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One-Year Limited Warranty

Subject to the conditions of this limited warranty, Shenzhen Foxwell Technology Co., Ltd ("FOXWELL") warrants its customer that this product is free of defects in material and workmanship at the time of its original purchase for a subsequent period of one (1) year.

In the event this product fails to operate under normal use, during the warranty period, due to defects in materials and workmanship, FOXWELL will, at its sole option, either repair or replace the product in accordance with the terms and conditions stipulated herein.

Terms and Conditions

1 If FOXWELL repairs or replaces the product, the repaired or replaced product shall be warranted for the remaining time of the original warranty period. No charge will be made to the customer for replacement parts or labor charges incurred by FOXWELL in repairing or replacing the defective parts.

2 The customer shall have no coverage or benefits under this limited warranty if any of the following conditions are applicable:
a) The product has been subjected to abnormal use, abnormal conditions, improper storage, exposure to moisture or dampness, unauthorized modifications, unauthorized repair, misuse, neglect, abuse, accident, alteration, improper installation, or other acts which are not the fault of FOXWELL, including damage caused by shipping.
b) The Product has been damaged from external causes such as collision with an object, or from fire, flooding, sand, dirt, windstorm, lightning, earthquake or damage from exposure to weather conditions, an Act of God, or battery leakage, theft, blown fuse, improper use of any electrical source, or the product was used in combination or connection with other product, attachments, supplies or consumables not manufactured or distributed by FOXWELL.

3 The customer shall bear the cost of shipping the product to FOXWELL. And FOXWELL shall bear the cost of shipping the product back to the customer after the completion of service under this limited warranty.

4 FOXWELL does not warrant uninterrupted or error-free operation of the product. If a problem develops during the limited warranty period, the consumer shall take the following step-by-step procedure:

a) The customer shall return the product to the place of purchase for repair or replacement processing, contact your local FOXWELL distributor or visit our website www.foxwelltech.com to get further information.
b) The customer shall include a return address, daytime phone number and/or fax number, complete description of the problem and original invoice specifying date of purchase and serial number.
c) The customer will be billed for any parts or labor charges not covered by this limited warranty.
d) FOXWELL will repair the Product under the limited warranty within 30 days after receipt of the product. If FOXWELL cannot perform repairs covered under this limited warranty within 30 days, or after a reasonable number of attempts to repair the same defect, FOXWELL at its option, will provide a replacement product or refund the purchase price of the product less a reasonable amount for usage.
e) If the product is returned during the limited warranty period, but the problem with the product is not covered under the terms and conditions of this limited warranty, the customer will be notified and given an estimate of the charges the customer must pay to have the product repaired, with all shipping charges billed to the customer. If the estimate is refused, the product will be returned freight collect. If the product is returned after the expiration of the limited warranty period, FOXWELL' normal service policies shall apply and the customer will be responsible for all shipping charges.

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ASSOCIATED EQUIPMENT, COST OF CAPITAL, COST OF ANY SUBSTITUTE EQUIPMENT OR FACILITIES, DOWNTIME, THE CLAIMS OF ANY THIRD PARTIES, INCLUDING CUSTOMERS, AND INJURY TO PROPERTY, RESULTING FROM THE PURC HASE OR USE OF THE PRODUCT OR ARISING FROM BREACH OF THE WARRANTY, BREACH OF CONTRACT, NEGLIGENCE, STRICT TORT, OR ANY OTHER LEGAL OR EQUITABLE THEORY, EVEN IF FOXWELL KNEW OF THE LIKELIHOOD OF SUCH DAMAGES. FOXWELL SHALL NOT BE LIABLE FOR DELAY IN RENDERING SERVICE UNDER THE LIMITED WARRANTY, OR LOSS OF USE DURING THE PERIOD THAT THE PRODUCT IS BEING REPAIRED.

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Safety Information

For your own safety and the safety of others, and to prevent damage to the equipment and vehicles, read this manual thoroughly before operating your tool. The safety messages presented below and throughout this user's manual are reminders to the operator to exercise extreme care when using this device. Always refer to and follow safety messages and test procedures provided by vehicle manufacturer. Read, understand and follow all safety messages and instructions in this manual.

Safety Message Conventions Used

We provide safety messages to help prevent personal injury and equipment damage. Below are signal words we used to indicate the hazard level in a condition.

⚠ DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.

⚠ WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.

⚠ CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.

Important Safety Instructions

And always use your tool as described in the user's manual, and follow all safety messages.

⚠ WARNING

- Do not route the test cable in a manner that would interfere with driving controls.
- Do not exceed voltage limits between inputs specified in this user's manual.
- Always wear ANSI approved goggles to protect your eyes from propelled objects as well as hot or caustic liquids.
- Fuel, oil vapors, hot steam, hot toxic exhaust gases, acid, refrigerant and other debris produced by a malfunction engine can cause serious injury or death. Do not use the tool in areas where explosive vapor may collect, such as in below-ground pits, confined areas, or areas that are less than 18 inches (45 cm) above the floor.
- Do not smoke, strike a match, or cause a spark near the vehicle while testing and keep all sparks, heated items and open flames away from the battery and fuel / fuel vapors as they are highly flammable.
- Keep a dry chemical fire extinguisher suitable for gasoline, chemical and electrical fires in work area.
- Always be aware of rotating parts that move at high speed when an engine is running and keep a safe distance from these parts as well as other potentially moving objects to avoid serious injury.
- Do not touch engine components that get very hot when an engine is running to avoid severe burns.
- Block drive wheels before testing with engine running. Put the transmission in park (for automatic transmission) or neutral (for manual transmission). And never leave a running engine unattended.
- Do not wear jewelry or loose fitting clothing when working on engine.

Table of Contents

1 Using This Manual

We provide tool usage instructions in this manual. Below is the conventions we used in the manual.

1.1 Bold Text

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

Example:

Press the **ENTER** button to select.

1.2 Symbols and Icons

1.2.1 Solid Spot

Operation tips and lists that apply to specific tool are introduced by a solid spot●.

Example:

When System Setup is selected, a menu that lists all available options displays. Menu options include:

- Languages
- Unit
- Beep
- Keypad Test
- LCD Test
- About
- Shortcuts

1.2.2 Arrow Icon

▶ An arrow icon indicates a procedure.

Example:

▶ To change menu language:
1. Scroll with the arrow keys to highlight **Language** on the menu.
2. Press the **ENTER** button to select.

1.2.3 Note and Important Message

Note

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

Example:

NOTE
Test results do not necessarily indicate a faulty component or system.

Important

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

Example:

IMPORTANT
Do not soak keypad as water might find its way into the tool.

2 Introduction

2.1 Why We Need Battery Configuration Tool

This section illustrates why we need the battery configuration tool when change the battery of modern vehicles.

Start-stop System: No Movement, No Fuel Consumption

In response to climate change, governments around the world are increasing environment regulations on vehicle to improve vehicle fuel economy and reduce emissions. For example, Europe has stipulated that by 2015, emission of 100 percent of the vehicles on its roads be reduced to 130 grams of CO2 per kilometer. The requirements of strictly emission control put a strain on vehicle emission technology.

In automobiles, a start-stop system or stop-start system automatically shuts down and restarts the internal combustion engine to reduce the amount of time the engine spends idling, The electrical consumer units in the vehicle continue to be supplied during the stop and the current energy consumption is monitored. When the journey is to be continued, operating the cluster automatically restarts the engine. This means in the standstill phases no fuel is consumed and no CO2 is emitted. This is most advantageous for vehicles which spend significant amounts of time waiting at traffic lights or frequently come to a stop in traffic jams. This feature is present in hybrid electric vehicles, but has also appeared in vehicles which lack a hybrid electric powertrain.

Devices of this type have been tested since the mid-1970s, when the Toyota corporation fitted a Crown sedan with an electronic device that would automatically switch off the engine after sitting stationary for 1.5 seconds. Citroën introduced a more refined system in its C2 and C3 models by 2006, named "Stop and Start", followed by BMW, Fiat Group, Ford, Honda, Opel, Renault ,Volkswagen and so on.

Why We Need Battery Configuration Tool

As one of the potential issues with Start-Stop vehicles, replacing the battery which, unlike a traditional starter battery, is not a simple procedure. With start-stop system, the battery is strictly linked to the power distribution system and the electronic control unit. So when a battery has to be replaced, you have to take into consideration the impact it will have on the control unit and on any Start & Stop system installed". Some manufacturers, like the Volkswagen-Audi group, require a code to be inserted when the battery is replaced; others (BMW) might show an error message when the battery is replaced and it will remain until the system is updated after replacement. It requires both skill and a diagnostic tool to ensure the correct installation is completed and any error message resolved. To overcome this matter, Foxwell R&D team designed the most innovative battery configuration tool in the industry. Foxwell NT40211 handles battery replacement, clears faults from the dashboard and displays current battery details. It offers excellent application coverage plus regular free software updates.

2.2 Tool Descriptions

This section illustrates external features, ports and connectors of the tool.

Figure 2-1 Front View

1 **Diagnostic Port** - provides connection between vehicle and the tool.

2 **LCD Display** - shows menus, test results and operation tips.

3 **Function Keys / Shortcut keys** - three keys that correspond with “buttons” on some screens for executing special commands or provide quick access to most frequently used applications or functions.

4 **Direction Keys** - select an option or scroll through a screen of data or text.

5 **ENTER Key** - executes a selected option and generally goes to the next screen.

6 **BACK Key** - exits a screen and generally returns to previous screen.

7 **HELP Key** - displays helpful information.

8 **Power Switch** - turns on/off the tool and press and hold for 5 seconds for emergency reboots.

9 **SD Card Port** - holds the SD memory card for data backup and software update.

10 **USB Port** - provides a USB connection between NT401 and PC or laptop.

IMPORTANT
Do not use solvents such as alcohol to clean keypad or display. Use a mild nonabrasive detergent and a soft cotton cloth.

2.3 Accessory Descriptions

This section lists the accessories that go with the tool. If you find any of the following items missing from your package, contact your local dealer for assistance.

1 **User’s Guide** - provides operation instructions for the usage of the tool.

2 **USB Cable** - provides connection between the tool and a computer to upgrade it.

3 **Memory Card** - contains the tool’s operating software and applications.

IMPORTANT
Do not remove the memory card unless performing updates to the card.

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4 **Diagnostic Cable** - connects the tool with diagnostic connector.

5 **Nylon Carry Pouch** - stores the tool and its accessories.

2.4 Technical Specifications

Display: Backlit, 240*320 TFT color display

Working Temperature: 0 to 60 ℃ (32 to 140℉)

Storage Temperature: -20 to 70℃ (-4 to 158℉)

Power Supply: 8-18V vehicle power, 3.3V USB power

Dimensions (L*W*H**)**: 200*100*38mm

Weight: 1.0Kg

3 Getting Started

This section describes how to provide power to the tool, provides brief introductions of applications loaded on the tool and display screen layout and illustrates how to input text and numbers with the scan tool.

3.1 Providing Power to Tool

Before using the tool, make sure to provide power to the tool.

The unit operates on any of the following sources:

- 12-volt vehicle power
- USB connection to personal computer

3.1.1 Connecting to Vehicle Power

The tool normally powers on whenever it is connected to the data link connector (DLC).

To connect to vehicle power:

1. Locate the data link connector (DLC). The DLC is generally located under the dash on the driver side of the vehicle.
2. Attached the Diagnostic cable to the tool and tighten the captive screws to ensure good connection.
3. Connect a correct adapter to the data cable according to the vehicle being serviced and plug it into the vehicle DLC.
4. Switch the ignition key to the ON position.
5. The tool automatically boots up.

IMPORTANT
Never try to provide power for the scan tool from USB connection when the scan tool is communicating with a vehicle.

3.1.2 Connecting to PC with USB Cable

The scan tool also receives power through the USB port when it is connected to a PC for updating software and transferring saved files.

To connect to PC:

1. Insert the small end of the USB cable to the USB port at the right side of the tool and the large end to a computer.
2. Press the power switch of the scan tool to power it on.

3.2 Application Overview

When the scan tool boots up, the Home screen opens. This screen shows all applications loaded on the unit.

Following applications are preloaded into the tool:

- **OBDII/EOBD** – leads to OBDII screens for all 9 generic OBD system tests.
- **BRT** – leads to screens for battery replacement process.
- **Setup** – leads to screens for adjusting default settings to meet your own preference and view information about the tool.
- **Playback** – leads to screens for access to saved data files.

Figure 3.1 Sample Home Screen

4 BRT Operations

This section illustrates how to use the tool to get the new battery validated, how to clear faults from the dashboard and display current battery details of the vehicle such as AUDI, BMW, CITROEN, PEUGEOT, SEAT, SKODA, VOLVO, VW and FORD.

1. Replace the old battery with the new one, ensuring the key is not in the ignition.
2. Connect NT4021 to the vehicle's 16 pin Data Link Connector (DLC) with the diagnostic cable.
3. Boost the device and select BRT, the following screen will display with all the vehicle makes available. Scroll with the arrow keys to highlight your vehicle make and press **ENTER** key to start.

Figure 4.1 Sample BRT Application Screen

4.1 AUDI/Skoda/Seat/VW Operations

1. Follow the on screen instruction step by step to make the device communicate with the ECU.

Figure 4.2 Sample Vehicle Selection Screen

2. The following Replace Battery menu will display when the vehicle model is selected correctly.

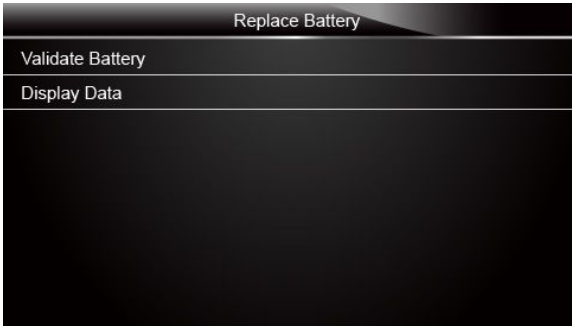

Figure 4.3 Sample Battery Reset Menu Screen

4.1.1 Validate Battery

Validate battery menu enables you to recode the new battery to the vehicle's ECU and to turn off dashboard warning lights.

1. Scroll with the arrow keys to highlight Validate Battery and press ENTER to start.

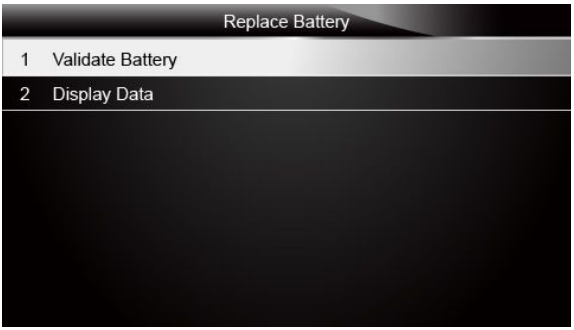

Figure 4.4 Sample Validate Battery Screen

2. Follow the on screen instructions to answer the question and continue the procedure.

Figure 4.5 Sample Validate Battery Display Data Screen

3. The device communicates with the vehicle and clear the current stored DTCs from the battery system.

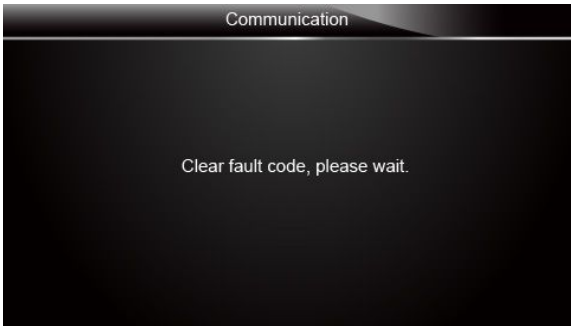

Figure 4.6 Sample Clear Codes Screen

4. When the codes are cleared, the following battery manufacturer list displays. Use the up and down arrow keys to highlight the new battery manufacturer and press ENTER to confirm.

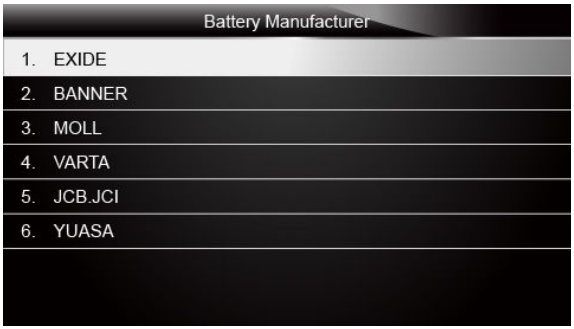

Figure 4.7 Sample Battery Manufacturer Screen

5. You are required to enter the current date and time, at which the battery is changed. Please press F2 key to bring up the keyboard. Scroll with the arrow keys to highlight your desired number and press ENTER to confirm.

Figure 4.8 Sample Information Record Screen

6. Follow the on screen instructions to answer the question and continue the procedure.

Figure 4.9 Sample Input Dialog Box Screen

7. When the whole battery validation procedure is completed, the following screen displays. Please press F1 to confirm.

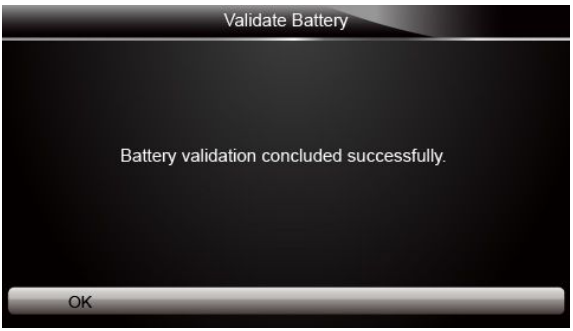

Figure 4.10 Sample Battery Validated Screen

NOTE
Not all procedure listed above are applicable to all vehicles. The procedure may vary by the year, model, and make of the test vehicle.

4.1.2 Display Data

Display Data menu enables you to check the battery information or battery replacement record of the vehicle.

1. Use the up and down arrow keys to highlight Display Data of the main menu and press ENTER to start.

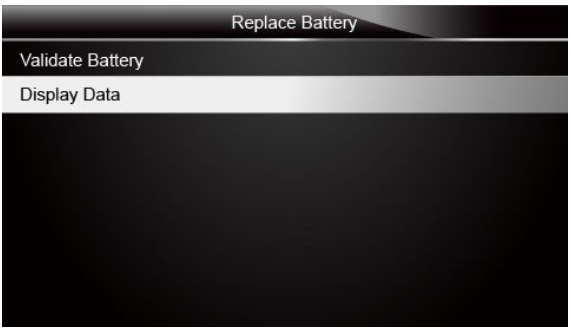

Figure 4.11 Sample Display Data Screen

2. The following screen displays the battery manufacturer, serial number, and part number.

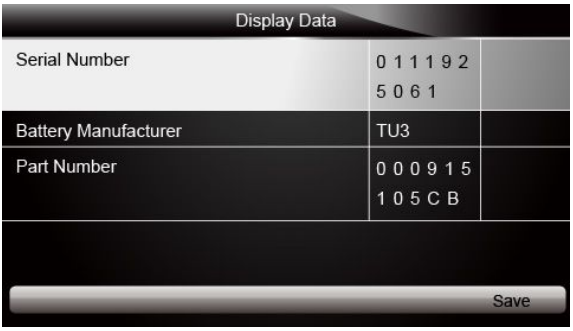

Figure 4.12 Sample Data Screen

4.2 Citroen/Peugeot Operations

1. Follow the on screen submenu to select Vehicle Model, Fuel, Year and System step by step.

Figure 4.13 Sample Vehicle Selection Screen

NOTE
Not all procedure listed above are applicable to all vehicles. The procedure may vary by the year, model, and make of the test vehicle.

2. The following Identification screen will display, showing the part number of the new battery. If no part number shows, please check the connection.

Figure 4.14 Sample Identification Screen

3. Follow the on screen instructions to answer the question and continue the procedure.

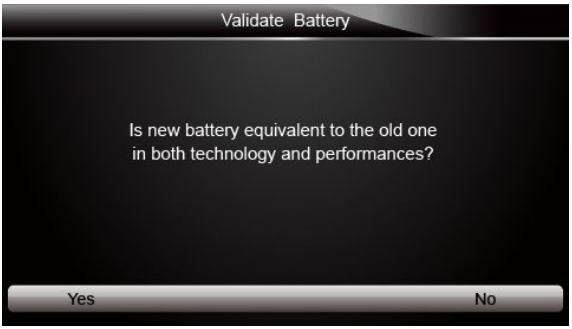

Figure 4.15 Sample Validate Battery Confirming Screen1

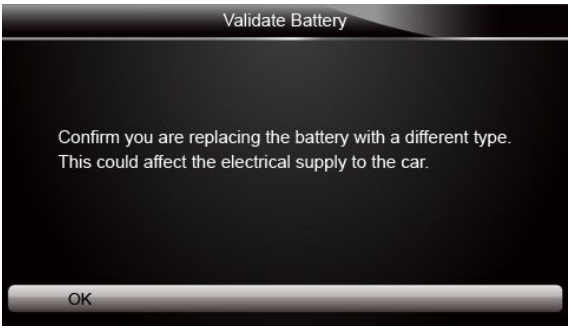

Figure 4.16 Sample Validate Battery Confirming Screen2

4. When the whole battery validation procedure is completed, the following screen displays. Please press F1 to confirm.

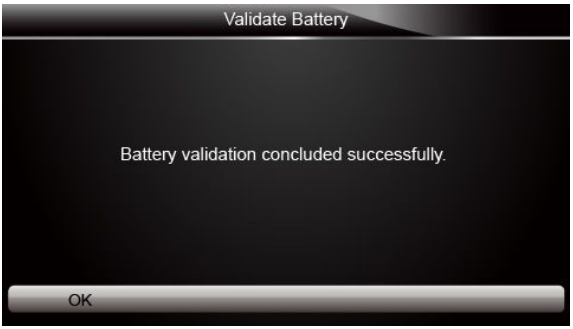

Figure 4.17 Sample Battery Validated Screen

4.3 BMW/Volvo Operations

1. Follow the on screen submenu to select Vehicle Model, Fuel, Year and System step by step.

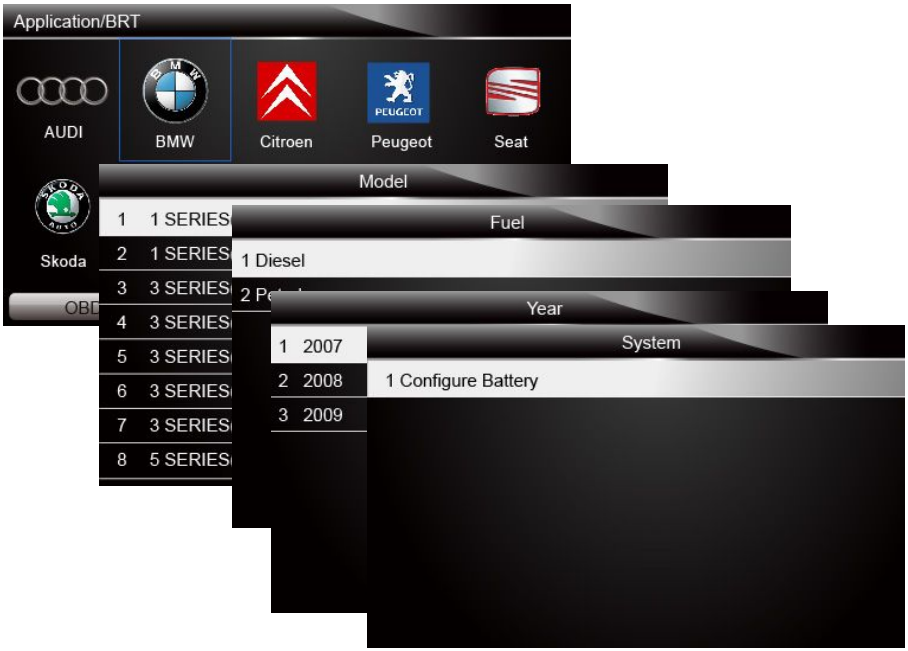

Figure 4.18 Sample Vehicle Selection Screen

NOTE
Not all procedure listed above are applicable to all vehicles. The procedure may vary by the year, model, and make of the test vehicle.

2. The following Select Function menu will display when the vehicle model is selected correctly.

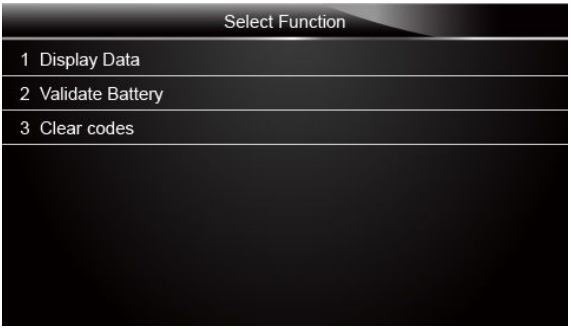

Figure 4.19 Sample Battery Reset Menu Screen

4.3.1 Validate Battery

Validate battery menu enables you to recode the new battery to the vehicle's ECU and to turn off dashboard warning lights.

1. Scroll with the arrow keys to highlight Validate Battery and press ENTER to start.

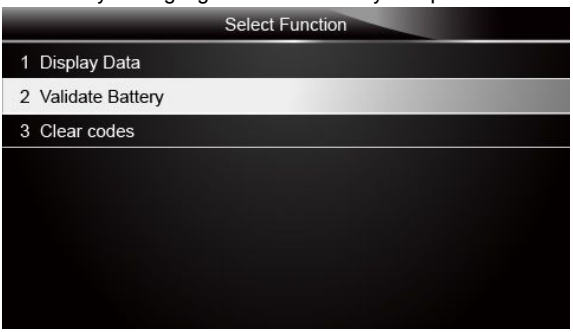

Figure 4.20 Sample Validate Battery Screen

2. The following screen displays when the battery validated successfully. Please press any key to continue.

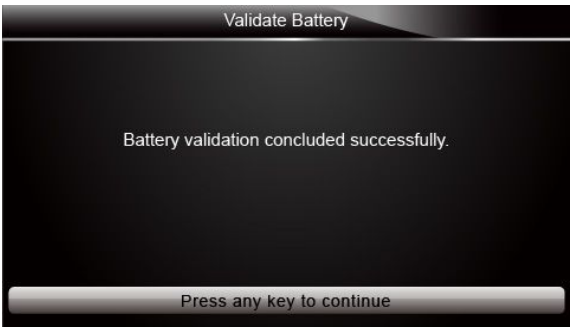

Figure 4.21 Sample Battery Validated Screen

4.3.2 Display Data

Display Date menu enables you to check the battery information or battery replacement record of the vehicle.

1. Use the up and down arrow keys to highlight Display Data of the main menu and press ENTER to start.

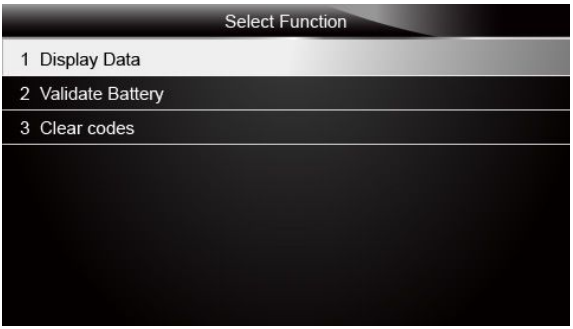

Figure 4.22 Sample Display Data Screen

2. The following screen displays with battery manufacturer, serial number, part number , battery volts, the last replacement days or the battery replacement records(not all items listed here display, it varies by different car make).

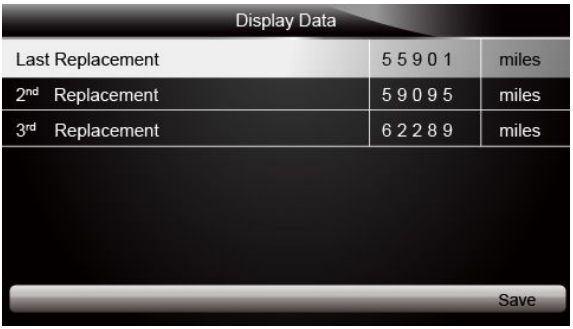

Figure 4.23 Sample Data Screen

4.3.3 Clear Codes

1. Scroll with the arrow keys to highlight Clear Codes and press ENTER to start.

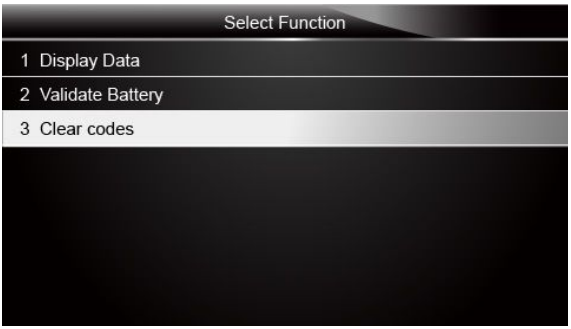

Figure 4.24 Sample Clear Codes Screen

2. The following screen displays when the fault codes cleared successfully.

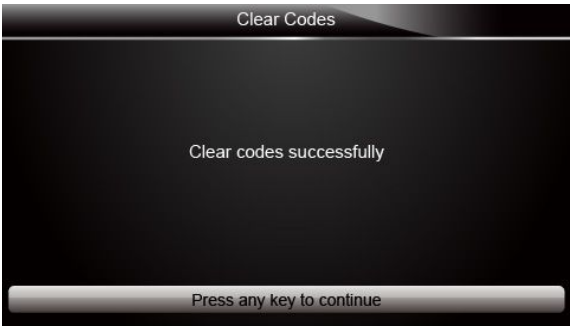

Figure 4.25 Sample Codes Cleared Screen

5 OBDII/EOBD Operations

OBD-II/EOBD menu lets you access all OBD service modes. According to ISO 9141-2, ISO 14230-4, and SAE J1850 standards, the OBD application is divided into several sub programs, called 'Service $xx'. Below is a list of OBD diagnostic services:

- **Service $01** - request current powertrain diagnostic data
- **Service $02** - request powertrain freeze frame data
- **Service $03** - request emission-related diagnostic trouble codes
- **Service $04** - clear/reset emission-related diagnostic information
- **Service $05** - request oxygen sensor monitoring test results
- **Service $06** - request on-board monitoring test results for specific monitored systems
- **Service $07** - request emission-related diagnostic trouble codes detected during current or last completed driving cycle
- **Service $08** - request control of on-board system, test or component
- **Service $09** - request Vehicle Information

When OBDII/EOBD application is selected from Home screen, the tool starts to detect the communicaiton protocol autometically. Once the connection has established, a menu that lists all of the tests available on the identified vehicle displays. Menu options typically include:

- System Status
- Read Codes
- Freeze Frame Data
- Erase Codes
- Live Data
- I/M Readiness
- O2 Sensor Test
- On-board Monitor Test
- Component Test
- Vehicle Information
- Modules Present
- Code Lookup

NOTE
Not all function options listed above are applicable to all vehicles. Available options may vary by the year, model, and make of the test vehicle. A "The selected mode is not supported!" message displays if the option is not applicable to the vehicle under test.

5.1 System Status

System Status option open a screen with a summary of system status of the vehicle under test.

To view summary system status of a vechicle:

1. Scroll with the arrow keys to highlight System Status from Diagnostic Menu and press the ENTER key.

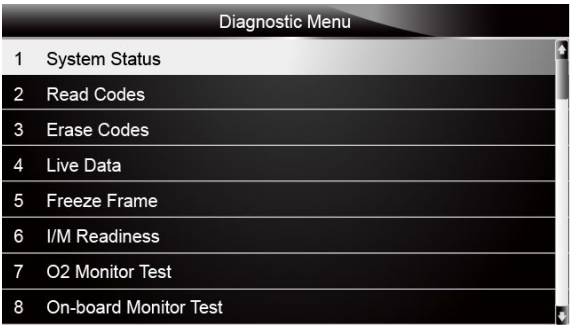

Figure 5-1 Sample Diagnostic Menu Screen

2. A screen with detailed information displays.

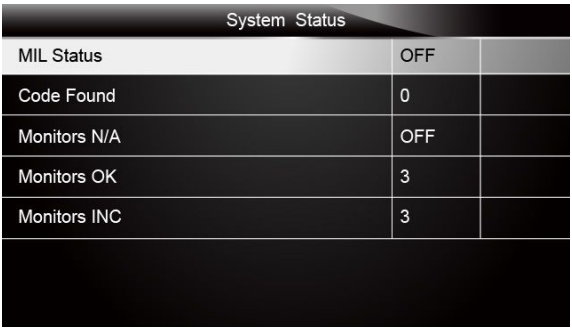

Figure 5-2 Sample System Status Screen

5.2 Read Codes

Read Codes menu lets you read both stored codes and pending codes found in the control unit. Typical menu options include:

- Stored Codes
- Pending Codes

Diagnostic trouble codes stored in a control module are used to help identify the cause of a trouble or troubles with a vehicle. These codes have occurred a specific number of times and indicate a problem that requires repair.

Pending codes are also referred to as maturing codes that indicate intermittent faults. If the fault does not occur within a certain number of drive cycles (depending on vehicle), the code clears from memory. If a fault occurs a specific number of times, the code matures into a DTC and the MIL illuminates or blinks.

To read codes/pending codes from a vehicle:

3. Scroll with the arrow keys to highlight Read Codes from Diagnostic Menu and press the ENTER key.

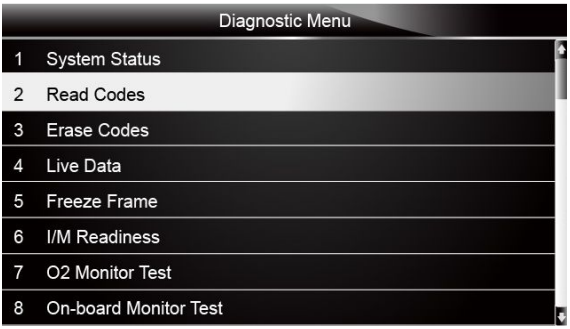

Figure 5-3 Sample Diagnostic Menu Screen

4. Select **Stored Codes**/**Pending Codes** and press the **ENTER** key to confirm. A code list including code number and its description display

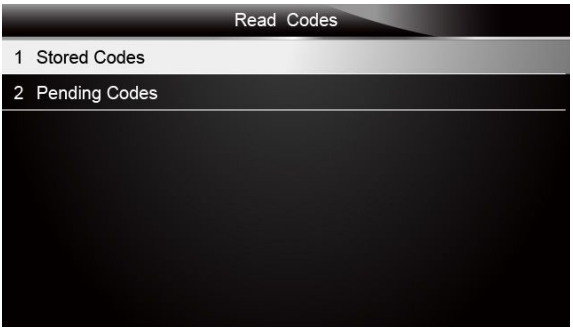

Figure 5-4 Sample Read Codes Screen

If no DTCs are present the message “No (Pending) Codes Found!” is displayed. If any manufacturer specific or enhanced codes detected, select vehicle a make before viewing DTC information.

Figure 5-5 Sample No Codes Screen

5. Use the up and down arrow keys to scroll through data to select lines, and left and right arrow keys to scroll back and forth through different screens of data.

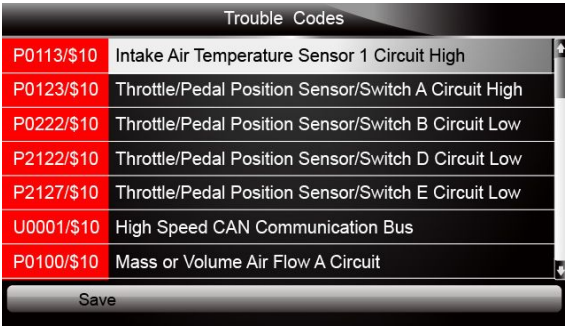

Figure 5-6 Sample Code Screen

6. Press function key **Save** to store DTC information. Or use the **BACK** key to exit.

5.3 Erase Codes

Erase Codes menu lets you to clear all current and stored DTCs from the control module. Also it erases all temporary ECU information, including freeze frame. So make sure that the selected system are completely checked and serviced by technicians and no vital information will be lost before clearing codes.

NOTE

- To clear codes, make sure that the ignition key is switched to ON with the engine off.
- Erase Codes does not fix the problem that caused the fault! DTCs should only be erased after correcting the condition(s) that caused them.

To clear codes:

1. Scroll with the arrow keys to highlight **Erase Codes** from Diagnostic Menu and press the **ENTER.**

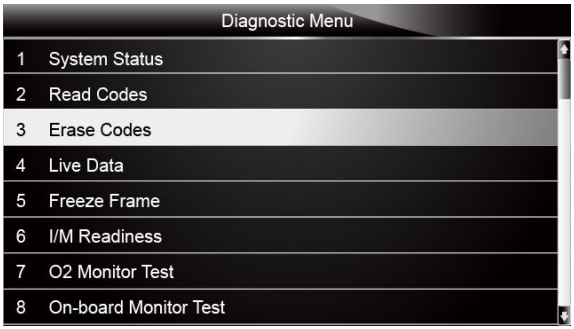

Figure 5-7 Sample Diagnostic Menu Screen

2. Follow the on-screen instructions and answer questions about the vehicle being tested to complete the procedure.

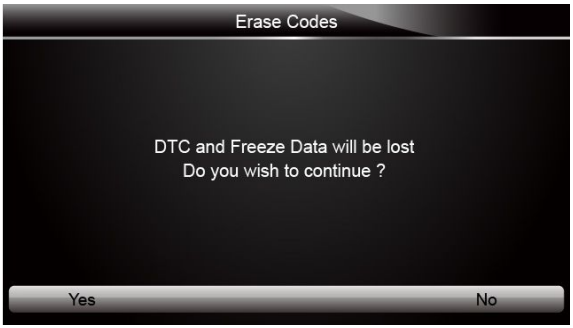

Figure 5-8 Sample Erase Codes Screen

3. Check the codes again. If any codes remain, repeat the Erase Codes steps.

5.4 Live Data

Live Data menu lets you view and record real time PID data from the electronic control module.

Menu options typically include:

- Complete Data List
- Custom Data List

5.4.1 Complete Data List

Complete Data List menu lets you view all live PID data from a selected system.

To view all live PID data:

1. Scroll with the arrow keys to highlight **Live Data** from Diagnostic Menu and press the **ENTER** key.

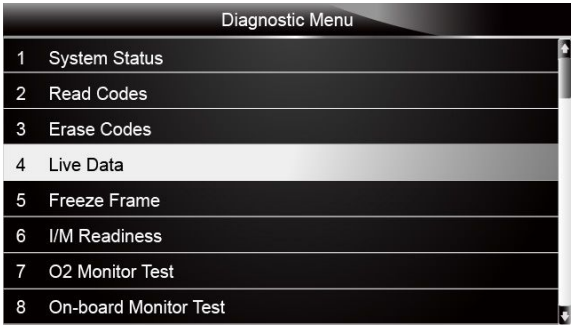

Figure 5-9 Sample Diagnostic Menu Screen

2. Select **Complete List** from the menu and press the **ENTER** key to display the datastream screen

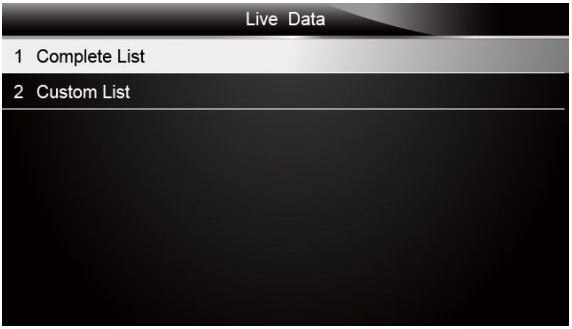

Figure 5-10 Sample Live Data Menu Screen

3. Use the up and down arrow keys to scroll through data to select lines, and left and right arrow keys to scroll back and forth through different screens of data.

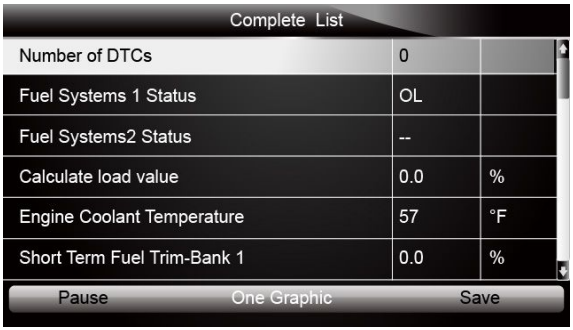

Figure 5-11 Sample Complete List Screen

4. Scroll with the up and down arrow keys to highlight a line, if the **One Graphic** on the bottom is highlighted, it indicates the graphing is available for the selected line. Press the function key **One Graphic** to display the PID graph.

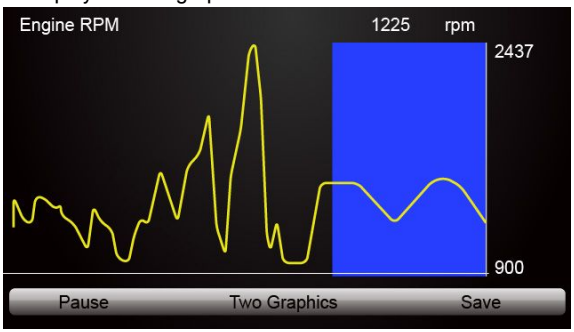

Figure 5-12 Sample PID Graph Screen

5. Press the function key **Two Graphics** to display two PID graphs in one screen

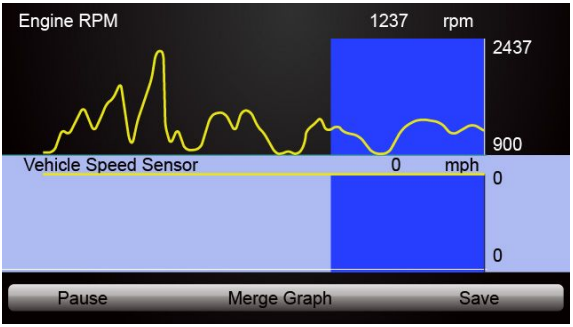

Figure 5-13 Sample Two PID Graph Screen

6. Press the function key **Merge Graph** to display two PID plots in one coordinate for easy and intuitive diagnosis.

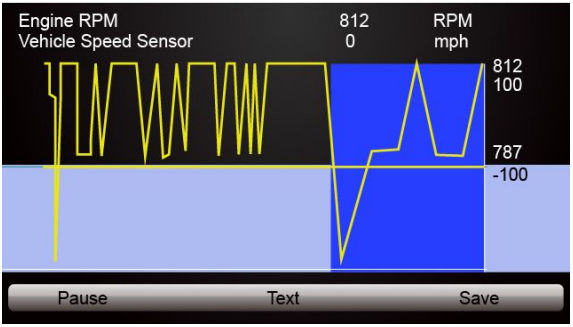

Figure 5-14 Sample Merge Graph Screen

7. To record the data to memory of the tool, use the function key **SAVE**, and press **Stop Saving** to stop recording at any time.
8. Select **Text** to return to text viewing of PID data.
9. Press **Pause** to suspend collecting data and use the **Contiune** key to resume collecting data.
10. Use the **Back** key to return to diagnostic menu.

5.4.2 Custom Data List

Custom Data List menu lets you to minimize the number of PIDs on the data list and focus on any suspicious or symptom-specific data parameters.

To create a custom data list:

1. Select **Custom List** from the menu and press the **ENTER** key.

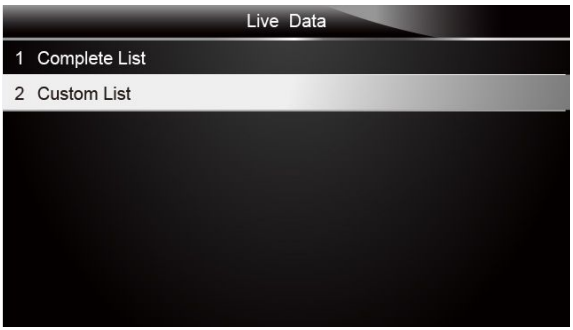

Figure 5-15 Sample Live Data Menu Screen

2. The custom datastream selection screen displays. Scroll with the up and down arrow keys to highlight a line, press the **ENTER** key and then repeat the action to make more selections.

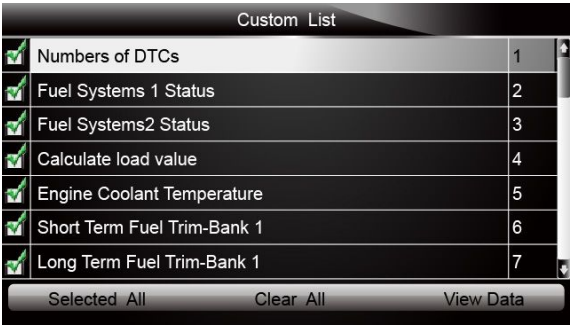

Figure 5-16 Sample Custom Datastream Selection Screen

NOTE
To deselect an item, select it again and then press the **ENTER** key. Alternatively, use the function keys **SELECT ALL** and **CLEAR ALL** to select or deselect all items at once.

3. When finished selection, use the function key **VIEW DATA** to display selected items.

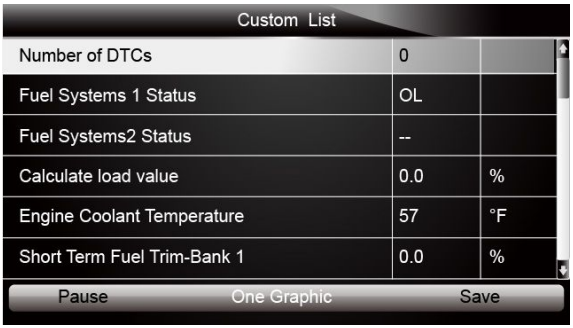

Figure 5-17 Sample Data stream Screen

5.5 Freeze Frame

Freeze Frame menu displays freeze frame data, a snapshot of critical vehicle operating conditions automatically recorded by the on-board computer at the time of the DTC set. It is a good function to help determine what caused the fault.

To view freeze fram data:
1. Select **Freeze Frame** from the Diagnostic Menu. Details of freeze frame data displays.

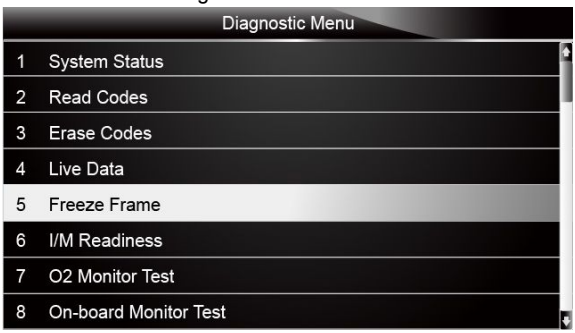

Figure 5-18 Sample Diagnostic Menu Screen

2. Use the up and down arrow keys to scroll through data to select lines, and left and right arrow keys to scroll back and forth through different screens of data. If no freeze frame detected, the message “No freeze frame data stored!” is displayed.

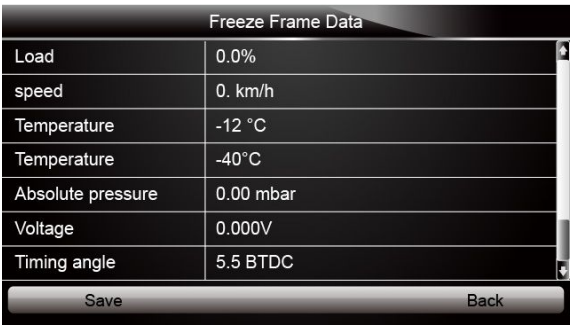

Figure 5-19 Sample Freeze Data Screen

3. Press function key **Save** to store freeze frame information. Or use the **BACK** key to exit.

5.6 Read I/M Readiness Status Data

I/M Readiness option allows to view a snapshot of the operations for the emission system on OBDII/EOBD vehicles.

I/M Readiness is a useful function used to check if all monitors are OK or N/A. The vehicle’s computer performs tests on the emission system during normal driving conditions. After a specific amount of drive time (each monitor has specific driving conditions and time required), the computer’s monitors decide if the vehicles emission system is working correctly.

When the monitor’s status is:

- OK - vehicle was driven enough to complete the monitor.
- INC (Incomplete) - vehicle was not driven enough to complete the monitor.
- N/A (Not Applicable) - vehicle does not support that monitor.

There are two types of I/M Readiness tests:

- Since DTCs Cleared - shows status of the monitors since the DTCs were last cleared.
- This Drive Cycle - shows status of monitors since the start of the current drive cycle.

Below is a list of abbreviations and names of OBD II monitors supported by the tool.

No.	Abbreviation	Name
1	Misfire Monitor	Misfire Monitor
2	Fuel System Mon	Fuel System Monitor
3	Comp. Component	Comprehensive Components Monitor
4	Catalyst Mon	Catalyst Monitor
5	Htd Catalyst	Heated Catalyst Monitor
6	Evap System Mon	Evaporative System Monitor
7	Sec Air System	Secondary Air System Monitor
8	A/C Refrig Mon	Air Conditioning Refrigerant Monitor
9	Oxygen Sens Mon	Oxygen Sensor Monitor
10	Oxygen Sens Htr	Oxygen Sensor Heater Monitor
11	EGR System Mon	Exhaust Gas Recirculation System Monitor

NOTE

- To review I/M Readiness status, make sure that the ignition key is switched to ON with the engine off.

• Not all monitors are supported by all vehicles.

To retrieve I/M Readiness Status data:

1. Scroll with the arrow keys to highlight **I/M Readiness** from Diagnostic Menu and press the **ENTER** key. If vehicle supports both types of monitors, a screen for monitor type selection displays. Select a monitor type and press the **ENTER** key.

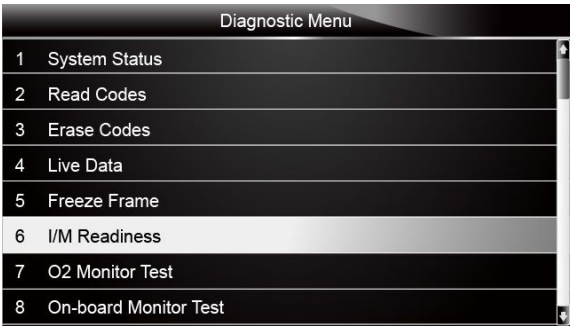

Figure 5-20 Sample Diagnostic Menu Screen

2. Depending on readiness test, one of these 2 screens will be present. Use the up and down arrow keys to scroll through data to select lines, and left and right arrow keys to scroll back and forth through different screens of data.

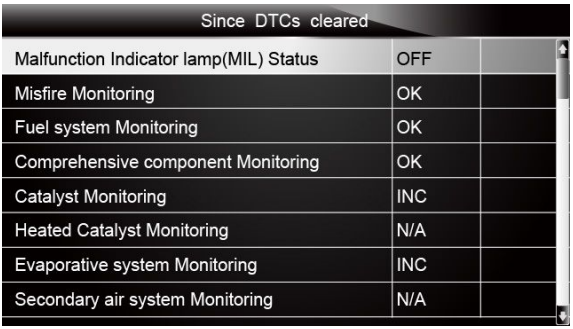

Figure 5-21 Sample IM Readiness Screen 1

Or

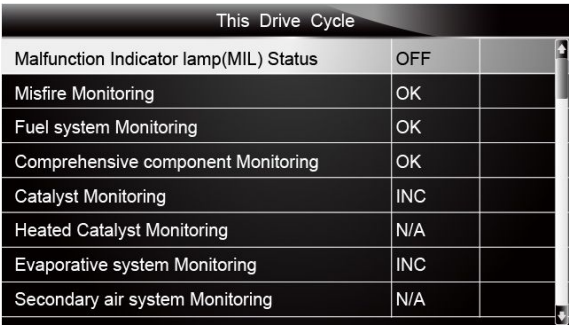

Figure 5-22 Sample IM readiness screen 2

3. Press the **BACK** key to exit.

5.7 O2 Monitor Test

OBD II regulations require certain vehicles monitor and test oxygen (O2) sensors to isolate fuel and emissions related faults. The O2 Monitor Test function is used to retrieve completed O2 sensors monitor test results.

The O2 Monitor Test is not an on-demand test. O2 sensors are not tested when selected via the menu but tested when engine operating conditions are within specified limits.

If the vehicle uses a controller area network (CAN) protocol to communicate, this function is not supported by vehicle. Refer to “On-Board Monitor Tests” on page 38-39 for O2 monitor data of CAN-equipped vehicles.

To retrieve O2 monitor data:

1. Scroll with the arrow keys to highlight **O2 Monitor Test** from Diagnostic Menu and press the **ENTER** key. A screen with a list of available sensors displays.

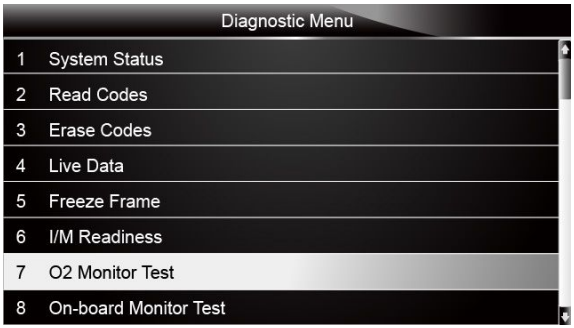

Figure 5-23 Sample Diagnostic Menu Screen

2. Scroll with the arrow keys to highlight an O2 sensor and press the **ENTER** key to confirm. A screen with details of the selected sensor displays.

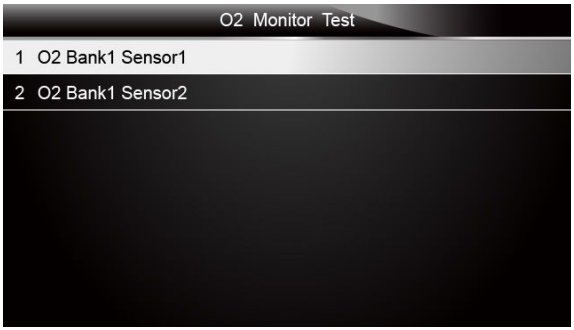

Figure 5-24 Sample O2 Monitor Test screen

3. Use the up and down arrow keys to scroll through data to select lines, and left and right arrow keys to scroll back and forth through different screens of data.

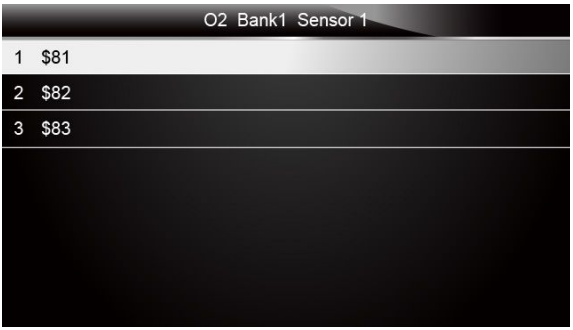

Figure 5-25 Sample O2 Bank1 Sensor 1 Screen

4. Press **Enter** key to view data of selection.

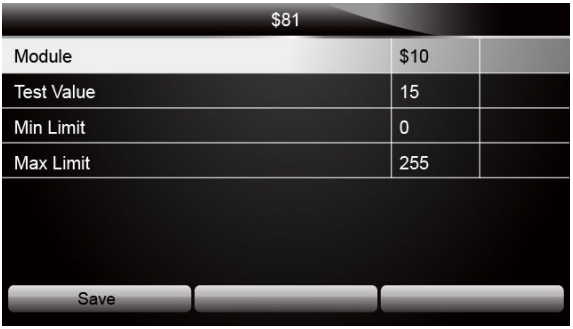

Figure 5-26 Sample data of $81 screen

5. Press the **BACK** key to exit and return.

5.8 On-Board Monitor Test

The On-Board Monitor Test function is useful after servicing or after clearing a vehicle ECU's memory. It receives test results for emission-related powertrain components and systems that are not continuously monitored for Non-CAN vehicles. And for CAN vehicles, it receives test data for emission-related powertrain components and systems that are and are not continuously monitored. It is vehicle manufacturer who is responsible for assigning test and component IDs.

NOTE
Test results do not necessarily indicate a faulty component or system.

To request on-board monitor test results:
1. Scroll with the arrow keys to highlight **On-Board Monitor Test** from Diagnostic Menu and press the **ENTER** key.

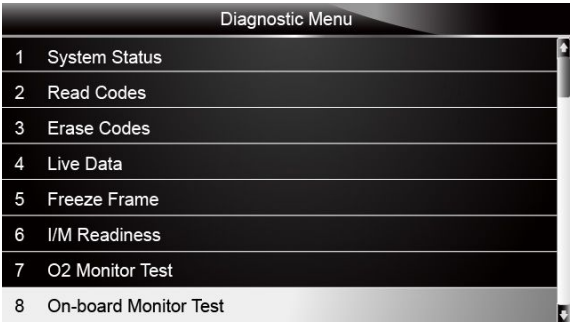

Figure 5-27 Sample Diagnostic Menu Screen

2. Depending on the protocol the vehicle used, one of these 2 screens shows.

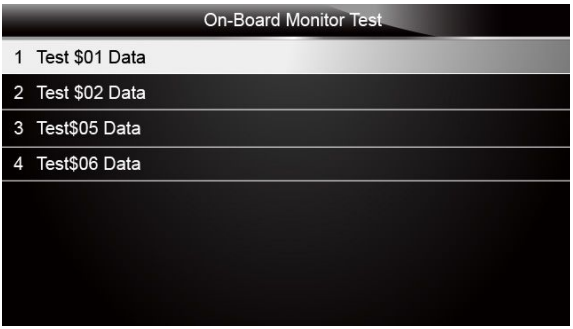

Figure 5-28 Sample Non-CAN Vehicle Test Screen

Or

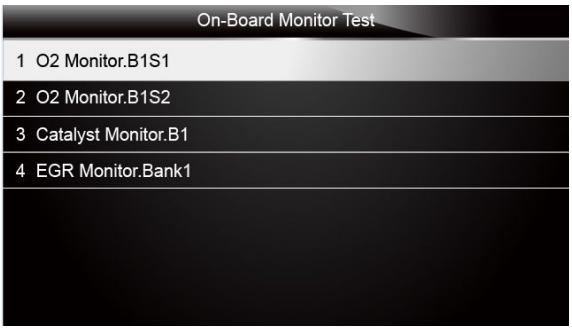

Figure 5-29 Sample CAN vehicle test screen

3. Scroll with the arrow keys to highlight a test group and press the **ENTER** key to confirm. A screen with details of the selected sensor displays. Use the up and down arrow keys to scroll through data to select lines, and left and right arrow keys to scroll back and forth through different screens of data.

   For non-CAN vehicles, test screen is illustrated as below:

Test $01 Data		
ID	00	
Module	$10	
Test Value	0000	
Min Limit	----	
Max Limit	0000	
Status	OK	

Figure 5-30 Sample Non-CAN vehicle test screen

For CAN vehicles, test screen is illustrated as below:

Test $01 Data		
MEAS	0.450	
MIN	0.312	
MAX	0.630	
STS	OK	

Figure 5-31 Sample Can vehicle test screen

4. Press the **BACK** key to exit and return.

5.9 Component Test

Component Test allows the tool to control operation of vehicle components, tests or systems.

NOTE

- Some manufacturers do not allow tools to control vehicle systems.
- The manufacturer sets the criteria to automatically stop test. Refer to appropriate vehicle service manual before using this function.

To perform a component test:

1. Scroll with the arrow keys to highlight **Component Test** from Diagnostic Menu and press the **ENTER** key. A screen with a list of available tests displays.

Diagnostic Menu	
6	I/M Readiness
7	O2 Monitor Test
8	On-board Monitor Test
9	Component Test
10	Vehicle Info.
11	Modules Present
12	DTC Lookup
1	System Status

Figure 5-32 Sample Diagnostic Menu Screen

2. Scroll with the arrow keys to highlight a system or component, press the **ENTER** key to start test and the tool displays the message “Command Sent!”.

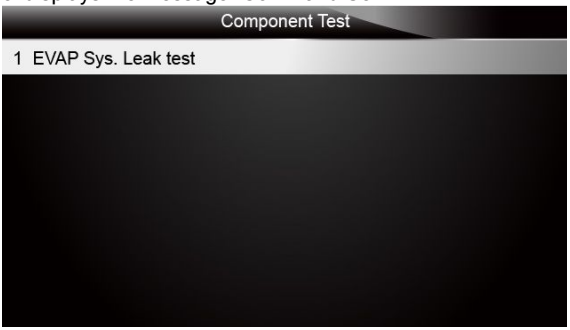

Figure 5-33 Sample Component test screen

3. Press the **BACK** key to exit and return.

5.10 Request Vehicle Information

Vehicle Information allows to request the vehicle’s VIN number, calibration ID(s) which identifies software version in vehicle control module(s), calibration verification numbers (CVN(s)) and in-use performance tracking on model year 2000 and newer OBD II compliant vehicles.

CVNs are calculated values required by OBD II regulations. They are reported to check if emission-related calibrations have been changed. Multiple CVNs may be reported for a control module. It may take several minutes to do the CVN calculation. In-use performance tracking tracks performance of key readiness monitors.

NOTE
Available options will vary depending on the vehicle under test.

To request vehicle information:

1. Scroll with the arrow keys to highlight **Vehicle Info.** from Diagnostic Menu and press the **ENTER** key.

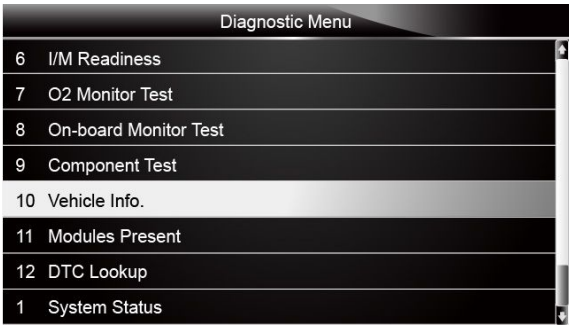

Figure 5-34 Sample Diagnostic Menu Screen

2. Follow on-screen instruction and send the command to read vehicle information. A screen with a list of available options displays.

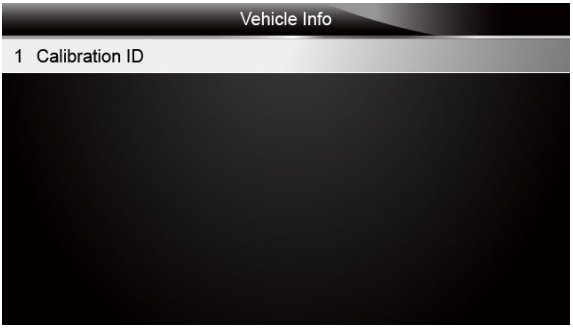

Figure 5-35 Sample Vehicle Info Screen

3. Scroll with the arrow keys to highlight an available option and press the **ENTER** key. A screen with details of the selected option displays.

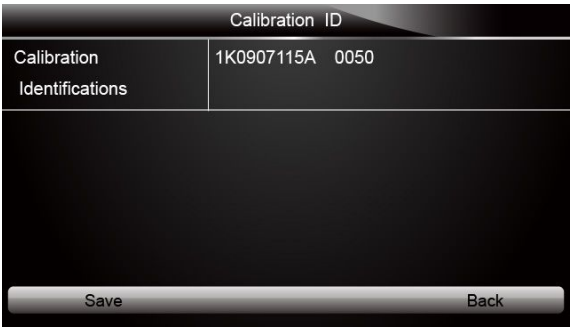

Figure 5-36 Sample Calibration ID Screen

4. Press function key **Save** to store the readiness data. Or use the **BACK** key to exit and return.

5.11 Modules Present

The tool identifies module IDs and communication protocols for OBD2 modules in the vehicle.

To view module IDs and communication types:

1. Scroll with the arrow keys to highlight **Modules Present** from Diagnostic Menu and press the **ENTER** key.

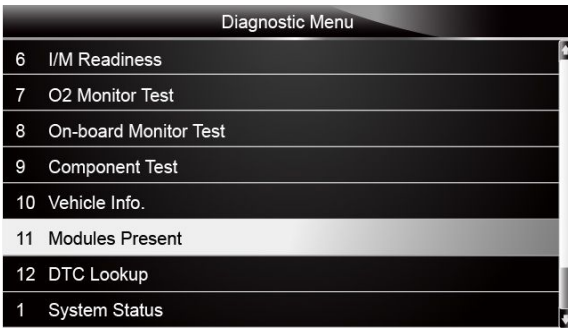

Figure 5-37 Sample Diagnostic Menu Screen

2. A screen with the module IDs and protocols displays.

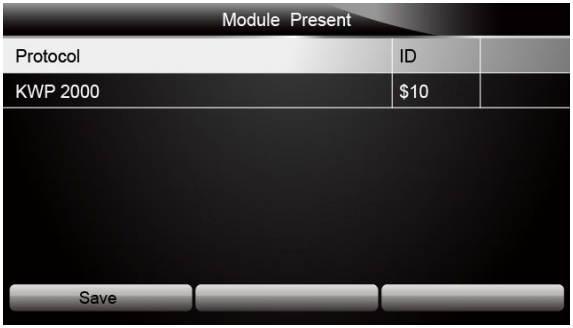

Figure 5-38 Sample Module Present Screen

3. Press function key **Save** to store the readiness data. Or use the BACK key to exit and return.

5.12 DTC Lookup

DTC Lookup menus allows to request DTC definitions stored in the scan tool.

To Look up DTCs:

1. Scroll with the arrow keys to highlight **DTC Lookup** from Diagnostic Menu and press the **ENTER** key.

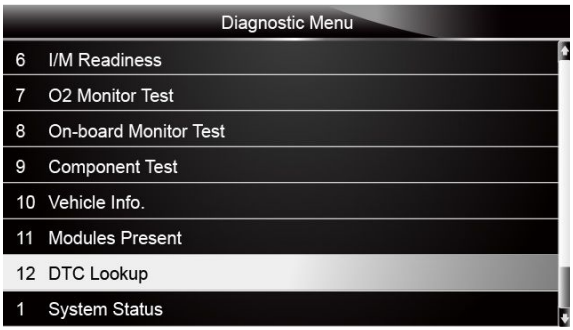

Figure 5-39 Sample Diagnostic Menu Screen

2. Enter a valid code number and press the function key Finish.

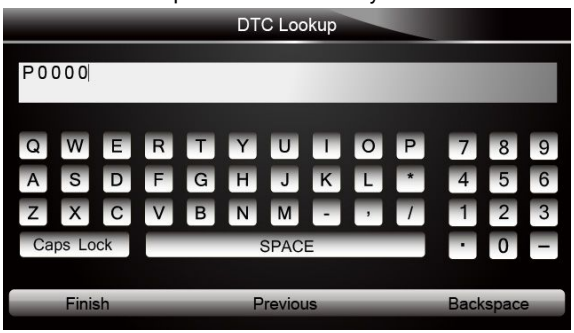

Figure 5-40 Sample DTC Lookup Screen

3. A screen with code number and its definition displays. If definition could not be found (SAE or Manufacturer Specific), the tool displays “DTC definition not found! Please refer to vehicle service manual!” If a P1xxx, C1xxx, B1xxx or U1xxx code is entered, select a vehicle make to look for DTC definitions. Press the **Back** key to exit.

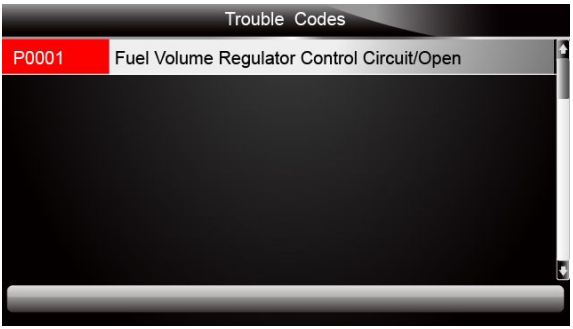

Figure 5-41 Sample Trouble Codes Screen

6 Playback Data

The Playback option leads to screens for review of recorded test results.

To review recorded data:

1. Scroll with the arrow keys to highlight **PlayBack** from home screen and press the **ENTER** key.

Figure 6-1 Sample Home Screen

2. A screen with a list of test records displays. If no data is recorded, the message “No Data available!” is displayed.

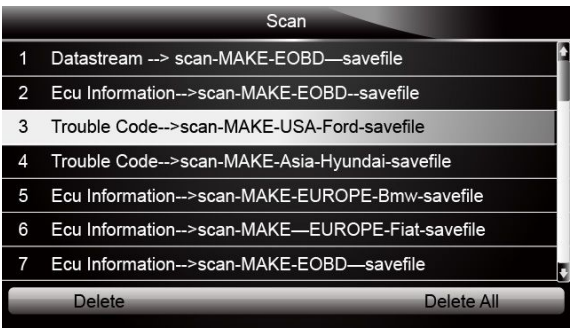

Figure 6-2 Sample Playback Screen

3. Scroll with the arrow keys to highlight a vehicle record and press the **ENTER** key. Details of the test record displays. Use the up and down arrow keys to scroll through data to select lines.

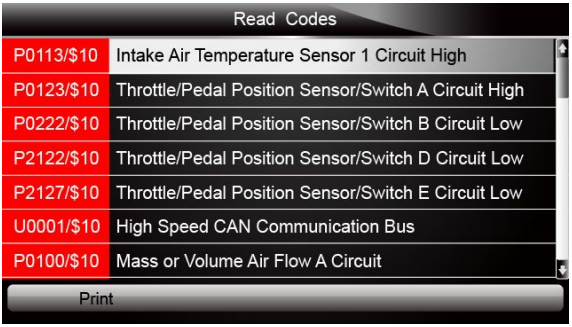

Figure 6-3 Sample Test Data Details Screen

4. If you are reviewing live data or freeze frame data, use the function key **Next Frame** or **Pre. Frame** to scroll through all possible frames when necessary.

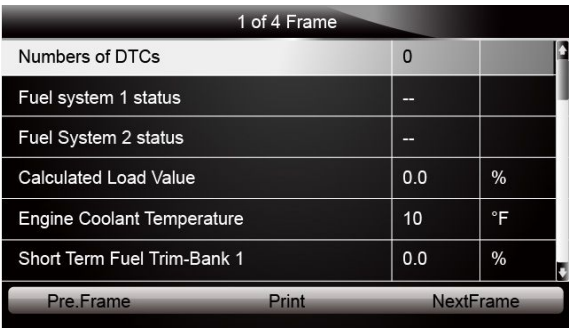

Figure 6-4 Sample Test Data Details Screen

5. To erase a record, scroll with the arrow keys to highlight it and press the function key **Delete**. To delete all records, press the function key **Delete All**. Answer **Yes** to delete and **No** to quit.

7 System Setup

This section illustrates how to program the tool to meet your specific needs.
When Setup application is selected, a menu with available service options displays. Menu options typically include:

- Language
- Unit
- Beep Set
- Key Test
- LCD Test
- About
- Shortcuts

7.1 Select Language

Selecting Language opens a screen that allows you to choose system language. The scan tool is set to display English menus by default.

To configure system language:
1. Scroll with the arrow keys to highlight **Language** from Setup menu and press the **ENTER** key.

Figure 7-1 Sample Setup Screen

2. Press the LEFT/RIGHT arrow key select a language and press the ENTER key to confirm. Press the Back key to exit and return.

Figure 7-2 Sample Language Selection Screen

7.2 Change Units

Selecting Unit opens a dialog box that allows you to choose between US customary or metric units of measure.

To change the unit setup:
1. Scroll with the arrow keys to highlight **Units** from Setup menu and press the **ENTER** key.

Figure 7-3 Sample Setup Screen

2. Press the **LEFT/RIGHT** arrow key select an item and press the **ENTER** key to save and return.

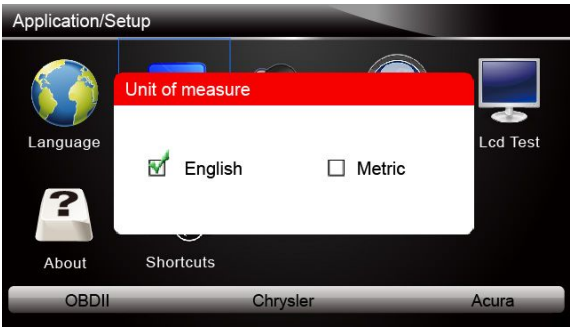

Figure 7-4 Sample Language Selection Screen

7.3 Configure Beeper

Selecting Beep Set opens a dialog box that allows you to turn on/off the beeper.

To turn on/off the beeper:

1. Scroll with the arrow keys to highlight **Beep Set** from Setup menu and press the **ENTER** key.

Figure 7-5 Sample Setup Screen

2. Press the LEFT/RIGHT arrow key select an item and press the ENTER key to save and return.

Figure 7-6 Sample Beeper On/Off Selection Screen

7.4 Test Keypad

Selecting Key Test option opens a screen that allows you to check the functionality of the keypad.

To test the keypad:

1. Scroll with the arrow keys to highlight **Key Test** from Setup menu and press the **ENTER** key.

Figure7-7 Sample Setup Screen

2. Press any key to start test. The virtue key corresponding with the key you pressed will be highlighted on the screen if it works correctly.

Figure 7-8 Sample Key Test Screen

3. To quit the test, click the F2 function key twice.

7.5 LCD Keypad

Selecting LCD Test option opens a screen that allows you to check the functionality of the display.

To test the display:

1. Scroll with the arrow keys to highlight **LCD Test** from Setup menu and press the **ENTER** key to start test. Check if there are any missing spots in the LCD screen.

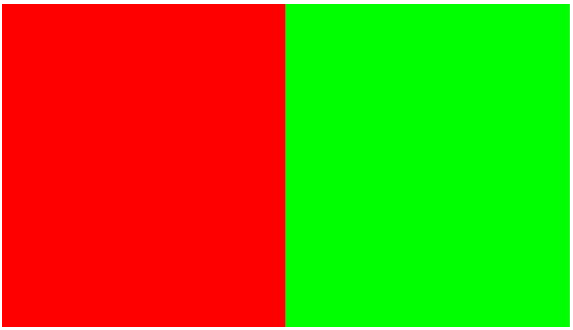

Figure 7-9 Sample LCD Test Screen

2. To quit the test, press the **Back** key.

7.6 Tool Information

Selecting About option opens a screen that show information about your scan tool, such as serial number and register password which may be required for product registration.

To view information of your scan tool:

1. Scroll with the arrow keys to highlight **About** from Setup menu and press the **ENTER** key.

Figure 7-10 Sample Setup Screen

2. A screen with detailed information of the tool displays.

Figure 7-11 Sample Tool Information Screen

3. Press the **Back** key to exit and return to the Setup menu.

7.7 Configure Shortcut Keys

Selecting Shortcuts option lets you to change the functionality of the shortcut buttons.

To assign a function to a shortcut button:

1. Scroll with the arrow keys to highlight **Shortcuts** from Setup menu and press the **ENTER** key. A screen with available shortcut keys displays.

Figure 7-12 Sample Setup screen

2. Press the **UP/DOWN** arrow key select a shortcut key and press the **ENTER** key. A screen with a list of loaded applications displays.

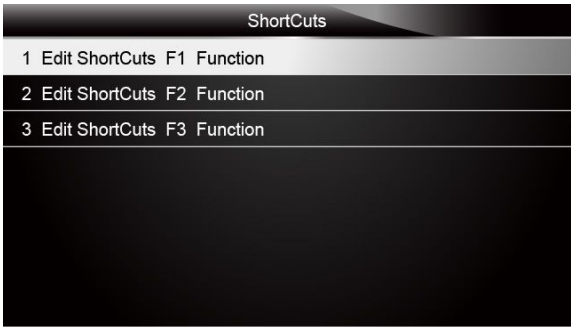

Figure 7-13 Sample Shortcuts Screen

3. Scroll with the **UP/DOWN** arrow keys to highlight an application and press the **ENTER** key to assign the application to the shortcut key. Press any key to exit.