

# VERLIS<sup>®</sup>

## User Manual



EAZ0061B46E Rev. A

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- Increases in any way the liability to the customer or to third parties.

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#### **IMPORTANT:**

Before operating or maintaining this unit, please read this manual carefully paying extra attention to the safety warnings and precautions.

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## Contact Information (North America)

### Websites:

<http://diagnostics.snapon.com>

#### ***ShopStream Connect***

<http://diagnostics.snapon.com/ssc>

### Phone / E-mail - Technical Assistance

1-800-424-7226 / [diagnostics\\_support@snapon.com](mailto:diagnostics_support@snapon.com)

For technical assistance in all other markets, contact your selling agent

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# Safety Information

For your own safety and the safety of others, and to prevent damage to the equipment and vehicles upon which it is used, it is important that the accompanying *Important Safety Instructions* be read and understood by all persons operating, or coming into contact with, the equipment. We suggest you store a copy near the Diagnostic Tool in sight of the operator.

This product is intended for use by properly trained and skilled professional automotive technicians. The safety messages presented throughout this manual are reminders to the operator to exercise extreme care when using this test instrument.

There are many variations in procedures, techniques, tools, and parts for servicing vehicles, as well as in the skill of the individual doing the work. Because of the vast number of test applications and variations in the products that can be tested with this instrument, we cannot possibly anticipate or provide advice or safety messages to cover every situation. It is the automotive technician's responsibility to be knowledgeable of the system being tested. It is essential to use proper service methods and test procedures. It is important to perform tests in an appropriate and acceptable manner that does not endanger your safety, the safety of others in the work area, the equipment being used, or the vehicle being tested.

It is assumed that the operator has a thorough understanding of vehicle systems before using this product. Understanding of these system principles and operating theories is necessary for competent, safe and accurate use of this instrument.

Before using the equipment, always refer to and follow the safety messages and applicable test procedures provided by the manufacturer of the vehicle or equipment being tested. Use the equipment only as described in this manual.

Read, understand and follow all safety messages and instructions in this manual, the accompanying safety manual, and on the test equipment.

## Safety Signal Words

Safety messages are provided to help prevent personal injury and equipment damage. All safety messages are introduced by a signal word indicating the hazard level.

### **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.

## Safety Message Conventions

Safety messages are provided to help prevent personal injury and equipment damage. All safety messages are introduced by a signal word indicating the hazard level.

Safety messages communicate the hazard, hazard avoidance and possible consequences using three different type styles:

- Normal type states the hazard.
- Bold type states how to avoid the hazard.
- Italic type states the possible consequences of not avoiding the hazard.

An icon, when present, gives a graphical description of the potential hazard.

Example:

### **WARNING**



Risk of unexpected vehicle movement.

- **Block drive wheels before performing a test with the engine running.**  
*A moving vehicle can cause injury.*

## Important Safety Instructions

For a complete list of safety messages, refer to the accompanying safety information.

# SAVE THESE INSTRUCTIONS

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This manual contains basic operating instructions and is structured in a manner to help you become familiar with your Diagnostic Tool features and perform basic operations.

The illustrations in this manual are intended as reference only and may not depict actual screen results, information, functions or standard equipment. Contact your sales representative for availability of other functions and optional equipment.

## 1.1 Conventions

### 1.1.1 Bold Text

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

Example:

- Select **Functions**.

### 1.1.2 Symbols

The “greater than” arrow (>) indicates an abbreviated set of selection instructions.

Example:

- Select **Utilities > Tool Setup > Date**.

The above statement abbreviates the following procedure:

1. Select the **Utilities** icon.
2. Select the **Tool Setup** submenu.
3. Highlight the **Date** option from the submenu.

### 1.1.3 Terminology

The term “select” describes tapping/touching an icon on the touch screen, or highlighting an icon or menu choice and then selecting the confirmation menu choice such as **Continue, Accept, OK, Yes**, or other similar choice.

Example:

- Select **Reset**.

The above statement abbreviates the following procedure:

1. Navigate to the **Reset** icon.
2. Select the **Reset** icon with your stylus.



## 1.1.4 Notes and Important Messages

The following messages are used.

### Note

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

Example:

**NOTE:**

For additional information refer to...

---

### Important

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

Example:

---

**IMPORTANT:**

Disconnecting the USB cable during vehicle communication can cause damage to the ECM.

---

## 1.1.5 Procedures

An arrow icon indicates a procedure.

Example:

**To change screen views:**

1. Select **View**.  
The dropdown menu displays.
2. Select an option from the menu.  
The screen layout changes to the format you selected.

## 1.1.6 Hyperlinks

Hyperlinks, or links, that take you to other related articles, procedures, and illustrations are available in electronic documents. Blue colored text indicates a selectable hyperlink.

Example:

---

**IMPORTANT:**

Read all applicable [Safety Information](#) before using this tool!

---

## 1.1.7 Tool Help

To display help topics for this tool, select a help option from the Help menu.

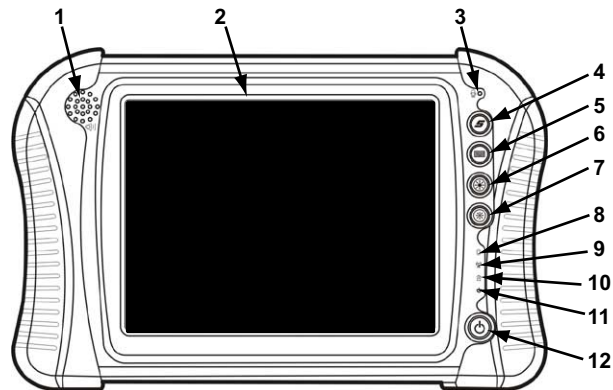
The VERUS® Diagnostic Tool is a specialized personal computer (PC) that combines information with test instrumentation to help you diagnose symptoms, codes, and complaints quickly and efficiently, test vehicle systems and components, access service records and recorded data, and verify repairs. VERUS forms a complete automotive diagnostic solution. There are two main components to the VERUS Diagnostic Tool:

- **Diagnostic Tool**—the central processor and system monitor with integral scope.
- **Scan Module**—the device for accessing vehicle data.

Microsoft Windows Embedded is the operating system of the Diagnostic Tool, which allows VERUS to run most Windows compatible software programs. The standard Windows toolbar displays at the bottom of the screen. Unique Snap-on software that allows VERUS to function as a scan tool, graphing multimeter, lab scope, and a powerful diagnostic database opens on startup.

## 2.1 Diagnostic Tool

### 2.1.1 Features

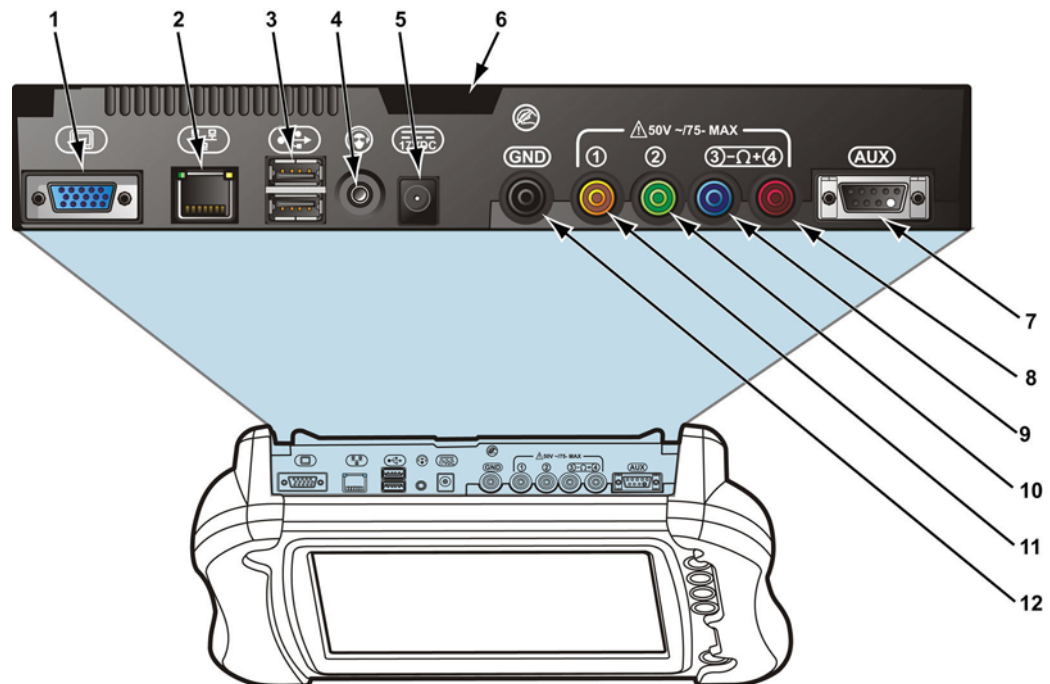


- 1— Audio Speaker
- 2— Touch Screen Display
- 3— Microphone
- 4— S (Shortcut) Button
- 5— Virtual Keyboard Button
- 6— Brightness Up Button
- 7— Brightness Down Button
- 8— Hard Drive Activity LED
- 9— Wireless LAN Activity LED
- 10— Battery Charging LED
- 11— Main Power LED
- 12— Power Button

Figure 2-1 Front view

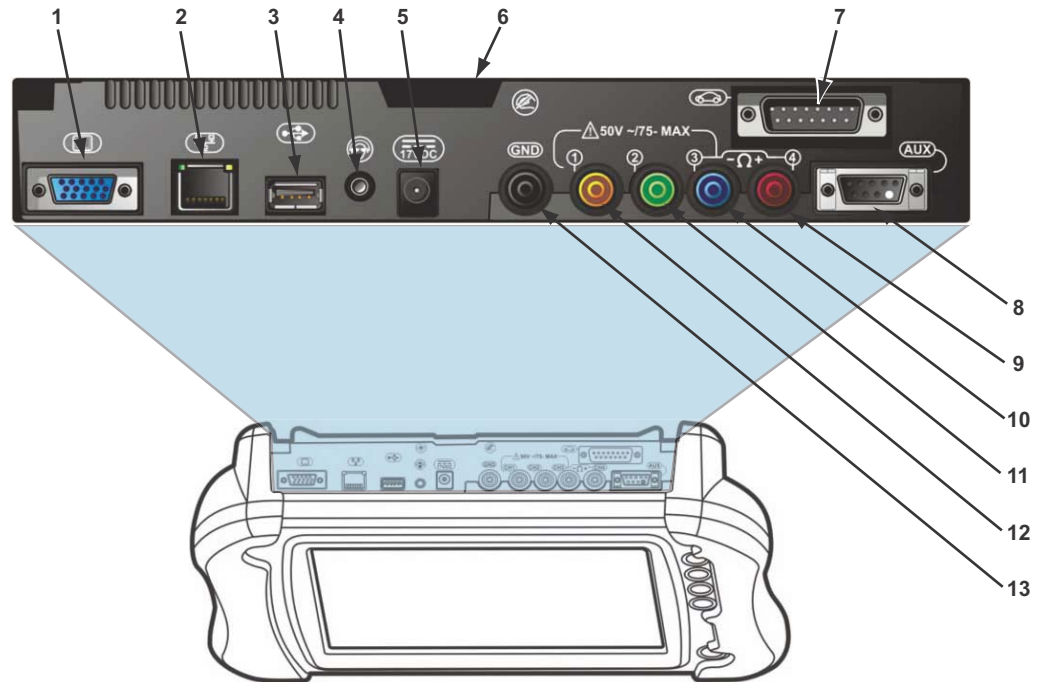
**IMPORTANT:**

There are two versions of the VERUS Diagnostic Tool: the standard Diagnostic Tool with integral Scanner that connects to the vehicle with a data cable, and the wireless Diagnostic Tool that uses the stand-alone Scan Module and does not require a physical link to the test vehicle. The top view of the two models are distinctly different, as shown in the illustrations below. Earlier standard Diagnostic Tools can be converted to operate with the wireless Scan Module, contact your sales representative for details.



- 1— VGA (video graphics array) Connector
- 2— LAN (local area network) Jack
- 3— USB (universal serial bus) Jacks (2)
- 4— Audio (head phone) Jack
- 5— DC Power Supply Input Jack
- 6— Fan Filter
- 7— Scope Auxiliary Connector
- 8— Channel 4 Jack
- 9— Channel 3 Jack
- 10— Channel 2 Jack
- 11— Channel 1 Jack
- 12— Common Ground Jack

Figure 2-2 Top view, wireless model



- 1— VGA (video graphics array) Connector
- 2— LAN (local area network) Jack
- 3— USB (universal serial bus) Jack
- 4— Audio (head phone) Jack
- 5— DC Power Supply Input Jack
- 6— Fan Filter
- 7— Data Cable Connector
- 8— Scope Auxiliary Connector
- 9— Channel 4 Jack
- 10—Channel 3 Jack
- 11—Channel 2 Jack
- 12—Channel 1 Jack
- 13—Common Ground Jack

Figure 2-3 Top view, standard model

## 2.1.2 Technical Specifications

### Processor:

Standard: 600MHz Intel Celeron M

Wireless: 1.6GHz Intel Atom

### Memory:

Standard: 500MB RAM

Wireless: 1GB RAM

### Operating System

Microsoft Windows Embedded Standard (XPe SP3)

**Touch Screen**

5-wire Resistive Touch Panel

**Display:**

10.4 inch, outdoor enhanced, TFT LCD

1024 x 768 resolution

262,144 Colors

**Battery:**

Lithium Ion Smart Battery Pack

Approximately 4 hour run time

Approximately 4 hour charge time, VERUS not operating

Approximately 8 hour charge time, VERUS operating

**Communications:**

10/100 Ethernet Jack

802.11 b/g Wireless LAN

Bluetooth 2.0 Class 1

**Dimensions:**

Width:

14.9 inches

358 mm

Height:

9.17 inches

233 mm

Depth:

3.07 inches

78 mm

**Weight (including battery):**

7.5 lbs.

3402 g

**Operating Temperature Range (ambient):**

At 0 to 90% relative humidity (non-condensing)

32 to 113°F

0 to 45°C

**Storage Temperature (ambient):**

At 0 to 70% relative humidity (non-condensing)

-4 to 131°F

-20 to 55°C

**Environmental Conditions:**

This product is intended for indoor use only.

This product is rated for Pollution Degree 2 (normal conditions).

**Power Supply:**

Supply Rating; 12–17 VDC. 3.53A

Output; 17VDC 60W, LPS (limited power source)

### 2.1.3 The Stand






The VERUS Diagnostic Tool has a built-in, metal stand attached to the back. When the stand is not in use, it is secured to the back of the Diagnostic Tool by an integrated casing hook. When extended, the stand allows the Diagnostic Tool to rest at a 45° angle for hands-free viewing.

### 2.1.4 Wrist Strap (Optional)

An adjustable wrist strap that attaches to the back of the Diagnostic Tool to secure and stabilize the VERUS while you work is available as an option. Using the wrist strap allows the VERUS to comfortably rest on your forearm and leaves a hand free for connecting test leads and operating the touch screen. The strap also eliminates the possibility of the VERUS falling off a vehicle due to vibrations or other movement, and also prevents you from accidentally dropping the Diagnostic Tool.

### 2.1.5 Control Buttons

There are five control buttons located on the right side of the Diagnostic Tool near the handgrip:

Name	Button	Description
S (Shortcut) Button		A function button that provides a shortcut for performing routine tasks.
Keyboard		Opens, and closes, a virtual keyboard on the touch screen.
Brightness Up		Incrementally increases the screen backlighting.
Brightness Down		Incrementally decreases the screen backlighting.
Power		Turns the Diagnostic Tool on and off. Also, press and hold for 5 seconds for emergency shutdown.

All other Diagnostic Tool operations are controlled through the touch screen.

#### S (Shortcut) Button

Use the S Button to quickly capture an image of the current screen with a single button press. This screen capture function is available at all times, even when operating outside of the VERUS Diagnostic Tool software.

## 2.1.6 LEDs

The four light-emitting diodes indicate certain system conditions:

- Hard Drive Activity LED—illuminates when the central processing unit (CPU) is reading or writing to the hard disk drive (HDD).
- Wireless LAN Activity LED—illuminates when a wireless local area network (LAN) is enabled, flashes when data is being sent or received.
- Battery Charging LED—illuminates when the internal battery pack is charging.
- Main Power LED—illuminates when the Diagnostic Tool is powered on or in Standby mode.

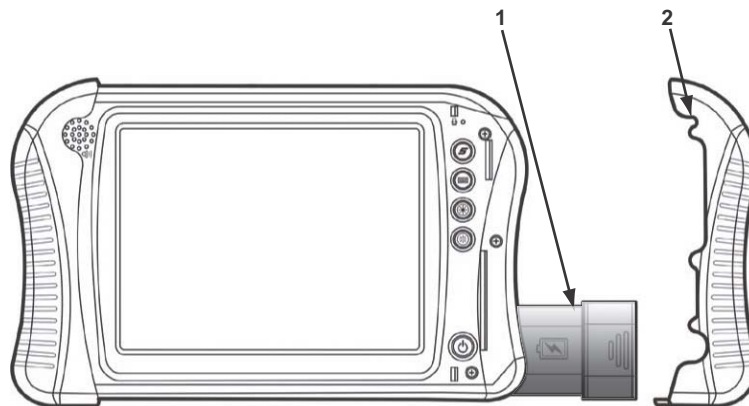
## 2.1.7 Power Sources

Your VERUS Diagnostic Tool can receive power from any of the following sources:

- [Internal Battery Pack](#)
- [Charging Station \(Optional\)](#)
- [AC/DC Power Supply](#)
- [Data Link Connector \(DLC\), Standard Unit Only](#)

### Internal Battery Pack

The VERUS Diagnostic Tool can be powered from a rechargeable lithium ion battery located on the bottom of the Diagnostic Tool under the right handgrip ([Figure 2-5](#)). A fully charged battery provides sufficient power for about four hours of constant operation.



- 1— Internal Battery Pack  
2— Right Handgrip

**Figure 2-4** Battery pack location

The battery is recharged on demand whenever the Diagnostic Tool is placed in the optional docking station, or the AC/DC power supply is connected to a voltage source.

### Charging Station (Optional)

The Diagnostic Tool can be powered and operated when installed on the optional charging station. The charging station also powers the internal battery pack charging process and allows USB connectivity for attaching peripherals. Contact your sales representative for additional details.

## AC/DC Power Supply

The Diagnostic Tool can be powered from a wall socket using the AC/DC power supply and power cord. The AC/DC power supply also powers the internal battery pack charging process.

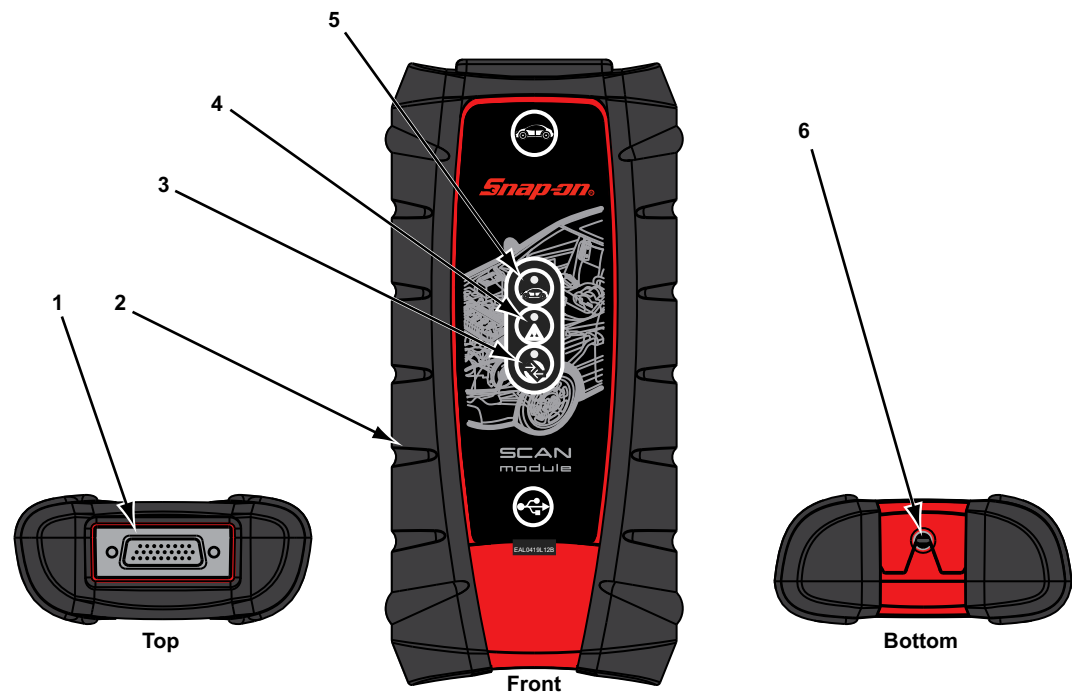
## Data Link Connector (DLC), Standard Unit Only

The standard VERUS Diagnostic Tool can be powered through the DLC when connected to an OBD-II vehicle with the data cable. However, battery pack charging is not available when the Diagnostic Tool is being powered by the DLC.

## 2.2 Scan Module

The wireless Scan Module is provided as standard equipment on all late-model VERUS Diagnostic Tools. Older VERUS Diagnostic Tools, which are designed to operate with a hard-wired connection to the test vehicle, can also be converted to operate with the wireless Scan Module.

### 2.2.1 Functional Description



- 1— Data cable connector
- 2— Memory card port (remove protective hand grip for access)
- 3— Bluetooth LED (green)
- 4— Communication issue LED (red)
- 5— Vehicle power LED (green)
- 6— Universal serial bus (USB) jack (remove protective hand grip for access)

Figure 2-5 Scan Module



## Wireless Communication

The Scan Module is a wireless communications device that transmits vehicle data to the VERUS Diagnostic Tool without a physical connection. The working range of the transmitter is about 30 feet (9.14 m). A signal lost due to moving out of range automatically restores itself when the Diagnostic Tool is brought closer to the Scan Module. The Scan Module sounds a tone and the Diagnostic Tool shows a warning message when the signal is lost.

## 2.2.2 Technical Specifications

### Dimensions:

Length:

8.04 inches

204.3 mm

Height:

3.82 inches

97 mm

Depth:

1.66 inches

42.1 mm

### Weight (including protective hand grip):

0.9 lbs.

0.408 kg

### Communications:

Bluetooth 2.0 Class 1

### USB Power:

5V @ 500mA

### Data Cable Connector Power:

8V to 32V, Maximum 12 Watts

### Operating Temperature Range (ambient):

At 0 to 90% relative humidity (non-condensing)

32 to 113°F

0 to 45°C

### Storage Temperature (ambient):

At 0 to 70% relative humidity (non-condensing)

-4 to 140°F

-20 to 60°C

### Environmental Conditions:

This product is intended for indoor use only.

This product is rated for Pollution Degree 2 (normal conditions).

### 2.2.3 Power Sources

The Scan Module operates on 12-volt vehicle power, which it receives through the data cable connector. The Diagnostic Tool powers on whenever it is connected to an OBD-II compliant data link connector (DLC). For non OBD-II compliant vehicles, the Diagnostic Tool can be powered from a cigarette lighter or other suitable power port on the test vehicle using the optional auxiliary power cable.

Before using the VERUS® Diagnostic Tool, it is recommended that you charge the battery fully or connect the AC power supply (see [Power Sources](#) on page 8). It is also recommended that you calibrate the touch screen upon initial startup, and as needed while the Diagnostic Tool is in service (see [Calibrating the Touch Screen](#) on page 135).

It is highly recommended that you back up personal and saved data to a USB mass storage device on a regular basis to prevent loss in the event of system corruption or hard disk drive failure.

## 3.1 Turning On

Press the Power button to turn the Diagnostic Tool on. The system boots up, then opens the VERUS Diagnostic Tool to the Home screen ([Figure 3-1](#)).










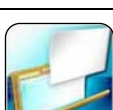



- 1— Function Icons
- 2— VERUS Toolbar
- 3— Windows Toolbar

Figure 3-1 Sample VERUS Home screen

### 3.1.1 Function Icons

The function icons configure the VERUS Diagnostic Tool for the type of test to be performed. The following table describes each function:

Table 3-1








Name	Function Icon	Description
Scanner		Configures the VERUS Diagnostic Tool to operate as a scan tool. See <a href="#">Scanner</a> on page 18.
OBD Direct		Allows you to perform generic OBD-II system tests without identifying the specific vehicle. See <a href="#">OBD Direct</a> on page 56.
Guided Component Test		Opens a diagnostic database of specific tests for the identified vehicle. See <a href="#">Guided Component Test</a> on page 64.
Scope Multimeter		Configures the VERUS Diagnostic Tool to operate as a lab scope, graphing multimeter, or digital multimeter. See <a href="#">Scope Multimeter</a> on page 76.
SureTrack		Opens the SureTrack website. See <a href="#">SureTrack™ Operations</a> on page 101.
Repair Information		Provides the information needed to make repairs once you have made your diagnosis. The linked program varies by region. See <a href="#">Repair Information Operations</a> on page 116.
Vehicle History		Opens a list of previously serviced vehicles. See <a href="#">Vehicle History Operations</a> on page 117.
Data Manager		Opens the organization system for saved data files. See <a href="#">Data Manager</a> on page 122.
Help		Opens the on-line help for the system. See <a href="#">Help Operations</a> on page 129.
System Settings		Establishes and manages wireless communication between modules. See <a href="#">System Settings Operations</a> on page 131.
Exit		Closes the VERUS Diagnostic Suite application.

Use your finger or the stylus to select the desired function.

### 3.1.2 VERUS Toolbar

Operation of the toolbar icons located on the lower-left area of the screen are described below:

Table 3-2

Name	Icons	Description
Home		Selecting this icon returns you to the VERUS Home screen from any test.
Windows Toolbar		Selecting this icon opens and closes the standard Windows toolbars at the bottom of the screen.
Menu		Selecting this icon opens a menu of common operations and information.
Change Vehicle		The currently identified vehicle is shown to the right of the icons, selecting this icon allows you to change the identified test vehicle.
View Record		Selecting this icon opens an editable worksheet of vehicle records.
Hardware Status		Indicates the connectivity status of the Scan Module.
		Indicates the connectivity status of the Scope Multimeter.

#### Menu Icon Options

The Menu icon on the Toolbar at the base of the display screen opens a list of basic operations and features. The list of options varies depending upon which module, or tool function, is active. Selecting a menu item opens a submenu of choices, and some submenus also open an additional menu. A right arrowhead ( ▶ ) indicates additional choices are available. Select an item to open it. The following Menu options are available from the Home Screen:

- [Safety Information](#)—opens the *Important Safety Instructions* document.
- [Help](#)—allows you to view supporting documentation, selecting opens a submenu.

Safety Information is available for all of the modules, and Help, as explained below, displays in the SureTrack, Vehicle History, Data Manager, Help, and System Settings modules. Additional menu options are available for the Scanner, OBD Direct, Guided Component Test, and Scope Multimeter modules. These additional menu options are detailed in their respective module chapters.

## Safety Information

Selecting Safety Information opens an electronic version of the printed *Important Safety Instructions* that were included with your Diagnostic Tool kit. The *Important Safety Instructions* document should be read and understood prior to using the Diagnostic Tool.

## Help

A variety of utilities and additional resources are available through the Help menu. Basic menu options, which are available for all modules, include:

- [User Manual](#)
- [Version Info](#)
- [Activation Status](#)

## User Manual

This option opens this document, which provides overall navigation and operation information for the Diagnostic Tool.

## Version Info

This option opens a window showing the version of the VERUS software and the Software License Agreement (Figure 3-2). Select **OK** to close the window.

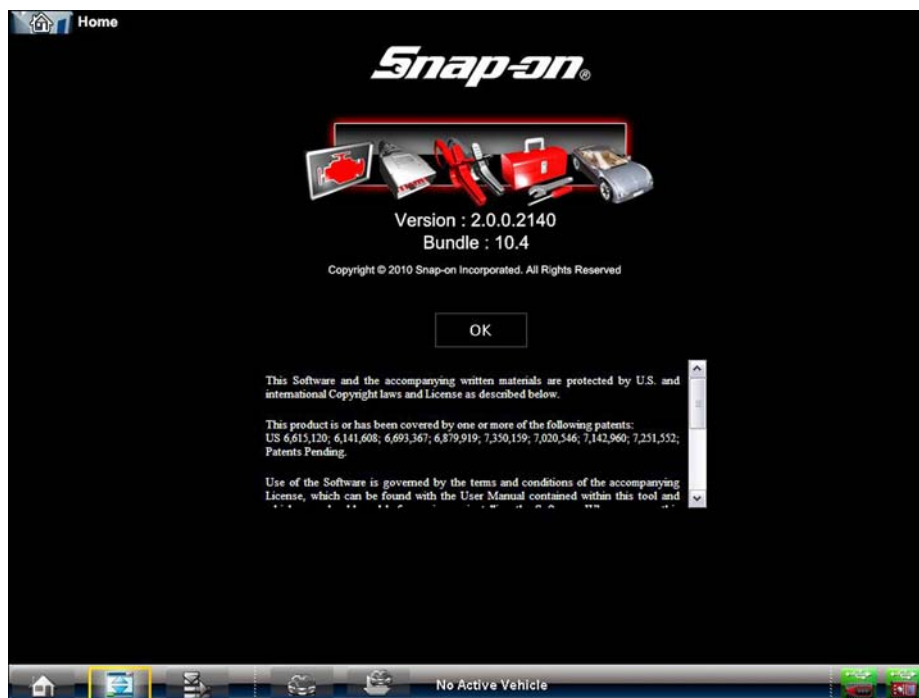


Figure 3-2 Sample software version screen

## Activation Status

This option opens a dialog box with version and licensing details for the system, and activation status for the Diagnostic Tool and all other modules.







## View Record

The year make and model of vehicle currently identified is shown on the toolbar. Selecting the icon opens the worksheet, or service record, of the test vehicle (Figure 3-3).

Figure 3-3 Sample vehicle worksheet

Use the virtual keyboard to enter data in the worksheet and select Back when finished. A toolbar at the top of the screen controls worksheet operations as explained in the table below:

Table 3-3 Worksheet toolbar icons

Name	Icon	Description
Back		Selecting this icon returns you to the previously viewed screen.
Print		Selecting this icon sends the worksheet to a printer.
Attachments		Opens a window for attaching supplemental files, such as a screen capture or data printout, to the vehicle records.
Add		Displays once Attachments is selected, opens a search window for locating supplemental files.
View		Displays once Attachments is selected, opens an attached file.
Delete		Displays once Attachments is selected, removes an attached file.

### 3.1.3 Windows Toolbar

This is the standard Windows toolbar. Your VERUS Diagnostic Tool is a fully functional personal computer based on the Windows Embedded Standard operating system. Refer to Microsoft documentation for additional information.

## 3.2 Turning Off

All vehicle communication must be terminated before shutting down the VERUS Diagnostic Tool. Failure to do so may lead to ECM problems on some vehicles. Always exit the Scan Module before turning off the VERUS Diagnostic Tool.



#### To turn off the VERUS Diagnostic Tool:

1. Open the Windows **Start** menu.
2. Select **Turn Off Computer**.
3. Select **Turn Off** in the dialog box.

The open programs close and the power switches off.

### 3.2.1 Emergency Shutdown

In case of emergency, press and hold the Power button to force a shutdown.



On early-model VERUS Diagnostic Tools the Scanner function is built into the Diagnostic Tool. On later-model Diagnostic Tools the Scan Module is a stand-alone unit that communicates wirelessly with the VERUS Diagnostic Tool. Operation and function are similar for both the integral Scanner and the wireless Scan Module. The information in this chapter applies to both, unless otherwise specified.

The Scan Module allows you to establish a data link to the electronic control systems of the vehicle being serviced to retrieve diagnostic trouble codes (DTCs), view live data parameters, and perform tests. The Scan Module can access the electronic control module (ECM) for various vehicle control systems such as engine, transmission, antilock brake system (ABS) and more.

Testing requires connecting the Scan Module to the test vehicle using the data cable and test adapters. The Scan Module communicates wirelessly with the VERUS Diagnostic Tool. Instructions on the VERUS screen tell you how to connect the Scan Module. Additional connection information can be found in the appropriate vehicle communication software manual for the test vehicle, which is available through the Help menu.

## 4.1 Getting Started

Before initial use the Scan Module must be synchronized with the VERUS Diagnostic Tool to establish a communication link. Refer to [Pairing the Wireless Scan Module](#) on page 132 for instructions and additional information.

The following steps get you started communicating with a vehicle:

1. Select the Scanner icon on the Home screen to start the Scanner software
2. Follow the screen instructions to identify the test vehicle
3. Connect the VERUS Diagnostic Tool to the test vehicle with the data cable
4. Navigate through the Scanner menus to begin testing

A demonstration program allows you to become familiar with Scan Module operations and testing without being connected to an actual vehicle.

### 4.1.1 The Demonstration Program

The Scan Module demonstration program allows you to become familiar with many of the test capabilities without connecting to a vehicle. Sample data and mock test results help you learn the menus and basic operations.

When applicable, both the Scan Module and the Diagnostic Tool must be powered on.



### To start the demonstration program:

1. From the VERUS Home screen, select the **Scanner** icon.  
The manufacturer menu displays. This menu includes all makes that are covered by any of the VERUS modules, not just those for which information is available. There is a Demonstration icon that starts the Demonstration program also included in the list.
2. Select the **Demonstration** icon.

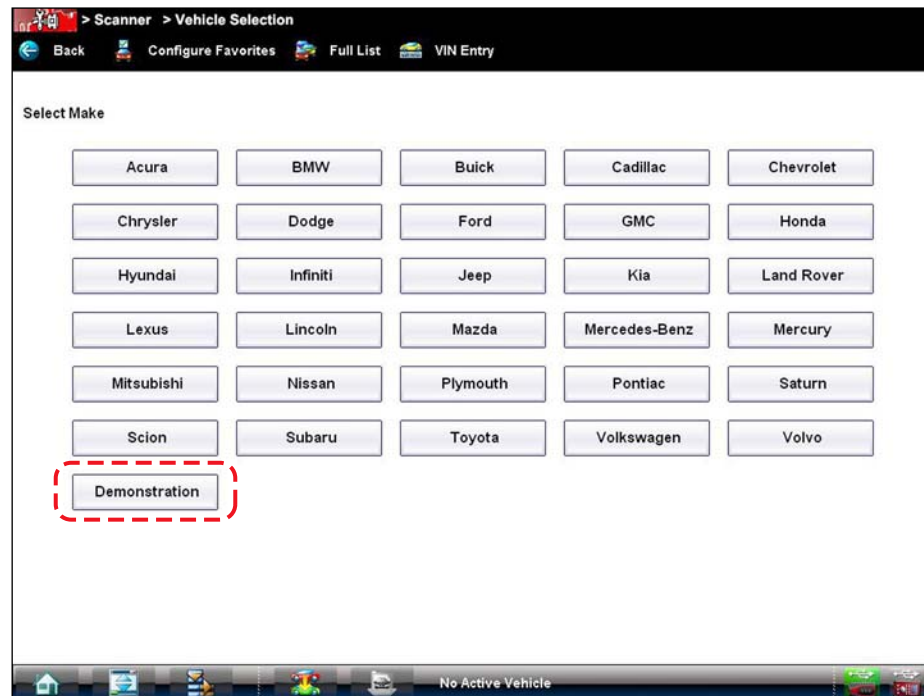


Figure 4-1 Sample demonstration selection

A screen with two choices now displays:

- US Domestic—contains actual data captured while driving a 2001 Chevrolet Tahoe. Look for the throttle position (TP) sensor dropout while analyzing the data in Graphing mode.
  - OBD Training Mode—provides simulated data for an OBD-II/EOBD vehicle that allows you to access any of the standard functions.
3. Select either option and a confirmation message displays.
  4. Select **Ok** to load the selected database.
  5. Follow the on-screen instructions and select as needed until the Systems menu displays.
  6. Select from any of the systems listed, then select from the submenus.

---

#### **IMPORTANT:**

Do not connect a vehicle to the VERUS Diagnostic Tool while in the Demonstration mode.

---

## 4.1.2 Disconnecting the VERUS Diagnostic Tool From a Vehicle

When disconnecting the VERUS Diagnostic Tool from the vehicle, make sure the Scan Module software is not communicating with the vehicle.



**To exit the Scan Module and disconnect the VERUS Diagnostic Tool from a vehicle:**

1. From a codes or data display screen, select the **Exit** icon on the upper toolbar.



Figure 4-2 Sample upper toolbar Exit icon

The screen goes to the codes or data menu.

2. Select the **Back** icon on the upper toolbar.



Figure 4-3 Sample upper toolbar Back icon

The screen goes to the system menu.

3. Select the **Back** icon on the upper toolbar.

A “stopping communication” briefly displays followed by the systems menu.

4. Select the **Change Vehicle** icon on the VERUS toolbar.



Figure 4-4 Sample VERUS toolbar Change Vehicle icon

The vehicle description on the toolbar should now read “No Active Vehicle”.

5. Select the **Home** icon on the VERUS toolbar.



Figure 4-5 Sample VERUS toolbar Home icon

The Home screen displays.

6. Disconnect the test adapter from the vehicle connector.



**NOTE:**

Damage to the electronic control module (ECM) of the vehicle can occur if communication is disrupted. Ensure that the vehicle communication cable is properly connected at all times during testing. Exit testing before removing the test cable or turn off the Diagnostic Tool.

### 4.1.3 Vehicle Identification

The Scan Module information presented is provided by a direct link to the ECM of the vehicle being tested. Therefore, certain attributes of the test vehicle must be entered into the VERUS Diagnostic Tool so that the data displays correctly. Vehicle identification information is carried over if you enter the Scan Module either from the Guided Component Test module or from one of the records stored in the Vehicle History module. However, in some instances, you may need to enter additional attributes.

The vehicle identification sequence is menu driven, you simply follow the screen prompts and make a series of choices. Each selection you make advances you to the next screen. A Back icon in the upper left corner of the screen returns you to the previous screen. Exact procedures may vary somewhat by vehicle.



#### To identify a vehicle for Scan Module testing:

1. Select the **Scanner** module icon from the Home screen.  
A list of manufacturers displays (Figure 4-6).

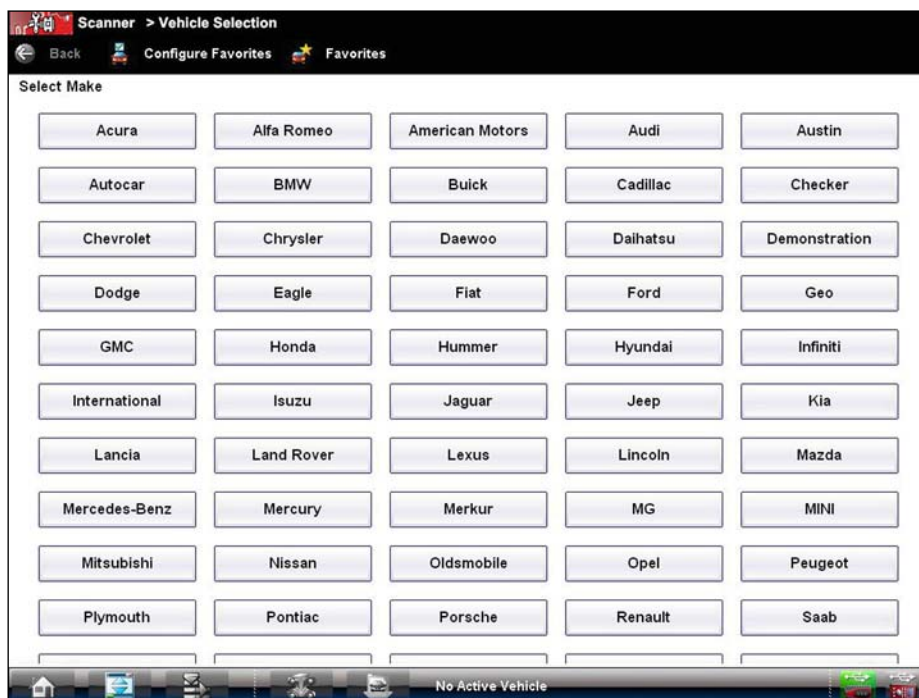


Figure 4-6 Sample manufacturer list

2. Select the manufacturer of the test vehicle from the list.  
A model year menu displays.



#### NOTE:

You can limit the number of manufacturers that appear on the list by selecting Configure Favorites from the toolbar. See [Creating a Favorites List](#) on page 67 for details.

3. Select the year of the test vehicle from the menu.  
A list of vehicle types or models displays. Several selections may be required to identify the vehicle type and model, follow the screen prompts and enter the required information.

- A confirmation dialog box displays once all the required data has been entered.
4. From the Confirm vehicle details dialog box, select:
    - a. **OK** to continue.
    - b. **Cancel** to return to the engine list.When Yes is selected list of systems available for testing on the identified vehicle displays.
  5. Select a test to continue (Figure 4-7).

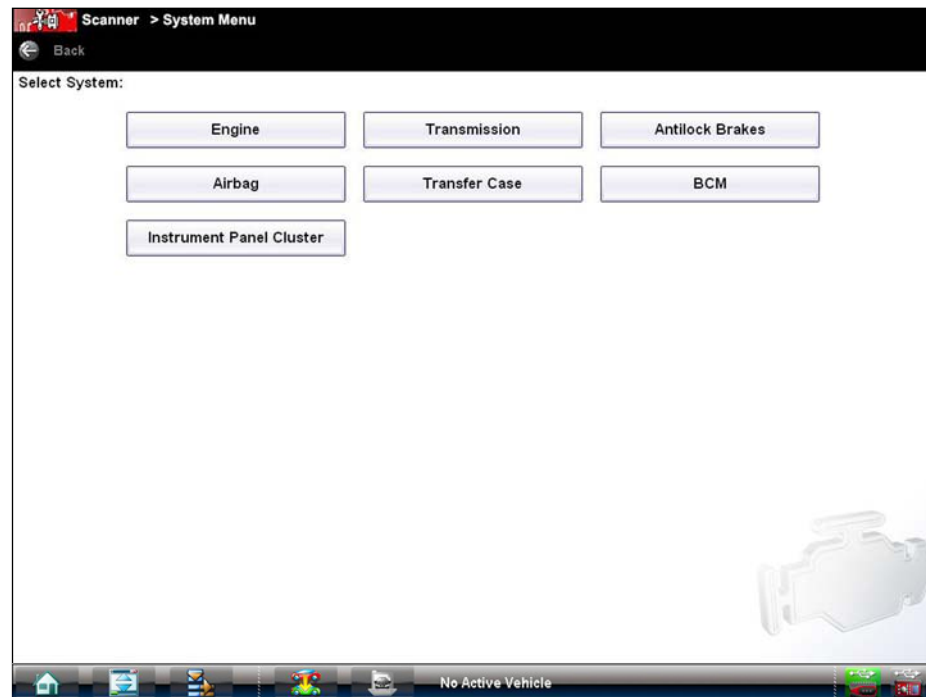


Figure 4-7 Sample available tests list

The identification sequence is now complete, refer to the Operations section that follows for details on how to navigate through the data and perform tests.



**NOTE:**

If you return to the Home screen and select Guided Component Test, Information, or another module, the vehicle identification entered here is carried over. However, additional information may be needed in some instances.

### Alternative Vehicle Identification

Occasionally, you may identify a test vehicle that the Scan Module does not recognize, the database does not support, or has some unique characteristics that prevent it from communicating with the Scan Module through the normal channels. In these instances, a menu of alternate choices that allow you to establish communication with the vehicle by other means displays. In addition to being able to identify a different manufacturer, the following alternative is available:

- OBDII/EOBD—allows you to perform generic OBD-II or EOBD tests, see [OBD Direct](#) on page 56 for additional information.

## 4.1.4 Menu icon Options, Scanner

The Toolbar Menu icon at the base of the screen opens a menu near the top of the display.

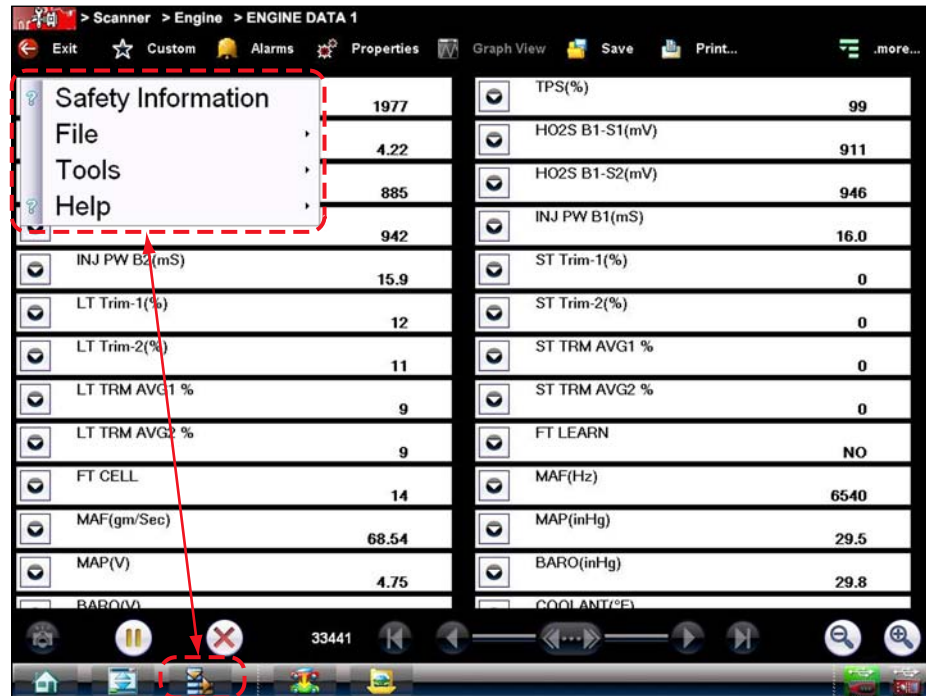


Figure 4-8 Sample Scanner Menu icon options

The following Menu icon options are available:

- [Safety Information](#)—opens the *Important Safety Instructions* explained previously.
- [File](#)—allows you to print or save the data being viewed.
- [Tools](#)—allows you to perform certain maintenance operations and adjust tool settings.
- [Help](#)—allows you to view supporting documentation.

### File

Use to print or save a copy of the data currently being viewed. Menu options include:

- **Save**—opens a submenu with these options:
  - **Screenshot**—saves a graphic image of the current screen.
  - **Collected Data**—saves a recording of all the data currently in the buffer plus the number of frames designated after the trigger event (see [Properties](#) on page 47).
- **Print**—opens a submenu with these options:
  - **Screenshot**—sends the current screen image to a printer.
  - **Troubleshooter**—prints the full text of the troubleshooter topic shown in the main body.

Selecting an option opens a Windows Print dialog box for printing or saving the file.

## Tools

This option allows you to adjust tool settings to your personal preferences. Selecting Tools opens a menu with two options:

- [Units Setup](#)
- [Display BEN](#)

### Units Setup

The units of measurement can be changed for temperature, vehicle speed, air pressure and other pressure readings. Choose between US customary or metric units of measure.

**NOTE:**

All measurement units return to their default values when different software is selected.

**To change the units setup:**

1. Select **Tools > Units Setup**.  
The Measurement Units Setup dialog box opens.

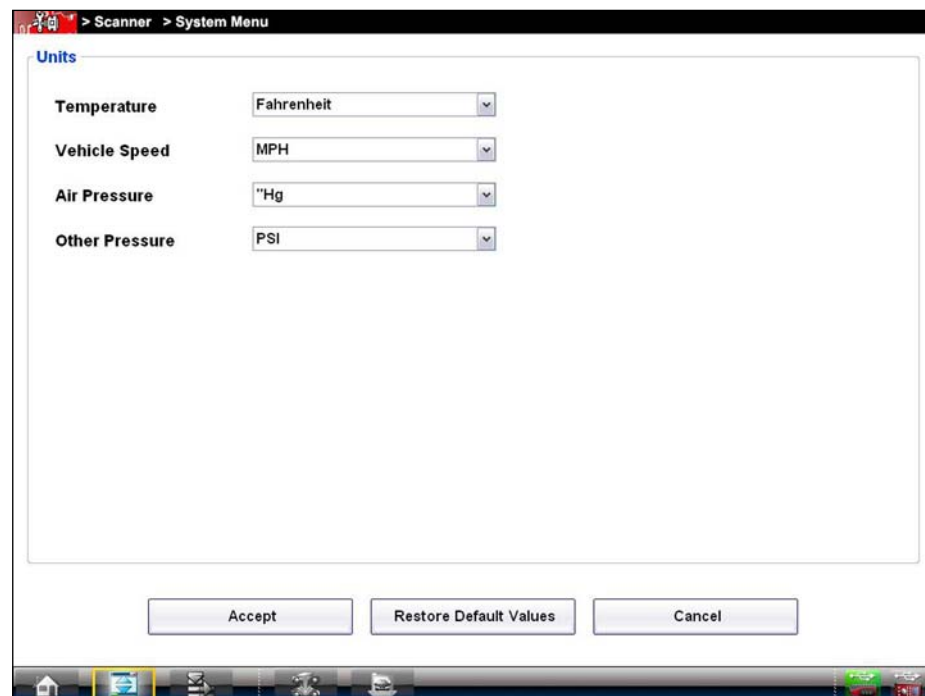


Figure 4-9 Sample Units Setup screen

2. Use the dropdown menus to select the desired value for each item.
3. Select **Accept** to close the dialog box and apply the changes.

### Display BEN

Selecting opens a screen with the Balco Engine Number (BEN) of the currently identified vehicle. The BEN is used internally for data coordination, and you may be asked to provide this number to a Customer Care representative for troubleshooting communication problems.

## Help

A variety of utilities and additional resources are available through the Help menu:

- [User Manual](#)
- [Version Info](#)
- [Activation Status](#)
- [User's Manuals](#)
- [About Scanner Hardware Version](#)
- [About Scanner](#)

The User Manual, Version Info, and Activation Status options are the same as explained previously, see [Menu Icon Options](#) on page 14 for details. Other options are explained below.

### ***User's Manuals***

This option opens a menu of additional support documentation, such as vehicle communication software manuals, available to assist in your diagnosis. These manuals provide connection information, detailed test procedures, and other resource material for specific vehicles.

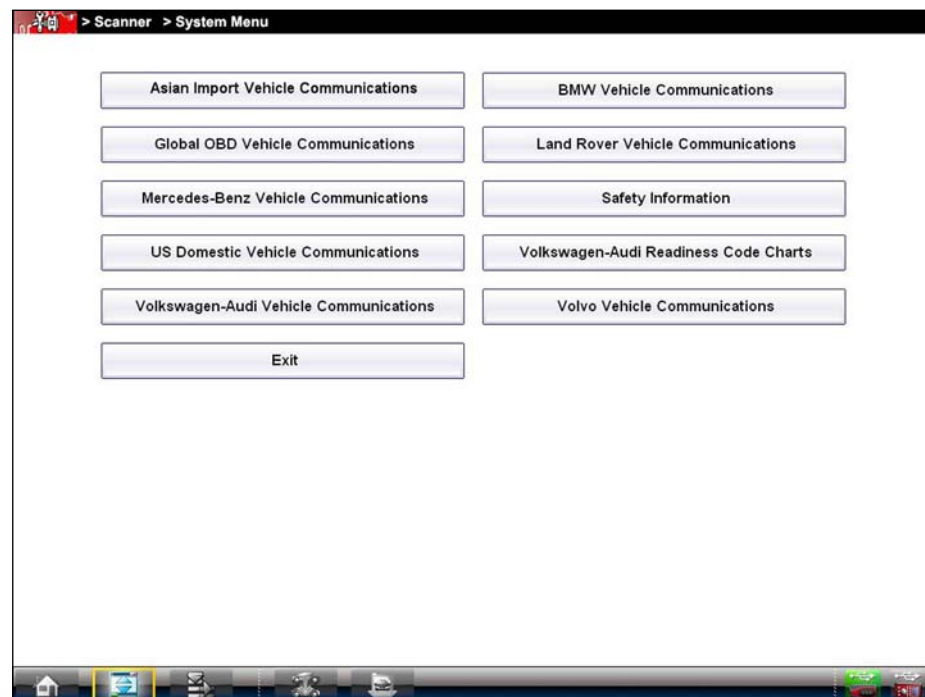


Figure 4-10 Sample User's Manuals menu

Select **Exit** to close the Help module and return to the Scanner.

### ***About Scanner Hardware Version***

This option opens a dialog box showing the hardware version and other details about the Scanner module. A **Copy to Clipboard** icon allows you to paste the information to a document or e-mail.

### ***About Scanner***

This option opens a dialog box that shows the software version and other details about the Scanner module. A **Copy to Clipboard** icon allows you to paste the information to another document or e-mail.



## 4.2 Connecting to a Vehicle

### 4.2.1 Data Cable Connection

Connection of the data cable to the Diagnostic Tool and vehicle DLC is required for Scanner and OBD-II/EOBD testing.

Depending on the vehicle, the supplied DA-4 data cable may be used alone or may require optional adapters.

- **All OBD-II/EOBD compliant vehicles** - Use the supplied DA-4 data cable. The 26-pin end of the cable attaches to the data cable connector on the top of the Diagnostic Tool. The 16-pin end connects to the vehicle DLC. The cable connectors are secured with captive screws.
- **All non-OBD-II/EOBD (OBD-I) compliant vehicles** - Use the supplied DA-4 data cable with the optional DA-5 adapter and a manufacturer specific adapter. The 26-pin end of the cable attaches to the data cable connector on the top of the Diagnostic Tool. The 16-pin end connects to the DA-5 adapter, the DA-5 adapter connects to the manufacturer specific adapter and then connects to the vehicle DLC. The cable connectors are secured with captive screws.

On-screen cable and adapter connection instructions are provided while using the Scanner and OBD-II/EOBD functions. The instructions may also include the location of the vehicle DLC (Figure 4-11). If required, additional connection information can be found in the appropriate vehicle communication software manual for the vehicle. Vehicle communication software manuals are available online, see the website information at the front of this manual

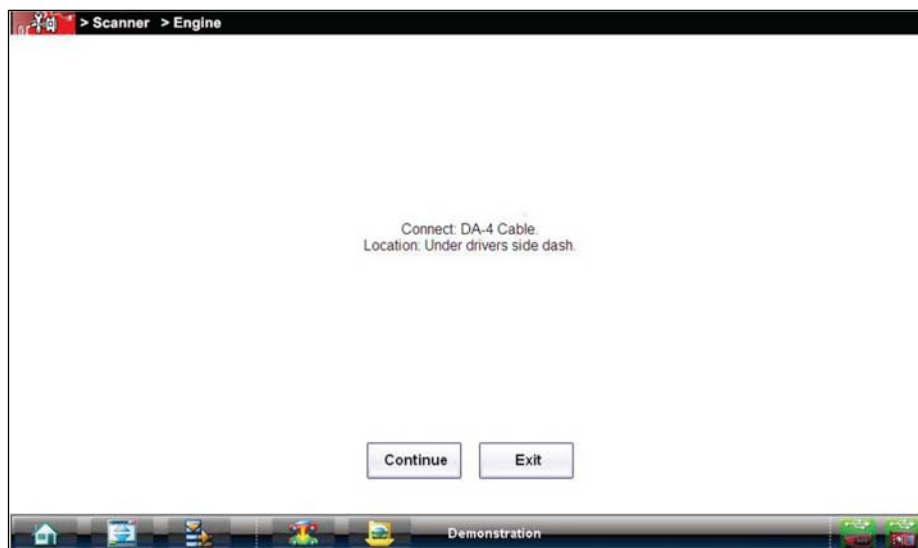


Figure 4-11 Vehicle connection data cable message

For data cable vehicle power connection information, see [Vehicle Power](#) on page 6.



#### To connect the data cable to the vehicle:

1. Follow the on-screen instructions for connecting to the vehicle (Figure 4-11).
2. Select **Continue** once the data cable is connected.

The Diagnostic Tool establishes communication then displays a list of available tests. If the Diagnostic Tool is unable to establish a communications link, a “no communications” message displays.

3. Select from the available tests to open a submenu of test options.

## 4.2.2 No Communication Message

When the screen displays a “no communication” message, it means the VERUS Diagnostic Tool and the vehicle's electronic control module cannot communicate with each other for some reason.

The following conditions cause a “no communication” message to display:

- The Scan Module is unable to establish a communication link with the vehicle.
- You selected a system for testing that the vehicle is not equipped with (such as ABS).
- There is a loose connection.
- There is a blown vehicle fuse.
- There is a wiring fault on the vehicle, or in the data cable or adapter.
- There is a circuit fault in the data cable, Personality Key, or adapter.
- Incorrect vehicle identification was entered.

Refer to the Vehicle Communication Software manuals for manufacturer-specific problems.

## 4.3 Navigation

This section describes how to navigate the Scan Module interface and select Scan Module tests.

### 4.3.1 Scanner Screen Layout

The Scanner screens typically include three sections (Figure 4-12):






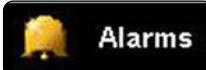







- 1— Scanner Toolbar
- 2— Main Body
- 3— Data Buffer Toolbar

Figure 4-12 Scan Module screen layout

## Scanner Toolbar

The Scanner toolbar contains a number of icons that allow you to configure the displayed data and to exit. The table below provides a brief explanation of the Scanner toolbar icon operations:

**Table 4-1** Scanner toolbar icons

Name	Icon	Description
Exit		Closes the current test and returns you to the menu.
Back		Returns to the previously viewed screen.
Custom		Allows you to select which parameters are displayed on the screen.
Alarms		Allows you to set an alarm on certain data parameters when the signal goes above or below the alarm setting.
Properties		Allows you to adjust the display characteristics for all of the data screens.
Graph View		Allows you to simultaneously view up to 16 data graphs at a time.
Save		Saves a copy of the current frame of data that can be viewed on the tool or in ShopStream Connect.
Print		Opens a standard Windows Print dialog box for saving a print copy of the current frame of data.
More		Opens a dropdown menu of the additional options shown below.
Scale		Switches the scale values, displayed along the left-hand side of the graphs, on and off.
Sweep		Switches the sweep values, displayed at the base of the graphs, on and off.

## Main Body

The main body of the screen varies depending on the stage of operation. The main body can show vehicle identification selections, the main menu, test data, instructions, troubleshooting information, controls, and other diagnostic information.

## Data Buffer Toolbar

Whenever communication is established with a vehicle, the Scan Module continuously records data transmitted by the ECM in the data buffer. The toolbar below the main body of the screen contains the icons for navigating this buffered data.

Use the slider in the middle of the toolbar to quickly move through paused data.





Figure 4-13 Sample data buffer slider

Use the toolbar icons (Table 4-2) to more precisely navigate the data.

Table 4-2 Data buffer toolbar icons (sheet 1 of 2)

Name	Icon	Description
Go To Start		Moves to the first frame in the data buffer
Pause		Suspends data capture and changes to show the Play icon
Play		Starts or resumes data capture and changes to show the Pause icon
Go To End		Moves to the last frame in the data buffer
Clear		Erases data in the data buffer
Step Back		Moves to the previous frame in the data buffer
Frame Counter		Indicates the data buffer frame currently displayed
Step Forward		Moves to the next frame in the data buffer
Snapshot		Arms the VERUS software to take a snapshot of vehicle data

Table 4-2 Data buffer toolbar icons (sheet 2 of 2)

Name	Icon	Description
Zoom In		Increases the magnification by decreasing the sweep of the graph
Zoom Out		Decreases the magnification by increasing the sweep of the graph

### 4.3.2 Screen Messages

Screen messages appear when additional input is needed before proceeding. There are three types of on-screen messages; confirmations, warnings, errors.

#### Confirmation Messages

Confirmation messages inform you when you are about to perform an action that cannot be reversed or when an action has been initiated and your confirmation is needed to continue.

When a user-response is not required to continue, the message displays briefly before automatically disappearing.

#### Warning Messages

Warning messages inform you when completing the selected action may result in an irreversible change or loss of data.

#### Error Messages

Error messages inform you when a system or procedural error has occurred.

Examples of possible errors include:

- A cable is disconnected.
- A peripheral, such as a printer is powered off.

### 4.3.3 Making Selections

The Scan Module software is a menu driven program that presents a series of choices one at a time. As you select from a menu, the next menu in the series displays. Each selection narrows the focus and leads to the desired test. Use your fingertip or the stylus to make menu selections.

## 4.4 Operations

The Scan Module allows you to establish a data link to the electronic control systems of the vehicle being serviced in order to view live data parameters and perform tests. You can use selected functional tests, get troubleshooting tips, and vehicle-specific trouble codes for various vehicle control systems such as engine, transmission, antilock brake system (ABS) and more.

The Scan Module has two main functions:

1. **Scanner**—provides access to Vehicle Communication Software functions such as reading codes, viewing data, and performing functional tests.
2. **Fast-Track Troubleshooter**—provides the diagnostic power of Fast-Track Troubleshooter, a database of experience based information developed by master technicians.

After a system is selected and the Scan Module establishes communication with the vehicle, a Scan Module Main menu, which lists available tests, displays. The main menu may include:

- **Data Display**—displays data parameter information from the vehicle ECM. Selecting may open a submenu of viewing options.
- **Codes Menu**—displays diagnostic trouble code (DTC) records from the vehicle ECM. Selecting may open a submenu of viewing options.
- **Clear Codes**—erases DTC records and other data from the ECM. This selection is found on a Codes submenu for some models.
- **Functional Tests**—provides specific subsystem and Guided Component Tests. The tests vary depending on the manufacturer and model.
- **Actuator Tests**—similar to functional tests, checks the operation of certain actuators, such as solenoid valves and relays.
- **Memory Resets**—allows you to reprogram adaptive values for certain components after making repairs. Selecting opens a submenu. These options are found on the Functional Tests Menu for some models.
- **System Tests**—provides specific subsystem testing. Performing these tests is similar to functional tests.
- **Generic Functions**—lets you access certain available Generic OBD II functions from a proprietary menu (1996 and newer vehicles only).
- **Troubleshooter**—provides step-by-step procedures, integrating parameter data and retrieving trouble codes when appropriate, for specific symptoms of the identified vehicle.



### To perform a Scan Module test

1. **Start the Scan Module**—Select Scanner on the VERUS Home screen.
2. **Identify the vehicle**—Identify the test vehicle by selecting from the menu options.
3. **Select the system**—Select the system to be tested from the systems menu.
4. **Connect the data cable to the vehicle**—Follow the on-screen connection instructions.
5. **Select the test from the Scanner main menu**—Select the desired test.

## 4.4.1 Data Display

Depending upon the test vehicle, this selection may appear as Data, Data Display, Data Only, Data (No Codes), or something similar. All are the same, selecting has one of the following results:

- A submenu of data viewing choices displays.
- Vehicle data displays.

A submenu displays when more than one data viewing mode is available on the identified vehicle. On some models, the engine must be started or cranked before data can be displayed. For these models, a "Waiting to Communicate" message displays if the engine was not cranked or started.

### Data Screens

When a Data selection is made, the screen displays the data list for the selected module (Figure 4-14). The items available for display vary from one vehicle to another.



- 1— Graph icon
- 2— Parameter name
- 3— Parameter value

Figure 4-14 Sample data screen

Data is presented in a 2-column format. An abbreviated parameter name is at the left of each column and its value is at the right edge of the column. Parameters display in the order that they are transmitted by the ECM, so expect variation between vehicles.

Gesture scrolling allows you to quickly move through the data list. Simply touch the screen and drag your finger up or down to reposition the parameters being displayed. Position bars that momentarily appear to the right of each column while scrolling indicate the position of the current screen in relation to the entire list. Each column of parameters scrolls independently of the other.

## Data Graphs

Select the **Graph** icon to open a data graph for that parameter (Figure 4-15). Selecting a parameter for graph view moves it to the top of the list. Select the **Graph** icon a second time to close the graph for that parameter and return to a data list view.

You can view up to six graphs at a time on the standard VERUS screen, and up to sixteen graphs at a time when Graph View is selected from the toolbar. Refer to [Graph View](#) on page 48 for additional information.





Figure 4-15 Sample graph view



Two icons display on each data graph that allow you configure settings for the selected graph only:

**Table 4-3** Data graph icon operations

Name	Icon	Description
Expand/Collapse		Select to expand the graph to fill the entire screen, select again to collapse the graph to the standard view.
Graph Properties		Select to open the Graph Properties dialog box, which allows you to set triggers for recording a snapshot and to adjust the scale.

### Triggers

Triggers establish threshold values, an upper limit and a lower limit, for recording a data snapshot. A snapshot allows you to closely evaluate conditions that caused the triggering event.

When a snapshot is taken, the Scanner captures additional data after the trigger point is detected, data collection pauses, and the buffered information is automatically saved as a movie. This gives you a complete picture of what was happening before the fact, what occurred at the trigger point, and what happened after the fact.

Data collection is paused following a trigger event. Select the **Play** icon to resume viewing live data. A vertical line now appears on each of the data graphs to indicate the triggering point. The trigger line on the parameter that triggered the snapshot is a different color than those on the other graphs. This makes it easy to determine which parameter caused the trigger when triggers are set for multiple parameters.



#### To adjust the amount of data collected after a trigger:

1. Select the **Properties** icon on the Scanner toolbar to open the dialog box.
2. Highlight one of the **Samples After Trigger** options.
3. Select the Accept icon to close the dialog box.



#### NOTE:

You can also adjust the amount of data collected after a triggering event using the Properties icon on the Scanner toolbar. See [Properties](#) on page 47 for additional information.



### To set triggers and record a snapshot:

1. Select the Graph Properties icon on the parameter to set triggers on to open the dialog box.
2. From the Graph Properties dialog box, select **Triggers On**.

The box is checked and the minimum and maximum fields activate (Figure 4-16).

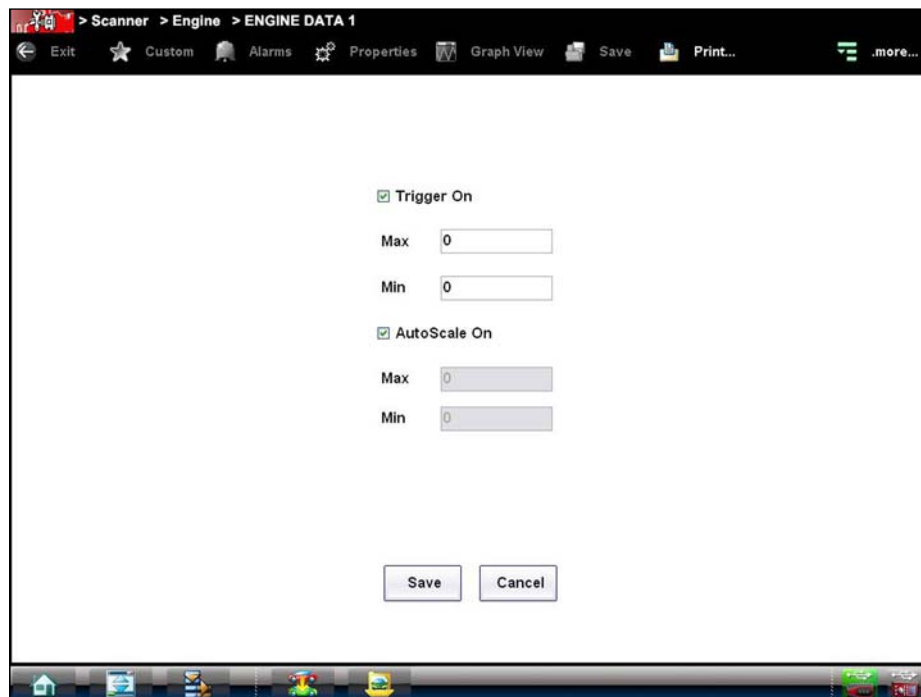


Figure 4-16 Sample Graph Properties dialog box

3. Select either **Max:** (maximum) or **Min:** (minimum) to activate that field and open the keyboard.
4. Type the desired trigger value into the field.
5. Select the other field and enter a trigger value, then close the virtual keyboard.
6. Select **Save** to close the dialog box.

Trigger lines (blue for upper and red for lower) display on the selected parameter graph.

The area between the upper and lower trigger lines establishes the triggering condition. Once the snapshot is armed, any data points that register outside of the set trigger conditions initiates a snapshot. The Scan Module continues to record the preset amount of data after the trigger and includes it in the snapshot.

7. Select **Snapshot** on the Data Buffer Toolbar to arm the snapshot.

The Snapshot icon changes color to indicate it has been armed.



Figure 4-17 Sample armed Snapshot icon

Once all of the data is compiled, data collection pauses and the information is saved as a movie. A confirmation screen displays to let you know the name automatically assigned to the saved file and where to locate it.

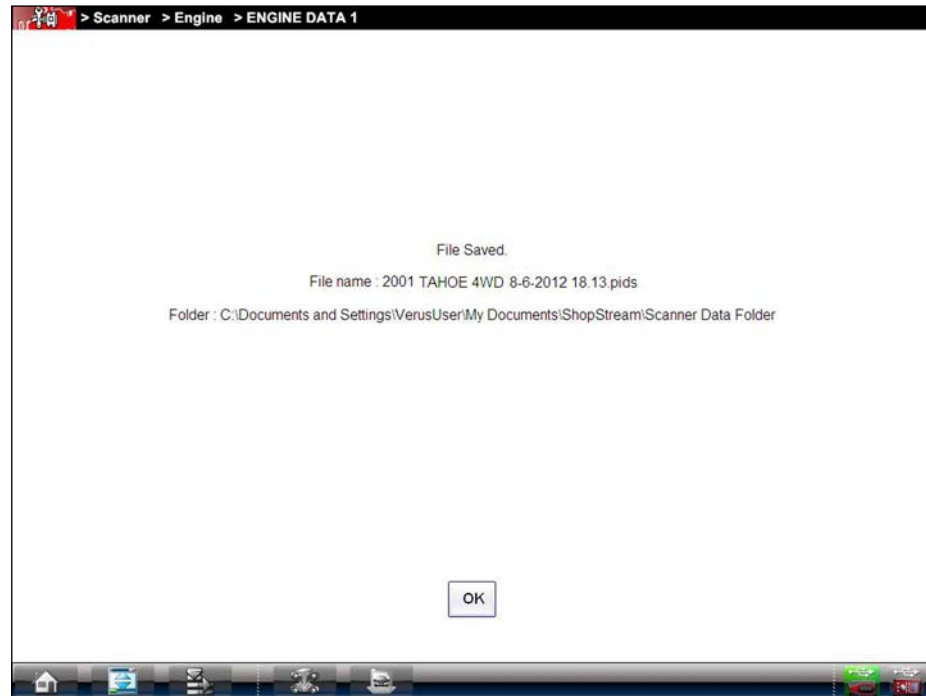


Figure 4-18 Sample saved movie confirmation screen

8. Select **OK** to close the confirmation screen.
9. Select the **Play** icon on the toolbar to resume viewing live data.



---

**NOTE:**

Selecting an armed Snapshot icon disarms it.

---

### **Scale**

Scale adjusts the upper and lower values displayed on the vertical axis of a data graph. Two scale modes are available; auto scale and manual scale. Auto scale, which is the default setting, automatically adjusts the graph scale based upon the minimum and maximum values transmitted by the ECM. Manual scale allows you to set the minimum and maximum values.



### To manually set the scale on a graph:

1. Select the Graph Properties icon on the graph you wish to scale to open the dialog box.
2. From the Graph Properties dialog box, select Auto Scale On.

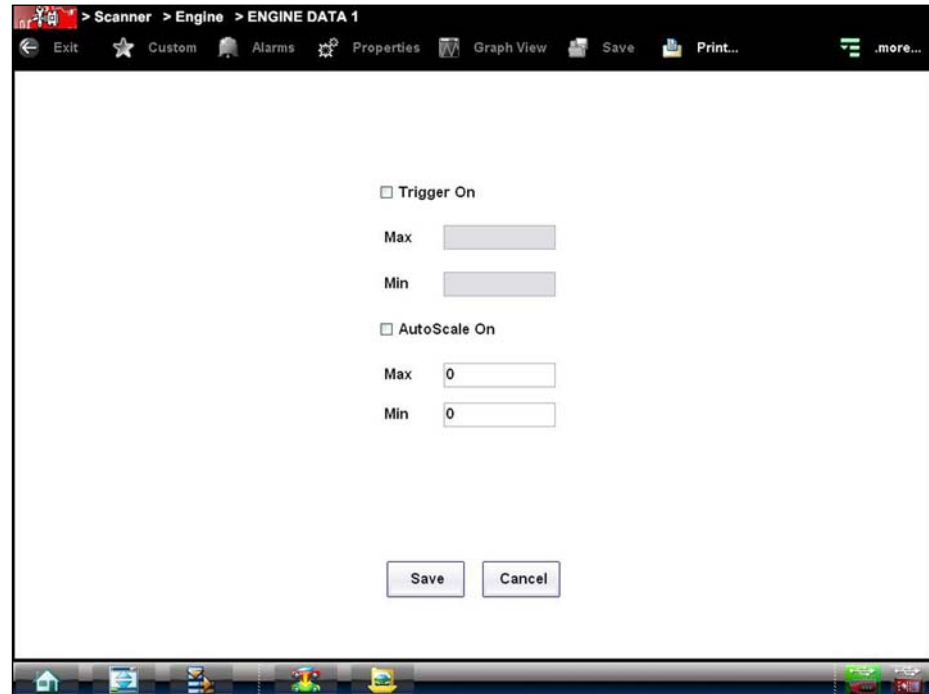


Figure 4-19 Sample manual scale selection

The check mark is cleared from the box and the minimum and maximum fields activate

3. Select either **Max:** (maximum) or **Min:** (minimum) to activate that field and open the keyboard.
4. Type the desired trigger value into the field.
5. Select the other field and enter a trigger value, then close the virtual keyboard.
6. Select **Save** to close the dialog box.

The dialog box closes and the parameter scale is now at the set values.

### Using Zoom

The zoom options Data Buffer toolbar allow you to change the level of magnification of the sweep when viewing graph data. Use the Zoom In (+) icon to increase magnification, and the Zoom Out (-) icon to decrease magnification.

## 4.4.2 Codes Menu

This selection may appear as Codes, Codes Menu, Codes Only, Codes (No Data), or something similar on the menu. Selecting opens a list of data parameter viewing options that may include:

- [Display Codes](#)
- [Clear Codes](#)
- [Freeze Frame/Failure Records](#)
- [DTC Status](#)

## Display Codes

Selecting either opens a list of diagnostic trouble codes (DTCs) stored in the selected electronic control module (ECM), or a submenu of DTC viewing options. Submenu options include:

- **Trouble Code Information**—opens a list of codes in ECM memory.
- **History Codes**—opens a list of codes whose symptoms are not currently present. History codes indicate an intermittently occurring problem.
- **Failed This Ignition**—opens a list of codes that set during the current ignition cycle.
- **MIL SVS or Message Requested**—displays ECM requests to light the malfunction indicator lamp (MIL) or service vehicle soon (SVS) lamp, or display a driver information alert.
- **Last Test Failed**—displays a complete list of failed tests.
- **Test Failed Since Code Cleared**—displays a list of tests that failed since the last time codes were cleared from ECM memory.

A code list includes the DTC, a brief description, and a **Fix It!** icon that opens a dropdown menu (Figure 4-20). The SureTrack frame above a code list can be expanded (**More**) or collapsed (**Less**) by selecting on the up or down caret, respectively. Once you are logged into SureTrack, the common replaced parts graph for the highlighted DTC displays if **More** is selected. See [Common Replaced Parts Graph](#) on page 102 for more details.

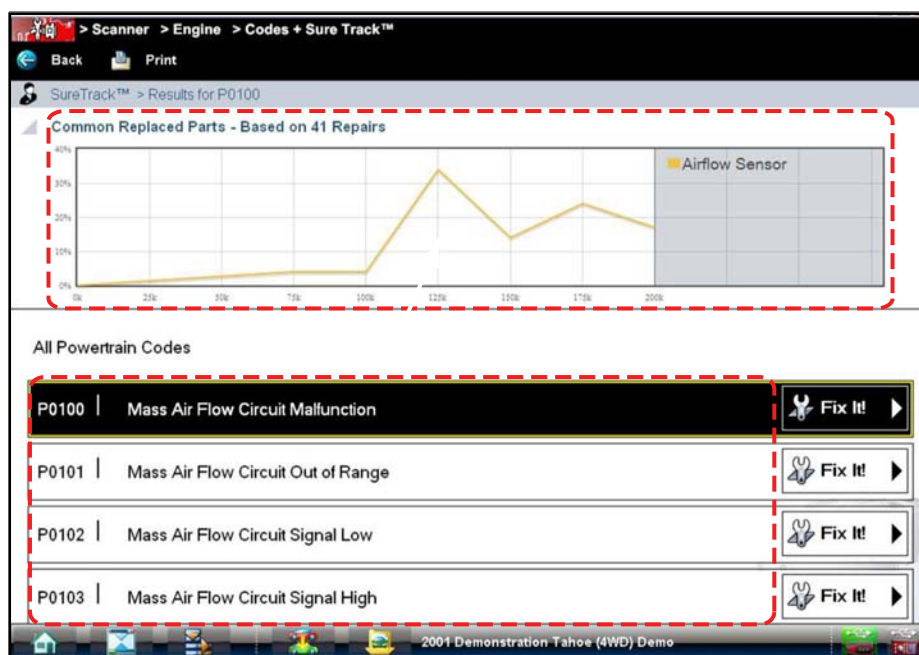


Figure 4-20 Sample code list

## Clear Codes

The Scan Module clears trouble codes from the ECM memory on some vehicles. If this function is not available on the test vehicle, Clear Codes does not appear as a menu option.



### To clear codes:

1. Select **Clear Codes** from the Codes Menu and a confirmation message displays.
2. Make sure any conditions shown on the confirmation message are met, then select **Yes**.
3. A “codes cleared” message displays once the operation is complete.

## Freeze Frame/Failure Records

This selection displays the DTC that was set, along with corresponding data, when the ECM commanded the malfunction indicator lamp (MIL) to turn on.

## DTC Status

This selection allows you to view the records of a particular DTC.



### To check DTC status

1. Select **DTC Status** from the Codes Menu.  
The DTC Status entry field displays and the virtual keyboard opens ([Figure 4-21](#)).

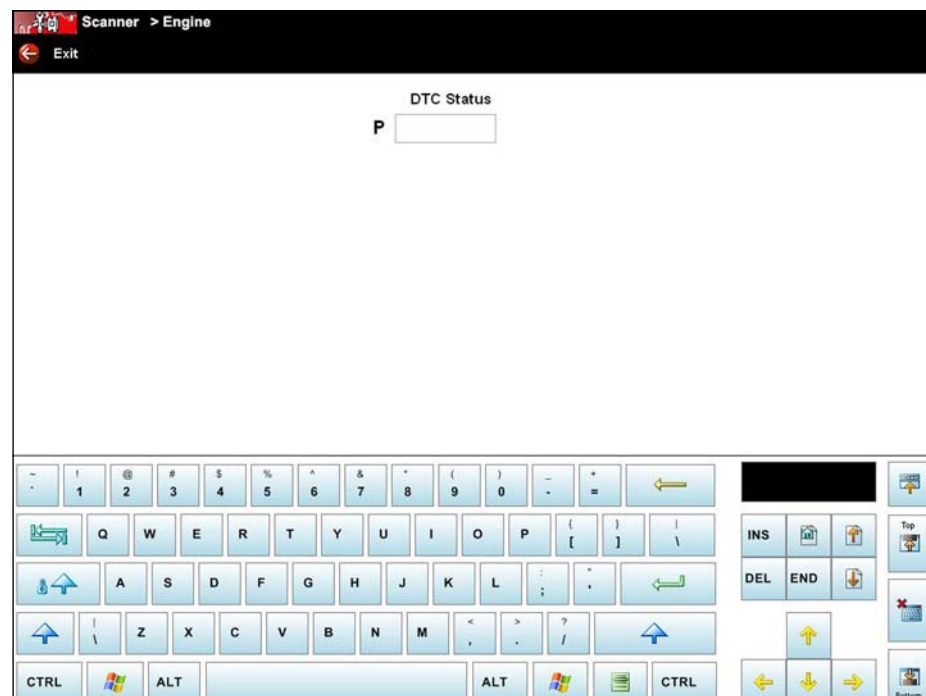


Figure 4-21 Sample DTC Status entry field

2. Use the virtual keyboard to enter the characters of the DTC.
3. Select the virtual keyboard **Backspace** icon if needed to erase a character.

4. Select the **Return** key once all the code characters are entered to open a report (Figure 4-22).

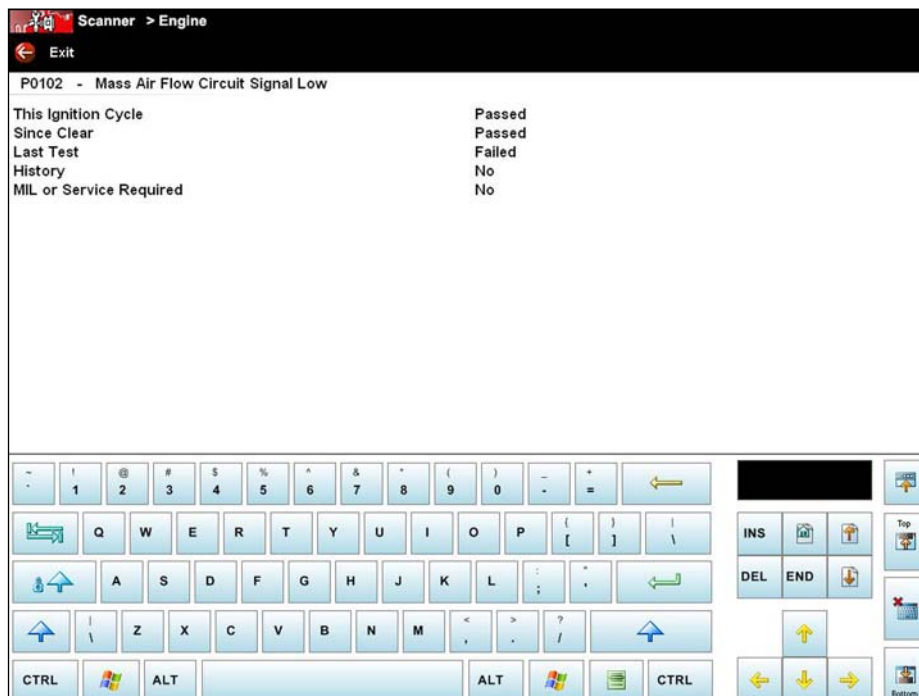


Figure 4-22 Sample DTC status report

5. Select **Exit** to return to the DTC status entry screen.
6. Select **Exit** again to return to the Codes menu.

### 4.4.3 Functional Tests

The **Functional Tests** selection is used to access vehicle-specific subsystem and Guided Component Tests. Available tests vary by manufacturer, year, and model, and only the available tests display in the menu.

There are four general types of functional test operations:

- **Information Tests**—are read-only tests, like selecting “VIN” from a Functional Tests menu to display the VIN of the identified vehicle.
- **Toggle Tests**—switch a component, such as a solenoid, relay, or switch, between two operating states.
- **Variable Control Tests**—command a certain value for a system or component, such as varying the spark timing in 1° increments or the EGR valve duty cycle in 10% increments.
- **Reset Tests**—reset the adaptive, or learned, values that are stored in the ECM.

Selecting Functional Tests opens a menu of test options that varies by make and model. Selecting a menu option either activates the test or opens a submenu of additional choices. Follow all screen instructions while performing tests. How and what information is presented on the screen varies according to the type of test being performed.

Some toggle and variable control tests display functional test controls at the top of the screen with data stream information below (Figure 4-23).

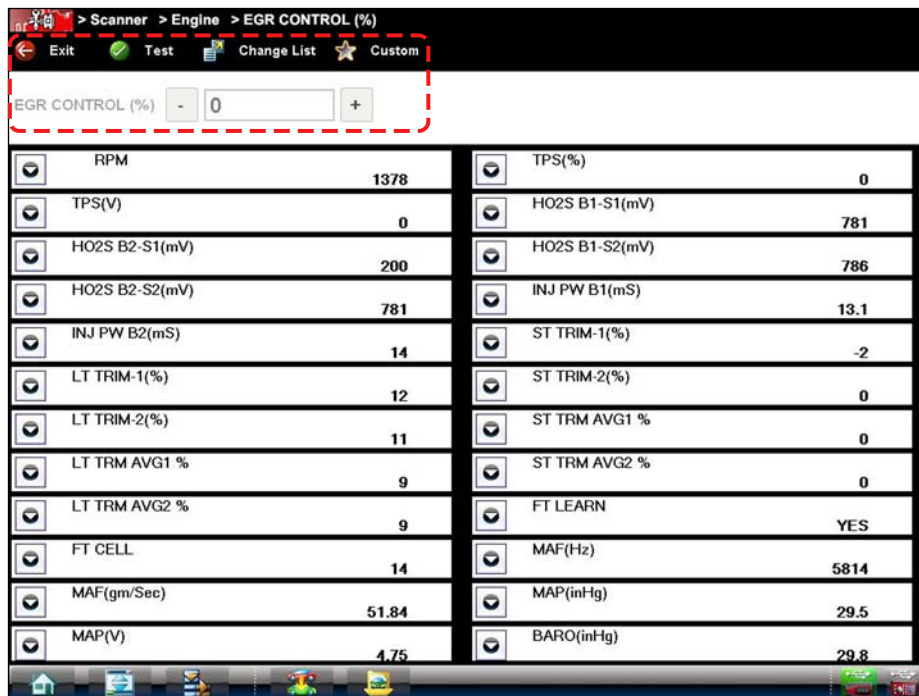


Figure 4-23 Sample functional test controls

Functional test controls allow you manipulate the test signal as shown in Table 4-5.

Table 4-4 Functional test control icons (sheet 1 of 2)

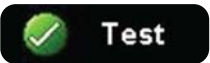







Name	Icon	Description
Test		Activates the test.
Return		Moves focus back to the data list. Scalable values return to their default setting on some tests.
Change List		Allows you to switch data lists.
Custom		Allows you to select which parameters display during the functional test.
On		Switches an item high or on.



Table 4-4 Functional test control icons (sheet 2 of 2)

Name	Icon	Description
Off		Switches an item low or off.
Minus		Switches an item off or low, or incrementally reduces a variable signal.
Plus		Switches an item high or on, or incrementally increases a variable signal.

#### 4.4.4 Generic Functions

The **Generic Functions** selection opens a menu of available OBD-II/EOBD functions on 1996 and newer vehicles. For additional information on generic functions refer to the *Global OBD Vehicle Communications Software Manual*.

Menu options typically include:

- Readiness Monitors—displays the status of the OBD-II/EOBD required monitors
- (\$02) Freeze Frame—displays data stored in ECM memory when a DTC is set
- (\$05) Oxygen Sensor Monitoring—displays on-board oxygen sensor monitoring test results
- (\$06) On-Board Monitored Systems—displays the status of system monitors
- (\$08) Request Control of On-Board System—establishes bidirectional ECM communication
- (\$09) Calibration Identification—displays the ECM calibration identification numbers
- (\$09) Calibration Verification Number—displays the ECM calibration
- (\$09) In-Use Performance Tracking—displays a monitoring conditions report
- (\$09) Vehicle Identification Number—displays the VIN

Refer to the *Global OBD Vehicle Communications Software Manual* for additional information.

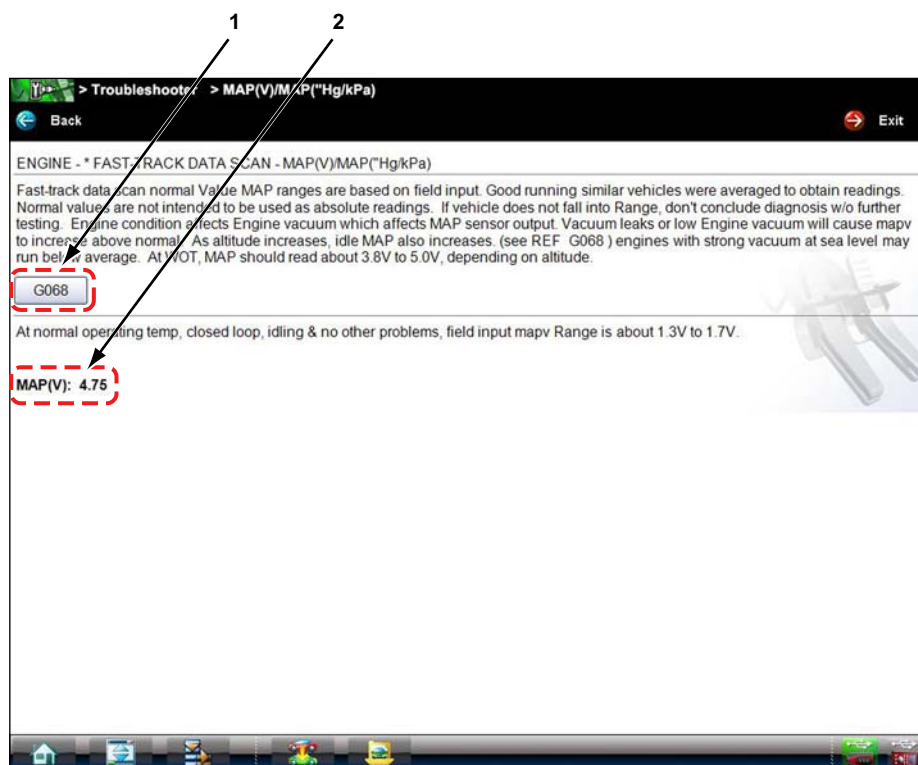
#### 4.4.5 Troubleshooter

Fast-Track® Troubleshooter is a database containing experience-based information of validated real-world repair strategies that have been compiled by top-notch technicians since 1988. The Troubleshooter system simplifies the diagnosis process, as it contains information on virtually all common diagnostic trouble code (DTC) problems and driveability symptoms for most vehicles covered by the vehicle communication software.

Troubleshooter information is organized into a series of diagnostic tips that are designed to quickly lead you to the root cause of a particular problem. The tips are vehicle-specific, which means only tips that relate to the identified vehicle are presented. Selecting opens a Menu, options include:

- **Code Tips**—provides detailed information on setting conditions, testing, and interpreting test results for specific codes.
- **Symptom Tips**—provides diagnostic tests and procedures based on vehicle operation.
- **Time Savers**—provides supplemental information, such as firing order and #1 cylinder location, that may be needed to make a diagnosis.
- **Common Problems**—provides advice and remedies for certain “pattern failures” that have been experienced on vehicles of the same model.
- **Tests and Procedures**—explains how to perform certain tests on the specific test vehicle. Some tips provide specifications and installation information as well.
- **Fast-Track Data Scan (Normal Values)**—contains information and guidelines to quickly validate data readings for certain sensors and actuators, live datastream values are provided.

Troubleshooter References open in a separate window. (Figure 4-24).



1— Hyperlink

2— Live data values

Figure 4-24 Sample data values within a Troubleshooter tip

Certain live data parameter values display directly within the tip when performing Troubleshooter tests and procedures. A tip may also contain a hyperlink to a Troubleshooter Reference, another test or procedure, or a supplemental operation, such as Clear Codes. Hyperlinks are shown as a icon, and selecting them opens the link.

## 4.4.6 Scanner Toolbar Operations

The Scanner toolbar is used to configure certain aspects of the displayed data and to exit. The following sections explain how to use the toolbar.

### Custom

The **Custom** icon on the Scanner Toolbar is used to determine which specific parameters display. Minimizing the number of parameters on the data list allows you to focus on any suspicious or symptom-specific data parameters. You can add or remove most parameters from the list. Any parameter that has a lock icon next to it cannot be removed from the list.

---

#### IMPORTANT:

Limiting the number of parameters to display only those that apply to a particular situation allows for a faster refresh rate of the data. A smaller data lists also reduces the amount of memory used for saved files.

---



#### To create a custom data list:

1. Select **Custom** on the Scanner Toolbar.  
The parameter selection dialog box with all of the parameters selected opens ([Figure 4-25](#)).
2. Select the **Deselect All** icon to clear the highlights from the screen.
3. Create a custom data list by selecting the parameters to be included. Highlighting indicates a parameter that displays, parameters that are not highlighted do not display.

Keep the following in mind when configuring a custom data list:

- If the list of parameters is longer than what is shown on the screen, select and drag the screen to bring the additional parameters into view.
- Use the **Select All** icon to display the complete list.
- Use the **Deselect All** icon to remove all the currently selected parameters from the list.
- Select individual parameters to highlight and include them in the list.
- Select individual highlighted parameters to remove them from the list.
- Use the **Cancel** icon to return to the data display.

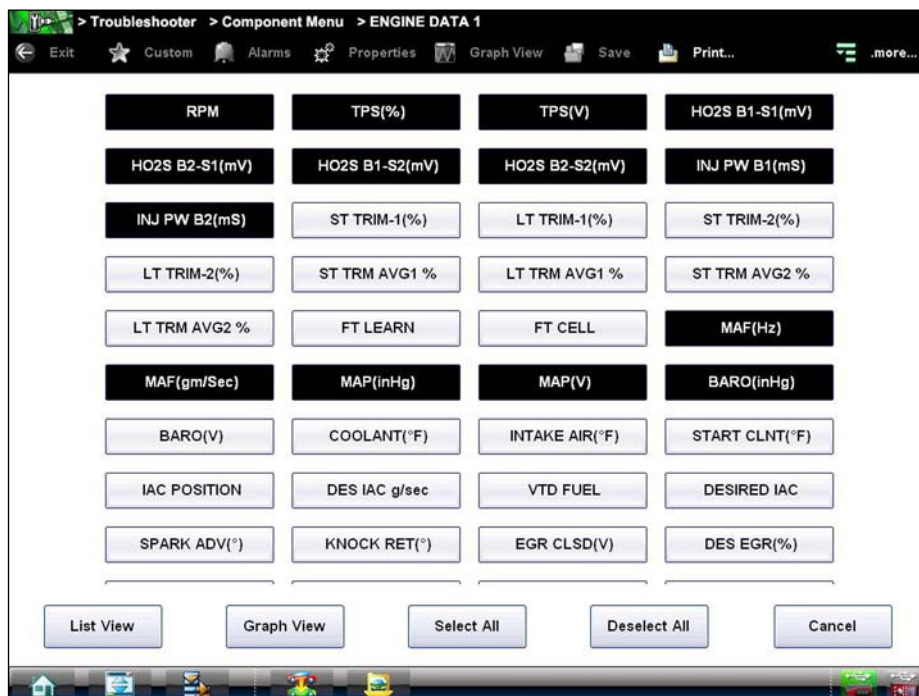


Figure 4-25 Sample custom list configuration screen

4. Once all desired parameters have been selected, return to the data list:
  - Use the **List View** icon to return to a data screen in PID List format.
  - Use the **Graph View** icon to return to a data screen in Graph format.



**NOTE:**

Graph View is only available when 16 or fewer parameters (the number that can display on a single screen) were selected for the custom list. Make sure that no more than 16 parameters are highlighted if the screen does not switch to the data list when the Graph View icon is selected.

## Alarms

**Alarms** are visual indicators next to a parameter in the data display list that change color to show the status of the signal. A green alarm indicates on, a gray alarm indicates off. Only parameters with a range of two states, can have alarms. Parameters with continuous ranges, such as variable voltage and pressure values, cannot have alarms.

The **Alarms** selection is used to configure visual indicators on certain digital data parameters. If a vehicle does not provide signals for these functions, the alarm indicators are unused.

The alarm indicator assignments remain as selected until you exit the data list:



**To configure alarm settings:**

1. Select the **Alarms** icon on the Scanner Toolbar.  
The Alarm List dialog box opens.
2. Check the parameters that you want to show alarms.
3. Select **Save**.

Alarm indicators now appear next to the selected parameters in the Data List. The indicators are green when the value is high, and gray when the value is low (Figure 4-26).

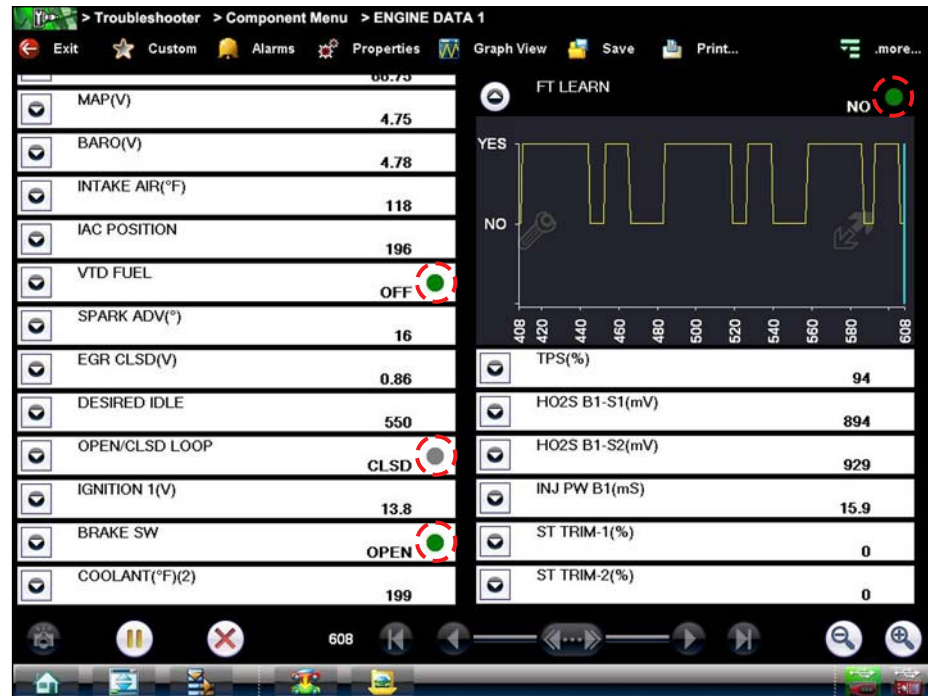


Figure 4-26 Sample alarm indicators



**NOTE:**

Alarms can only be set for certain parameters. If the Alarm List dialog box is empty, no parameters are available and alarms cannot be set.

## Properties

The Properties icon on the Scanner Toolbar is used to configure certain characteristics of the parameter graph display. Selecting opens a Properties dialog box that allows you to adjust colors, settings, and sweep (Figure 4-27).

Selecting either color option, **Edit Plot Color** or **Edit Background Color**, opens a standard color selection dialog box. Select a color, then select **OK** to close the dialog box.

The Show Grid icon is used to switch a background grid pattern on the data graphs on and off:

- To switch the grid on; select to highlight **Show Grid**, then select **Save**.
- To switch the grid off; select **Show Grid** twice so it is not highlighted, then select **Save**.

The Samples After Trigger setting determines how many data samples are recorded following a triggering event. The highlighted samples icon indicates the number of frames that are included in the recording after a triggering event.

The sweep options let you choose the amount of data that displays across the graph. Values are in sample points, or frames of data. A frame of data equals one complete transmission of the serial data by the ECM.

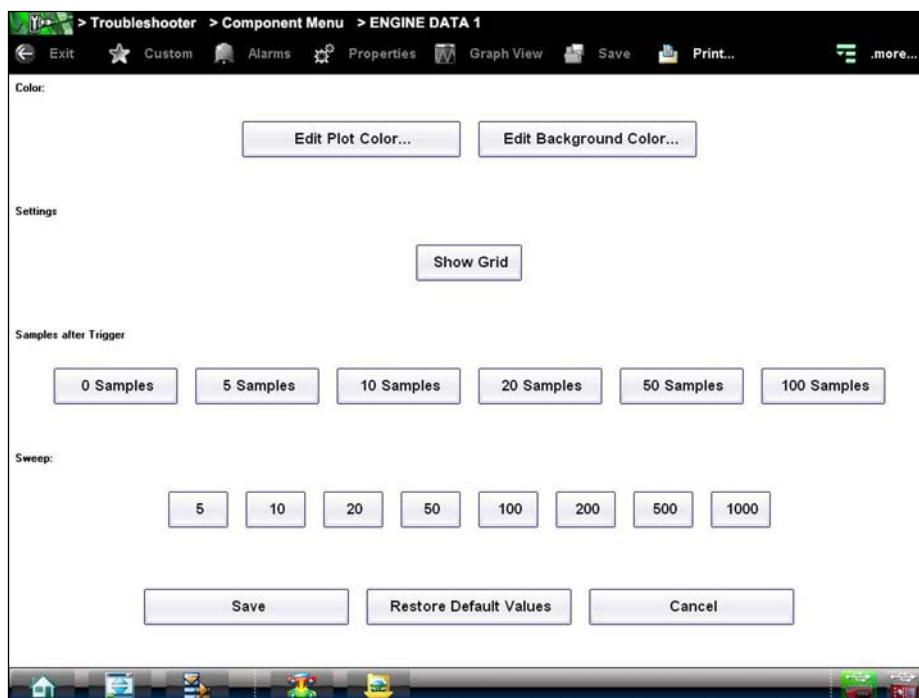


Figure 4-27 Sample properties dialog box

## Graph View

The Graph View icon on the Scanner toolbar allows you to simultaneously view up to sixteen data graphs (Figure 4-28). The graphs must first be opened in the data list in order to be included when Graph View is selected from the toolbar. The display defaults to a single graph if more than 16 graphs are open when the toolbar icon is selected. Should this happen, return to the data list and close some of the graphs.



Figure 4-28 Sample Graph View screen

A simple toolbar in Graph View allows you switch scale and sweep values on and off, and to return to the List View. The Data Buffer toolbar at the base of the screen remains active.



### NOTE:

The screen does not scroll in Graph View mode, it adjusts to show only the selected parameters.

Graph View mode can also be engaged from the custom data list configuration screen. Refer to [Custom](#) on page 44 for details.



### To use Graph View:

1. Open the graph for each data parameter, up to sixteen, that you wish to view.
2. Configure parameter settings, such as Triggers, Auto Scale, and Sweep, as needed. Remember, these must be selected before entering Graph View.
3. Select **Graph View** on the Scanner toolbar.  
All of the open data graphs now appear on a single screen (Figure 4-28).
4. Select **List View** on the Scanner toolbar to return to a normal view.

## Save

The **Save** icon is used to record movies of vehicle datastream values. Saved files can be helpful when trying to isolate an intermittent problem or to verify a repair during a road test.



### To save a movie:

- Select **Save**.

A save movie dialog box displays while data is being saved. The movie is saved when the message box disappears.



**Figure 4-29** Sample save dialog box

Saved files can later be viewed by selecting Data Manager on the home screen. From the Data Manager open the Scanner Data Folder, then locate and select the saved file to be viewed.



## Print

Selecting Print from the toolbar opens a standard Windows Print dialog box. Select from the options as needed to print the current frame of data.

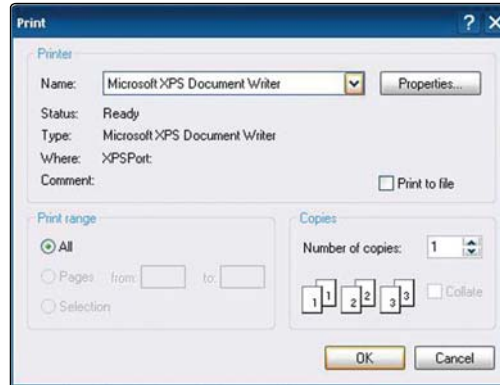


Figure 4-30 Sample print dialog box

If the Diagnostic Tool is connected to a printer, the current frame of data is printed. If the Diagnostic Tool is not connected to a printer, the frame of data is saved as an “XPS” file. A dialog box opens so that you can name the print file and specify the location that it is saved to, follow the on-screen instructions.

Saved files can be printed at a later date, or opened and reviewed.



### NOTE:

Saved print files cannot be viewed using the Data Manager, they can only be opened into an internet browser.

---



### To open a saved print file:

1. Minimize the Diagnostic Suite to view the desktop.
2. From the desktop select **My Documents > ShopStream > Scanner Data Folder**.
3. Locate the file you wish to view.
4. Double click the file to open it.

The internet browser starts and the file opens.

## More

Whenever the More icon appears on the toolbar it indicates that there are additional options available. Selecting the More icon from the Scanner toolbar opens a dropdown menu that offers two choices, Scale and Sweep, that only apply to data graphs:

## Scale

The **Scale** option switches the scale values, displayed along the left-hand side of the graphs, on and off (Figure 4-31). The dropdown menu closes once a selection is made.



Figure 4-31 Sample Scale values displayed

## Sweep

The **Sweep** option switches the sweep values, displayed below the graphs, on and off (Figure 4-32). The dropdown menu closes once a selection is made.

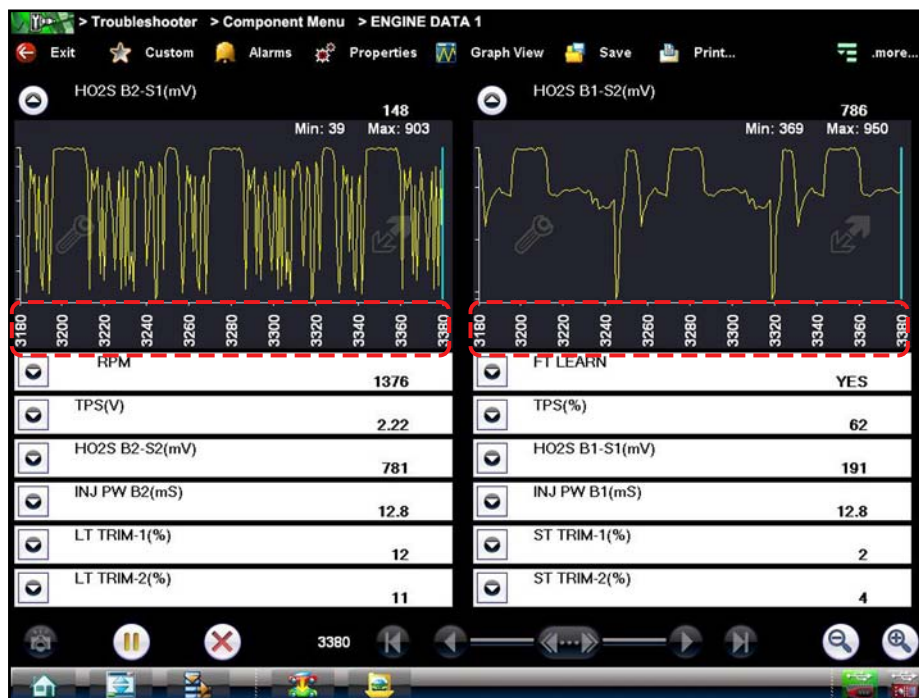


Figure 4-32 Sample Sweep values displayed

## 4.5 Exiting the Scan Module

The Scan Module remains open as long as there is an active communication link with the vehicle. You must disconnect this communication link in order to exit from Scan Module tests and close the VERUS Diagnostic Tool software. A warning message displays if you attempt to shut down with the Scan Module communicating.



### NOTE:

Damage to the vehicle electronic control module (ECM) may occur if communication is disrupted. Make sure the data cable is properly connected at all times during testing. Exit all tests before disconnecting the test cable or turning off the tool.



### To exit the Scan Module:

1. From an active screen, select **Exit** from the Scanner Toolbar to return to the Systems Menu.
2. From the Systems Menu, select **Back** from the data menu.

A “stopping communications” message briefly displays followed by the main menu.

Now, the Scan Module is no longer communicating with the vehicle and it is safe to return to the Home screen and exit the VERUS Diagnostic Tool.

## 4.6 Downloading Firmware

The internal programming of the Scan Module, known as the firmware, can be updated using the VERUS Diagnostic Tool. Firmware updates increase the Scan Module diagnostic capabilities, typically by adding support for new tests, new models, or enhanced applications to the databases.

The Diagnostic Tool automatically searches for available updates for all of the VERUS components when it is connected to the internet. Any updates that are found are downloaded and stored on the Diagnostic Tool. However, the update must be installed in order to complete the process. This section describes installing an update to the Scan Module firmware. A notification message displays if an update is available when Scanner is selected from the VERUS Home screen (Figure 4-33).

The firmware update process, as explained in the following procedure, begins automatically after ten seconds unless the Update Now or Update Later icon is selected. Selecting **Update Now** begins the process immediately. **Update Later** defers the operation, closes the message, and starts the Scan Module. Not updating does not impact operations, the Scan Module remains functional but may not benefit from the additional features available in the update. Selecting **Details** in the upper-right corner opens a list of what is included in the update.

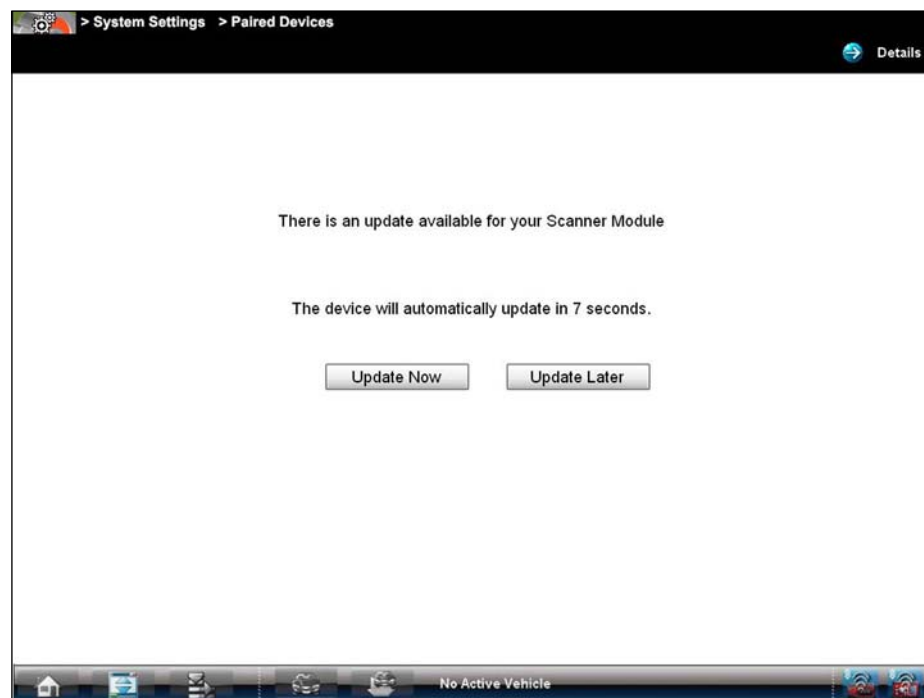


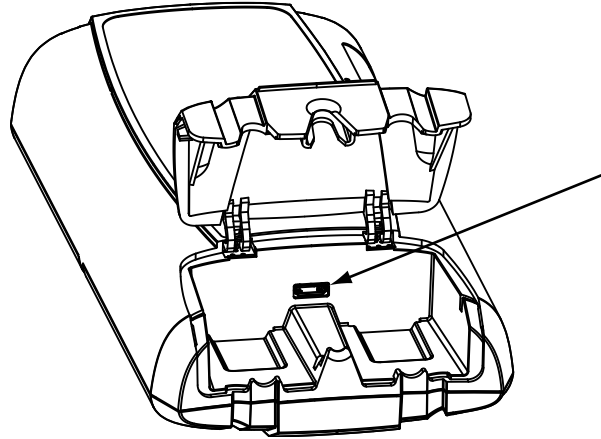
Figure 4-33 Firmware update available message



### To update the firmware:

1. Power on the VERUS Diagnostic Tool.
2. Connect a wireless Scan Module to the Diagnostic Tool as follows (Figure 4-34):
  - a. From the bottom of the Scan Module, gently lift up and out on the sides of the handgrip to free it from Scan Module housing.
  - b. Open the hinged cover on the base of the Scan Module to expose the service jacks.
  - c. Plug the small end of the USB cable into the USB jack on the Scan Module.

- d. Plug the large end of the USB cable into one of the jacks on the side of the Diagnostic Tool.



- 1— Hinged cover
- 2— USB jack

Figure 4-34 Scan Module service jack



**NOTE:**

A wireless Scan Module must be connected to the Diagnostic Tool with the USB cable to update the firmware. The USB cable also provides power to the Scan Module so there is no need to connect to a vehicle to turn on the Diagnostic Tool.

3. Select **Scanner** from the VERUS Home screen.
4. Select **OK** when the firmware update notification displays (Figure 4-33).  
The firmware update begins and installation progress is tracked on the screen (Figure 4-35).

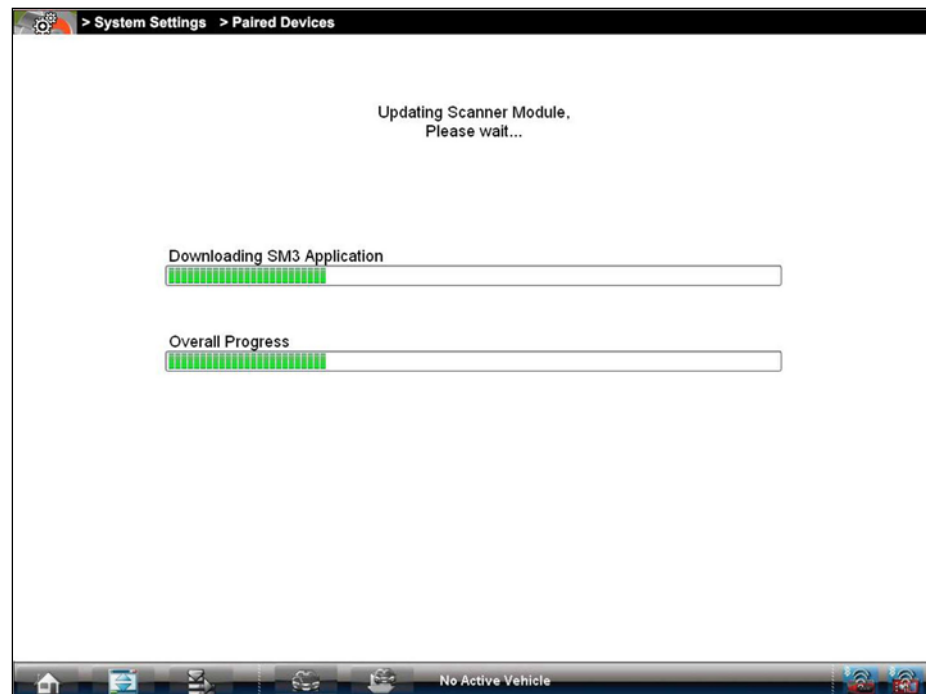


Figure 4-35 Sample update in progress screen

A “successfully updated” message displays once the installation is complete (Figure 4-36).

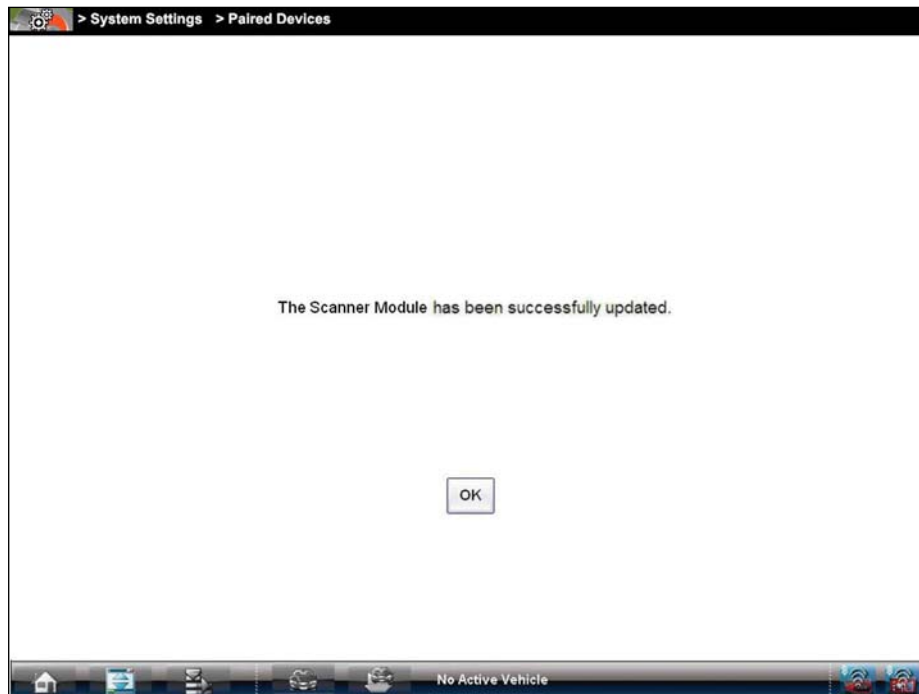


Figure 4-36 Sample firmware update complete message

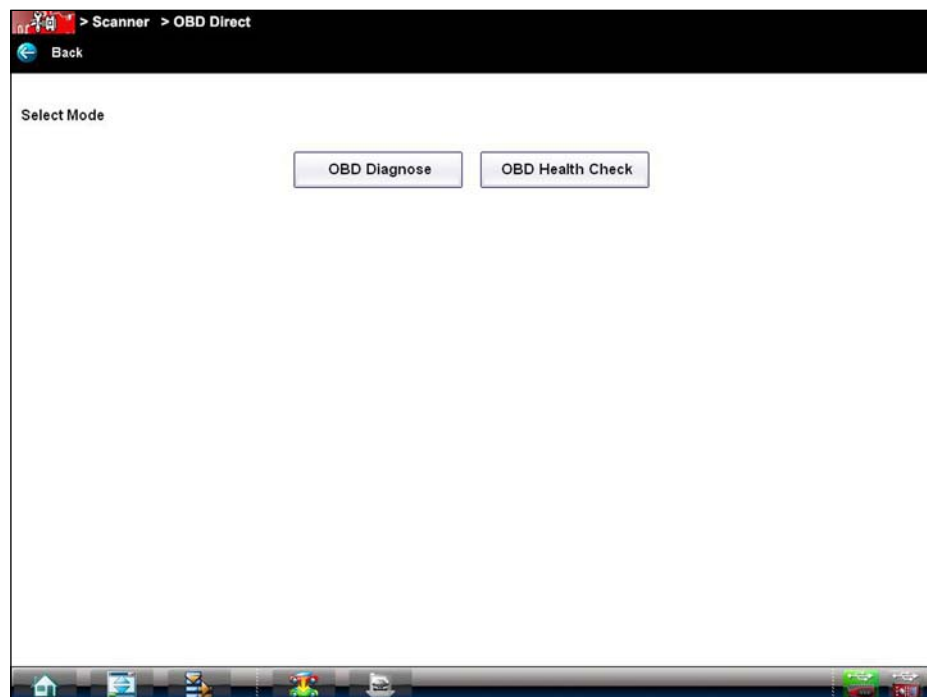
5. Select **OK** to close the message and return to Scan Module operations. The Scan Module, with the latest firmware update, is now ready to use.

This Home screen option allows you to access Generic OBD-II tests without completing a vehicle identification. This presents a quick way to check for diagnostic trouble codes (DTCs), isolate the cause of an illuminated malfunction indicator lamp (MIL), check monitor status prior to emissions certification testing, verify repairs, and perform a number of other services that are emissions-related. OBD Direct is also used for testing OBD-II compliant vehicles that are not included in the Scan Module databases.

OBD Direct is a scan tool function and the Scan Module must be connected to the test vehicle and communicating with the Diagnostic Tool. Keep in mind, this function provides generic OBD-II information only. Select Scanner from the VERUS Home screen for enhanced OBD-II functions.

Options for the Menu icon on the Toolbar at the base of the screen are the same as those available for the Scanner module. Refer to [Menu icon Options, Scanner](#) on page 23 for details.

Selecting OBD Direct on the VERUS Home screen opens a menu with two options ([Figure 5-1](#)):



**Figure 5-1** Sample OBD Direct main menu

## 5.1 OBD Health Check

The OBD Health Check offers a way to quickly check for and clear generic diagnostic trouble codes (DTCs) and to check readiness monitors. Selecting OBD Health Check will first direct you to connect the correct cable and adapter. Selecting **Continue** opens a submenu of options (Figure 5-2).



Figure 5-2 Sample OBD Health Check menu

### 5.1.1 Global OBD II Code Check

This option displays any stored emission related generic DTCs reported by the ECM. Selecting this option opens a submenu with two choices: Codes and Pending Codes.

Select an option to display the code list. Refer to [Codes Menu](#) on page 37 and the *Global OBD Vehicle Communication Software Manual* for additional information.

#### Codes

The Codes option displays a list of current emission related DTCs.

OBD-II Codes have a priority according to their emission severity, with higher priority codes overwriting lower priority codes. The priority of the code determines the illumination of the MIL and the code erase procedure. Vehicle manufacturers have implemented the priority ranking differently, so there will be differences between makes.



### Pending Codes

The purpose of this service is to enable the Diagnostic Tool to obtain “pending” or maturing diagnostic trouble codes. These are codes whose setting conditions were met during the last drive cycle, but need to be met on two or more consecutive drive cycles before the DTC actually sets.

The intended use of this service is to assist the service technician after a vehicle repair and after clearing diagnostic information, by reporting test results after a single driving cycle.

- If a test failed during the driving cycle, the DTC associated with that test is reported. If the pending fault does not occur again within 40 to 80 warm-up cycles, the fault is automatically cleared from memory.
- Test results reported by this service do not necessarily indicate a faulty component or system. If test results indicate another failure after additional driving, then a DTC is set to indicate a faulty component or system, and the MIL is illuminated.

### 5.1.2 Global OBD II Clear Codes

This option is used to clear all emission related diagnostic data such as, DTCs, freeze frame data, and test results from the memory of the selected ECM. Although OBD Direct only displays generic OBD-II data, clearing codes erases all of the stored data including any enhanced codes.

A confirmation screen displays when the clear codes option is selected to prevent accidental loss of data. Select Yes on the confirmation screen to continue. Refer to [Codes Menu](#) on page 37 and the *Global OBD Vehicle Communication Software Manual* for additional information.

### 5.1.3 Readiness Monitors

Use this menu option to check the readiness of the monitoring system. such as the transmission controller components and the engine components. If a monitor system is not supported, it is not displayed. Test results are shown in the data viewer ([Figure 5-3](#)).



Figure 5-3 Sample readiness monitor test report

Scroll to view the entire list of Readiness Monitors to ensure that all tests are complete. It is possible to print the readiness test status or save it as part of a Vehicle history.

### 5.1.4 MIL Status

This item is used to check the current condition of the Malfunction Indicator (MIL). Additional information, such as which ECM commanded the MIL on and also the distance traveled while the MIL is on (if supported), can also be displayed. It is also possible to print the MIL Status.

## 5.2 OBD Diagnose

Selecting OBD Diagnose opens a menu with the following options:

- Start Communication—begins the test session
- Connector Information—provides data link connector (DLC) location details for most models
- Manual Protocol Selection—allows you to select which protocol to use

### 5.2.1 Start Communication



To perform an OBD Direct Test:

1. Select **Start Communications** from the OBD Direct menu.

A generic connection message will display ([Figure 5-4](#)).

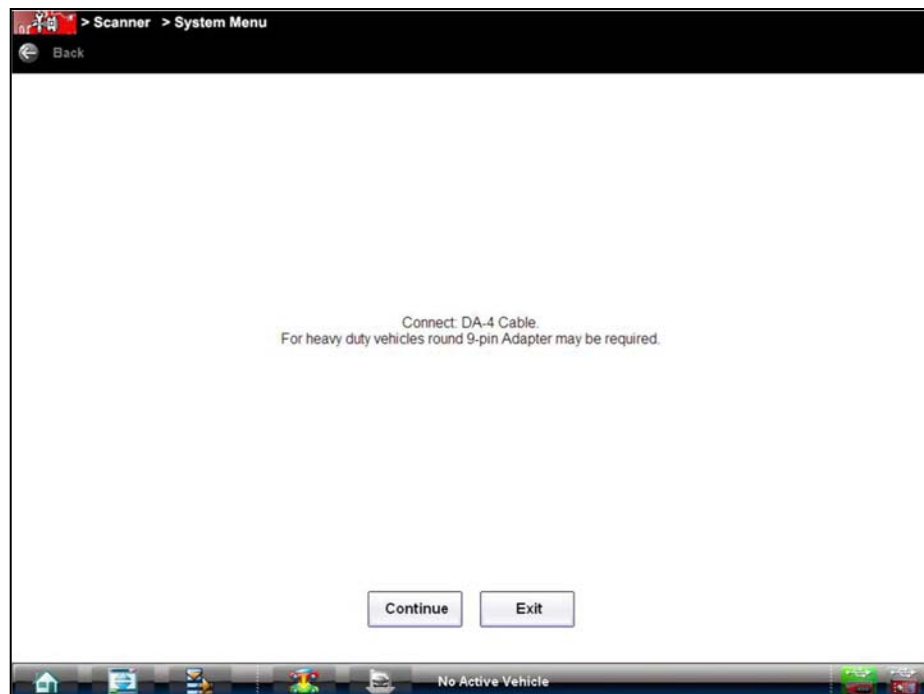


Figure 5-4 Sample generic connection message

2. Connect the Scan Module to the test vehicle as instructed using the correct data cable and adapter.
3. Select **Continue**.  
A message showing ECM information displays (Figure 5-5).



Figure 5-5 Sample communication message

4. Select **Continue** and a menu of available tests displays (Figure 5-6).

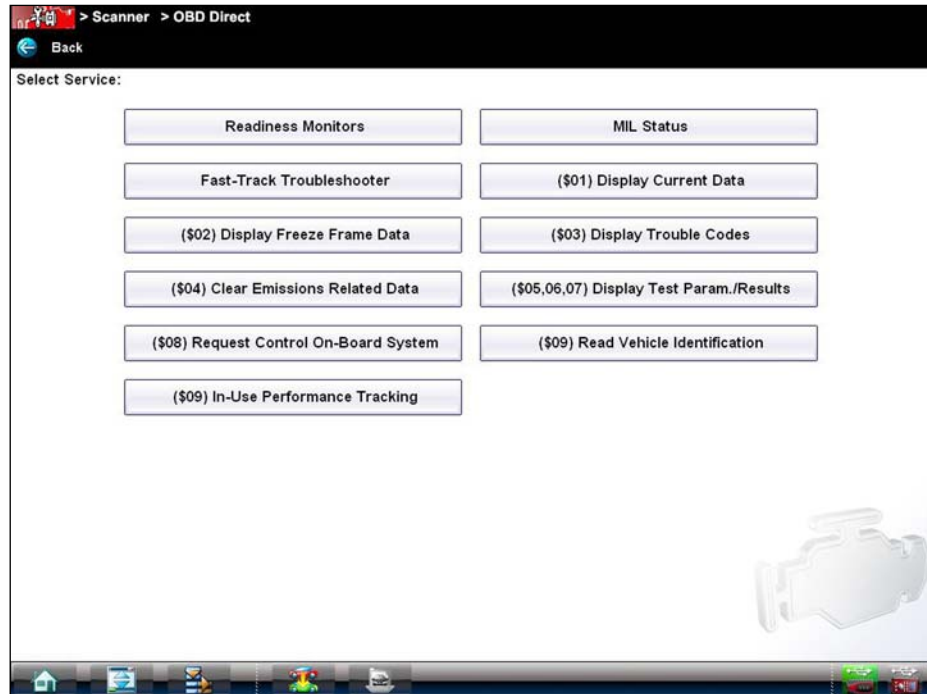


Figure 5-6 Sample Start Communication menu

5. Select a test to continue.

## Readiness Monitors

Use this menu item to check the status of the monitored system. If a monitored system is not supported, it is not displayed. Scroll to view the entire list of Readiness Monitors to ensure that all tests are complete.

## MIL Status

This item is used to check the current condition of the Malfunction Indicator Lamp (MIL). Additional information, such as which ECM commanded the MIL on and also the distance traveled while the MIL is on (if supported), can also be displayed. It is also possible to print the MIL Status.

## Fast-Track Troubleshooter

Fast-Track® Troubleshooter is a database containing experience-based information of validated real-world repair strategies that have been compiled by top-notch technicians since 1988. The Troubleshooter system simplifies the diagnosis process, as it contains information on virtually all common diagnostic trouble code (DTC) problems and driveability symptoms for most vehicles covered by the vehicle communication software. See [Troubleshooter](#) on page 42 for details.

## (\$01) Display Current Data

Use this item to display the current emission related data from the selected electronic control module (ECM) of the vehicle. Displayed data includes analog inputs and outputs, digital inputs and outputs, and system status information broadcast on the vehicle data stream. See [Data Display](#) on page 32 for additional information.

## (\$02) Display Freeze Frame Data

This item is used to display freeze frame data for any stored emission related diagnostic trouble codes (DTC). In most cases the stored frame is the last DTC that occurred. Certain DTCs, those that have a greater impact on vehicle emission, have a higher priority. In these cases, the highest priority DTC is the one for which the freeze frame records are retained.

Freeze frame data includes a “snapshot” of critical parameter values at the time the DTC set.

## (\$03) Display Trouble Codes

This option displays any stored emission related DTCs reported by the various ECMs. The OBD Direct code report is similar to a Scanner module code report, and includes the Fix It icon with hyperlinks to SureTrack and Repair Information details. See [Display Codes](#) on page 38 for additional information.

## (\$04) Clear Emissions Related Data

This item is used to clear all emission related diagnostic data such as, DTCs, freeze frame data, and test results from the memory of the selected ECM.

### (\$05, 06, 07) Display Test param./Results

This selection opens a submenu of test parameters and test results from various sensors, such as the oxygen sensor (O2S), monitor test results, and a record of DTCs detected during the last drive cycle. The menu includes:

- Oxygen Sensor Monitoring (\$05)
- On-Board Monitored Systems (\$06)
- DTCs Detected During Last Drive (\$07)

### Request Control of On-board System (\$08)

This service enables bidirectional control of the ECM so that the Scanner is able to transmit control commands to operate the vehicle system. This function is useful in determining how well the ECM responds to a command.

Selecting opens a menu of test choices available on the identified vehicle. Options vary by make, model, and year of the test vehicle. Select a test and follow the on-screen instructions.

### Read Vehicle Identification (\$09)

This selection displays the vehicle identification number (VIN), the calibration identification, and the calibration verification number (CVN) of the test vehicle.

### In-use Performance Tracking (\$09)

This selection displays the “In-use Performance Tracking” of monitored data. It is basically a record of the number of times each of the monitor tests have been completed.

## 5.2.2 Connector Information

This option opens a database of vehicle diagnostic connector locations that includes most makes and models.



#### To locate a vehicle diagnostic connector:

1. Select **Connector Information** from the System menu.
2. Select a manufacturer from the list presented.
3. Select a model from the list presented.  
Instructions for which, if any, cable adapter or pin to use.
4. Select **Continue**.  
Information on where to locate the vehicle diagnostic connector displays.
5. Select **Continue** to return to the System menu.

## 5.2.3 Manual Protocol Selection

A communication protocol is a standardized way of data communication between an ECM and a Diagnostic Tool. Global OBD may use several different communication protocols. The Diagnostic Tool automatically connects to an available protocol, which displays on the connection message (Figure 5-5). Some vehicles communicate on more than one protocol. Use the Manual Protocol Selection option to switch to a different protocol.

Select **Manual Protocol Selection** and message displays advising you to make sure you know the correct protocol for the test vehicle. An incorrect selection may activate warning lamps and set CAN related faults on the vehicle. Select **OK** and a menu of options displays (Figure 5-7).

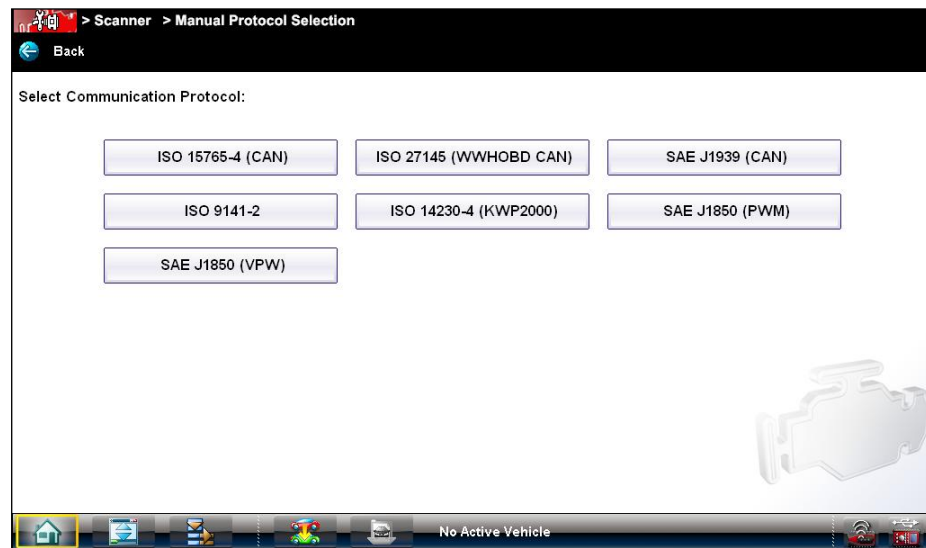


Figure 5-7 Sample communication protocol menu

The Guided Component Test software is a component-testing powerhouse, providing you with a robust diagnostic database for use with scopes and meters. It is like having access to a complete library of shop manuals for testing engine-management components, transmission sensors and components, and ABS systems.

Guided Component Test helps you with everything from selecting the appropriate test for a specific component to showing the hook-up location and correct pin configuration. This software thoroughly guides and instructs you on proper testing procedures and offers tips from the internal troubleshooter database. The guided component test procedures, tips, and meter settings reduce your overall set-up and diagnostic testing time. Vehicle-specific Guided Component Tests are provided for engine, transmission, ABS, charging, transfer case and suspension systems.

## WARNING



Risk of electrical shock.

- **Read the *Important Safety Instructions* document provided separately for messages on the safe use of this product.**
- **This product is intended for Measurement Category I (for example, automotive 12V systems), do not use this product for Measurement Categories II, III, and IV.**
- **Measurement Category I is for performing measurements on circuits not directly connected to MAINS or MAINS circuits (an example of a MAINS circuit is 120V AC or 240V AC household or industrial electricity), do not connect this product to MAINS or MAINS circuits.**

*Electrical shock can cause personal injury, equipment damage, or circuit damage.*

---

### IMPORTANT:

**Maximum rated transient over voltage impulse is 500 volts, do not exceed the rated transient over voltage.**

---

## 6.1 Vehicle Identification

The guided component test information presented is specific to the vehicle being tested. Therefore, certain attributes of the test vehicle must be entered into the VERUS Diagnostic Tool so that the correct data can be retrieved. Vehicle identification information is carried over if you enter the Guided Component Test module either from the Scan Module or from one of the records stored in the Vehicle History module. However, you may need to enter additional attributes in some instances.

The vehicle identification sequence is menu driven, you simply follow the screen prompts and make a series of choices. Each selection you make advances you to the next screen.

## 6.1.1 Menu Icon Options, Guided Component Test

Selecting the Toolbar Menu icon at the base of the screen offers the following options:

- [Safety Information](#)—opens the *Important Safety Instructions* document. See “[Safety Information](#)” on page 15 for additional information.
- [File](#)—allows you to print or save the data being viewed.
- [Top Level Menus](#)—allows you to access supplemental information and training programs.
- [Help](#)—allows you to view supporting documentation. See “[Help](#)” on page 15 for additional information.

### File

Selecting **File** opens a menu of print options:

- **Print Article**—selecting has one of two results:
  - If a printer is connected, the file is sent to the printer.
  - If a printer is not connected, the article is saved as a (.xps) file, which can be retrieved, moved, or copied and printed at a later time.
- **Print Preview**—opens a representation of what the printed file will look like.
- **Page Setup**—allows you to adjust margins and paper orientation.

### Top Level Menus

Selecting Top Level Menu opens a list of the following options:

- [Features Benefits](#)
- [Power User Tests](#)
- [How To](#)

### *Features Benefits*

Selecting **Features Benefits** opens a menu page that includes:

- **5-MINUTE WALK THRU WITH DEMO BOARD**—explains how to use the optional demonstration board to generate sample signals.
- **Features & Benefits**—provides descriptions and a brief overview of meter functions.
- **Accessories**—opens a menu of optional equipment available.
- **Product Description**—provides descriptions and a brief overview of meter operations.

The demonstration board not only helps you learn how to use the Guided Component Tests software, it allows you to hone your skills and diagnostic technique without an actual test vehicle.

### *Power User Tests*

The **Power User Tests** option gives you quick access to a pre-configured meter for conducting a number of control system tests. Tests are available with or without on-screen help. Help typically provides a description of the test along with expected results and a link to the pre-set meter.



### ***How To***

The **How To** option provides a list of available on-screen instructions for performing tasks. Typical topics include:

- **10-Minute Electronic Class**—provides brief instruction in basic electronics and circuit connections.
- **15-Minute Ignition Class**—provides an introduction to basic ignition testing.
- **Illustrated Terms & Definitions**—provides definitions of terms, drawings and tips associated with guided component testing.
- **No Start Basics**—provides a guideline for diagnosing a no-start condition.
- **O2 Sensor and Feedback System Analysis**—displays the guided component test meter in the “live” graphing mode with O2S test tips to help you understand the fundamental concepts of O2S diagnostics.
- **Test Tips**—gives on-screen instructions for performing specific Guided Component Tests along with drawings and tips.
- **20-Minute Current Ramp Classes**—provides an introduction to current ramp testing.
- **Theory And Operation**—provides basic theory and operation information for related components.
- **Snap-on Automotive Theory**—Selecting the **Snap-on Automotive Theory** option provides you basic operation, theory and testing information on various systems such as:
  - Air Conditioning
  - Diesel Particulate Filters
  - High-Intensity Discharge Headlights
  - Supplemental Restraint Systems
  - Diagnosing Battery Draws
  - Electronic Parking Assistance Class
  - LIN-Bus
  - Tire Pressure Monitoring

## 6.1.2 Creating a Favorites List

Once a Guided Component Test database is loaded, a list of manufacturers displays. This list is often long and includes a number of makes not frequently used. A toolbar at the top of the screen allows you to custom configure the manufacturer list to display only the makes you frequently service.

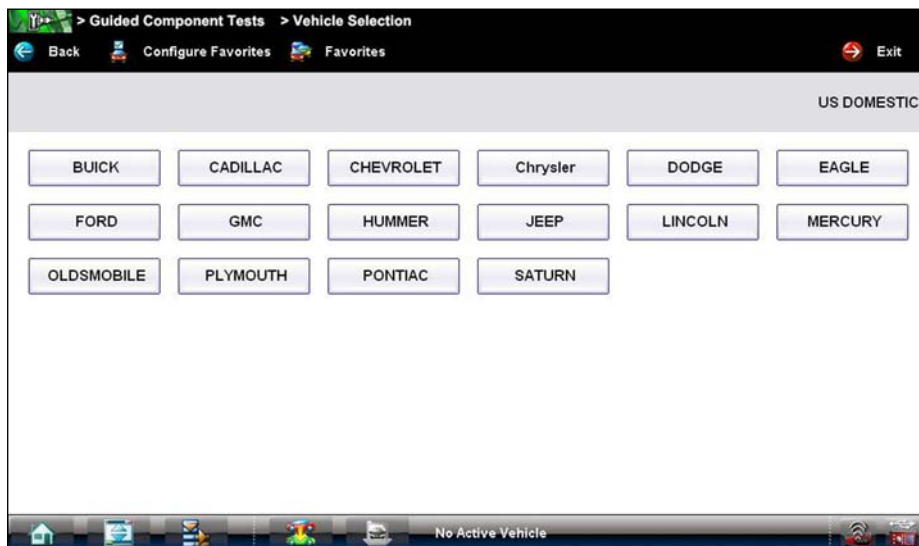


Figure 6-1 Sample manufacturer list



### To custom configure the manufacturer list:

1. Select **Configure Favorites** on the toolbar.  
A list that includes all available manufacturers displays.
2. Select each manufacturer you want to include. Selected manufactures are highlighted (Figure 6-2).



### NOTE:

Manufacturers appear on the favorites list in the order in which they are selected. Therefore, if you select the makes you work on most frequently first, they will appear at the top of the list.

3. Select **Finished** on the toolbar once your selections have been made.  
The screen returns to the manufacturer list, but only the makes you selected display. Note the "Favorites" toolbar selection now reads "Full list".

4. Select **Full List** on the toolbar to view the complete list of manufacturers.
5. Select **Back** on the tool bar at any time to return to the previous screen.

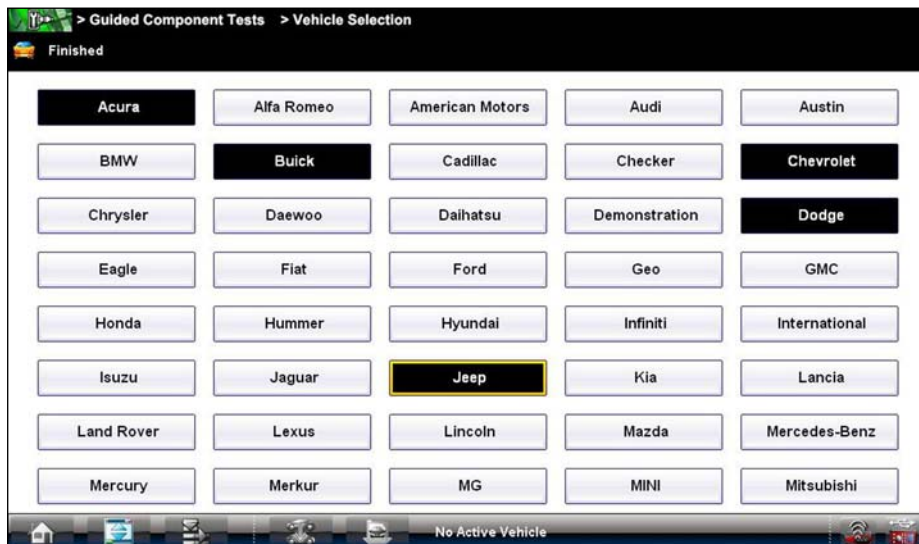


Figure 6-2 Sample Configure Favorites screen

Your favorites list is what will display whenever a Guided Component Test database is started in the future. The list can be modified at any time by selecting Configure Favorites from the toolbar.

### 6.1.3 Identifying a Test Vehicle

Procedures to identify the test vehicle may vary somewhat by vehicle and market. The following, which identifies a 2008 Ford Focus for testing the fuel injection system, is typical of what to expect.



#### To identify a vehicle for Guided Component Test:

1. Select the **Guided Component Test** module icon from the Home screen.
2. Select which database to load for the test vehicle if requested (optional).  
After the database loads, a list of manufacturers displays.
3. Select **FORD** and a model year menu displays.
4. Select **2008** from the year menu and a list of available models displays.
5. Select **FOCUS** from the model list and a list of available engines displays.
6. Select **2.0L** from the engine list and a confirmation dialog box displays (Figure 6-3).

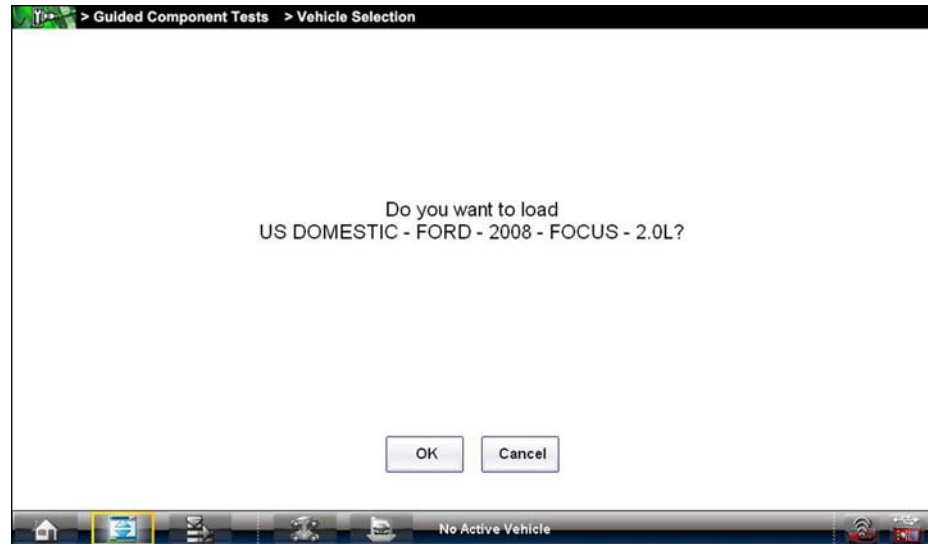


Figure 6-3 Sample confirmation dialog box

7. From the confirmation dialog box, select **OK** to continue, or **Cancel** to return to the engine list. A list of tests available for the identified vehicle displays (Figure 6-4).

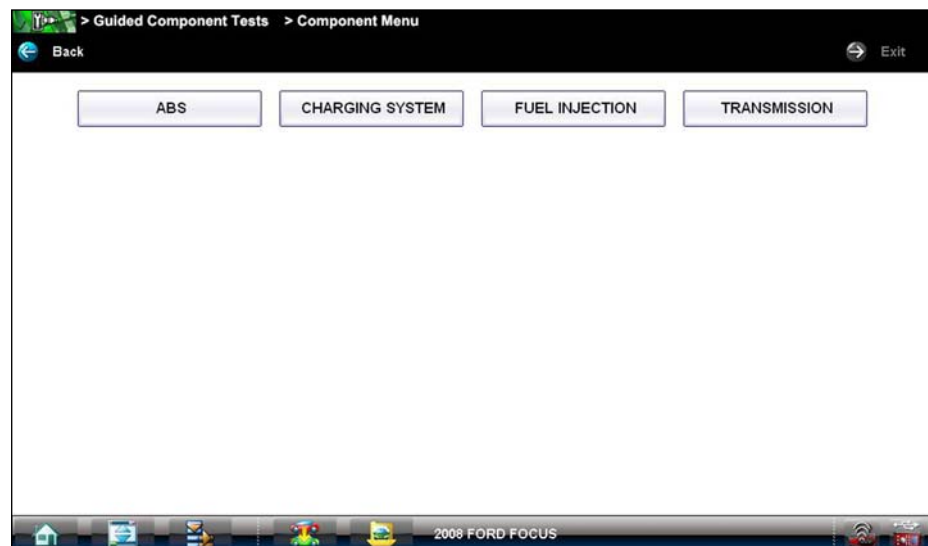


Figure 6-4 Sample available tests list

8. Select **FUEL INJECTION** and a fuel injection component test menu displays (Figure 6-5).

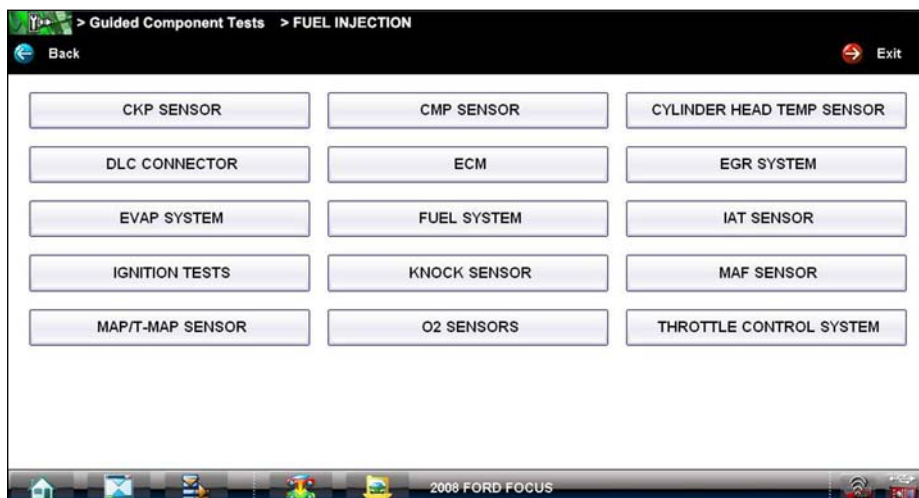


Figure 6-5 Sample available component tests list

9. Select a test to continue.

The identification sequence is now complete, refer to the Operations section that follows for details on how to navigate through the Guided Component Test information and perform tests.



**NOTE:**

If you return to the Home screen and select **Scanner** or **Vehicle History** or Information the vehicle identification entered here is carried over. However, additional information may be needed in some instances.

## 6.2 Operations

The Guided Component Test software provides vehicle specific guided component test procedures and information that aid in setting up scopes and meters. Once a test vehicle is identified, you can select a guided component test from the list of available tests. For most selections two main choices are available on the component menu:

1. **COMPONENT INFORMATION**—provides information on the selected component and connector pin details that assists you in understanding of the components prior to diagnosis.
2. **TESTS**—provides a pre-configured list of tests, guides you through performing the tests, and offers tips and resources to reduce setup and testing time.

## 6.2.1 Component Information

Component Information provides details on specific vehicle components to provide a better understanding the components prior to diagnosis.

The Component Information screens contain information to assist you with testing. The screens are divided in sections to help quickly guide you to the correct information:

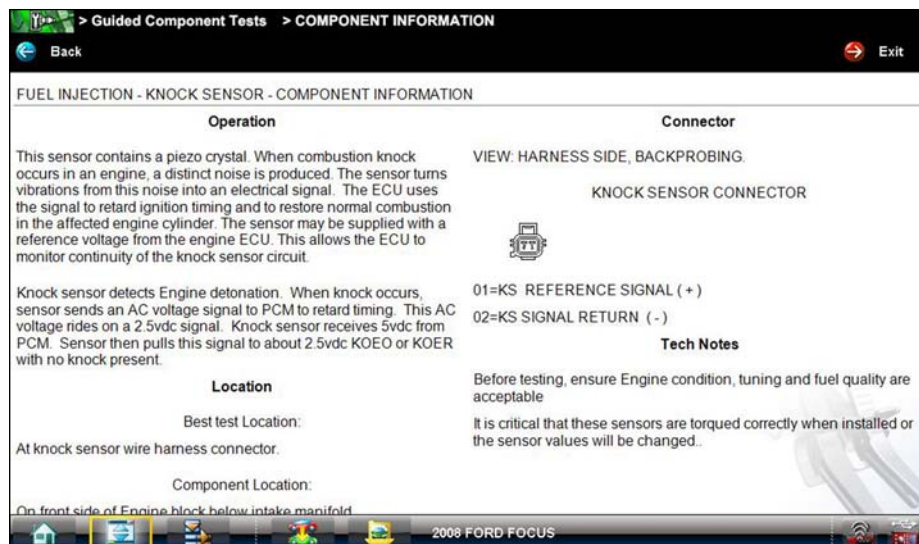


Figure 6-6 Sample Component Information screen

- **Operation**—provides a general description of normal component operation.
- **Connector**—displays the component connector and lists pin assignments.
- **Location**—identifies the component location and the best place for testing it.
- **Tech note**—provides guided component test-related tips (for example, common failures or faults) as well as update or recall information.



### To view component information:

1. Select a component from the tests list.
2. Select **COMPONENT INFORMATION** from the component menu.



### NOTE:

An additional selection, such as front or rear for an oxygen sensor (O2S), may be required before advancing to the component information screen.

The component information screen displays (Figure 6-6).

3. Gesture scroll to view any additional information.
4. Select **Back** at any time to return to the previous screen.

## 6.2.2 Tests

The Tests section guides you through the process of performing tests on a specific component. It also provides specifications, tips on how and where to connect the test meter leads, and also configures the multimeter or lab scope to perform the selected test.

**To select a test:**

1. Select a component from the list.
2. Select **TESTS** to open the submenu.

**NOTE:**

More than one selection is available in some instances. For example, a primary and a secondary tests selection display when ignition tests is selected.

The submenu shows all the tests available for the selected component, choices may include:

- DC voltage test
- Out of range signal test
- Resistance test
- Signature test
- Frequency test
- Pulse width test

Some tests, such as O2S voltage, open an additional submenu similar to the one shown in [Figure 6-7](#) when more than one option is available.

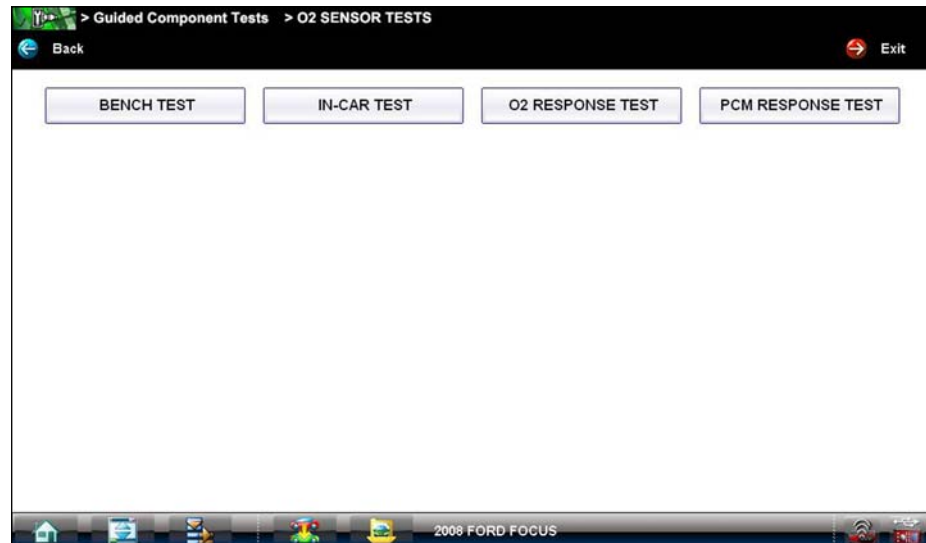


Figure 6-7 Sample O2S voltage test submenu

3. Select a test option and the test screen displays (Figure 6-8).

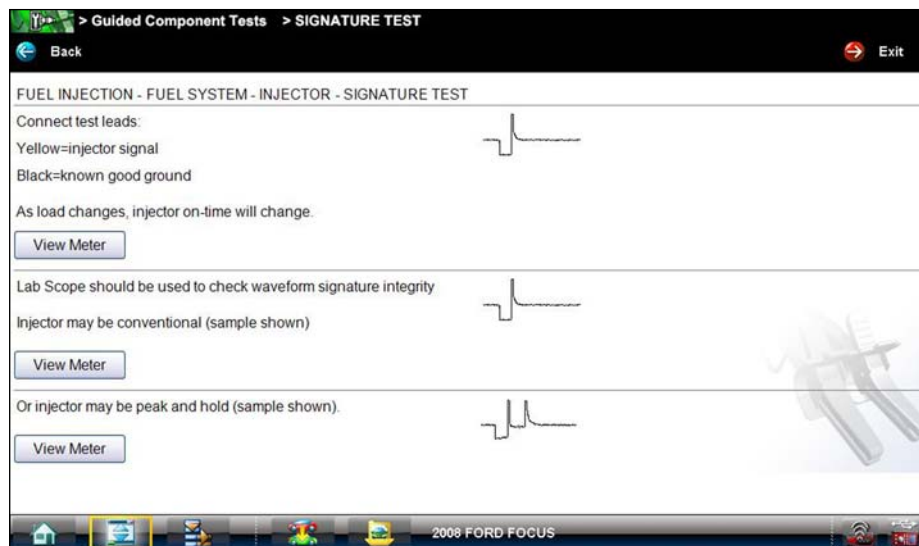


Figure 6-8 Sample Test screen

4. Gesture scroll to view any additional information.
5. Select **Back** at any time to return to the previous screen.

## Hyperlinks

Guided component test screens contain hyperlinks that either take you to another page that contains additional information or open an additional window on top of the current screen. Hyperlinks display as icons. Common hyperlinks are:

- **View Meter**—opens a live meter set up to perform the test in the lower portion of the screen (Figure 6-10). Once the meter view is open, the Guided Component Test toolbar at the top of the screen is replaced by the Scope Multimeter toolbar, which allows you to make adjustments to the settings. See “Scope Multimeter Toolbar” on page 83 for details.
- **Show More Information**—advances to a new screen with more detailed information about a particular test, select **Back** to return to the test screen.

A Meter icon, which is only available in the Guided Component Test view meter mode, appears on the upper toolbar (Figure 6-10). Three view meter options are available:

1. With View Meter active (Figure 6-10), select the toolbar **Meter** icon once and the meter expands to fill the entire screen.
2. Select the **Meter** icon a second time and the meter opens as a separate window (Figure 6-9). This window can remain open if you switch to the Scan Module and can be accessed from the Windows toolbar at the bottom of the screen. You can also resize and reposition the meter window on the screen.



Selecting the **Close** icon (red box with an X) when viewing the meter in a separate window closes the meter and return you to the Guided Component Test screen.

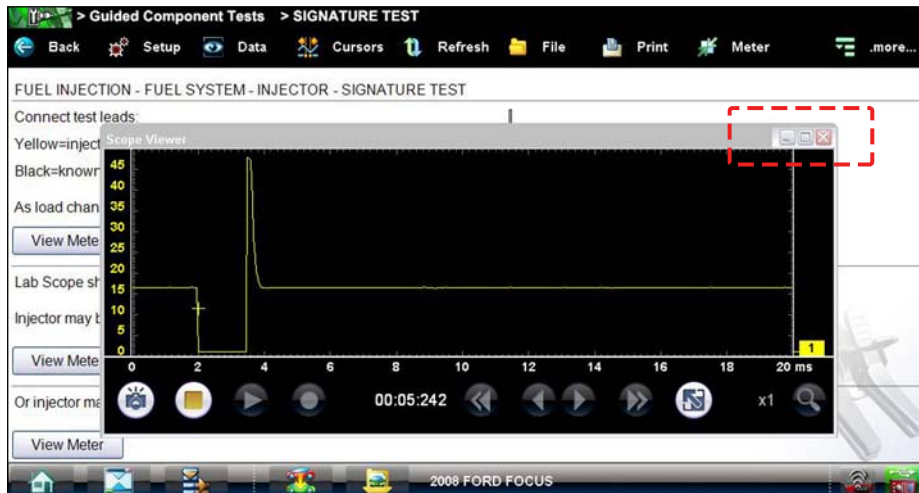


Figure 6-9 Sample meter view in a separate window

3. Select the **Meter** icon a third time to close the separate window and return to the standard view as shown in Figure 6-10.

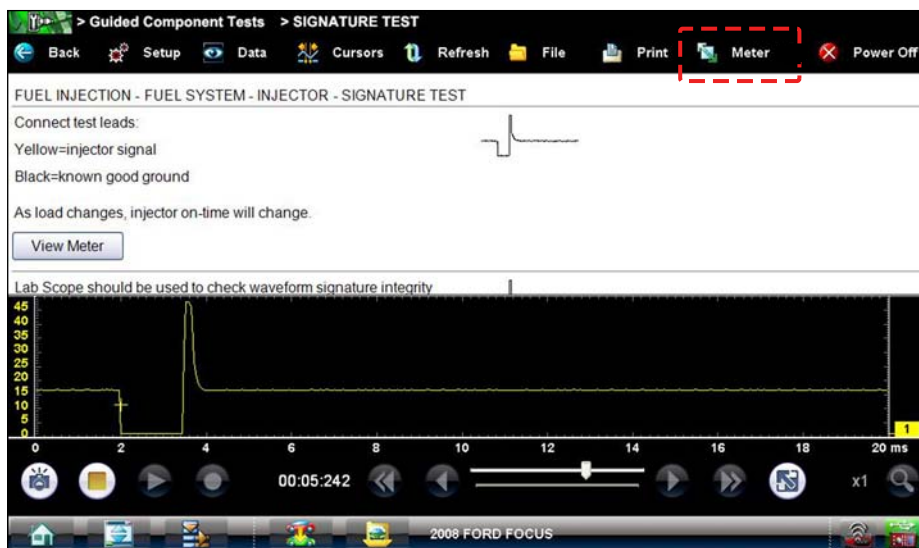


Figure 6-10 Sample view meter screen

Select **Exit** from the toolbar to close meter view and return to the Guided Component Test screen.

### Connecting to a Test Vehicle

Before performing a test, you must connect the meter test leads to the vehicle. Certain Guided Component Tests require the use of specific leads. Information on specific leads and other connecting information displays in the initial test screen. Follow the on-screen connection instructions in the test procedure and support sections to connect the test leads.

## Performing a Test

Once you connect the test leads to the vehicle, you can proceed with testing.



### To perform Guided Component Tests:

1. Follow the instructions display in the test procedure section.
2. Gesture scroll to view all of the instructions, and follow the on-screen procedures.
3. Select the View Meter hyperlink to display test results.
4. Refer to the on-screen information to verify test results.

---

### **IMPORTANT:**

Refer to [“Scope Multimeter” on page 76](#) for information on working with the View Meter window.

---

This Scope Multimeter module provides all the tools needed for performing electrical and electronic circuit tests and for monitoring signals and circuit activity. The Scope Multimeter works interactively with other modules. Selecting “View Meter” from a Guided Component Test or Scanner Test starts the Scope Multimeter module.

## WARNING



Risk of electrical shock.

- Read the Safety Information provided for important warnings on the use of this product
- This product is intended for Measurement Category I (for example, automotive 12V systems), do not use this product for Measurement Categories II, III, and IV.
- Measurement Category I is for performing measurements on circuits not directly connected to MAINS or MAINS circuits (an example of a MAINS circuit is 120V AC or 240V AC household or industrial electricity), do not connect this product to MAINS or MAINS circuits.

*Electrical shock can cause personal injury, equipment damage, or circuit damage.*

---

### IMPORTANT:

Maximum rated transient over voltage impulse is 500 volts, do not exceed the rated transient over voltage.

---

## 7.1 Getting Started

The Scope and Multimeter module enables the following VERUS functions:

- Lab Scope
- Ignition Scope
- Graphing Multimeter
- Digital Multimeter

### 7.1.1 Capabilities

The following tables detail the software and hardware capabilities.



---

#### NOTE:

200V to 400V scales are not to be used to measure signals greater than 50VAC (rms) or 75VDC.

---

---

#### IMPORTANT:

Do not use the Low Amp Probe to measure current on conductors at a potential greater than 46VAC peak or 70VDC.

---

Table 7-1 Scope

Function	Range	Accuracy/Comments
Signal Measurement	Ch. 1—yellow banana jack Ch. 2—green banana jack Ch. 3—blue banana jack Ch. 4—red banana jack	Each channel input is referenced to common ground input (GND—black banana jack)
Sample Rate	Single trace mode = 6 MSPS (Ch. 1 only) Dual trace mode = 3 MSPS (Ch. 1 & 2 only) Four trace mode = 1.5 MSPS (Ch. 1–4)	Continuous sampling, MSPS = mega samples per second
Bandwidth	DC–3 MHz	3 db point @ 3 MHz
Input Impedance	10 MOhm @ DC 4 kOhm @ 3 MHz	Channel 1–4
VDC (Full Scale)	100mV–400V	Do not measure greater than 75VDC
VAC (Full Scale)	100mV–400V	Do not measure greater than 50VAC (rms)

Table 7-2 Graphing Multimeter

Function	Range	Accuracy/Comments
Signal Measurement	Ch. 1—yellow banana jack Ch. 2—green banana jack Ch. 3—blue banana jack Ch. 4—red banana jack	Each channel input is referenced to common ground input (GND—black banana jack)
Sample Rate	1.5 MSPS	Continuous sampling, MSPS = mega samples per second
Bandwidth	DC–3 MHz	3 db point @ 3 MHz
Input Impedance	10 MOhm @ DC 4 kOhm @ 3 MHz	Channel 1–4
VDC (Full Scale)	75VDC	Do not measure greater than 75VDC
VAC (Full Scale)	50VAC	Do not measure greater than 50VAC (rms)
Low Amp Probe	20A scale (100mV/Amp) 40A scale (10mV/Amp)	Connect Low amp Probe (+) to Ch. 1 (yellow banana jack) and (–) to GND input (black banana jack). See NOTE below.

Table 7-3 Digital Multimeter

Function	Range	Accuracy/Comments
Signal Measurement	Ch. 1—yellow banana jack	Channel 1 input is referenced to common ground (GND—black banana jack)
VDC (Full Scale)	75VDC	Do not measure greater than 75VDC
VAC (Full Scale)	50VAC	Do not measure greater than 50VAC (rms)
Signal Measurement Input Impedance	10 MOhm	
Ohm Measurement Diode Test Continuity Test	Ch. 3—blue banana jack Ch. 4—red banana jack	Each channel input is referenced to common ground (GND—black banana jack)
Ohms	400 Ohm–4 MOhm	Fixed scales or Auto Ranging
Glitch capture	Approximately 50 uS	
Diode Test	2 V Scale	

## 7.1.2 Leads, Probes and Adapters

The Scope Multimeter uses standard safety banana plugs that are compatible with many accessories. The various leads, probes, clips, and adapters that are supplied with or available for the VERUS Diagnostic Tool explained in this section.

---

**IMPORTANT:**

When removing leads from their sockets, do not pull on the wire because it can damage the leads. Pull on the plug.

---

### Channel 1 Lead

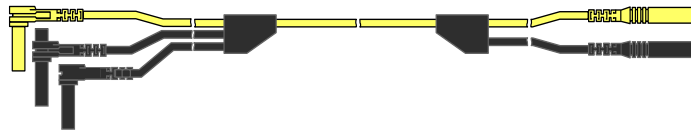


Figure 7-1 Yellow Channel 1 Lead

The shielded yellow lead is used for Channel 1 (Figure 7-1) and other channel connections that need additional grounding. The lead color matches the color of socket 1 on the VERUS Diagnostic Tool and the color of trace 1 on the test screens.

This yellow lead includes a black, right-angle, common ground plug and a black, stackable, right-angle, common ground plug. The non-stackable ground plug always connects to the ground (GND) jack on top of the Diagnostic Tool. The stackable ground plug is used for connecting additional leads, such as the Channel 2 Lead or the Secondary Coil Adapter Lead, that require grounding. The stackable lead does not need to be connected to the GND jack on the Diagnostic Tool, it grounds through the non-stackable lead.

### Channel 2 Lead

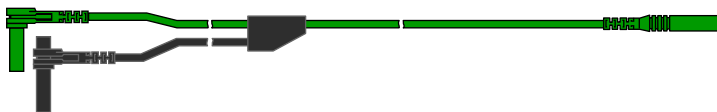


Figure 7-2 Green Channel 2 lead

The shielded green lead (Figure 7-2) is used for Channel 2. The lead color matches the color of socket 2 on the VERUS Diagnostic Tool and the color of trace 2 on the test screens. This green lead includes a stackable, black, right-angle, ground plug.

## Channel 3 Lead



Figure 7-3 Blue Channel 3 lead

The non-shielded blue lead (Figure 7-3) is used for either Channel 3 or Digital Meter minus (-). The lead color matches the color of socket 3 on the VERUS Diagnostic Tool, as well as the color of trace 3 on the test screen.

## Channel 4 Lead



Figure 7-4 Red Channel 4 lead

The non-shielded red lead (Figure 7-4) is used for either Channel 4 or Digital Meter plus (+). The lead color matches the color of socket 4 on the VERUS Diagnostic Tool, as well as the color of trace 4 on the test screen.

## Alligator Clips

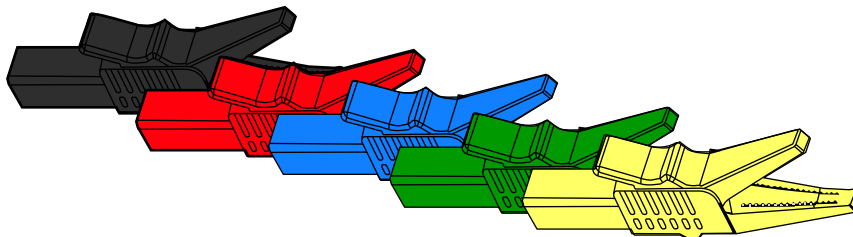


Figure 7-5 Alligator clip

Four insulated alligator clips are included and colored to match each test lead, a black clip for the common ground lead is also supplied (Figure 7-5). Each clip plugs into the straight end of a channel lead.

## Test Probes

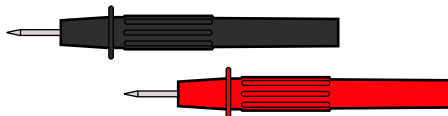


Figure 7-6 Test probe

Two test probes are included, one black and one red (Figure 7-6) and plug into the straight end of the test leads.

## Secondary Coil Adapter Lead (optional)

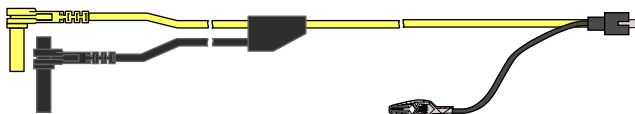


Figure 7-7 Secondary Coil Adapter lead

The optional Secondary Coil Adapter lead (Figure 7-7) connects to the clip-on secondary wire adapter, coil-in-cap adapter or coil-on-plug adapter to display secondary waveforms.

## Secondary Ignition Clip-on Wire Adapter (optional)



Figure 7-8 Secondary Ignition Clip-on Wire Adapter

The optional Secondary Ignition Clip-on Wire Adapter (Figure 7-8) connects the Secondary Coil Adapter lead to the vehicle Secondary wire to display ignition patterns.

## Inductive RPM Pickup Adapter (optional)



Figure 7-9 Inductive RPM Pickup adapter

The optional Inductive RPM Pickup adapter (Figure 7-9) connects to the scope auxiliary jack of the VERUS Diagnostic Tool with a DB9F plug. It can be used to trigger a waveform or display RPM. With the Ignition Scope, the RPM Pickup connects to cylinder number one to establish the firing order.

### Low Amp Current Probe (optional)

The optional Low Amp Current Probe provides accurate and reliable non-intrusive testing of ignition coils, fuel injectors, fuel pumps, relays, electric motors, and parasitic draw. The optional Low Amp Current Probe measures current from 10 mA to 60 Amps.



Figure 7-10 Low Amp Current Probe

### 7.1.3 Menu Icon Options, Scope Multimeter

The Menu icon on the Toolbar at the base of the screen opens a menu with the following options:

- [Safety Information](#)—opens the *Important Safety Instructions* document.
- [File](#)—allows you to print or save the data or meter setup being viewed.
- [Setup](#)—allows you to adjust certain tool settings once a test has been selected.
- [Help](#)—allows you to view supporting documentation.

#### File

Use to print or save a copy of the data currently being viewed. Selecting opens a submenu:

- **Save Multimeter**—opens an additional submenu with these options:
  - **Save Configuration**—saves the current screen setup as a preset for quick access.
  - **Save Single Frame**—saves a recording of the current screen.
  - **Save All Frames**—saves a recording of the current screen plus all the data in the buffer.
- **Print**—opens a standard Windows Print dialog box for printing the current screen. A message will display asking if you wish to print only the scope or the entire screen display. Answering No will print the entire displayed screen.

#### Setup

This option allows you to adjust tool settings to your personal preferences. Selecting opens a menu of the following:

- [Unit Setup](#)—opens the Unit Setup dialog box to adjust trace and display settings
- [Snapshot](#)—opens the Snapshot dialog box for selecting how triggered data is saved.
- [Ignition](#)—opens the Ignition dialog box for setting up to display secondary ignition patterns.



## Help

A variety of utilities and additional resources are available through the Help menu:

- User Manual
- Version Info
- Activation Status
- Scope About

The User Manual, Version Info, and Activation Status options are the same as explained previously, see [Getting Started](#) on page 12 for details.

### **Scope About**

This option opens a dialog box that contains the software version and other specific details about the Scope module. A **Copy to Clipboard** icon allows you to copy and paste the information to a document or e-mail.

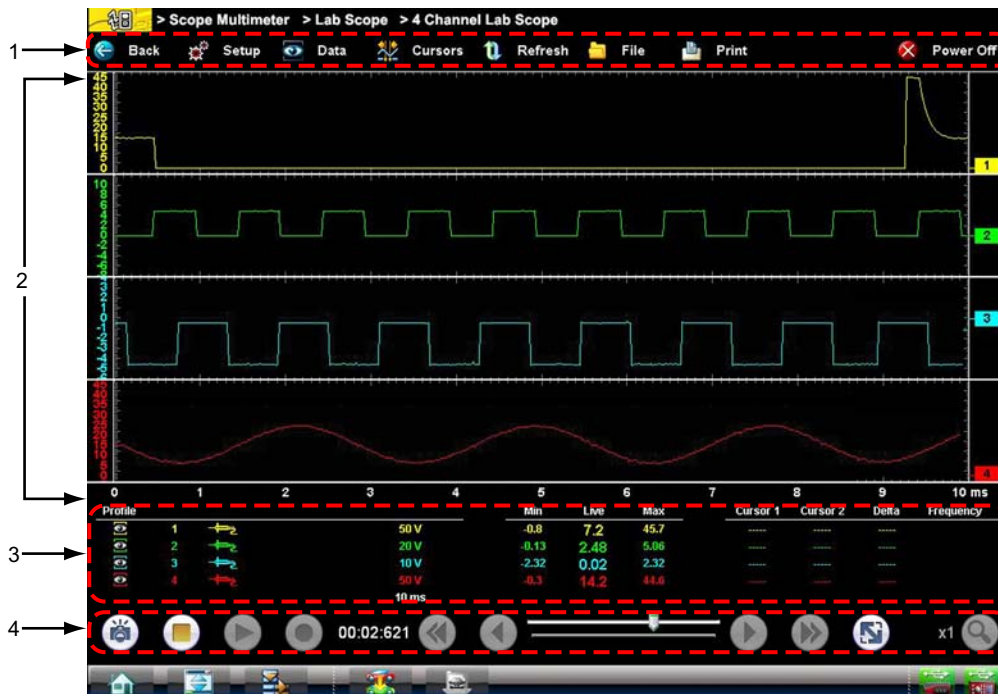
## 7.2 Navigation

The following section describes how to navigate the screen interface.

### 7.2.1 Screen Layout

The screens typically include the following sections ([Figure 7-11](#)):

- **Scope Multimeter Toolbar**—allows you to configure the tool for the type of test and to adjust the settings for each channel, or trace.
- **Main Body of the screen**—displays test results. Options on the toolbar let you select how tests display on the screen.
- **Trace Details**—displays trace settings, which can be adjusted or switched through the touch screen.
- **Record/Playback Control Toolbar**—allows you to record and navigate through paused data.



- 1— Scope Multimeter Toolbar
- 2— Main Body
- 3— Trace Details
- 4— Record/Playback Control Toolbar

Figure 7-11 Scope Multimeter screen layout

### Scope Multimeter Toolbar

The Scope Multimeter toolbar is used to set up the tool for testing and to configure the settings for each trace. The table below gives brief descriptions of the control icons on the toolbar:

Table 7-4 Scope Multimeter toolbar icons (part 1 of 2)




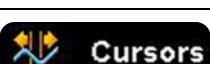
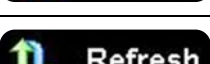



Name	Icon	Description
Back		Returns to the previously viewed screen.
Setup		Opens a dialog box that allows you to select personal preferences for viewing and saving data.
Data		Switches the trace information displayed at the base of the screen between three available states.
Cursors		Opens a dialog box that allows you to switch cursors on and off, and to reposition them on the screen.
Refresh		Updates data on the viewing screen.

Table 7-4 Scope Multimeter toolbar icons (part 2 of 2)

Name	Icon	Description
File		Opens a dialog box that allows you to select options for saving data.
Print		Opens a dialog box that allows you to configure and print data.
Power Off		Switches the Scope Multimeter off. This retains the settings and reduces battery drain when switching to a different module. The Play and Record icons on the Playback toolbar switch the meter back on.

## Main Body of the Screen

The main body of the screen varies depending on what display options have been selected. Up to four traces, along with digital readouts of current signal values, signal status and triggering conditions, can be displayed simultaneously on the main body of the screen. Adjustments to the display are made through the scope toolbar as explained above.

Each trace is displayed as voltage over time on a standard oscilloscope screen. Voltage level is recorded on the vertical, or “y”, axis and time is presented on the horizontal, or “x”, axis of the screen. Values are shown for each graduation on the scales.

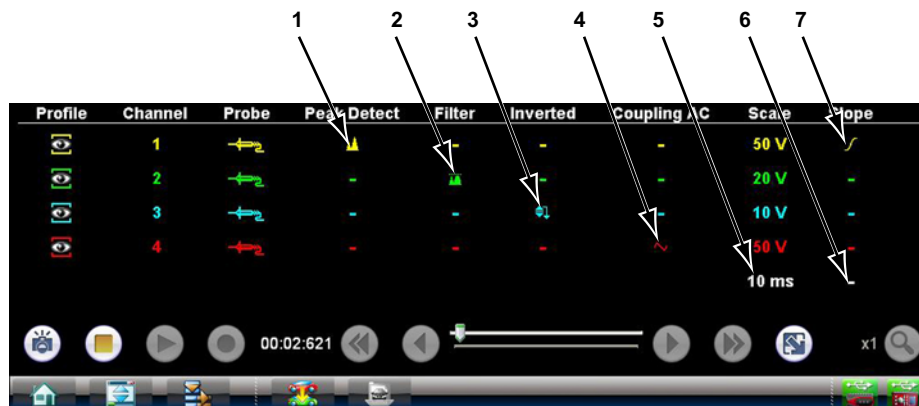
When using pressure transducers, the pressure being sensed is converted into a voltage signal. However, the values are shown as pressure on the display screen rather than voltage.

## Trace Details

The Trace Details section displayed at the base of the screen can be used to quickly adjust settings for capturing the trace. The Trace details are accessed using either the **Data** icon on the upper toolbar or the **Touch and Grow** icon (fingerprint) icon on the Playback toolbar. Both icons function the same and cycle the Trace Details selection through three states:

- **Displayed**—trace settings are displayed in this mode
- **Expanded**—trace settings are displayed in a larger format in this mode
- **Off**—trace settings are not displayed in this mode

Adjustments are made by selecting the item to be changed on the screen. A dash (–) indicates a function that is not selected, and an icon displays to indicate an active function ([Figure 7-12](#)).



- 1— Peak Detect on
- 2— Filter on
- 3— Inverted trace
- 4— Coupling AC on
- 5— Sweep setting
- 6— Trigger setup
- 7— Trigger set on the rising slope

Figure 7-12 Sample data detail display

The following trace adjustments and settings are available:












- **Profile**—switches the trace for the selected channel on and off.
- **Channel**—opens a dialog box that allows you to configure the trace setup (see [Trace Controls](#) on page 90 for details).
- **Probe**—opens a dialog box that allows you to select the type of test probe being used.
- **Peak Detect**—maximizes the signal sampling rate in order to capture fast events, such as spikes, glitches and other anomalies, that may normally be undetected.
- **Filter**—smooths out the trace when the signal is disrupted by noise or other interference.
- **Inverted**—switches the polarity of the displayed signal.
- **Coupling AC**—subtracts the average value of the waveform by blocking the DC portion of an input signal in order to amplify the AC portion. This allows small variations in the trace to become visible.
- **Scale**—opens a dialog box that allows you to select the scale, which is the total value displayed on the vertical axis of the display. The value shown in white at the bottom of the list is the current sweep setting, selecting it open a dialog box that allows you to adjust the sweep (see [Sweep Controls](#) on page 91 for details).
- **Slope**—only active when a trigger is set, indicates whether the trigger is set to activate on the rising or falling slope of the trace. Selecting the slope icon switches the slope. The white dash at the bottom of the slope column is used to set the trigger, selecting it opens the trigger setup dialog box (see [Trigger Controls](#) on page 92 for details).

## Record/Playback Control Toolbar

The record/playback control toolbar at the base of the screen is used for recording data and for reviewing paused data. Use the stylus or your finger tip to activate the icons. A position counter in the toolbar displays a numerical value of where the current screen is in relation to the entire recorded file.

Use the toolbar icons (Table 7-5) to navigate the data.

**Table 7-5** Data buffer toolbar icons

Name	Icon	Description
Snapshot		Arms the software to take a snapshot of the sampled data
Step Back		Moves to the previous point in the recorded data
Back 1 Frame		Moves to the previous frame in the recorded buffer
Stop		Stops recording data
Record		Begins recording data
Play Recording		Plays the data recording in a continuous loop at actual speed
Forward 1 Frame		Moves to the next frame in the recorded buffer
Step Forward		Moves to the next point in the recorded buffer
Position Indicator		In record mode, indicates how much data is collected. In playback mode; shows the position of the buffered data currently displayed as minutes:seconds:milliseconds of elapsed time
Touch and Grow		Expands and collapses the Trace Detail area on the display screen to allow for easier finger tip control
Zoom		Increase or decrease the magnification of the graph

Use the slider in the middle of the toolbar to quickly move through paused data.

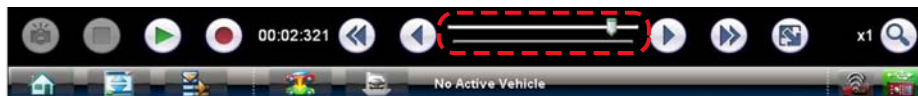


Figure 7-13 Sample data buffer slider

## 7.2.2 Making Selections

Most selections for setting up and operating the scope are made using the stylus and the scope toolbar. The cursor lines, the trace zero line, and the trigger point indicator (+) can be repositioned by selecting and dragging them in the main body of the screen.

There are two basic types of controls on the toolbar:

- Switches
- Dialog boxes

A Switch changes states when selected. Changes happen immediately as the selection is made.

A dialog box opens as a separate window on the screen and typically includes a number of choices. Changes happen immediately, however, the dialog box must be closed to return to the main window and continue. Make a selection to close the dialog box.

## 7.3 Operations

This section describes configuring the scope or meter and performing tests. Selecting “View Meter” from a Guided Component Test or Scanner screen saves time by automatically configuring the scope or meter.

### 7.3.1 Starting the Scope and Multimeter

Use the following procedure to set up the scope multimeter for performing tests.



#### To start the scope multimeter:

1. Select the **Scope Multimeter** icon on the VERUS Home screen.  
The Scope Multimeter main menu, a list of setup options, displays;
  - Lab Scope
  - Ignition Scope
  - Graphing Meter
  - Digital Multimeter
  - Presets
2. Select the correct main menu option for the tests to be performed.  
A submenu of scope or meter configuration displays, see below for additional information.
3. Select the correct configuration for the tests to be performed.  
The Scope Multimeter displays configured for the selected test.

## Lab Scope Options

The following options are available for testing:

- 4 Channel Lab Scope
- Volts DC
- Low Amps (20)
- Low Amps (40)
- Low Amps (60)
- Ignition Probe
- 100 PSI Vacuum
- 100 PSI Pressure
- 500 PSI Pressure
- 5000 PSI Pressure

## Graphing Options

The following options are available for testing:

- 4 Channel Graphing
- Volts DC
- Volts DC Average
- Volts AC RMS
- Frequency
- Pulse Width
- Injector Pulse Width
- Duty Cycle
- Low Amps (20)
- Low Amps (40)
- Low Amps (60)
- MC Dwell (60)
- MC Dwell (90)
- 100 PSI Vacuum
- 100 PSI Pressure
- 500 PSI Pressure
- 5000 PSI Pressure

## Ignition Scope Options

The following options are available for testing:

- Parade
- Cylinder
- Raster
- Superimposed
- Single Cylinder Ignition

## Digital Multimeter Options

The following options are available for testing:

- Volts DC
- Volts DC Average
- Volts AC RMS
- Ohms
- Diode/Continuity
- Low Amps (20)
- Low Amps (40)
- Low Amps (60)

## Presets

Presets are factory configured meter settings for common component tests. Selecting opens a list of available setups. Selecting from the list opens the scope multimeter configured to perform the selected test. In addition to the factory presets, you can create your own custom meter configurations and save them as presets.

### 7.3.2 Measurement Out of Range

A group of arrows display when a measurement is out of range for the scale selected:

- Arrows pointing UP—measurement over maximum range
- Arrows pointing DOWN—measurement under minimum range

Voltage measurements also display arrows in place of live values when the voltage exceeds the input rating of the meter.

#### WARNING



Risk of electrical shock.

- **Do not exceed voltage limits between inputs as indicated on the rating label.**
- **Use extreme caution when working with circuits that have greater than 40 volts AC or 24 volts DC.**

*Electrical shock can cause personal injury, equipment damage, or circuit damage.*

---

#### IMPORTANT:

If arrows are displayed in the live voltage values, discontinue circuit testing.

---

Correct an out-of-range condition by selecting a scale setting appropriate for the signal being sampled. See [“Trace Controls” on page 90](#) for more information.

### 7.3.3 Scope and Multimeter Setup

The following sections explain how to adjust the scope and multimeter for the specific type of signal being sampled. Most of these setup operations are available from the toolbar.



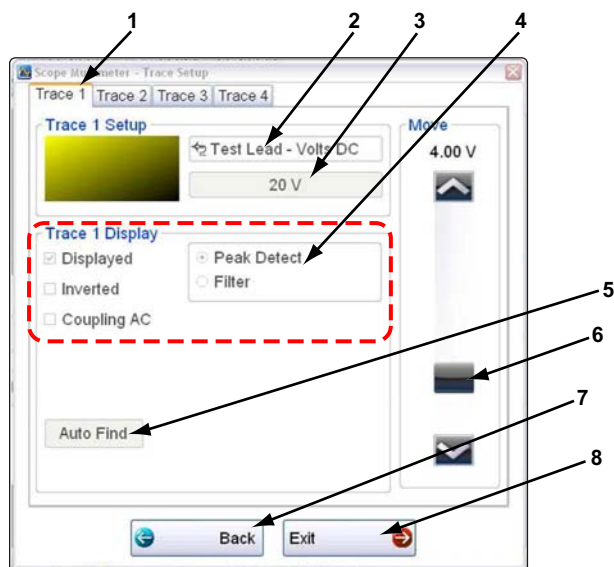
## Trace Controls

The Traces controls are used to adjust individual characteristics of how the signal is sampled and displayed for each of the four traces.



### To adjust trace controls:

1. Select **Setup** from the Scope Multimeter toolbar.  
The Scope Multimeter Preferences dialog box opens.
2. Select **Traces** to open the submenu.
3. Select the tab for the trace to be configured from the submenu  
The traces dialog box displays (Figure 7-14).



- 1— Trace tabs
- 2— Trace Probe icon
- 3— Trace Scale icon
- 4— Trace characteristics check boxes
- 5— Baseline position
- 6— Auto Find icon
- 7— Back icon
- 8— Exit icon

Figure 7-14 Traces dialog box

4. Select the **Trace Probe** icon to open the menu.
5. Highlight a probe on the list and select **OK** to close the window.
6. Select the **Trace Scale** icon to adjust the vertical scale, of the display.  
A dropdown menu opens, menu options vary depending upon which test lead is selected.
7. Select a trace scale option, then close the window.
8. Select or deselect the trace characteristic items as needed:
  - **Displayed**—this trace is on screen when checked, and not visible when not checked.
  - **Inverted**—signal polarity is reversed when checked, normal when not checked.

- **Coupling AC**—check when sampling an AC signal, uncheck for DC signals.
  - **Peak Detect**—use when trying to capture a fast event or signal glitch.
  - **Filter**—use when radio frequency interference (RFI) may be disrupting the signal.
9. The scope samples the signal and internally calculates the best way to display it when **Auto Find** is selected. A scale and the vertical position for the zero line of the trace that allows the whole waveform to fit on the screen is established when Auto Find is selected. If Auto Find is selected on the trigger channel, it also sets the trigger level halfway between the minimum and maximum value of the sampled signal to provide a stable waveform.
  10. The baseline position is the zero line of the trace, use the slider and arrows to adjust it.
  11. Select **Back** to return to the Preferences dialog box, or select **Exit** to close the dialog box and return to the scope.

## Sweep Controls

Sweep is the amount of time represented by the screen, or the horizontal scale of the display.



### To adjust Sweep controls:

1. Select **Setup** from the Scope Multimeter toolbar.  
The Scope Multimeter Preferences dialog box opens.
2. Select **Sweep** icon to open the sweep dialog box (Figure 7-15)

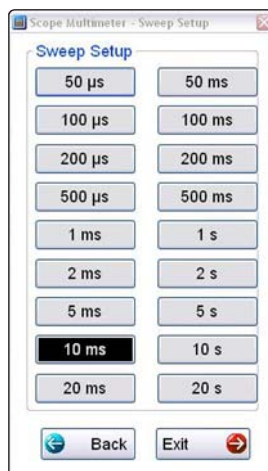


Figure 7-15 Sample Sweep Setup dialog box

3. Choose an option from the list.
4. Select **Back** to return to the Preferences dialog box, or select **Exit** to close the dialog box and return to the scope.

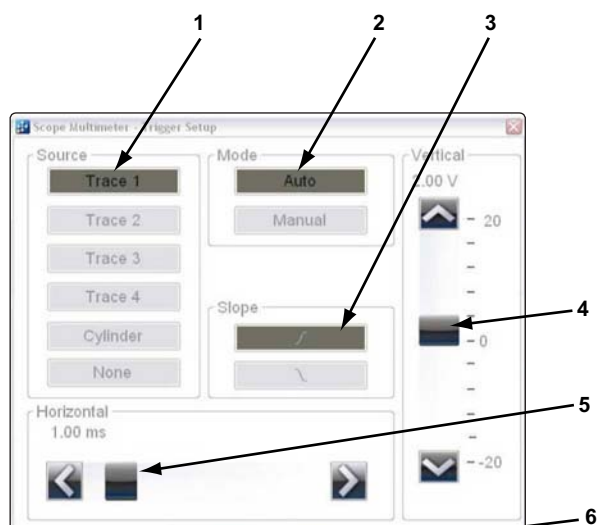
## Trigger Controls

Triggering allows you to set the scope so that it only begins displaying a trace once predetermined signal conditions, or triggers, are met. The trigger point is indicated by a plus sign (+) on the scope grid. The plus sign can be dragged across the grid with the stylus to roughly position it. The trigger controls allow you to precisely position the trigger.



### To adjust trigger controls:

1. Select **Setup** from the Scope toolbar. The Scope Multimeter Preferences dialog box opens.
2. Select **Trigger** to open the Trigger Setup dialog box (Figure 7-16).
3. Use the dialog box controls to establish the position for triggering.
4. Select **OK** to close the dialog box.
5. Select **Back** twice to close the Scope Multimeter Preferences dialog box.



- 1— **Source**—selects the triggering event:
  - Trace 1—sets the trigger to channel 1.
  - Trace 2—sets the trigger to channel 2.
  - Trace 3—sets the trigger to channel 3.
  - Trace 4—sets the trigger to channel 4.
  - Cylinder—sets triggering to the firing of a cylinder detected by the optional RPM Pickup or Secondary Ignition Adapter.
- 2— **Mode**—sets the method of triggering:
  - Auto (automatic)—if a trigger is found, the waveform displays. If a trigger is not found after about a half second, the waveform and a “trigger not found” message displays.
  - Manual—if a trigger is found, the waveform displays. If a trigger is not found nothing displays (no waveform and no message).
- 3— **Slope**—sets triggering to the rising (top icon) or falling (lower icon) slope of the signal waveform.
- 4— **Vertical position**—moves the trigger position up and down on the grid.
- 5— **Horizontal position**—moves the trigger timing left and right on the grid
- 6— Select **Back** to return to the Preferences dialog box, or select **Exit** to close the dialog box and return to the scope.

Figure 7-16 Trigger controls

## View Controls

Use the view controls to set display attributes.



### To adjust view controls:

1. Select **Setup** from the Scope Multimeter toolbar.

The Scope Multimeter Preferences dialog box opens.

2. Select View to open a submenu.

Three types of adjustment are available on the submenu:

- **Display**—use to adjust what information displays and how it appears
- **Layout**—use to set how many and how the traces display on the screen
- **Units**—use to adjust time and voltage interval settings

Selecting from the submenu opens a dialog box for that item. Dialog box options for each item are discussed in the following sections.

3. Make dialog box selections as needed.

4. Select **Back** to return to the Preferences dialog box, or select **Exit** to close the dialog box and return to the scope.

## Display Settings

Selecting **Display** from the View submenu opens the Display dialog box (Figure 7-17).

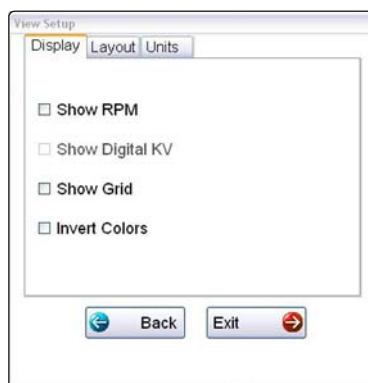


Figure 7-17 Sample Display dialog box

The following options are available from the Display dialog box:

- **Show RPM**—adds an engine speed field at the top of the screen (Figure 7-18).

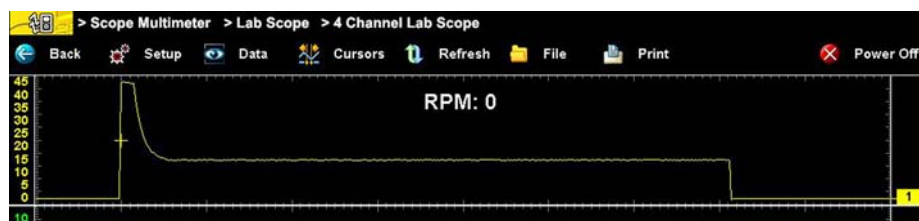


Figure 7-18 Sample Show RPM selected

- **Show Digital KV**—available only in ignition scope, adds a kilovolt reading to the screen.
- **Show Grid**—switches grid lines on the screen off and on (Figure 7-19).

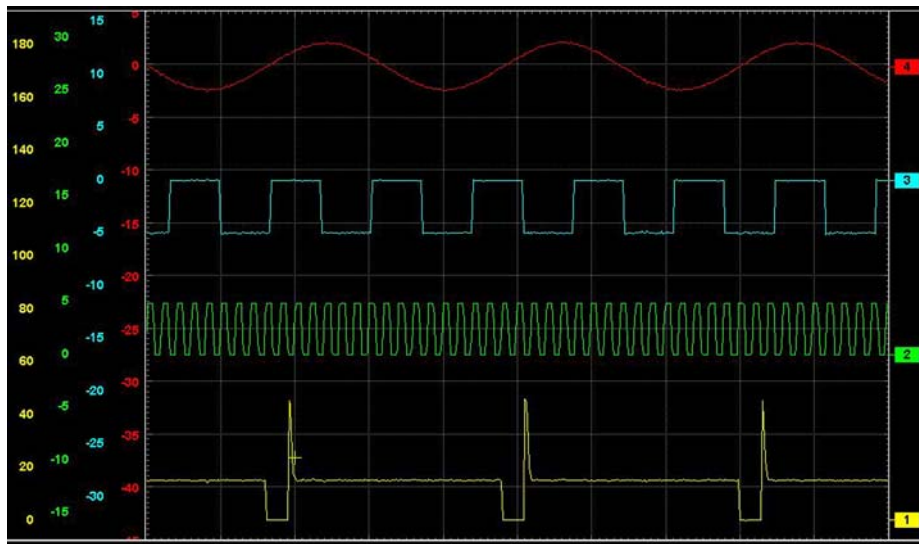


Figure 7-19 Sample grid selected

- **Invert Colors**—switches the screen background to white.

### Layout Settings

The selected radio knob on the Layout dialog box shows which setting is active. Use a finger or the stylus to switch between settings:

- **1 window**—shows all traces on the same screen (Figure 7-19).
- **2 windows**—shows two separate traces in two ways: horizontal, one below another (Figure 7-20) or vertical, side-by-side (Figure 7-21)

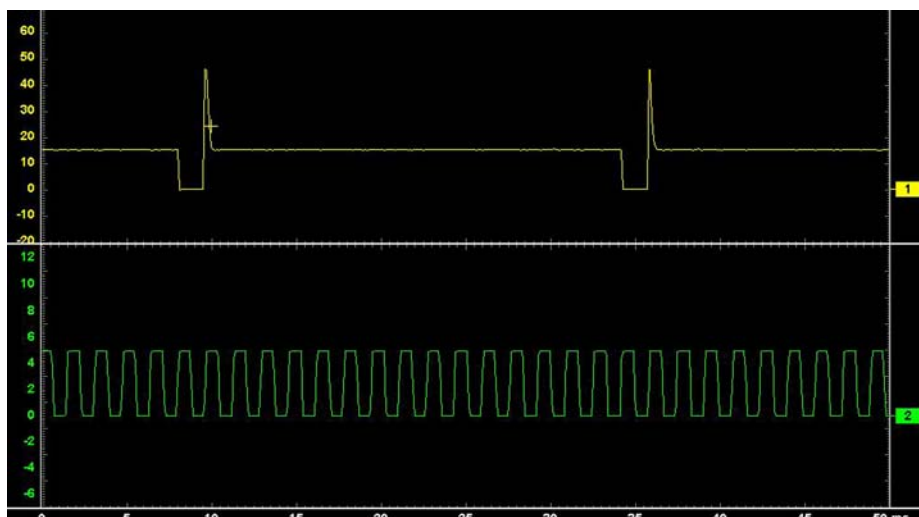


Figure 7-20 Sample 2 Windows horizontal display

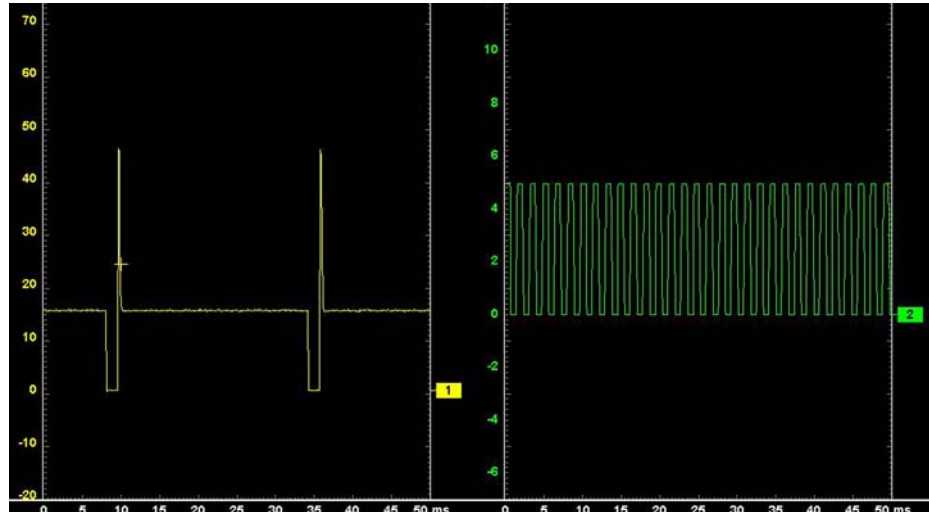


Figure 7-21 Sample 2 Windows vertical display

- **3 windows**—shows three traces, one below another, on the same screen (Figure 7-22).

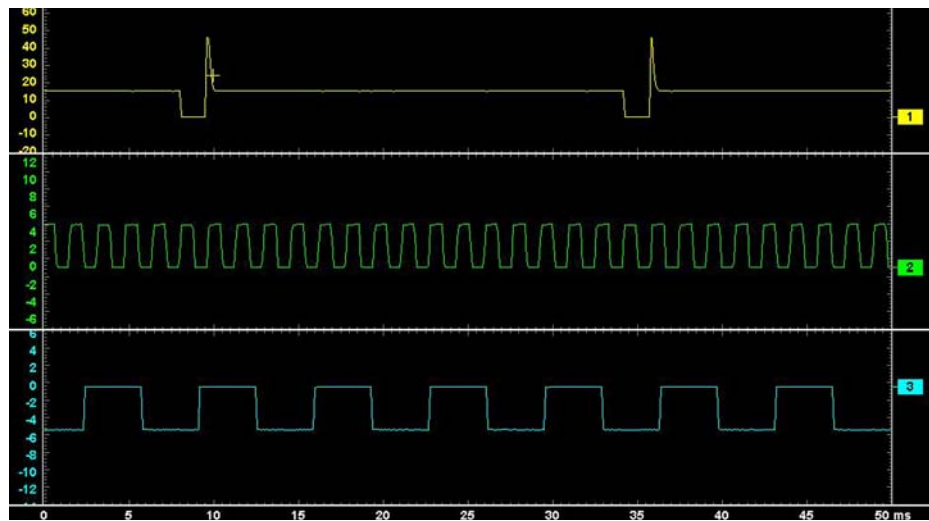


Figure 7-22 Sample 3 Windows display

- **4 windows**—shows four traces, one below another, on the same screen.

## Units Settings

The Units dialog box allows you to switch between Full Scale or Per Division settings for the trace setup and the display settings. Selecting Full Scale configures the units to the full viewing area of the screen, while Per Division adjusts the units to a single division (one tenth) of the screen.

The selected radio knob on the Units dialog box shows which setting is active. Use a finger or the stylus to switch between settings (Figure 7-23).

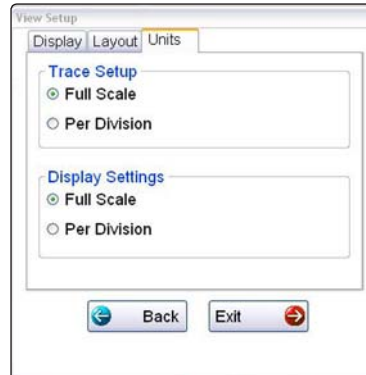


Figure 7-23 Sample View Units dialog box

## Setup Controls

Basic tool settings are adjusted here.



### To adjust setup controls:

1. Select **Setup** from the Scope Multimeter toolbar.  
The Scope Multimeter Preferences dialog box opens
2. Select **Setup** from the dialog box.  
A submenu of options displays:
  - **Units**—use to set how measurement values display, US standard or metric
  - **Snapshot**—use to adjust the percentage of data captured following a trigger event
  - **Ignition**—use to configure the optional ignition scope for the test vehicle
 Selecting from the submenu opens a dialog box for that item. Dialog box options for each item are discussed in the following sections.
3. Make dialog box selections as needed.
4. Select **Back** to return to the Preferences dialog box, or select **Exit** to close the dialog box and return to the scope.

## Unit Setup

The units of measurement can be changed between US standard or metric units of measure for pressure and vacuum readings. The table below shows available unit values.

Abbreviation	Description
bar	bar
inHg	inches of mercury

Abbreviation	Description
kg/cm2	kilograms per centimeter squared
kPa	kilopascal
mmHg	millimeters of mercury
psi	pounds per square inch

Selecting Units opens the Setup dialog box. The selected radio knobs on the Setup dialog box show which settings are active (Figure 7-24).

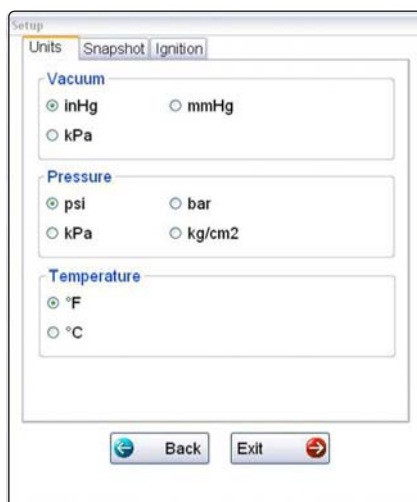


Figure 7-24 Sample Setup Units dialog box

### Snapshot

The Snapshot tab of the Setup dialog box opens a window that allows you to select how much data is captured after a snapshot is triggered (Figure 7-25). Available selections, which range from ten to ninety percent in ten-percent increments, are shown as icons with the current setting highlighted. Select a icon, then select **OK** to close the dialog box.

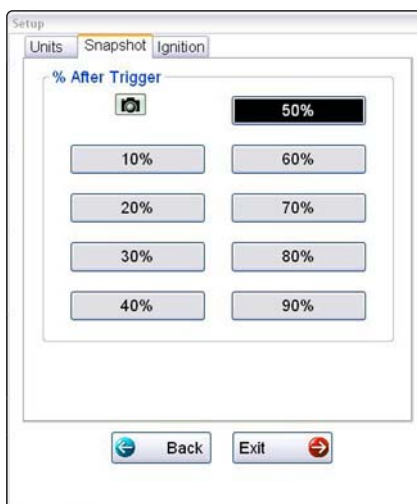


Figure 7-25 Sample Snapshot dialog box

Refer to [Trigger Controls](#) on page 92 for information on how to setup a trigger.



## Ignition

The Ignition tab of the Setup dialog box is used to configure the scope for displaying secondary ignition patterns. There are two main selection fields (Type and Cylinders) and two fields that vary depending upon the type of ignition system selected in dialog box (Figure 7-26).



Figure 7-26 Sample Setup Ignition dialog box



### To setup Ignition tests

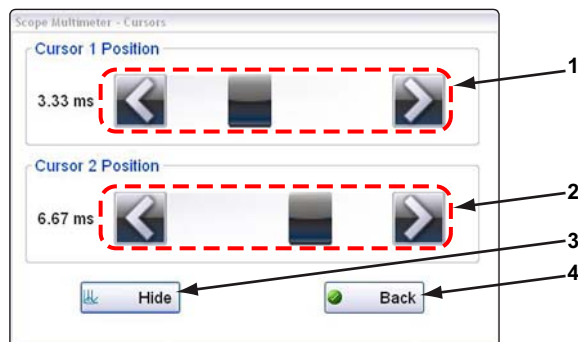
1. Select the **Setup** icon to open the Setup dialog box.
2. Select the **Ignition** tab of the dialog box.
3. Highlight the ignition system for the test vehicle in the “Type” field:
  - **Standard**—use for systems with a distributor
  - **Waste Spark**—use for coil pack systems that fire 2 plugs simultaneously
  - **Direct**—use for coil-on-plug systems
  - **Other**—use for systems that do not fit any of the above categories
4. Select the number of cylinders for the test vehicle in the “Cylinders” field. Scroll through the list using the up and down arrows on either side of the number.
5. This step varies depending upon the type of ignition system:
  - If testing a Standard system, select the Firing Order.
  - If testing an Other system, select the RPM Factor. Scroll through the list of available choices using the up and down arrows below the displayed firing order or RPM factor.
6. This step also varies depending upon the type of ignition system:
  - If testing a Standard or Direct system, choose between Coil and Plug for the Number 1 Trigger.
  - If testing a waste Spark system, select the polarity of the firings using the +, –, and arrow icons.
7. Select **Back** to return to the Preferences dialog box, or select **Exit** to close the dialog box and return to the scope.

## Data

The **Data** icon on the toolbar switches the trace details information at the base of the screen as previously in [Trace Details](#) on page 84.

## Cursor Controls

The cursor controls include a Show Cursors check box plus a slide control and arrows for moving the cursor position left or right. Select **Cursors** from the toolbar to open the Cursors dialog box ([Figure 7-27](#)).



- 1— Cursor 1 controls
- 2— Cursor 2 controls
- 3— Show or Hide icon
- 4— Back icon

**Figure 7-27** *Cursor controls*

Cursor 1, the top slider and arrows, is the left-hand cursor on the screen. Cursor 2, the lower set of controls, is the right-hand cursor on the screen. Drag the slider or select the arrows to position the cursors. Each tap of the stylus moves the cursor incrementally in the direction of the arrow.

- Select **Show** to display the cursors (the icon changes to Hide).
- Select **Hide** to conceal the cursors (the icon changes to Show).
- Select **Back** to close the dialog box.

## Refresh Controls

Selecting the **Refresh** icon from the Scope Multimeter Toolbar clears the minimum and maximum digital values and updates the viewing screen.

## File Controls

Selecting **File** from the toolbar opens a dialog box with a menu of save options:



Figure 7-28 Sample file setup dialog box

- **Save Configuration**—saves the current setup values as a preset.
- **Save Single Frame**—saves the data currently on the screen only.
- **Save All Frames**—saves the current screen plus all the data stored in the buffer.



### To save a file or configuration:

1. Select **File** from the toolbar.
2. Select a save option from the dialog box.  
The Save As dialog box and the virtual keyboard open.
3. Use the keyboard to name the file to be saved, then either select the **Save** icon or select **return** on the keyboard.

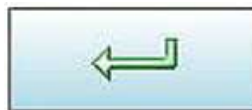


Figure 7-29

A configuration description dialog box opens.



### NOTE:

The description entered here is what displays in the information panel of the Data Manager.

4. Use the keyboard to enter a description of the file to be saved.
5. Select the **OK** icon or select **return** on the keyboard.
6. Select **OK** to close the file setup dialog box.

Once a configuration is saved, it becomes available as a preset. Files are saved to the Scope Multimeter Data Folder and can be retrieved through the **Data Manager**.

## Print Controls

Selecting Print from the toolbar opens a standard Windows Print dialog box set up to print the current screen. A printer must be connected and setup on the VERUS unit. If not, the “Add Printer Wizard” opens and guides you through the procedure. Select from the menus as needed.

Designed to help you improve diagnostic accuracy and reduce repair time, SureTrack is a comprehensive source of expert knowledge for professional technicians, combining diagnostic experience and detailed parts replacement records, all wrapped in an interactive community.

SureTrack offers this exclusive list of features:

- Access to multiple resources through a single intelligent lookup
- Common Replaced Parts feature shows which parts are most frequently replaced to successfully complete repairs for symptoms, codes and vehicles similar to the one in your bay
- Tips and fixes harvested from completed repairs, validated by SureTrack expert technicians
- Guided Component Tests and waveform library gathered through on-vehicle tests for a confident diagnosis
- OEM campaign alerts – never forget to check for TSBs and recalls again
- Up-to-the-minute intelligence based on vehicles currently in service bays nationwide

**NOTE:**

You must have a current SureTrack subscription to access the SureTrack information.

---

SureTrack information can be accessed in multiple ways:

- While displaying DTCs in Scanner Mode
- Starting the SureTrack Program from the Home screen
- Using a web browser, visit the SureTrack website (askatech.com) on a device with internet access

## 8.1 Using SureTrack in Scanner Mode

Before using SureTrack, you must be logged in. If you are not currently logged in and connected to the SureTrack website, a dialog box will appear on the Display Codes screen displaying “**SureTrack Content May Be Available! Click here for more information.**”.

**To log in to SureTrack:**

1. Select the “**SureTrack Content May Be Available! Click here for more information.**” dialog box from the Display Codes screen or select the **SureTrack** icon on the Home screen.
2. Follow the screen prompts to log in to the SureTrack website.

SureTrack repair information can be accessed while reviewing DTCs in Scanner Mode. Current DTCs are displayed in a list that includes the DTC, a brief description, and a **Fix It!** icon (Figure 8-1).

The **Fix It!** icon opens a screen displaying:

- **Common Replaced Parts Graph**
- **Dashboard Feature Information**

### 8.1.1 Common Replaced Parts Graph

The Common Replaced Parts graph (Figure 8-1) shows the percentage of verified fixes (using the parts listed) derived from the total number of repairs by mileage. The example below indicates that based on 41 repairs (intake airflow sensor replacement) involving vehicles with up to 200k miles, approximately 33% of the repairs occurred at 125k miles. For additional information, see “Common Replaced Parts Graph” on page 102.

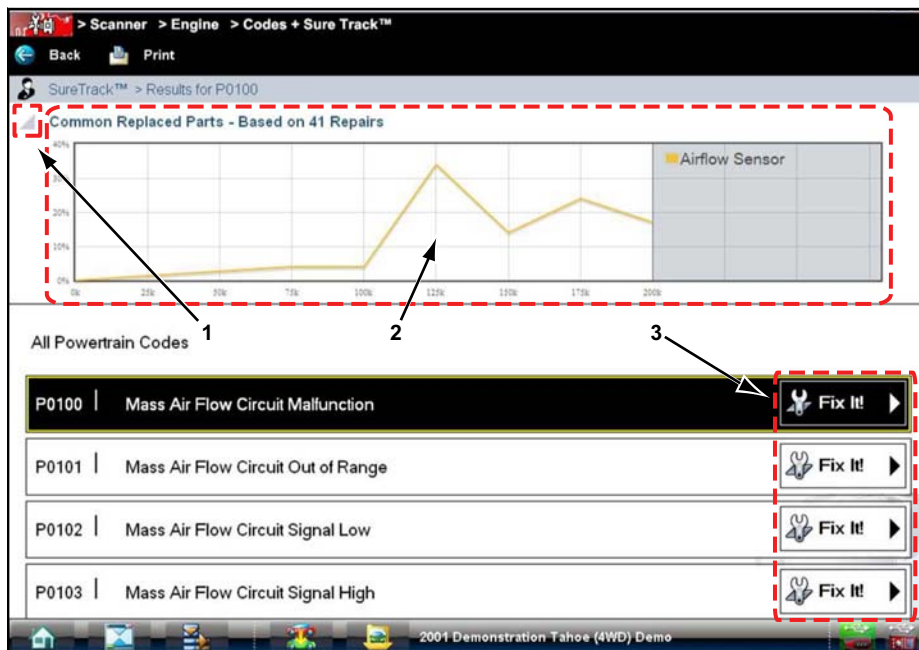


Figure 8-1 Sample Common Replaced Parts Graph

- 1— **Common Replaced Part Graph Icon**—toggles Common Replaced Parts graph display on/off.
- 2— **Common Replaced Part Graph**
- 3— **Fix It! Icon**—opens Dashboard Feature Information

## 8.1.2 Dashboard Feature Information

Dashboard Feature Information includes:

- Detailed DTC Information
- Related Tips, Real Fixes and Repair Information

SureTrack will display detailed information about the current DTC describing code setting conditions, possible symptoms, system operation and possible solutions. In addition, other reference links may be provided such as schematics and illustrations (Figure 8-2).

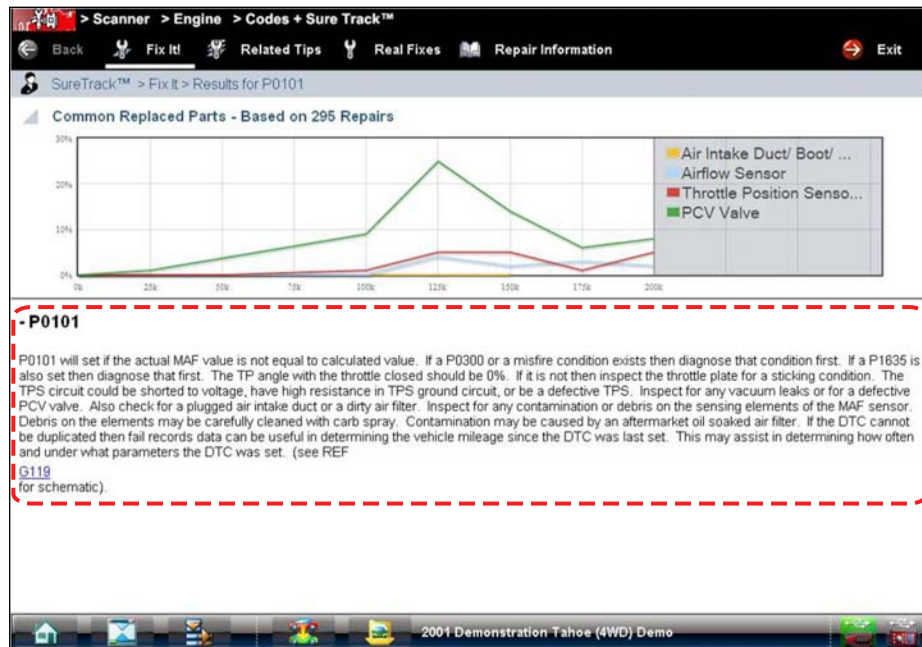


Figure 8-2 Sample "Fix It!" DTC Information

Menu links are also provided for:

**Related Tips**—opens a list of tips that may include information that is related to the current DTC (Figure 8-3).

**Real Fixes**—opens a list of tips related to the current DTC that have been gathered from actual shop repair orders and presented in a Complaint, Cause, Correction format (Figure 8-4).

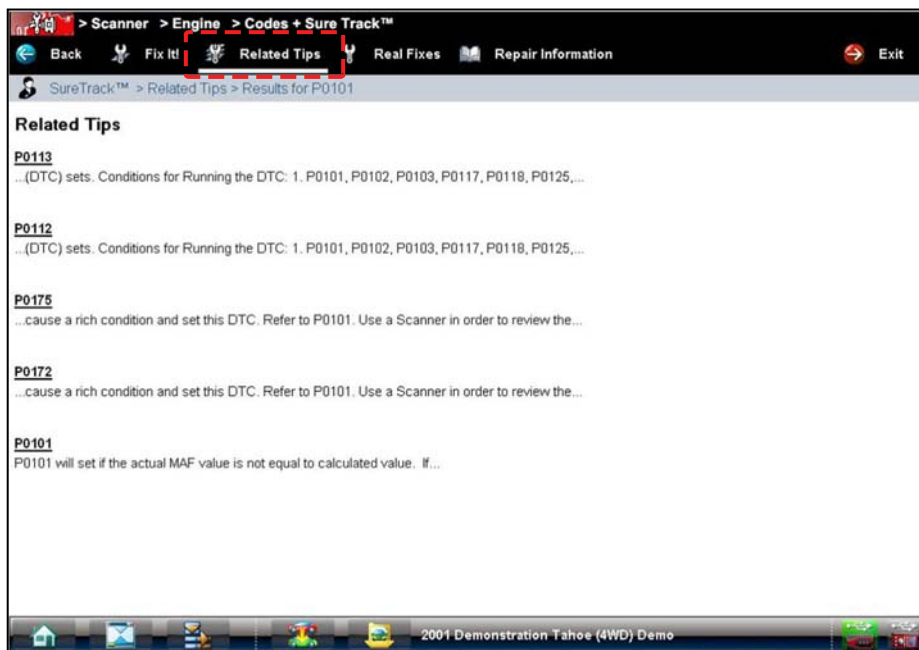


Figure 8-3 Sample Related Tips Screen

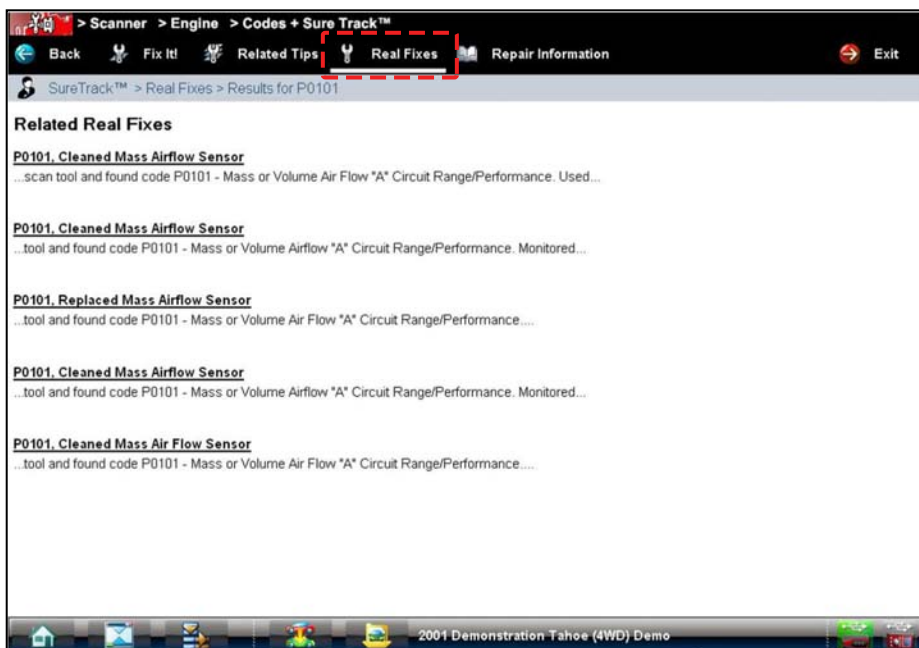


Figure 8-4 Sample Real Fixes Screen

**Repair Information**—starts the online ShopKey Pro website, See “Repair Information Operations” on page 116 for additional information (Figure 8-5).



Figure 8-5 Sample ShopKey Pro Login Screen

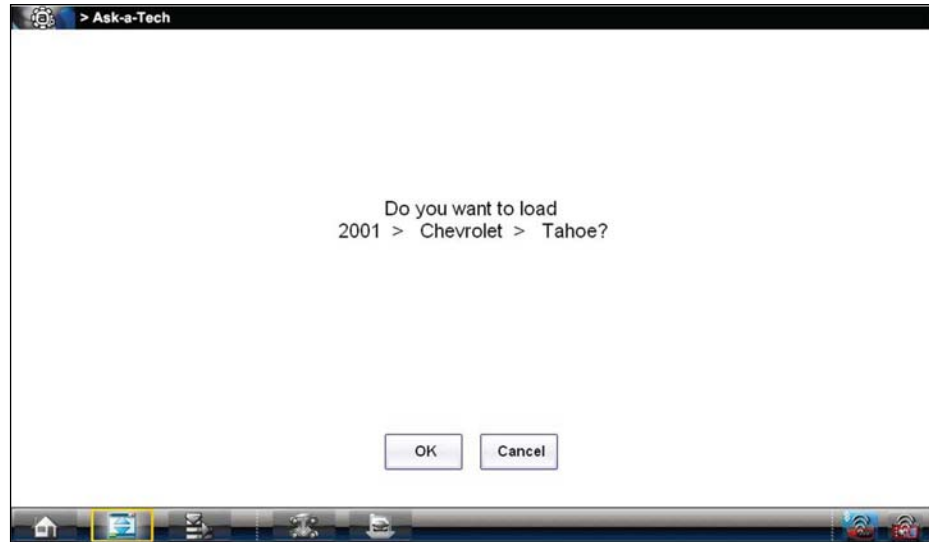


## 8.2 Starting SureTrack from the Home Screen

Select the **SureTrack** icon on the Home screen to start the website. SureTrack information is vehicle specific and a vehicle must be identified to access information.

Expect one of two results when SureTrack is selected:

1. A confirmation message displays if the Diagnostic Tool recognizes an active vehicle:
  - a. Select **OK** to continue with the identified vehicle.
  - b. Select **Cancel** to identify a different vehicle.



**Figure 8-6** Sample Confirmation Message

2. A vehicle identification sequence begins if there is no active vehicle. Follow the screen prompts to select the year, make, model, submodel, engine, and system of the vehicle. The SureTrack website opens once you confirm the vehicle identification.

## 8.3 SureTrack Website

The SureTrack website opens to the login page (Figure 8-7):

- If this is your first time using SureTrack, select the **Join Now** icon, which is on the right side of the screen to open the registration form. Complete the form and then select **Login**.
- If you are a returning user, simply enter your username and password, then select **Login**.

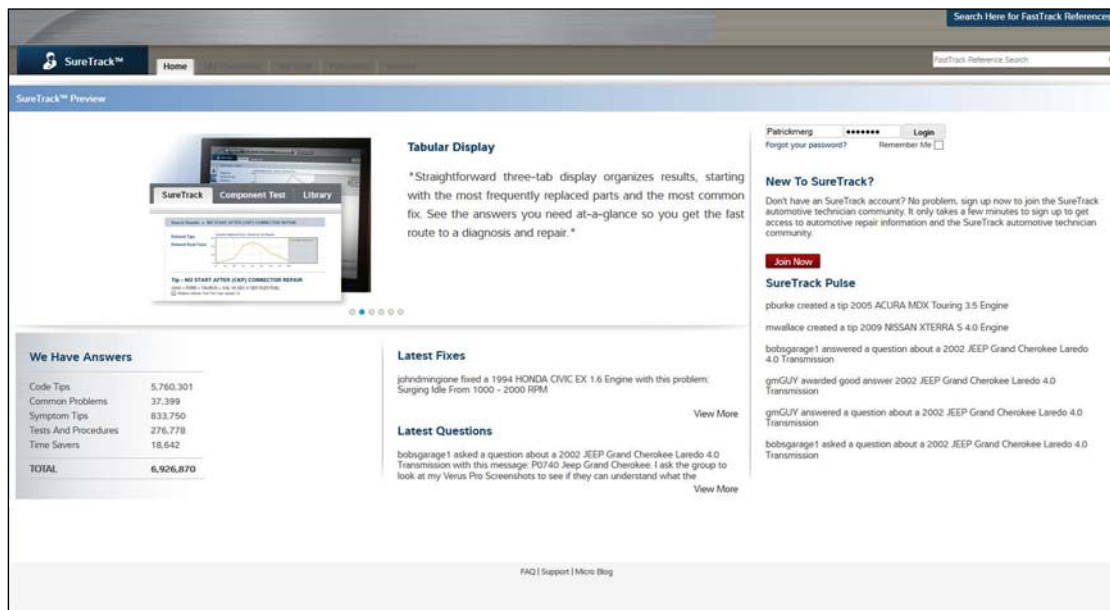


Figure 8-7 Sample SureTrack Login Page

When you login, the SureTrack website opens to the home page (Figure 8-8).

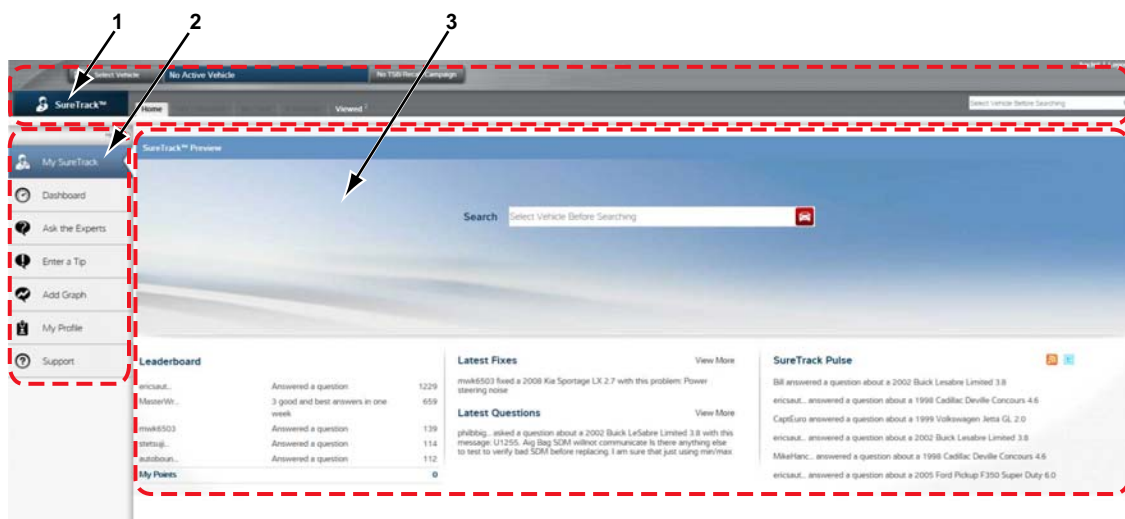


Figure 8-8 Sample SureTrack Home Page

- 1— **Header Bar**—located across the top of the page used to select vehicles and perform keyword searches.
- 2— **Navigation Bar**—located along the left-hand side of the page is used to access the main features of SureTrack.
- 3— **Main Screen**—the center portion of the page presents content based on the vehicle attributes and keywords selected.

The main screen also has tabs that allow you to switch between functions. Which tabs are available depends upon which function is selected on the Navigation Bar.

### 8.3.1 Header Bar

The Header Bar consists of two lines of options that run across the top of the page. The upper line has a Select Vehicle/Change Vehicle icon, a description of the active vehicle, and a TSB/Recall/Campaign icon. The lower line includes a series of tabs that allow you to switch between functions, and a search field for entering keywords to locate information. What is available from the tabs changes depending upon which function is selected on the Navigation Bar.

#### Select Vehicle/Change Vehicle

The Select Vehicle/Change Vehicle icon is used to identify the active vehicle to SureTrack. Vehicle attributes are selected from a sequence of option lists. Make a selection to advance through the lists. Once an active vehicle is identified, search data is filtered so that only information that applies to the identified vehicle is shown.



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**NOTE:**

To ensure a more accurate search, it is recommended that you should make a complete vehicle selection by choosing all of the attributes.

---

Select the **Change Vehicle** icon at any time to modify the attributes of the active vehicle. Select from the list on the left-side of the screen to change individual attributes of the active vehicle. The **Clear All** icon at the bottom of the list erases all of the vehicle attributes. Select **Use This Vehicle** in the upper-right corner of the screen to implement changes once they are made.

#### TSB/Recall/Campaign

Technical Service Bulletins from the original equipment manufacturer (OEM), recalls ordered by the National Highway Traffic and Safety Administration (NHTSA), and campaigns from the OEM that apply to the active vehicle are accessible from the TSB/Recall/Campaign icon. An icon appears on the icon if any TSB, recall, or campaign information is available for the selected vehicle ([Figure 8-9](#)).



**Figure 8-9** Sample TSB/Recall/Campaign Icon

Available items are listed in order; recalls first, followed by any campaigns, then service bulletins. The most recent is at the top of the list when multiple documents are available. Selecting a listed item opens the complete text of the recall or campaign. TSBs are grouped by year, select the plus sign (+) alongside a year to expand the list.

The screenshot shows the SureTrack website interface. On the left is a navigation bar with options: My SureTrack, Dashboard, Ask the Experts, Enter a Tip, Add Graph, My Profile, and Support. The main content area is titled '2011 Chevrolet Tahoe 5.3' and 'TSB/Recall/Campaign'. A window is open showing a list of recalls and campaigns. The window has a title bar 'Recalls(10) | Campaigns(6) | TSBs(444)'. The content is divided into three sections: NHTSA (SAFETY) RECALLS, OEM CAMPAIGNS, and TECHNICAL SERVICE BULLETINS (TSBs). The NHTSA section contains a table with columns 'Ref Number', 'Title', and 'Pub Date'. The OEM CAMPAIGNS section also contains a table with the same columns. The TSBs section is currently collapsed, showing a plus sign and the text '+ 2014 Technical Service Bulletins'. Below the window, there are sections for 'Related Real Fixes' and 'Related Tips'.

Figure 8-10 Sample TSB/Recall/Campaign Window

Select the **Back** icon on your web browser to close the open TSB/Recall/Campaign window.

## 8.3.2 Navigation Bar

Icons on the Navigation Bar start the main segments of the system. A **Hide/Open** icon in the upper-right corner of the Navigation Bar collapses and expands the width of the Navigation Bar so that it shows either icons only or icons and text. Navigation Bar options include:

- **My SureTrack**—shows the latest questions and fixes, along with the SureTrack Pulse and Leaderboard.
- **Dashboard**—shows the current search results for the active vehicle.
- **Ask the Experts**—use to post a question to the community.
- **Enter a Tip**—use to share your personal repair experience with the community.
- **Add a Waveform or PID Graph**—use to attach supporting images and files to an existing tip.
- **My Profile**—allows you to customize how your profile appears to the community.
- **Support**—opens a message box for contacting Customer Service by e-mail, a link to the Frequently Asked Questions (FAQ) page, as well as a phone number for contacting the Support Center.

## My SureTrack

My SureTrack opens your personal SureTrack page, which is also the page that displays when you first login to SureTrack.

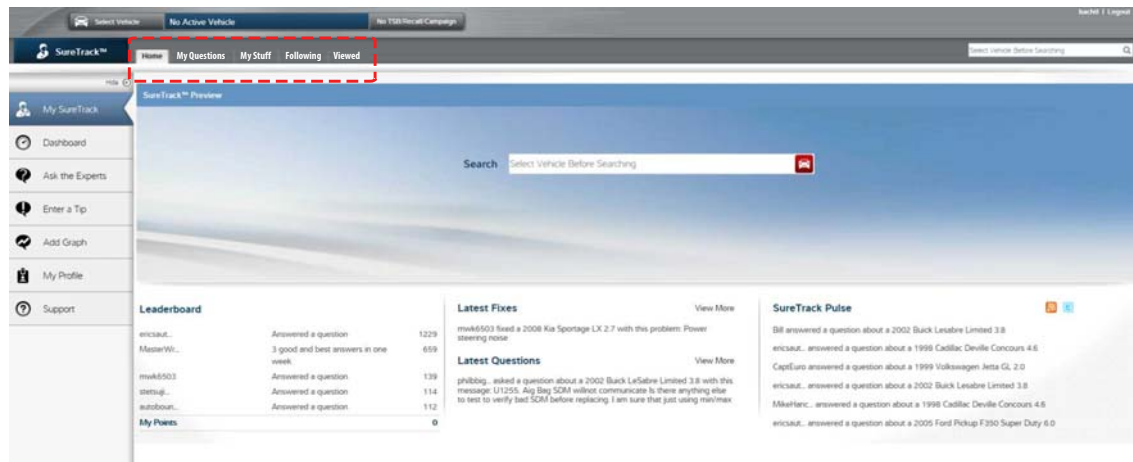


Figure 8-11 Sample My SureTrack Page

My SureTrack, the first option on the Navigation Bar along the left side of the screen, opens your personal SureTrack page. Five My SureTrack functions are available from the Header Bar tabs:

- **Home**—displays the SureTrack Leaderboard, links to Latest Fixes, Latest Questions, SureTrack Pulse, and a search field.
- **My Questions**—opens a list with links to questions that you have posted to the community.
- **My Stuff**—opens a list of Tips that you have created.
- **Following**—opens a list with links to Tips and discussions you are actively participating in.
- **Viewed**—opens a list with links to Tips that you recently visited.

## Dashboard

The Dashboard presents search results for the active vehicle. Search results may be listed in several categories:

- **Tips**—presents a list of Tips that directly correlate to your search criteria. Select a tip from the list to open and review the complete Tip.
- **Related Tips**—presents a list of Tips that may include information that pertains to your search, even though they are not an exact match to your search criteria.
- **Related Real Fixes**—presents a list of successful repairs for problems similar to the one in your search.
- **Community**—presents a list of Tips that have been gathered from actual shop repair orders and are presented in an easy to understand Complaint, Cause, Correction format.

There are also three key pieces of information available from the Dashboard: Common Replaced Parts, Component Test and Library.

### ***Common Replaced Parts***

When a tip is selected the Common Replaced Parts graph appears at the top the Dashboard page. The graph shows the frequency with which parts, commonly related to the Tip, are replaced and at what vehicle mileage. The data in the Common Replaced Parts graph is actual data extracted from millions of recorded repair orders from shops all around the country. For additional information, [see “Common Replaced Parts Graph” on page 102.](#)

### ***Component Test***

Component Test, accessed by selecting the tab on the Dashboard page, provides specific component operational information on how to locate the component on the vehicle, how to set up a meter to test the component, the best place on the vehicle to connect the meter, component connector pin assignments, and what readings you should expect to see.

### ***Library***

Library, accessed by selecting the tab on the Dashboard page, provides data graphs and/or waveforms associated with the selected Tip and vehicle. This is a comprehensive collection of test results gathered through actual on-vehicle tests, so you know exactly what to look for when performing your own tests. Data graphs and lab scope waveforms provide a point of reference to help you verify faulty parts.

### **Ask the Experts**

Ask the Experts, opens a series of text entry forms that allow you to ask a question to the SureTrack community. For additional information, [see “SureTrack Questions” on page 114.](#)

### **Enter a Tip**

Enter a Tip, opens a text entry form where you can enter you personal repair experience to share with the community.



#### **To create a new Tip:**

1. Select either **Select Vehicle** or **Change Vehicle** from the Header Bar and enter all of the identifying attributes of the vehicle you are writing the Tip about.
2. Select **Enter a Tip** from the Navigation Bar.
3. Enter your Tip Title in the Title field.
4. Compose your tip in the Content field. Include as much information as possible, while keeping the information concise and to the point. A tip should provide accurate information that is easy to read, understand, and follow.
5. Select **Submit** once you are satisfied with your Tip.

For additional information, [see “SureTrack Tips” on page 113.](#)

## Add Graph

Add Graph, opens a data entry form that allows you to attach a file sample of a graph or similar image. To submit the image you must complete all the required entries including Title, File (attach) and the five drop-down list items in the Tags menu box. When you are finished, select the **Submit** icon.

## My Profile

My Profile opens your personal identification page. The Header Bar tabs allow you to create your SureTrack identity, and to establish filters for the type of information that will be sent to you:

- **User Profile**—information that you include here determines how you are presented to the community.
- **Vehicle Selection**—use to set up a list of preferred vehicles. The preferred list limits the choices that display on the “Select Vehicle” list to specific years, makes, and systems.
- **Expert Subscriptions**—allows you to share your knowledge by alerting you when there is a question related to an indicated area of your expertise.
- **Communication**—use to configure what type of information from the community will be e-mailed to you.

## Support

Support opens a message box to contact the administrator of the SureTrack site.

### 8.3.3 Main Screen

The Main Screen is the active field that displays search results, SureTrack Tips, and other data that is available for the vehicle. The display varies depending upon which Navigation Bar function is active.

## 8.4 SureTrack Tips

SureTrack Tips are concise and complete descriptions of a real fix for a particular vehicle repair issue. A SureTrack Tip is a combination of proven fixes and vehicle specific data we have collected and analyzed into an all-in-one information source to help you fix vehicle problems quickly and easily.

On SureTrack you can search for Tips or enter your own Tip to help other community members resolve vehicle issues. There are 3 types of SureTrack Tips:

- **Snap-on Certified Tips**—these proven tips have gone through rigorous review by experts.
- **Real Fix Tips**—these tips are gathered from actual shop repair orders and are presented in an easy to understand Complaint, Cause, Correction format.
- **SureTrack Community Tips**—these are Tips that have been created by members of the SureTrack community.

The screenshot shows the SureTrack website interface. At the top, there's a navigation bar with 'SureTrack™', 'Component List', and 'Library'. A search bar contains 'Fuel'. Below the search bar, the results for 'P0300' are displayed. A graph titled 'Common Replaced Parts - Based on 907 Repairs' shows the frequency of various parts being replaced. Below the graph, a detailed tip for P0300 is shown, including the vehicle information (2001 Chevrolet Tahoe 5.3), the DTC description, and diagnostic steps. A table of related tips is also visible, listing codes like P0171, P0442, P0440, and P0124 with their respective 'Fixed It' counts.

Figure 8-12 Sample Tip

If you have a new fix to a specific problem, you can create a Tip to share this information with other technicians. See [“SureTrack Tips” on page 113](#).



## 8.5 SureTrack Questions

SureTrack provides answers, but you must first ask a question in order to receive an answer. Begin using SureTrack by asking a question of the Community. Select **See Examples** in the upper-right portion of the screen to view samples of well written questions.

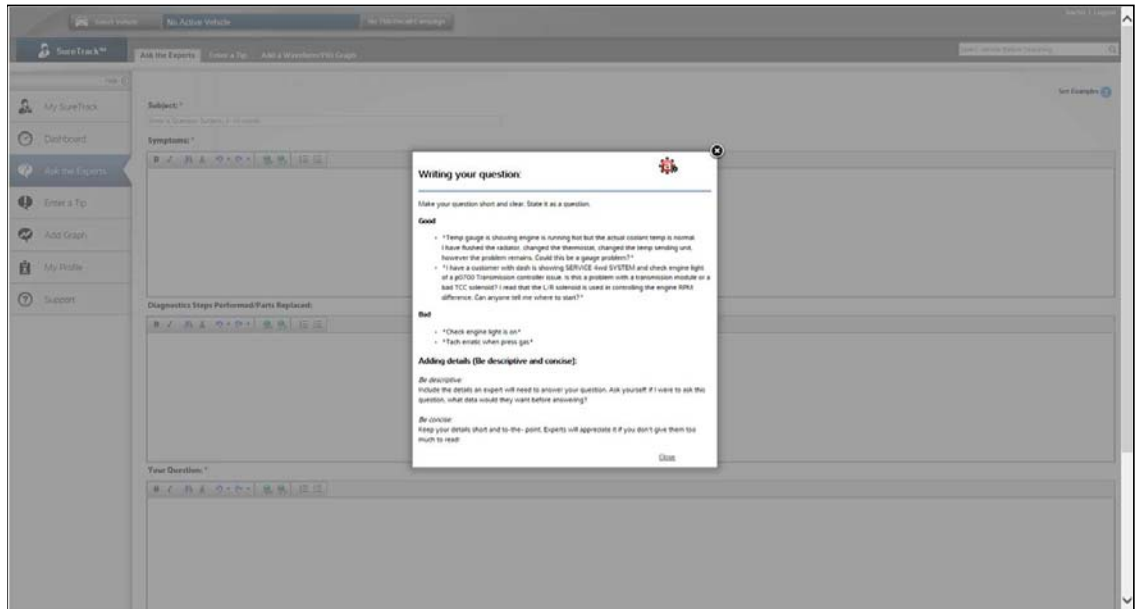


Figure 8-13 Example Question



### To ask a Question:

1. If not already done, select either **Select Vehicle** or **Change Vehicle** on the Header Bar and enter the identifying attributes of the vehicle you would like to ask a question about.
2. Select **Ask the Experts** on the Navigation Bar along the left-side of the screen to open the page.
3. Enter a **Subject** for the question (4 to 10 words).
4. Complete the form:
  - **Symptoms**—this is where you describe how the vehicle is behaving.
  - **Diagnostics Steps Performed/Parts Replaced**—include any previous diagnostic tests that you performed, including the results of those tests. Also list any parts that were replaced during previous diagnostic work.
  - **Your Question**—compose a clear and concise question to ask the community. Be sure to be descriptive and concise when asking your question. Select **See Examples** in the upper-right corner of the page to review examples of how to construct a good question.

The **Attach Files** icon at the left-side bottom of the page allows you to include images or other supporting data with your question. Select **Attach Files** and a selection window opens for locating items on your computer and attaching them.

Use the **Preview** icon at the right-side bottom of the page to see how your question will be presented to the community before you actually post it.

Use the **Cancel** icon at the right-side bottom of the page to delete your question.

Use the **Submit** icon at the right-side bottom of the page to ask your question.

Check the **Follow** box if you want to get e-mail notifications when other members edit or comment on your question.

## 8.5.1 Closing a Question

Questions that you post to the community need to be closed once the vehicle repair issue has been resolved. You are encouraged to document the fix, and an important part in doing so is to provide information on what actually fixed the vehicle. This makes it possible for other SureTrack community members to use the information as well. To close a question select the **Close Question** icon on the right side of your question. Your question is now converted to a SureTrack Community Tip. Unless you have already done so, you will be asked to award Best Answer and Good Answer ratings to reward those community members that helped you as part of closing the question. This awards Leaderboard points to those community members that assisted you.

### Rating Answers

Rating answers is one way to give back to the SureTrack community. The member that originally asked the question gets to select a Good Answer and a Best Answer from all the responses. The community member that provided the Good Answer or Best Answer to a question is recognized for their contribution.

About Good Answers and Best Answers:

- Only one answer can be rated Best Answer.
- More than one answer can be rated Good Answer.
- Only the SureTrack community member that asked the question can rate the answers.

### Leaderboard

The Leaderboard shows the top ranked SureTrack community members. Community members are awarded points for answering questions, and those that gather the most points show on the Leaderboard. Leaderboard points are awarded as follows:

- 1 point is awarded for answering a question.
- 5 points are awarded if your answer is rated as a “Good Answer” by the SureTrack community member who asked the question.
- 10 points are awarded if your answer is rated as the “Best Answer” by the SureTrack community member who asked the question.

Bonus points are awarded for:

- An extra 15 points every time three Best Answers are provided in the week.
- An extra 10 points for a combination of 3 Good Answers and Best Answers per week.

**NOTE:**

Answers can only be counted once for bonus points.

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After using the Scanner, Guided Component Test, and Scope Multimeter to diagnose and locate the source of a problem, select **Repair Information** on the Home screen to link to resources that help you fix the problem and get the vehicle back in service (Figure 9-1).



**Figure 9-1** Sample Home screen Repair Information icon

ShopKeyPro/ShopKey5 or ProDemand/OnDemand5 subscriptions are available as an option for North America. An internet connection is required. When installed, simply select the Repair Information icon on the Home screen to start the program. Refer to the on-line help within the ShopKeyPro/ShopKey5 or ProDemand/OnDemand5 program for additional information.

Vehicle History refers to any work in progress, such as a repair order, estimate or invoice, that has customer, vehicle, and repair information for a vehicle in your shop. The Vehicle History is the starting point for using the VERUS system.

The Scan Module and Guided Component Test software gets vehicle information from the Vehicle History, and can only start after a Vehicle History is opened.

## 10.1 Screen Layout

There are two main parts to the Vehicle History screen:



1— **Vehicle History Toolbar**—lets you manage the vehicle data

2— **Main Body**—lists all open Vehicle History records

Figure 10-1 Sample Vehicle History screen

### 10.1.1 Vehicle History Main Body

The main body of the screen lists all of the available Vehicle History items. By default, items are shown in the order in which they are entered. However, you can resort them by any of the categories shown as column headings. You can also resize the individual columns.



**To sort Vehicle History items:**

1. Select a category heading.

The listed items resort according to the selected category. A triangle appears alongside the name of the column that was used for the sort.

2. Select the triangle in the heading to reverse the sort order.



**To resize a Vehicle History column:**

1. Select the line separating two columns.

A line with arrowheads appears to show the column is ready for resizing.

2. Drag the line left or right to increase or decrease the column width.

### 10.1.2 Vehicle History Toolbar

The table below gives brief descriptions of the control icons on the toolbar:

**Table 10-1** *Toolbar icons*

Name	Icon	Description
Back		Returns to the previously viewed screen.
Activate		Loads the highlighted vehicle history.
View		Opens the worksheet for the currently highlighted vehicle history.
Delete		Erases the currently highlighted vehicle history.
Search		Opens a window that allows you to locate a particular vehicle history.
Show All		Available only after a search, use to return to a complete Vehicle History list.
Settings		Opens a window that allows you to configure which fields display on main Vehicle History screen.

### Activate

Use this icon to load an existing vehicle history when servicing a vehicle that you have previously worked on. VERUS uses the identification characteristics stored in the vehicle history to load the correct database, so you do not need to identify the vehicle to begin testing.



**To activate a vehicle:**

1. Locate and highlight the desired Vehicle History in the main body of the screen.
2. Select **Activate** on the Vehicle History toolbar.  
The Activate icon is removed from the toolbar once a vehicle has been selected.
3. Select the **Home** icon on the VERUS toolbar.  
The VERUS Home screen displays and with the activated vehicle shown on the toolbar.
4. Select any module icon on the Home screen to begin testing.

### View

Use this selection to open, edit, add notes, and print the work sheet for an existing Vehicle History.



**To modify an existing Vehicle History:**

1. Highlight the Vehicle History be opened in the main body of the screen.
2. Select **View** on the Vehicle History toolbar.  
The worksheet for the selected vehicle opens, and there are now Back and Save & Close icons available on the toolbar.

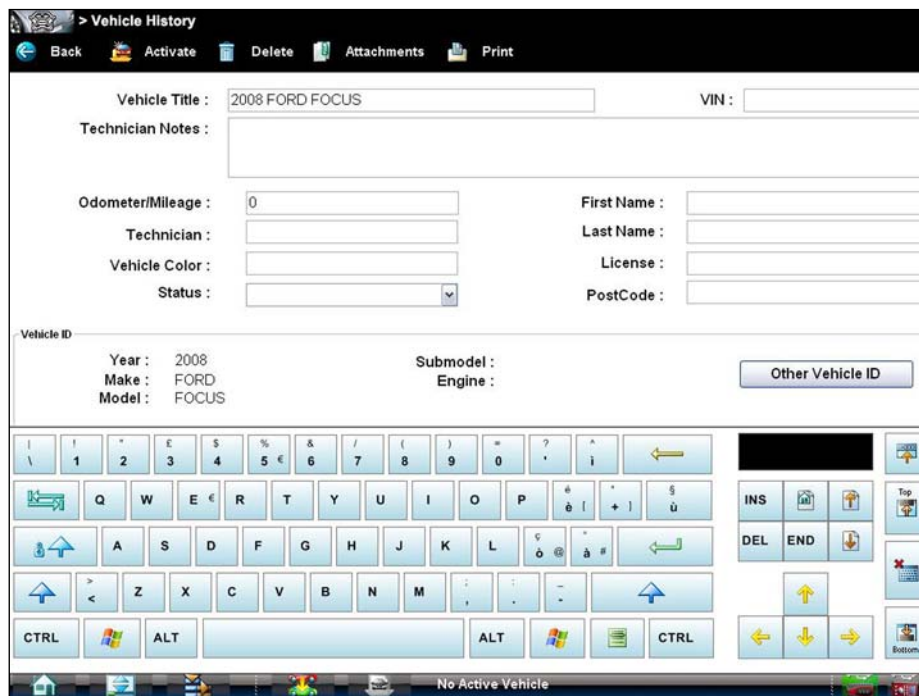


Figure 10-2 Sample vehicle history worksheet

**NOTE:**

The virtual keyboard automatically opens the first time you select within one of the data fields.

3. Use the virtual keyboard to enter information in the data fields.
4. Select **Save & Close** on the toolbar to save the changes you made and return to the Vehicle History screen.

Use the **Back** icon on the toolbar to return to the Vehicle History screen without saving the changes you made.

**Delete**

Use the Delete icon to remove unwanted items from the Vehicle History list. Simply highlight the item to remove, then select **Delete**.

**Search**

Selecting Search opens a dialog box that allows you to search Vehicle History items by category. You can search for data in the following categories:

- Year
- Make
- Model
- Color
- Customer
- License
- State
- Technician

**To search:**

1. Select **Search** on the Vehicle History toolbar to open the search window.
2. Select within the text field of the search window to open the virtual keyboard ([Figure 10-3](#)).

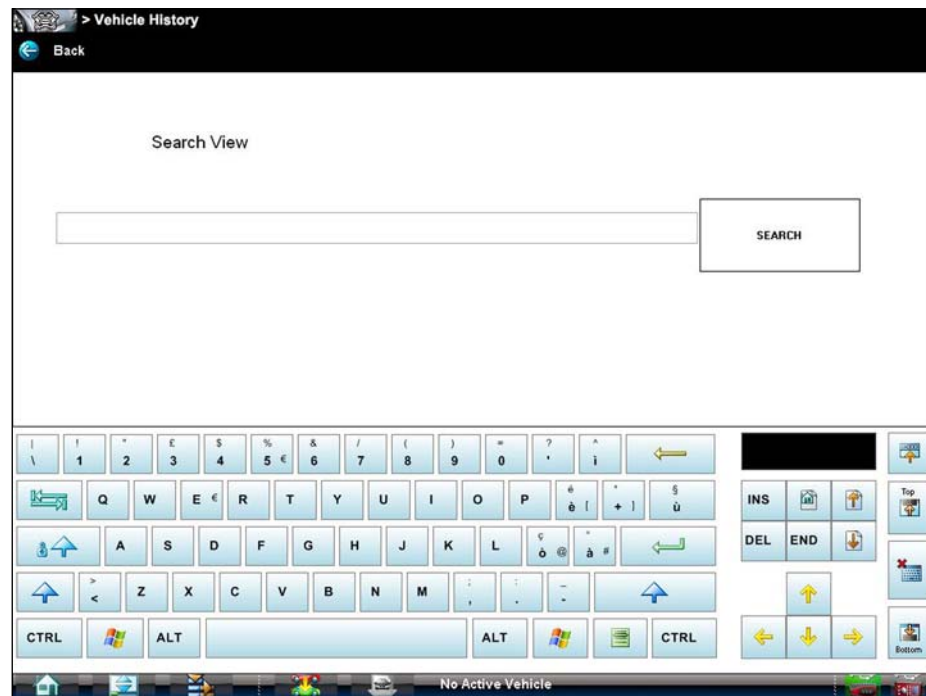


Figure 10-3 Sample Search dialog box

3. Enter the search criteria using the keyboard. There is no need to identify the category, just enter the search item.
4. Tap **Search** twice. The first tap closes the keyboard, the second tap starts the search. The display returns to the Vehicle History screen with only the records fitting the search criteria showing.
5. Select **Show All** on the toolbar to restore the complete Vehicle History list.

## Settings

Use Settings to determine which categories of information display in the main body of the Vehicle History screen. Selecting the Settings icon opens a dialog box.



### To change Settings:

1. Select **Settings** on the Vehicle History toolbar to open the dialog box.

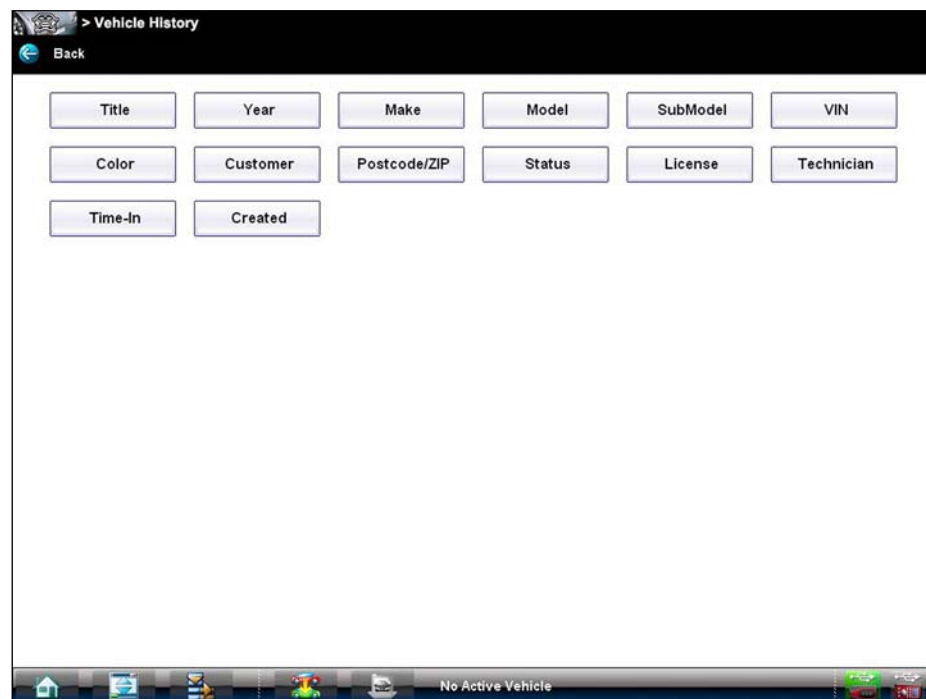


Figure 10-4 Sample Settings dialog box.

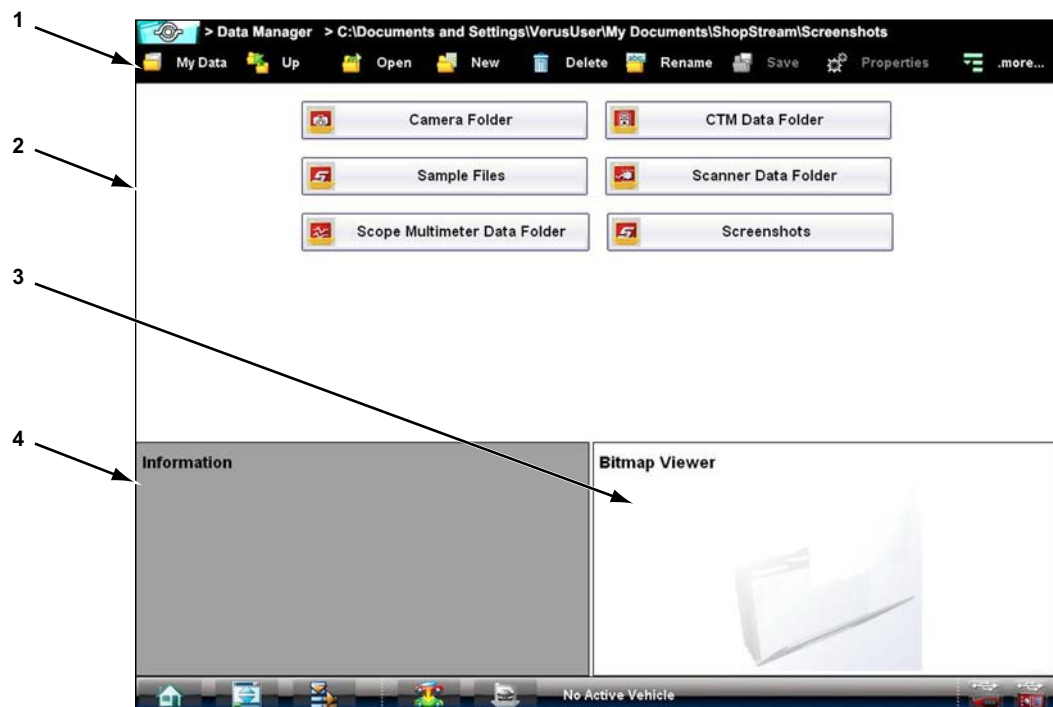
2. Select to highlight the categories that you do not want to display on the main screen, remember:
  - Items that are highlighted display
  - Items that are not highlighted do not display
3. Select **OK** on the toolbar to implement the changes, select **Cancel** to disregard the changes. The dialog box closes and the screen updates.



The Data Manager module is used to store, sort, and review saved files. Most operations are controlled through the toolbar.

## 11.1 Screen Layout

Select Data Manager on the Module toolbar to open the file system. Use the toolbar at the top of the screen to navigate through the data. The folders panel below the toolbar displays the contents of the Windows “My Documents” folder. The information panel on the lower-left portion of the screen shows a summary of the saved file when available, and the preview panel on the lower right displays an image if the selected file is a graphic.














- 1— Data Manager Toolbar
- 2— Folders Panel
- 3— Information Panel
- 4— Preview Panel

**Figure 11-1** Sample Data Manager main screen

The Data Manager module is used to store, sort, and review saved files. Most operations are controlled through the toolbar.

**Table 11-1** *Data Manager toolbar icons*

Name	Icon	Description
My Data		Returns the main screen to the original (My Documents) view.
Up		Moves the items displayed in the folders panel up one level in the file structure.
Open		Opens the highlighted folder or file.
New		Creates a new folder.
Delete		Moves the highlighted file or folder to the Recycle Bin.
Rename		Opens a dialog box and virtual keyboard for renaming the selected file or folder.
Save		Saves the selected file.
Properties		Opens a dialog box and virtual keyboard for renaming the selected file or folder.
More		Opens a menu of additional toolbar options shown below.
Shortcut		Creates a link, or shortcut, to the selected file on the Data Manager main screen.
Email		Attaches the selected file to a new email.

### 11.1.1 My Data

The My Data icon is a shortcut that quickly returns you to the main Data Manager screen. Select the icon at any time to instantly return. Note the location of the page being viewed is shown near the top of the screen just below the toolbar.

## 11.1.2 Open

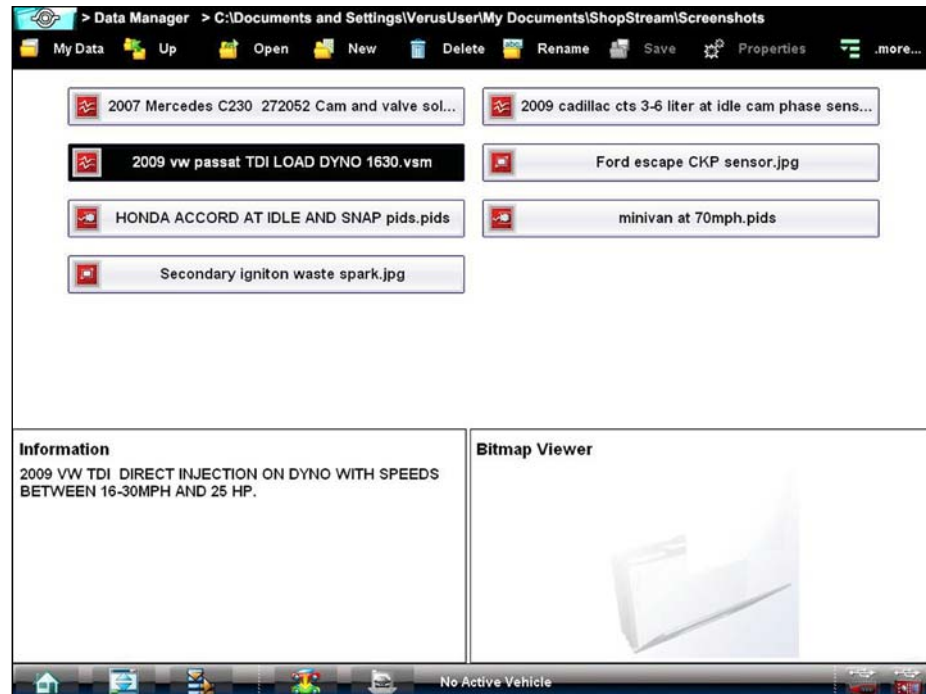
The Open icon is only active (displays in color) when an item in the folders panel is highlighted.



### To open a folder:

1. Highlight the file to open in the folders panel.
2. Select the **Open** icon to load the highlighted file.

The screen advances and the contents of the open folder are shown in folders panel. Highlight an item in the folders panel and the information or preview displays if available (Figure 11-2).



**Figure 11-2** Sample open folder showing information

3. To exit the current folder:
  - Select **My Data** on the toolbar to return to the main Data Manager screen.
  - Select **Up** on the toolbar to return to the previous page.

### 11.1.3 New

The New icon allows you to create a new folder. This option is only available when the icon displays in color.



#### To create a new folder:

1. Select the **New** icon on the toolbar.  
The New Folder Name dialog box opens (Figure 11-3).
2. Select the entry field on the dialog box to open the virtual keyboard.
3. Type a name for the new folder using the virtual keyboard.
4. Select the **OK** icon to create the new folder and return to the previous page. The **Cancel** icon returns you to the previous page without creating a new folder.

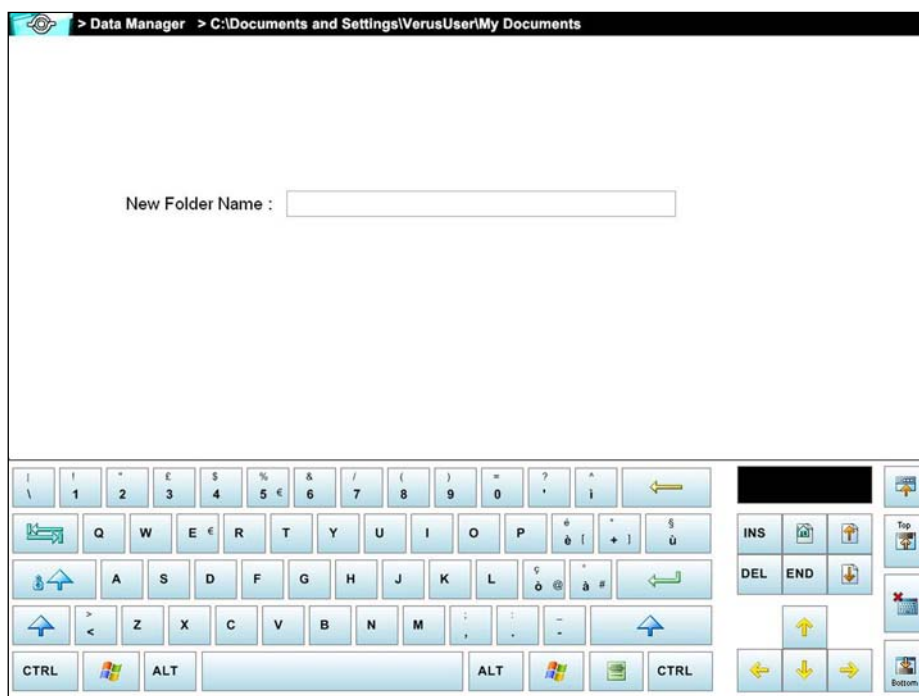


Figure 11-3 Sample New Folder name dialog box

### 11.1.4 Delete

The Delete icon moves folders or items within folders to the Recycle Bin.



#### To delete an item:

1. Select to highlight the item or folder to be deleted.
2. Select the **Delete** icon on the toolbar.  
A confirmation message displays.
3. Select **OK** to delete the selected item and return to the previous page. The **Cancel** icon returns you to the previous page without deleting the selected item.

## 11.1.5 Rename

The Rename icon allows you to change the name of a folder or items within a folder.



### To rename an item:

1. Select to highlight the item or folder to be renamed.
2. Select the **Rename** icon on the toolbar.

The New Name dialog box opens (Figure 11-3).

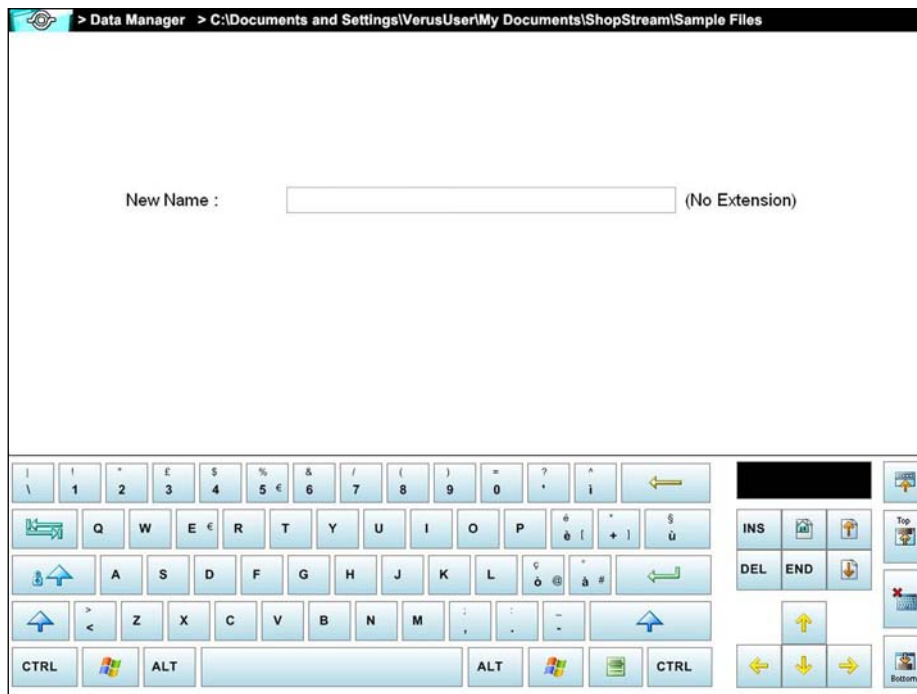


Figure 11-4 Sample new name dialog box

3. Select the entry field on the dialog box to open the virtual keyboard.
4. Type the new name into the entry field using the virtual keyboard.
5. Select the **OK** icon to change the name and return to the previous page. The **Cancel** icon returns you to the previous page without changing the name.

## 11.1.6 Properties

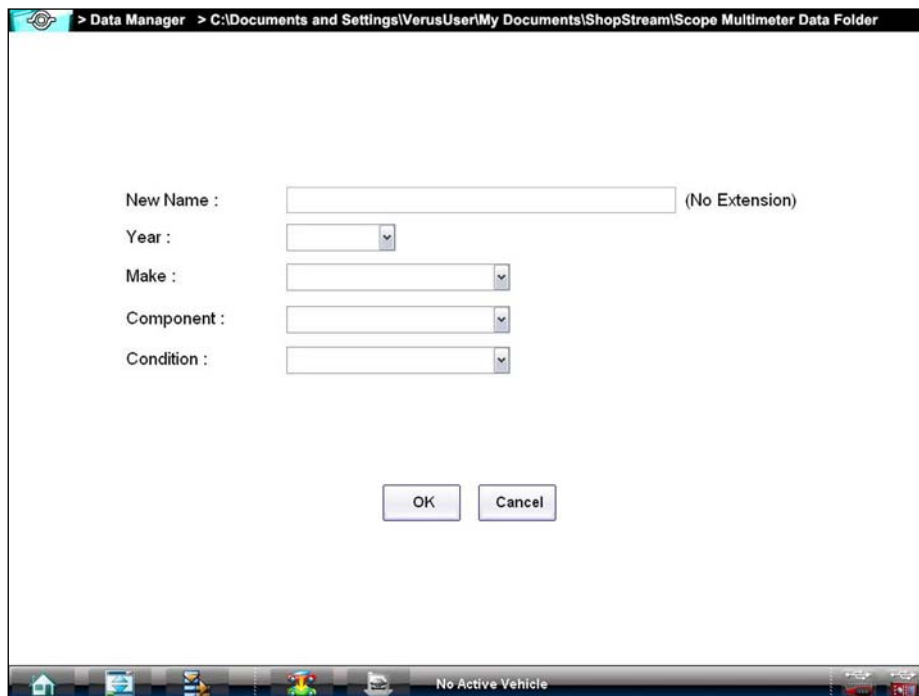
The Properties icon function allows you to change the name and assign identifying attributes to saved Scope Multimeter files. Operation is similar to renaming a file as discussed above, except there are additional fields for entering descriptive information.



### To assign properties to an item:

1. Highlight the item or folder.
2. Select the **Properties** icon on the toolbar.

The Properties dialog box and the virtual keyboard open (Figure 11-3).



**Figure 11-5** *Sample Properties dialog box shown without the virtual keyboard*

3. Type a new name into the field using the virtual keyboard if you want to rename the file.
4. Use either the virtual keyboard or the dropdown menus to fill in the Year, Make, Component, and Condition fields.
5. Select the **OK** icon to change the name and return to the previous page. The **Cancel** icon returns you to the previous page without changing the name.

### 11.1.7 More

Selecting the More icon opens a dropdown menu with two options:

- **Shortcut**—creates a shortcut to the highlighted item. A confirmation message that includes the address of where the shortcut will be installed displays when this option is selected.
- **Email**—opens a new e-mail message with the selected file attached. The Diagnostic Tool must have an active e-mail account to use this feature.

## 11.2 Saved File Structure

The Diagnostic Suite automatically creates folders to manage saved files. Whenever 60 files are saved into any of the Data Manager menu option folders, a new folder is created. Folders may contain files for a day, week, month, or a year. An Older folder, when available, goes to the next higher level in the files structure menu (Figure 11-6).

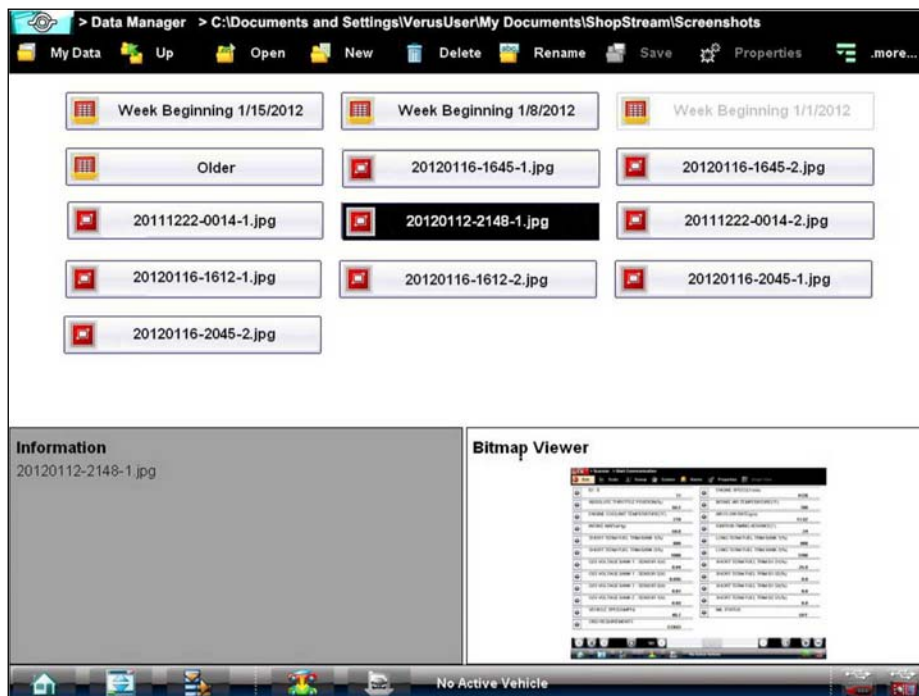


Figure 11-6 Sample saved file folder structure

Selecting Help from the Home screen opens this manual in a dedicated screen viewer. Navigate through the file either by gesture scrolling on the touch screen, or with the scroll bar along the right edge of the viewing screen. A left-to-right scroll bar appears at the bottom of the screen when magnification is increased.

All listings in the Contents and Index are active links. Select an entry with the stylus to go directly to that point of the document. Additional links within the text, shown in blue-colored type, also take you to the referenced section of the manual.

## 12.1 Using the Help Toolbar

A simple toolbar at the top of the screen is used to adjust screen magnification and to exit Help:

**Table 12-1** Help toolbar icons (sheet 1 of 2)






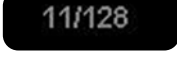

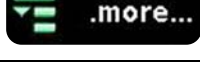

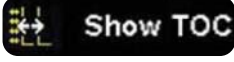

Name	Icon	Description
Back		Closes the help file and returns you to the previously viewed screen.
Zoom +		Incrementally increases the screen magnification.
Zoom –		Incrementally decreases the screen magnification.
Reset		Restores the default screen magnification.
Previous Page		Moves back one page in the document.
Page Counter		Shows the current page over the total number of pages in the document.
Next Page		Moves forward one page in the document.
More		Opens a menu of the additional options shown below.



Table 12-1 Help toolbar icons (sheet 2 of 2)

Name	Icon	Description
	Hide TOC	
		Closes the contents and search column so the document fills the screen.
	Show TOC	
		Opens the contents and search column if they have been hidden.
Exit		Closes the help file, and any other open modules, and returns you to the Home screen.

Selecting System Settings from the Home screen opens a menu with two options:

- [Paired Devices](#)
- [Shop Information](#)

Paired Devices allows you to check the status of and to pair wireless devices, such as the Scan Module, to the Diagnostic Tool. Shop Information allows you to create and edit a personalized header that is included on printed documents.

## 13.1 Paired Devices

The wireless Scan Module makes vehicle data readily available on the Diagnostic Tool while working anywhere on or around the vehicle. Before use, wireless units must be “paired” in order to create a communications network between them. Information about modules paired to the Diagnostic Tool can be found by selecting System Settings from the Home screen.



### To check paired module details:

1. Select the **System Settings** icon on the Home screen.
2. Select the **Paired Devices** option on the menu.

The paired devices screen opens ([Figure 13-1](#)).

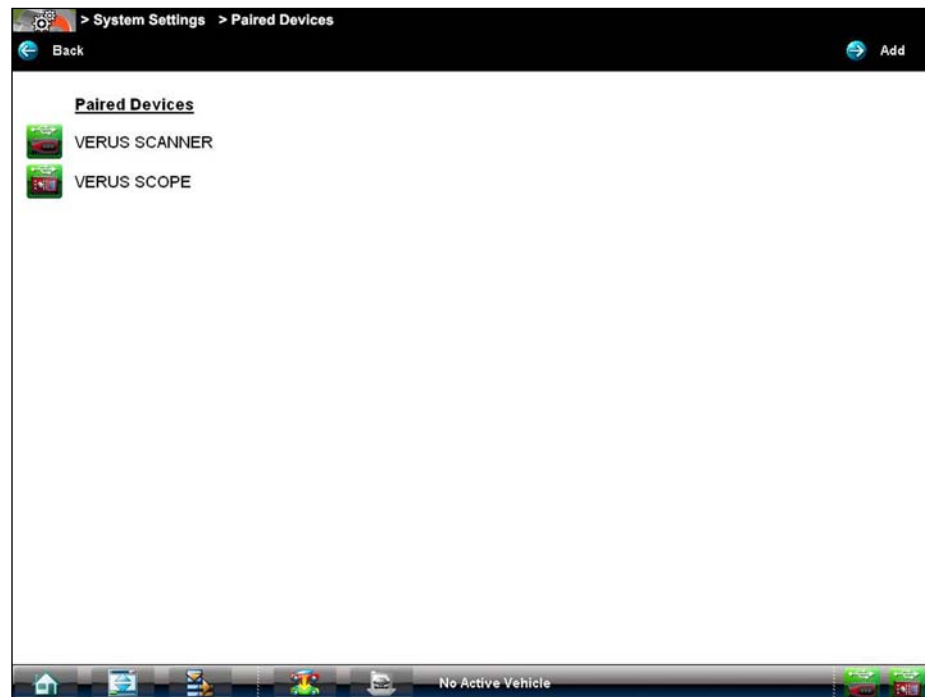


Figure 13-1 Sample Paired Devices screen

The Paired Devices screen shows the type and a partial serial number for all of the modules synchronized to the Diagnostic Tool, and whether or not there is an active communications link between the units.

### 13.1.1 Pairing the Wireless Scan Module

The wireless Scan Module needs to be either connected to a vehicle or connected to a powered USB jack so that it is powered up during the synchronization procedure. Make sure the Diagnostic Tool has a charged battery or is connected to an AC power supply.



#### To pair the Scan Module with the Diagnostic Tool:

1. Power on the VERUS Diagnostic Tool.
2. Connect the 26-pin end of the data cable to the Scan Module data cable connector.
3. Connect the 16-pin end of the data cable to a live vehicle data link connector (DLC).  
The green vehicle power LED should be illuminated.
4. Select the **System Settings** icon on the Home screen of the Diagnostic Tool.
5. Select **Paired Devices** from the menu.
6. From the Paired Devices screen select **Add** from the toolbar.
7. When prompted select **OK** from the toolbar.

The Diagnostic Tool searches for compatible wireless devices, then displays the results. The Scan Module is listed as “VERUS SCANNER” plus a partial serial number (Figure 13-2).

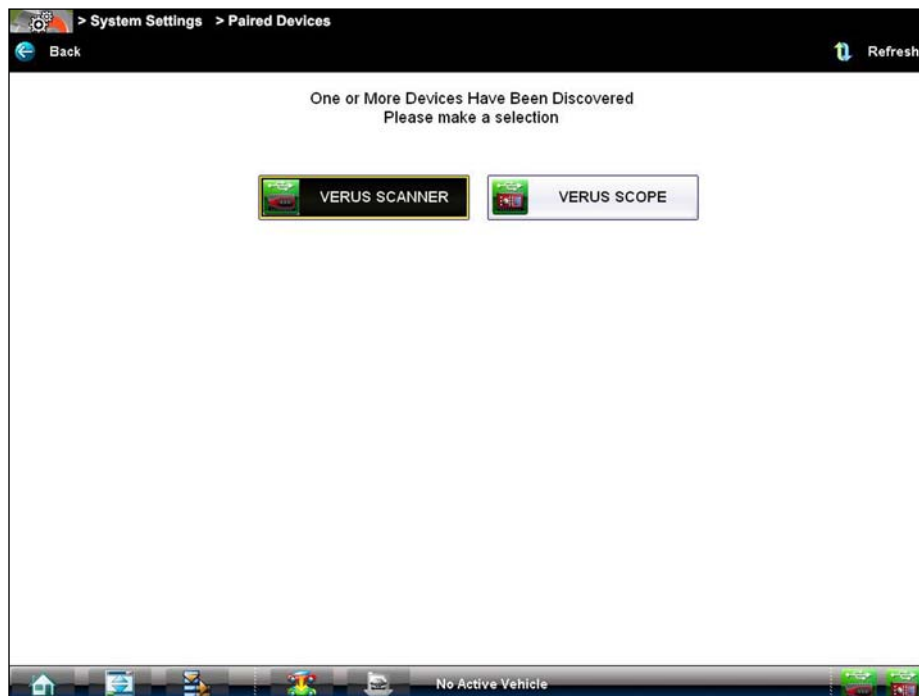
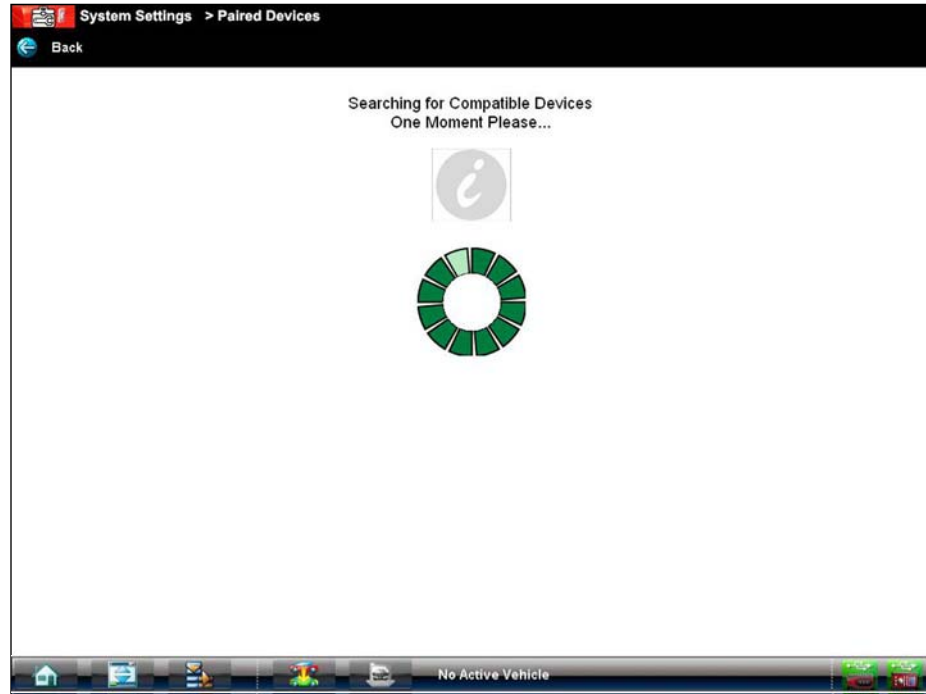


Figure 13-2 Sample Scan Module selection

8. Select the Scan Module from the search results list.

A search in progress message displays during the pairing procedure (Figure 13-3), the Paired Devices screen (Figure 13-1) displays once the procedure completes.



**Figure 13-3** Sample pairing in progress message

9. Select the **Home** icon on the VERUS toolbar to return to the Home screen.
10. Disconnect the data cable from the vehicle.

The Scan Module and Diagnostic Tools are now synchronized for wireless communication and should automatically recognize each other when both are powered up.

## 13.2 Shop Information

This option allows you to add personalized shop information that can be included on printed data files. Selecting opens a form that can be filled in using the virtual keyboard. Select OK when the form is complete and the information is saved.



### To add Shop Information:

1. From the Home screen select **System Settings**.
2. From the System Settings menu select **Shop Information**.

The Shop Information dialog box opens (Figure 13-4).

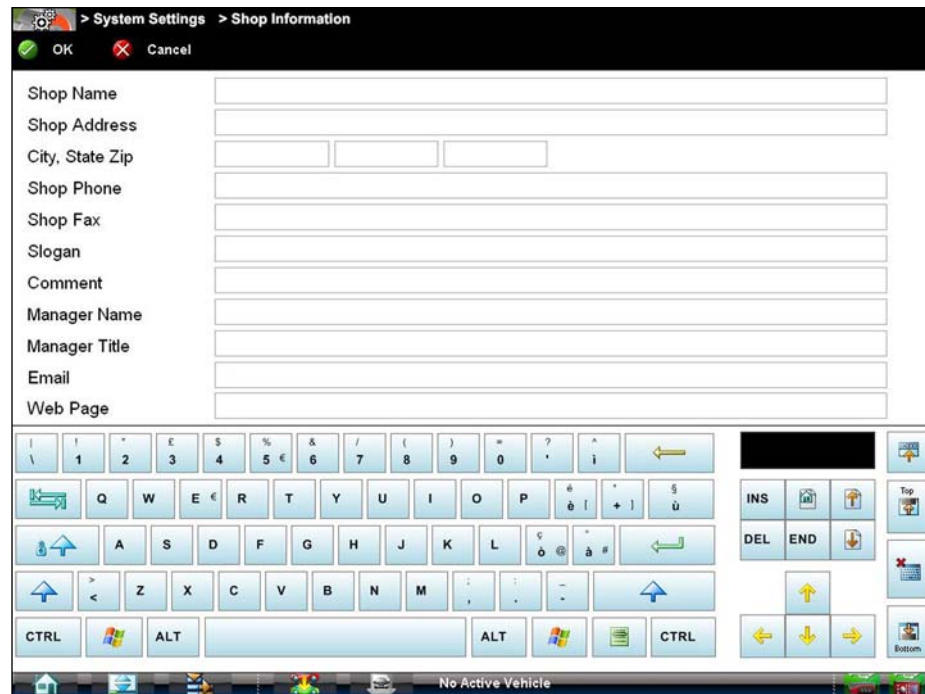


Figure 13-4 Sample Shop Information dialog box

3. Select within any of the information fields and the virtual keyboard opens.
4. Use the virtual keyboard to fill in the Shop Information form.  
As an alternative, you can connect a USB keyboard to a USB jack on the Diagnostic Tool and use it to enter information into the form.
5. Close the virtual keyboard and review the information once all the fields have been filled in.
6. Select **OK** from the toolbar to save the Shop Information, or **Cancel** to close the Shop Information dialog box without saving.

The Shop Information screen closes and the screen returns to the System Settings menu.

This section covers how to care for your VERUS Diagnostic Tool.

## 14.1 Cleaning the Touch Screen

The touch screen can be cleaned with a soft cloth and alcohol or a mild window cleaner.

---

**IMPORTANT:**

Do not use any abrasive cleansers or automotive chemicals on the touch screen.

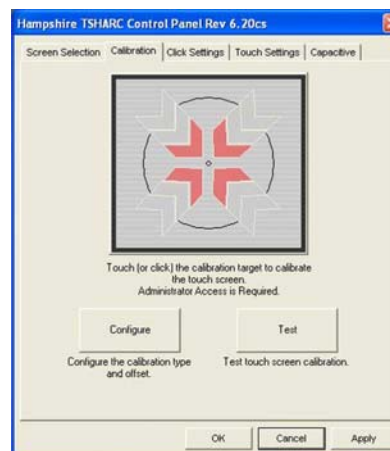
---

## 14.2 Calibrating the Touch Screen

The sensitivity and accuracy of the touch screen should be calibrated before you begin using your VERUS Diagnostic Tool. Adjustments can be made to the touch screen calibration to maintain your personal settings. The touch screen can also be set to recognize the stylus being held in place for five seconds as a right-click of a mouse. Both procedures are explained below.

**To calibrate the touch screen:**

1. From the Windows toolbar select **Start > All Programs > Hampshire TSHARC Control Panel** to open the touch screen dialog box (Figure 14-1).



**Figure 14-1** Sample Hampshire TSHARC Control Panel window

2. Select the **Calibration** tab.
3. Select **Configure** to open the Calibration Options dialog box.
4. Check **20%** in the Offset field on the right-hand side of the dialog box, **scroll** down and select **20 Point Calibration** on the left-hand side of the screen.

5. Select **OK** to close the Calibration Options dialog box.
6. Select the **Calibration Target** to begin the calibration process.
7. As targets appear on the screen, select the center of the target with the tip of the stylus. Hold the stylus on the target until the release instruction appears.
8. Select **Accept** to save the settings after selecting all of the targets.
9. Select **Apply** to implement the new settings.
10. To make additional adjustments, select other tabs and follow the screen instructions.
11. Select **OK** to close the Control Panel dialog box.

---

**IMPORTANT:**

If the touch screen is severely out of calibration use a USB mouse, rather than the stylus, to perform the calibration.

---

**To set the touch screen for a right mouse click:**

1. From the Windows toolbar select **Start > All Programs > Hampshire TSHARC Control Panel** to open the touch screen dialog box.
2. Select the **Click Settings** tab.
3. Select the **Enable Right Click** check box.
4. Set both the **Right Click Area** and **Right Click Delay** sliders to the middle of the bars.
5. Select **Apply** to implement the new settings.
6. Select **OK** to close the Control Panel dialog box.

## 14.3 Cleaning and Inspecting the Diagnostic Tool

When using the VERUS Diagnostic Tool, make sure to do the following:

- Check the housing, wiring, and connectors for dirt and damage before and after each use.
- Inspect the fan filter. Replace the filter if it is torn, severely dirty, or otherwise damaged.
- At the end of each working day, clean the VERUS housing, wiring, and connectors with a clean damp cloth.

---

**IMPORTANT:**

Do not use any abrasive cleansers or automotive chemicals on the VERUS Diagnostic Tool.

---

## 14.4 Fan Filter Service

The fan filter should be periodically replaced to ensure an unrestricted source of cooling air to the Diagnostic Tool. Replacement intervals vary depending upon tool use and environment, replace as needed.

**To replace the fan filter:**

1. Clean off any dirt from the area around the filter.
2. Remove the old filter.
3. Install the new filter.

## 14.5 Battery Pack Service

Follow all safety guidelines when handling the battery pack.

### WARNING



Risk of electric shock.

- **Prior to recycling batteries, protect exposed terminals with heavy insulating tape to prevent shorting.**
- **Disconnect all test leads and turn Diagnostic Tools off before removing end grips.**
- **Do not attempt to disassemble the battery or remove any component projecting from or protecting the battery terminals.**
- **Do not expose the Diagnostic Tool or battery pack to rain, snow, or wet conditions.**
- **Do not short circuit the battery pack terminals.**

*Electric shock can cause injury.*

### WARNING



Risk of explosion.

- **The Lithium battery is factory replaceable only, incorrect replacement or tampering with the battery pack may cause an explosion.**

*Explosion can cause death or serious injury.*

### 14.5.1 Battery Pack Safety Guidelines

---

#### IMPORTANT:

The battery pack contains no user serviceable components. Tampering with the battery pack terminals or housing will void the product warranty.

---

Keep the following in mind when using and handling the VERUS battery pack:

- Do not short circuit battery pack terminals.
- Do not immerse the VERUS Diagnostic Tool or battery pack in water, or allow water to enter the Diagnostic Tool or battery pack.
- Do not crush, disassemble, or tamper with the battery pack.
- Do not heat the battery pack to over 100°C (212°F), or dispose of it in a fire.
- Do not expose the battery pack to excessive physical shock or vibration.
- Keep the battery pack out of reach of children.
- Do not use a battery pack that appears to have suffered abuse or damage.
- Charge the battery pack in the appropriate charger only.
- Do not use a battery charger that has been modified or damaged.
- Use the battery pack for the specified product only.
- Store the battery pack in a cool, dry, well ventilated area.



#### NOTE:

The battery pack should be used within a short period of time (about 30 days) after charging to prevent loss of capacity due to self-discharging.

---

If long-term storage of the battery pack is necessary, it should be stored in a cool, dry, well ventilated place with a 30 to 75 percent state of charge to prevent loss of characteristics.



To prolong the life of your battery, power off the Diagnostic Tool when it is not in use. The VERUS Diagnostic Tool has a built in charger that recharges the battery on demand whenever it is connected to a power source. A Smart Battery Charger, which prolongs battery life and improves performance, is available as an option for your VERUS.

The optional Smart Battery Charger ensures maximum performance by cycling the battery to a complete discharge state, then slowly drawing it up to a full charge. This over-night charging cycle is highly recommended for units that are subjected to heavy usage.

## 14.5.2 Replacing the Battery Pack

If the battery pack no longer holds a charge, contact your sales representative to order a new one.

---

**IMPORTANT:**

Replace the battery pack with original Snap-on replacement parts only.

---

**To replace the battery pack:**

1. Remove the right-side handgrip from the Diagnostic Tool.
2. Depress the lock tab on the back side of the battery pack.
3. Slide the battery pack clear of the Diagnostic Tool.
4. Fit the new battery pack into the slot.
5. Install the handgrip.

## 14.5.3 Disposing of the Battery Pack

Always dispose of a lithium-ion battery pack according to local regulations, which vary for different countries and regions. The battery pack, while non-hazardous waste, does contain recyclable materials. If shipping is required, ship the battery pack to a recycling facility in accordance with local, national, and international regulations. For additional information contact:

- North America—Rechargeable Battery Recycling Corporation (RBRC) at <http://www.rbcc.org> or <http://www.call2recycle.org>, or call 1(800) 822-8837 (USA)
- United Kingdom—Electrical Waste Recycling Company at <http://www.electricalwaste.com>

Products bearing the WEEE logo (Figure 14-2) are subject to European Union regulations.



**Figure 14-2** *sample WEEE logo*

**NOTE:**

Always dispose of materials according to local regulations.

---

Contact your sales representative for details.

## 14.5.4 Battery Pack Calibration

The VERUS battery pack contains a micro controller that monitors the battery pack characteristics and maintains an internal “fuel gauge”. The internal fuel gauge may lose some accuracy after many cycles of partial discharge and charge. Should this happen, the fuel gauge can be calibrated with the following procedure:



**To calibrate the battery pack fuel gauge:**

1. Fully charge the battery pack.
2. Fully discharge the battery pack at a steady rate.

---

**IMPORTANT:**

The battery must be completely discharged! Operate the Diagnostic Tool until it shuts down by itself due to a lack of power. Continue operating the tool when the “low battery” warning displays, do not begin charging until after the tool has automatically shut down.

---

3. Fully charge the battery pack.



---

**NOTE:**

It is not recommended to perform the calibration procedure more than once within 30 days.

---

The optional Smart Battery Charger automatically cycles the battery pack to calibrate it.

## 14.6 VERUS System Restore

The VERUS Diagnostic Tool contains Snap-on System Restore software that returns the tool to original factory condition following a catastrophic failure. Use the procedure below to restore the system if your VERUS Diagnostic Tool does not start the Windows operating system, or if the hard disk drive or other system files have become corrupted.

---

**IMPORTANT:**

All data on the VERUS hard disk drive C is erased during a system restore. If at all possible, make a back up copy of any personal or saved data before proceeding.

---

It is highly recommended that the VERUS Diagnostic Tool be connected to an AC power source when performing a system recovery. If AC power is not available, make sure the internal battery pack is fully charged.



**To restore the VERUS system:**

1. With the VERUS Diagnostic Tool turned off, connect an external keyboard to the USB jack on top of the VERUS Diagnostic Tool.
2. Select and hold the **Left ALT** key on the keyboard, then press the VERUS **Power** button.  
A dialog box warning that all data on drive C will be deleted and replaced with original factory data displays.
3. Select **OK** to proceed with the restore, or **Cancel** to abort.

The system restore begins and the time remaining until completion displays if OK is selected. The operation typically takes from 10 to 20 minutes.

4. When the “finished successfully” message displays, select **OK** to reboot the system.  
The Windows system reseat program automatically runs on start up and a dialog box displays. Once the reseat completes, the dialog box closes, Windows starts, and the VERUS Diagnostic Tool is ready for use.

If you receive an error message while starting the VERUS software, the license key may need to be updated or replaced. Contact your sales representative or Customer Care.

**NOTE:**

After using the Snap-on System Restore software, the Diagnostic Tool is restored to original factory condition. In addition, if you have purchased and installed any of the “Bundle” updates, the most current Snap-on Bundle update will also be re-installed. However, any additional software that you installed will need to be reloaded onto the VERUS system after a System Restore. Contact your sales representative or Customer Care for additional information.

---

## 14.7 Wireless Scan Module

When using the wireless Scan Module, make sure to do the following:

- Check the housing, wiring, and connectors for dirt and damage before and after each use.
- At the end of each working day, clean the VERUS housing, wiring, and connectors with a clean damp cloth.

---

**IMPORTANT:**

Do not use any abrasive cleansers or automotive chemicals on the Scan Module.

---

### 14.7.1 Replacing the Protective Handgrip

The soft protective handgrip that covers the outer edges of the Scan Module is easily replaced should it become worn or damaged. Contact your sales representative for replacement parts.

**To replace the protective handgrip:**

1. Disconnect the data cable, and any other cables, if attached to the Scan Module.
2. From the bottom of the Scan Module, gently lift up and out on one side of the handgrip to free it from Scan Module housing.
3. Repeat step 2 to loosen the other side of the handgrip.
4. Lift the handgrip off of the Scan Module housing.

**NOTE:**

The handgrip tapers toward the front of the Scan Module housing. Make sure the replacement handgrip is correctly oriented before attempting to install it.

---

5. Fit the new handgrip over the top, data cable end, of the Scan Module housing.
6. With your fingers, work the new handgrip onto the Scan Module housing from top to bottom. Make sure the tabs on the handgrip fit into the grooves on the housing.

# Troubleshooting Bluetooth Communication Issues

The Scan Module is a wireless communications device that uses Bluetooth technology to transmit vehicle data to the Diagnostic Tool without a physical connection. The working range of the transmitter is about 30 feet (9.14 m). Scan Module operations can be impacted when signal interference, or some other condition, disrupts or impairs the wireless communication network. These interruptions are usually temporary and easily repaired.




Indicators of wireless communication interference include:

- Slow Scan Module response accompanied by “Error 101” message.
- Slow Scan Module response accompanied by “Error 404” message.
- “Error Occurred” Message when trying to use the Scan Module.
- “Error Occurred” Message after 20 or more minutes sitting idle, particularly if the devices have been stationary.

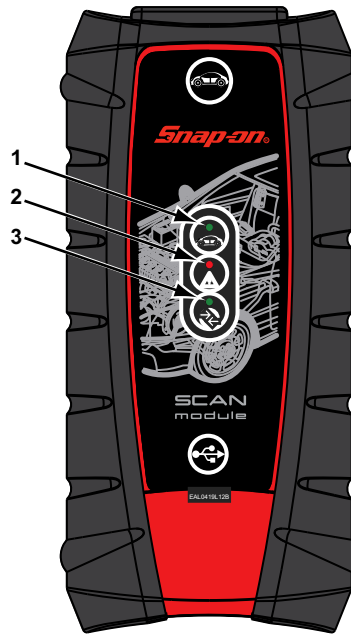
Verifying the Hardware Status is always the first step in troubleshooting a Bluetooth issue.

## Hardware Status

The Hardware Status indicators in the lower-right corner of the Home screen provide a quick reference to wireless operations. The background color of the status indicator icon represents the condition of the wireless connectivity to that device. Icon status is shown in the table below

Hardware Icon	Background Color	Condition	Action
	Red	Not Paired	Pair the Scan Module to the Diagnostic Tool. See <a href="#">“Paired Devices”</a> on page 131 for instructions.
	Grey	Paired, but Not Communicating	You may have moved out of range. Move the Diagnostic Tool closer to the Scan Module to reestablish communications. If connectivity is not restored, perform the <a href="#">“Recovery Procedure”</a> on page 142.
	Blue	Paired and Communicating	Hardware status is good and Bluetooth should be functional. Verify that the green Bluetooth LED on the front of the Scan Module is flashing. If there is no connectivity, perform the <a href="#">“Recovery Procedure”</a> on page 142.

The three light emitting diodes (LEDs) on the faceplate of the Scan Module let you know at a glance whether or not there is an active connection between the two modules. The two green LEDs (Vehicle Power and Bluetooth) both flash on and off when the Scan Module and Diagnostic Tool are actively communicating through a wireless connection. The red Communication LED flashes on and off when the Scan Module is performing an internal self test, and is illuminated solidly if there a failure is detected ([Figure A-1](#)).



- 1— **Vehicle Power**—green LED, flashes during wireless communications
- 2— **Communication**—red LED, illuminates if there is a communications failure
- 3— **Bluetooth**—green LED, flashes during wireless communications

Figure A-1 Scan Module LEDs

## Recovery Procedure

This is a quick and easy method that reestablishes connectivity between the Diagnostic Tool and the Scan Module. If Bluetooth connectivity remains unavailable following recovery, use one of the alternate procedures to restart the system.

**NOTE:**



This product is intended to be used by professional technicians in a garage environment. Electrostatic discharges may happen occasionally and cause a loss of communication. To restore communication disconnect and reconnect the communication cables and follow screen prompts.



**To recover wireless connectivity:**

1. Disconnect the Scan Module from the vehicle.
2. Navigate to the Home Screen on the Diagnostic Tool.
3. Select **Exit** to close the ShopStream Diagnostic Suite.
4. Connect the Scan Module to the vehicle.
5. Select the **ShopStream Diagnostic Suite** icon on the desktop and the.



Figure A-2 Sample ShopStream Diagnostic Suite desktop icon

**NOTE:**



The ShopStream Diagnostic Suite can also be started from the Windows Start menu.

## Alternate Procedures

Use these methods as an option to the Recovery Procedure, or when recovery fails to restore the wireless connection.

### USB Procedure

This method establishes a “hard-wired” USB cable connection between the modules.



#### To create a USB connection:

1. Carefully slip the ends of the handgrip off of the sides of the Scan Module housing.
2. Lift open the hinged cover on the base of the Scan Module.

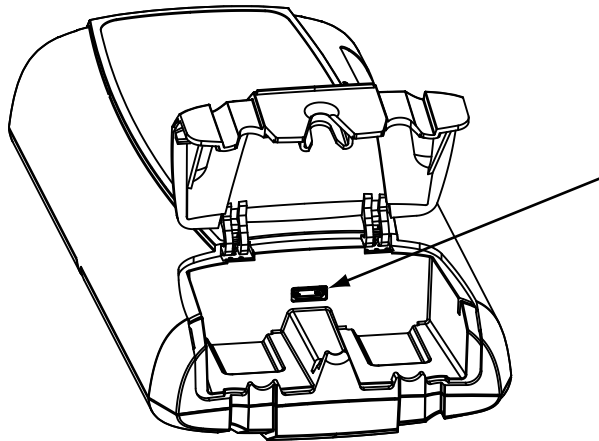


Figure A-3 Scan Module USB jack, handgrip removed

3. Plug the small end of the USB cable into the USB jack on the Scan Module.
4. Plug the large end of the USB cable into a USB jack on the Diagnostic Tool.  
Scanner functionality should be restored immediately once the USB connection is complete. If not, suspect a hardware failure. The Diagnostic Tool and Scan Module are both fully functional, so you can complete your testing with the USB connection intact.

### ShopStream Diagnostic Suite Restart Procedure

This method, which closes and restarts the ShopStream Diagnostic Suite software, takes about two minutes to complete.



#### To restart the ShopStream Diagnostic Suite:

1. Navigate to the Home Screen on the Diagnostic Tool.
2. Select **Exit** to close the ShopStream Diagnostic Suite.
3. Wait for the Scan Module Communication LED to stop flashing.
4. Select the ShopStream Diagnostic Suite icon on the desktop.  
The ShopStream Diagnostic Suite should open with connectivity restored.

## Windows Reboot Procedure

This method, which completely shuts down the Diagnostic Tool, takes several minutes to complete.



### To reboot the Diagnostic Tool:

1. Disconnect the Scan Module from the vehicle.
2. Navigate to the Home Screen on the Diagnostic Tool.
3. Select **Exit** to close the ShopStream Diagnostic Suite.
4. Select **Start** in the lower-left corner of the screen to open the menu.

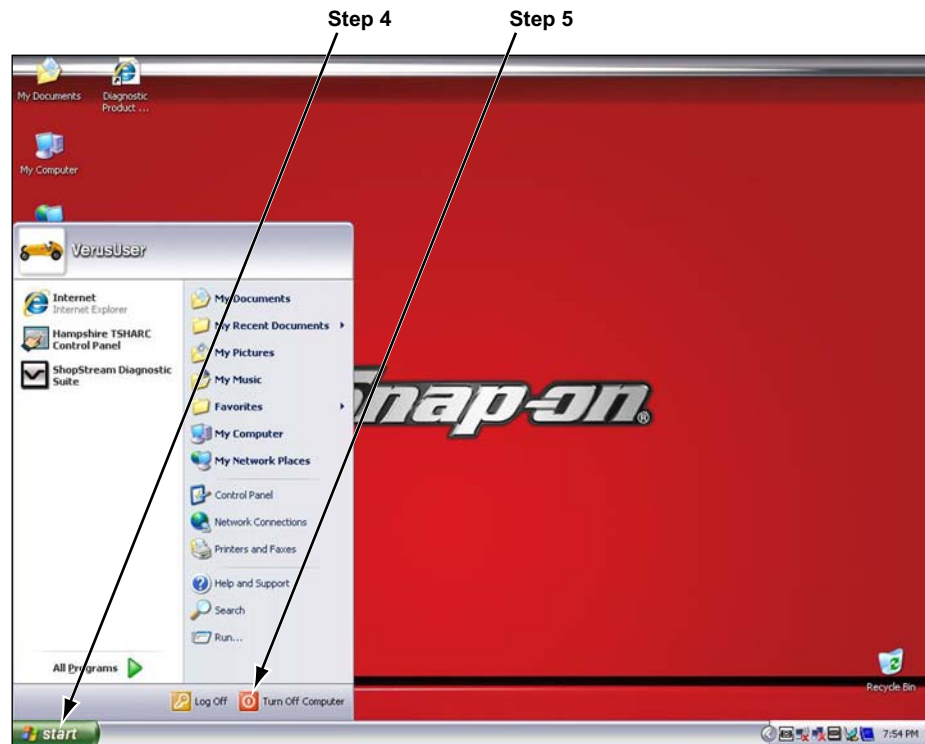


Figure A-4 Sample Windows Start menu

5. Select **Turn Off Computer** from the menu.
6. Select **Turn Off** when the Confirmation window opens.



Figure A-5 Sample shutdown confirmation window

7. Wait for the tool to completely power off, then press the **Power** to restart the Diagnostic Tool.
8. Connect the Scan Module to the vehicle once the ShopStream Diagnostic Suite opens.

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