5 Keyboard

Solvents such as **alcohol should not be used** 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” in 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.

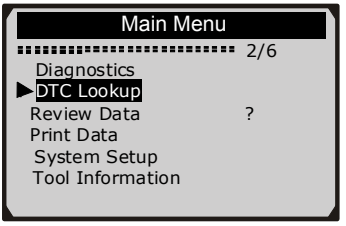
- ***A plastic DLC cover may be found for some vehicles and you need to remove it before plugging the OBDII cable.***

3)Plug OBD II cable into the vehicle’s DLC.

3.7 DTC Lookup

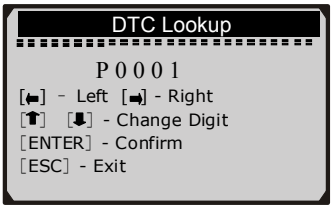
The DTC Lookup function is used to search for definitions of DTCs stored in the built-in DTC library.

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



- The number “2/6” to the right indicates the total number of items under this menu and the sequence of highlighted items.
- The “?” to the right indicates help information is available. Press the **HELP** button to view help information for the selected item.

2)From the **DTC Lookup** menu, use the **LEFT**/**RIGHT** button to move to the desired character, use the **UP**/**DOWN** button to change the selected digit/ character and press the **ENTER** button to confirm.



3)View the DTC definition on screen. When the DTC definition covers more than one screen, use the **LEFT/RIGHT** button to view additional information on previous/next screen(s).

- ***For manufacturer specific codes, you'll 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!"***

4)To view next or previous DTC in the DTC library, use the **UP/DOWN** button.

5)To enter another DTC, press the **ESC** button to return to the previous screen.

6)To exit to the Main Menu, press the **ESC** button.

3.8 Product Setup

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

1)**Language:** Selects the desired language.

2)**Contrast adjustment:** 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.

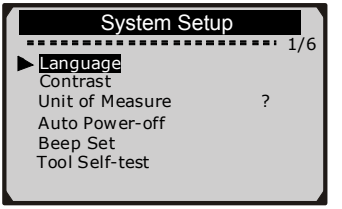
5)**Beep Set:** Turns on/off beep.

6)**Tool self-test:** Checks if the LCD display and keyboard are working normally.

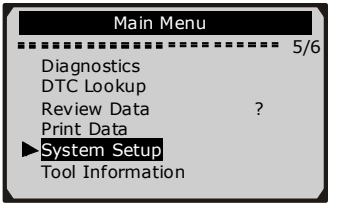
- *Settings of the unit will remain until changes to the existing settings are made.*

To enter the setup menu mode

From the keyboard: Press the **ESC** button to enter the **System Setup** menu. Follow the instructions to make adjustments and program settings as described in the following setup options.



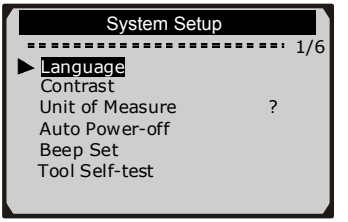
From the Main Menu: Use the **UP/DOWN** scroll button to select **System Setup**, and press the **ENTER** button. Follow the instructions to make adjustments and program settings as described in the following setup options.



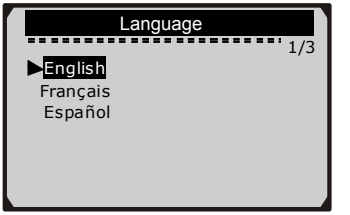
Language Setup

- English is the default language.

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

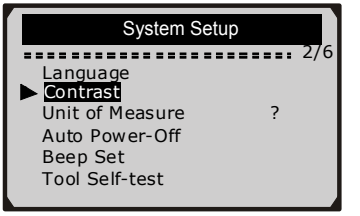


2)Use the **UP/DOWN** scroll button to select the desired language and press **ENTER** to save your selection and return to the previous menu.

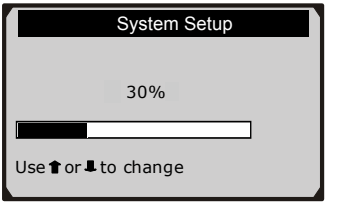


Contrast Adjustment

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



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

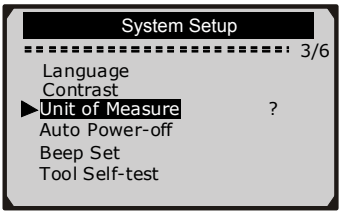


3)Press **ENTER** to save your settings and return to the previous menu.

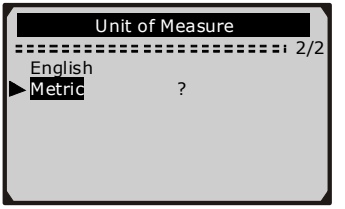
Unit of Measurement

- Metric is the default measurement unit.

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



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

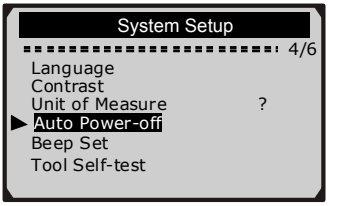


3)Press the **ENTER** button to save your selection and return to the previous menu.

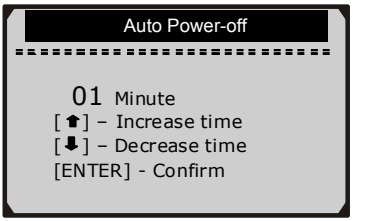
Auto Power-off

- The minimum automatic power-off time is one (1) minute, and the maximum is 20 minutes.
- The Auto Power-Off function is available only when the scanner is powered by a 9V cell battery.

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



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

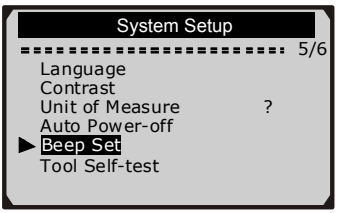


3) Press **ENTER** to save your setting and return to the previous menu.

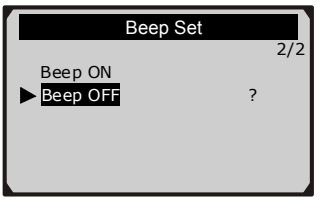
Beep Set

- *The default setting is Beep On.*

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



2)From the '**Beep Set**' menu, use the **UP/DOWN** scroll button to select Beep ON or Beep OFF.



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

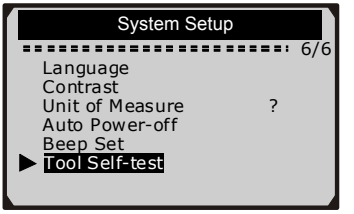
Tool Self-test

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

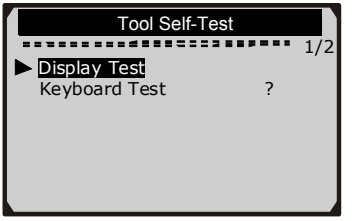
A. Display test

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

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



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



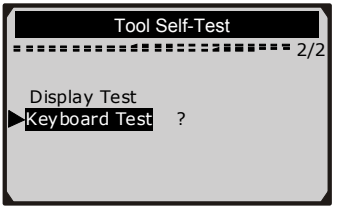
3)Press **ENTER** again to start test. Look for missing spots in the solid black characters.

4)When completed, press **ESC** to return.

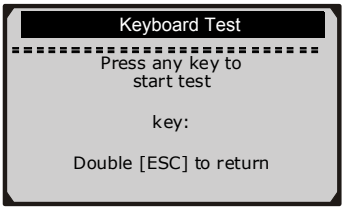
B. Keyboard Test

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

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



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



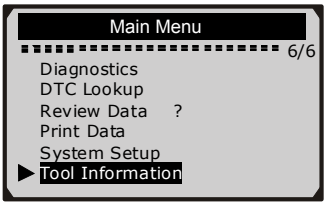
- *If you press and hold the power switch, the key name does not show on the screen, but resets the scanner when powered by a vehicle battery, or turns off the scanner when powered by a cell battery. If it does not restart the scanner or power off the scanner, the key is not working properly.*

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

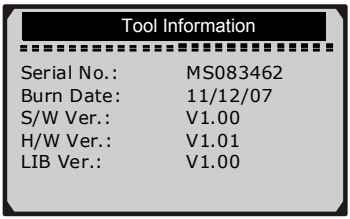
3.9 Tool Information

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

1) From the **Main Menu**, scroll to select **Tool Information** and press **ENTER**.



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 battery 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 securing screw.

3.11 Vehicle Coverage

The AutoLink$^{Pro®}$ AL510 Professional 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’ll need to do the following to check it:

- Verify that the ignition is ON;
- Verify scan tool’s OBD II connector is securely connected to the vehicle’s DLC;
- Verify that the vehicle is OBD II 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'll 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

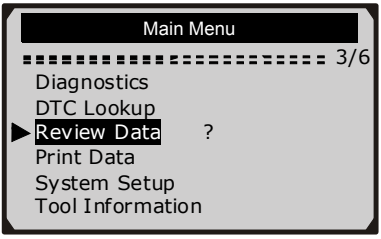
If the scan tool won't power up or operates incorrectly in any other way, you'll need to do the following to check it:

- 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 has at least 8.0 volts.

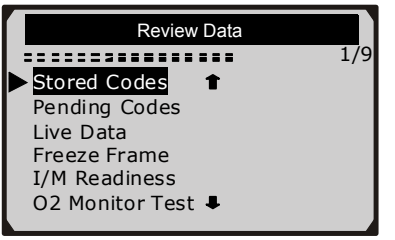
4. Review Data

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

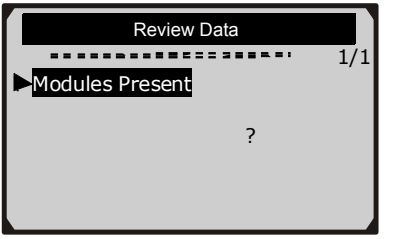
1)Use the **UP**/**DOWN** scroll button to select **Review Data** from **Main Menu**, and press **ENTER**.



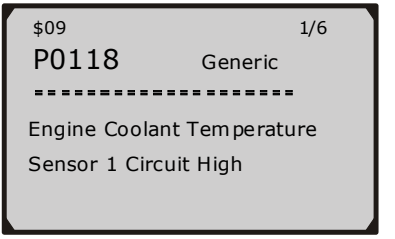
2)Use the **UP/DOWN** scroll button to select the desired item from **Review Data** menu, and press **ENTER**.



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



3)Review selected data on screen.



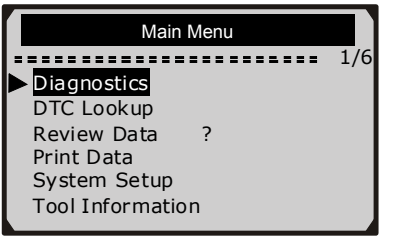
- ***If there is no data stored for selected item, a "Not Supported or Stored No Data!" message shows on the screen.***

5. OBD II 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 Powertrain Control Module [Engine] and Transmission Control Module [Transmission].

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) Press **ENTER** to enter **Main Menu**. Use the **UP**/**DOWN** scroll button to select **Diagnostics** from the menu.

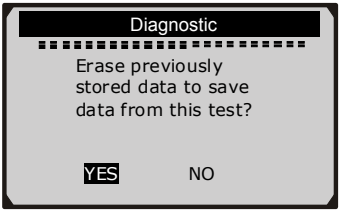


6) Press **ENTER** to confirm. A sequence of messages displaying the OBDII protocols will be observed on the display until the vehicle protocol is detected.

- ***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 OBDII 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 communicating with the vehicle. Contact your local distributor or the manufacturer's customer service department for assistance.***

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

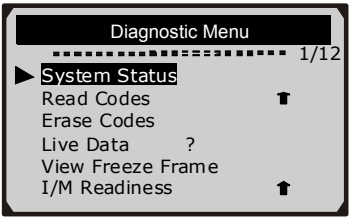
- ***Review previously stored data thoroughly before erasing.***



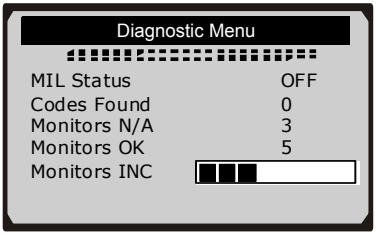
- ***If no data is stored in the scan tool, above prompt will not show up.***

8) If you wish to erase the data, press 'ENTER'; if you do not want to erase the data, press ESC or use the LEFT/RIGHT button to select NO and press ENTER to return to the **Diagnostic Menu**.

5.1 System Status



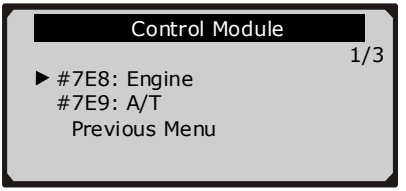
Press ENTER to select **System Status**, the following screen will be displayed if there is only one control module. Press SCROLL to exit **System Status** and return to the main **Diagnostic Menu**.



System Status Screen

This screen displays the current (live) conditions of each of the eleven emissions monitors (see pg. 45). These monitors are continuously updated. Monitors N/A are those “not available” on the current vehicle. Monitors OK have completed their tests. Monitors INC have yet to be run (tested). Since this is a live screen which continuously updates, the vehicle can be driven until the monitors INC (incomplete monitors) graph is empty of solid blocks. **Additionally, while monitoring this screen, an audible beep will be heard upon completion of each incomplete monitor.** If no beep is heard, see “3.8 Product Setup” on page 14 to turn ‘beep set’ on. For more precise information on which monitors have been tested or not, see **5.6 Retrieving I/M Readiness Status** on page 43.

If there is more than one control module available, the screen below will be displayed offering a choice of control modules. For example, Engine or Automatic Transmission Control module.

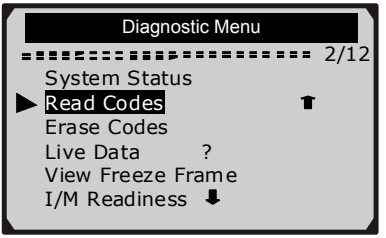


Select **#7E8: Engine** *for OBD II Testing. *#7E9 is for Transmission.*

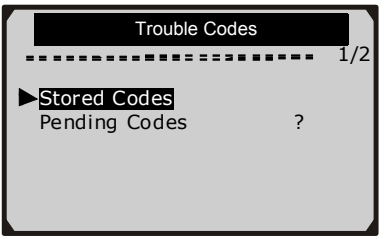
5.2 Reading Codes

- ***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 lamp (MIL) when an 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.***

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

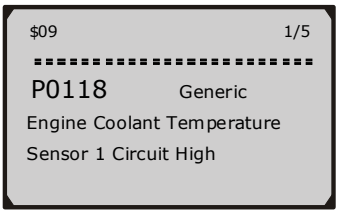


2)Use the **UP/DOWN** scroll button to select **Stored Codes** or **Pending Codes** from the **Trouble Codes** menu and press **ENTER**.



- ***If there are no Diagnostic Trouble Codes present, the display indicates "No (pending) codes are stored in the module!" Wait a few seconds or press any key to return to the Diagnostic Menu.***

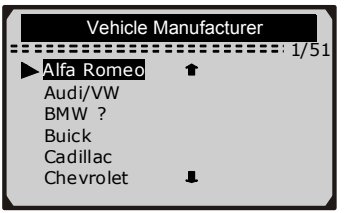
3)View DTCs and their definitions on screen.



- ***The control module number, sequence of the DTCs, total number of codes detected and type of codes (Generic or Manufacturer specific) will be observed on the upper right hand corner of the display.***

4)If more than one DTC is found, use the **UP/DOWN** scroll button, as necessary, until all the codes have been viewed.

- ***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 the UP/DOWN scroll button to select manufacturer and then press ENTER to confirm.***



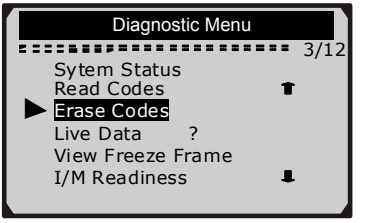
- ***If the manufacturer for your vehicle is not listed, use the UP/DOWN scroll button to select "Other" and press ENTER.***

5.3 Erasing Codes

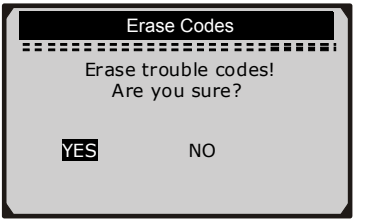
<u>CAUTION:</u> Though there is no harm in doing so, erasing the Diagnostic Trouble Codes will not only erase the codes from the vehicle's on-board computer, but also "Freeze Frame" data and manufacturer enhanced data. Freeze Frame data PIDs are information used to help the technician verify the condition at the time a fault is set. Further, the I/M Readiness Monitor Status, for all vehicle monitors, is reset to "INC" (incomplete) status.

- ***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 the **Diagnostic Menu** and press **ENTER**.



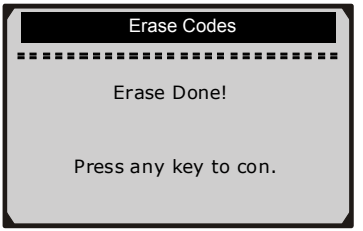
2)A warning message comes up asking for your confirmation.



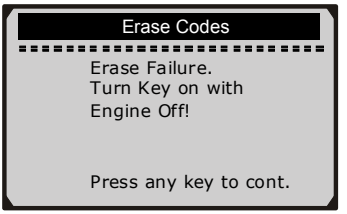
- ***If you do not want to proceed with erasing codes, press the ESC button or use the LEFT/RIGHT scroll button to select NO to exit. A message of "Command Cancelled!" is displayed. Wait a few seconds or press any key to return to the Diagnostic Menu.***

3)Press **ENTER** to confirm.

- ***If the codes are cleared successfully, an "Erase Done!" confirmation message is displayed.***



- ***If the codes are not cleared, then an "Erase Failure. Turn Key on with Engine off!" message is displayed.***



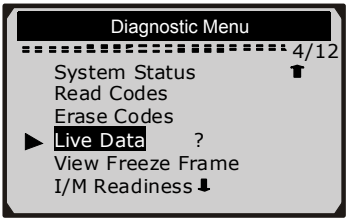
4)Press any button to return to **Diagnostic Menu.**

5.4 Live Data

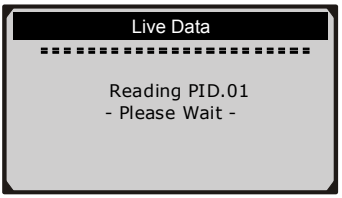
Viewing Data

The View Data function allows viewing of live (real time) PID data from the vehicle's computer module(s).

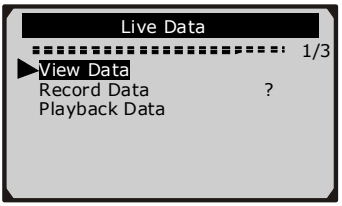
1)To view live data, use the **UP/DOWN** scroll button to select **Live Data** from the **Diagnostic Menu** and press **ENTER**.



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

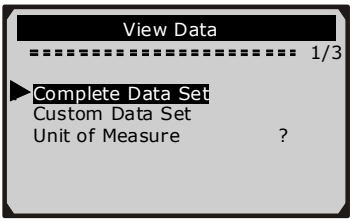


3)Use the **UP/DOWN** scroll button to select **View Data** from the **Live Data** menu and press **ENTER**.

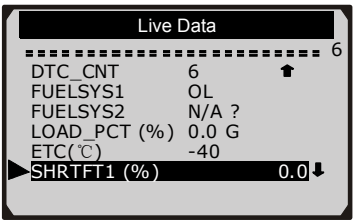


Viewing Complete Data Set

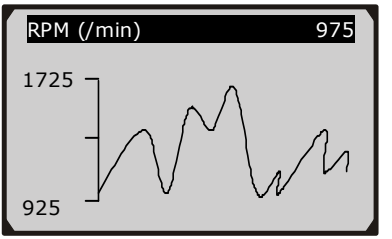
4)To view a complete set of data, use the **UP/DOWN** scroll button to select **Complete Data Set** from the **View Data** menu and press **ENTER**.



5)To view live PIDs on the screen. Use the **UP/DOWN** scroll button for more PIDs if an ⬆ or ⬇ arrow appears on the screen.



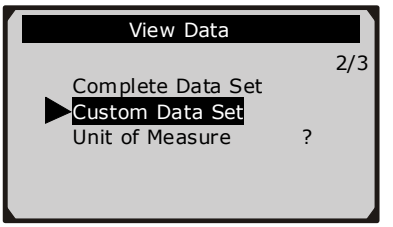
- ***The number "6" to the right of the screen indicates the sequence of the highlighted item.***
- ***If you want to view the full name of the highlighted PID, press the Help button.***
- ***If the "G" icon appears when a PID is highlighted, graphic information is available. Press ENTER to view.***



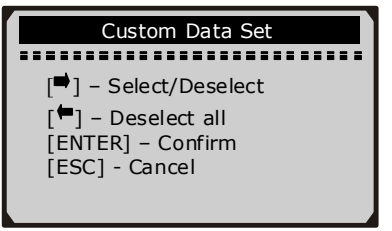
6)Press **ESC** to return to previous menu.

Viewing Custom Data Set

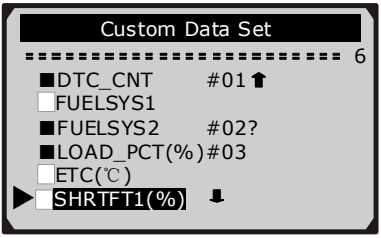
7)To view customized PID data, use the **UP/DOWN** scroll button to select **Custom Data Set** from the **View Data** menu and press **ENTER**.



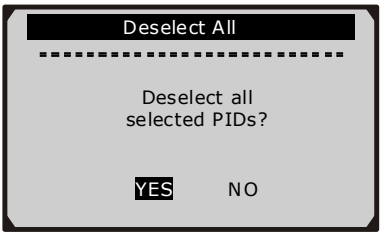
8)Observe on-screen instructions.



9)Use **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.

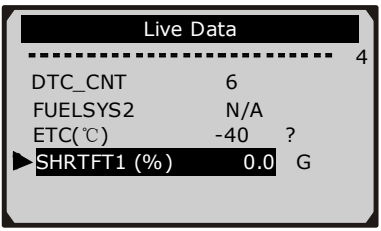


- ***The number "6" to the upper right corner of the screen indicates the sequence of highlighted item; and "#01, #02..." are the order that the parameters are selected and will be displayed.***
- ***You are allowed to pick up a maximum of 18 PIDs. If the selected PIDs exceed 18, a "The selected data list is full!" message displays on the screen.***
- ***If you want 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 ESC or use the UP/DOWN scroll button to select NO to continue PID selections.***

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



11)Use the **ESC** button to return to **View Data** menu and/or return to **Live Data** menu.

Recording Data

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

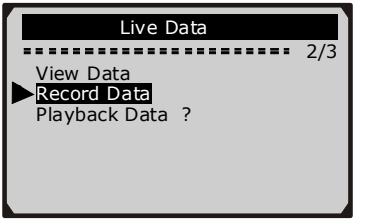
There are two trigger modes used to record data:

A. **Manual Trigger -** allows user to press **ENTER** to start recording.

B. **DTC Trigger -** automatically records PID data when a fault that causes a DTC to set is detected by the vehicle.

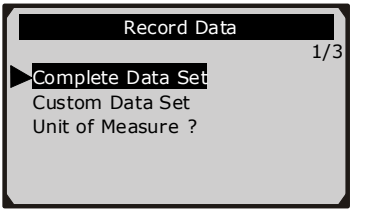
CAUTION: DO NOT try to drive and operate the scan tool at the same time! Always have another person operate the scan tool while driving.

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

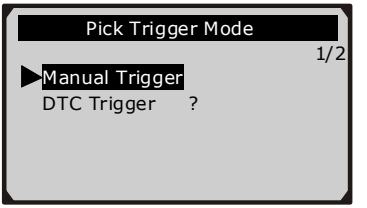


Recording Complete Data Set

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



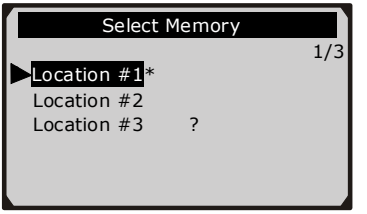
3)Use the **UP/DOWN** scroll button to select a trigger mode and press **ENTER**.



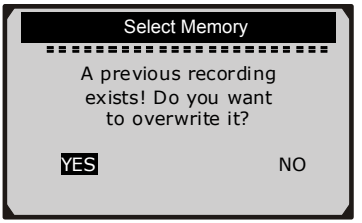
- **If data from a previously tested vehicle is not erased, data from the current test will be stored in a temporary cache.**

The following screen shows when Manual Trigger is selected or when DTC Trigger is selected:

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



- ***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 recordings displays.***



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

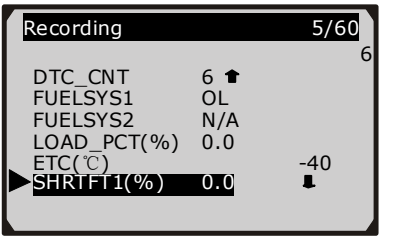
5)Observe on-screen instructions.

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

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

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

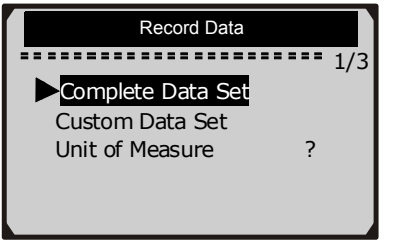
- ***Drive until a DTC is detected when DTC Trigger is selected. If no DTCs are detected, press ESC to exit recording.***



- ***The number "5/60" in the upper right corner of the screen indicates the maximum frames that can be recorded and the number of recorded frames.***

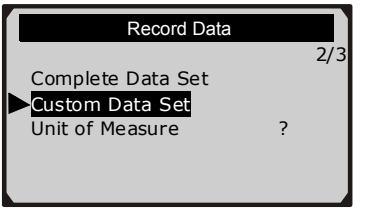
7)The scan tool keeps recording PID data until user presses **ESC**, selected memory location is full, or it completes recording. A message prompting to playback data shows on the screen.

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

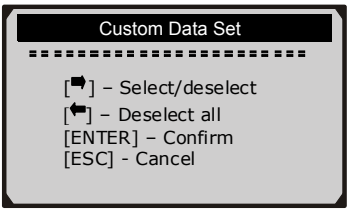


Recording Custom Data Set

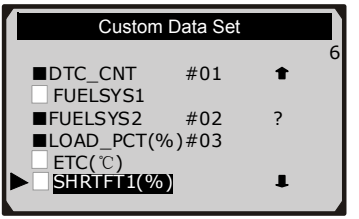
8)To record customized data, use the **UP/DOWN** scroll button to select **Custom Data Set** from **Record Data** menu and press **ENTER**.



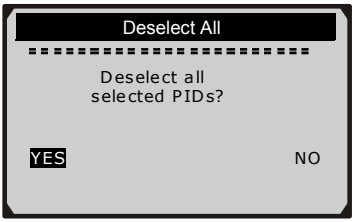
9)Observe on-screen instructions. Wait a few seconds or press any key to continue.



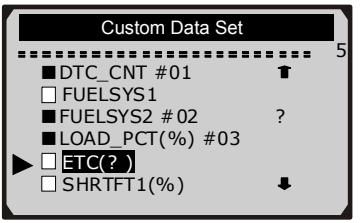
10)Use **RIGHT** button to select/deselect data parameters. Selected parameters are marked with solid squares. Press **ENTER** to confirm.



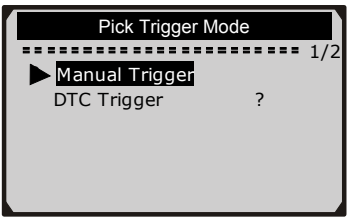
- ***You are allowed to pick up a maximum of 18 PIDs. If the selected PIDs exceed 18, a "The selected data list is full!" message is displayed.***
- ***If you wish to deselect all marked items, press the LEFT button.***
- ***A message asks for your confirmation.***



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

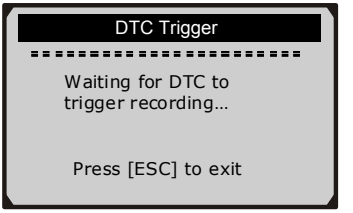


11)Use the **UP/DOWN** scroll button to select a trigger mode and press **ENTER**.

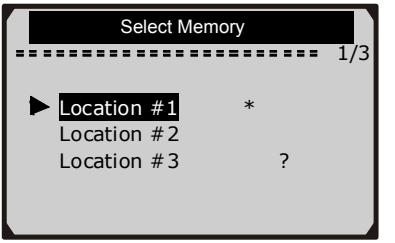


- ***If data from a previously tested vehicle is not erased, data from the current test will be stored in temporary cache. The following screen shows when Manual Trigger is selected:***

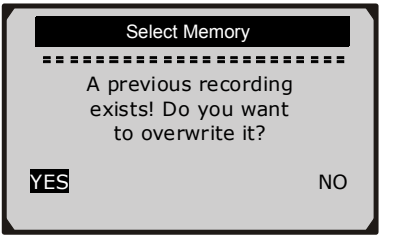
Or the following screen shows when **DTC Trigger** is selected:



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



- ***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 the old recording is displayed.***



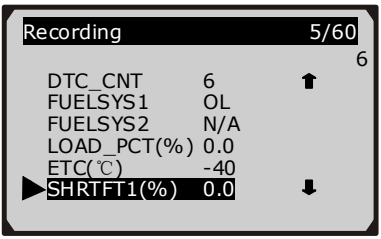
- ***If you do not wish to proceed with overwriting old recording(s), press 'ENTER'; if you do not wish to overwrite it, press ESC, or use the LEFT/ RIGHT button to select NO and press ENTER to pick another memory location.***

13)Observe on-screen instructions.

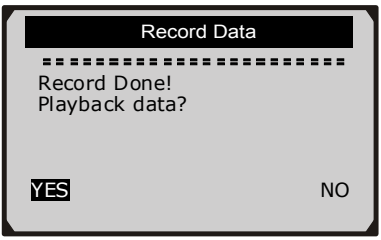
- ***If Manual Trigger is selected, the following screen shows:***

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

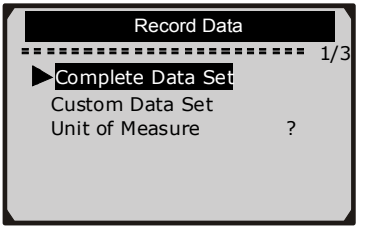
14)Wait for DTC to trigger recording or press **ENTER** to start recording.



15)The scan tool keeps 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.



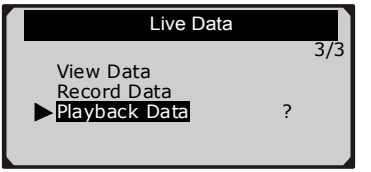
- ***If you wish to playback recorded data, press 'ENTER'; if you do not wish to playback, press ECS, or use the LEFT/RIGHT button to select NO and press ENTER to return to Record Data menu.***



Playing Back Data

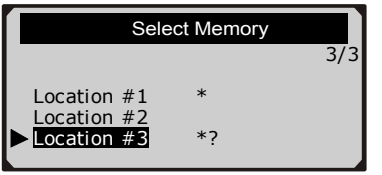
The Playback Data function allows viewing of previously stored PID data.

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



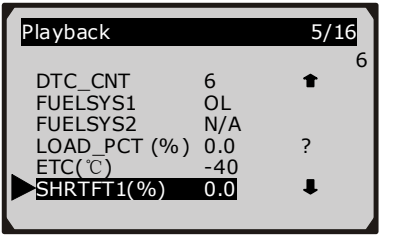
- ***You are also allowed to playback recorded data immediately after recording.***

2)Use the **UP/DOWN** button to select the memory location marked with an asterisk (*) icon.



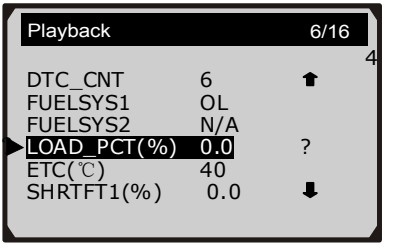
- ***If there is no recording in the selected location, a message "Not Supported or Stored No Data" is displayed.***
- ***For data stored in temporary cache, you do not have to select memory location.***

3)Use the **UP/DOWN** button to view recorded PIDs of each frame.



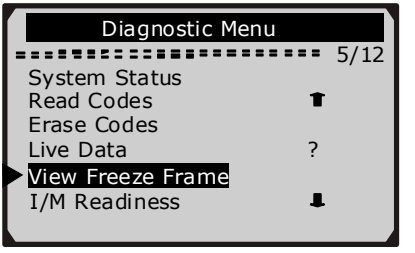
- ***The number "5/16" to the upper right corner of the screen indicates total number of recorded frames and sequence of frame being displayed.***
- ***Negative frames indicate data recorded prior to trigger event; and positive frames indicate data recorded after trigger event.***

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

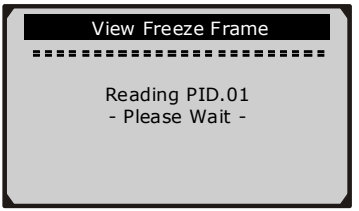


5.5 Viewing Freeze Frame Data

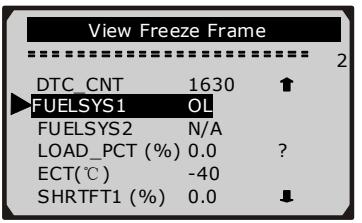
To view freeze frame data, use the **UP/DOWN** scroll button to select **View Freeze Frame** from **Diagnostic Menu** and press **ENTER**.



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

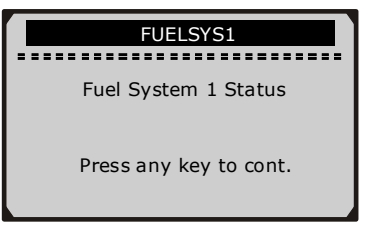


6)If retrieved information covers more than one screen, a down arrow will appear. Use the **DOWN** scroll button, as necessary, until all data has been viewed.



- ***If there is no freeze frame data available, an advisory message "No freeze frame data stored!" is displayed.***

7)If you want to view the full name of a PID, use the **UP/DOWN** scroll button to select the PID, and press **HELP**.



8)Wait a few seconds or press any button to return to the previous screen.

5.6 Retrieving I/M Readiness Status

The I/M Readiness function is used to check individual Emission System readiness tests on OBDII compliant vehicles. It is an excellent function to use prior to having a vehicle inspected for compliance to a state emissions program. *CAUTION - by clearing trouble codes you also clear the readiness status for the individual emission system readiness tests.* In order to reset these monitors, the vehicle must be driven through a complete drive cycle with no trouble codes in memory. Times for reset vary depending on vehicle.

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

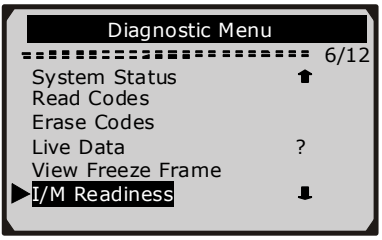
A. ***Since DTCs Cleared*** - indicates status of the monitors since the DTCs were erased.

B. ***This Drive Cycle*** - indicates status of monitors since the beginning of the current drive cycle.

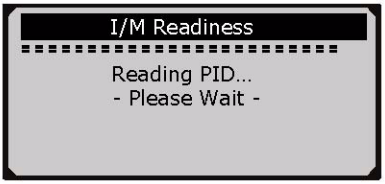
An I/M Readiness Status result of "INC" does not necessarily indicate that the vehicle being tested will fail the state I/M inspection. For some states, one or more such monitors may be allowed to be "Not Ready" to pass the emissions inspection.

- **"OK" --** Indicates that a particular monitor being checked has completed its diagnostic testing.
- **"INC" --** Indicates that the testing of a particular monitor being tested is incomplete. Additional driving is needed.
- **"N/A" --** The monitor is not supported on that vehicle.

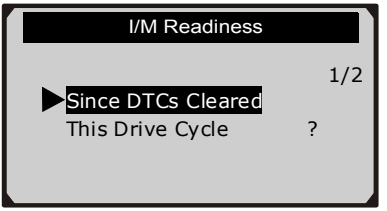
1)Use the **UP/DOWN** scroll button to select **I/M Readiness** from the **Diagnostic Menu** and press **ENTER**.



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

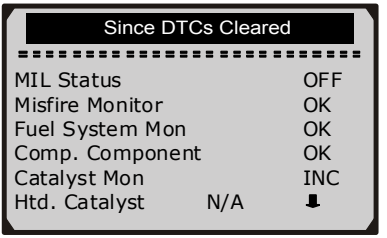


3)If the vehicle supports both types of tests, then both types will be shown on the screen for selection.

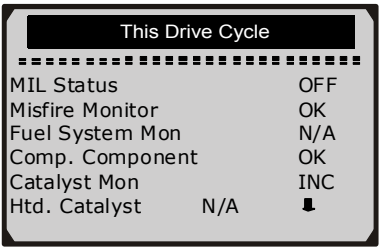


4)Use the **UP/DOWN** scroll button, as necessary, to view the status of the MIL light (**"ON" or "OFF**) and the following monitors: (these monitors are for emissions systems)

- **Misfire monitor -- Misfire monitor**
- **Fuel System Mon. -- Fuel System Monitor**
- **Comp. Component -- Comprehensive Components Monitor**
- **EGR -- Exhaust Gas Recirculation System Monitor**
- **Oxygen Sens. Mon. -- O2 Sensors Monitor**
- **Catalyst Mon. -- Catalyst Monitor**
- **EVAP System Mon. -- Evaporative System Monitor**
- **Oxygen Sens. Htr. -- O2 Sensor Heater Monitor**
- **Sec. Air System -- Secondary Air Monitor**
- **Htd. Catalyst -- Heated Catalyst Monitor**
- **A/C Refrig. Mon. -- A/C system Monitor**



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



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

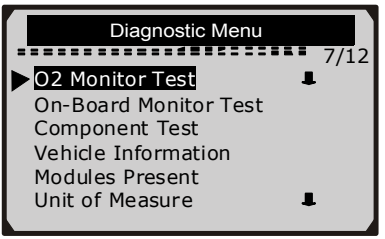
5.7 O2 Monitor Test

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

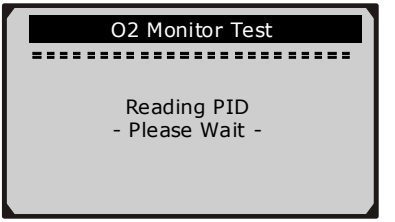
The O2 Monitor Test function allows retrieval and viewing of O2 sensor monitor test results for the most recently performed tests from the vehicle's on-board computer.

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

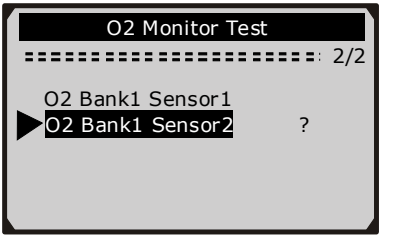
1)Use the **UP/DOWN** scroll button to select **O2 Monitor Test** from **Diagnostic Menu** and press **ENTER**.



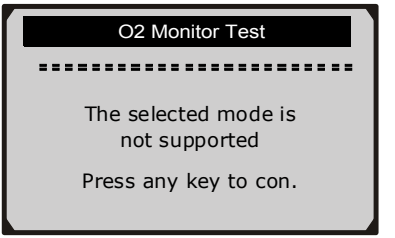
2)Wait a few seconds while the scan tool validates the PID MAP.



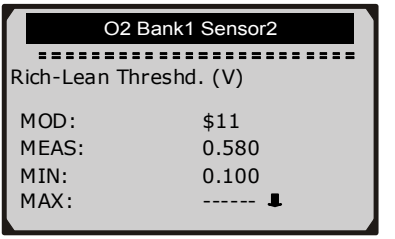
3)Use the **UP/DOWN** scroll button to select O2 sensor from **O2 Monitor Test** menu and press **ENTER**.



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



4)View test results of the selected O2 sensor.



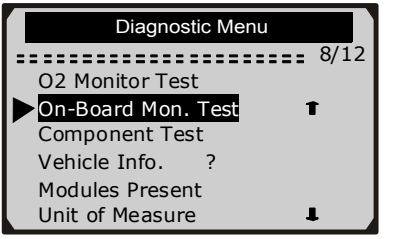
5)Use the **UP**/**DOWN** scroll button to view more screens of data if an ⬆ or ⬇ icon is displayed.

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

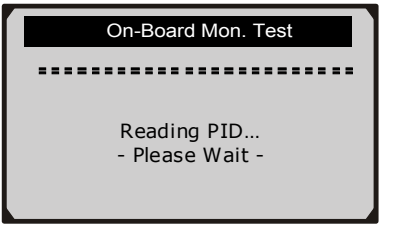
5.8 On-Board Monitor Test

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

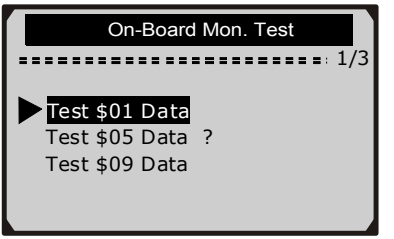
1)Use the **UP/DOWN** scroll button to select **On-Board Mon. Test** from **Diagnostic Menu** and press **ENTER**.



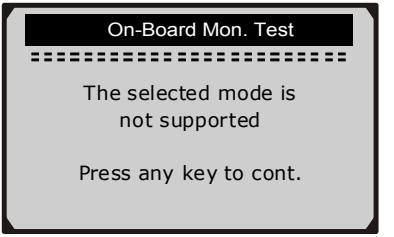
2)Wait a few seconds while the scan tool validates the PID MAP Test.



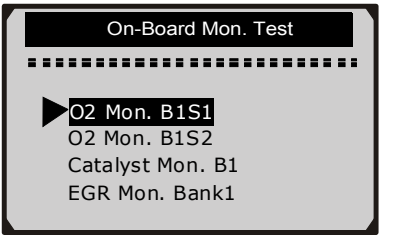
3)From **On-Board Mon. Test** menu, use the **UP**/**DOWN** scroll button to select a test to view and press **ENTER**.



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

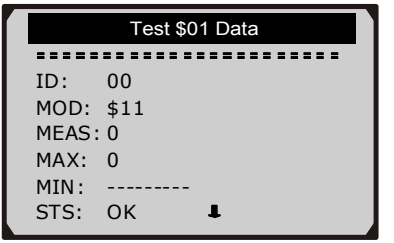


- ***For CAN-equipped vehicles, test selections can be as below***:

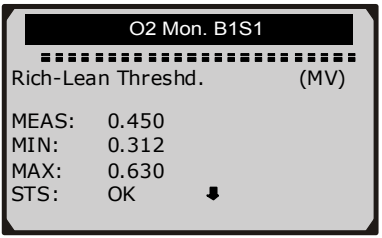


4)Use the **UP/DOWN** scroll button to select the desired monitor from **On-Board Mon. Test** menu and press **ENTER**.

5)View test data on screen.



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

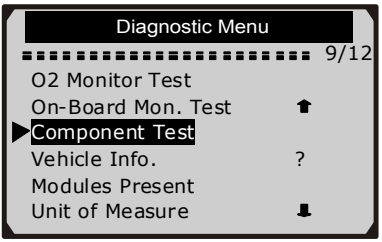


6)Press **ESC** to return to the previous menus.

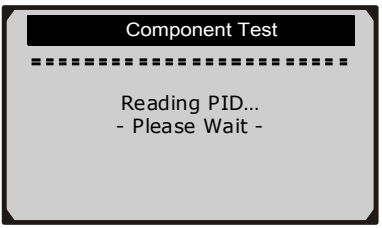
5.9 Component Test

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.

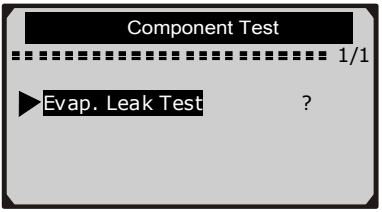
1)Use the **UP**/**DOWN** scroll button to select **Component Test** from **Diagnostic Menu** and press **ENTER**.



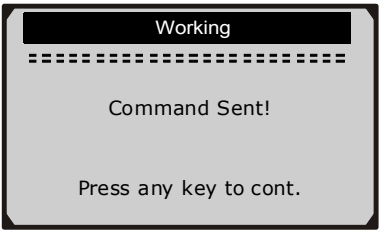
2)Wait a few seconds while the scan tool validates the PID MAP.



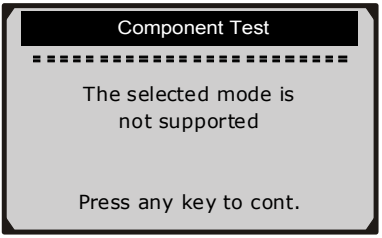
3)From **Component Test** menu, use the **UP**/**DOWN** scroll button to select the test to be initiated.



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



- ***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.***

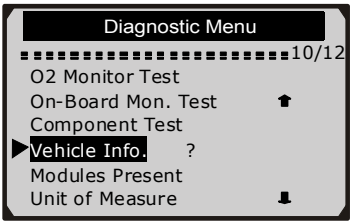


5)Wait a few seconds or press any key to return to **Diagnostic Menu**.

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**.

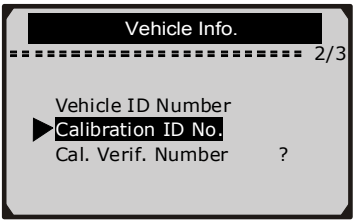


2)An advisory message comes up to remind you. Wait a few seconds or press any key to continue.

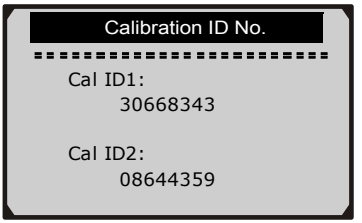
3)Wait a few seconds while the scan tool reads vehicle information.

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

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



5)View retrieved vehicle information on screen.

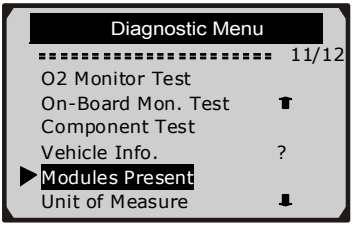


6)Press **ESC** button to return previous menu.

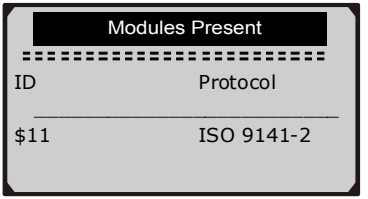
5.11 Modules Present

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

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



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



6. 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***:

  AutoLink AL510 **Pro** ™ Scan Tool

  A PC or laptop with USB ports

  The USB cable supplied with product

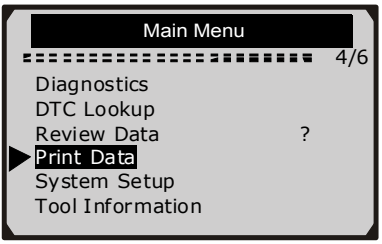
1)Place included CD into CD-Drive and download the installation software. For the latest version of software visit our website: www.autel.us.

2)Follow on screen instructions on your computer to install the updates.

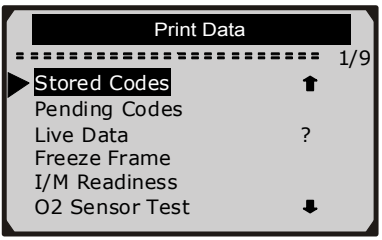
3)Launch "**Auto**Link**Pro** Software", and start the printing application by selecting ***Scan Tool > AL510 > Print***.

4)Connect the scanner to computer with the USB cable supplied.

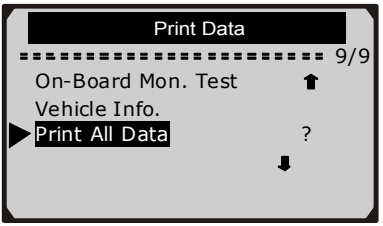
5)Use the **UP**/**DOWN** scroll button to select **Print Data** from **Main Menu**, and press **ENTER**.



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



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



7)Press **ENTER** to upload data to the computer.

7. Appendix

7.1 Appendix 1-- PID List

DTC_CNT	Number of DTCs Stored	FUELSYS1	Fuel System 1 Status (opn/clsd loop)
DTCFRZF	DTC Freeze Frame	FUELSYS2	Fuel System 2 Status (opn/clsd loop)
LOAD_PCT	Calculated Load Value (%)	LOAD_ABS (%)	Absolute Load Value
FRP(Kpa)	Fuel Rail Pressure(Kilopascal)	FRP(PSI)	Fuel Rail Pressure(Gauge)
ETC(°F)	Engine Coolant Temperature	FLI (%)	Fuel Level Input
MIL_DIST(Mi)	Distance w/ Mil Activated	MAP(KPA)	Intake Manifold Absolute Pressure
SHRTFT1 (%)	Short Term Fuel Trim-bank1*	MAP(INHg)	Intake Manifold Absolute Pressure
SHRTFT2 (%)	Short Term Fuel Trim-bank2*	RPM(/MIN)	Engine Rpm
LONGFT1 (%)	Long Term Fuel Trim-bank1*	MAF(G/S)	Mass Air Flow Sensor
LONGFT2 (%)	Long Term Fuel Trim-bank2*	VSS(MPH)	Vehicle Speed Sensor
SPAR-ADV	Ignition Timing Advance	EQ_RAT	Commanded Equivalence Ratio
CLR_DIST(mi)	Distance Since DTC Cleared	IAT(°F)	Intake Air Temperature
AIR_STAT	Commanded Secondary Air Status	OBDSUP	On-board Diagnostic System Supported
O2B1S1(V)	O2 Sensor Output Voltage B1S1*	O2B2S1(V)	O2 Sensor Output Voltage B2S1*
O2B1S2(V)	O2 Sensor Output Voltage B1S2*	O2B2S2(V)	O2 Sensor Output Voltage B2S2*
RUNTM(SEC)	Time Since Engine Start	EGR_PTC (%)	Commanded EGR
EQ_RAT11	Equivalence Ratio (Wide Range O2S) B1S1*	EQ_RAT21	Equivalence Ratio (wide range O2S)(B2S1)*
EQ_RAT12	Equivalence Ratio (Wide Range O2S) B1S2*	EQ_RAT22	Equivalence Ratio (wide range O2S)(B2S2)*
MIL_TIME	Minute run by Engine While MIL activated	EVAP_PCT (%)	Commanded Evaporative Purge
EGR_ERR (%)	EGR Error	WARM_UPS	Warm-ups Since DTC Cleared
CLR_TIME	Time since Diagnostic Trouble Code Clear	VPWR(V)	Control Module Voltage

EVAP_VP(Pa)	Evap System Vapor Pressure	AAT(°F)	Ambient Air Temperature
BARO(Kpa)	Barometric Pressure	BARO(inHg)	Barometric Pressure
O2S11(mA)	O2 Sensor Current (wide range O2S) B1S1*	O2S21(mA)	O2 Sensor Current (wide range O2S) B2S1*
O2S12(mA)	O2 Sensor Current (wide range O2S) B1S2*	O2S22(mA)	O2 Sensor Current (wide range O2S) B2S2*
CATEMP11(°F)	Catalyst Temperature B1S1*	CATEMP12(°F)	Catalyst Temperature B1S2*
CATEMP21(°F)	Catalyst Temperature B2S1*	CATEMP22(°F)	Catalyst Temperature B2S2*
TP (%)	Absolute Throttle Position	TAC_PCT (%)	Commanded Throttle Actuator Control
TP_R (%)	Relative Throttle Position	APP_D (%)	Accelerator Pedal Position D
TP_B (%)	Absolute Throttle Position B	APP_E (%)	Accelerator Pedal Position E
TP_C (%)	Absolute Throttle Position C	APP_F (%)	Accelerator Pedal Position F

*** B = Bank, S = Sensor**

(The location of Cylinder #1 designates the side of Bank 1 on the engine block.)

7.2 Appendix 2 -- In-use Performance Tracking Data List

Abbreviation	Full Name	Definitions
OBDCOND	**OBD Monitoring Conditions Encountered Counts**	OBD Monitoring Conditions Encountered Counts displays number of times that the vehicle has been operated in the specified OBD monitoring conditions (general denominator).
IGNCNTR	**Ignition Counter**	Ignition Counter displays the count of number of times that the engine has been started.
CATCOMP1	**Catalyst Monitor Completion Counts Bank 1**	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	**Catalyst Monitor Conditions Encountered Counts Bank 1**	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	**Catalyst Monitor Completion Counts Bank 2**	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	**Catalyst Monitor Conditions Encountered Counts Bank 2**	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	**O2 Sensor Monitor Completion Counts Bank 1**	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	**O2 Sensor Monitor Conditions Encountered Counts Bank 1**	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	**O2 Sensor Monitor Completion Counts Bank 2**	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	**O2 Sensor Monitor Conditions Encountered Counts Bank 2**	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	**EGR Monitor Completion Condition Counts**	EGR Monitor Completion Condition Counts displays number of time that all conditions necessary to detect an EGR system malfunction have been encountered (numerator).
EGRCOND	**EGR Monitor Conditions Encountered Counts**	EGR Monitor Conditions Encountered Counts displays number of times that the vehicle has been operated in the specified EGR system monitoring conditions (denominator).
AIRCOMP	**AIR Monitor Completion Condition Counts (Secondary Air)**	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	**AIR Monitor Conditions Encountered Counts (Secondary Air)**	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	**EVAP Monitor Completion Condition Counts**	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	**EVAP Monitor Conditions Encountered Counts**	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).

8. Warranty and Service

8.1 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.

8.2 Service Procedures

If you have any questions, please contact your local store, distributor or visit our website at www.autel.us

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

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