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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 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.
- Be extra cautious 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.

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1. Using the Manual

This manual contains device usage instructions.

Some illustrations shown in this manual may contain modules and optional equipment that are not included on your system. Contact your sales representative for availability of other modules and optional tools or accessories.

1.1 Conventions

The following conventions are used.

Bold Text

Bold emphasis is used to highlight selectable items such as buttons and menu options.

Example:

- Tap **OK**.

Terminology

The term “select” means highlighting a button or menu item and tapping it to confirm the selection.

Notes and Important Messages

The following messages are used.

Notes

A NOTE provides helpful information such as additional explanations, tips, and comments.

Important

IMPORTANT indicates a situation which, if not avoided, may result in damage to the test equipment or vehicle.

Illustrations

Illustrations used in this manual are samples, the actual testing screen may vary for each vehicle being tested. Observe the menu titles and on-screen instructions to make correct option selection.

2. General Information

2.1 On-Board Diagnostics (OBD) II

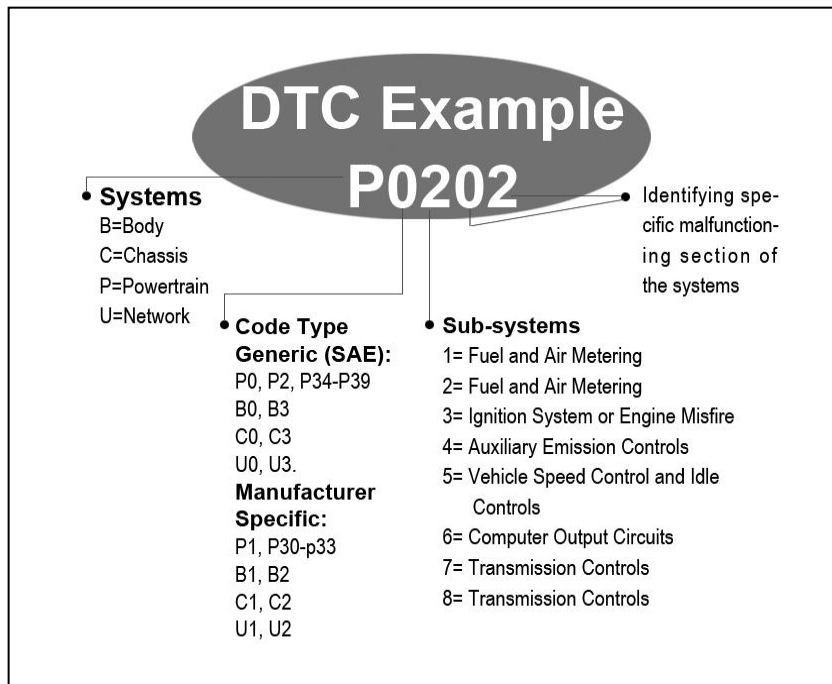
The first generation of On-Board Diagnostics (called OBD I) was developed by the California Air Resources Board (ARB) and implemented in 1988 to monitor some of the emission control components on vehicles. As technology evolved and the desire to improve the On-Board Diagnostic system increased, a new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

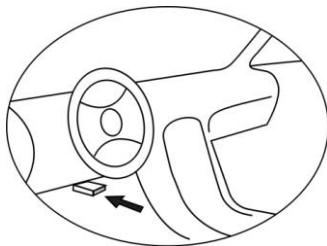
2.2 Diagnostic Trouble Codes (DTCs)

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. For different ignition type engines, the available monitors are different too.

The following monitors are to be used for spark ignition engines only:

- 1) EGR System**
- 2) O2 Sensors**
- 3) Catalyst**
- 4) Evaporative System**
- 5) O2 Sensor Heater**
- 6) Secondary Air**
- 7) Heated Catalyst**

The following monitors are to be used for compression ignition engines only:

- 1) EGR System**
- 2) NMHC Catalyst**
- 3) NOx Aftertreatment**
- 4) Boost Pressure System**
- 5) Exhaust Gas Sensor**
- 6) PM Filter**

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 Code (DTC) that identifies which section of the emission control system has malfunctioned.

Enabling Criteria -- Also termed Enabling Conditions. They are the vehicle-specific events or conditions that must occur within the engine before the various monitors will set, or run. Some monitors require the vehicle to follow a prescribed “drive cycle” routine as part of the enabling criteria. Drive cycles vary among vehicles and for each monitor in any particular vehicle.

OBD II Drive Cycle -- A specific mode of vehicle operation that provides conditions required to set all the readiness monitors applicable to the vehicle to the “Ready” condition. The purpose of completing an OBD II drive cycle is to force the vehicle to run its onboard 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 emission 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. Use the Scan Tool

3.1 Tool Description



- 1) **CONNECTOR** -- Connects the scan tool to the vehicle's Data Link Connector (DLC).
- 2) **LCD DISPLAY** -- Indicates test results.
- 3)  **FUNCTION BUTTONS** – Corresponds with “buttons” on screen for executing commands.

- 4)  **ESC BUTTON** -- Cancels a selection (or an action) from a menu or returns to the previous screen.
- 5)  **HELP BUTTON** -- Provides help information and the description of DTCs.
- 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. When looking up DTC, it is used to change value of selected character.
- 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. When looking up DTC, it is used to change value of selected character.
- 8)  **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; views previous screen or previous frames of recorded data. It is also used to view previous trouble code when viewing DTCs.
- 9)  **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; views next screen or next frames of recorded data. It is also used to view next trouble code when viewing DTCs.
- 10)  **OK BUTTON** -- Confirms a selection (or an action) from a menu.
- 11) **USB CONNECTOR** -- Connects the scan tool to the PC for printing.
- 12) **TF CARD SLOT** -- Holds the System TF card.

3.2 Specifications

- 1) Display: 2.8" TFT color display (320 x 240 dpi)
- 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: 12.0 V to 18.0 V power provided via vehicle battery.
- 5) Dimensions:

Length	Width	Height
198.5 mm (7.81")	103.8 mm (4.09")	37.5 mm (1.48")

- 6) Weight: 0.28 kg (w/o main cable) 0.435 kg (with main cable)

3.3 Accessories Included

- 1) **User Manual** -- Instructions on tool operations.
- 2) **CD** -- Includes user manual, Autel update software, etc.
- 3) **OBD II Cable** -- Provides power to tool and communicates between the tool and the vehicle.
- 4) **USB Cable** -- Used to upgrade the scan tool, and to print retrieved data.
- 5) **TF Card** -- Contains the scan tool's operation software and applications.
- 6) **Carry Case** -- A nylon case to store the scan tool.

3.4 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.

3.5 Power

The scan tool is powered via the 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 OBD II cable.*
- 3) Plug the OBD II cable to the vehicle's DLC.
 - 4) Power up the scan tool, and wait for the **Main Screen** to appear (Figure 3.1).

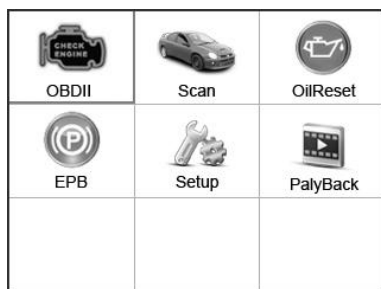


Figure 3.1

3.6 System Setup

The System Setup functions allow you to adjust default settings and view information about the scan tool.

- 1) **Language:** Selects the desired language.
 - 2) **Unit of Measure:** Sets the unit of measure to English or Metric.
 - 3) **Beep Set:** Turns on/off the beep.
 - 4) **Key Test:** Checks if the keyboard is working properly.
 - 5) **LCD Test:** Checks if the LCD display is working properly.
 - 6) **About:** Provides information of the scan tool.
- *Settings of the unit will remain until change to the existing settings is made.*

To Enter the Setup Menu

From the **Main Screen**, use **LEFT/RIGHT** scroll button or **UP/DOWN** scroll button to select **Setup**, and press the **OK** button. Following the instructions to do adjustments and settings could make your diagnosis more conveniently and easily (Figure 3.2).

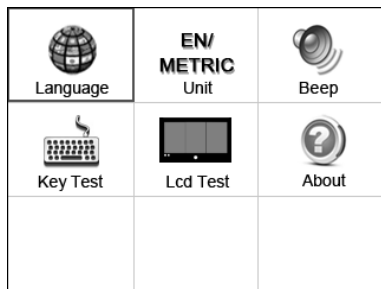


Figure 3.2

Language Setup

- *English is the default language.*
- 1) From **System Setup** screen, use the **LEFT/RIGHT** scroll button to select **Language**, and press the **OK** button.
 - 2) Use the **LEFT/RIGHT** scroll button to select the desired language and press the **OK** button to save your selection and return to previous screen (Figure 3.3).

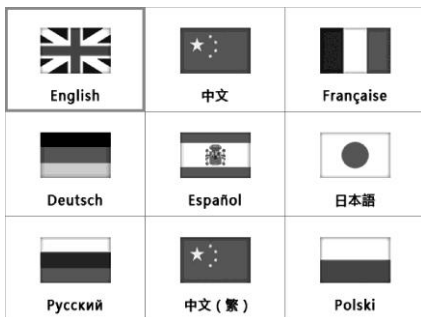


Figure 3.3

Unit of Measure

- *Metric is the default measurement unit.*
- 1) From **System Setup** screen, use the **LEFT/RIGHT** scroll button to select **EN/METRIC Unit** and press the **OK** button.

- 2) From **Unit of Measure** screen, use the **LEFT/RIGHT** scroll button to select the desired unit of measurement (Figure 3.4).

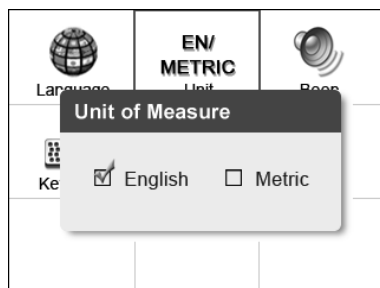


Figure 3.4

- 3) Press the **OK** button to save your selection and return to previous menu. Or, press the **ESC** button to exit without saving.

Beep Set

- *The default setting is Beep On.*
- 1) From **System Setup** screen, use the **UP/DOWN** scroll button or the **LEFT/RIGHT** scroll button to select **Beep** and press the **OK** button.
- 2) From **Beep Set** menu, use the **LEFT/RIGHT** scroll button to select ON or OFF to turn on/off the beep (Figure 3.5).

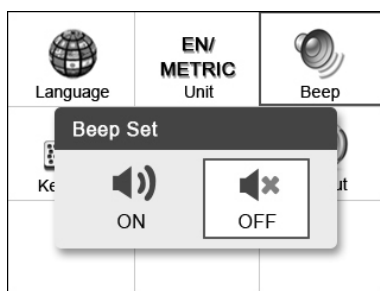


Figure 3.5

- 3) Press the **OK** button to save your selection and return to the previous menu. Or, press the **ESC** button to exit without saving.

Key Test

The **Key Test** function checks if the keyboard is working properly.

- 1) From **System Setup** screen, use the **UP/DOWN** scroll button or the **LEFT/RIGHT** scroll button to select **Key Test**, and press the **OK** button.
- 2) Press any key to start test. When you press a key, the edge around corresponding key on the screen should turn to red. Otherwise, the key is not functioning properly.
- 3) Double press **ESC** to return to the previous menu.

LCD Test

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

- 1) From **System Setup** screen, use the **UP/DOWN** scroll button or the **LEFT/RIGHT** scroll button to select **LCD Test**, and press the **OK** button.
- 2) Look for missing spots in the red, green, blue, black and white LCD display.
- 3) When completed, press the **ESC** button to exit.

About

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

- 1) From **System Setup** screen, use the **UP/DOWN** scroll button or the **LEFT/RIGHT** scroll button to select **About** and press the **OK** button; wait for the **About** screen to appear.
- 2) View tool information on screen. Press the **ESC** button to exit.

3.7 Vehicle Coverage

On the basis of all OBD II compliant vehicles, including those equipped with universal protocol -- Control Area Network (CAN), DiagLink scanner expands vehicle system coverage and offers more diagnostic power to the vehicle technicians. Featuring expanded

global vehicle coverage, the scan tool offers technicians a significant improvement on model years covered by supported manufactures.

3.8 Product Troubleshooting

Vehicle Linking Error

A communication error occurs if the scan tool fails to communicate with the vehicle's ECU (Electronic Control Unit). You need to do the following to check up:

- ✓ Verify that the ignition is ON.
- ✓ Check if the scan tool's connector is securely connected to the vehicle's DLC.
- ✓ 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 (Electronic Control Unit) is too slow to respond to requests. You need to do the following to reset the tool:

- ✓ 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 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. Playback Data

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

☑ **NOTE:** *The amount of files that can be saved depends on the space available in the TF card.*

4.1 Review Data

- 1) Use the **LEFT/RIGHT** scroll button or the **UP/DOWN** scroll button to select **Playback** from **Main Screen** (Figure 3.1), and press the **OK** button. Wait for the **Review Data** screen to appear (Figure 4.1).
- 2) Use the **UP/DOWN** scroll button to select the desired item from **Review Data** screen, and press the **OK** button.

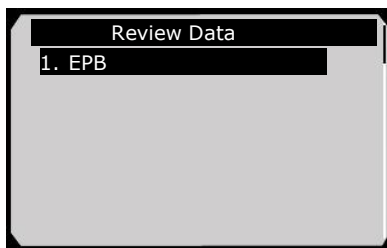


Figure 4.1

- If no data from previously tested vehicle is recorded, a message "**No data available!**" shows on the screen.
- 3) Review selected data on screen (Figure 4.2).

Vehicle	Specification
Vehicle:	Mustang
Engine Type:	Other
Capacity:	3.8L
Transmission:	Manual
Fuel Type:	Gasoline
Emission Level:	Federal Emission
VIN:	1FAFP40462F100819
PrefSuf:	2R3APB VersionID:4612
Print	

Figure 4.2

4.2 Delete Data

By selecting **Delete** on the screen, you are allowed to erase the selected data on the scan tool. Review the recordings thoroughly before erasing. You could also erase all recordings by select **Delete All**.

 **NOTE:** Don't use **Delete All** unless you are definitely sure what you are going to proceed.

4.3 Print Data

Print option allows you to print the recorded files to your computer and then to the printer.

For more details, please refer to chapter **9. Print Data**.

5. Diagnostics

 **NOTE:** The screens shown below in this chapter are examples. The screens actually appear vary by vehicle.

5.1 Enter Vehicle Information

Before using the scan tool to diagnose, you must input the vehicle information. There are generally three ways to input the vehicle information.

- Vehicle information manual acquisition.
- VIN code automatic acquisition.
- VIN code manual acquisition.

The way to enter diagnostic procedure depends on vehicle being tested.

5.1.1 Vehicle Information Manual Acquisition

Follow these steps to enter the vehicle information and begin diagnostics. (Take **Ford** as an example)

- 1) Connect the scan tool to the vehicle's DLC via the main cable and wait for the **Main Screen** to appear.
- 2) Select **Scan** icon in the **Main Screen** (Figure 3.1) and wait for the vehicle manufacturer screen and then select the vehicle make.

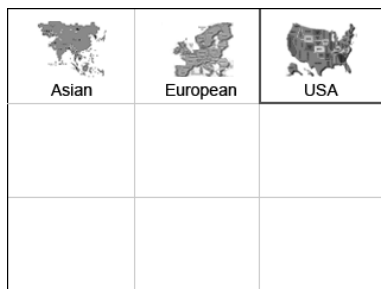


Figure 5.1

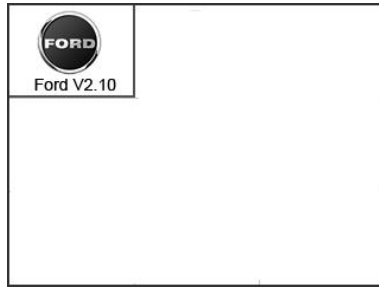


Figure 5.2

- 3) Step by step, select the right options for your vehicle according to each screen that appears.

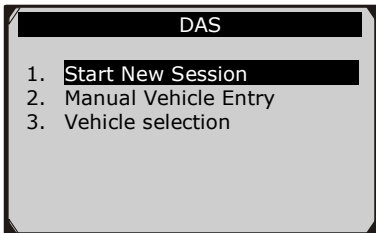


Figure 5.3

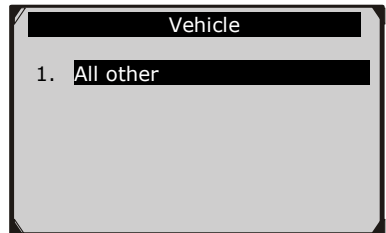


Figure 5.4

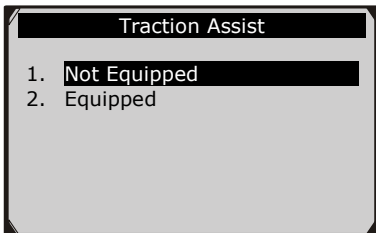


Figure 5.5

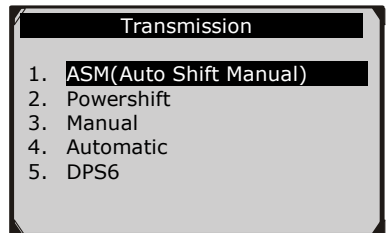


Figure 5.6

- 4) Do this until the complete vehicle information is entered. Then the scan tool will ask your confirmation.

Vehicle Specification	
Vehicle: Mustang	
Engine Type: Other	
Capacity: 3.8L	
Transmission: Manual	
Fuel Type: Gasoline	
Emission Level: Federal Emission	
Is this correct?	
Yes	no

Figure 5.7

5.1.2 VIN Code Automatic Acquisition

Some vehicles could identify the VIN code intelligently, saving customer's time to input complex information. (Take **Renault** as an example)

	
Renault V1.00	

Figure 5.8

RENAULT
1. VIN acquisition

Figure 5.9

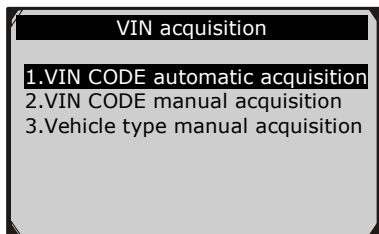


Figure 5.10

In this mode, the scan tool will communicate with the vehicle and read off the VIN code automatically. It will ask for your confirmation about the VIN code if ECU response received. If no response from the ECU, it will turn to manual mode. (*Please see **VIN Code Manual Acquisition***)

5.1.3 VIN Code Manual Acquisition

For some vehicles, both selecting the options manually and acquiring the VIN are available for you to enter the vehicle information. (Take **Benz** as an example)

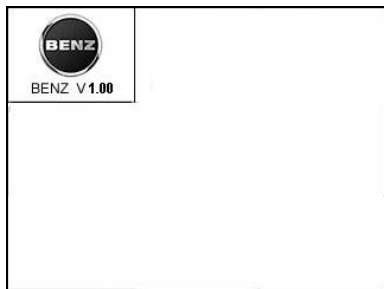


Figure 5.11

In the Benz **Cars** menu, choose the item “**2. Select by entering VIN**” and you can enter the VIN code directly.

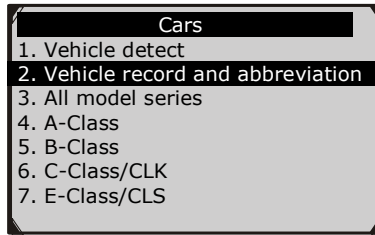


Figure 5.12

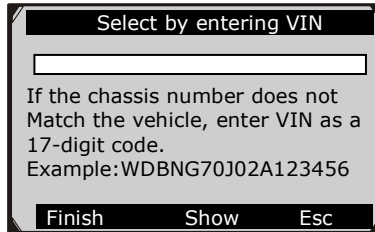


Figure 5.13

When you choose to enter VIN directly, a pop-up soft keyboard is used to input VIN code (Figure 5.14).

To pop up the keyboard, press the Function button corresponding to **Show**. Use the **UP/DOWN** scroll button and **LEFT/RIGHT** scroll button to select digit and character, and then press the **OK** button to confirm. Use **Backspace** button to delete the previous digit or character. When finished, press the Function button corresponding to **Finish** to proceed. The scan tool will identify the VIN code and turn to diagnostic procedure.

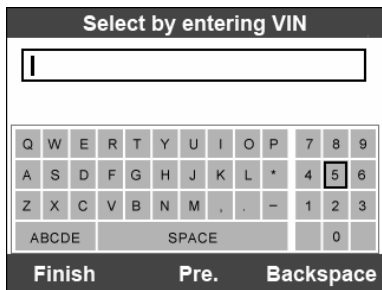


Figure 5.14

5.2 Diagnostic Test

After you have entered the correct vehicle information, the diagnostic testing selection will display as below:

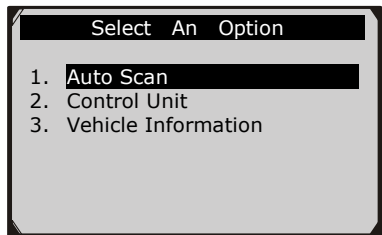


Figure 5.15

5.2.1 Auto Scan

Depending on the scan tool model, **Auto Scan** function will carry out an overall scan to check the status of all systems or four systems (engine, transmission, airbag and ABS) on the vehicle being tested. Selecting **Auto Scan** will lead to retrieve the trouble codes in each system of the vehicle one by one. It will take a few minutes to display.

Use the **UP/DOWN** scroll button to select **Auto Scan** from **Main Groups** menu (Figure 5.15), and press the **OK** button.

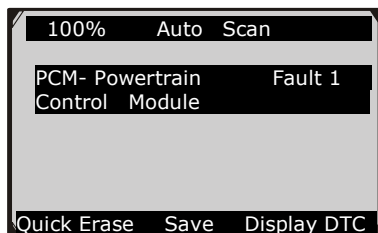


Figure 5.16

User is allowed to check the details of each system, quickly erase DTC, save the data, and display DTC from the **Auto Scan** menu screen. To select the options on the bottom, simply press the corresponding function button.

- **Save** –You can save the Auto Scan information as “Vehicle Record” so that you will not need to follow the vehicle selection process again on the same vehicle in later tests. For detailed instructions, please refer to **5.2.4 Save and retrieve files**.
- **Quick Erase** – By selecting this option, the scan tool will erase all displaying DTCs and once again read the data and check the latest status of the system. If the system did not repair, the trouble codes will keep on displaying.
- **Display DTC** – This option allows you to read DTC definitions in the highlighted system. If more than one fault is detected in a system, the scan tool will display an option list for you to view different kind of DTCs or freeze frames.

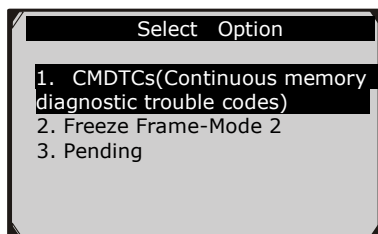


Figure 5.17

In **Auto Scan** screen (Figure 5.16), pressing **OK** button will turn to diagnostic operation. For more details, refer to **5.3 Diagnostic Operation**.

To exit the **Auto Scan** option, press **ESC** button. The scan tool will display a message “**Are you sure to quit?**” to ask for your confirmation. Select **Yes** to quit, and select **No** to cancel command.

5.2.2 Control Unit

Control Unit function will list down all the systems that might be available on the vehicle for you to select to test. Select a system to display the function menu and start testing.

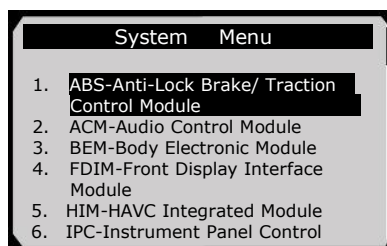


Figure 5.18

 **NOTE:** The actual systems displayed in the **System Menu** screen may be different from Figure 5.18 due to various vehicle configurations.

5.2.3 Vehicle Information

Vehicle Information function allows you to view vehicle-specific information for Specifications, System Type and other Identification.

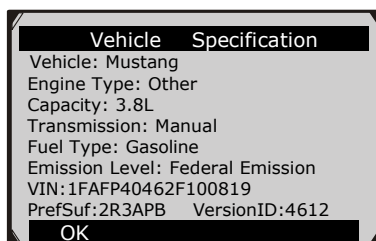


Figure 5.19

5.2.4 Save and Retrieve Files

Save and Retrieve Files function will save the detected vehicle information. You can directly get the vehicle information next time.

Please follow the instructions above to finish the **Auto Scan** process (Figure 5.15), and press the Function button corresponding to **Save**, and name the record on the **Save Vehicle Record** screen.

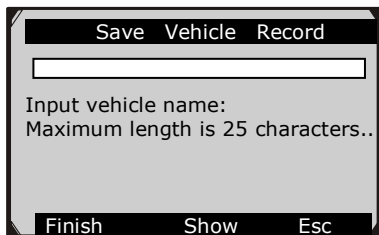


Figure 5.20

To enter the diagnostic functions through the vehicle record option in future, please follow these steps:

- Select **Vehicle Data Recorder** from the DAS menu.

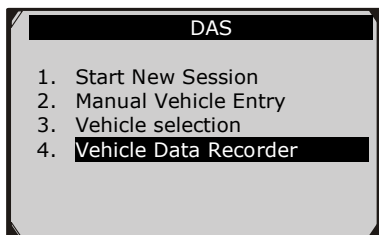


Figure 5.21

- Click on the vehicle file you desired to enter the diagnostic menu directly.

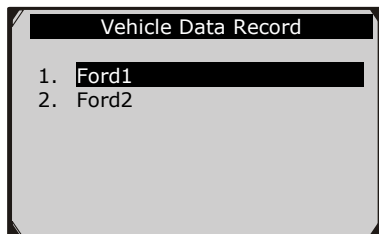


Figure 5.22

5.3 Diagnostic Operation

This function allows you to read and clear diagnostic trouble codes (DTCs), read and save live data. (Take **Ford** as an example)

5.3.1 Read Codes

The Read Codes procedure varies for each vehicle being tested. This section includes the following Read Codes procedures.

In the **Function Menu** screen (Figure 5.23), select **Read Codes**. This will display the **Read Codes** menu screen (Figure 5.24).

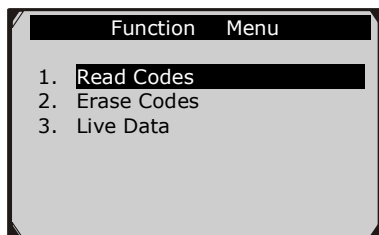


Figure 5.23

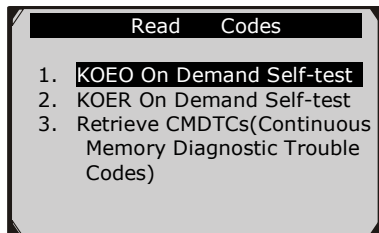


Figure 5.24

In the **Read Codes** menu, select one of the options to proceed. The screen will show as below.

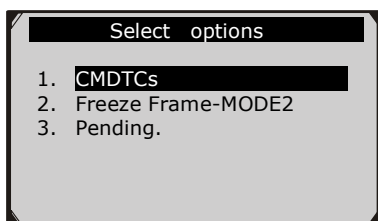


Figure 5.25

Select one of the DTC options to view detailed diagnostic trouble code information.

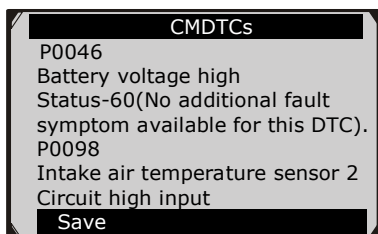


Figure 5.26

You can save the code results for later review by selecting **Save** option on the bottom. When you finished viewing the DTCs, press the **ESC** button to return to previous screen.

5.3.2 Erase Codes

After reading and / or reviewing the diagnostic trouble codes, take the following steps to erase codes from the vehicle. If **Erase Codes** is not an available menu option, consult the manufacturer's service manual for the correct "clear code" method.

🔧 **NOTE:** This **Erase Codes** function clears the DTCs from the selected ECU or provides instructions for how to manually clear the codes from the ECU.

🔧 **NOTE:** Before performing this procedure, make sure the vehicle's ignition key is in the *On (Run)* position with the engine

off.

To Erase DTCs, please follow these steps:

1. With the **Function Menu** screen displayed (Figure 5.23), click on **Erase Codes**. The scan tool displays an instruction message.
2. Follow the instructions on each screen that appears until the procedure is complete.
3. When finished, press any key to exit.
4. Use **Read Codes** function to check the codes again to see if DTCs have been erased successfully. If any codes remain, it indicates that the vehicle needs maintenance. Please repeat the **Erase Codes** steps after repairing the vehicle.

5.3.3 Live Data

Live Data function enables you to view the real-time live data, including the information of values (volts, rpm, temperature, speed etc.) and system status information (open loop, closed loop, fuel system, etc.) generated by vehicle sensors, switches and actuators.

 **NOTE:** If the vehicle must be driven in order to perform a troubleshooting procedure, **ALWAYS** have a second person help you. One person should drive the vehicle while the other person observes the Scan Tool data. It is dangerous to drive and operate the Scan Tool at the same time because a serious traffic accident might be caused.

- 1) To view live data, use the **UP/DOWN** scroll button to select **Live Data** from **Function Menu** screen (Figure 5.27), and press the **OK** button. The screen will show as below.

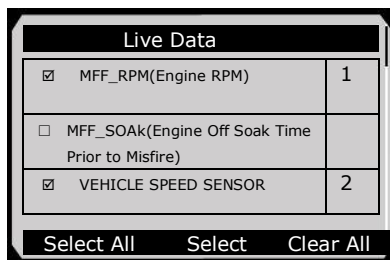


Figure 5.27

- The number to the right of selected item indicates sequence of this item.
 - If you want to select the item, press **Select** button.
 - To select all the items on the screen, press **Select All** button. To clear all the selected items on the screen, press **Clear All** button.
- 2) Press the **OK** button to view the information.

Live Data		
MFF_RPM(Engine RPM)	837	RPM
VEHICLE SPEED SENSOR	0	km/h
Pause one Graphic Save		

Figure 5.28

The three keyboard function buttons work as below.

[One Graphic]: To view the live data waveform.

[Save]: Save the live data.

[Pause]: Suspend viewing and stop saving live data.

- 3) Press the **FUNCTION** button corresponding to **One Graphic**. The screen will show the live data waveform as Figure 5.29.

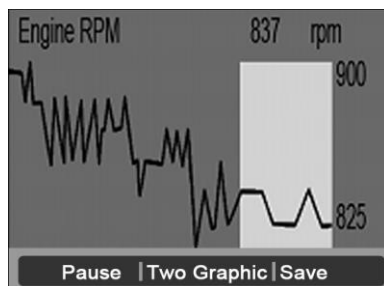


Figure 5.29

- 4) Press the **FUNCTION** button corresponding to **Two Graphic**, the screen will show two graphs as Figure 5.30.

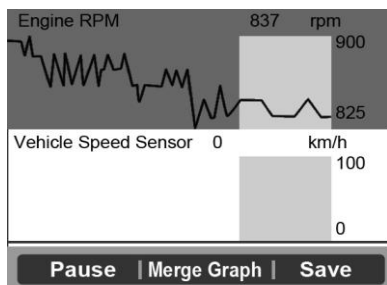


Figure 5.30

- 5) Press the **FUNCTION** button corresponding to **Merge Graph**, the above two graphs will merge together as Figure 5.31.

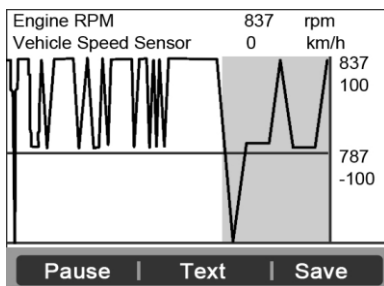


Figure 5.31

 **NOTE:** *Merge Graph* can be used to compare two related parameters in graphic mode. It is especially convenient that you could select two interacted parameter to merge and see their relationship.

- 6) Select **Text** to return to the view the live data in text form
- 7) Select **Save** to record retrieved live data and graphs.

 **NOTE:** *The scan tool can only playback text data even though the data is saved in graphic mode. Since what you are viewing is “real time” Live Data, the data changes as the vehicle’s operating conditions change.*

- When there is not enough memory space, a warning message prompting to delete previously recorded data.

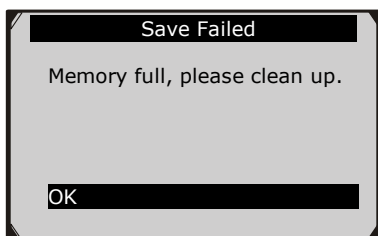


Figure 5.32

- If you wish to delete the data, select **OK** and then go to **Playback** screen to delete the data.
- Select **Pause** to suspend recording. You could resume the recording process again by selecting **Continue**.
- You may review the saved data in **Playback** function.
- Press **ESC** button to exit.

6. OBD II Diagnostics

The OBD II Diagnostics function is a fast-access option that allows you to carry out a quick test on the engine system of OBD II vehicles.

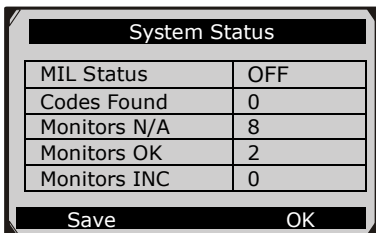
When more than one vehicle control module is detected by the scan tool, you will be prompted to select the module where the data may be retrieved. The most often to be selected are the Power-train Control Module [PCM] and Transmission Control Module [TCM].

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 and wait for power on.
 - 4) Turn the ignition on. Engine can be off or running.
 - 5) Select **OBDII** from the **Main Screen** on the scan tool (Figure 3.1).
 - 6) Press the **OK** button to wait for the Menu to appear. 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) more than three times, 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.

- 7) View a summary of system status (MIL status, DTC counts, Monitor status) on screen (Figure 6.1). Press **ESC** button for **Diagnostic Menu** (Figure 6.3) to come up.



System Status	
MIL Status	OFF
Codes Found	0
Monitors N/A	8
Monitors OK	2
Monitors INC	0

Save OK

Figure 6.1

- If more than one module is detected, you will be prompted to select a module before testing (Figure 6.2).

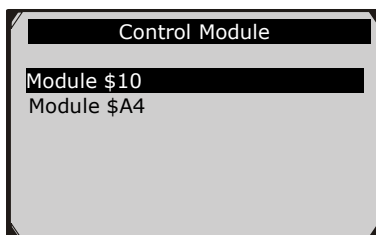


Figure 6.2

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

6.1 Read 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”, which are fault codes, or trouble codes that have been stored in the vehicle computer memory because the faults have reoccurred for more than a specified amount of key-cycles. These codes will*

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 computer until the appropriate monitor for each DTC has determined that the malfunction is no longer present and is not commanding the MIL on. Permanent DTC shall be stored in non-volatile memory and may not be erased by any diagnostic services or by disconnecting power to ECU.*

- 1) Use **UP/DOWN** scroll button to select **Read Codes** from **Diagnostic Menu** and press the **OK** button (Figure 6.3).

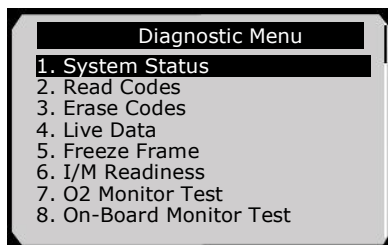


Figure 6.3

- 2) Use the **UP/DOWN** scroll button to select **Stored Codes**, **Pending Codes** or **Permanent Codes** from the **Read Codes** menu and press the **OK** button (Figure 6.4).

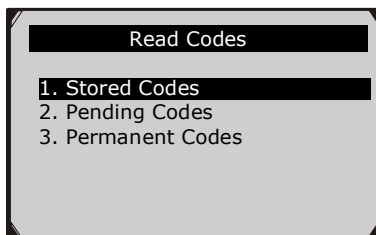


Figure 6.4

- 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 the previous screen.
- ✎ **NOTE:** *Permanent Codes function is available for merely vehicles supporting the CAN protocols.*
- 1) View DTCs and their definitions on screen.
- 2) If more than one DTC is found, use the **UP/DOWN** 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 **OK** button to confirm.

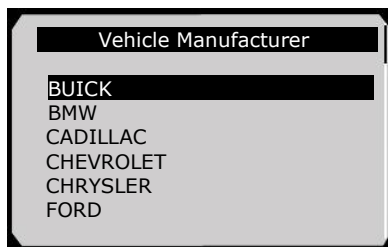


Figure 6.5

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

6.2 Erase 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.

❏ **NOTE:** Erasing codes does not mean that trouble codes in ECU have been eliminated completely. As long as there is fault with the vehicle, the trouble codes keeps on presenting.

◆ **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 **OK** button (Figure 5.3).
- 2) After you have pressed **OK** button, a message will come up asking you to check the ignition and engine status (Figure 6.6).

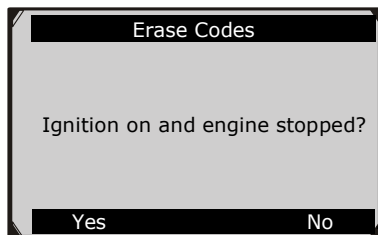


Figure 6.6

- If you do not want to proceed with erasing codes, press **ESC** button or select **NO** to exit and return to the previous screen.
- If you press **Yes** function button or **OK** button, a warning message will come up asking your confirmation (Figure 6.7).

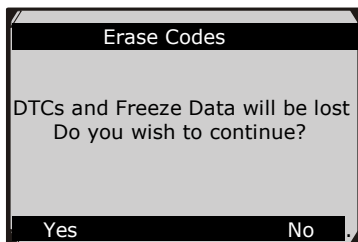


Figure 6.7

3) Press the **OK** button to confirm.

- If the codes are cleared successfully, an “Erase Done!” confirmation message shows on the display (Figure 6.8).

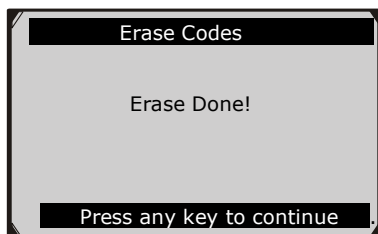


Figure 6.8

- If the codes are not cleared, then an “Erase Failure. Turn Key on with Engine off!” message appears (Figure 6.9).

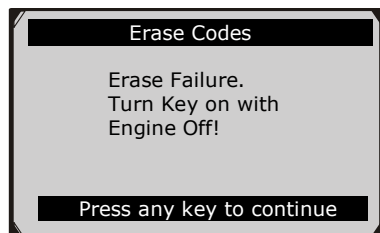


Figure 6.9

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

6.3 Live Data

In this function, you can not only read the live data but also record data for later review.

View 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 **OK** button (Figure 6.3).
- 2) Wait a few seconds while the scan tool validates the **PID MAP** (Figure 6.10).

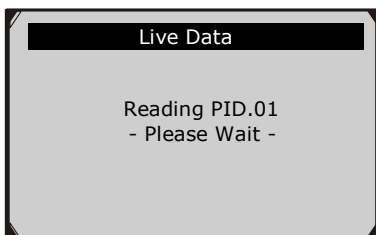


Figure 6.10

A. View Complete List

- 1) To view complete set of data, use **UP/DOWN** scroll button to select **Complete List** from **Live Data** menu and press the **OK** button (Figure 6.11).

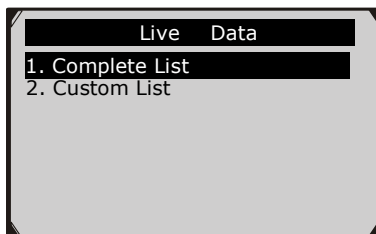


Figure 6.11

- 2) View live PIDs on the screen. Use the **UP/DOWN** scroll button for more PIDs if additional information is available on more than one page (Figure 6.12).

Complete List		
Numbers of DTCs	0	
Fuel system 1 status	OL	
Fuel system 2 status	--	
Calculated load value	0.0	%
Engine coolant temperature	-40	°C
Pause Graphics Save		

Figure 6.12

- If the “**Graphics**” on the bottom appears when a PID is highlighted, graphic information is available. Select **Graphics** to view graph (Figure 6.13). PID name, current value, maximum and minimum values are displayed on the screen.

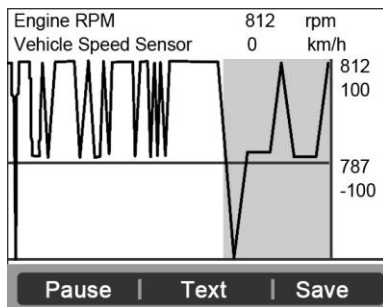


Figure 6.13

- If the “**Merge Graph**” on the bottom appears when a PID is selected to view, merged graph information is available (Figure 6.14).
- NOTE:** *Merge Graph* can be used to compare two related parameters in graphic mode, which is especially convenient in the **Custom List** option where you could select two interacted parameter to merge and see their relationship.

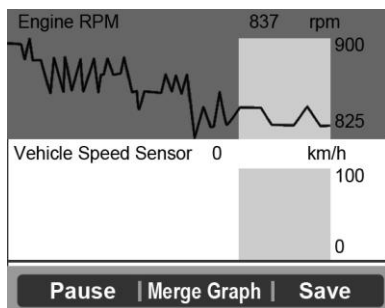


Figure 6.14

- Select **Text** to return to text viewing of PID data.
 - Select **Save** to record retrieved live data and PID graphs.
 - Select **Pause** to suspend viewing. You could resume the viewing process again by selecting **Start**.
- 3) Press the **ESC** button to return to previous menu.

B. View Custom List

- 1) To view customized PID data, use the **UP/DOWN** scroll button to select **Custom List** from **Live Data** menu and press the **OK** button (Figure 6.11).
- 2) Use the **UP/DOWN** scroll button to move up and down to the desired items and click **Select** button to confirm. The selected parameters are marked with solid squares (Figure 6.15).

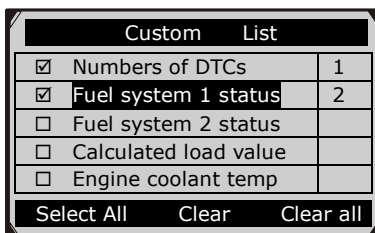


Figure 6.15

- The number to the right of selected item indicates sequence of this item.

- If you want to deselect the item, press **Clear** button.
 - To select all the items on the screen, press **Select All** button.
To clear all the selected items on the screen, press **Clear All** button.
- 3) Press the **OK** button to view selected PIDs on screen.

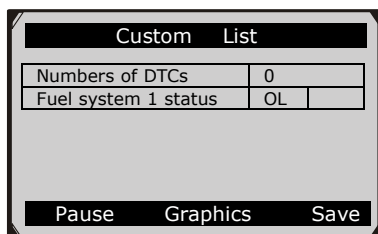


Figure 6.16

- 4) Press the **OK** button to view selected PIDs on screen.

Record Data

The Record Data function allows recording vehicle modules' Parameter Identification (PID) data to help diagnose intermittent vehicle problems. You could save data files to the SD card and then use the Playback function to view the saved files.

 **NOTE:** The length of time for each frame varies per vehicle. Generally, one frame of data is about 1/4 second, or 4 frames per second.

- 1) To record live data, with the live data screen displaying, select **Save** on the bottom. The scan tool will start timing to record retrieved live data and PID graphs.
 - If you record live data under text mode, following screen shows::

Complete List		
Numbers of DTCs	0	
Fuel system 1 status	OL	
Fuel system 2 status	--	
Calculated load value	0.0	%
Engine coolant temperature	-40	°C
Pause Graphics Saving 94		

Figure 6.17

- If you record live data under graph mode, following screen shows:

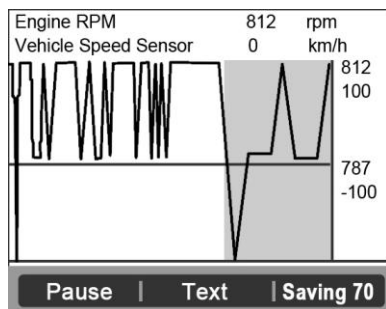


Figure 6.18

NOTE: The scan tool can only playback text data even though the data is saved in graphic mode.

- 2) When there is not enough memory space, a warning message prompting to delete previously recorded data.

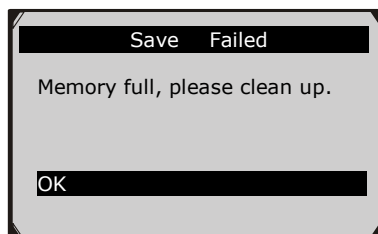


Figure 6.19

- If you wish to delete the data, select **OK** and then go to **Playback** screen to delete the data.
- 3) Select **Pause** to suspend recording. You could resume the recording process again by selecting **Start**.
 - 4) You may review the saved data in Playback function.
 - 5) Press ESC button to exit.

6.4 Freeze Frame

Freeze Frame Data allows the technician to view the vehicle's operating parameters at the moment a DTC (Diagnostic Trouble Code) is detected. For example, the parameters may include engine speed (RPM), engine coolant temperature (ECT), or vehicle speed sensor (VSS) etc. This information will aid the technician by allowing the parameters to be duplicated for diagnostic and repair purposes.

- 1) To view freeze frame data, use the **UP/DOWN** scroll button to select **Freeze Frame** from **Diagnostic Menu** and press the **OK** button (Figure 6.3).
- 2) Wait a few seconds while the scan tool validates the PID MAP.
- 3) If retrieved information covers more than one screen, use the **DOWN** scroll button, as necessary, until all the data have shown up (Figure 6.20).

Freeze Frame		
DTC that caused required freeze frame data storage	P0193	
Fuel system 1 status	OL	
Fuel system 2 status	--	
Calculated load value	0.0	%
Engine coolant temperature	-40	°C
Save		

Figure 6.20

- If there is no available freeze frame data, an advisory message **"No freeze frame data stored!"** shows on the display.

- 4) Select **Save** to record freeze frame. A confirming message “**Save success!**” shows on the display and scan tool return to previous menu.
- 5) If you don’t want to save the freeze frame data, press **ESC** button to return to previous screen.

6.5 Retrieve I/M Readiness Status

I/M Readiness function is used to check the operations of the Emission System on OBD II 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 latest vehicle models may support two types of **I/M Readiness** tests:

- A. *Since DTCs Cleared*** - indicates status of 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 emission 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 **OK** button (Figure 6.3).

- 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 (Figure 6.21).

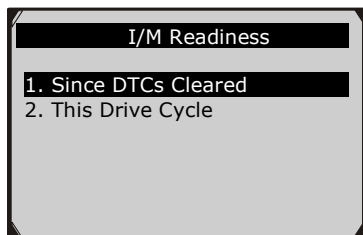


Figure 6.21

- 4) Use the UP/DOWN scroll button, as necessary, to view the status of the MIL light ("ON" or "OFF") and the following monitors:

For spark ignition engines:

- **MIS** -- Misfire Monitor
- **FUEL** -- Fuel System Monitor
- **CCM** -- Comprehensive Component Monitor
- **EGR** -- EGR System Monitor
- **O2S** -- O2 Sensors Monitor
- **CAT** -- Catalyst Monitor
- **EVAP** -- Evaporative System Monitor
- **HTR** -- O2 Sensor Heater Monitor
- **AIR** -- Secondary Air Monitor
- **HCAT** -- Heated Catalyst Monitor

For compression ignition engines:

- **MIS** -- Misfire Monitor
- **FUEL** -- Fuel System Monitor
- **CCM** -- Comprehensive Component Monitor
- **EGR** -- EGR System Monitor

- **HCCAT** -- NMHC Catalyst Monitor
- **NCAT** -- NO_x Aftertreatment Monitor
- **BP** -- Boost Pressure System Monitor
- **EGS** -- Exhaust Gas Sensor Monitor
- **PM** -- PM Filter Monitor

Since DTCs cleared		
MIL Status	OFF	
Misfire Monitoring	N/A	
Fuel system monitoring	OK	
Comprehensive component monitoring	OK	
Catalyst monitoring	N/A	
Heated catalyst monitor	N/A	

Figure 6.22

- 5) If the vehicle supports readiness test of “**This Drive Cycle**”, a screen of the following displays: (Figure 6.23)

This Drive Cycle		
MIL Status	OFF	
Misfire Monitoring	N/A	
Fuel system monitoring	OK	
Comprehensive component monitoring	OK	

Figure 6.23

- 6) Use the **UP/DOWN** scroll button for more PIDs if additional information is available on more than one page. Or use the **LEFT/RIGHT** scroll button to view PIDs in the previous/next page.
- 7) Press the **ESC** button to return to **Diagnostic Menu**.

6.6 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 **OK** button (Figure 6.3).
- 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 **OK** button (Figure 6.24).

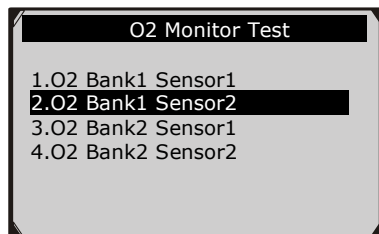


Figure 6.24

- If the vehicle does not support the mode, an advisory message will be displayed on the screen (Figure 6.25).

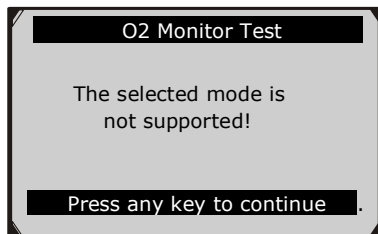


Figure 6.25

- 4) View test results of selected O2 sensor (Figure 6.26).

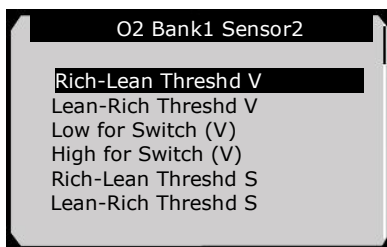


Figure 6.26

- 5) Use the **UP/DOWN** scroll button to view more screens of data if additional information is available in more than one page.
- 6) Press the **ESC** button to return to the previous menu.

6.7 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.

In this test, there are typically a minimum value, a maximum value, and a current value for each monitor. By comparing the current value with the minimum and maximum value, the scan tool will determine

if it is OK.

- 1) Use the **UP/DOWN** scroll button to select **On-Board Monitor Test** from **Diagnostic Menu** and press the **OK** button (Figure 6.3).
- 2) Wait a few seconds while the scan tool validates the PID MAP.
- 3) The scan tool will prompt you to select the vehicle make (If you have selected the vehicle before, the **Vehicle Manufacturer** screen would not appear again).

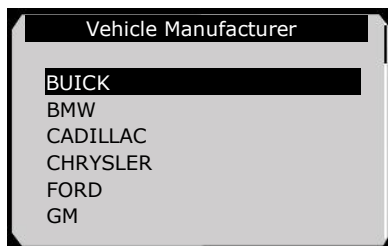


Figure 6.27

- 4) After you select the vehicle manufacturer, the scan tool shows the On-Board Monitors tests for specific monitoring systems.
- 5) From **On-Board Monitor Test** menu, use the **UP/DOWN** scroll button to select a test to view and press the **OK** button (Figure 6.28).

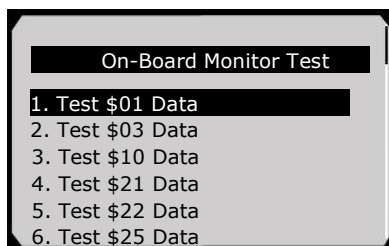


Figure 6.28

- If the vehicle under test does not support the mode, an advisory message will be displayed on the screen (Figure 6.29).

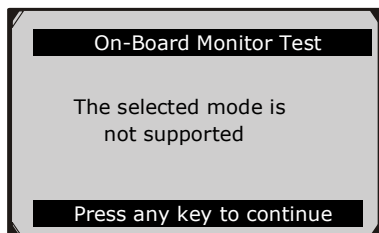


Figure 6.29

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

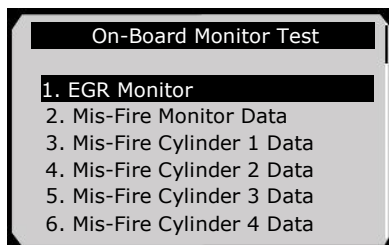


Figure 6.30

- 6) Use the **UP/DOWN** scroll button to select the desired monitor from **On-Board Monitor Test** menu and press the **OK** button.
- 7) View test data on screen.

Test \$01 Data		
ID	11	
Module	\$10	
Test Value	0400	
Min Limit	0200	
Max Limit	----	
Status	OK	

Figure 6.31

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

Flow Test		
ID	11	
Module	\$10	
Test Value	0.10	%
Min Limit	0.00	%
Max Limit	95.0	%
Status	OK	

Figure 6.32

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

6.8 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 **OK** button (Figure 6.3).
- 2) Wait for the scan tool to display the **Component Test** menu.

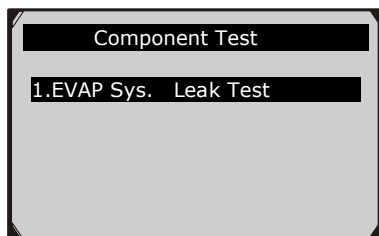


Figure 6.33

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

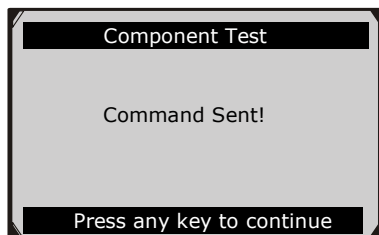


Figure 6.34

- 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.

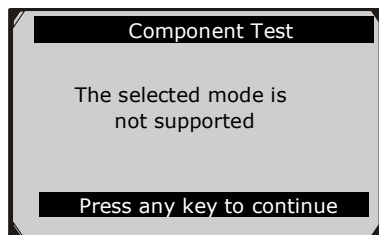


Figure 6.35

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

6.9 View 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 **OK** button (Figure 6.3).
- 2) An advisory message comes up to remind you. Wait a few seconds or press any key to continue.



Figure 6.36

- 3) Wait for the scan tool to display the **Vehicle Info.** menu.

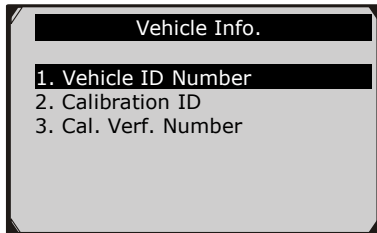


Figure 6.37

- 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 **OK** button.
 - 5) View retrieved vehicle information on screen.

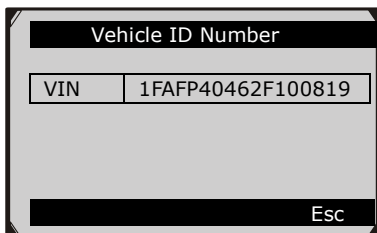


Figure 6.38

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

6.10 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 **OK** button (Figure 6.3).
- 2) View modules present with their IDs and communication protocols.

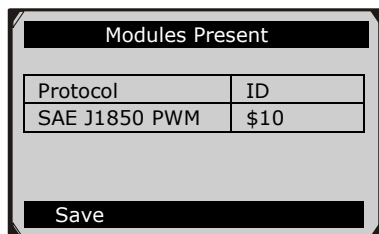


Figure 6.39

- 3) Select **Save** to save the modules data and return to previous menu. Or press **ESC** button to exit.

6.11 DTC Lookup

The **DTC Lookup** function allows user to search definitions of DTC stored in built-in DTC library.

- 1) Use the **UP/DOWN** scroll button to select **DTC Lookup** from **Diagnostic Menu** and press **OK** button (Figure 6.3).
- 2) Wait for the scan tool to display the **DTC Lookup** screen.

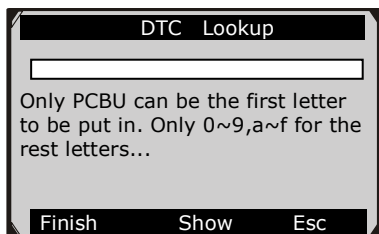


Figure 6.40

- 3) Select **Show** and a soft keyboard will pop up. Use **LEFT/RIGHT** button and **UP/DOWN** button to move to the desired character, then press **OK** button to confirm.
- 4) After you input the DTC code, select **Finish** and the scan tool will display this code's definition on screen.

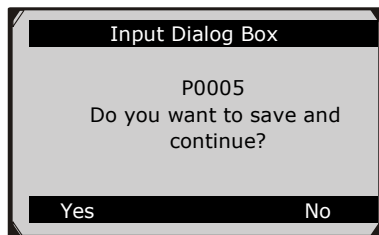


Figure 6.41

- 5) Press **Yes** or **OK** button to proceed. The scan tool will display DTC definition as below.

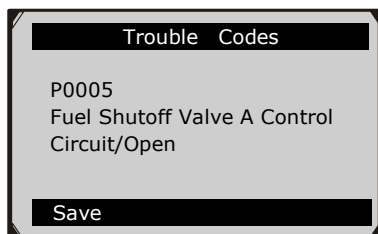


Figure 6.42

- Use the **LEFT/RIGHT** scroll button to view the previous / next DTC.
 - Select **Save** to record code definition.
 - 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 "**Please refer to vehicle service manual!**"
- 6) Press **No** or **ESC** button to return to previous menu.

7. Oil Reset

7.1 General Information

The Engine Oil Life System calculates when to change the engine oil and filter based on vehicle use. An oil change is required whenever indicated by the display and according to the recommended maintenance schedule. Whenever the oil is changed, reset the system so it can calculate when the next oil change is required. If a situation occurs where the oil is changed prior to a service indicator being turned on, also reset the system.

 **IMPORTANT:** Always reset the engine oil life to 100% after every oil change.

 **NOTE:** All required work must be carried out before the service indicators are reset. Failure to do so may result in incorrect service values and cause DTCs to be stored by the relevant control module.

 **NOTE:** For some vehicles, the scan tool can perform added functionality to reset additional service lights (maintenance cycle, service interval). Take BMW as an example, its service reset function includes engine oil, spark plugs, front/rear brakes, coolant, particle filter, brake fluid, microfilter, vehicle inspection, exhaust emission inspection and vehicle check.

All software screens shown in this manual are examples, actual test screens may vary for each vehicle being tested. Observe the menu titles and onscreen instructions to make correct option selections.

7.2 Reset Operation

1. Turn the ignition on but do not start the engine.
2. Turn on the scan tool and wait for the **Main Screen** to appear.
3. Select **Oil Reset** icon in the **Main Screen** (Figure 3.1) and wait for the vehicle manufacturer screen. Choose the correct vehicle make.

There are two ways to perform the reset service.

A. Manual Reset

Almost all Asian vehicles and most American and European vehicles can be reset manually by technicians.

 **NOTE:** *In this manner, the scan tool will not communicate with the vehicle being tested.*

To finish this procedure, please follow these steps (Take **Ford** as an example):

- 1) From the vehicle make screen, select **Ford** and press **OK** button.

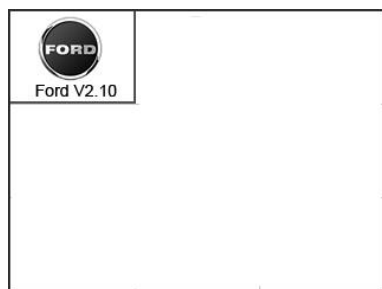


Figure 7.1

- 2) Step by step, select the right options for your vehicle according to each screen that appears.

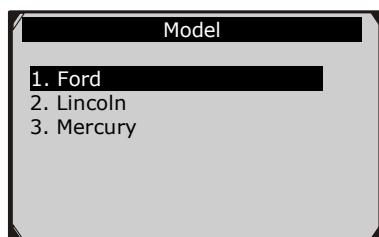


Figure 7.2

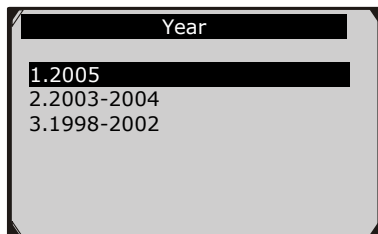


Figure 7.3

- 3) After entering the vehicle information, the scan tool displays manual reset message as below.

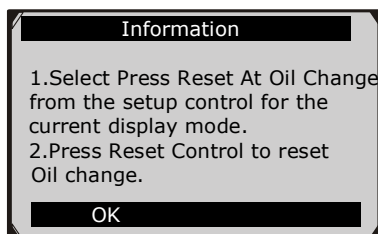


Figure 7.4

- 4) Follow the instructions to reset the service manually.
- 5) Press **ESC** button to exit.

B. Auto Reset

Most American and European vehicles can be reset automatically by the scan tool.

 **NOTE:** *In this manner, the scan tool will communicate with the vehicle being tested. If there is a linking error, please refer to 3.8 product troubleshooting.*

To finish this procedure, please follow these steps (Take **PEUGEOT** as an example):

- 1) From the vehicle make screen, select **Peugeot** and press **OK** button.

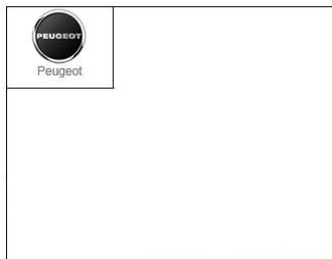


Figure 7.5

- 2) Step by step, select the right options for your vehicle according to each screen that appears.

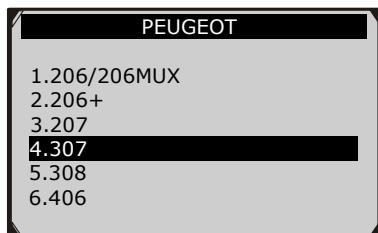


Figure 7.6

- 3) After you have entered the vehicle information, the oil reset screen will display as below.

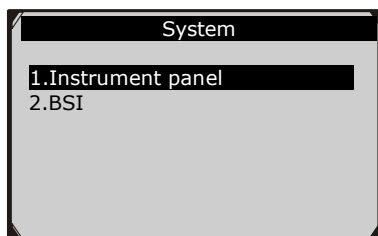


Figure 7.7

- 4) The **Instrument Panel** option enables you to finish oil reset service in one step by resetting the ECU to default values automatically. The procedures work as below.

- In the **Oil Reset** menu, select **Service Zero Reset** function and press **OK** button.

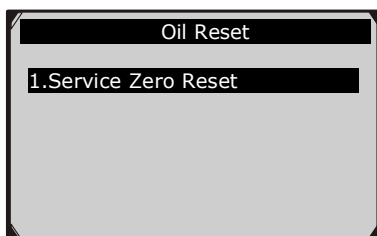


Figure 7.8

- The tool will automatically begin resetting the vehicle ECU to default values.

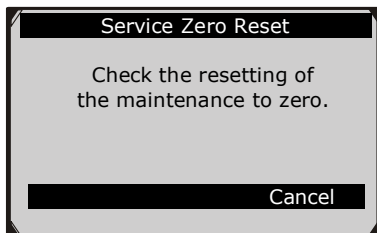


Figure 7.9

- When the resetting is finished, the tool will display a confirmation message.

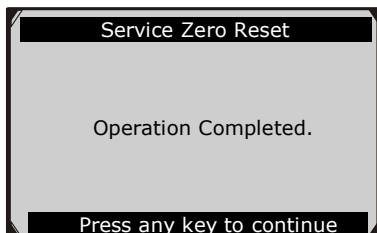


Figure 7.10

- 5) The **BSI** option enables you to finish oil reset service automatically and manually. The procedures work as below.

- In the **Oil Reset** menu, select **Resetting to zero of the service mileage** function and press **OK** button.

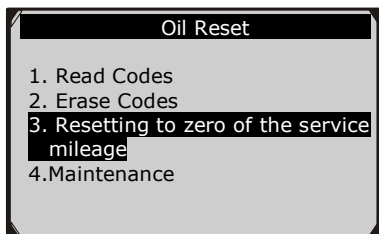


Figure 7.11

- The tool will reset the oil service to zero automatically.

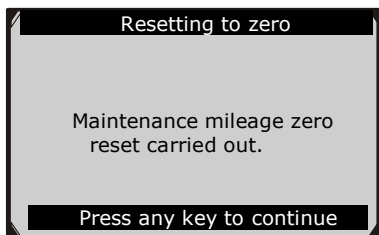


Figure 7.12

- ✓ In the **Oil Reset** menu (Figure 7.11), select **Maintenance** function and press **OK** button. The screen will display the preset maintenance information of the vehicle. The information items vary with different vehicles.

Maintenance	
Period before service (months)	6
First maintenance threshold	china
Maintenance limit(km)	7400
Finish	Edit ESC

Figure 7.13

✓

- ✓ For the **First maintenance threshold**, you have two choices. Select the correct option and press **OK** button to save the change.

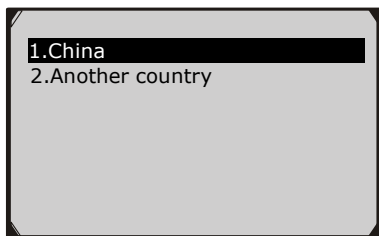


Figure 7.14

- ✓ For the **Period before service** or **Maintenance limit**, press **Edit** key on the bottom to pop up a soft keyboard to facilitate your input.

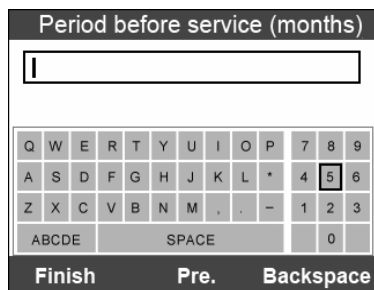


Figure 7.15

The three keyboard function keys work as below.

Finish --- When you finished the input, select this key to confirm your input and exit.

Pre. --- Moves a space to the left.

Backspace --- Uses this key to erase the previous digit or character when typing.

- ❏ **NOTE:** The data you input must be in the reasonable range, which is defined by the preset values in ECU. If you enter a data out of range, the tool will display a warning message.

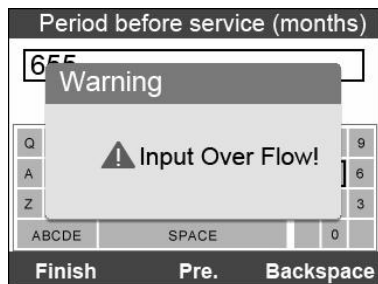


Figure 7.16

- ✓ When you have finished your configuration, select **Finish** key on the bottom of the screen, then the tool will begin the oil reset service.

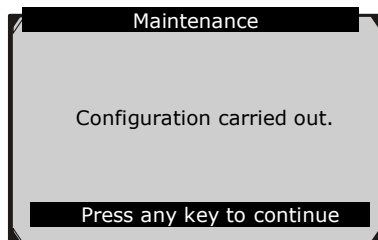


Figure 7.17

8. EPB

This electric parking brake (EPB) function has a multitude of uses to maintain the electronic braking systems safely and effectively. The applications include deactivating/activating the brake control system, assisting with brake fluid control, brake diagnostics, opening and closing brake pads, setting brakes after disc or pad replacement and also reading and clearing EPB/SBC trouble codes. It is also capable of retrieving Fault Codes information from the ECU.

8.1 EPB Safety

It may be dangerous to perform electric parking brake (EPB) system maintenance, so before you begin the service work, please keep these rules in mind.

- Ensure that you are fully familiar with the braking system and its operation before commencing any work.
- The EPB control system may be required to be deactivated before carrying out any maintenance/diagnostic work on the brake system. This can be done from the tool menu.
- Only carry out maintenance work when the vehicle is stationary and on level ground.
- Ensure that the EPB control system is reactivated after the maintenance work has been completed.

 **NOTE:** *Autel accepts no responsibility for any accident or injury arising from the maintenance of the Electric Parking Brake system.*

8.2 EPB Maintenance

- 1) Turn the ignition off.
- 2) Release the park brake and make sure the car is properly blocked.
- 3) Connect the tool to vehicle and wait for the tool power on.
- 4) Turn the ignition on.

- 5) Select **EPB** icon in the **Main Screen** (Figure 3.1) and wait for the vehicle manufacturer screen. Choose the correct vehicle make. (Take **PEUGEOT** as an example)

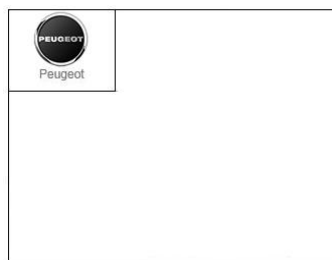


Figure 8.1

- 6) After you have selected the vehicle make, the electric parking brake system screen will display as below.

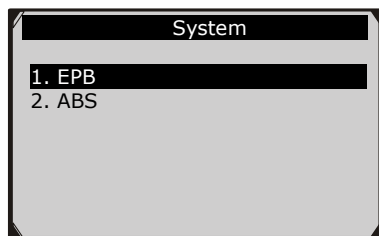


Figure 8.2

- 7) In the electric parking brake system screen, use the **UP/DOWN** button to select **EPB** to enter EPB system. In the EPB diagnostic function, the tool can read codes, erase codes, record live data, read ECU information, perform active test, and perform special function. For the functions already being described before, please refer to chapter 5. **OBDII Diagnostics** for details.

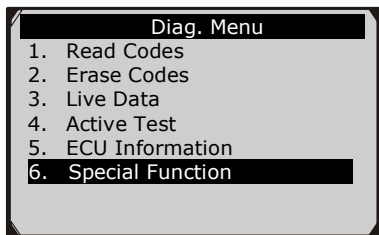


Figure 8.3

Special Function

- 1) In the **Diagnostic Menu** (Figure 8.3), use the **UP/DOWN** button to select **Special Function** to do the EPB test, which includes **Brake cable replacement** and **Electric parking brake replacement**.

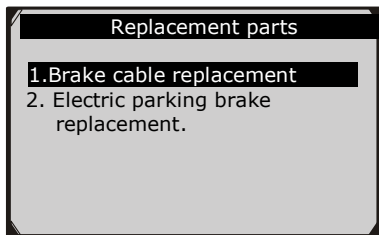


Figure 8.4

- 2) In the **EPB** screen, use the **UP/DOWN** button to select **Brake cable replacement**. The screen shows as below.

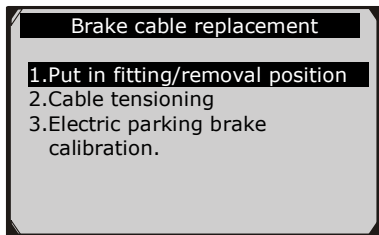


Figure 8.5

In the **Brake cable replacement** screen, the tool can perform three functions.

A. Put in fitting or removal position

This function enables you to fit in or remove the brake cable safely and easily. It will take a few seconds to execute this command.

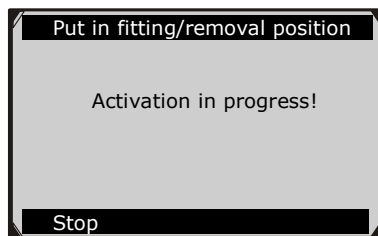


Figure 8.6

When the job is done successfully, the tool will display a message to confirm.

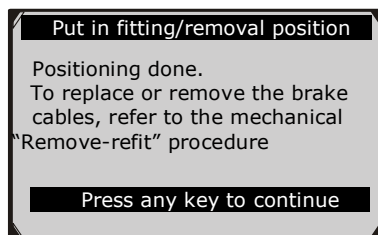


Figure 8.7

If the job fails to finish, the tool will display a message to remind user of a problem. After you exit the diagnosis program, please repair the problem immediately.

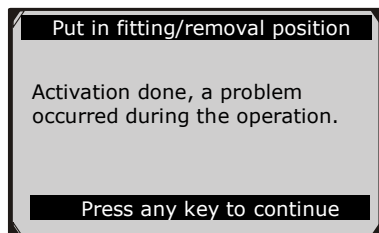


Figure 8.8

B. Cable tensioning

Once the brake cable is fit in, you would use this function to adjust its tension. It will take a few seconds to execute this command.

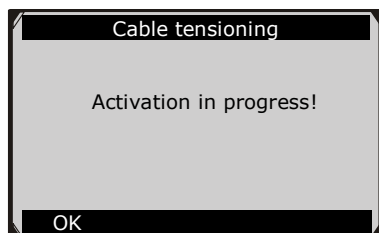


Figure 8.9

When the job is done successfully, the tool will display a message to confirm.

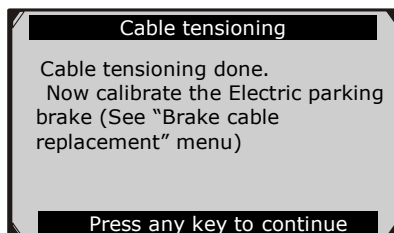


Figure 8.10

If the job fails to finish, the tool will display a message to remind user of a problem. After you exit the diagnosis program, please repair the problem immediately.

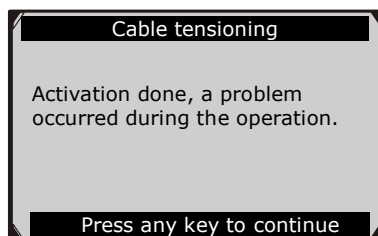


Figure 8.11

C. Electric parking brake calibration

When both functions above have completed successfully, you still need to calibrate the electric parking brake system.

This function is to check if the EPB is working correctly, which should be performed after work has been completed on the EPB or vehicle braking system. It will remove any air gap from the brake pads and check the EPB pressure.

After you select this function, the tool will automatically work in the following procedure.

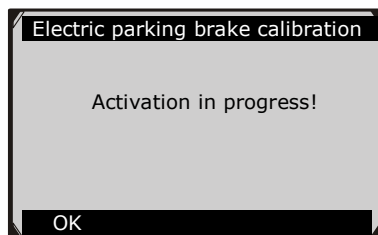


Figure 8.12

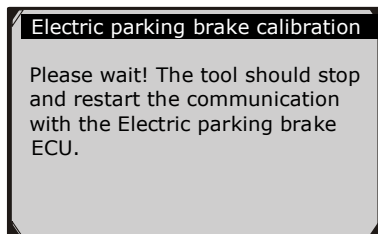


Figure 8.13

When the job is done successfully, the tool will display a message to confirm.

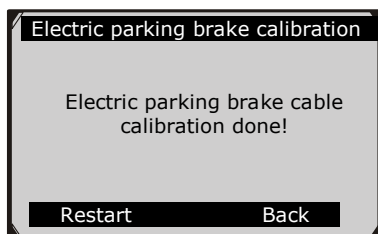


Figure 8.14

If the job fails to finish, the tool will display a message to remind user of a problem. After you exit the diagnosis program, please repair the problem immediately.

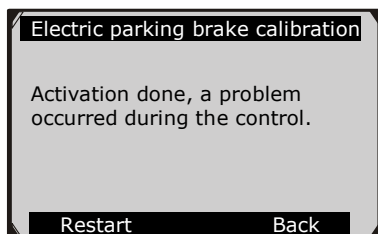


Figure 8.15

- 3) In the **EPB** screen, use the **UP/DOWN** button to select **Electric parking brake replacement**. The screen shows as below.

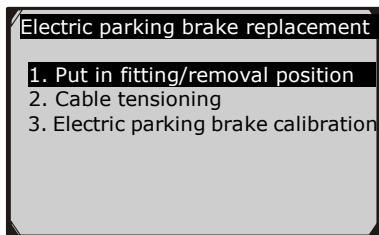


Figure 8.16

In the **Electric parking brake replacement** screen, the tool can also perform three functions, which details could refer to the same functions described in the **Brake cable replacement** menu above.

Active Test

During an active test, the tool is used for outputting commands to the ECU in order to drive the actuators. This test determines the integrity of the system or parts by monitoring the operation of the actuators or by reading the EPB ECU data.

To carry out an active test, please follow these steps.

1. Follow the instructions above to display the **Diag. menu** screen.(Figure 8.3)
2. Select **Active Test** and a list of possible tests appear. The test items in the list vary with different vehicles.

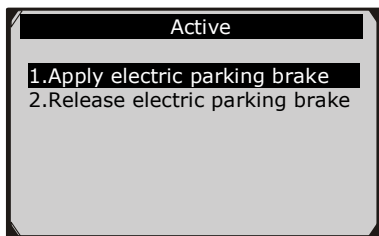


Figure 8.17

3. Select a test and the tool will display an information screen as "The 'apply electric parking brake' operation is used to test the operation of the brake cables statically. If you start the

actuator test, you must wait for the component to stop operating before starting another actuator test. Press 'OK' to apply the electric parking brake or press 'Cancel' to go back to the list of possible operation.” Select OK to continue or Cancel to exit.

4. The tool may display information during and after the test. The information varies by vehicle.

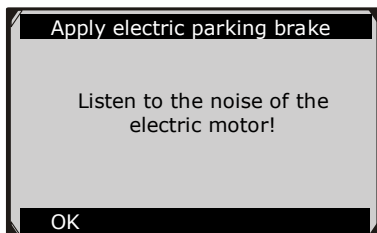


Figure 8.18

5. When the test is finished, there may be three results displaying on the screen.
 - The test is finished successfully.
 - The test is stopped by the user.
 - The test did not finish.

In the first condition, the tool will display an information screen as **“The operation was performed correctly. Put the vehicle on a vehicle lift and check that the rear wheels are locked. Check that the 'Electric parking brake on' message is display on the control panel and that the LED illuminates on the control panel.”**

In the second condition, the tool will display an information screen as **“Operation of the actuator test was stopped by the user. Press ‘Cancel’ to go back to the list of possible operations.”**

In the third condition, the tool will display an information screen as **“The actuator test did not finish operating. Please perform the following check: Read the faults to resolve any possible faults**

relating to the electric motor or to the cables.”

- ❶ **IMPORTANT:** Make sure that the components to be tested are not physically damaged and are well assembled.
- ⚠ **WARNING:** Please stop repairing the components to be tested before the test starts and keep a certain distance during the test.

8.3 ABS Maintenance

In the **System** menu (Figure 8.2), use **UP/DOWN** button to select **ABS** to do ABS maintenance. The scan tool displays as below:

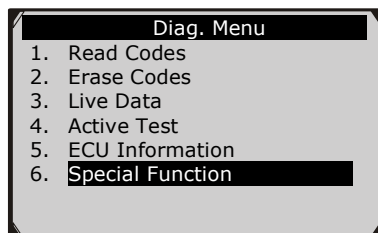


Figure 8.19

In the ABS diagnostic function, the tool can read codes, erase codes, record live data, read ECU information, perform active test, and perform special function. For the functions already being described before, please refer to chapter 5. **OBDII Diagnostics** for details.

Special Function

- 1) In the **Diagnostic Menu** (Figure 8.19), use the **UP/DOWN** button to select **Special Function** to do the ABS test. The scan tool displays as below.

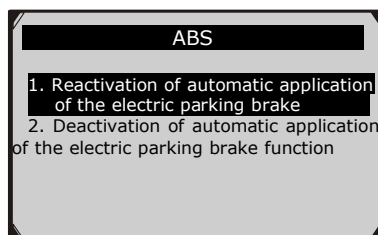


Figure 8.20

- 2) In the **EPB** menu, select the desired function and press **OK** button. If the operation is finished successfully, the scan tool will display a confirmation message. Otherwise, it will display a message to remind user of a problem. After you exit the diagnosis program, please repair the problem immediately.

Active Test

- 1) In the **Diagnostic Menu** (Figure 8.19), use the **UP/DOWN** button to select **Active Test** to do the 8.test. The scan tool displays as below.

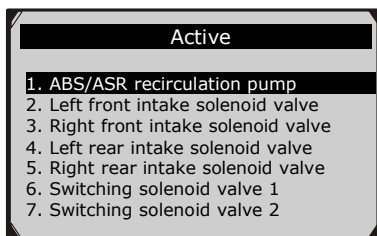


Figure 8.21

- 2) In the Active menu, use the **UP/DOWN** button to select the desired actuator to begin test. If the selected actuator works correctly, the tool will display a confirmation message as below (Figure 8.22). Otherwise, it will display a message to remind user of a problem. After you exit the diagnosis program, please repair the problem immediately.

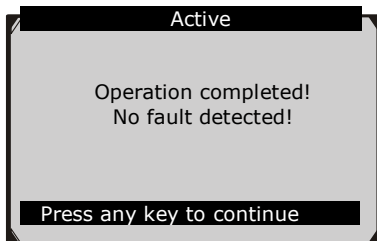


Figure 8.22

9. Print Data

The **Print Data** function allows printing out diagnostic data recorded by the scan tool or customized test reports by connecting the scan tool to a PC or laptop with the USB cable supplied.

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

DiagLink Main Unit

A PC or laptop with USB ports

A USB cable

- 1) Download and install Autel PC Suite from our website (<http://pro.auteltech.com/>).
- 2) Connect the scan tool to computer with the USB cable supplied.
- 3) Run **Autel Printer** software on computer.
- 4) Select **Playback** function in **Main Screen** of the scan tool. In **Review data** screen, use the **UP/DOWN** scroll button to select the files you want to print. Wait for the reviewing window to display (Figure 4.2), and then select **Print** function on the bottom. The selected file will be uploaded to your computer. For more detailed instructions, please refer to **4. Playback Data**.
- 5) The **Autel Printer** will show as below.



Figure 9.1

6) The selected data will display on the textbox of **Autel Printer**. By selecting the function buttons on the right, you could execute the following operations:

- **Print** – Print all data in the textbox to a printer connected to your computer.
- **Edit** – Once clicked, the software will automatically open an NOTEPAD window with all recorded data showing on.
- **Copy** – Copy all data in the textbox to the clipboard.
- **Clear** – Delete all data in the textbox.
- **Exit** – Quit the operation.

7) You are also allowed to edit, copy, and delete the data in the **Autel Printer** window.



NOTE: *The scan tool can only print text data even though the data is saved in graphic mode.*

10. Software Update

This function allows you to update the scan tool software through a computer.

NOTE: You can get one free vehicle software for the first time after registration. **Please download the first free software via PC Suite before purchasing online otherwise you will lose access to the free vehicle software.**

10.1 Register the Tool

NOTE: Before registration, please confirm your network is working properly.

- 1) Download and install Autel PC Suite from our website (<http://pro.auteltech.com/>).
- 2) Connect DiagLink to your computer through USB to power up the scan tool, and wait for the Main screen to appear. Use the **UP/DOWN** scroll button and **LEFT/RIGHT** scroll button to select **Update** (Figure 10.1), and press the **OK** button.



Figure 10.1

- 3) Run the Autel Update option in Autel PC Suite software. Wait for the Log In window to pop up (Figure 10.2).
- 4) Product serial number and password will automatically read when the device is detected. Please click **Register** to proceed.

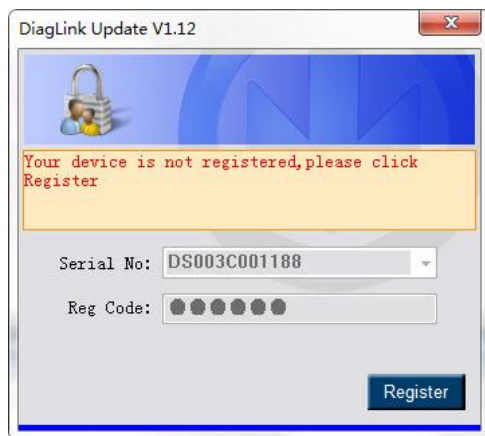


Figure 10.2

- 5) Enter your email address in the input box and click **Next** (Figure 10.3).

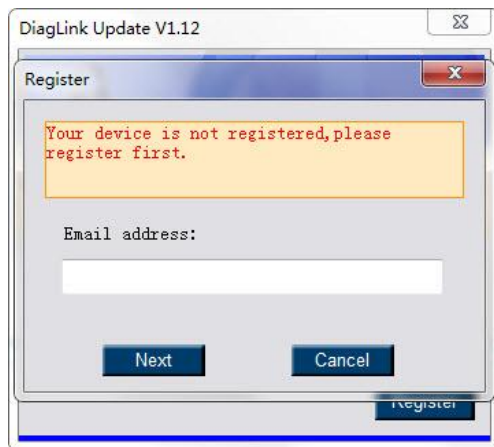


Figure 10.3

- If you are a new member to Autel, you will receive a verification code in your email box. Set a new login password, and input the verification code and then click **Register** button (Figure 10.4).

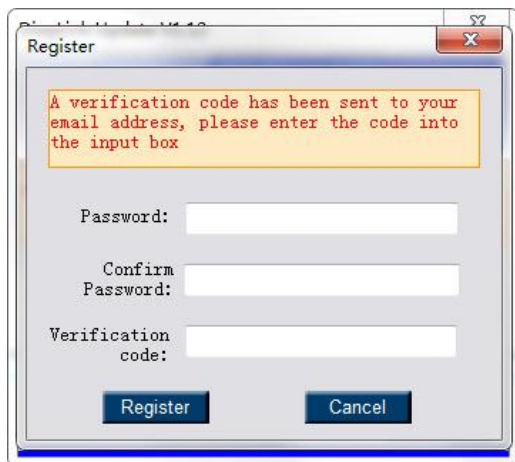
The image shows a 'Register' dialog box with a title bar. Inside, a yellow message box states: 'A verification code has been sent to your email address, please enter the code into the input box'. Below this, there are three input fields labeled 'Password:', 'Confirm Password:', and 'Verification code:'. At the bottom, there are two buttons: 'Register' and 'Cancel'.

Figure 10.4

- If the email address you entered has already been registered and activated as an Autel ID, enter your password and click **Bind** to bind your device (Figure 10.5).

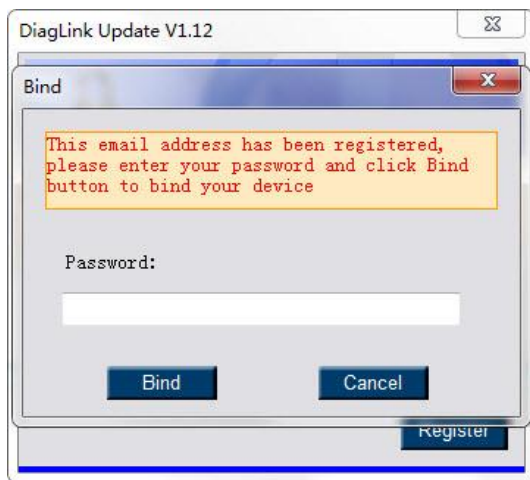


Figure 10.5

10.2 Update Procedure

Autel frequently releases software updates that you can download. The Update feature makes it very easy to determine and get exactly what you need.

- 1) You will come into the Update window after successful registration. First install the management program by click **Update** button (Figure 10.6).

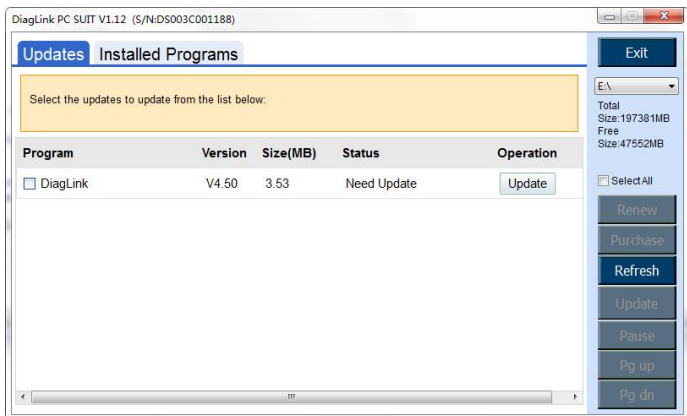


Figure 10.6

- 2) If the device has already been installed with the latest version of management program, you will directly come to the next step.
- 3) The program list will be automatically loaded. If you have never downloaded any software package, the **Updates** window will show as below (Figure 10.7).

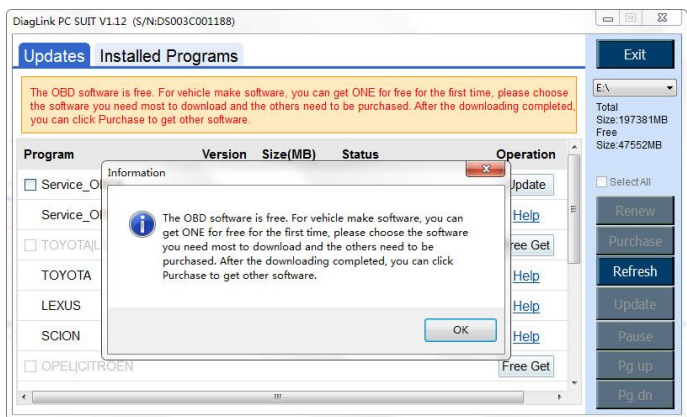


Figure 10.7

- 4) If the program has already installed OBD in the latest version, OBD software will not appear in the list, and the window will

show as below (Figure 10.8).

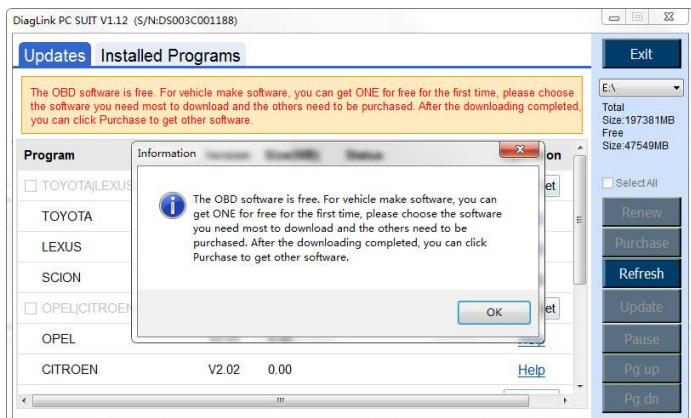


Figure 10.8

- 5) The OBD software is free. You can download one more vehicle make software for free for the first time. Find out the desired item to be downloaded and click **Free Get** button in the same line.
- 6) In a popped dialog box, enter your Autel ID and your password, and click **OK** (Figure 10.9).

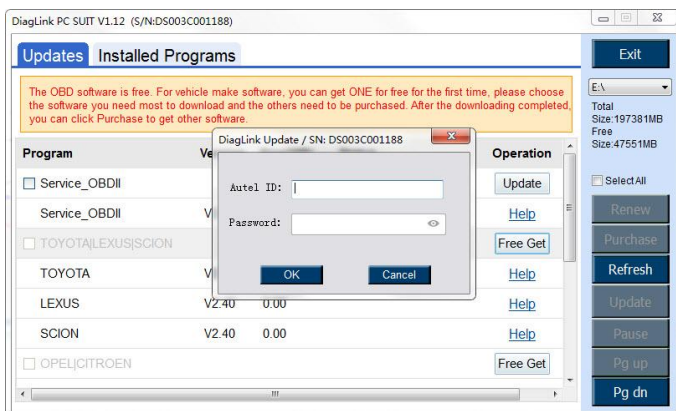


Figure 10.9

- 7) If your Autel ID is correct and valid, the program will establish communication with Server on-line and reload the list (Figure 10.10).

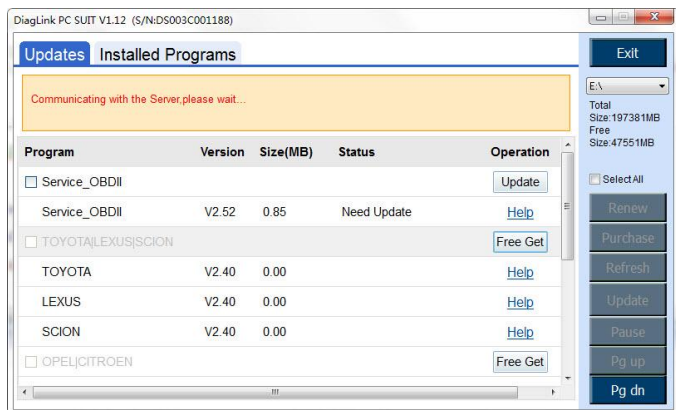


Figure 10.10

- 8) After reloading, you can install the selected program by clicking **Update** button (Figure 10.11).

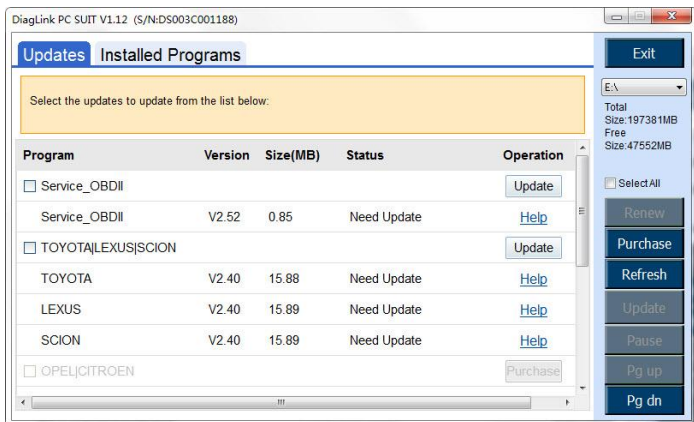


Figure 10.11

- 9) When the installation is completed (Figure 10.12), you can click **Purchase** button on the right side of screen to update other desired items on <http://pro.auteltech.com/>.

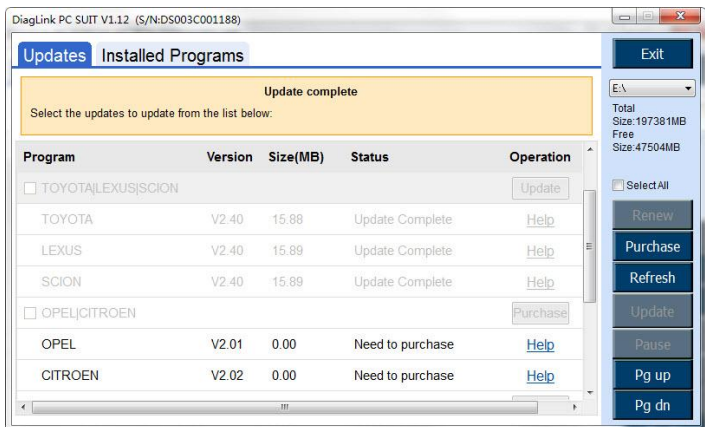


Figure 10.12

- 10) After successful purchase, click **Refresh** button.

Single update:

- Find out the desired updating item. Click **Update** button in the same line.
- Check the updating process by observing the upper left progress bar [Downloads] and upper right progress bar [Installs]. You may also find progress information in the Status column of updated items.
- Anytime you could click the **Pause** button in the line to suspend this progress.
- To resume updating process, click the **Update** button in the line again. The progress will resume from the break point.

Batch Update:

- Click on the **Select All** checkbox on the right side of screen and then click **Update** button to update selected items.
- Check the updating process by observing the upper left progress bar [Downloads] and upper right progress bar [Installs]. You may also find progress information in the Status column of updated items.
- Anytime you could click the **Pause** button on the right side of screen to suspend all progresses.
- To resume updating process, you may need to select those suspended items again, and then click the **Update** button. The progress will resume from the break point.

When the downloading is completed, the downloaded programs will be installed automatically. The new version will replace the old version.

- 11) When purchased programs exceed the valid date, you can click Renew button on the right side to renew them on <http://pro.auteltech.com/>.

10.3 View or Delete Programs

To view the list of installed programs or to delete an installed program, please follow these steps:

- Click on the **Installed Programs** tag entry and the page will show the list of programs installed (Figure 10.13).

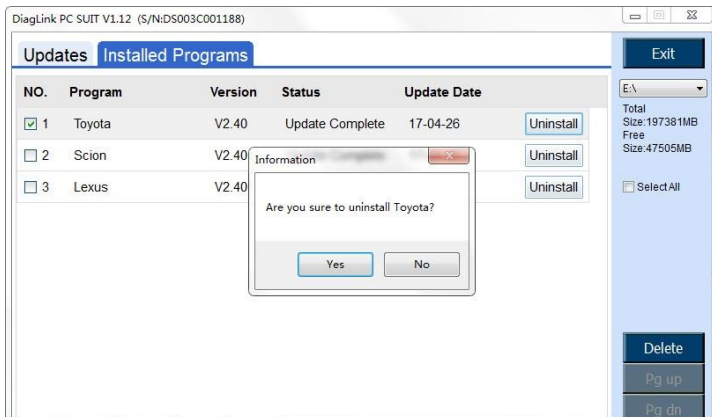


Figure 10.13

- Select the program(s) that you would delete.
 - ✧ **Single delete:** Click the **Uninstall** button in the line of your would-be-deleted program.
 - ✧ **Batch delete:** Select the programs that you would delete by clicking on the check boxes to the left of those items. Then click the **Delete** button on the right side of screen.
- A window asking “**Are you sure to uninstall XXX?**” will pop up for your confirmation (Figure 10.14).

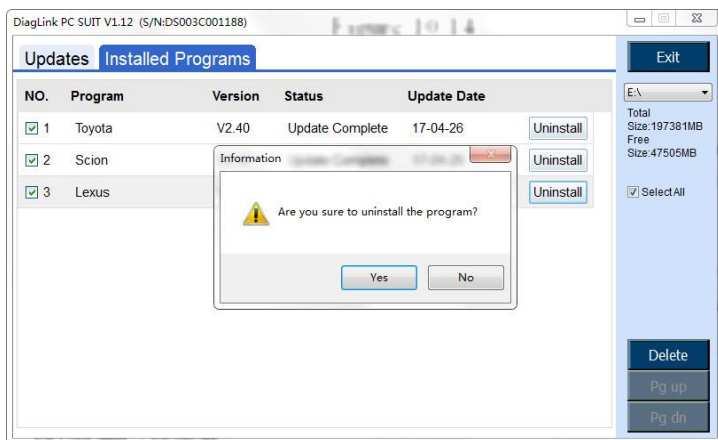


Figure 10.14

- Click on **Yes** to delete the program(s) selected, or on **No** to cancel the action.
- The deleted program will automatically add to the end of program list in the Update page in case you would like to install again.

Theoretically, all programs in latest versions will be automatically compatible with the older versions, but if your scan tool do have a compatible problem and want to retrieve the older version for some programs, you may need to delete them first then install the older version again. Choose older version from the pull-down menu of program version.

11. Warranty and Service

11.1 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.

11.2 Service Procedures

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

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