OBD ½Wireless Vehicle Interface User Manual EXHIBIT

FOR:	EASE Simulation, Inc.
FCC ID No:	O8A-WI-916
EUT:	OBD ½ Wireless Vehicle Interface
MANUFACTURER:	EASE Simulation Inc. State Route 492, Box 3011 New Milford, PA 18834 John Yuron 570-489-1063
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Information on the Wireless Vehicle Interface can be found on pages 25-27 in Section VIII Setup Procedures - Heading 3. Using the Wireless Vehicle Interface.

Information on installing the software can be found on pages 10-16 in Section VI Software Installation.

USER'S MANUAL

for the

PC BASED SCAN TOOL

and

DATA LOGGER

Professional and Personal Versions

EASE Diagnostics
State Route 492 Box 3011
New Milford, PA 18834
USA

OBD I & OBD II Scan Tool User's Manual

Rev 07/12/00

TABLE OF CONTENTS

I. SAFETY PRECAUTIONS

BEFORE WORKING ON ANY VEHICLE, PLEASE READ THIS!

- To avoid possible personal injury and damage to the vehicle, please refer to the appropriate vehicle manufacturer's service procedures and safety instructions.

- Objects can be propelled by moving engine parts. These objects and high pressure fluids and liquids can cause serious injury. ALWAYS wear an ANSI approved eye protection.

- Ensure all sparks, lighted cigarettes, open flames, or any other device capable of producing a high temperature are not utilized near automotive batteries. Automotive batteries contain sulfuric acid and produce explosive gases.

- Ensure a safe distance from all moving engine components during servicing. Test equipment, clothing, and parts of your body can be seriously damaged or injured.

- An operating engine produces carbon monoxide which is an odorless, colorless, poisonous gas that can lead to serious injury or death. ALWAYS service an operating engine in a well ventilated area.

- Fuel systems are typically under high pressure. Ensure the area is well ventilated and free of all sparks or other ignition sources to avoid the possibility of fire.

- Ensure the parking brake is engaged, the vehicle's drive wheels are blocked, and the gear selector is in neutral for manual transmissions and in park for automatics.

- Never set tools on a vehicle's battery. You may short the terminals together causing harm to yourself, the tools or the battery.

- NEVER attempt to operate this software and drive the vehicle at the same time. ALWAYS have another person to use the software while the vehicle is being driven.

- Do not leave your vehicle unattended while running tests.

II. SOFTWARE LICENSE AGREEMENT

PLEASE READ ALL OF THE TERMS OF THIS AGREEMENT PRIOR TO INSTALLING THE SOFTWARE. BY INSTALLING THE SOFTWARE, YOU ACCEPT THE TERMS AND CONDITIONS OF THIS AGREEMENT.

1. Grant of License: In consideration of payment of the LICENSE fee, which is a part of the price you paid for this product, EASE Simulation, Inc. ("EASE"), as Licenser, grants to you, the LICENSEE, a non-exclusive right to use and display this copy of an EASE Software Program (hereinafter to "Software") on a single COMPUTER, (i.e., with a single CPU) at a single location. "Software" includes all software that resides on the included media, any installed software/files from this media, and all firmware and microcode within the accompanying Hardware, and all printed materials. "Hardware" includes the interface hardware, data logger, and any and all other hardware that may be used with the Software. If the single computer on which you use the software is a multi-user system, the License covers all users on that single system. EASE reserves all rights not expressly granted to LICENSEE.

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7. Export Law Assurances: You agree and certify that neither the Software nor any other technical data received from EASE, nor the direct product thereof, will be exported outside the United States except as authorized and as permitted by the laws and regulations of the United States. If the Software has been rightfully obtained by you outside of the United States, you agree that you will not re-export the Software nor any other technical data received from EASE, nor the direct product thereof, except as permitted by the laws and regulations of the United States and the laws and regulations of the jurisdiction in which you obtained the Software.

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9. Controlling Law and Severability: This License and Limited Warranty shall be governed by and construed in accordance with the laws of the United States and the Commonwealth of Pennsylvania, as applied to agreements entered into and to be performed entirely within Pennsylvania between Pennsylvania residents. If for any reason a court of competent jurisdiction find any portion of this License, or portion thereof to be unenforceable, that provision of the License shall be enforced to the maximum extent permissible so as to effect the intent of the parties, and the remainder of this License shall continue in full force and effect.

10. Complete Agreement: This License constitutes the entire agreement between the parties with respect to the use of the Software and related documentation, and supersedes all prior or contemporaneous understandings or agreements, written or oral, regarding such subject matter. No amendment or modification of this License will be binding unless in writing and signed by a duly authorized representative of EASE Simulation, Inc.

Should you have any questions concerning this Agreement, please call or write the manufacturer: EASE Simulation, Inc., State Route 492 Box 3011, New Milford, PA 18834 USA 570-465-9060.

III. LIMITED WARRANTY

EASE Simulation, Inc. (EASE) warrants to the original licensee that the diskette(s) on which the software is recorded be free from defects in materials and workmanship under normal use and service for a period of ninety (90) days from the date of delivery as evidenced by a copy of your receipt. If a defect in the disk(s) should occur during this period, you may return the disk to EASE and we will replace the disk(s) without charge. EASE warrants that for a period of thirty (30) days from the date of delivery to you the licensee, the software shall materially conform to the specifications defined in pertinent documentation relating thereto (manuals, guides, exclusion documents, and computer aided instructions).

EASE does not warrant that the operation of the software will be interrupted or error free. Further, EASE does not warrant or guarantee the use of, or the results of the use of, the software in terms of correctness, accuracy, reliability, currentness, or otherwise; you rely on the software and results solely at your own risk. The licensee's sole and exclusive remedy for failure of the software to materially conform to the specifications defined in the pertinent documentation is for the licensee to return the software to EASE and notify EASE in writing of such non-conformity within thirty (30) days of delivery to the licensee. EASE's sole obligation shall be, at EASE's option, within a reasonable time after EASE receives notice of non-conformity, to either provide the licensee with software which conforms to the express warranty above or refund to the licensee the licensee fee paid therefore. In the event of a refund, this agreement shall be considered terminated and the licensee, if they have any copies of the software or related materials, shall promptly deliver to EASE and/or destroy all such copies (including that in memory or data storage apparatus) and warrant in writing to EASE within thirty (30) days of termination that the licensed software, related materials and all copies thereof have been either returned and/or destroyed.

To the original purchaser only, EASE warrants the supplied hardware products to be free from defects in materials and workmanship under normal use for a period of one (1) year from the date of purchase as evidenced by a copy of the sales receipt. EASE makes no other express warranty on the hardware products. The purchaser's sole remedy in the event of a breach of warranty is expressly limited to repair or replacement of the defective hardware or, if replacement is not possible, a refund of the purchase price. Repair parts and replacement hardware products will be provided on an exchange basis and will be either reconditioned or new. All replaced parts become property of EASE. This limited warranty does not cover damage to the products resulting from misuse, accident, disaster, abuse, negligence, improper maintenance, or modification and/or repair of the hardware product other than by EASE.

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Neither EASE nor its authorized dealer(s) shall be liable for any defect, indirect, incidental, special, or consequential damages, whether in an action in contract or tort (including negligence and strict liability), such as, but not limited to, loss of anticipated profits or benefits resulting from the use of this software and/or hardware product or any breach of any warranty, even if EASE or its authorized dealer(s) has been advised of the possibilities of such damages. In no event will EASE or its authorized dealer's liability exceed the price paid for the product.

Note: Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusions or limitations may not apply to you.

The information presented in this manual is believed to be accurate. Responsibility for errors, omission of information, or consequences resulting from the use of this information cannot be assumed by EASE. EASE retains all rights to make changes to specifications at any time without notice.

RETURNING A PRODUCT? WARRANTY CLAIM?
CALL CUSTOMER SERVICE AT 888-366-3273

If you need to return a product for any reason, please call us. If the product you ordered did not meet your needs, we want to know about it! Your satisfaction is very important to us, and your feedback helps us improve our products and our services. EASE will gladly accept merchandise returns and will replace the product or refund your money at your option. All returns should be made within 30 days of date of invoice. If you have a problem after that, please refer to the Limited Warranty.

In order to facilitate our Return processing or Warranty Claim processing:

- Please call Customer Service to obtain a Return Merchandise Authorization Number (RMA #).
- All returns should be made within 30 days of date of invoice and be accompanied by a completed Return Merchandise Form.
- All Warranty Claims should be accompanied by a completed Warranty claim Form and proof of purchase.
- Return by UPS ground whenever possible. Ship freight prepaid. COD's are not accepted.
- Return merchandise in original packaging and in resaleable condition. Each package must be identified with the proper RMA number.
- Please note that parts returned due to customer error may be subject to a 15% restocking charge and that "Special Order Items" are not returnable.

Returned Merchandise Authorization (RMA) Guidelines
When an RMA has been opened and the number issued, EASE must be notified if, for any reason, the defective material will not be returned within 30 days, for domestic RMA's and 45 days for international RMA's, from the initial request date. Materials not returned within the specific period will be invoiced at the full list price.

Damaged Materials
If material arrives and packaging appears to have damage, do not refuse shipment. Note damage on Carrier's Documentation when signing for product. **It is important to keep the shipping carton, packing material and parts intact.** Test the product. If the unit fails, contact EASE Customer Support *immediately* to initiate a claim.

How to reach EASE
- Customer Service is available at **888-366-3273** from 9:00 am to 6:00 PM Eastern Standard Time. Please have your sales order or invoice number available when you call.
- By Telephone: **570-465-9060**.
- By Fax: **570-465-9061**
- By Mail: EASE Diagnostics State Route 492 Box 3011, New Milford, PA 18834
- By e-mail info@obd2.com. Our website is located at www.obd2.com

IV. TECHNICAL SUPPORT

Our websites are located at www.obd2.com. Check out our site for information about the EASE OBD II Scan Tool and other EASE products and details on product accessories and software upgrades.

If you have questions about the use of this product, first check the relevant portion of the Users Manual, the EASE Scan Tool Software Help System or refer to the EASE website. If you can not find the answer in these places, call our Technical support line at 570-465-9062. This support line is answered Monday through Friday from 9:00 am to 6:00 PM Eastern Standard time. At other times, please leave a message and the call will be returned. Also, you can e-mail your questions or comments to techsupport@obd2.com.

BEFORE YOU CALL : Have your computer turned on and the following information available:

- Your name and address
- The product name and model number.
- Software version number.
- Software serial number.
- Your computer make, model and CPU speed.
- Amount of RAM in your system.
- Type and capacity of the hard drive.
- Graphics adapter and monitor type.
- Printer make and model.
- List of any other software or adapter cards presently installed in your system.
- Windows versions numbers.
- The error message identification number and description.
- List of the steps you took to lead you to the problem.

V. USING WINDOWS

Dialog Boxes and Check Boxes, Pointers and Cursors

This manual does not explain how to use typical Windows components -- dialog boxes and check boxes, pointers and cursors, list boxes and drop-down list boxes. All these are common to all Windows programs. Please refer to your Windows documentation for basic Windows training.

How to Use Windows Help

This manual does not explain how to use the Windows Help system itself. We are assuming that you know how to use standard Windows components to navigate yourself. If that is not the case, you can quickly learn how to use Windows Help by experimenting with it for a few minutes, and by reading the How to Use Help file provided with Microsoft Windows. You can get to this by selecting *Help|How to Use Help* in the EASE Scan Tool Main Screen.

Documentation Conventions

This manual uses a special convention, a form of shorthand, when we tell you to select a menu command: *menuname|commandname*. "Select *File|Exit*" means "open the File menu and select to Exit option.

VI. SOFTWARE INSTALLATION

This section includes the following:

1. System requirements for the EASE Scan Tool Software
2. Step by step instructions for installing the Professional EASE Scan Tool Software
3. Step by step instructions for installing the Personal EASE Scan Tool Software
4. Step by step instructions for upgrading the Personal EASE Scan Tool Software

EASE Scan Tool Software Requirements

The EASE Scan Tool Software requires the following hardware and software for operation.

- Windows 95/98/NT
- Pentium 120 MHz or greater or 100% compatible computer
- 32 MB of RAM
- Large capacity hard drive
- One free Serial Communications Port
- Monitor
- Mouse
- Keyboard
- CD-ROM drive

To Install the Professional EASE Scan Tool software in Windows:

1. Start your computer.

2. Close ALL software applications BEFORE installation.

IMPORTANT: If you have a Virus Scan program, you must disable it before you install the software. If you do not, the installation could be corrupted.

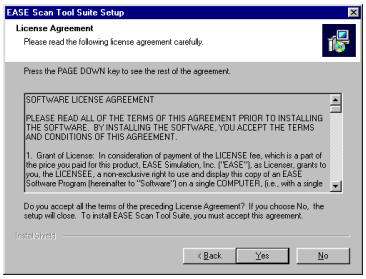
3. Place the EASE Scan Tool CD in your CD-ROM drive. The CD will start automatically.

NOTE: If the CD does not start automatically, double-click the My Computer icon on the Windows desktop. Locate the CD-ROM drive in the window, double click the drive letter to display the contents of the CD, and then double-click SETUP.EXE.

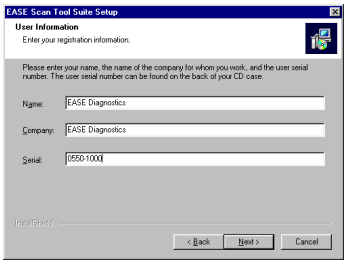
4. The Setup Welcome Screen will be displayed. Select on the Next button to begin the software installation process.

NOTE: During the software installation select on the Back button to return to the previous screen, the Next button to go to the next installation screen or Cancel to abort the installation.

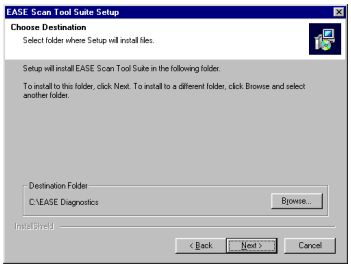
5. The Software License Agreement Screen displays the Software License Agreement. Please read the agreement. Select on the Yes button if you accept the terms of the agreement. If not, select No. If you do not accept this agreement, the software will not be installed.



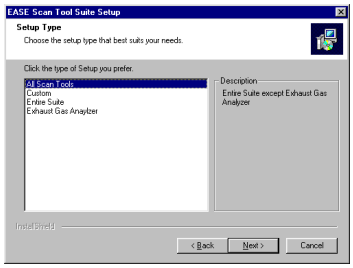
6. You will be asked to enter your Name and Company Name and User Serial Number. The User Serial Number is an 8 digit number that can be found on the CD case. A dash mark must be inserted after the first four digits. All characters in the serial number are numbers. Select on the Next button to continue. The correct serial number must be entered before you can continue with the install.



7. The EASE Scan Tool software will be installed by default in the C:\EASE Diagnostics folder (directory). If you wish to install the program into the default drive and folder select Next, otherwise select on the Browse button to enter a new drive and/or folder. If the folder you enter does not exist, the installation program will create it.

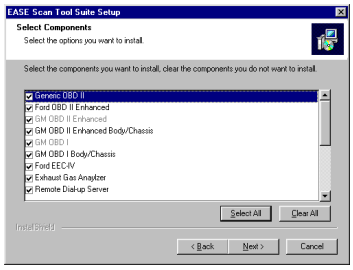


8. In the Setup Type Screen you must choose which Scan Tool programs you want to install. The choices are as follows:



All Scan Tools: If you choose this setup option, all of the available Scan Tool software programs along with body and chassis data, the Dial-Up Server and Scan Tool Launcher will be installed on your computer. You will only be able to connect to a vehicle with the Scan Tool programs that you have purchased. The Scan Tool programs you have not purchased can be viewed in demo mode.

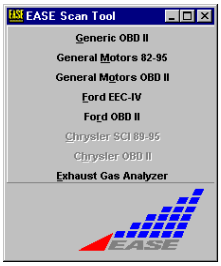
Custom: If you choose this setup option, you can choose which Scan Tool programs will be installed on your computer. All checked components will be installed.

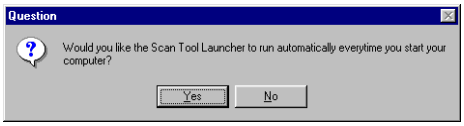


Entire Suite: The entire Scan Tool suite including all of the available Scan Tool programs, body and chassis data, Exhaust Gas Analyzer software, Dial-Up Server and Scan Tool Launcher will be installed. You will only be able to connect to a vehicle with the Scan Tool programs that you have purchased. The Scan Tool programs you have not purchased can be viewed in demo mode.

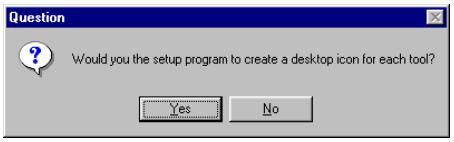
Exhaust Gas Analyzer: If you choose this option, only the Exhaust Gas Analyzer Software will be installed.

9. Next a Question box will be displayed to ask if you would like the Scan Tool Launcher to be displayed each time the computer is started. Select Yes, if you would and No, if you would not. The Scan Tool Launcher allows the user to quickly start all the installed Scan Tool programs. If you choose not to have the Launcher run automatically, it can be started at anytime from the EASE Diagnostics Folder in the Programs group in the Windows Start Menu.

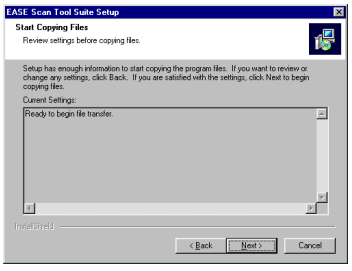




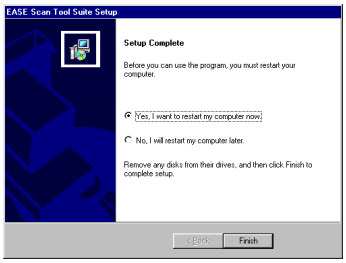
10. Next a Question box will be displayed to ask if you would like to create a desktop icon for each installed Scan Tool? Select Yes if you would, and No if you would not. If you choose not to have desktop icons created, you can start the Scan Tool programs from the EASE Diagnostics Folder in the Programs group of the Windows Start Menu.



11. At this point, the installation program has enough information to start copying the program files to your computer. The installation settings you have selected are displayed in the Current Settings box. If you want to change any of these settings, select on the Back button to return to the setup screen you want to change. If you are satisfied with the settings, select on the Next button to begin copying files to your computer.



12. At this time, installation is complete. Your computer must be restarted before you can run the Scan Tool software. Select Finish to complete the software installation.

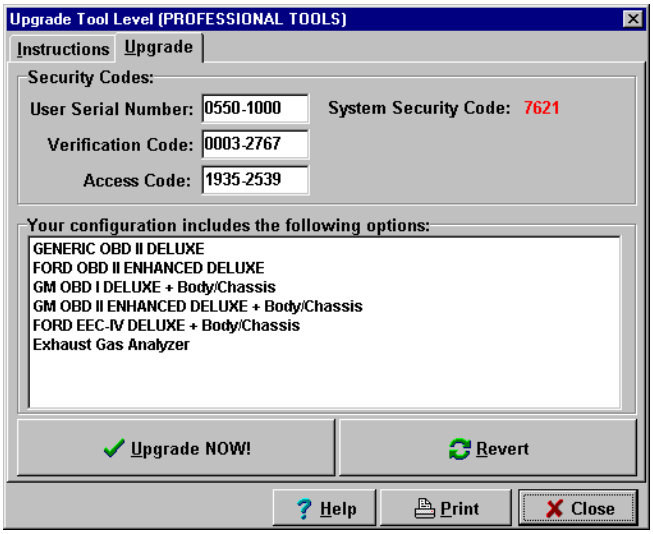


13. To start the EASE Scan Tool Software:

Pick the Scan Tool program that you want to start in the EASE Diagnostics Folder in the Programs group of the Windows Start Menu OR double-click the desktop icon for the Scan Tool program (if you chose to create them during installation) OR select on the Scan Tool program you want to start in the Scan Tool Launcher, if it was installed.

14. Your Scan Tool software will start and run at this time. However, until you receive an Access Code from EASE you will not be able to connect to a vehicle.

15. To obtain an Access Code, first fill in the Upgrade Tool Level Screen. The Upgrade Tool Level Screen will be displayed the first time you enter the software and can also be opened from the EASE Scan Tool menu bar by selecting *File\Upgrade Tool Level*.



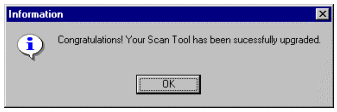
The User Serial Number you entered during the software installation will be displayed. This number is an 8 digit number with a dash mark inserted after the first 4 digits. It can be found on your CD case. Contact EASE with this number and the System Security Code. An EASE representative will give you the Verification Code and Access Code you need to enable your software.

To obtain your Access Code:

1. Call EASE at 1-888-366-3273 or 570-465-9060. Either have a printed copy of this screen available or have your software open to the Upgrade Tool Level Screen before calling.

2. Send an e-mail containing the User Serial Number, System Security Code, your name and phone number to info@obd2.com. An Access Code will be e-mailed back to you. If all of the information is not included, an access code can not be determined.

16. After obtaining the Access Code, carefully type it in the Access Code box. Next select on the **Upgrade Now Button**. You will be informed if your upgrade was successful. If you were unsuccessful, try re-entering you access code. Also verify that your software serial number and verification code are correct. If you are unable to upgrade your software, call EASE at 1-888-366-EASE for assistance



You are now ready to Scan with EASE!!

To Install Personal EASE OBD II Scan Tool software in Windows:

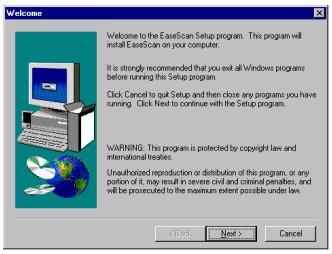
1. Start your computer.
2. Uninstall any previous versions of the EASE Scan Tool software.
3. Close ALL software applications BEFORE installation.

IMPORTANT: If you have a Virus Scan program, you must disable it before you install the software. If you do not, the installation could be corrupted.

4. Place the EASE Scan Tool CD in your CD-ROM drive. The CD will start automatically.

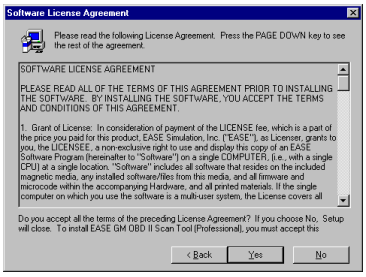
NOTE: If the CD does not start automatically, double-click the My Computer icon on the Windows desktop. Locate the CD-ROM drive in the window, double click the drive letter to display the contents of the CD, and then double-click SETUP.EXE.

5. The Welcome screen will be displayed. Select on the **Next** button to begin the software installation process.

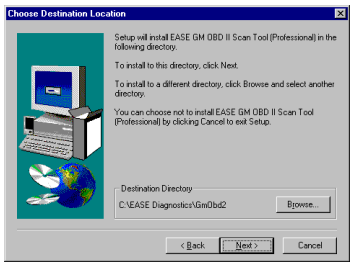


NOTE: During the software installation select on the **Back** button to return to the previous screen, the **Next** button to go to the next installation screen or **Cancel** to abort the installation.

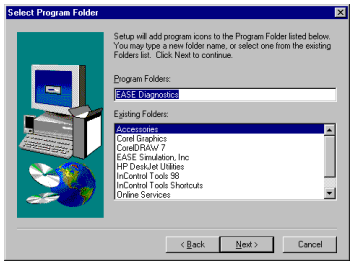
6. The Software License Agreement Screen displays the License Agreement. Please read the agreement. If you accept the terms of the agreement, select on the **Yes** button. If not, select **No**. If you do not accept this agreement the software will not be installed.



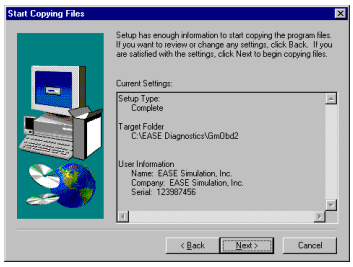
7. The EASE Scan Tool software will be installed in the default directory C:\EASE Diagnostics. If you wish to install the program into the default drive and directory select **Next**, otherwise select on the **Browse** button to enter a new drive and/or directory. If the directory you enter does not exist, the installation program will create it.



8. The default Program Folder for the EASE Scan Tool program icon is EASE Diagnostics. If you want to change the default folder, type in a new folder name or select one from the existing folders listed. Select on the **Next** button to continue.

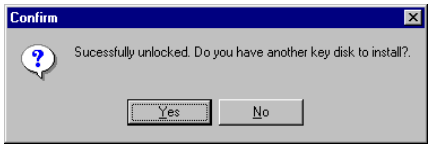


9. At this point, the installation program has enough information to start copying the program files to your computer. The installation settings you have select are displayed in the Current Settings box. If you want to change any of these settings, select on the **Back** button to return to the setup screen you want to change. If you are satisfied with the settings, select on the **Next** button to begin copying files to your computer.

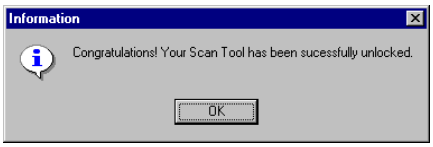


10. Next you will be asked to insert the Key Disk that you received with your Personal Software into the floppy drive. This disk unlocks the vehicle interface(s) you ordered. Select on the **OK** button to continue.

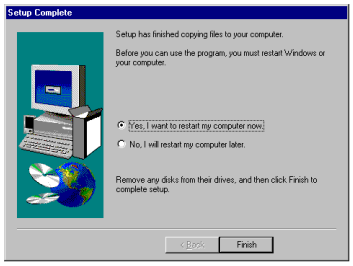
11. If the software was successfully unlocked, the following message box will be displayed. If you have another key disk to install at this time, select the Yes button. If not, select the No button to continue.



12. After you have installed all your key disk(s), the following message box will be displayed. Select the OK button to continue.



13. At this time, installation is complete. Your computer must be restarted before you can run the software. Remove any floppy disks from the drive and then select **Finish** to complete the software installation.



14. To start the EASE Scan Tool Software either double-click on the EASE Scan Tool Icon on the Windows Desktop or pick the Scan Tool program that you want to start in the EASE Diagnostics Folder in the Programs group of the Windows Start Menu.

You are now ready to Scan with EASE!!

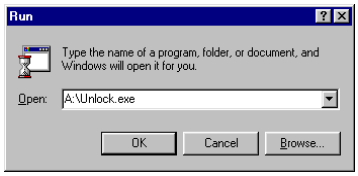
To Upgrade the EASE Personal Scan Tool software:

After the Personal Scan Tool has been installed, it can be upgraded with another interface or to the Plus Level with a Key Disk. To upgrade the Personal software, follow the instructions below.

1. Place the Key Disk in your floppy disk drive.

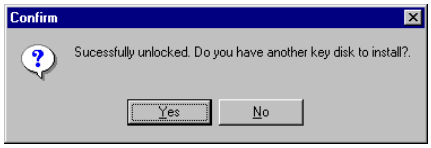
2. From the Windows desktop, select **Start**, then **Run**.

3. At the Open prompt type **A:\Unlock.exe** (or X:\Unlock.exe where X is the letter which represents your floppy disk drive) and then select on the **OK** button.

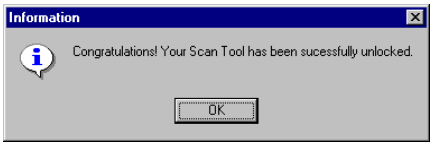


4. Select on the **OK** button in the Unlock Screen to continue.

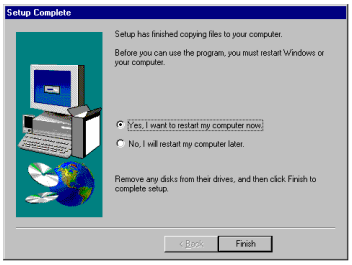
5. If the software was successfully unlocked, the following message box will be displayed. If you have another key disk to install at this time, select the Yes button. If not, select the No button to continue.



6. After you have installed all your key disk(s), the following message box will be displayed. Select the OK button to continue.



7. At this time, installation is complete. Your computer must be restarted before you can run the software. Remove any floppy disks from the drive and then select **Finish** to complete the software installation.



VII. VEHICLE REQUIREMENTS

OBD II PC Scan Tools

The OBD II Scan Tool is designed to work with all OBD II compliant vehicles.

- 1996 or newer OBD II Compliant Vehicle (Includes All Domestic, Asian and European Vehicles)
- Some 1994 and 1995 vehicles are OBD II Compliant

Exceptions: CNG (Compressed Natural Gas) vehicles and vehicles that are designated as Flex Fuel that are 1996 and newer may not be OBD II Compliant. Be sure to check the Vehicle Emission Control Information Label.

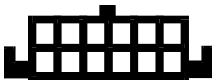
For your vehicle to be OBD II compliant it must have a 16 pin DLC under the dash and the Vehicle Emission Control Information label must state that the vehicle is OBD II compliant. This label is located on the inside of the hood on most vehicles. An example of this label is shown below. Note the last line of the label states that the vehicle is OBD II certified.

DLC- Data Link Connector (above) - a 16 position connector located under the driver side dash of most vehicles.

Vehicle Emission Control Information Label (right) - located inside the hood of most vehicles. Use it to identify whether or not the vehicle is OBD II certified.

GM OBD I PC Scan Tool

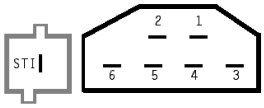
The GM OBD I PC Scan Tool is designed to work with 1982-95 GM OBD I vehicles, including Saturn. The GM OBD I diagnostic connector (shown below) is a 12 position connector and is referred to as the Assembly Line Diagnostic Link, (ALDL), the Assembly Line Communication Link, (ALCL), and the Data Link Connector (DLC).



GM ALDL Diagnostic Connector - a 12-position connector located under the driver side dash of most GM vehicles.

Ford EEC-IV PC Scan Tool

The Ford EEC-IV Scan Tool is designed to work with 1984-98 Ford EEC-IV vehicles. Some of the vehicles in this time frame do not support on-board diagnostics. To determine whether or not your vehicle supports Ford EEC-IV, look for the vehicle's diagnostic connector. It is located under the hood of most Ford vehicles. The end of this connector is shown below.



Ford EEC-IV Diagnostic Connector – located under the hood of most Ford vehicles.

VIII. SETUP PROCEDURES

NOTICE

THIS PRODUCT IS DESIGNED TO OPERATE AT A VEHICLE'S NORMAL BATTERY VOLTAGE: 11-15 VOLTS DC. ANY OTHER VOLTAGE MAY DAMAGE THE EASE SCAN TOOL UNIT!

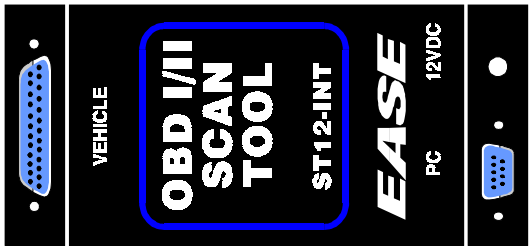
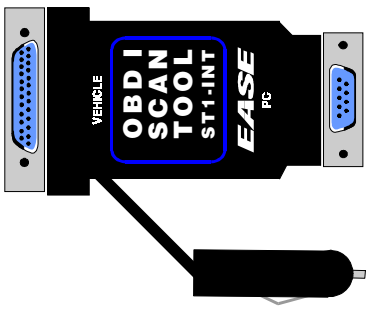
This section includes the following:

1. What comes with an EASE Scan Tool
2. Step by step instructions for setting up the EASE Scan Tool
   a. Identifying what type of COM port connector your PC has
   b. Connecting EASE Scan Tool to a PC
   c. Locating Your Vehicle's Diagnostic Connector
   d. Connecting to and Scanning the vehicle
3. Using the Wireless Scan Tool Interface
   a. Connecting to and Scanning an OBD II vehicle
   b. Connecting to and Scanning a pre-OBD II vehicle

1. What Comes With An EASE Scan Tool

An EASE Scan Tool Package is provided with the following:

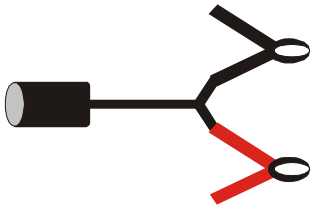
1. An EASE Scan Tool Unit – There are currently three different EASE Scan Tool vehicle interface units. The unit shipped depends upon the package that was purchased.

ST12-INT: OBD I/II Scan Tool Interface – a 4.5" x 2.74" black steel box with a DB25 connector on one end and a DB9 connector and power jack on the other. This unit can be used to connect to all OBD II compliant and pre-OBD II GM, and Ford vehicles.	
ST2-INT: OBD II Scan Tool Interface – a small black "T" box with a DB9 connector on one end and a DB25 connector on the other. This unit can be used to connect to all OBD II compliant vehicles.	
ST1-INT: OBD I Scan Tool Interface – a small black box with a DB9 Connector on one end and a DB25 on the other. A cigarette lighter plug is attached to the side. This unit can be used to connect to pre-OBD II GM and Ford vehicles.	

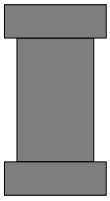
2. Serial Interface Cable - A cable with a DB9 male connector on one end and a DB9 female connector on the other that is used to connect the EASE Scan Tool Unit to the PC. Professional packages are shipped with a 25' cable and Personal packages with a 15' cable. 50' cables are available.

CABLE-DB9-15: 15' Cable	**CABLE-DB9-25**: 25' Cable	**CABLE-DB9-50**: 50' Cable
		

3. Vehicle Interface Cable(s) – Cables that are used to connect the vehicle's diagnostic connector to the EASE Scan Tool Unit. The cable(s) shipped depends upon the Scan Tool package that was purchased.

CABLE-OBD II: OBD II Vehicle Interface Cable – A cable with an OBD II connector on one end and a DB25 on the other. Required when scanning OBD II compliant vehicles (1996 and newer) vehicles with ST12-INT or ST2-INT Scan Tool unit.	
CABLE-GM1: GM OBD I Vehicle Interface Cable – A cable with a GM OBD I connector on end and a DB25 on the other. Required when scanning pre-OBD II General Motors and Saturn vehicles with ST12-INT or ST1-INT Scan Tool unit.	
CABLE-FORD1: Ford EEC-IV Black Vehicle Interface Cable – A cable with a Ford EEC-IV connector on one end and a DB25 on the other. Required when scanning pre-OBD II Ford vehicles with ST12-INT or ST1-INT Scan Tool unit.	
CABLE-CIG-PLG: Cigarette Plug Power Cable - A cable with a power plug on one end and a cigarette lighter plug on the other. Required to power the ST12-INT Scan Tool Unit when scanning pre-OBD II GM and Ford vehicles.	
CABLE-BAT-CLP: Cable with Battery Clips – An adapter that has a cigarette lighter jack on one end and battery clamps on the other. Allows you to power the Scan Tool unit by clipping directly to the vehicle's battery. Required to power the ST12-INT and ST1-INT Scan Tool Units when scanning pre-OBD II Ford vehicles.	

4. Surge Suppresser - A COM port adapter that has a DB9 male connector on one end and a DB9 female connector on the other. For your protection we recommend that you install this adapter on the COM (Serial) port that you are connecting the Scan Tool to. This will protect your COM port from voltage induced transients which could be caused by high voltage equipment, such as a welder or a 440 volt motor, operating in the vicinity of your scan tool system.



5. Installation Software CD – On the CD is the installation software and the User's Manual file.

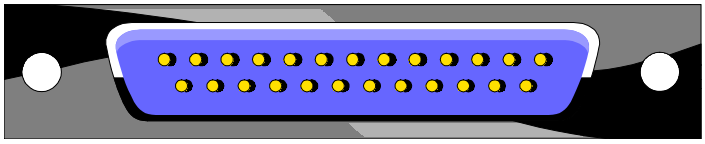
2. Step By Step Instructions For Setting Up The EASE Scan Tool

The EASE Scan Tool unit must be connected to both your vehicle and computer to operate. The following sections explain how to make the proper connections.

Identifying What Type of COM Port Connector Your PC Has

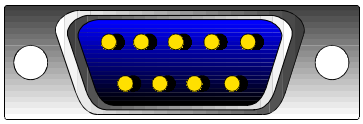
Before you can connect the EASE Scan Tool to your computer, you must identify what type of COM (Serial) port your computer has available. The EASE Scan Tool connects to any unused COM (Serial) Port on the back of your computer. Depending upon your computer's configuration, a COM port can be either a 9-pin male (plug) or a 25-pin male (plug).

25-pin male connector COM Port



If you have a serial mouse (it will have a 9 pin connector on the end of it), it is typically plugged into COM1 -- a 9-pin male connector on the back of the computer. On some systems, next to COM1 there is a 25-pin male connector. This is also a COM port and depending on the configuration of your computer, it could be called anything from COM2 - COM9. Use this port or another unused 25-pin male connector for the EASE Scan Tool Unit.

9-pin male connector COM Port



Other computers have two 9-pin male connectors. If you have a serial mouse (it will have a 9 pin connector on the end of it), it is typically plugged into COM1-- a 9-pin male connector on the back of the computer. The other 9-pin male connector is also a COM port and depending on the configuration of your computer, it could be called anything from COM1 - COM9. Use this port or another unused 9-pin male connector for the EASE Scan Tool Unit.

NOTE: If you cannot identify a spare COM port on the back of your computer, you may not have one. Contact your local computer store for information on how to install a COM (Serial) port into your computer.

NOTE: There will be another 25 pin female (receptacle) connector on the back of your computer. This connector is called LPT1 and is for your printer. Do not connect the EASE Scan Tool to this port.

Connecting the EASE OBD II Scan Tool to a PC

The EASE Scan Tool unit must be connected to a PC in order to control the unit using the EASE Scan Tool software. After you have identified the type of COM port your PC has, use the instructions below that pertain to your type of COM port.

If you have a 25-pin male connector COM Port

If you have a 25-pin male connector, you will need a DB9 Male to DB25 Female adapter to connect the Scan Tool to your PC. This adapter is not included with EASE Scan Tool. You can buy this adapter at your local computer supply store. Attach this adapter to the available 25-pin male COM port on the back of your computer. Attach the surge suppresser to the adapter. Next attach one end of the Serial Interface Cable (DB9 male to DB9 female cable) to the surge suppresser. Connect the other end to the DB9 connector located on the end of the Scan Tool unit.

See Section 21.0 for information on configuring your software to your COM port.

If you have a 9-pin male connector COM Port

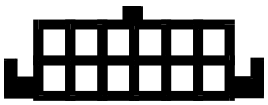
Connect the surge suppresser to the COM port on the back of the PC. Next connect one end of the Serial Interface Cable (DB9 male to DB9 female cable) to the surge suppresser. Connect the other end to the DB9 connector located on the end of the EASE Scan Tool unit.

See Section 21.0 for information on configuring your software to your COM port.

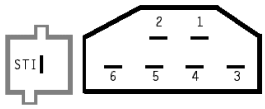
Locating The Vehicle's Diagnostic Connector

In order for the Scan Tool Unit to work it must be connected to the vehicle and PC. To connect the unit to the vehicle, you must first locate the vehicle's diagnostic connector. The OBD II diagnostic connector (Figure 1) is a 16-pin connector and is referred to as the Data Link Connector (DLC). The GM OBD I diagnostic connector (Figure 2) is a 12 position connector and is referred to as the Assembly Line Diagnostic Link, (ALDL), the Assembly Line Communication Link, (ALCL), and the Data Link Connector (DLC). In OBD II vehicles this connector supplies power to the Scan Tool Unit.

OBD II DLC- Data Link Connector
Figure 1. A 16-position connector located under the driver side dash of most OBD II vehicles.



GM OBD I Diagnostic Connector
Figure 2. A 12-position connector located under the driver side dash of most GM OBD I vehicles.



Ford EEC-IV Diagnostic Connector
Figure 3. Located under the hood of most Ford EEC-IV vehicles.

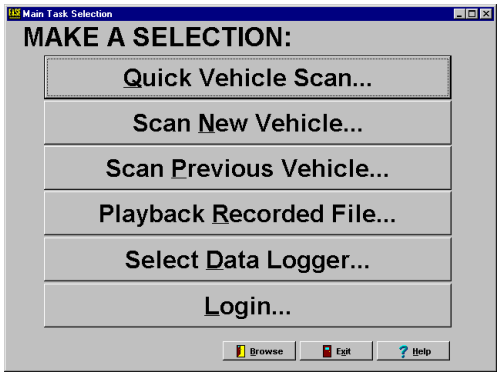
On most OBD II and GM OBD I vehicles the diagnostic connector is located under the driver's side dashboard in full view. In some vehicles it may be recessed behind a panel. Remove this panel for access to the connector. Other vehicles have a cap labeled "Diagnostic Connector" over the connector. Remove this cap to connect the Scan Tool. Replace this cover when you are finished. To be OBD II compliant: if the diagnostic connector is not located under the driver's side dashboard, a label should be placed there to notify the owner where it is located. On Ford EEC-IV vehicles, the diagnostic connector (Figure 3) is located under the hood. If you are unable to find the diagnostic connector, consult the vehicle's service manual for the exact location.

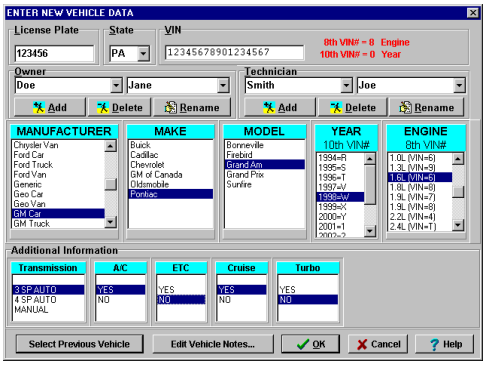
Connecting to and Scanning the Vehicle

1. **Start the Scan Tool Software version for the vehicle that is to be scanned.** Use the table below to determine which Scan Tool software to run.

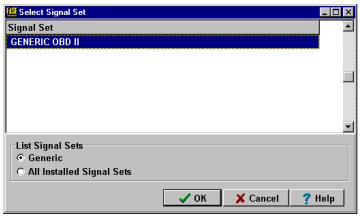
Scan Tool	Vehicles Supported	Data
Generic OBD II	1996 and newer Domestic, Asian, and European OBD II compliant vehicles	OBD II Generic Vehicle Data
General Motors 82-95	1982 - 95 General Motors Vehicles and Saturn Vehicle	Powertrain and Body and Chassis
General Motors OBD II	1996 and newer General Motors vehicles.	Enhanced Powertrain and Body and Chassis Data
Ford EEC-IV	1984-98 Ford EEC-IV Vehicles	Powertrain Data and/or KOEO/KOER
Ford OBD II	1996 and newer Ford Vehicles	Enhanced Powertrain Data
Toyota OBD II	1996 and newer Toyota Vehicles	Enhanced Powertrain Data

2. **Select the Scan New Vehicle Button in the Main Task Selection Screen.**
3. **Select the vehicle that you are connecting to in the Enter New Vehicle Data Screen.** Once the correct information is entered, select the OK button.





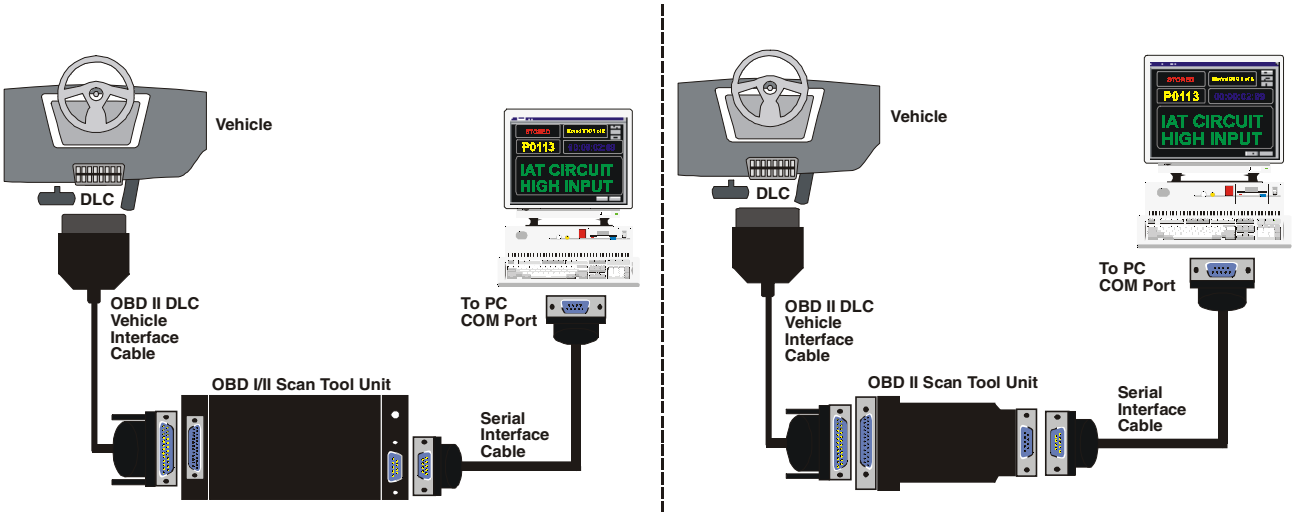
4. **In the Select Signal Set Screen, select which type of data will be scanned from the vehicle.** Select the OK button.



5. **Connect the Serial Interface Cable to the PC's serial (COM) port and the Scan Tool Unit.** The Scan Tool software must be configured to communicate with the COM port you have connected the serial cable to. To set the COM port, select the Set COM Port button in the Vehicle Communications Screen to open the PC Communications Screen. See Section 21.0 for more information.
6. **Connect the Scan Tool Unit to the vehicle.**

<u>OBD II Vehicles</u>

a. SAFETY FIRST!!! Review Section I. Safety Precautions.
b. Turn the vehicle's ignition OFF.
c. Connect one end of the OBD II Vehicle Interface Cable to the vehicle's diagnostic connector. Connect the other end of the cable to either the ST12-INT (left) or ST2-INT (right) Scan Tool Unit.



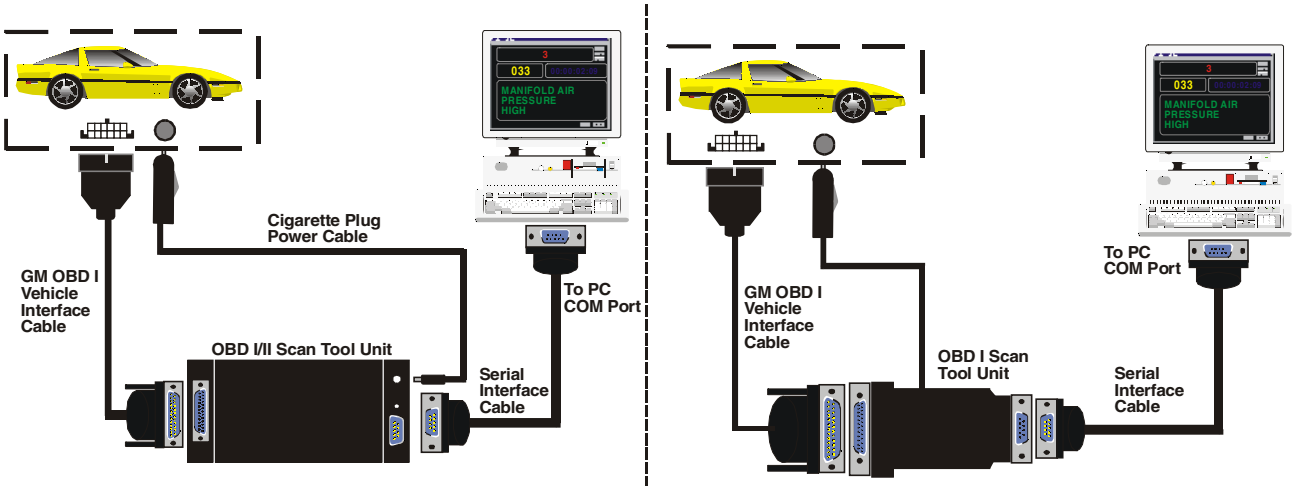
OBD II Vehicle Connection Diagrams - the Scan Tool unit must be connected to both the computer and vehicle to operate properly.

GM OBD I Vehicles

a. SAFETY FIRST!!! Review Section I. Safety Precautions.
b. Turn the vehicle's ignition OFF.
c. Connect one end of the GM OBD I Vehicle Interface Cable to the vehicle's diagnostic connector. Connect the other end of the cable to either the ST12-INT (left) or ST1-INT (right) Scan Tool Unit.
d. ST12-INT only: Plug one end of the cigarette plug power plug into the side of the scan tool unit. Plug the other end into the vehicle's cigarette lighter receptacle.

   ST1-INT only: Plug the cigarette lighter plug that is attached to the side of the unit into the vehicle's cigarette lighter receptacle.

   IMPORTANT: The LED on the end of the cigarette lighter plug will light if the plug is securely connected and the receptacle is powered. If the LED does not light, check your connections and test to make sure there is power at the lighter receptacle. **If the scan tool unit is not powered it will not connect to the software.**



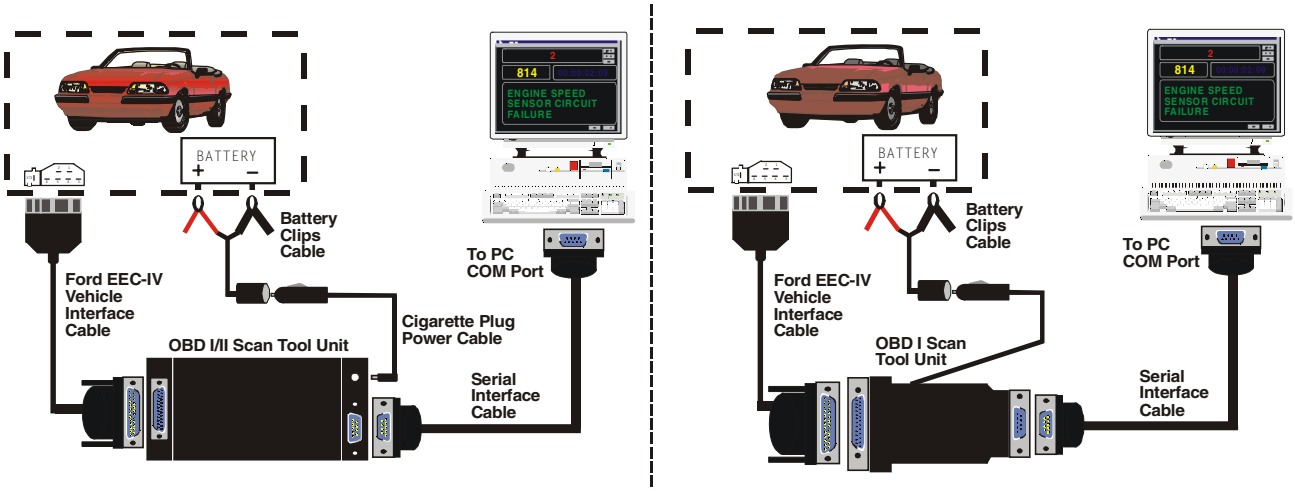
GM OBD I Vehicle Connection Diagrams - the Scan Tool unit must be connected to both the computer and vehicle to operate properly.

Ford EEC-IV Vehicles

a. SAFETY FIRST!!! Review Section I. Safety Precautions.
b. Turn the vehicle's ignition OFF.
c. Connect one end of the correct Ford EEC-IV Vehicle Interface Cable to the vehicle's diagnostic connector. Connect the other end of the cable to either the ST12-INT (left) or ST1-INT (right) Scan Tool Unit.
d. Connect the battery clips cable to the vehicles battery.
e. ST12-INT only: Plug one end of the cigarette plug power plug into the side of the scan tool unit. Plug the other end into the lighter receptacle on the battery clips cable.

   ST1-INT only: Plug the cigarette lighter plug that is attached to the side of the unit into the vehicle's cigarette lighter receptacle.

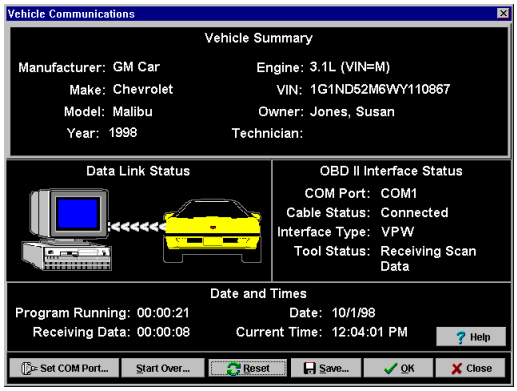
   IMPORTANT: The LED on the end of the cigarette lighter plug will light if the plug is securely connected and the receptacle is powered. If the LED does not light, check your connections and test to make sure there is power at the lighter receptacle. **If the scan tool unit is not powered it will not connect to the software.**



Ford EEC-IV Vehicle Connection Diagrams - the Scan Tool unit must be connected to both the computer and vehicle to operate properly.

7. **Turn the vehicle's ignition switch to the "ON" position.**

8. **Once the PC is properly connected to the vehicle, the software will automatically connect and begin the communication process. The status of this connection is shown in the Vehicle Communications Screen.** If the software successfully linked to the vehicle, arrows will scroll between the PC and the Car in the Data Link Status Section, the Cable Status will be "Connected" and the Tool Status will be "Receiving Scan Data".



If the software did not link, check all cable connections, make sure the ignition is ON, that the OBD II connector or the cigarette plug power cable is powering the Scan Tool unit and that the correct COM port is selected.

3. Using the Wireless Vehicle Interface

The Wireless Vehicle Interface (WVI) is a 900 Mhz EASE Scan Tool interface set that eliminates the need for cables between the vehicle under test and the PC running EASE diagnostic software. Vehicles can be scanned several feet away.

The WVI set consists of a base unit connected to the PC and a vehicle unit, which connects to the vehicle's DLC. The WVI works on all OBD II compliant vehicles (96+) and currently supports OBD II Generic and GM, Ford, Chrysler and Toyota Enhanced data in wireless or cabled mode. (In cabled mode the WVI vehicle unit must be cabled directly from the vehicle to the PC). The WVI works on pre-OBD II GM, Ford and Chrysler vehicles in cabled mode only.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

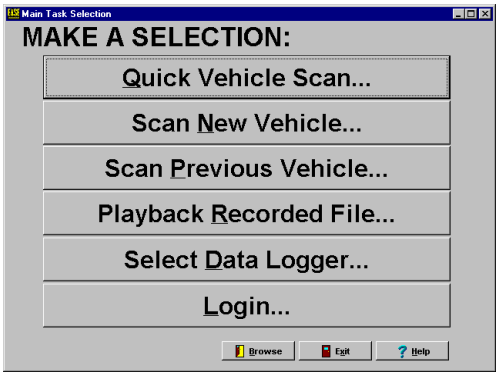
a. Connecting to and Scanning an OBD II Vehicle with the Wireless Interface

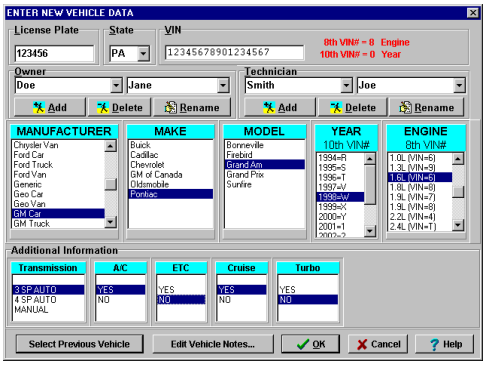
1. **Start the Scan Tool Software version for the OBD II vehicle that is to be scanned.** Use the table below to determine which Scan Tool software to run.

Scan Tool	Vehicles Supported	Data
Generic OBD II	1996 and newer Domestic, Asian, and European OBD II compliant vehicles	OBD II Generic Vehicle Data
General Motors OBD II	1996 and newer General Motors vehicles.	Enhanced Powertrain and Body and Chassis Data
Ford OBD II	1996 and newer Ford Vehicles	Enhanced Powertrain Data
Toyota OBD II	1996 and newer Toyota Vehicles	Enhanced Powertrain Data

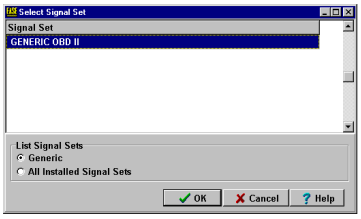
2. **Select the Scan New Vehicle Button in the Main Task Selection Screen.**

3. **Select the vehicle that you are connecting to in the Enter New Vehicle Data Screen.** Once the correct information is entered, select the OK button.





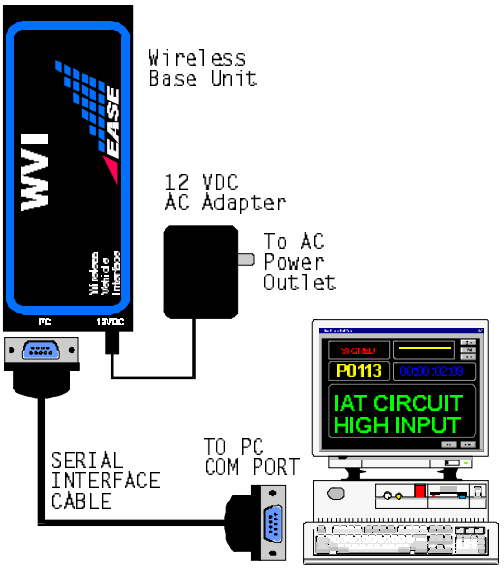
4. **In the Select Signal Set Screen, select which type of data will be scanned from the vehicle.** Select the OK button.

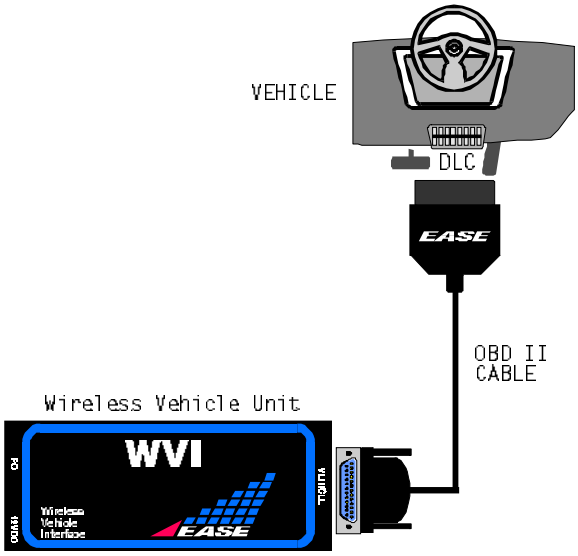


5. **Connect the Serial Interface Cable to the PC's serial (COM) port and the Wireless Base Unit.** The Scan Tool software must be configured to communicate with the COM port you have connected the serial cable to. To set the COM port, select the Set COM Port button in the Vehicle Communications Screen to open the PC Communications Screen.

6. **Power the Wireless Base Unit.** Using the included AC adapter to power the wireless base unit. The power port is located next to the PC port on the base unit. The wireless vehicle unit gets its power from the vehicle.

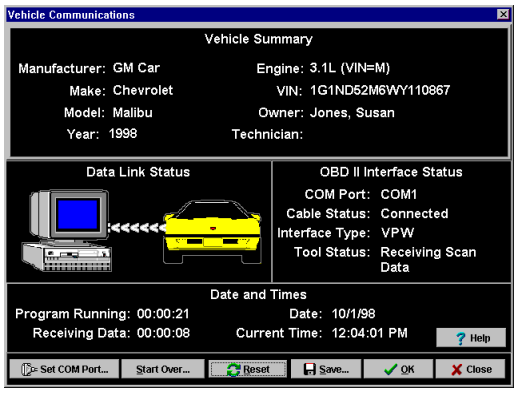
7. **Connect the Wireless Vehicle Unit to the vehicle.** Connect the DB25 end of the OBD II cable to the vehicle port on the Wireless unit. Plug the other end into the vehicle's diagnostic connector.





8. Turn the vehicle's ignition switch to the "ON" position.

Once the PC is properly connected to the vehicle, the software will automatically connect and begin the communication process. The status of this connection is shown in the Vehicle Communications Screen. If the software successfully linked to the vehicle, arrows will scroll between the PC and the Car in the Data Link Status Section, the Cable Status will be "Connected" and the Tool Status will be "Receiving Scan Data".



If the software did not link, check all cable connections, make sure the ignition is ON, and that the correct COM port is selected.

b. Connecting to and Scanning a pre-OBD II Vehicle with the Wireless Vehicle Unit

The Wireless Vehicle Unit works on GM OBD I and Ford EEC-IV vehicles in cabled mode only. To connect the Wireless Vehicle Unit to these vehicles, follow the instructions for GM OBD I and Ford EEC-IV vehicles in the previous section, 2d. Connecting to and Scanning the vehicle. Use the instructions for the ST12-INT scan tool unit.

A. AUTOMOBILE ON-BOARD COMPUTERS AND DIAGNOSTIC TROUBLE CODES

The following section provides information on

1. Automobile On-board Computers
2. OBD II
3. How to tell if your vehicle is OBD II
4. OBD II Inspection and Maintenance (I/M) Readiness Monitors
5. OBD II Diagnostic Trouble Codes (DTC)
6. OBD II Freeze Frame Data
7. OBD II The Malfunction Indicator Lamp (MIL)
8. OBD I DTCs (Malfunction Codes)
9. OBD I Check Engine Lamp

Automobile On-board Computers

Automobile on-board computers control engines, transmissions, brakes, traction and many other components. These computers have several names and acronyms depending upon the manufacturer and components they control. The most common name is PCM or Powertrain Control Modules. Other examples are Body Control Modules (BCM), Transmission Control Modules (TCM), Electronic Brake Control Module (EBCM) and Air Conditioning Control Module (ACM).

A variety of sensors, such as the oxygen sensor, throttle position sensor and manifold air temperature sensor, provide information to the on-board computer regarding the vehicle's engine operating conditions. Air Conditioning systems, vehicle air bags, and anti-lock brake systems also report to on-board computers.

On-board computers have a built in self testing system called self-diagnosis which means the on-board computer will monitor many or all of the vehicle's sensors and controlled devices for proper operation. A diagnostic trouble code or DTC is detected and set when one of the monitored devices is not functioning properly. This malfunction is stored into the on-board computer's memory as a DTC number that is related to a specific sensor or other problem. The computer can later be accessed using the EASE Scan Tool or other scan tools and code reading devices to obtain the codes stored in the on-board computer memory.

OBD II

Federal law required all vehicle manufacturers to meet On Board Diagnostics, Second Generation or OBD II standards by 1996. In order to meet this standard, the automobile's on-board computer must monitor and perform diagnostic tests on vehicle emissions to ensure that the vehicle is operating at an acceptable (legal) emission level. The maximum allowable emission level is set by the Federal Test Procedure (FTP).

All 1996 and newer passenger vehicles are OBD II compliant. All OBD II vehicles have the same 16 pin diagnostic connector or DLC. This eliminates the need to have a manufacturer specific connector to connect to your vehicle. (Some 1994 and 1995 vehicles have this connector, however, this does not mean that the vehicle is OBD II compliant.)

How to tell if the Vehicle is OBD II

The EASE OBD II Scan Tool is designed to work with all OBD II compliant vehicles.

- 1996 or newer OBD II Compliant Vehicle (Includes All Domestic, Asian and European Vehicles)
- Some 1994 and 1995 vehicles are OBD II Compliant

Exceptions: CNG (Compressed Natural Gas) vehicles and vehicles that are designated as Flex Fuel that are 1996 and newer may not be OBD II Compliant. Be sure to check the Vehicle Emission Control Information Label.

For your vehicle to be OBD II compliant it must have a 16 pin DLC under the dash and the vehicle Emission Control Information label must state that the vehicle is OBD II compliant. This label is located on the inside of the hood on most vehicles. An example of this label is shown below. Note the last line of the label states that the vehicle is OBD II certified.

Figure 1. (Above) DLC- Data Link Connector - a 16 position connector located under the driver side dash of most vehicles.

Figure 2. (Right) Vehicle Emission Control Information Label - located inside the hood of most vehicle. Use it to identify whether or not the vehicle is OBD II compliant.

OBD II Inspection and Maintenance (I/M) Readiness Monitors

A monitor is a piece of software in one of the vehicle's on-board computers that has the job of monitoring a specific piece of the engine. There are two types of monitors: continuous and non-continuous. A continuous monitor runs continuously during vehicle operation. A non-continuous monitor requires enabling criteria to make it run. Some examples of enabling criteria are vehicle acceleration/deceleration to a certain speed, engine temperature and driving the vehicle at a certain speed for a period of time.

For OBD II vehicles, there is a fixed list of 11 monitors: 3 continuous and 8 non-continuous. The 11 monitors are not applicable for all vehicles. The Inspection & Maintenance screen of the EASE OBD II Scan Tool software lists the availability and status of your vehicles monitors. In order to pass an emissions inspection all of the supported monitors must be completed.

The Continuous Monitors are:

- Misfire
- Fuel System
- Components

The Non-Continuous Monitors are:

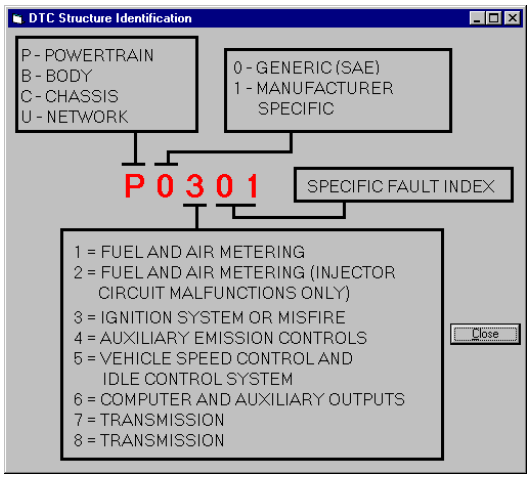
- Catalyst
- Heated Catalyst
- Evaporative System
- Secondary Air System
- A/C System
- EGR System
- Oxygen Sensor
- Oxygen Sensor Heater

OBD II Diagnostic Trouble Codes or DTCs

OBD I malfunction code numbers varied between manufacturers, years, makes and models. OBD II requires that all vehicle manufacturers use a common Diagnostic Trouble Code or DTC numbering System. There is a generic DTC listing that all manufacturers must use. Since the generic listing was not specific enough, most manufacturers came up with their own DTC listing which are called manufacturer specific codes. Both generic and manufacturer specific codes are 5 digits.

The first digit is a letter which identifies the function of the device which has the fault. This digit can be either

P	Powertrain
B	Body
C	Chassis
U	Network or data link code



The second digit is either a 0 or 1 and indicates whether the code is generic or manufacturer specific.

0	Generic
1	Manufacturer Specific

The third digit represents the specific vehicle system that has the fault. Listed below are the number identifiers for the powertrain system.

1	Fuel and Air Metering
2	Fuel and Air Metering (Injector Circuit Malfunctions Only)
3	Ignition System or Misfire
4	Auxiliary Emission Control
5	Vehicle Speed Control and Idle Control System
6	Computer and Auxiliary Outputs
7	Transmission
8	Transmission

The last two digits indicate the specific fault index.

On OBD II vehicles there are two different types of DTCs: Stored and Pending. For a DTC to become Stored, certain malfunction conditions must occur. The condition(s) required to Store a code are different for every DTC and vary by vehicle manufacturer. In order for some DTCs to become Stored, a malfunction condition has to happen more than once. If the malfunction conditions are required to occur more than once, the potential malfunction is called a Pending DTC. The DTC remains Pending until the malfunction condition occurs the required number of times to make the code Stored. If the malfunction condition does not occur again after a set time the Pending DTC will be cleared.

OBD II Freeze Frame Data

When the first emissions related powertrain DTC becomes stored, the PCM will capture (save) a block of current engine parameters. This list of parameters is called Freeze Frame Data and consists of a fixed list of parameters. For vehicles which do not support all parameters, only the applicable ones are stored. The first parameter in the list is always the DTC that caused the Freeze Frame. When DTCs are cleared, the Freeze Frame Data is cleared from the vehicle's PCM. However, the freeze frame data is saved by the scan tool software until you reconnect to another vehicle or exit the program.

OBD II Malfunction Indicator Lamp (MIL)

The Malfunction Indicator Lamp (MIL) is located in the instrument panel on the dashboard and is either a red or yellow labeled lamp. The MIL is normally off and will illuminate if a system or component either fails or deteriorates to the point where the vehicle emissions could rise 1.5 times above the FTP set emissions level.

OBD I DTCs (Malfunction Codes)

On-board computers have a built in self testing system called self-diagnosis which means the on-board computer will test many or all of the vehicle's sensors and controlled devices for proper operation. A malfunction is detected and a code is set when one of the monitored devices is not functioning properly. This malfunction is stored into the on-board computer's memory as a code number that is related to a specific sensor or other problem. The computer can later be accessed using a scan tool or other code reading devices to obtain the codes, (called diagnostic trouble codes (DTCs), malfunction codes, trouble codes, or fault codes), stored in the on-board computer memory. Malfunction code numbers and meanings vary from vehicle to vehicle and year to year even on the same vehicle model.

OBD I Check Engine Lamp

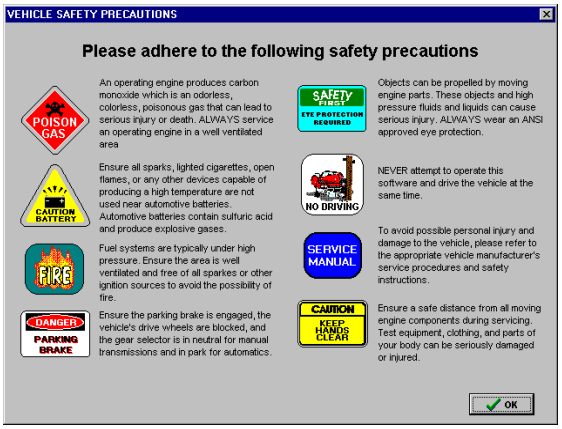
The Check Engine Lamp, also called the Service Engine Soon, and Malfunction Indicator Lamp (MIL) is located in the instrument panel on the dashboard and is either a red or yellow labeled lamp. The Check Engine Lamp is normally off and is turned on by the on-board computer when the engine is running and a malfunction condition is being detected. The lamp will stay lit as long as the problem is present and a malfunction code will be stored in the on-board computer's memory. If the engine starts operating under acceptable operating conditions again the Check Engine Lamp will be turned off by the computer, however, the code will remain stored in memory. The lamp may be turned off and on several times while the engine is running if your vehicle has an intermittent problem. After you see the Check Engine Lamp come on either steadily or intermittently while the vehicle is running, scan the codes at your earliest convenience to obtain the malfunction code(s).

B. SOFTWARE OPERATION

There are two versions of the Professional PC Based Scan Tool - Express and Deluxe. The Personal PC Based Scan Tool also has two versions Basic and Plus. This manual is for both versions. If a software function only applies to one of these versions it will be noted.

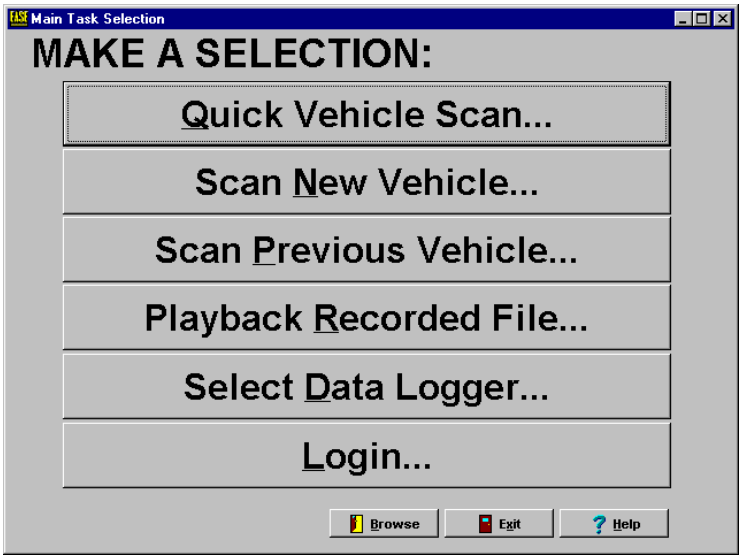
1.0 STARTING THE SCAN TOOL SOFTWARE

After starting the EASE Scan Tool Software, the user is first informed of safety precautions to follow when working around vehicles. After reading the precautions, select on the **OK** button to continue loading the software. See Section I Safety Precautions for a listing of vehicle safety precautions.



1.1 MAIN TASK SELECTION SCREEN

The Main Task Selection Screen is displayed upon software startup. This screen allows the user to select which task they will be performing in the scan tool software. A description of each task follows.



Quick Vehicle Scan (OBD II Generic Data Only)
Selecting this button opens the Vehicle Communications Screen so that you can quickly connect the scan tool to a vehicle. See Section 2.2 Vehicle Communications Screen for more information.

Scan New Vehicle
Selecting this button opens the Enter New Vehicle Data Screen, which allows you to enter vehicle data on the vehicle you are connecting the scan tool to. The information you will be able to enter is license plate number, state, VIN, vehicle owner, technician, vehicle manufacturer, make, model, year, and engine. You can also enter specific notes on each vehicle. This information does not have to be entered to connect the scan tool to a vehicle. It simply provides a way to track information on a per vehicle basis. See Section 14.0 Enter New Vehicle Data Screen for more information.

Scan Previous Vehicle
If you are connecting the scan tool to a vehicle you have connected to previously, select this button to open the Select Previous Vehicle Screen which has a list of all the vehicles the scan tool has been connected to. A search engine is provided so that you can quickly find the vehicle you are looking for. See Section 15.0 Select Previous Vehicle Screen for more information.

Playback Recorded File
Selecting this button opens the Previously Recorded Scan Files Screen where you can select a previously recorded file to playback. See Section 17.0.

Select Data Logger
If you have an EASE Data Logger, a tool that gathers vehicle data during road tests without a computer, select this button to open the Data Logger Task Selection Screen where you can configure or retrieve data from the data logger. See Section C.

Login (Deluxe or Plus)
If one or multiple users share the same copy of the scan tool software, the Deluxe and Plus Versions allow each user to customize the software. Select the Login button to login to your customized software.

2.0 PC TO VEHICLE COMMUNICATIONS

As long as the software is running and the PC is properly connected to the vehicle, the software will automatically begin the PC to Vehicle communication process. During the communication initialization the software will:

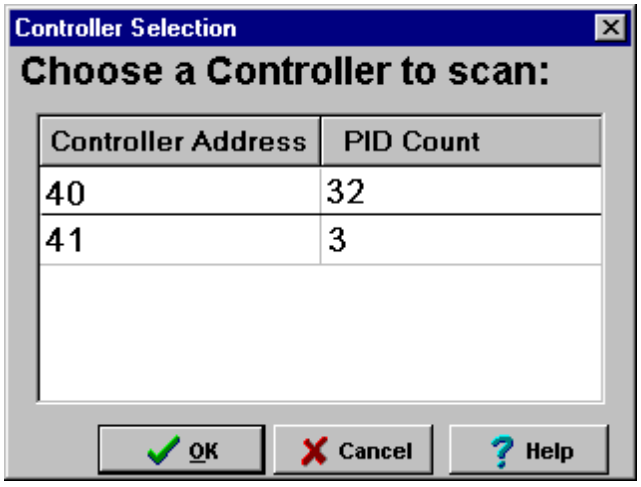
The software will then:

- Determine if there are multiple modules on the vehicle bus (OBD II only)
- Determine all the capabilities of the vehicle (OBD II only)
- Obtain IM Readiness Status data (OBD II only)
- Obtain Oxygen Sensor Location and O2 test data (OBD II only)
- Obtain any DTCs if present
- Obtain Freeze Frame data if present (OBD II only)

All of this data is obtained from the vehicle during the initial communications scan to avoid having to take the time to obtain the information after you have entered the Scan Tool section of the software. Once into the Scan Tool section, the user will be able to quickly review all of the data to get an overview of the vehicle status.

For information on connecting the PC to the vehicle, see Section VIII Setup Procedures.

2.1 CONTROLLER SELECTION SCREEN



Sometimes an OBD II vehicle will have more than one controller (on-board computer). If multiple controllers are detected during the initial communications scan, the software will alert the user of multiple controllers via the Controller Selection Screen. The User can then select which controller they want to scan. The software will default to the controller, which contains engine data information. Normally the Controller Address with the highest PID (Parameter Identification) Count is the engine controller and the second highest is the transmission controller.

Controller Address
This is the bus address of the on-board computer

PID Count
This is the number of Parameter Identification Counts that the controller has.

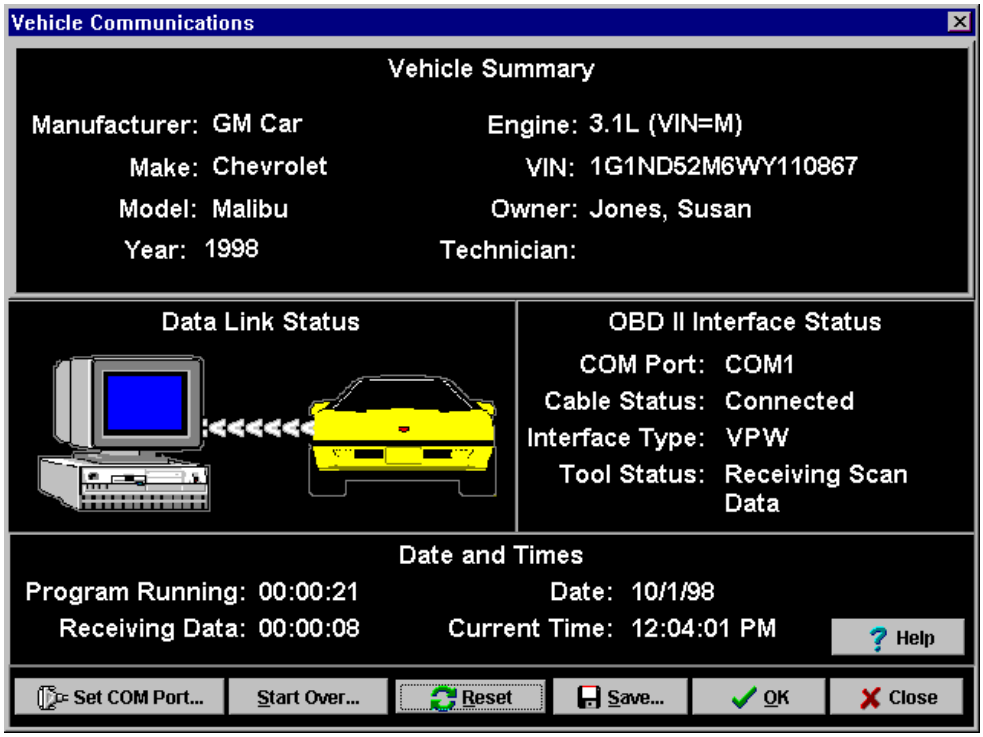
Once you are into the scan tool section of the software, you can enter the Controller Selection Screen through the menu bar by selecting *Vehicle|Select Controller.*

2.2 VEHICLE COMMUNICATIONS SCREEN

The Vehicle Communications Screen provides an overview of the current communication status between the vehicle and the PC. The software opens to this screen each time a vehicle is chosen for connection. This screen can be opened by selecting on the  icon in the tool bar, *Vehicle / Vehicle Connection Status* in the menu bar or the Quick Vehicle Scan button in the Main Task Selection Screen..

This screen is divided into 5 sections. More information on each section follows.

A. Vehicle Summary/Vehicle Communications Lost Alert Section
B. Data Link Status Section
C. OBD II Interface Status Section
D. Date/Time Section
E. Control Buttons Section

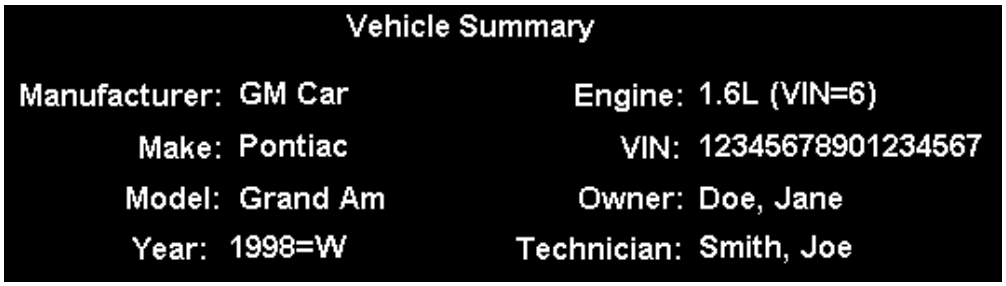


A. Vehicle Summary/ Vehicle Communications Lost Alert Section

This section of the Vehicle Communications Screen has a dual purpose: to provide a summary of the vehicle the software is connected to and to alert the user when communications have been lost to the vehicle.

Vehicle Summary

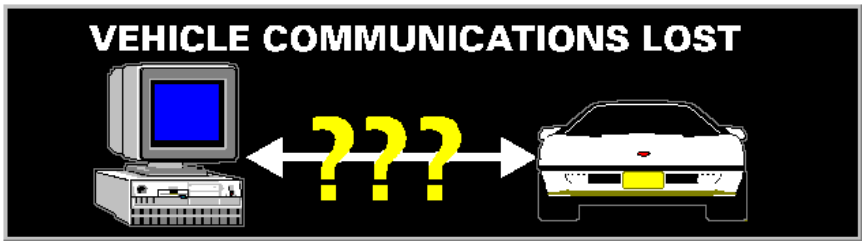
If you have entered vehicle data in the Enter New Vehicle Data Screen or chosen a previous vehicle which has vehicle data in the Select Previous Vehicle Screen, a summary of the vehicle data is displayed here. Only the vehicle data that you have entered is displayed. The software does not obtain this information from the vehicle.



NOTE: In the OBD II Generic Software, this vehicle information is for reference only. Incorrect information will not affect the scan tool's performance.

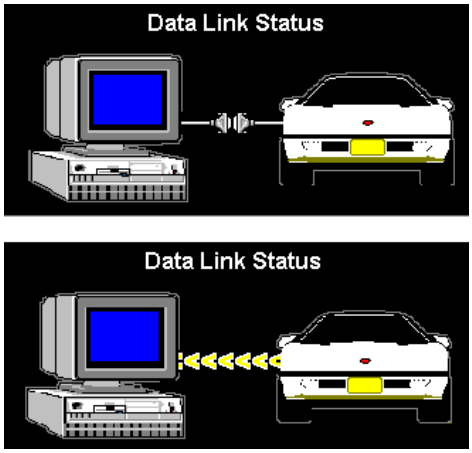
Vehicle Communications Lost Alert

If at any time communications is lost between the vehicle and the PC, the Vehicle Communications Lost Alert will appear in this section of the Vehicle Communications Screen. This provides a very large visible indication that communications has been lost.



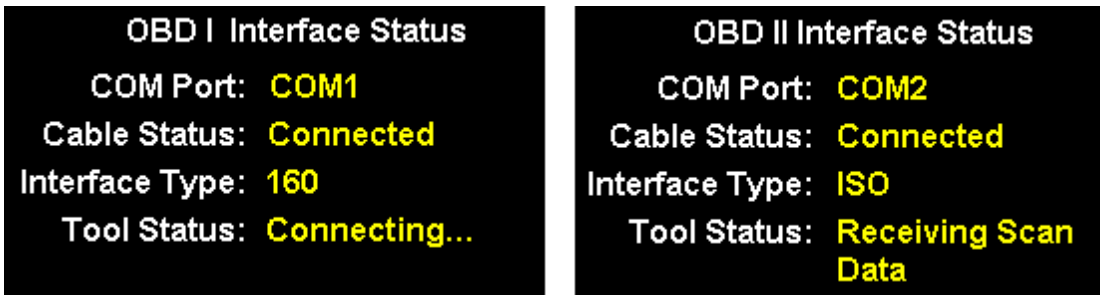
B. Data Link Status

This Section provides an animation of the communication status between the PC and Vehicle. Cable disconnected, cable connected, and PC to vehicle communication animations are displayed. In the figure to the right, the top picture represents cable disconnected and the bottom picture shows that the vehicle is communicating with the PC and software.



C. OBD I/OBD II Interface Status

The COM Port, Cable Status, Interface Type and Tool Status are displayed in this section. Two examples of this section are displayed.



COM Port

The COM Port that the software is set to is displayed here. This is the COM port that the Scan Tool serial interface cable should be plugged in to. To change the COM Port setting select on the **Set COM Port... button** on the bottom of the screen or *Options*|*Communications* from the software menu bar to open the PC Communications Screen.

Cable Status

The status of the serial cable is displayed here. If Disconnected is displayed: check all of your cable connections. If you are connecting to an OBD I vehicle make sure the unit is being powered by the cigarette receptacle. For information on connecting the scan tool unit to your PC and vehicle, see Section VIII Setup Procedures.

Interface Type

This is the communication interface type of the current connected vehicle.

OBD II Vehicles: There are 3 types of OBD II interfaces. 1. ISO - International Standardization Organization used mainly on Chrysler, Asian, European Vehicles; 2. PWM - Pulse Width Modulation used mainly on Ford vehicles; 3. VPW - Variable Pulse Width used mainly on General Motor's vehicles.

Pre-OBD II Vehicles: There are several types of OBD I interface types: 100, 160, 8192, 8192b, 8192g, 8192n, and 8192u (The number represents the baud rate that the vehicle's ECM communicates at) and EEC-IV.

Tool Status
The current status of the tool is displayed here. There are 7 possible states.

1. Off-line: The software is currently not communicating with the scan tool unit.
2. Initializing: The software is communicating with and initializing the scan tool unit.
3. Determining Capabilities: The software is communicating with and determining all the capabilities of the vehicle. At this time it is also obtaining the IM Readiness Status data, Oxygen Sensor data, DTCs (if any), and Freeze Frame data, etc. (See Section 2.0)
4. Receiving Data: The software is communicating with and receiving data from the vehicle.
5. Browse Mode: In this mode you can go through the software screens without being connected or attempting to connect to a vehicle. The software is in Browse mode after a recording playback session is ended. Select the Reset or Start Over Button to begin a new scan session.
6. Recording Data: The software is currently recording vehicle data.
7. Replaying Data : The software is currently replaying previously recorded vehicle data.

D. Date and Times

The Program Running Time, Receiving Data Time, Date and Current Time are displayed here.

Program Running
This is the amount of time the software has been running since the software program was started or reset. The time continues to increase while the system is running. This time can be reset by pressing the **Reset** Button at the bottom of the screen.

Receiving Data
This is the amount of time that the Scan Tool Software has been receiving information from the vehicle.

Date
The date setting that your PC is currently using is displayed.

Current Time
The time setting that your PC is currently using is displayed.

NOTE: See the Windows Help file for information on changing the Date and Time setting of your PC.

E. Control Buttons

The Control Buttons Section of the Vehicle Communications Screen contains the following.

Set COM Port Button
Selecting this button opens the PC Communications Screen which allows the user to select which of the PC's COM (serial) ports that the Scan Tool's serial interface cable is connected to. See 21.0 PC Communications Screen.

Start Over Button
Select this button to restart the vehicle to PC communication process. Select this button if you are connecting the software to a new vehicle or want to restart the scan session with the current vehicle.

Reset Button
The Reset button is used to reinitialize or reset the system at any time. When the system is reset the software timers and report capture buffers are cleared.

Save Button
Select this button to save the data that is in the buffer, up to 600 frames, or the current record session before you connect to another vehicle.

OK Button
Select this button to close the Vehicle Communications screen and enter the scan tool section of the software. This button is not available until the software is connected to and receiving data from the vehicle.

Cancel Button
Select this button to close the Vehicle Communications Screen and enter the scan tool section of the software before successful communication is established between the software and the vehicle.

Help Button
Selecting this button opens the Help Screen to the Vehicle Communications Screen Section.

2.3 DTC ALERT SCREEN

If DTCs were detected during the initial communication process or anytime there after the software will alert the user via the DTC Alert screen. This feature allows the user to immediately view the DTCs without having to request them. See Section 7.1 for more information.

NOTE: The DTC CNT parameter must be in the current parameter set and currently being sampled (displayed in the Data Grid) for the DTC Alert Feature to be active after the initial scan.

3.0 REAL TIME DATA GRID SCREEN

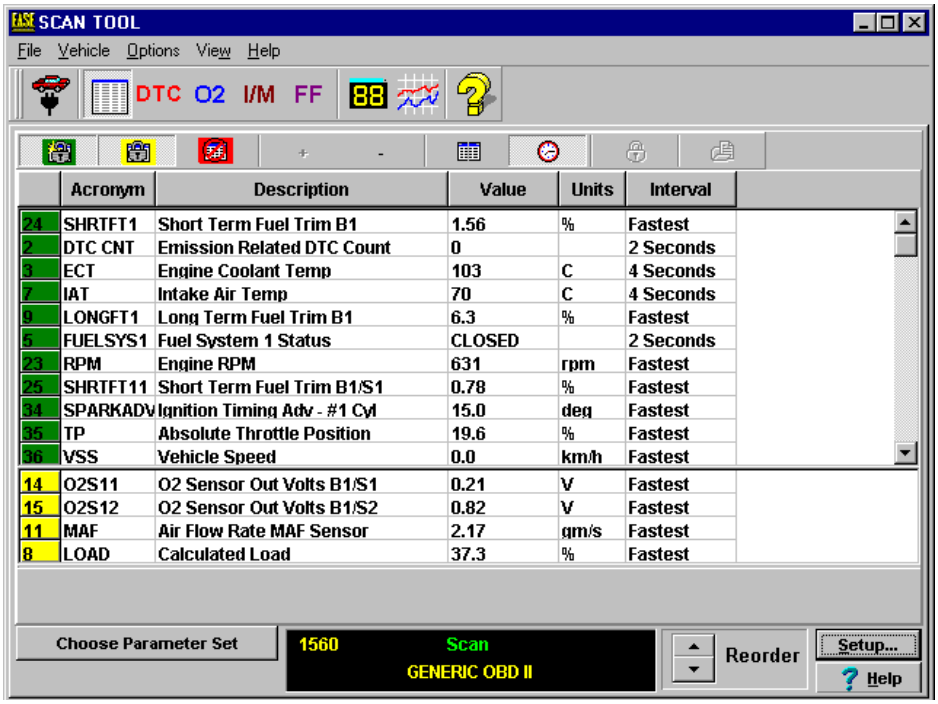
After communication is established between the vehicle and the software, the software opens to the Real Time Data Grid Screen. This screen contains a data grid for vehicle data parameters to be viewed while updating in real time. The vehicle parameters are divided into predefined factory default parameters sets. The Deluxe and Plus Versions allow the user to make custom parameter sets. Since this is where all of the real time data is being displayed, this is considered the scan tool's Main Screen.

The data in the grid is divided into three categories each represented by a color - Available (Green), Locked (Yellow) and Unavailable (Red). Available parameters are the parameters that are supported by the current vehicle. Locked parameters are available parameters that the user has chosen to continually sample. Unavailable parameters are the parameters not available on the current vehicle.

NOTE: The setting of your PC display resolution determines the number to parameters that can be viewed at once in the data grid. Set your display resolution to SVGA (1024 x 768) to view the most parameters at once in the data grid.

This screen contains the following sections. More information on each section follows.

1. Real Time Data Grid Toolbar
2. Real Time Data Grid Section
3. Control Buttons and Status Section



The data in the data grid can also be viewed as a graph in the Charts Screen (See Section 6) or in a meter in the Meters Screens (See Section 5)

3.1 REAL TIME DATA GRID TOOLBAR

The Real Time Data Grid Toolbar is used to control how the data is displayed in the grid. Each function of the Real Time Data Grid Toolbar is described below.

NOTE: The data in the grid is divided into three categories each represented by a color - Available (Green), Locked (Yellow) and Unavailable (Red). Available parameters are the parameters that are supported by the current vehicle. Locked parameters are available parameters that the user has chosen to continually sample. Unavailable parameters are the parameters not available on the current vehicle.

 **Show Scrolling Window**

Select this button to display the parameters that are available on the current vehicle in the selected parameter set in the data grid. De-select the button to hide these parameters.

For this category the user is allowed to select how many parameters to view at one time in the grid. (In OBD II, the more parameters you select to view, the slower the data updates.) Use the Add/Remove Row  buttons to control the number of rows of available parameters that are displayed in the grid. The fewer parameters viewed at one time, the faster the sampling rate. If all the parameters in the set are not displayed in the data grid, use the scroll bar to scroll through the parameters in the parameter set. Only the displayed parameters are being sampled.

The order of the parameters in the set can be controlled by using the Reorder buttons  at the bottom of the screen. Use these buttons to move a selected parameter up or down to the desired position on the list.

NOTE: Locked (yellow) parameters are also parameters that are available on the current vehicle.

 **Show Locked**

To view and sample the locked parameters in the data grid, select this button. De-select this button to hide and stop sampling these parameters. A locked parameter is an available parameter in the selected parameter set that the user has chosen to continually sample. To lock a parameter to the grid, select an available (green) parameter and then select the  Lock Parameter icon in the toolbar. To un-lock a locked parameter, select the parameter, then select the Lock Parameter icon in the toolbar.

TIP: Double click on an available (green) parameter to quickly lock it. Double click on a locked (yellow) parameter to quickly unlock it.

 **Show Unavailable**

To view the parameters that are not available on the current vehicle in the data grid, select this button. De-select this button to hide these parameters.

 **Add Row / Remove Row**

The user is allowed to select how many available (green) parameters to view at one time in the grid. (In OBD II, the more parameters you select to view, the slower the data updates.) Use the Add (**+**) Row button to add a row to the grid and the Remove (-) Row button to remove a row from the grid.

 **Two Columns**

When this button is selected the data is displayed in two columns on the grid.

 **Show Sample Interval**

Select this button to show the sample interval for each parameter in the data grid.

 **Lock Parameter**

A locked (yellow) parameter is an available (green) parameter in the selected parameter set that the user has chosen to continually sample. To lock a parameter to the grid, select an available (green) parameter then select the Lock Parameter icon in the toolbar. To un-lock a locked (yellow) parameter, select the parameter then select the Lock Parameter icon in the toolbar.

TIP: Double click on an available (green) parameter to quickly lock it. Double click on a locked (yellow) parameter to quickly unlock it.

 **Save Settings as Default**

If you have re-ordered parameters and/or locked available parameters in a parameter set and would like to save this setup, select this button to save the current settings. A change must be made to the parameter set before this button is available.

NOTE: If the software is connected to a vehicle that does not support the saved locked or available parameter(s), they will become unavailable (red).

NOTE: This feature is not available for the All Parameters parameter set.

 **Save Active Parameters as Set (Deluxe and Plus Only)**

If you are a logged in user, select this button to save all the available (green) and locked (yellow) parameters that are currently displayed in the data grid as a custom parameter set.

3.2 REAL TIME DATA SECTION

The data grid section is where the data parameters in the selected parameter set are displayed. To change the displayed parameter set select on the Choose Parameter Set button to open the parameter set menu. If all the parameters in the set do not fit in the data grid, use the scroll bar on the right of the data grid to scroll through the list.

	Acronym	Description	Value	Units	Interval
24	SHRTFT1	Short Term Fuel Trim B1	1.56	%	Fastest
2	DTC CNT	Emission Related DTC Count	0		2 Seconds
3	ECT	Engine Coolant Temp	103	C	4 Seconds
14	O2S11	O2 Sensor Out Volts B1/S1	0.21	V	Fastest
15	O2S12	O2 Sensor Out Volts B1/S2	0.82	V	Fastest
11	MAF	Air Flow Rate MAF Sensor	2.17	gm/s	Fastest

The data in the grid is split up into three categories each represented by a color - Available (Green), Locked (Yellow) and Unavailable (Red). Available parameters are the parameters that are supported by the current vehicle. Locked parameters are available parameters that the user has chosen to continually sample. Unavailable parameters are the parameters not available on the current vehicle. Use the Data Grid Toolbar (See Section 3.1) to select which category(ies) will be displayed and sampled in the grid.

A description for each Data Grid column follows.

Sort # Column
The first column contains the sort order number and the category color for the parameter. The data in the grid is split up into three categories each represented by a color - Available (Green), Locked (Yellow) and Unavailable (Red). Select at the top of the column to arrange each displayed category by sort order number.

Acronym Column
Displays the parameter's Acronym. Select on the column heading to arrange the parameters alphabetically by Acronym.

Description Column
Displays the parameter description. Select on the column heading to arrange the parameters alphabetically by Description.

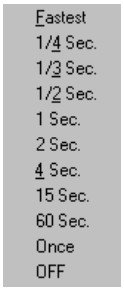
Value Column
Displays the current parameter value. If N/A is displayed than that specific parameter is not available on the current vehicle.

Units Column
Displays the unit the value is displayed in. To change the unit system select the **Setup...** button at the bottom of the grid or *Options\English/Metric...* in the menubar. Select on the column heading to arrange the parameters alphabetically by units.

Interval Column
Displays the rate at which the parameter is sampled and updated in the real-time data grid. The software is set up with optimum default interval rates. In OBD II, the more parameters that are

viewed, the slower the data updates. Therefore a parameter that does not change in value quickly, such as the Engine Coolant Temperature, does not have to be updated by the Scan Tool as quickly as the value of the Oxygen Sensor Output Voltage and would have a slower interval rate. Select on the column heading to arrange the parameters by interval rate.

NOTE: The **Show Sample Interval** button must be selected to show the sample interval for each parameter in the data grid.

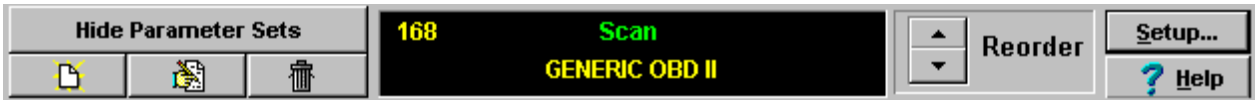


DELUXE AND PLUS: These versions give the user the ability to customize the interval (sampling) rate of each parameter in a user's custom parameter set. To change the interval, click on the interval rate you want to change with your right mouse button. A list of available rates will be displayed. Select on the desired rate. The interval rates of parameters in factory default parameter sets can not be changed.

NOTE: If only one parameter is being sampled, the sample rate must be 4 Sec. or faster.

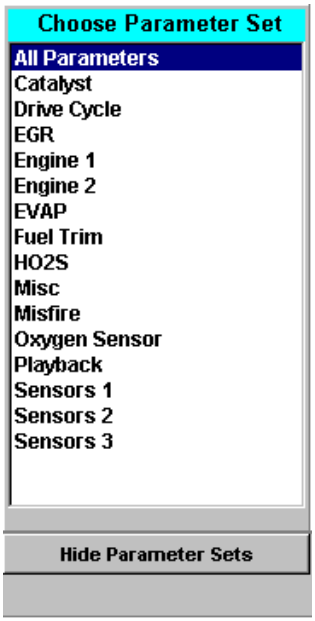
NOTE: To de-select a selected parameter row (a row that is highlighted with a blue bar), press the **Tab** button.

3.3 CONTROL BUTTONS AND STATUS SECTION



The Control Button section of the Real Time Data Grid contains buttons which allow the user to pick the displayed parameter set, change the order of the parameters in the grid, change the setup of the data grid and create, modify or delete parameter sets (Deluxe and Plus Versions only). The Status Section displays the current Scan Tool status. A detailed description of each section follows.

A. Choose Parameter Sets \ Hide Parameter Sets Button



Selecting the Choose Parameter Sets button opens the Parameter Set Selection Menu, which allows the user to change the parameter set being displayed in the data grid. There are factory default parameter sets provided in each scan tool. The All Parameters Parameter Set contains all of the parameters available for the vehicle. However, the vehicle may not support all the parameters.

The data parameters were divided into functional sets for two reasons:

1.) In OBD II, the more parameters that are viewed, the slower the data.
2.) To allow the user to quickly view only the parameters required for a particular problem.

To choose a parameter set, select on one of the parameter sets in the menu. The parameters in the selected set, which are in the categories (available, locked, unavailable) you have chosen to display, will be shown in the data grid. To hide the Parameter Set Selection Menu select the Hide Parameter Sets button.

NOTE: The data in the grid is split up into three categories each represented by a color - Available (Green), Locked (Yellow) and Unavailable (Red). Available parameters are the parameters that are supported by the current vehicle. Locked parameters are available parameters that the user has chosen to continually sample. Unavailable parameters are the parameters not available on the current vehicle. Use the Data Grid Toolbar (See Section 3.1) to select which category(ies) will be displayed in the grid.

DELUXE AND PLUS:
If you have the Deluxe or Plus Version, the Parameter Set Menu contains more features to allow users to create, modify and delete their own parameter sets. Creating and modifying parameter sets is a very useful feature. It allows each user to make customized parameter sets for specific vehicle problems. An important note to remember when creating a custom parameter set is if you do not include the parameter DTC CNT Emission Related DTC Count in your custom parameter set and display it in the data grid, the scan tool will not be scanning for DTCs unless you are in the DTC screen. Therefore you will not be notified with the DTC Alert Screen if a new DTC is set. In addition to the Express and Basic version features described in the previous section, the screen includes the following

1. Factory/User Selection
2. Current User Box
3. Create Parameter Set Button
4. Modify Parameter Set Button
5. Delete Parameter Set Button

Factory/User Selection
This box is used to select the source of the parameter sets, either the Factory parameter sets or the User's custom parameter sets. If no user is currently logged in, selecting on User will open the Login Screen.

Current User
The logged in User's name is displayed here. If no user is logged in, Factory Default is displayed.

INSTRUCTIONS FOR SELECTING A PARAMETER SET

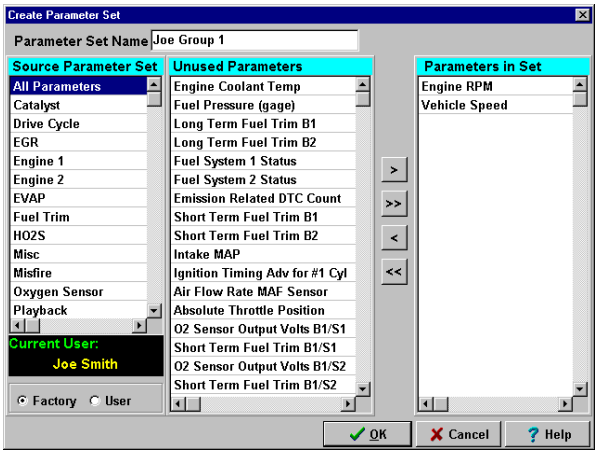
The parameters displayed in the grid are determined by which parameter set is selected. There are factory default parameter sets (groups) in each Scan Tool Version. The All Parameters Parameter Set contains all of the parameters available for the vehicle. However, the vehicle may not support all of the available parameters.

To change the parameter set that is being displayed Select the Choose Parameter Set button at the bottom of the Real Time Data Grid Screen to open the Parameter Set Selection Menu. Select the parameter set that you want to display in this menu. Select the Hide Parameter Sets button to close the menu.

NOTE: The Deluxe and Plus Software Versions allows the user to create, modify and delete their own custom parameter sets. See Custom Parameter Sets for more information on creating, modifying and deleting custom parameter sets.

Create New Parameter Set Button

When User is selected in the Factory/User Selection box, selecting the Create Parameter Set button opens the Create Parameter Set Screen where the user can create a custom parameter set. Only logged in users can create parameter sets, therefore when Factory is selected in the Factory/User Selection box this button is not selectable. Step by Step instructions for creating a parameter set follows this section on the Create Parameter Set Screen.



Parameter Set Name: Type in the name of the parameter set you are creating here.

Source Parameter Set: To add parameters to the new parameter set: select the parameter set that contains the parameter(s) you want to add in this column. If you want to use one of the Factory parameter sets, select Factory in the lower left hand corner of the screen to display the factory parameter sets.

Unused Parameters: All of the parameters in the selected source parameter set are displayed in this column. If a parameter in the source parameter set has already been added to the new parameter set it will not be displayed. To add a parameter, select the parameter(s) you want to add then select the  button. To add all of the parameters from the source parameter set select  .

Add/Remove Arrows: Use these arrows to add the selected parameter(s) from the Unused Parameter column to the Parameter in Set column or to remove the parameters from the Parameters in Set column.

 Select this button to add a selected parameter(s) from the Unused Parameters Column to the Parameters in Set column.

 Select this button to add all of the parameters from the Unused Parameters Column to the Parameters in Set column.

 Select this button to remove the selected parameter from the Parameters in Set Column.

 Select this button to remove all of the parameters from the Parameters in Set Column.

Parameters in Set Column: This column displays all of the parameters in the parameter set you are creating.

Current User Box: The logged in User's name is displayed here. If no user is logged in, Factory Default is displayed.

Factory/User Selection: This box is used to select the source of the parameter sets, either the Factory parameter sets or the User's custom parameter sets.

OK Button: Select this button to save the new parameter set.

Cancel Button: Select this button to close the Create Parameter Set Screen without creating a new parameter set.

Help Button: Select this button to open the help file

INSTRUCTIONS FOR CREATING A NEW PARAMETER SET

Creating parameter sets is a very useful feature. It allows each user to make customized parameter sets for specific vehicle problems. An important note to remember when creating a custom parameter set is if you do not include the parameter DTC CNT Emission Related DTC Count in your custom parameter set, after the initial scan, the scan tool will not scan for DTCs unless you are in the DTC screen. Therefore you will not be notified with the DTC Alert Screen if a new DTC is set. To create a new parameter set follow the steps below.

1. Open the Log In Screen by selecting the Login  icon in the main tool bar or *User/Login* from the menubar and log in. Only logged in users can create parameter sets. See Section 18.0 for more information on the Login Screen.

2. Select the  Create New Parameter Set button at the bottom of the Real Time Data Grid screen. This opens the Create Parameter Set Screen.

3. In the Create New Parameter Set Screen, enter the name of the parameter set you are creating in the Parameter Set Name box.

4. In the Source Parameter Set column, select the parameter set that contains the parameter(s) you want to put in your new parameter set. To display the factory default parameter sets, select Factory in the lower left hand corner of the screen.

5. In the Unused Parameters column, select the parameter(s) you want to add to your new parameter set from the Source Parameter Set Column and then select  to add the selected parameter(s) to the new parameter set or select  to add all of the parameters from the source parameter set to the set. If a parameter(s) that you want to add is not in the source parameter set choose another source set and select more parameters. If you want to delete parameters from the new parameter set, select on the parameter in the Parameters in Set column and then select  . To remove all of the parameters from the set, select  .

For example: If you want to add Engine RPM to your new parameter set. Select on Factory to display the list of factory default parameter sets. (One of the Factory parameter sets that has Engine RPM is Engine 2.) Select this parameter set as the source parameter set. All of the parameters in the Engine 2 set are displayed in the Unused Parameters column. Select on Engine RPM then select  to add it to the Parameters in Set column. Engine RPM has now been added to your new parameter set.

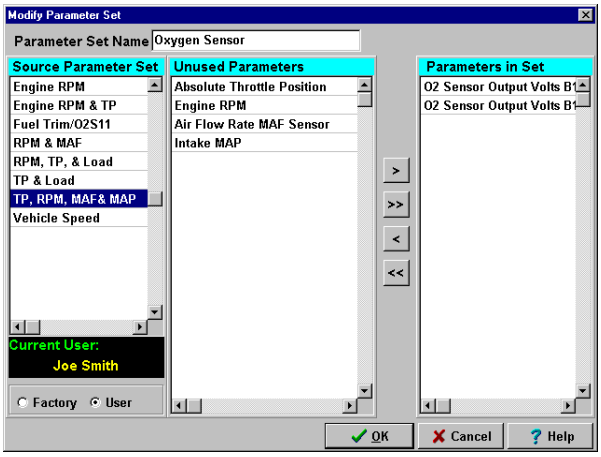
6. All the parameters that you have added to the new parameter set are displayed in the Parameters in Set column.

After you have completed making your new parameter set, select on the OK button to save the parameter set.

QUICK TIP: If you are a logged in user, select the Save Active Parameters as Set button  in the Real Time Data Grid Toolbar to save all the available (green) and locked (yellow) parameters that are currently displayed in the data grid as a custom parameter set.

 **Modify Parameter Set Button**

Selecting the Modify Parameter Set button opens the Modify Parameter Set Screen where the user can modify (add/remove parameters to or rename) a custom parameter set. Only User parameter sets can be modified. Therefore when a Factory parameter set is selected, this button is not selectable. Step by Step instructions for modifying a parameter set follows this section on the Modify Parameter Set Screen.



Parameter Set Name: The name of the parameter set you are modifying is displayed here. If you want to rename the parameter set, type the new name in this box.

Source Parameter Set: If you want to add parameters to the parameter set, in this column, select the parameter set that contains the parameter(s) you want to add. If you want to use one of the Factory parameter sets as a source, select Factory in the lower left hand corner of the screen to display the factory default parameter sets.

Unused Parameters: All of the parameters in the source parameter set are displayed in this column. If a parameter in the source parameter set has already been added to the parameter set it will not be

displayed. To add a parameter to the set, select the parameter(s) you want to add and then select the > button. To add all of the parameters from the source parameter set select >>.

Add/Remove Arrows: Use these arrows to add the selected parameters from the Unused Parameter column to the Parameter in Set column or to remove the parameters from the Parameters in Set column.

> Select this button to add a selected parameter(s) from the Unused Parameters Column to the Parameters in Set column.

>> Select this button to add all of the parameters from the Unused Parameters Column to the Parameters in Set column.

< Select this button to remove the selected parameter in the Parameters in Set Column.

<< Select this button to remove all of the parameters from the Parameters in Set Column.

Parameters in Set Column: This column displays all of the parameters in the parameter set you are modifying.

Current User Box: The logged in User's name is displayed here. If no user is logged in, Factory Default is displayed.

Factory/User Selection: This box is used to select the source of the parameter sets, either the Factory parameter sets or the User's custom parameter sets.

OK Button: Select this button to save the changes made to the parameter set.

Cancel Button: Select this button to close the Modify Parameter Set Screen without saving the changes made to the parameter set.

Help Button: Select this button to open the help file.

INSTRUCTIONS FOR MODIFYING A PARAMETER SET

1. Open the Log In Screen by selecting the Login  icon in the main tool bar or *User/Login* from the menubar and log in. Only logged in users can modify parameter sets. See Section 18.0 for more information on the Login Screen.

2. Select the user's custom Parameter Set you want to modify (add or remove parameters to or rename) in the Real Time Data Grid Screen.

3. Select the  Modify Parameter Set Button to open the Modify Parameter Set Screen.

4. Modify the parameter set.

To rename parameter set:

If you want to rename the parameter set, change the current name in the Parameter Set Name box.

To add parameters to parameter set:

If you want to add parameters, select the parameter set that contains the parameter(s) you want to add in the Source Parameter Set column. (To display the factory default parameter sets, select Factory in the lower left hand corner of the screen.) Select the parameter(s) you want to add from the Unused Parameters column and then select > to add the selected parameter(s) to the parameter set or select >> to add all of the parameters from the source parameter set to the set.

To delete parameters from parameter set:

If you want to remove a parameter from the set, select on the parameter in the Parameters in Set column and then select <. To remove all of the parameters from the set, select <<.

After you have completed modifying your parameter set, select on the **OK** button to save the changes made to the parameter set.

 **Delete Parameter Set Button**

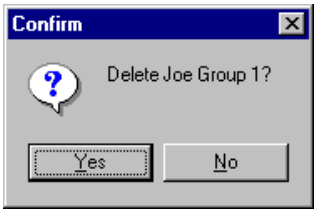
When a user's custom parameter set is selected, selecting the Delete Parameter Set Button deletes the selected custom parameter set. Only User parameter sets can be deleted, therefore when a Factory parameter set is selected, this button is not selectable. Step by Step instructions for deleting a parameter set follows.

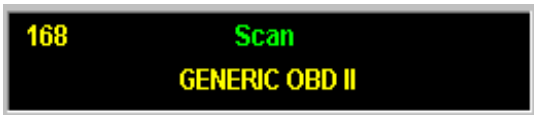
INSTRUCTIONS FOR DELETING A PARAMETER SET

1. Open the Log In Screen by selecting the Login  icon in the main tool bar or *User/Login* from the menubar and log in. Only logged in users can delete parameter sets. See Section 18.0 for more information on the Login Screen.

2. Select the user's custom Parameter Set you want to delete.

3. Select the  Delete Parameter Set button. A Confirm screen is displayed to verify that the user wants to delete the specified parameter set. Select the **Yes** button on the Confirm screen to delete the parameter set or the **No** button to cancel the delete.



B. 

Status Section

The Status Section contains the frame number, signal set and status of the scan tool software.

Frame Number: The frame number is displayed in the upper left hand corner. This is the number of the frame that is being scanned. If the software is scanning data from the vehicle, this number should be increasing.

Tool Status: The current status of the tool is displayed in the top row in green text. Possible status conditions and their description follow.

Browse: In Browse mode the user can go through the software screens without being connected to or attempting to connect to a vehicle.
Scan: In Scan mode the software is communicating with and receiving data from the vehicle.
Record: The software is currently recording vehicle data.
Playback: The software is currently replaying previously recorded vehicle data.
(Paused): If the software is paused while scanning, recording or playing back vehicle data, paused will be displayed after the function.

Signal Set: The Signal Set is displayed in the bottom row in yellow text. This is the type of data that the scan tool is scanning. The types of data currently available on the PC Scan Tool follow. You must purchase each type of data separately. Call the EASE Diagnostics sales office for more information.

Generic OBD II - The scan tool is scanning generic OBD II data.
Ford Car Enhanced OBD II PCM - The scan tool is scanning Ford manufacturer data.
GM Enhanced - The scan tool is scanning General Motors OBD II manufacturer data.
GM OBD I - The scan tool is scanning a pre-OBD II General Motors or Saturn vehicle.
Ford EEC-IV – The scan tool is scanning a Ford EEC-IV vehicle.

C. 

Reorder Buttons

The order of the parameters in the grid can be controlled by using the order buttons to move the desired data parameter up or down to the desired location in the list. Select the parameter that you want to move and select the Up or Down arrow to move it to the desired position.

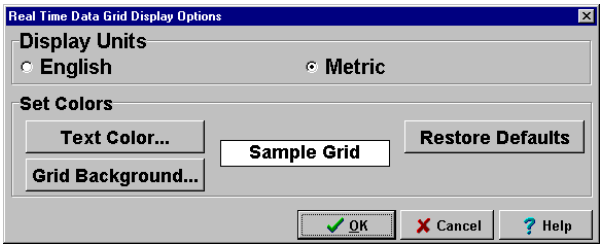
If you have re-ordered the available parameters and/or the locked available parameters in a parameter set and would like to save this setup, select the  **Save Settings as Default** button in the Real Time Data Grid toolbar to save the current settings. A change must be made to the parameter set before this button is available.

NOTE: The Save Settings as Default button is not available for the All Parameters Set.

NOTE: To de-select a selected parameter row (a row that is highlighted with a blue bar), press the **Tab** button.

D. Setup... Button

Selecting this button opens up the Real Time Data Grid Display Options Screen. This screen allows the user to set their preferences for the parameter display units and the grid text and background colors.



The Real Time Data Grid Display Options Screen contains the following:

Display Units

This section is used to select which unit of measure the data parameter values will be displayed in - English or Metric. Choose the desired unit of measure.

English: If this option is selected, then all parameter values in the data grid are displayed in English Units.

Metric: If this option is selected, then all parameter values in the data grid are displayed in Metric Units.

Set Colors

This section of the setup screen allows the user to change the colors of the text and grid background in the data grid. Look at the Sample Grid to view a sample of any color changes you make.

Text Color... Button: Select this button to change the color of the text in the data grid. Selecting this button opens the Color Screen which allows the user to pick a new color. See 23.0 Color Screen for information on the Color Screen.

Grid Background... Button: Select this button to change the color of the grid background in the data grid. Selecting this button opens the Color Screen which allows you to pick a new color. See 23.0 Color Screen for information on the Color Screen.

Sample Grid: This box shows a sample of what the data grid will look like with the current text and grid background color settings.

Restore Defaults Button: Selecting this button returns the color of the text and grid background to their original colors of black text with a white background.

OK Button

Select on this button to close the Real Time Data Grid Setup Screen and save any changes you have made.

Cancel Button

Select on this button to close the Real Time Data Grid Setup Screen without saving any changes you have made.

Help Button

Select on this button to open the Help File to a topic relevant to this screen.

4.0 TOOL BARS

The software Scan Tool has three toolbars: the Main Toolbar, the Record/Playback Toolbar and the Data Grid Toolbar. The Main Tool Bar provides a quick, alternate way to open the commonly used software screens. While scanning vehicle data, the Record/Playback Toolbar is used to pause, playback and save any previous data (up to 600 frames). The Data Grid Toolbar controls the data in the data grid. More information on the Main Toolbar and the Record/Playback Toolbar follows. See Section 3.1 for more information on the Real Time Data Grid Toolbar.

4.1 MAIN TOOLBAR

The Main Toolbar provides a quick, alternate way to open the commonly used software screens. The number of toolbar icons varies depending upon which software version you have. If you prefer to use the software menubar to open the various software screens or if you want to free up room on the screen for viewing data, the Main Toolbar can be hidden. To show/hide the main tool bar select on *Options\Main Toolbar* in the software menubar. If there's a checkmark next to Main Toolbar, the tool bar should be visible. A description of each toolbar icon is given below followed by the section where more information on the screen is given.

 Main Task Selection Screen See Section 1.1

 Vehicle Communications Screen See Section 2.2

 Login Screen (Deluxe and Plus) See Section 18.0

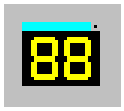
 Real-Time Data Grid Screen See Section 3.0

Diagnostic Trouble Codes Screen See Section 7.0

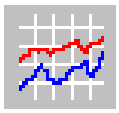
Oxygen Sensor Test Results Screen See Section 8.0

Inspection & Maintenance Monitors Screen See Section 9.0

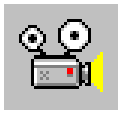

Freeze Frame & Snapshot Data Screen See Section 10.0



Meters See Section 5.0


Charts See Section 6.0


Record Data Screen See Section 16.0


Playback Previously Recorded Scan Files See Section 17.0


Data Logger Task Selection Screen See Section C


Report Print Options Screen (Deluxe and Plus) See Section 12.0


DTC, Acronym, & Parameter Libraries (Deluxe and Plus) See Section 13.0


Help Contents Screen See Section 11.0

4.2 RECORD/PLAYBACK TOOLBAR

When the scan tool is scanning real time vehicle data, it stores the previous scan data, up to 600 frames, in a buffer so that the user can quickly review it. The Record/Playback Toolbar is used to pause, playback and save the data (up to 600 frames) in the buffer. To show/hide the Record/Playback Toolbar select on *Options\Record/Playback Toolbar* in the software menubar. If there's a checkmark next to Record/Playback Toolbar, the tool bar should be visible. A description of each toolbar button is given below.

A variation of the Record/Playback Toolbar is used in the Charts Screen. See Section 6.4 for information on the toolbar used in the Charts Screen.

If you are recording or playing back vehicle data, the Record/Playback Toolbar is used. See Section 16.2 for information on the toolbar when it is used for recording and playing back vehicle data.

 Resume Scan
When this button is depressed and the frame number starts increasing, the scan tool software is scanning vehicle data. If the scan is paused, select on this button to begin scanning real time data again.

 **Playback**
Select this button to playback the previous vehicle data, up to 600 frames, that is in the data buffer.

 **Pause**
Select this button to temporarily stop scanning real time vehicle data.

 **Clear Buffer**
When the scan tool is scanning real time vehicle data, it stores the previous scan data, up to 600 frames, in a buffer so that the user can quickly review it. Select this button to clear all the frames of data from the data buffer. This will reset the frame number counter but not the time of frame.

 **Save Recording**
Select this button to save the previous vehicle data, up to 600 frames, that is in the data buffer. This will open the Save Recorded Data Screen where you can save the data, play it back or attach notes to it. See Section 16.3 for more information.

Frame Number and Time of Frame
This is the number and time of the frame currently being scanned or played back. The time is shown in seconds and represents the time from the start of software to vehicle communications.

 **Playback Speed Multiplier**
This is the speed the buffer data is playing back at. Increase the number to increase the playback speed. 0 means stopped. A negative number means the data is playing back in reverse at the specified playback speed multiplier.

 **First Frame** - When the pause button is selected, select this button to go to the first frame of buffer data.

 **Previous Frame** - When the pause button is selected, select this button to go to the previous frame of buffer data.

 **Next Frame -** When the pause button is selected, select this button to go to the next frame of buffer data.

 **Last Frame** - When the pause button is selected, select this button to go to the last frame of buffer data.

 **Track bar - Rough Frame Position**
While paused, use the track bar to quickly scroll forward or back through the buffer data.

5.0 METER SCREENS

There are Six Meter Configurations available on the Scan Tool Software. These meters are used to display the data parameters in a larger format so that they can be viewed from a distance.

- One Parameter - One meter is displayed
- Four Parameters - Four meters are displayed
- Nine Parameters - Nine meters are displayed.
- Two Parameters with Bar Graphs - Two meters with corresponding bar graphs are displayed.
- Eight Parameters with Bar Graphs - Eight meters with corresponding bar graphs are displayed.
- Minimum/Maximum Screen - Three meters are displayed with corresponding meters which display the minimum and maximum parameter values for the displayed parameter.

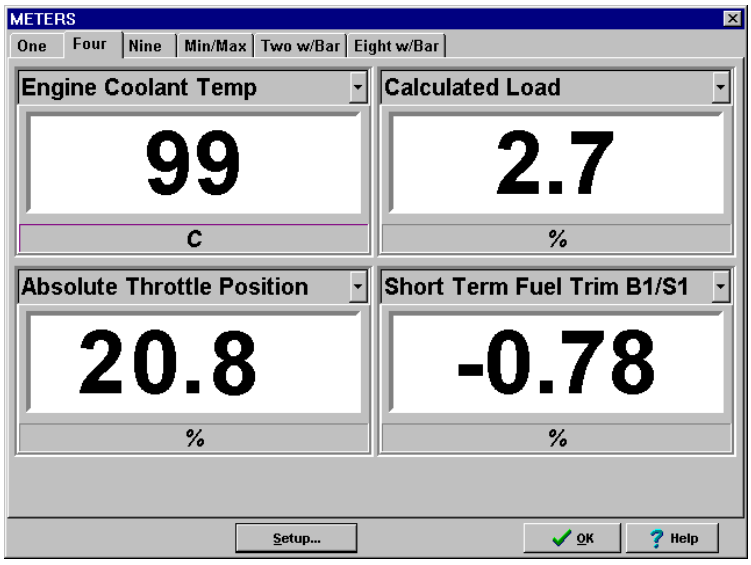
To change between the meter configurations simply click on the appropriate tab.

Each meter consists of:

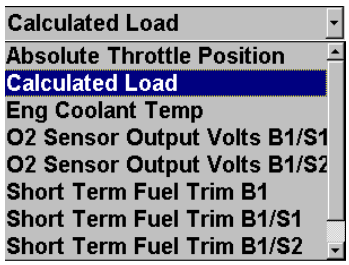
1. A Title Box which contains the data parameter's description.

2. A Meter Box where the data parameter's value is displayed.

3. A Unit Box which lists the units the parameter value is displayed in.

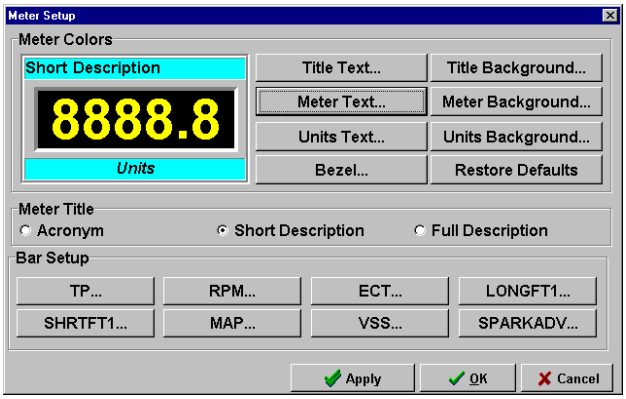


To change the data parameter displayed in a specific meter, select on the down arrow in the right of the Title Box to open a drop box displaying all the parameters in the current selected parameter set. Select on the parameter you want displayed in the meter. To close the drop down box without making any changes, select on the down arrow again.



The Meter Screens have the following common control buttons.

Setup Button
Selecting this button opens the Meter Setup Screen. In this screen you can change the color of the different components of the meter and decide the length of the title.



The Meter Setup Screen contains the following:

Meter Colors: This section of the screen is used to change the colors of the various components of the meter. Select on one of the buttons identifying the meter component you want to change the color of. This will open the Color Screen where a new color can be picked. The box shows a sample of what the meter will look like with the current color settings.

Meter Title: In this section select which format the parameter title will be displayed in.

Acronym - The data parameter's acronym would be displayed as the title.
Short Description - A short description of the data parameter is displayed.
Long Description - A long description of the data parameter is displayed.

Bar Setup (Deluxe and Plus): This section contains buttons which open the Bar Setup Screen, where the user can change the minimum and maximum setup points of the bar graph and the tri color bar setpoints, for the data parameter listed on the button. The data parameters listed on the buttons are the first 8 parameters currently being displayed in the Nine Meter Screen. If only 4 parameters are being displayed then only four buttons will have parameter names on them. See Bar Setpoints button in the following section for more information on the Bar Setup Screen.

Apply Button: Selecting this button applies the setup selections to the screen but leaves the Setup Screen open so that you may make more setup selections.

OK Button: Selecting this button saves your setup selections and closes the Setup Screen.

Cancel Button: Selecting this button allows you to exit the Setup Screen without making any changes.

OK Button
Select on the OK button to close the Meter Screens.

5.1 METER SCREENS WITH BAR GRAPHS

Meter Screens with bar graphs have a meter complemented by a bar graph which has a unique tri-state color feature which allows you to simply watch for a color change instead of a specific parameter value. This feature is very useful if you are watching your computer screen from a distance.

EXPRESS AND BASIC VERSION

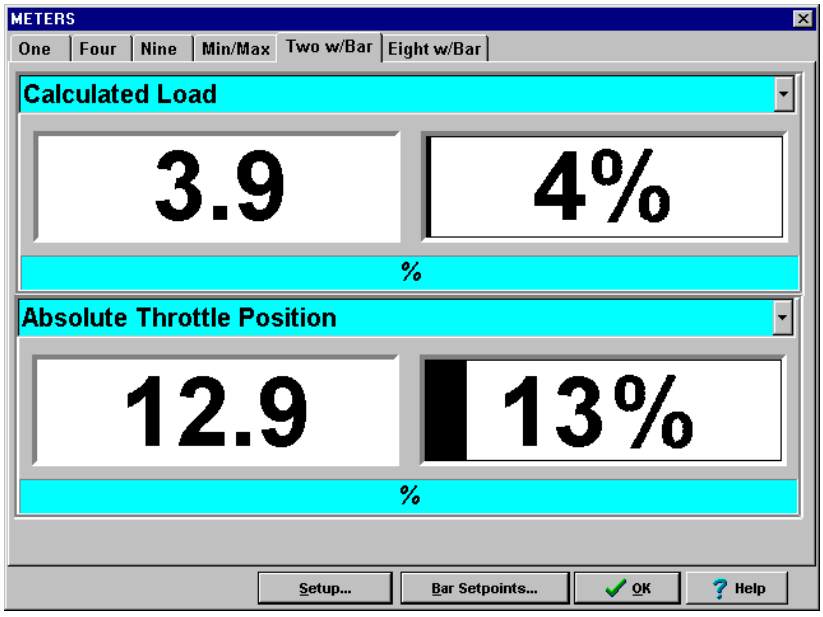
In the Express and Basic versions of software, the bar graph has three color states. What each color state represents is identified below.

Green The parameter's value is below 25% of its range.
Yellow The parameter's value is above 25% of its range.
Red The parameter's value is above 50% of its range.

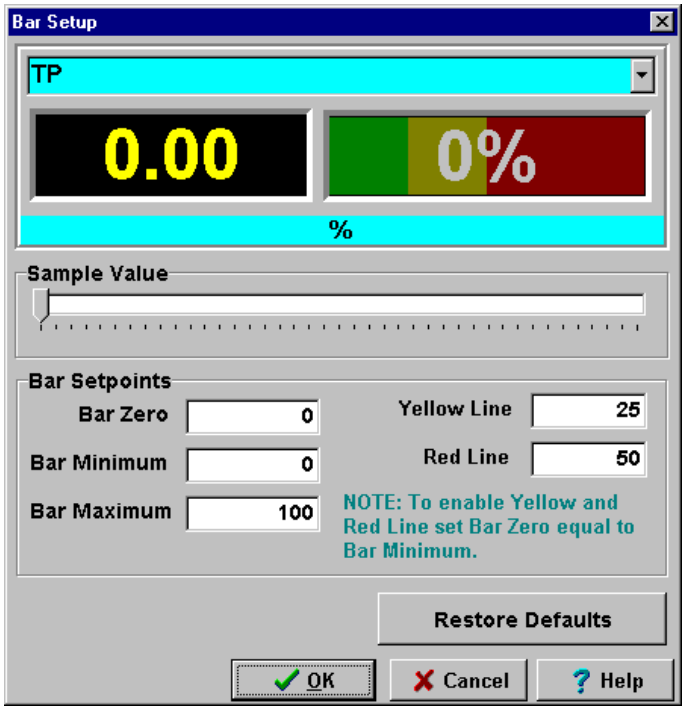
For example the parameter, Absolute Throttle Position has a range of 0-100%. For a Throttle Position of 0-24%, the bar graph would be green. For 25-49% the bar graph would be yellow. Once the Throttle Position is over 50% the bar graph will be red.

DELUXE AND PLUS

The Deluxe and Plus Versions allow the user to customize the minimum and maximum settings and the green/yellow/red threshold limits of the bar graph. Select on the Setup or Bar Setpoints button at the bottom of any meter screen to open the Bar Setup Screen. In this screen the user can change the minimum and maximum setup points of the bar graph and the tri color bar setpoints. A different color configuration can be set for each parameter.



Bar Setpoints Button (Deluxe and Plus)
Selecting this button opens the Bar Setup Screen. In this screen the user can change the minimum and maximum setup points of the bar graph and the tri color bar setpoints.



The Bar Setup Screen contains the following:

Data Parameter Box: The box at the top of the screen displays the parameter that you are modifying the bar graph of. To select a different parameter, select on the down arrow in the right of this box to open a drop box displaying all of the software's vehicle data parameters. Scroll through the list and select a new parameter.

Sample Bar Graph: The sample meter and bar graph are used to demonstrate the bar setpoint settings that you have entered. Use the Sample Value bar to vary the data parameter's value.

Sample Value Bar: Slide this bar to vary the data parameter's value so that you can test the new bar setpoint settings you have entered. The sample meter and bar graph will vary as you increase and decrease the value.

Bar Setpoints Section: Use this section to type in the new setpoint settings for the bar graph.

Bar Zero Box: Enter the parameter value that equates to 0 percent on the bar graph here.

Bar Minimum Box: Enter the minimum parameter value of the bar graph here. You can enter a negative value.

Bar Maximum Box: Enter the maximum parameter value of the bar graph here.

Yellow Line Box: Enter the parameter value where you want the bar graph to turn yellow. If the bar zero and bar minimum setpoints are not equal, this box is not enabled.

Red Line Box: Enter the parameter value where you want the bar graph to turn red. If the bar zero and bar minimum setpoints are not equal, this box is not enabled.

NOTE: If the Bar Zero and Bar Minimum values are not equal, the Yellow Line and Red Line setpoints are not enabled. In this configuration, the bar graph has only two colors. Green below the Bar Zero setpoint and red above it.

NOTE: To make a one color bar graph make Bar Maximum, Yellow Line and Red Line setpoint values equal.

Restore Defaults Button: Selecting this button restores the bar setpoint values to their factory default settings.

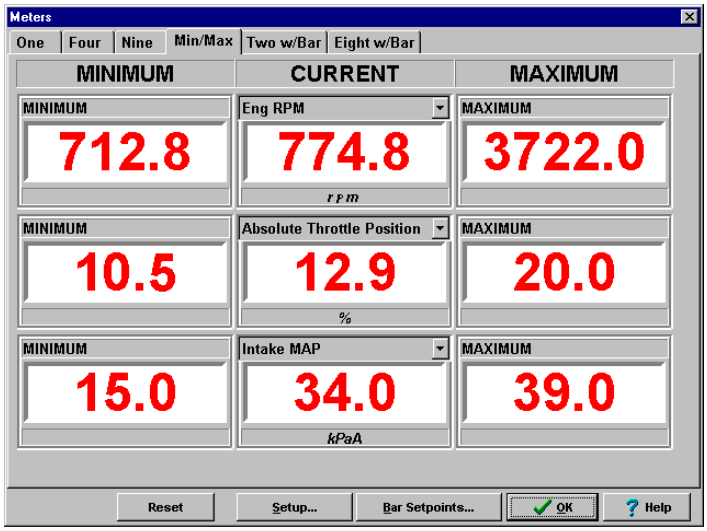
OK Button: Selecting this button saves your setup selections and closes the Setup Screen.

Cancel Button: Selecting this button allows you to exit the Bar Setup Screen without making any changes.

Help Button: Selecting this button opens the help file to the section on the Bar Setup Screen.

5.2 MINIMUM/MAXIMUM METER SCREEN

To determine the Minimum and Maximum value of up to three parameters, select the Min/Max Tab. While the Min/Max Meter Screen is displayed, the software keeps track of the Minimum and Maximum value of the data parameter. Selecting the **Reset** Button will restart the Minimum/Maximum determination sequence.



For example: In the top row of the sample Min/Max meter screen below, the lowest Engine RPM value seen while the Min/Max Meter Screen was open was 712.8 rpm and the highest was 3722.0 rpm. The current value is 774.8 rpm.

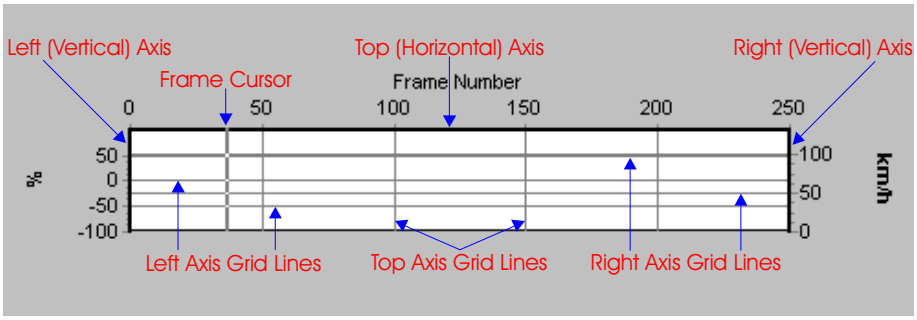
6.0 CHARTS (GRAPHING)


The Chart Screen allows the user to view the real time data parameters in graphical format. In case you are not familiar with graphs (charts) a brief overview is given first in this section followed by an overview of the scan tool's charts screen.

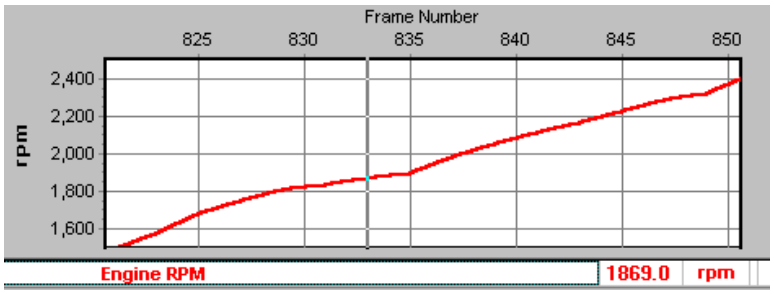
ABOUT GRAPHS (CHARTS)

Graphs have vertical and horizontal axes. The data value is plotted on the vertical axis in reference to a frame number or a time value on the horizontal axis. In the scan tool software the data value can be plotted on the left or right vertical axis. Grid lines are displayed on the graph for each axis at predefined data values for reference. The units of the data being plotted on the axis are displayed next to each axis. In the diagram below the main components of a graph are identified.

The data parameter values are plotted on the vertical axis in reference to a frame number or a time value on the horizontal axis. The bold vertical line is the frame cursor. The value of the data parameter at the frame cursor is shown below each chart beside the parameter name.

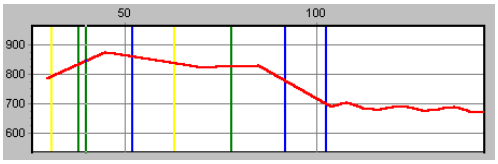


For example: In the graph below Engine RPM is being graphed on the left vertical axis in reference to a frame number on the horizontal axis. At frame 825 the rpm value is 1678, at frame 835 1893 rpm and at frame 845 2227 rpm. The frame cursor is at frame 833 and the value at this frame 1869 rpm is displayed beside the data parameter name.



Markers are shown on the graph as colored vertical lines. There are four markers and four snapshots available. Markers are used to mark the data with a color so that the user can easily find that reference point during playback in the chart screen. A snapshot captures the data values for a predefined parameter set and sets two vertical lines on the chart to show the starting and ending points of the snapshot. Markers are made by selecting keyboard function keys F6-F9. Snapshots are taken by selecting keyboard function keys F2-F5. You can take an unlimited number of each. The

EASE Data Logger also allows you to take markers and/or snapshots. Each marker, snapshot and data logger button has a unique color that identifies it. An example of a graph with markers is shown below. See Sections 10.0 and 16.1 for more information on snapshots and markers.



THE SCAN TOOL'S CHART SCREEN

The Chart Screen allows the user to view the real time data parameters in graphical format. The Express and Basic Versions of the software have two graphing windows. You can chart from one to the maximum number of data parameters in the selected parameter set. To open the help file to the Charts Screen section while in the charts screen select the keyboard function key F1.

A full array of controls (tool bar buttons) are supplied in the graphing section of the software to further enhance the diagnostic capability of the software. Although the tool bars may seem intimidating at first, once you use the features, you will not want to be without them.

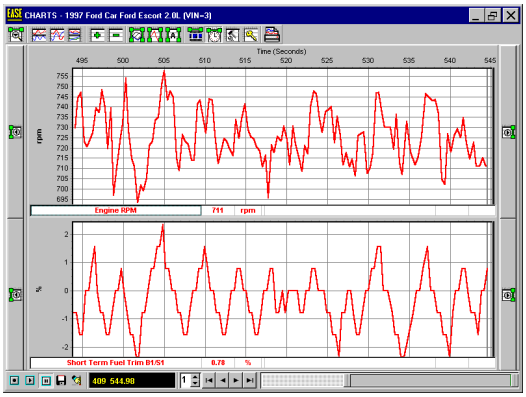
The Pan and Box Zoom features all the user to Box Zoom (zoom to a specific rectangular region in real-time), and Pan (move the chart viewing area left or right and up or down in real time). See 6.5 Pan and Box Zoom Features for more information.

The Deluxe and Plus Versions further enhances the scan tool software's graphing capabilities. They allow the users to view up to six charts simultaneously, easily add and delete graphing windows, and chart the vehicle data by frames or time.

The Chart Screen contains:

- A Top Tool Bar which controls both charts
- Chart Selection bars which open up tool bars that allow you to separately control each of the vertical chart axes.
- Graphing Windows which display the real time data in graphical format.
- Control tool bar and a track and zoom bar

A description on each section of the Charts Screen follows.



6.1 TOP TOOL BAR

The Top Tool Bar is used to control all the charts. A description of each top tool bar button follows for each software version.

NOTE: If you cannot remember the function of a specific toolbar button, position your mouse pointer over it and a pop up box will be displayed with the tool bar's title.

EXPRESS AND BASIC VERSION

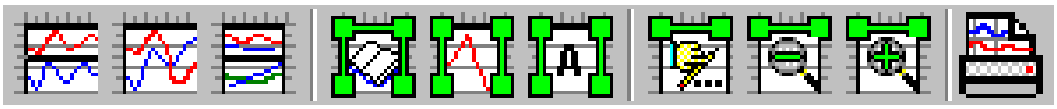


 **Chart each parameter separately**
If this button is selected only one parameter will be graphed in each of the charts.

 **Chart parameters by unit using left axis**
If this button is selected all parameters that have the same units, such as Volts and Deg F, in the parameter set will be graphed on the same chart using the left axis as reference. The units of the first two graphable data parameters listed in the parameter set are used. See the data grid below the charts for the color key for the data parameters.

 **Chart parameters by unit using both axes**
If this button is selected all parameters that have the same units, such as Volts and Deg F, in the parameter set will be graphed on the same chart. Both vertical axes of each chart will be used therefore four unit groups can be graphed. See the data grid below the charts for the color key for the data parameters.

 **Zoom all charts to maximum parameter range**
Selecting this button will adjust the left/right axes of the graphs to a predefined parameter range and the horizontal axes will be adjusted to fit all the frames of data.

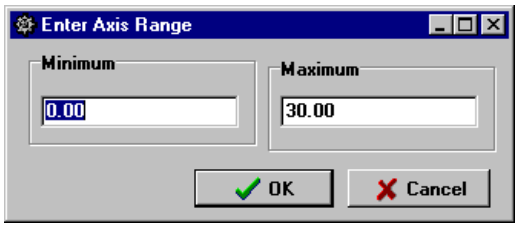
 **Zoom all charts to fit data**
If this button is selected, the axis range of the vertical axes are adjusted to fit up to the last 600 frames of data. However as you continue the graph session, if the parameter's value exceeds the new vertical axis range it will not be shown on the chart.

Auto scale data to fit charts

Selecting this button puts the charts in the autoscale mode. The vertical axes of the graphs are automatically adjusted to fit the data. Unlike the Zoom all charts to fit data button, once in the autoscale mode if the parameter's value exceeds the vertical axis range, the vertical axis range will be automatically changed to accommodate the new maximum or minimum value.

Edit horizontal axis range

Selecting this button opens the Enter Axis Range Screen which allows you to type in a specific horizontal axis range. Type in the desired minimum and maximum range and select on the **OK** button. Select on the **Cancel** button to exit the screen without making any changes.



Zoom out horizontal axis

Select this button to zoom out (increase the axis range) of the horizontal axis. This allows you to increase the number of frames of data you are viewing. Select this button as many times as you like to get to the desired range.

Zoom in horizontal axis

Select this button to zoom in (decrease the axis range) on the horizontal axis. Select this button as many times as you like to get to the desired range.

Print Screen

Select this button to send a copy of the current screen to the default printer.

DELUXE AND PLUS

If you have the Deluxe or Plus version, the top tool bar consists of two rows. The second row is hidden and can be shown by selecting the first button of the tool bar. A description of each tool bar button follows.

Show/Hide Horizontal Control Toolbar

Selecting this button shows/hides the bottom toolbar.

Chart each parameter separately

If this button is selected only one parameter will be graphed in each of the charts.

 **Chart parameters by unit using left axis**

If this button is selected all parameters that have the same units, such as Volts and Deg F, in the parameter set will be graphed on the same chart using the left axis as reference. See the data grid below the charts for the color key for the data parameters.

 **Chart parameters by unit using both axes**

If this button is selected all parameters that have the same units, such as Volts and Deg F, in the parameter set will be graphed on the same chart. Both vertical axes of each chart will be used. See the data grid below the charts for the color key for the data parameters.

 **Add a Strip Chart**

Select this button to add another graphing window to the charts screen. Up to six graphing windows can be added.

 **Remove Last Strip Chart**

Select this button to remove a graphing window from the charts screen.

 **Zoom all charts to maximum parameter range**

Selecting this button will adjust the left/right axes of the graphs to a predefined parameter range and the horizontal axes will be adjusted to fit all the frames of data.

 **Zoom all charts to fit data**

If this button is selected, the axis range of the vertical axes are adjusted to fit up to the last 600 frames of data. As you continue the graph session, if the parameter's value exceeds the new vertical axis range it will not be shown on the chart unless you select this button again.

 **Auto scale data to fit charts**

Selecting this button puts the charts in the autoscale mode. The vertical axes of the graphs are automatically adjusted to fit the data. Unlike the Zoom all charts to fit data button, once in the autoscale mode if the parameter's value exceeds the vertical axis range, the vertical axis range will be automatically changed to accommodate the new maximum or minimum value.

 **Chart by Frame on Horizontal Axis**

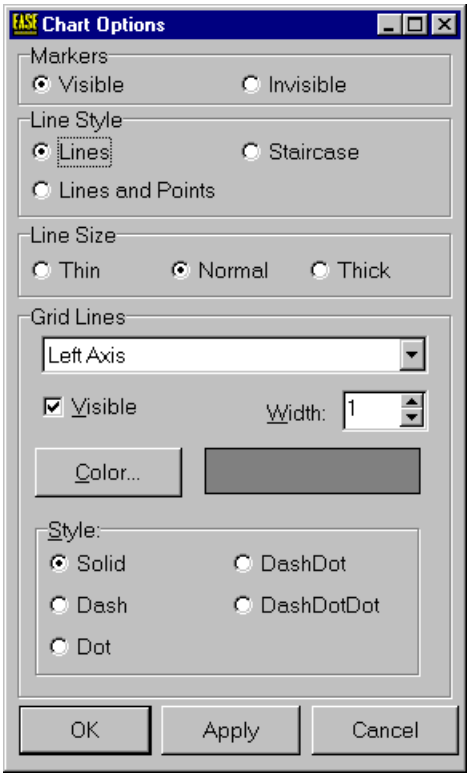
If this button is selected, the data on the vertical axis is charted by frame number on the horizontal axis.

 **Chart by Time on Horizontal Axis**

If this button is selected, the data on the vertical axis is charted by time on the horizontal axis.

Edit Chart Options

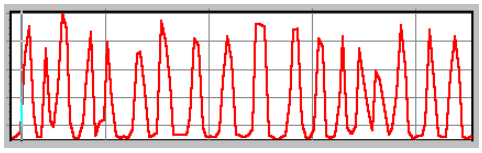
Selecting this button opens the Chart Options Screen where you can select the line style, line size, and grid lines color and style. The Chart Options screen contains the following.



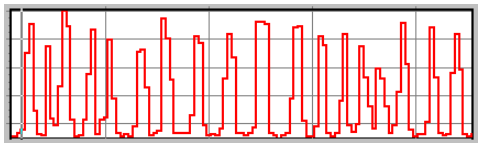
Markers: Select here if you would like markers to be visible or invisible in the charts.

Line Style: Select the chart line style. An example of each style follows.

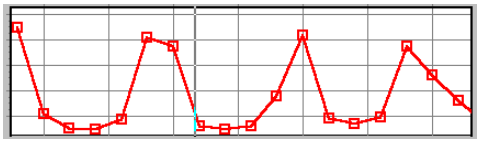
Lines:



Staircase:

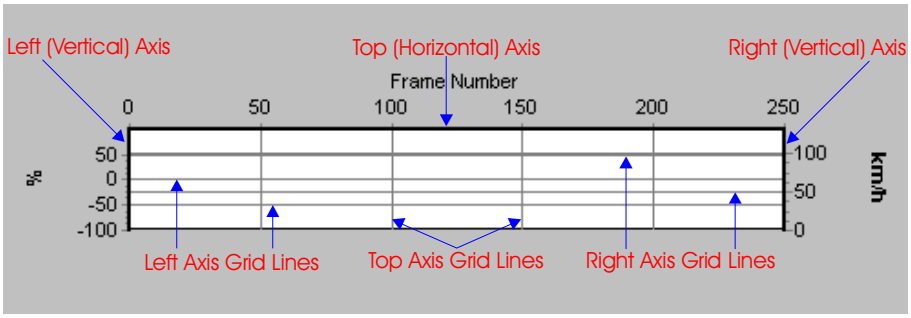


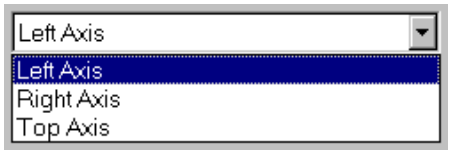
Lines and Points:



Line Size: Select the line size in this section: Thin, Normal, or Thick.

Grid Lines Section: This section is used to set the color, size, and style for the left axis, right axis and top axis grid lines. See the diagram below for reference.





Axis Selection Box - Select the arrow in the right of the box to open a drop down box which lists the three axes: Left, Right and Top. Select the axis you want to modify the grid lines for.

Visible - If this box is checked, the grid lines for the axis selected in the Axis Selection box will be visible on the Chart Screen. If it is not checked, then they will not be shown. Click in the checkbox to set your preference.

Width - This box is used to control the width of the grid lines for the axis selected in the Axis Selection box. The higher the number the thicker the width.

Color - Select this button to open the Color Screen where you can select a color for the grid lines of the axis selected in the Axis Selection Box.

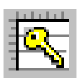
Style - Select the style of the grid lines for the axis selected in the Axis Selection box in this section.

Solid ————— Dash — — —
Dot - - - - - - - - - - - DashDot - - — - — -
DashDotDot - - - — - - - — - -

OK Button - Select this button to close the Chart Options Screen and save your setup selections.

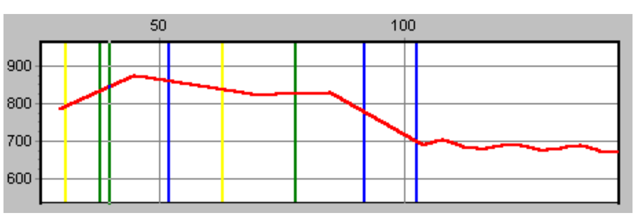
Apply Button - Select this button to apply your setup selections to the Charts Screen and leave the Chart Options Screen open.

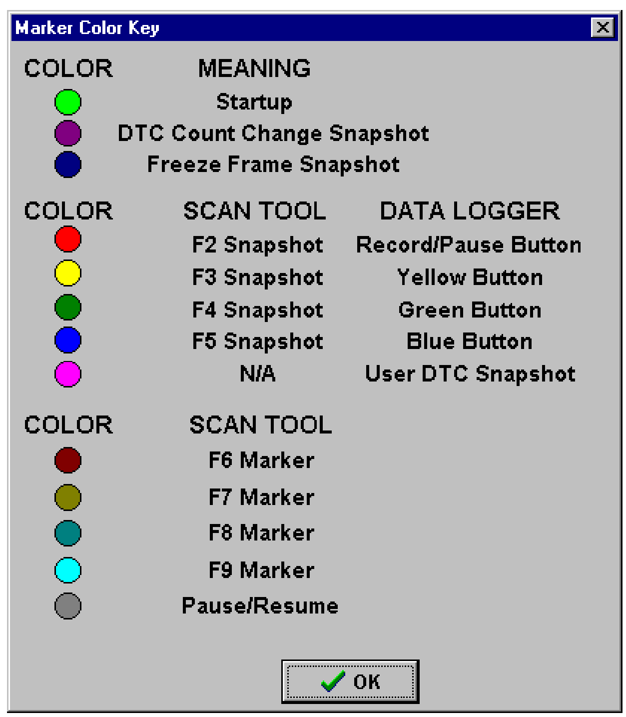
Cancel Button - Select this button to close the Chart Options Screen without saving your selections.

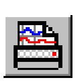


Marker Color Key

Select this button to display the Marker Color Key Screen which contains the color key for snapshots and markers. If markers or snapshots were taken, they are displayed on the graph as a colored vertical line. Use the Marker Color Key Screen to determine what the marker represents. An example of a graph with markers is shown below. See Sections 10.0 and 16.1 for more information on snapshots and markers.







Print Screen

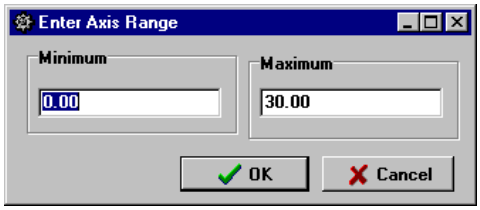
Select this button to send a copy of the current screen to the default printer.

Zoom Horizontal Axis to Fit Data

Select this button to zoom the horizontal axis range to fit all the vehicle data. If you are currently scanning a vehicle, the horizontal axis range will be adjusted to display the last 600 frames of data. If you are playing back a recording, the horizontal axis will be adjusted to fit all of the frames of recorded data.

Edit horizontal axis range

Selecting this button opens the Enter Axis Range Screen which allows you to type in a specific horizontal axis range. Type in the desired minimum and maximum range and select on the **OK** button. Select on the **Cancel** button to exit the screen without making any changes.



Zoom Out Horizontal Axis Minimum

Select this button to zoom out (decrease the minimum axis range value) the horizontal axis minimum range value. Select this button as many times as you like.

Zoom In Horizontal Axis Minimum

Select this button to zoom in (increase the minimum axis range value) the horizontal axis minimum range value. Select this button as many times as you like.

Zoom out Horizontal axis

Select this button to zoom out (increase the axis range) the minimum and maximum range values of the horizontal axis. This allows you to increase the number of frames of data you are viewing. Select this button as many times as you like to get to the desired range.

Zoom in Horizontal Axis

Select this button to zoom in (decrease the axis range) the minimum and maximum range values of the horizontal axis. This decreases the number of frames of data you are viewing. Select this button as many times as you like to get to the desired range.

Zoom In Horizontal Axis Maximum

Select this button to zoom in (increase the maximum axis range value) the horizontal axis maximum range value. Select this button as many times as you like.

Zoom Out Horizontal Axis Maximum

Select this button to zoom out (decrease the maximum axis range value) the horizontal axis maximum range value. Select this button as many times as you like.

6.2 CHART SELECTION BARS

Next to each vertical chart axis is a Chart Selection Bar. Selecting this bar will open another toolbar which contains controls to individually control the selected vertical axis. These toolbars are called the Left and Right toolbars. They allow you to select which parameters are charted on each axis, zoom the selected chart full screen, and edit the vertical axes. To close a Left/Right toolbar, select on the Chart Selection bar again.

Both the Left and Right toolbars contain the same controls. Select on the Chart Selection Bar next to the axis you want to modify to open the Left or Right toolbar. If you have the Deluxe or Plus Version you have more controls than the Express or Basic user. A description of each button in the toolbar follows. If a control is only available with the Deluxe and Plus Version, it is noted.

Zoom Selected Chart Full Screen

Select on this button to make the selected chart full screen. Select on the button again to show all charts.

Zoom Left/Right Axis to Full Parameter Range (Deluxe and Plus)

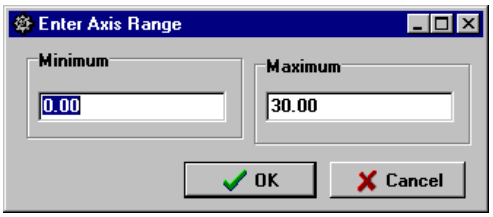
Selecting this button will adjust the selected left or right vertical axis to a predefined parameter range.

Zoom Left/Right Axis to Fit Data (Deluxe and Plus)

Select this button to adjust the selected left or right vertical axis to fit the data.

Edit Left/Right Axis Range

Selecting this button opens the Enter Axis Range Screen which allows you to type in a specific vertical axis range. Type in the desired minimum and maximum range and select on the **OK** button. Select on the **Cancel** button to exit the screen without making any changes.



Pan Up Left/Right Axis (Deluxe and Plus)

Select this button to pan (move the graph viewing area) up the graph.

Pan Down Left Right Axis (Deluxe and Plus)

Select this button to pan (move the graph viewing area) down the graph.

NOTE: You can also pan the graph in any direction by selecting in the graphing window with your right mouse button. While holding the right mouse button down, move the mouse in the direction you want to pan. When you have finished panning, release the mouse button.

 **Zoom out Left/Right Axis**

Select this button to zoom out (decrease the axis range) of the selected left or right vertical axis. Select this button as many times as you like to get to the desired range.

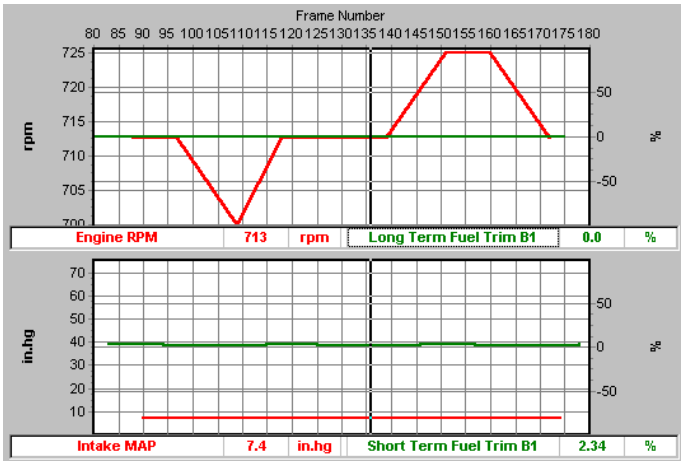
 **Zoom in Left/Right Axis**

Select this button to zoom in (increase the axis range) on the selected left or right vertical axis. Select this button as many times as you like to get to the desired range.

6.3 THE GRAPHING WINDOWS

The graphing windows of the Chart Screen are where the real time data is shown graphically. In the Express and Basic versions of the scan tool software, two graphing windows are available for graphing. If you have the Deluxe or Plus software version, 6 graphing windows are available; however, if your display resolution is set on VGA (640 X 480) mode it is difficult to view six graphs simultaneously. By adjusting your display resolution to SVGA (1024 X 768) mode, six charts can be viewed at once. See the Windows help file for instructions on changing the resolution of your display.

The data parameter values are plotted on the vertical axis in reference to a frame number or a time value on the horizontal axis. Depending upon how many parameters are being graphed, both the left and right vertical axes may be used on both charts. The units of the data parameter(s) are displayed next to the axis on which they are being graphed. See the data grid below each graphing window to determine which parameter is represented by each colored graph line.



Frame Cursor

The bold vertical line on both charts is the frame cursor. The value of the data parameter at this cursor is shown below the charts in the Value column of the data grid. The frame cursor can be moved manually by selecting on it with your mouse and moving it to the desired position.

Graphing Window Data Grid

A data grid is displayed below each graphing window. This grid is also used to select which parameter(s) are being plotted in the graphing windows.

Left Axis Parameter Description / Parameter Selection Column: The first column displays the description for all the parameters, if any, plotted on the left axis . The font color is the same color as the parameter's graph line in the graphing window.

Select on this column to open a Parameter Selection Pull down menu which displays all of the graphable parameters in the current parameter set. A check mark is placed next to the parameter(s), if any, which are currently being graphed on the left axis of the graphing window. To add a parameter to the graph, select on it. Select on a parameter which is checked to remove it from the graph.

Left Axis Value Column: Displays the parameter's value at the frame cursor. The frame cursor is the bold vertical line located on each graph. The frame cursor can be moved manually by selecting on it with your mouse and moving it to the desired position.

Left Axis Units Column: Contains the unit the value is displayed in.

Right Axis Parameter Description / Parameter Selection: The first column displays the description for all the parameters, if any, plotted on the right axis. The font color is the same color as the parameter's graph line in the graphing window.

Select on this column to open a Parameter Selection Pull down menu, which displays all of the graphable parameters in the current parameter set. A check mark is placed next to the parameter(s), if any, which are currently being graphed on the right axis of the graphing window. To add a parameter to the graph, select on it. Select on a parameter, which is checked to remove it from the graph.

Right Axis Value Column: Displays the parameter's value at the frame cursor. The frame cursor is the bold vertical line located on each graph. The frame cursor can be moved manually by selecting on it with your mouse and moving it to the desired position.

Right Axis Units Column: Contains the unit the value is displayed in.

6.4 GRAPH TOOL BAR AND TRACK BAR

The Graph tool bar is always displayed in the Charts Screen. The graph tool bar is the Record/Playback tool bar with a different track bar. The tool bar and track bar are used to pause the graphing in the charts screen and scroll through all of the current chart data as well as any previous data (up to 600 frames) while you are scanning a vehicle and all of the recorded data while you are playing back a recording.

 **Resume Scan -** When this button is depressed and the frame number is increasing, the scan tool is scanning vehicle data. After pausing the data in the charts screen, select on this button to begin scanning real time vehicle data again.

 **Playback** - If the pause button is selected while scanning a vehicle, select this button to playback up to the last 600 frames of vehicle data.

 **Pause** - Select this button to temporarily stop the graphing of the vehicle data parameter(s).

 **Save Recording** - Select this button to save up to the last 600 frames of vehicle data. This will open the Save Recorded Data Screen where you can save the data, play it back or attach notes to it. See Section 16.3 for more information.

 **Clear Buffer** - Select this button to clear the buffer which stores up to the last 600 frames of vehicle data when the software is scanning a vehicle.

Frame Number and Time of Frame

The number and time of the frame at the frame cursor is displayed here. The time is shown in seconds and represents the time from the start of software to vehicle communications.

Playback Speed Multiplier - This is the speed the buffer data is playing back at. Increase the number to increase the playback speed. 0 means stopped. A negative number means the data is playing back in reverse at the specified playback speed multiplier.

 **First Frame** - While the charts are paused, select this button to move the frame cursor to the first frame of stored vehicle data. The parameter value at this frame will be displayed in the data grid.

 **Previous Frame** - While the charts are paused, select this button to move the frame cursor to the previous frame. The parameter value at this frame will be displayed in the data grid. You may select this button repeatedly.

 **Next Frame -** While the charts are paused, select this button to move the frame cursor to the next frame. The parameter value at this frame will be displayed in the data grid. You may select this button repeatedly.

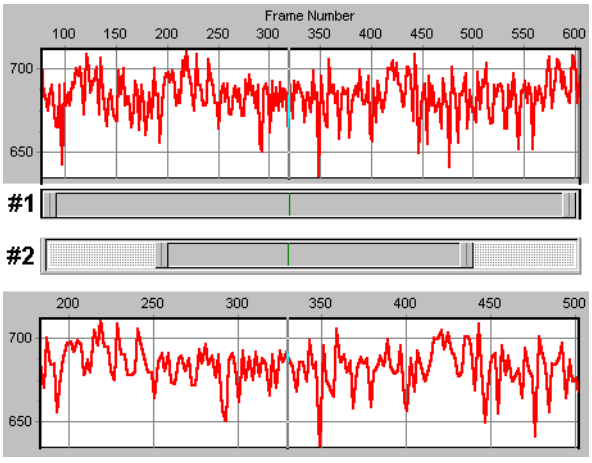
 **Last Frame** - While the charts are paused, select this button to move the frame cursor to the last frame of stored vehicle data. The parameter value at this frame will be displayed in the data grid.

 **Track and Zoom Bar**

If the Pause button is selected, a Track and Zoom Bar appears below the graph window. This bar allows the user to scroll through the previous chart data and adjust the horizontal axis range of the graphing window. As the chart(s) are scrolled and zoomed, the data grid updates to show the current value of the parameter at the frame cursor (the bold vertical line on the right side of both charts). The green line on the track and zoom bar represents the frame cursor. Double clicking on the bar toggles between the full range and the specified horizontal range settings.

To adjust the horizontal range minimum value, select on the tab  on the left of the bar and move it to the desired position. Select on the tab  on the right of the bar and move it to adjust the maximum horizontal range value. To scroll the horizontal range, select on the solid gray bar  and move it left or right to the desired position.

For example: In the diagram below the pause button was selected while scanning vehicle data. If the bar is set up like Bar #1 with the minimum and maximum bar tabs placed at the extents of the bar, the 600 frames of buffer data will be displayed (See the top graph). If the minimum and maximum bar tabs are adjusted like Bar #2 in the diagram below, the result is the bottom graph with a smaller horizontal axis range. If you were to double click on the bar in Bar #2, your track and zoom bar would be set to full range (Bar #1). Double clicking again on the bar would return the bar settings to Bar #2.



NOTE: The frame cursor can be moved manually by selecting on it with your mouse and moving it to the desired position.

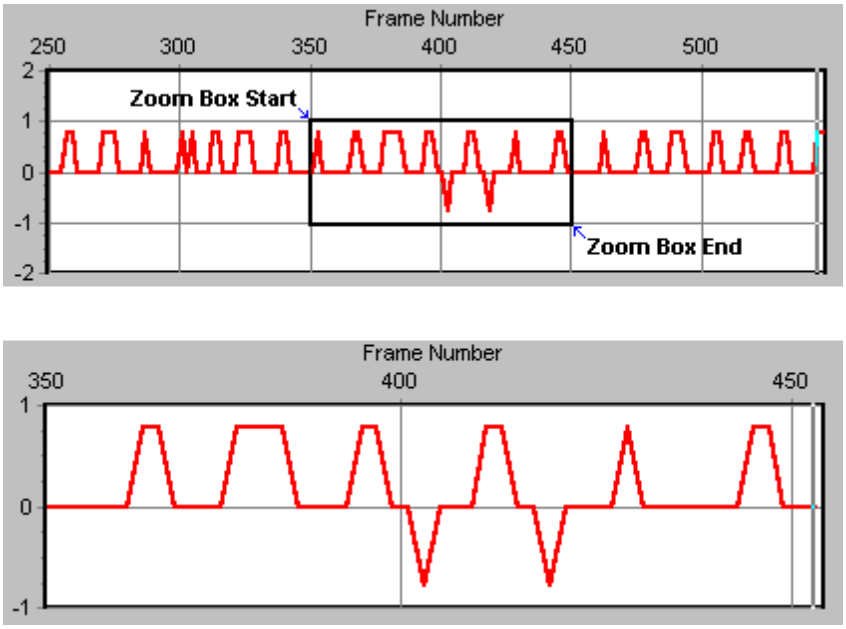
6.5 PAN AND BOX ZOOM FEATURES

Two other features of the Charts Screen are pan and box zoom. These features do not have a control button on the tool bar. They are activated by your mouse.

Pan Feature
The pan feature allows you to move the chart viewing area left or right and up and down in real-time or while in pause. To pan, select in the graphing window with your right mouse button and while holding the right mouse button down, move the mouse in the direction you want to pan. When you have finished panning release the mouse button.

Box Zoom Feature (Simultaneous Horizontal and Vertical Zoom)
Box Zoom is a unique feature that allows you to zoom in to a specific rectangular region on the chart in real-time or while in pause. The box zoom is a horizontal and vertical zoom at the same time. Holding your left mouse button down, draw a box over the section of the graphing window that you want to zoom in on. When you release the mouse button, the chart window will automatically rescale so that the area you boxed in will be displayed in full on the graph. If you draw the box from left to right the chart are will be zoomed in (less frames of data will be shown in the graphing window). If you draw the zoom box from right to left the chart will be zoomed out to its original scaling.

For example: In the top graph of the diagram below a zoom box was drawn from the value of 1 at Frame 350 to -1 at Frame 450. The result was the bottom graph with a vertical axis range from 1 to -1 and a horizontal axis range from 350 to 450. If a zoom box of any size is drawn from right to left in the bottom graph the result would be the top graph.



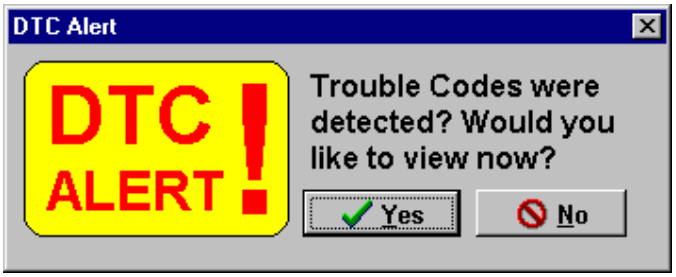
7.0 DIAGNOSTIC TROUBLE CODES (DTC)

Automobile on-board computers have a built in self testing system called self-diagnosis which means the on-board computer will monitor many or all of the vehicle's sensors and controlled devices for proper operation. A diagnostic trouble code or DTC is detected and set when one of the monitored devices is not functioning properly. On OBD II vehicles there are two different types of DTCs: Stored and Pending. The OBD II Scan Tools checks for stored and pending DTCs during initial connection to a vehicle and stored DTCs every 2 seconds while connected and communicating with a vehicle if the parameter set currently selected has the DTC CNT Emission Related DTC Count parameter in it and it is displayed in the data grid.

When a malfunction is detected in a GM OBD I vehicle, the malfunction is stored into the on-board computer's memory as a code number that is related to a specific sensor or other problem. Malfunction code numbers and meanings vary from vehicle to vehicle and year to year even on the same vehicle model. The GM OBD I software scans for DTCs every 0.2 – 5 seconds depending upon the vehicle.

7.1 DTC ALERT SCREEN

The OBD II Scan Tools checks for stored and pending DTCs (Diagnostic Trouble Codes) during initial connection to a vehicle and stored DTCs every 2 seconds while connected and communicating with a vehicle if the parameter set currently selected has the DTC CNT Emission Related DTC Count parameter in it and this parameter is displayed in the data grid so that it is being sampled. The GM OBD I software scans for DTCs every 0.2 – 5 seconds depending upon the vehicle. If a DTC is detected, the DTC Alert screen pops up. The user has a choice to view the DTCs at this time by selecting the **Yes** button. Select **No** to close the DTC Alert Screen without viewing the DTCs. This screen is inactive while the DTC main screen is open.

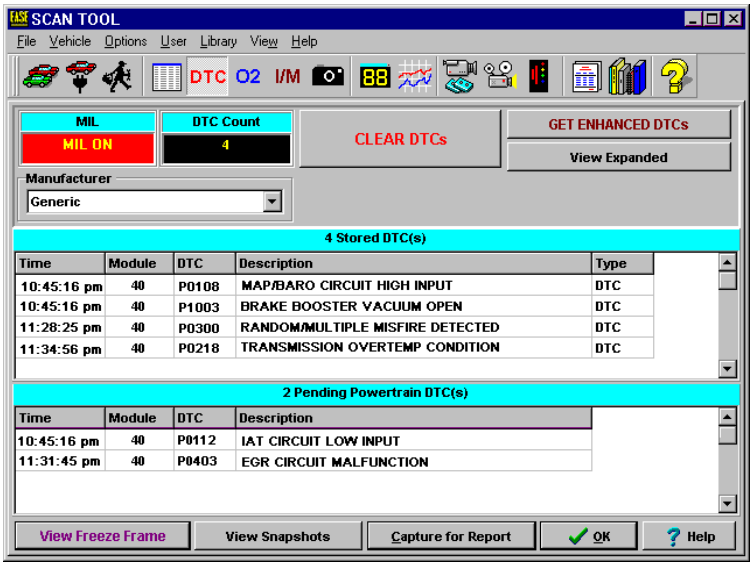


The DTC Alert Screen can be suppressed while you are viewing charts and during a recording. It is important to suppress DTC requests when viewing a time critical parameter on a chart and during a recording. Otherwise each time a DTC is requested, the parameter(s) you are charting or recording will not be sampled. To suppress the DTC Alert Screen select on *Options/Preferences* in the menu bar. This opens the User Preferences Screen which allows you to suppress the DTC Alert Screen when viewing charts and during a recording. See 19.0 User Preferences Screen for more information.

7.2 OBD II DTC MAIN SCREEN

In the OBD II Scan Tools the Main DTC screen displays the Current Emission related DTC Count, MIL Status, and the Stored and Pending DTCs. For each DTC, the DTC Number is listed, with a description, time stamp and the module. If the DTCs were present on startup (during initial connection), the time stamp will indicate pre-existing. The user also has the option of viewing Freeze Frame data or clearing the DTCs. While this screen is open, the software will sample for DTCs every 2 seconds and time stamp each new DTC. The user can sort by DTC activation time, DTC number, and DTC Description by clicking the appropriate column heading.

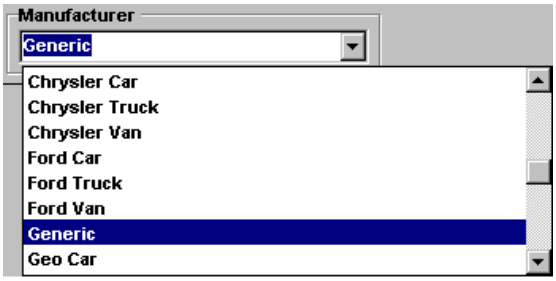
The OBD II DTC Main Screen contains:



MIL
Displays the status of the vehicle's Malfunction Indicator Lamp (MIL)

DTC Count
Displays the total number of emission related DTCs currently stored in the vehicle

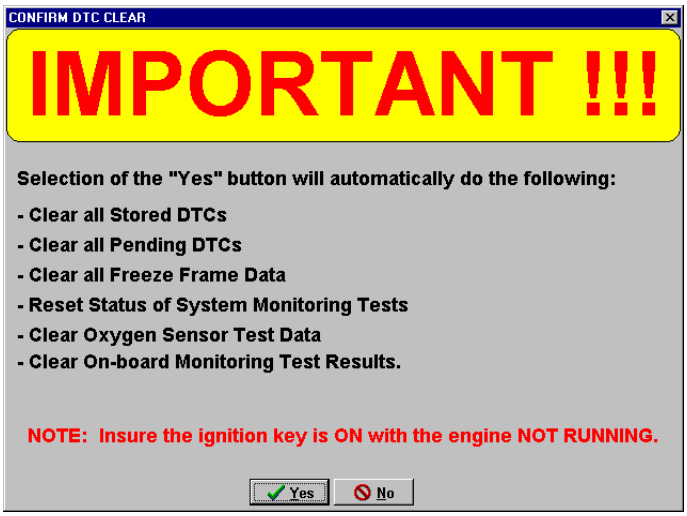
Manufacturer
Displays the current selected vehicle manufacturer. The manufacturer can be changed by selecting on the down arrow in the right of the manufacturer box to open a drop box displaying vehicle manufacturers. Select on the desired vehicle manufacturer. To close the drop down box without making any changes, select on the down arrow again.



NOTE: Since Generic DTC codes are the same for all vehicle manufacturers, this manufacturer setting is used for determining the description of manufacturer specific DTCs only. If manufacturer specific DTCs are displayed (P1XXX codes) be sure to have the correct manufacturer selected or an incorrect DTC description may be displayed. See Section A for more information on DTCs.

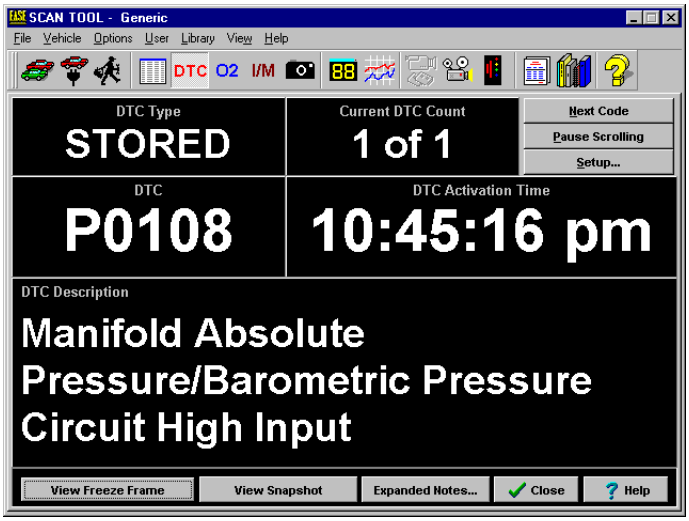
Clear DTCs Button

Stored and Pending DTCs, Freeze Frame Data, Oxygen Sensor Test Data, and Inspection and Maintenance Monitors can all be cleared (erased) from the vehicle's on-board computer by selecting the Clear DTCs button. After selecting this button the Confirm DTC Clear Screen is displayed to inform the user which vehicle information will be erased. Make sure that the vehicle's ignition key is in the ON position and the vehicle's engine is not running. For some vehicles unless these conditions are met the DTCs will not be cleared. Select on the **Yes** button to continue with the clearing process or **No** to cancel.



View Expanded Button

Selecting this button opens the DTC Expanded View Screen which displays the current Stored and/or Pending DTCs information on the screen with text large enough to be viewed from a distance. The screen cycles through the DTCs at a rate which is adjustable.



The DTC Expanded View Screen contains:

DTC Type: The DTC Type, either Stored or Pending, is displayed in this box

Current DTC Count: The current number of DTCs of the type specified in the DTC Type box is displayed here.

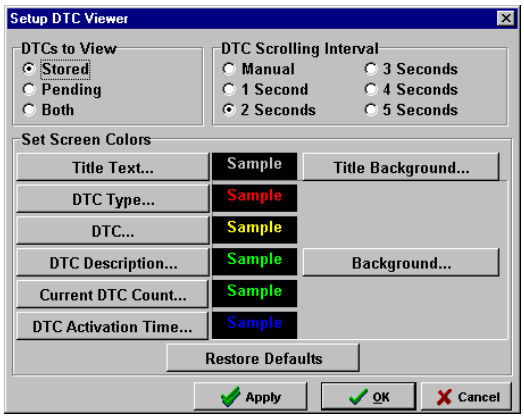
DTC: The 5 digit DTC code which corresponds to a specific problem is displayed here.

DTC Activation Time: This is the value of the time of day when the DTC was set. If the malfunctions were set in the vehicle's PCM (on-board computer) prior to the Scan Tool software's start up, then Pre-existing is displayed.

Next Code Button: This button is used to manually scroll through the current DTCs.

Pause\Resume Scrolling Button: This button is used to stop the current DTCs from scrolling. When the screen is in the paused state, you can use the Next Code button to display the next DTC. To resume scrolling select the Resume Scrolling button.

Setup Button: Selecting on the Setup button opens the Setup DTC Viewer Screen. This screen allows you to control the scrolling interval, what type of DTCs are displayed, and the screen colors. The Setup DTC Viewer Screen contains the following:



DTCs to View: Use this section to select what type(s) of DTCs you would like displayed in the DTCs Expanded View Screen: Stored, Pending, or Both types.

DTC Scrolling Interval: Controls the rate at which the screen cycles through the DTCs. In Manual Mode, you have to select on the Next Code button to cycle through the codes.

Set Screen Color: This section allows you to change the colors of various components of the screen. Select on one of the buttons identifying the section of the screen you want to modify and select a new color from the Color Screen. The **Restore Defaults** button restores the default screen colors. A sample box is shown to display the current color settings.

Select on the **OK** button to save your setup selections. The **Cancel** button allows you to exit the setup screen without saving any changes. The **Apply Now** button applies your setup selections to the DTCs Expanded View Screen but leaves the Setup Screen open so that you may make more setup selections.

DTC Description: The description that corresponds to the DTC is displayed here.

View Freeze Frame Button: Selecting this button opens the Freeze Frame Data Screen. See Section 10.0.

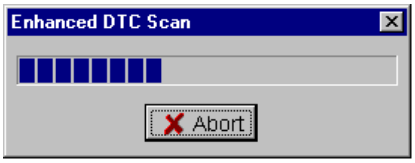
View Snapshot Button: Selecting this button opens the Freeze Frame Data/Snap Shot Screen. See Section 10.0.

Expanded Notes Button (Deluxe and Plus): Selecting this button opens the DTC Library to the DTC displayed in the screen.

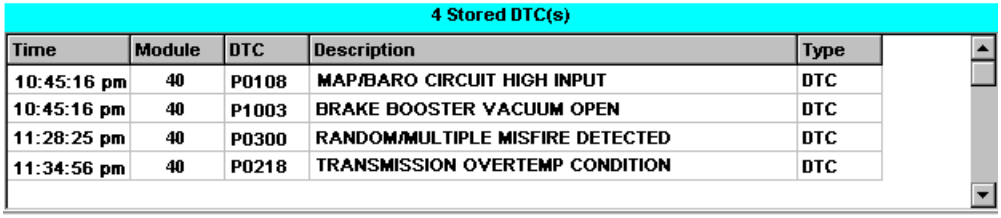
Close Button: Selecting this button closes the DTC Expanded View Screen.

Help Button: Selecting this button opens the Help file to the section on this screen.

Get Enhanced DTCs Button
When this button is selected, the software scans the vehicle for Enhanced DTCs. This scan can take several minutes. While the software is scanning for enhanced DTCs the Enhanced DTC Scan Screen is displayed. Select the Abort button to stop the scan.



Stored Powertrain DTCS:
This section of the DTC screen lists all of the Vehicles Stored DTCs. (See Section A for more information on DTCs)



Time Column: This is the value of the time of day when the stored DTC was set. If the malfunctions were stored in the vehicle's PCM (on-board computer) prior to the Scan Tool software's start up, then Pre-existing is displayed in the Time column.

Module: The controller (on-board computer) address that the software is currently scanning is displayed here.

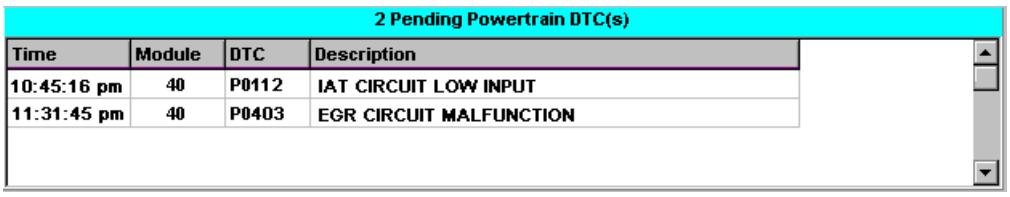
DTC: A Diagnostic Trouble Code or DTC is the 5 digit number stored in the vehicle's PCM when a malfunction condition occurs that correspond to a specific sensor or other problem.

Description: The DTC description is displayed in this column.

Type: The type of DTC is displayed here.

DELUXE AND PLUS: Double-click your mouse on a specific DTC in this section to open the DTC Library to the description on that DTC.

Pending Powertrain DTCS:
This section of the DTC screen lists all of the Vehicles Pending DTCs. (See Section A for more information on DTCs)



Time Column: This is the value of the time of day when the stored DTC was set. If the malfunctions were stored in the vehicle's PCM (on-board computer) prior to the Scan Tool software's start up, then Pre-existing is displayed in the Time column.

Module: The controller (on-board computer) address that the software is currently scanning is displayed here.

DTC: A Diagnostic Trouble Code or DTC is the 5 digit number stored in the vehicle's PCM when a malfunction condition occurs that correspond to a specific sensor or other problem.

Description: The DTC description is displayed in this column.

DELUXE AND PLUS: Double-click your mouse on a specific DTC in this section to open the DTC Library to the description on that DTC.

View Freeze Frame Button
Selecting this button opens the Freeze Frame Data/Snap Shot Screen. See Section 10.0

View Snapshots Button
Selecting this button opens the Freeze Frame Data/Snap Shot Screen. See Section 10.0.

Capture for Report Button (Deluxe and Plus)
Select this button to capture (save) the MIL Status, Stored and Pending DTC information displayed in the DTC Screen, so that the information can be viewed, printed and saved in a report file. This button can be selected as many times as you like.

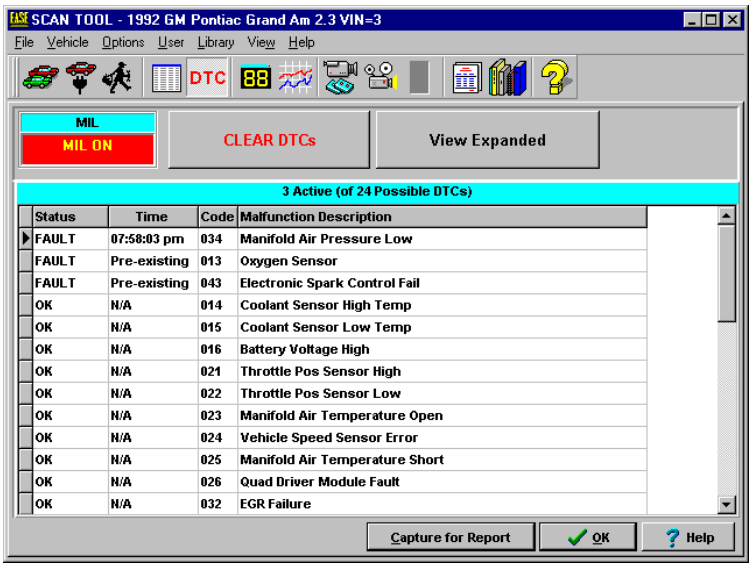
OK Button
Selecting this button closes the DTC Screen.

Help Button
Selecting the Help button opens the Help file to the section on DTCs.

7.3 GM OBD I DTC MAIN SCREEN

In the GM OBD I Scan Tool the Main DTC screen displays the MIL Status, all the DTCs available for the current vehicle, and the status of each DTC. For each available DTC, the DTC Number is listed, with a description and current status. If a DTC was present on startup (during initial connection), the time stamp will indicate pre-existing. The user can sort by Status, DTC activation time, DTC number, and DTC Description by clicking the appropriate column heading.

The GM OBD I DTC Main Screen contains:



MIL
Displays the status of the vehicle's Malfunction Indicator Lamp (MIL)

Clear DTCs Button
Malfunction codes are saved in the OBD I vehicle's on-board computer until they are cleared by the user. There are two different methods for clearing GM OBD I DTCs: Automatic and Manual. The method used depends upon the selected vehicle. The Scan Tool software will inform you of the required method in the Confirm DTC Clear Screen which will be displayed after the Clear DTCs button is selected.

<u>Automatic Clearing:</u> For certain GM OBD I vehicles, the Scan Tool software can send a command and clear the DTCs. The vehicle must be linked to the software for the codes to be cleared. Select the Yes button in the Confirm DTC Clear Screen to clear the DTCs or Abort to cancel the process.

Manual Clearing: For some GM OBD I vehicles the power must be disconnected from the on-board computer for a period of 30 seconds in order to clear the active DTCs. If your vehicle requires the power to be disconnected from the on-board computer in order to clear the active DTCs, follow the steps below. Select Yes to close the Confirm DTC Clear Screen.

Step 1. Observe ALL Safety Precautions. See Section I of the Users Manual.

Step 2. Turn the vehicle's Ignition Switch to the "Off" position. (To be sure the ignition is "Off", remove the key from the ignition.)

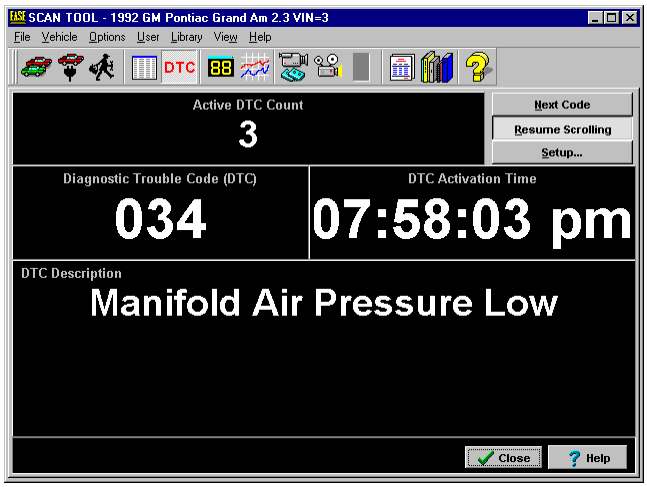
Step 3. Disconnect the power to the vehicle's on-board computer. This can be accomplished three different ways.

- The easiest way is to locate the on-board computer (ECM) fuse in the fuse block and remove it. See your vehicle's owner's manual for fuse locations.
- Another way is to disconnect the positive battery terminal from the battery. When doing this, be careful not to lay tools on the battery. You may short the battery terminals together causing harm to yourself, the tool or the battery.
- Removing the fuse from the in-line fuse holder on the positive battery terminal will also remove the power to the on-board computer.

Step 4. After 30 seconds has expired, reconnect the power to the on-board computer. The codes are now cleared.

View Expanded Button

Selecting this button opens the DTC Expanded View Screen which displays the current active DTCs on the screen with text large enough to be viewed from a distance. The screen cycles through the DTCs at a rate which is adjustable.



The DTC Expanded View Screen contains:

Active DTC Count: The current number of active DTCs is displayed here.

Diagnostic Trouble Code (DTC): The code number of the active DTC is displayed here.

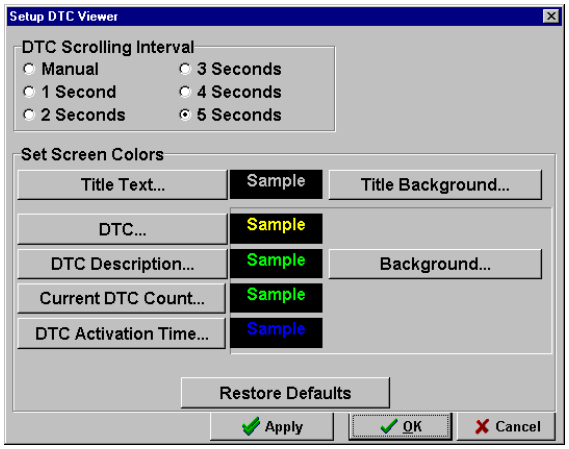
DTC Activation Time: This is the time of day when the DTC was set. If the malfunctions were set in the vehicle's on-board computer prior to the Scan Tool software's start up, then Pre-existing is displayed.

DTC Description: The active DTC's description is displayed here.

Next Code Button: This button is used to manually scroll through the current DTCs.

Pause\Resume Scrolling Button: This button is used to stop the current DTCs from scrolling. When the screen is in the paused state, you can use the Next Code button to display the next DTC. To resume scrolling select the Resume Scrolling button.

Setup Button: Selecting on the Setup button opens the Setup DTC Viewer Screen. This screen allows the user to control the scrolling interval, what type of DTCs are displayed, and the screen colors. The Setup DTC Viewer Screen contains the following:



DTC Scrolling Interval: Controls the rate at which the screen cycles through the DTCs. In Manual Mode, you have to select on the Next Code button to cycle through the codes.

Set Screen Color: This section allows the user to change the colors of various components of the screen. Select on one of the buttons identifying the section of the screen you want to modify and select a new color from the Color Screen. The **Restore Defaults** button restores the default screen colors. A sample box is shown to display the current color settings.

Select on the **OK** button to save your setup selections. The **Cancel** button allows you to exit the setup screen without saving any changes. The **Apply Now** button applies your setup selections to the DTCs Expanded View Screen but leaves the Setup Screen open so that you may make more setup selections.

Close Button: Selecting this button closes the DTC Expanded View Screen.

Help Button: Selecting this button opens the Help file to the section on this screen.

DTC Grid:
This section of the DTC screen lists all of the DTCs both active and non-active for the current vehicle. (See Section A for more information on OBD I DTCs) The total number of possible and active DTCs is displayed at the top of the grid. The total number of possible DTCs varies with each vehicle.

3 Active (of 24 Possible DTCs)			
Status	Time	Code	Malfunction Description
FAULT	07:58:03 pm	034	Manifold Air Pressure Low
FAULT	Pre-existing	013	Oxygen Sensor
FAULT	Pre-existing	043	Electronic Spark Control Fail
OK	N/A	014	Coolant Sensor High Temp
OK	N/A	015	Coolant Sensor Low Temp
OK	N/A	016	Battery Voltage High

Status Column: This column shows the DTC's current status. If OK is displayed, the code is not currently set. If FAULT is displayed, the DTC is set and stored in the on-board computer's memory.

Time Column: This is the time of day when the active DTC was set. If the malfunctions were set in the vehicle's on-board computer prior to the Scan Tool software's start up, then Pre-existing is displayed in the Time column.

Code Column: The code number of the DTC is displayed here.

Malfunction Description Column: The DTC description is displayed in this column.

NOTE: For the RWAL controller, the possible DTCs are listed on the Main DTC screen, however, the status (Fault or OK) is not displayed. To determine the RWAL DTC number, observe the flashing brake lamp on the vehicle dash. In counting the brake lamp flashes, count the number of short flashes starting from the long flash. Include the long flash as a count. Note that sometimes the first count sequence is short because the flashout started with the count already in progress. Subsequent counts, however, will be accurate. If there is more than one failure, only the first recognized failure code will be retained and flashed.

Capture for Report Button (Deluxe and Plus)
Select this button to capture (save) the MIL Status and DTC information displayed in the DTC Screen, so that the information can be viewed, printed and saved in a report file. This button can be selected as many times as you like.

OK Button
Selecting this button closes the DTC Screen.

Help Button
Selecting the Help button opens the Help file to the section on DTCs.

8.0 OXYGEN SENSOR INFORMATION & TEST RESULTS (OBD II only)

There are three screens to view Oxygen Sensor Data:

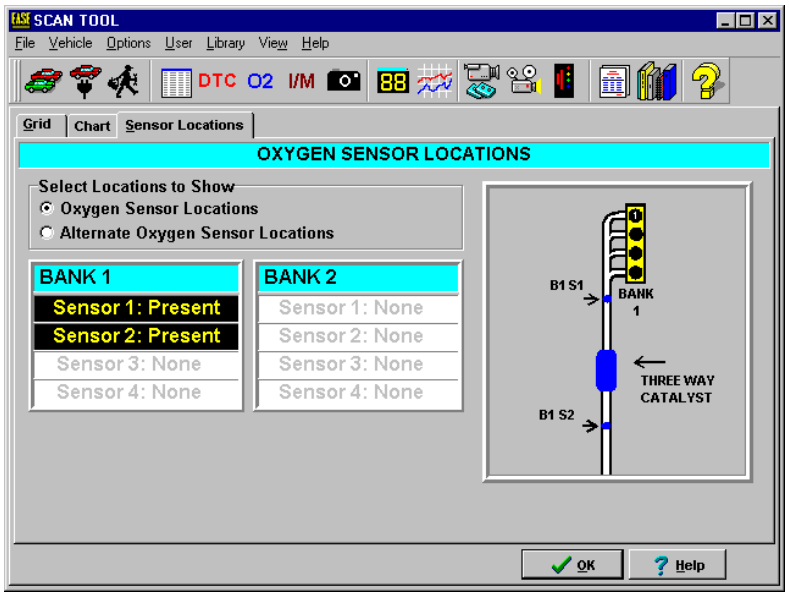
Sensor Locations - Shows which oxygen sensors are present and their locations.
Grid - Shows the results of the on-board oxygen sensor monitor tests in grid format.
Chart- Shows the results of the on-board oxygen sensor monitor tests in chart format.

Select on the appropriate tab to view the different screens. More information on each screen follows.

8.1 OXYGEN SENSOR LOCATIONS SCREEN

The Oxygen Sensor Locations screen shows what Oxygen Sensors are present on the vehicle and their primary and alternative locations for Banks 1 and 2 - Sensors 1 through 4. A bitmap of the applicable oxygen sensor location configuration is also displayed.

Select Locations to Show
This box allows the user to select if they want the primary or alternative oxygen sensor location displayed in the oxygen sensor location diagram box in the right of the screen.



Oxygen Sensor Locations - If this option is selected, a diagram of the oxygen sensor locations is displayed in the box in the right of the screen.

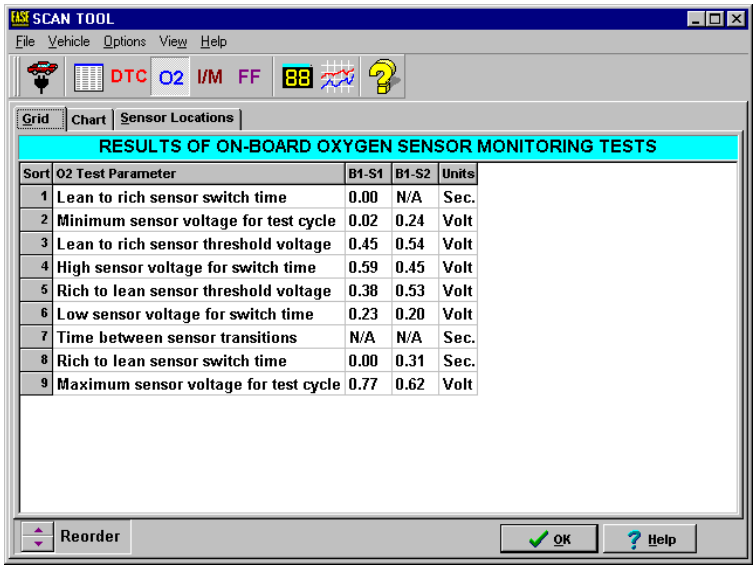
Alternate Oxygen Sensor Locations - If this option is selected, a diagram of the alternate oxygen sensor locations is displayed in the box in the right of the screen.

Bank 1 and Bank 2 Box
These boxes show which oxygen sensors are present on the current vehicle.

Oxygen Sensor Location Diagram Box
Depending upon which option is selected in the Select Locations To Show Box located in the upper left hand corner of the screen , a diagram of either the primary or alternative oxygen sensor locations is displayed here.

8.2 OXYGEN SENSOR GRID SCREEN

The results of the on-board oxygen sensor monitoring tests are displayed for the vehicle's available oxygen sensors in two formats: a grid and a graphical depiction. The Grid tab opens the screen which shows the test results in grid format. Select on the Chart tab to display the same data in graphical format.



Sort	O2 Test Parameter	B1-S1	B1-S2	Units
1	Lean to rich sensor switch time	0.00	N/A	Sec.
2	Minimum sensor voltage for test cycle	0.02	0.24	Volt
3	Lean to rich sensor threshold voltage	0.45	0.54	Volt
4	High sensor voltage for switch time	0.59	0.45	Volt
5	Rich to lean sensor threshold voltage	0.38	0.53	Volt
6	Low sensor voltage for switch time	0.23	0.20	Volt
7	Time between sensor transitions	N/A	N/A	Sec.
8	Rich to lean sensor switch time	0.00	0.31	Sec.
9	Maximum sensor voltage for test cycle	0.77	0.62	Volt

Sort Column
Contains the sort order number for the parameter. Select on the word **Sort** at the top of the column to arrange the parameters by sort order number.

O2 Test Parameter
This column lists the nine available oxygen sensor test parameters. Select on **O2 Test Parameter** at the top of the column to arrange the parameters alphabetically by parameter name.

B1-S1, B1-S2
These columns list the data results of the oxygen sensor tests. If N/A is displayed, then that specific test is not supported by the specified oxygen sensor on the current vehicle. The number of data columns vary according to the number of oxygen sensors present on the current vehicle. The oxygen sensor bank and sensor designation is abbreviated in the column heading.

B1-B2	Bank 1 - Bank 2
S1-S4	Sensor 1 - Sensor 4

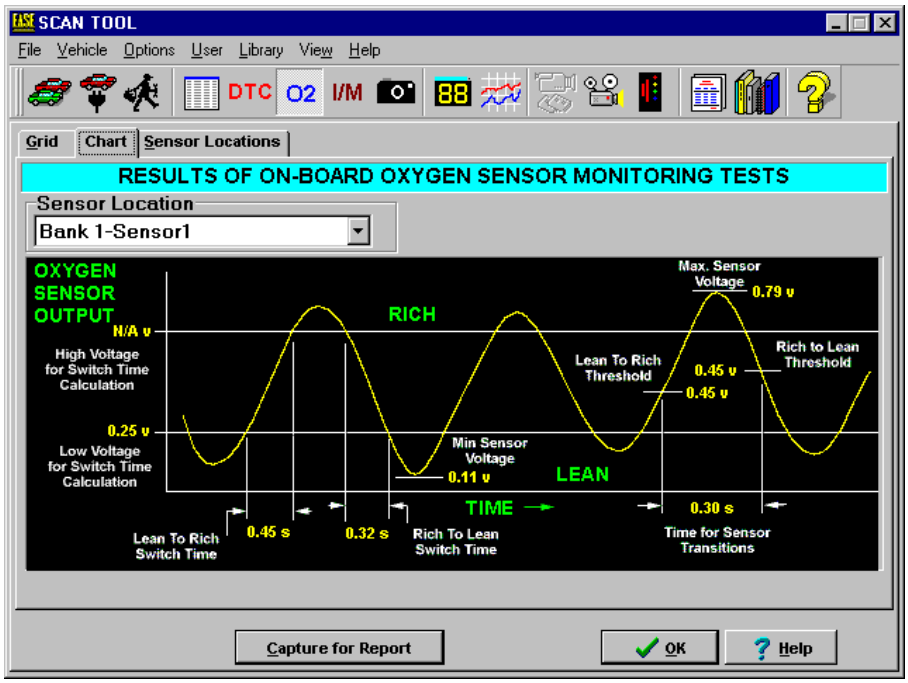
Units
This column contains the unit the data parameter value is displayed in. Select on the word Unit at the top of the column to arrange the parameters by units.

The order of the parameters in the group can be controlled by using the reorder buttons to move the desired data parameter up or down to the desired location in the list. Select on the parameter that you want to move and select on the Up or Down arrow to move it to the desired position.

NOTE: To de-select a selected parameter row (a row that is highlighted with a blue bar), press the **Tab** button.

8.3 OXYGEN SENSOR CHART SCREEN

The results of the on-board oxygen sensor monitoring tests are displayed for the vehicle's available oxygen sensors in two formats: a grid and a graphical depiction. The Chart tab opens the screen which shows the test results in graphical format. Select on the Grid tab to display the same data in grid format.



Sensor Location Box
Select on the arrow in the right of the sensor location box to open a drop down box. In the drop down box, select the oxygen sensor you want to view the test results of in graphical format.

Oxygen Sensor Output Chart
The oxygen sensor test parameters description and value are displayed in the appropriate position on the graph for the oxygen sensor listed in the sensor location box. If N/A is displayed, then that specific test is not supported by the specified oxygen sensor on the current vehicle.

All of the Oxygen Sensor Screens have the following buttons in common:

Capture for Report Button (Deluxe and Plus)
Select this button to capture (save) the oxygen sensor test results information, so that you can print the information in a report or save it to a file. You can select this button as many times as you like.

OK Button
Select this button to close the Oxygen Sensor Screens and return to the Real Time Data Grid Screen.

Help Button
Select this button to open the help file to the Oxygen Sensor Screens section.

9.0 INSPECTION AND MAINTENANCE MONITORS (OBD II only)

A monitor is a piece of software in one of the vehicle's on-board computers that has the job of monitoring a specific piece of the engine. There are two types of monitors: continuous and non-continuous. A continuous monitor runs continuously during vehicle operation. A non-continuous monitor requires enabling criteria to make it run. Some examples of enabling criteria are vehicle acceleration/deceleration to a certain speed, engine temperature and driving the vehicle at a certain speed for a period of time.

For OBD II vehicles, there is a fixed list of 11 monitors: 3 continuous and 8 non-continuous. These 11 monitors are called Inspection and Maintenance or I/M Monitors. All 11 monitors are not supported by all vehicles.

The Inspection and Maintenance Data Screen displays:

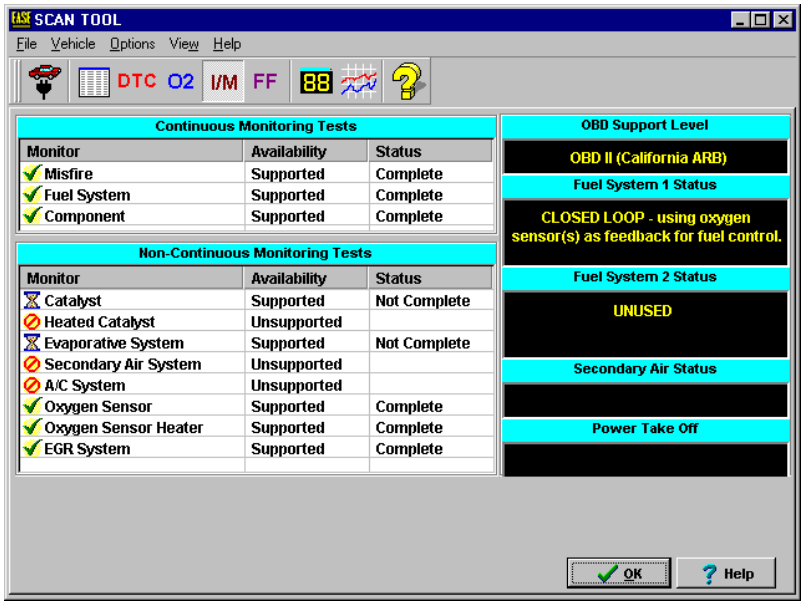
- Continuous tests (Misfire, Fuel System, Component)
- Non-continuous tests (Catalyst, Heated Catalyst, Evaporative System, Secondary Air System, A/C System, Oxygen Sensor, Oxygen Sensor Heater, EGR System)
- OBD II Support Level
- Fuel systems 1 and 2 Status
- Secondary Air Status
- Power Take Off Status

NOTE: When DTCs are cleared, the Inspection and Maintenance Monitors are also cleared.

Monitor
This column displays the title of the monitor.

Availability
This column displays whether or not the specific monitor is supported by the current vehicle. Either "Supported" or "Unsupported" will be displayed.

Status
This column displays the status of the supported monitors. Either Complete or Not Complete will be displayed.



The status of each Monitor can also be readily determined by the following icons displayed in the left of the Monitor column:

- Status Unknown
- Status Complete
- Status Not Supported
- Status Not Complete

The Inspection and Maintenance monitor screen also contains miscellaneous vehicle status information. This information is not supported by all vehicles. These items are listed below with their possible status states.

OBD Support Level

- OBD II (California ARB)
- OBD (Federal EPA)
- OBD and OBD II
- OBD 1
- Not intended to meet any OBD requirements

Fuel System 1 Status and Fuel System 2 Status

- Open loop - has not yet satisfied conditions to go closed loop
- Closed loop - using oxygen sensor(s) as feedback for fuel control
- Open loop due to driving conditions (power enrichment, deceleration enleanment)
- Open loop due to detected system fault
- Closed loop, but fault with at least one oxygen sensor - may be using single oxygen sensor for fuel control

Secondary Air Status

- Upstream of first catalytic converter
- Downstream of first catalytic converter inlet
- atmosphere/off

Power Take Off

- PTO OFF
- PTO ON

Capture for Report Button (Deluxe and Plus)

Select this button to capture (save) the Inspection and Maintenance monitor test results, so that you can print the information in a report or save it to a file. You can select this button as many times as you like.

OK Button

Select this button to close the Inspection and Maintenance monitor screen.

Help Button

Select this button to open the help file to the Inspection and Maintenance monitor section.

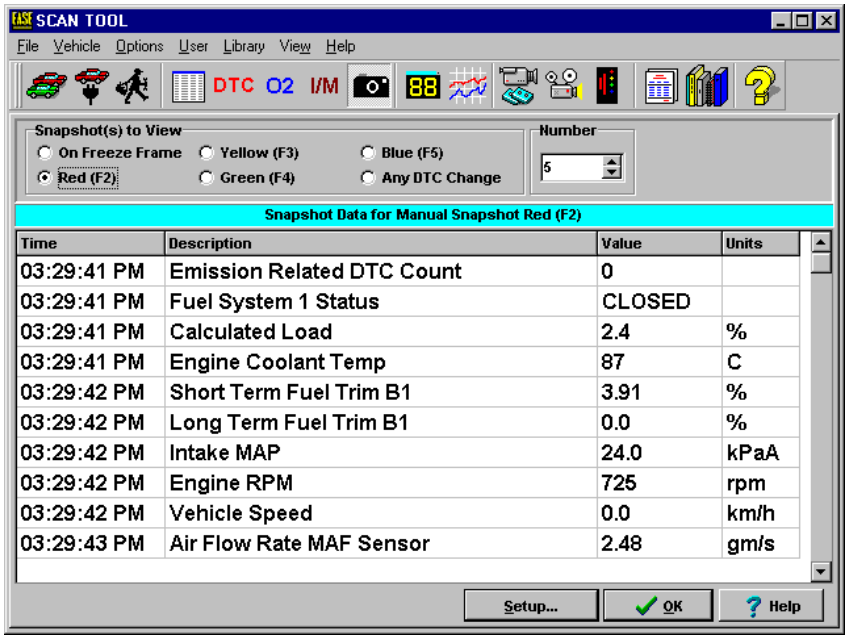
10.0 FREEZE FRAME (OBD II only) AND SNAPSHOT DATA SCREEN

In OBD II vehicles, when the first emissions related powertrain DTC occurs, the PCM will snapshot (save) a block of current engine parameters. This list of parameters is called Freeze Frame Data and consists of a fixed list of parameters. For vehicles which do not support all the parameters, only the applicable ones are stored. The Freeze Frame and Snapshot Data Screen displays the vehicle's freeze frame data, if any.

The user is allowed to take unlimited custom snapshots simply by selecting a keyboard function key. A snapshot captures the data values for a predefined parameter set and sets a colored marker on the chart in the charts screen to show when the snapshot was taken. Snapshots are taken by selecting keyboard function keys F2-F5. The snapshots are time-stamped and color coded. The software can also be set to automatically take a snapshot of a predefined data parameter set each time a DTC is set. Snapshots are saved until the software is reconnected to another vehicle or the program is exited. Snapshots taken during a recording are saved with the record file so they may be viewed during playback. The software can also be set to automatically take a snapshot of a predefined data parameter set each time a DTC is set. Freeze frame data and snapshots can be printed in a vehicle report or saved in a report file. Snapshots are cleared by selecting on the Reset button in the Vehicle Communications Screen.

NOTE: When DTCs are cleared, the Freeze Frame Data is cleared from the vehicle's PCM. However, the freeze frame data is saved by the EASE scan tool software until you reconnect to another vehicle or exit the program. This feature allows you to clear the vehicle's DTCs and save the freeze frame data.

The Freeze Frame and Snapshot Data Screen contains:



Snapshots to View
This section is used to select which snapshot data is displayed in the grid: the PCM freeze frame data snapshot, one of the four custom snapshots, or the DTC change snapshot(s). To setup the custom snapshots and to enable the DTC change snapshot select the Setup button to open the Snapshot Setup Screen.

- On Freeze Frame: PCM Freeze Frame (OBD II only) snapshot data (if any) is displayed in grid.
- Red (F2), Yellow (F3), Green (F4), Blue (F5): These are the four available custom snapshots. Select on one of the custom snapshot to display the snapshot data in the grid. If you did not take any snapshots, no data will be displayed. If you took multiple snapshots, change the number in the Number box to view each snapshot in the grid.
- Any DTC Change: The software can be set to capture a predefined parameter set each time a DTC change is detected. The EASE Scan Tool Software checks for DTCs during initial connection to a vehicle and every 2 seconds while connected and communicating with a vehicle if the parameter set currently selected in the Real Time Data Grid Screen has the DTC CNT Emission Related DTC Count parameter in it and it is displayed in the Data Grid.

Number Box
If multiple snapshots were taken of freeze frame data, a custom snapshot or a DTC change snapshot, change the Number in this box to scroll through each snapshot's data in the grid

Snapshot Data Grid
This grid contains the data parameters for the snapshot selected in the Snapshots to View section.

Time Column: This is the value of the time of day when the snapshot was taken.

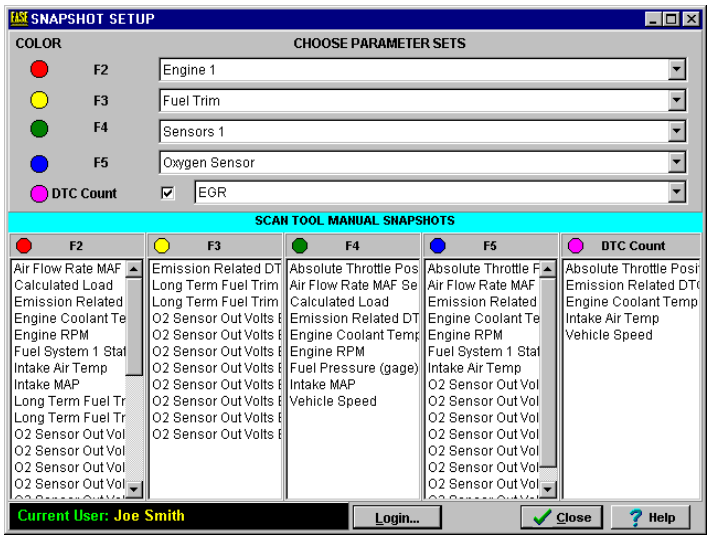
Description Column: This column lists the description of the data parameter.

Value Column: This column lists the data parameter's value.

Units Column: This column lists the data parameters units when applicable.

Setup Button
Selecting this button opens the Snapshot Setup Screen where the user can enable and define custom snapshots.

The Snapshot Setup Screen contains:



Choose Parameter Sets Section
Assign a parameter set to each snapshot in this section.

There are four available custom snapshots. Each snapshot is identified by a color and a keyboard function key (F2-F5). The user takes a snapshot by selecting the designated keyboard function key.

- Color -Each custom snapshot is identified by a color and a keyboard key. The colored circle represents the color of the marker that is displayed in the charts screen at the frame the snapshot was taken at. Select one of the snapshot keyboard function keys (F2-F5) to take a custom snapshot.

- Choose Parameter Sets Boxes - These boxes are used to select which parameter set will be captured when a custom snapshot is taken. Select on the down arrow in the right of each box to display a drop down menu showing a list of all of the available parameter sets. If you are a logged in user, your custom parameter sets will be included in the list along with the factory ones. Select a parameter set in the drop down menu. All the available parameters in the set are listed below in the Scan Tool Manual Snapshots Column below. Each time the keyboard function key is selected a snapshot is taken of the data for all the available parameters in the selected parameter set.

- DTC Count Snapshot - The EASE Scan Tool Software checks for DTCs during initial connection to a vehicle and every 2 seconds while connected and communicating with a vehicle if the parameter set currently selected in the Real Time Data Grid Screen has the DTC CNT Emission Related DTC Count parameter in it and displayed. The software can be set to automatically take a snapshot of a predefined data parameter set each time a stored DTC is set.

  To enable the automatic snapshot for each DTC change feature, select the checkbox next to the Choose Parameter Set box.

Scan Tool Manual Snapshots Columns **-** All of the parameters in the parameter set selected in the Choose Parameter Set box for each snapshot are displayed in these columns. If the DTC Count snapshot is not enabled, a parameter column will not be displayed for it.

Current User Box - The currently logged in User's name is displayed here. If no user is currently logged in, Factory Default is displayed.

Login Button **-** Selecting this button opens the Login Screen, where the user can login so they can select their custom parameter sets for snapshots.

Close Button: Select this button to close the Snapshot Setup Screen.

Help Button: Select this button to open the help file to the Snapshot Setup Screen.

11.0 HELP CONTENTS

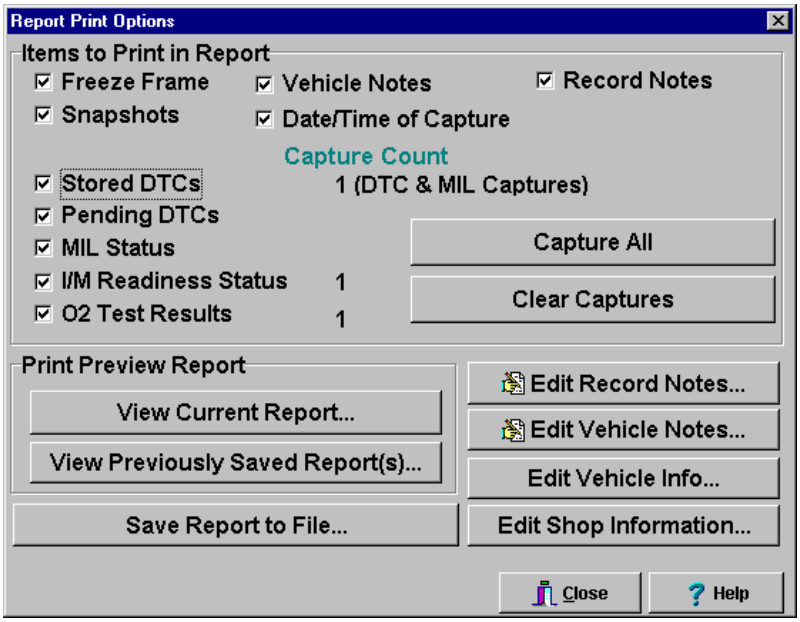
 Selecting this button opens up the Help Contents Screen. Select on the Hypertext (typically green underlined text) topics for more information.

12.0 REPORT PRINT OPTIONS SCREEN (DELUXE AND PLUS)

 Selecting this button opens the Report Print Options Screen where you can print, save and view previously saved vehicle reports containing DTCs, Freeze Frame Data, Inspection and Maintenance Monitors, Oxygen Sensor Test Results, graphs and shop information.

NOTE: To quickly print a copy of any software screen, select *File\Print Screen* in the menu bar.

The Report Print Options Screen contains the following:



Items to Print in Report
Select the checkboxes next to the items in this section that you want included in the vehicle report.

Freeze Frame - If this box is selected, the vehicle's Freeze Frame data (if any) will be printed in the report.

Snapshots - If this box is selected, all of the snapshot data will be included in the report.

Vehicle Notes - If this box is selected, the vehicle notes will be included in the report.

Date/Time of Capture - If this box is selected, the date and time each capture was made at will be included in the report.

Record Notes - If this box is selected, the record notes will be included in the report.

Stored DTCs - If this box is selected, the vehicle's stored DTCs (if any) will be included in the report.

Pending DTCs - If this box is selected, the vehicle's pending DTCs (if any) are included in the report.

MIL Status - If this box is selected, the vehicle's MIL (Malfunction Indicator Lamp) status is included in the report.

I/M Readiness Status - If this box is selected, the vehicle's Inspection and Maintenance Monitor's status are included in the report.

O2 Test Results - If this box is selected, the vehicle's oxygen sensor test results are included in the report.

Capture Count - This column lists the number of times the Capture for Report button was selected in the DTC , Oxygen Sensor Test Results Screen and Inspection and Maintenance Monitors Screens.

Capture All Button - Selecting this button selects all of the items in the Items to Print in Report section so that they all will be included in the report.

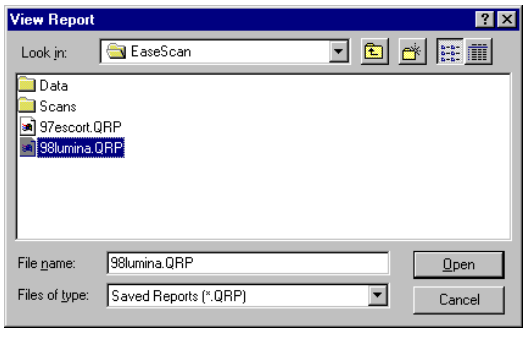
Clear Captures Button - Selecting this button, clears all of the selections in the Items to Print in Report section and also clears all of the captures that were made in the DTC , Oxygen Sensor Test Results and Inspection and Maintenance Monitors Screens.

Print Preview Report

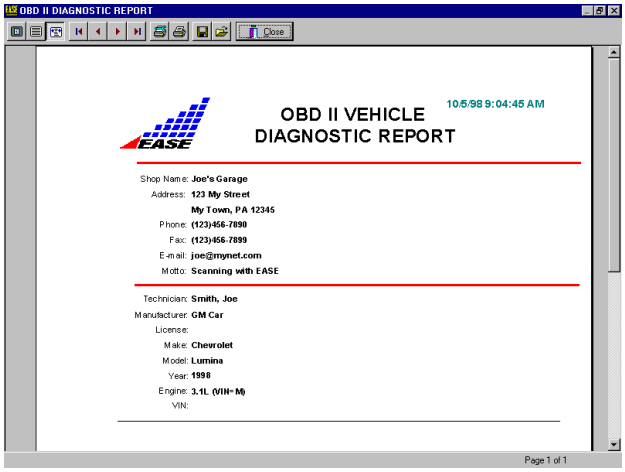
Select which report you would like to see a print preview for in this section: the current one or a previously saved one.

View Current Report Button - Selecting this button displays the print preview screen for the current report.

View Previously Saved Report(s) Button - Selecting this button opens the View Report Screen. In this screen, select the file that contains the previously saved report that you want to view. The file extension for a report is .QRP.



You can view, print, save and open reports from the report print preview screen. A sample report is shown. The top of the print preview screen contains a toolbar. The various buttons and their functions are described below.



 Zoom the displayed report page to fit the screen.

 Zoom the report to 100% (actual size) in the screen.

 Zoom the report so the page width is displayed in the screen.

 Display the first page of the report.

 Display the previous page of the report.

 Display the next page of the report.

 Display the last page of the report.

 Select this button to open the printer set up screen where you can select and configure the printer you are printing the report to.

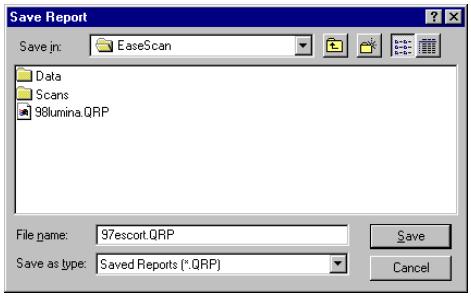
 Select this button to print the report.

 Select this button to save the report.

 Select this button to open a previously saved report.

Select this button to close the print preview screen.

Save Report to File Button
Selecting this button opens the Save Report Screen where you can save the current report to a file. To save a report: Select the folder, type in a File name and then select the Save button. To exit the Save Report Screen without saving the report select the Cancel button.

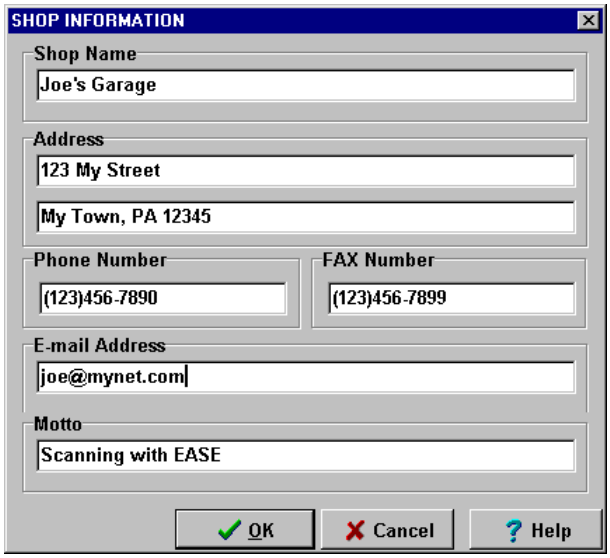


Edit Record Notes Button
Select this button to edit the record notes.

Edit Vehicle Notes Button
Select this button to edit the vehicle notes.

Edit Vehicle Info Button
Select this button to open the Edit Vehicle Data Screen where you can edit the vehicle information.

Edit Shop Information Button
Select this button to open the Shop Information Screen, where you can enter your shop information so that it is printed in the report.



Shop Name: Enter your shop name here.

Address: Enter your shop's address here.

Phone Number: Enter your shop's phone number.

Fax Number: Enter your fax number here.

E-mail Address: Enter your e-mail address here.

Motto: Enter your shop's motto here.

OK Button: Select this button to close the Shop Information Screen and save the information.

Cancel Button: Select this button to close the screen without saving any changes.

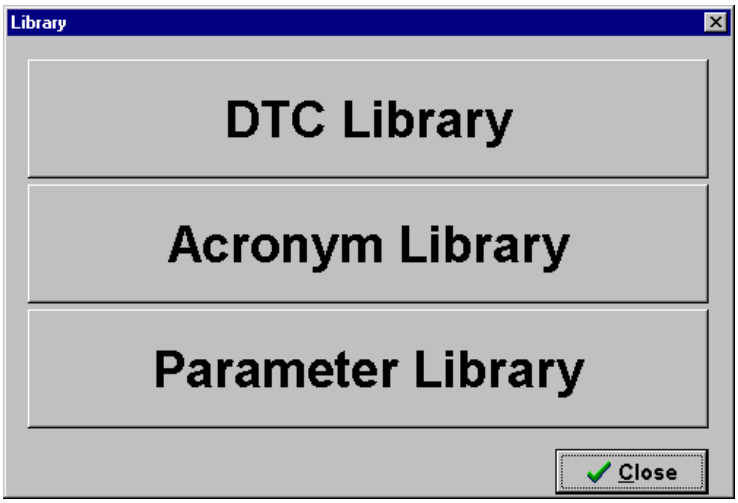
Help Button: Select this button to open the Help File to a relevant topic.

Close Button
Select this button to close the Report Print Options Screen.

Help Button
Select this button to open the Help File to a relevant topic.

13.0 LIBRARY SCREEN (DELUXE AND PLUS)

The Deluxe and Plus Versions supply the user with information libraries. The Library Screen contains buttons to open each library. Select on the button that identifies the library you want to open. Select on the Close button to close the Library Screen.



- **DTC Library (OBD II only)** - This library contains a listing of generic and manufacturer specific DTCs. You can search the library for a specific DTC listing. Notes can be entered and saved on each DTC.

- **Acronym Library** - This library contains descriptions for automotive acronyms and abbreviations.

- **Parameter Library** - This library contains the description, units, minimum, maximum, KOEO and KOER values for the vehicle data parameters.

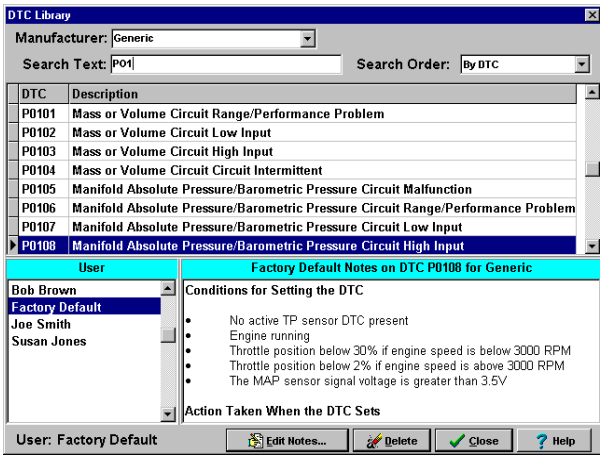
More information on each library follows.

13.1 DTC LIBRARY (OBD II Only)

The OBD II DTC Library Screen allows you to look up the description for a DTC Number or vice versa. Each logged in user can enter their own notes on each DTC in this screen.

NOTE: You can quickly open the DTC Library from the DTC Screen by double-clicking in the Pending and Stored DTC sections.

The DTC Library Screen contains:



Manufacturer Box

Select the manufacturer of the vehicle you are connected to in this box by selecting on the arrow to the right of the box to open a drop down box listing the vehicle manufacturers. It is important that you select the correct manufacturer if you have manufacturer specific DTCs (P1XXX) because a manufacturer specific DTC's description may be different for another manufacturer.

Search Text Box

Type in the DTC or word that you are looking for in this box. If you are searching for a specific DTC, then By DTC must be selected in the Search Order box. If you are searching for a description, By Description must be selected in the Search Order box.

Search Order Box

You can order the DTC information by DTC number or DTC description. Select on the arrow to the right of the box to open a drop down box listing the search choices: By DTC or By Description.

DTC Column

The 5 digit DTC is displayed here. If "b" or "c" follows the code, then that particular DTC has more than one description.

Description Column

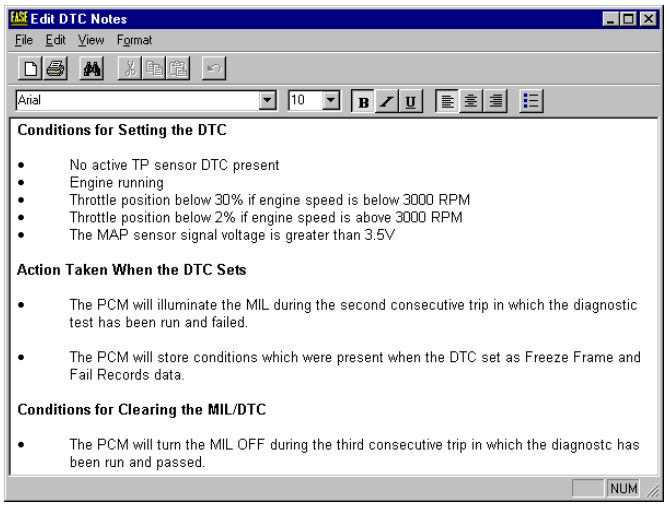
The DTC's description is displayed here.

User

Each user can enter their own notes for each DTC. Select the User whose notes you want to edit or view. The current logged in user is displayed below this box.

Notes Section
Notes that were entered for the selected DTC are displayed here. You can also edit the Notes in this section.

Edit Notes Button
Select this button to open the Edit DTC Notes Screen, where you can enter notes for the selected DTC.



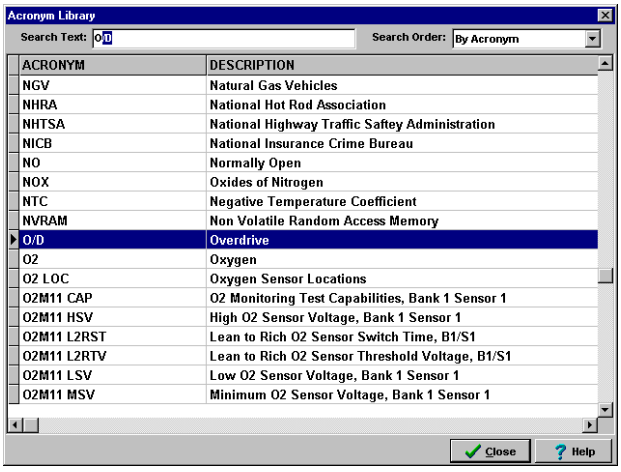
Delete Button
Select this button to delete the notes for the selected DTC. You can only delete the notes of the logged in user. You can not delete Factory Default Notes.

Close Button
Select this button to close the DTC Library.

Help Button
Select this button to open the Help file to the DTC Library section.

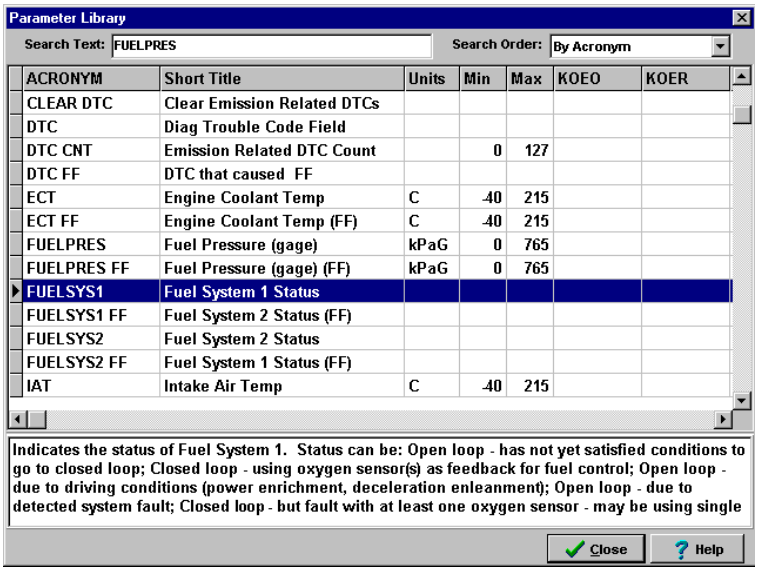
13.2 ACRONYM LIBRARY

This library contains descriptions for automotive acronyms and abbreviations. Enter the acronym or word you are looking for in the Search Text Box. You can order the information by Acronym or Description by selecting your preference in the Search Order Box. If you are searching by acronym, make sure By Acronym is selected in the Search Order box. If you are searching by description, make sure By Description is selected in the Search Order box. Select the Close button to close the screen.



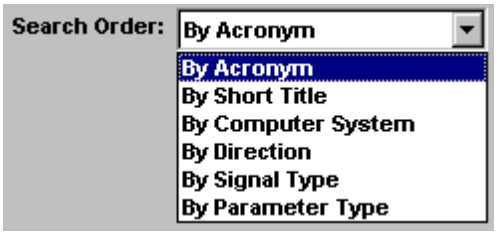
13.3 PARAMETER LIBRARY

This library contains the description, units, minimum, maximum, KOEO and KOER values for the vehicle data parameters.



Search Text
Type the word you are searching for in this box to search for it. You can only search the beginning of the column selected in the Search Order Box.

Search Order
You can arrange the information in the table alphabetically in the following orders: By Acronym, By Short Title, By Computer System, By Signal Type, and By Parameter Type. Select on the arrow in the right of the box to open a drop down box and select your preference.



Acronym Column
The vehicle data parameter's acronym is listed in this column.

Short Title Column
The data parameter's short title is listed in this column.

Units Column
The units the parameter's value is displayed in is listed, if applicable.

Min Column
The minimum (lowest possible) value of the data parameter is displayed in this column.

Max Column
The maximum (highest possible) value of the data parameter is displayed in this column.

KOEO Column
The value of the parameter at KOEO (Key Off Engine Off) is displayed in this column.

KOER Column
The value of the parameter at KOER (Key Off Engine Running) is displayed in this column.

Computer Column
The on board computer that the parameter is monitored by is displayed here.

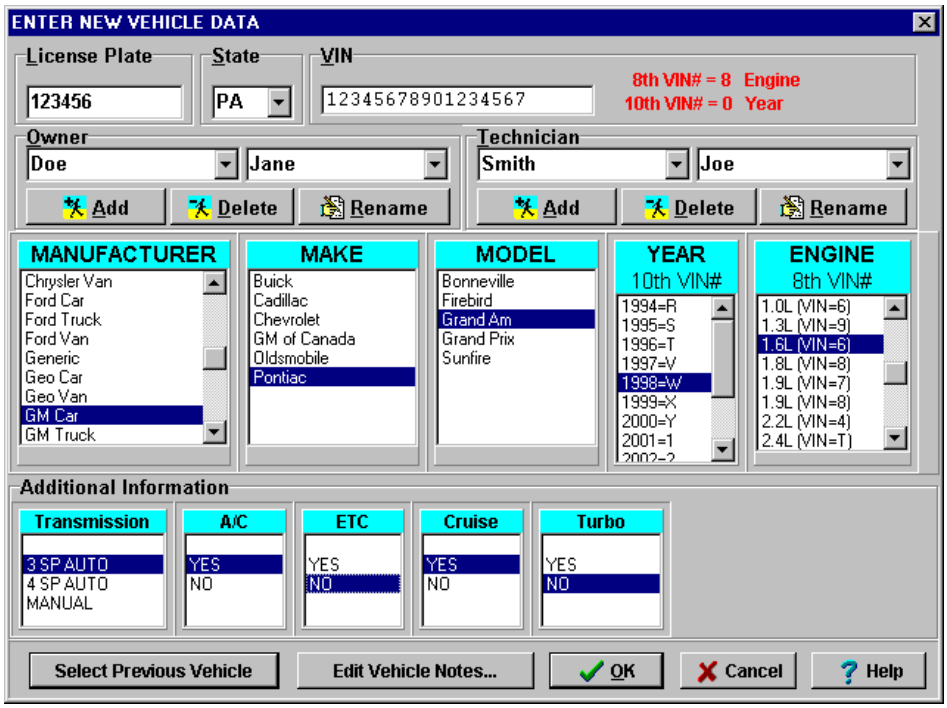
Description Box
A description of the parameter is given in this box.

Close Button
Select this button to close the Parameter Library.

Help Button
Select this button to open the help file to the Parameter Library.

14.0 ENTER NEW VEHICLE DATA SCREEN

Select the Scan New Vehicle button in the Main Task Selection Screen or *Vehicle/Scan New Vehicle* in the menubar to open the Enter New Vehicle Data Screen where the user can enter data on the vehicle they are connecting the scan tool to. This information does not have to be entered to connect the scan tool to an OBD II vehicle. It simply provides a way to track information on a per vehicle basis. The correct vehicle information must be entered in order for the OBD I Scan Tool to connect to the vehicle.



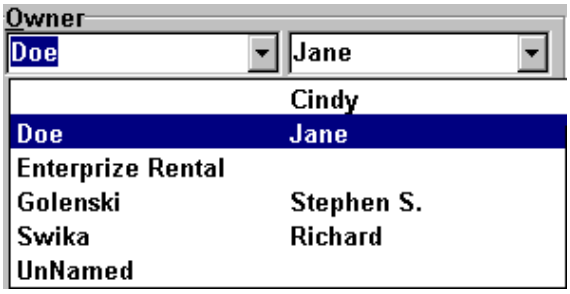
The Enter New Vehicle Data Screen contains the following.

License Plate
Enter the vehicle's license plate number here.

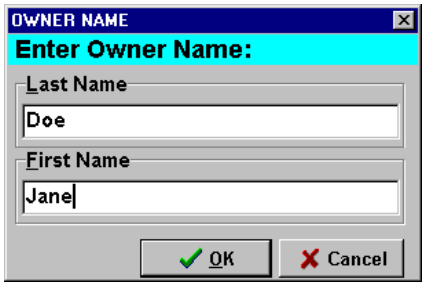
State
Enter the state of the vehicle's license plate.

VIN
Enter the vehicle's VIN (Vehicle Identification Number) here. The VIN is a 17 digit number which represents your vehicle. You can find this number on top of the driver's side dashboard. The most commonly used digits of the VIN are the 8th and 10th. The 8th digit represents the vehicle's engine and the 10th the vehicle's model year. If you type in the vehicle's complete VIN in this box, the software lists the 8th and the 10th digit to the right of the box for easy identification.

Owner



Name Boxes: Enter the vehicle's owner. The owner's last name is listed in the first box and first name in the second. Select in either box to open a drop down box which contains a list of all the entered owners. If you select the first box, the owners' last names are listed in alphabetical order. Type in the first letters of the owner's last name in the box to quickly search the list. If you select the second box, the owners' first names are listed in alphabetical order. Type in the first letters of the owner's first name to quickly search the list.



Add Button: If the vehicle's owner is not listed, select the add button to open the Owner Name Screen. Type in the owner's last and first name in the box. Select **OK** to enter the name and **Cancel** to exit the screen without making any changes.

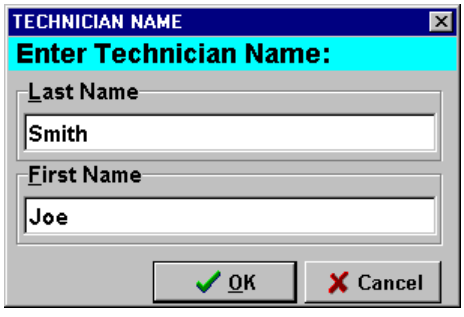
Delete Button: Select this button to delete the owner's name currently displayed in the owner's boxes. A confirm delete screen will be displayed. Select **OK** to delete the name and **Cancel** to close the screen without deleting name.

Rename Button: Select this button to rename the owner's name listed in the owner's boxes. The Owner Name Screen will open to allow you to edit the selected owner's name. Select **OK** to save your changes and **Cancel** to exit the screen without making any changes.

Technician

Enter the technician's name who worked on the vehicle.

Name Boxes: Enter the technician's name here. The technician's last name is listed in the first box and first name in the second. Select in either box to open a drop down box which contains a list of all the entered technicians. If you select the first box, the technicians' last names are listed in alphabetical order. Type in the first letters of the technician's last name in the box to quickly search the list. If you select the second box, the technicians' first names are listed in alphabetical order. Type in the first letters of the technician's first name to quickly search the list.



Add Button: If the technician is not listed, select the add button to open the Technician Name Screen. Type in the technician's last and first name in the box. Select **OK** to enter the name and **Cancel** to exit the screen without making any changes.

Delete Button: Select this button to delete the technician's name currently displayed in the technician's boxes. A confirm delete screen will be displayed. Select **OK** to delete the name and **Cancel** to close the screen without deleting name.

Rename Button: Select this button to rename the technician's name listed in the technician's boxes. The Technician Name Screen will open to allow you to edit the selected technician's name. Select **OK** to save your changes and **Cancel** to exit the screen without making any changes.

Manufacturer
Select the vehicle's manufacturer. For some manufacturers, you have to select whether the vehicle is a truck or a car. For example if you are connecting to a Pontiac Grand Am, you must select GM Car in this column.

Make
Select the vehicle's make. For manufacturer's who do not have makes such as Kia and Toyota, you must select the manufacturer again in this column.

Model
Select the vehicle's model.

Year
Select the vehicle's model year. If you are unsure of the vehicle's model year, this information can be obtained from the vehicle's VIN. The tenth digit of the vehicle's VIN represents the model year. Use this digit to determine your selection for the vehicle's year.

Engine
Select the vehicles engine size. If you are unsure of the vehicle's engine size, this information can be obtained from the vehicle's VIN. The eight digit of the vehicle's VIN represents the engine size. Use this digit to determine your selection for engine size.

Additional Information
This section allows you to enter additional information on the vehicle, if desired.

Transmission - Select the type of transmission the vehicle has
3 SP AUTO (3 speed automatic)
4 SP AUTO (4 speed automatic)
5 SP AUTO (5 speed automatic)
MANUAL

A/C - Does the vehicle have air conditioning? Select Yes or No.

ETC - Does the vehicle have electronic transmission control? Select Yes or No.

Cruise - Does the vehicle have cruise? Select Yes or No.

Turbo - Does the vehicle have a turbo charger? Select Yes or No.

Select Previous Vehicle Button
Selecting this button opens the Select Previous Vehicle Screen where the user can connect the scan tool to a vehicle they previously connected to. See section 15.0 for information on this screen.

Edit Vehicle Notes Button
Select this button to open the Edit Vehicle Notes screen where the user can type in notes on the vehicle. These notes are saved with the vehicle's record.

OK Button
Select this button to close the screen and save the vehicle data information you have entered and begin the vehicle communication process. The next screen that will be displayed is the Select Signal Set Screen. In this screen you must pick the type of data that the scan tool is scanning. See Section 24.0 for more information on the Select Signal Set Screen.

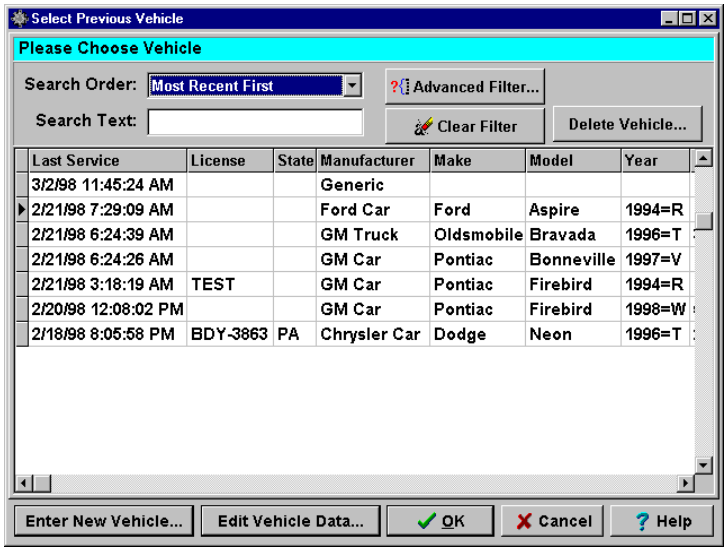
Cancel Button
Select this button to close the screen without saving the vehicle data information.

Help Button
Select this button to open the help file to a relevant topic.

15.0 SELECT PREVIOUS VEHICLE SCREEN

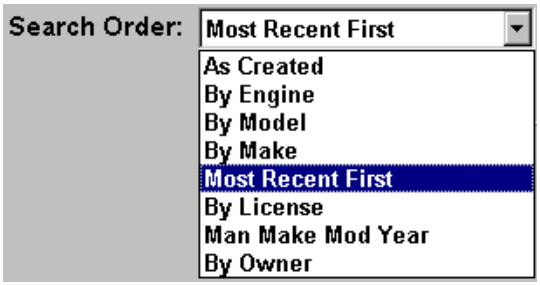
Selecting the Scan Previous Vehicle Button in the Main Task Selection Screen, the Select Previous Vehicle button in the Enter New Vehicle Data Screen or *Vehicle/Scan Previous Vehicle* in the software menubar opens the Select Previous Vehicle Screen. In this screen you can select a vehicle you have previously connected the scan tool to in order to reconnect to it or to view/edit the vehicle notes. Each time a vehicle is connected to the scan tool, a vehicle record is automatically stored by the scan tool. The vehicle information remains saved until you delete it. A search engine is provided so that you can quickly find the vehicle you are looking for.

The Select Previous Vehicle Screen contains the following:



Search Order

You can arrange the information in the table alphabetically or numerically in the following orders: As Created, By Engine, By Model, Most Recent First, By Make, By License, Man Make Mod Year, or By Owner. Select on the arrow in the right of the box to open a drop down box and select your preference.

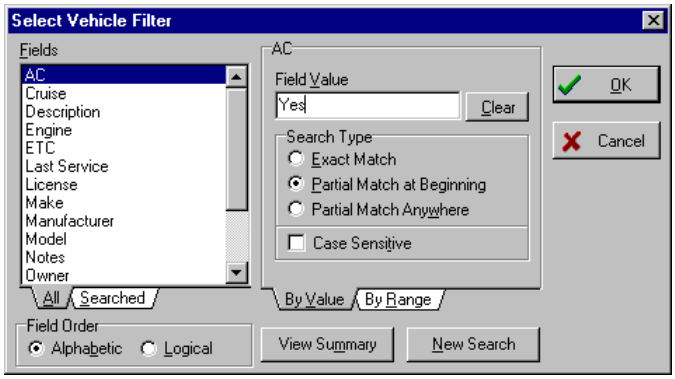


Search Text

Type the word or number you are searching for in this box. You can only search the beginning of the column selected in the Search Order Box.

Advanced Filter Button
Select this button to open the Select Vehicle Filter Screen where you can do advance searches on the previous vehicle listings. With an advanced search you can list all the GM vehicles you worked on or all the 1997-98 Ford vehicles with A/C and Cruise Control. You can even search the vehicle notes for a specific word(s).

The Select Vehicle Filter Screen contains the following:



Fields Section: Select the data field you want to set up a search in this section. There are two tab settings for this section of the screen: All and Searched. Select on the tab at the bottom of the section to change the tab setting.

All Tab: All the vehicle data fields you can set up searches on are listed here.

Searched Tab: All the vehicle data fields you have set up searches on are listed here.

Search Setup Section: There are two tab settings for this section of the screen: By Value and By Range. Select on the tab at the bottom of the section to change the tab setting.

By Value Tab: This tab allows you to set up a search for a specific field value.

Field Value - Enter the value you want to search for in the field selected in the Fields Section. This can be a letter, a number, a word, or any combination. Select the Clear button to clear the current field value.

Search Type - Select the kind of search you want to do for the field value.

- Exact Match: Search the selected data parameter field for an exact match for the value entered in the Field Value box.
- Partial Match at Beginning: Search the selected data parameter field for a partial match at the beginning of the field for the value entered in the Field Value box.
- Partial Match Anywhere: Search the selected data parameter field for a partial match anywhere in the field for the value entered in the Field Value box.

Case Sensitive - Select this check box if you only want to search for matches with the same case as the value entered in the Field Value box. Otherwise, advanced searches disregard the field value's case.

By Range Tab: Use this tab to set up a search for a range of values. For example 1997-1998.

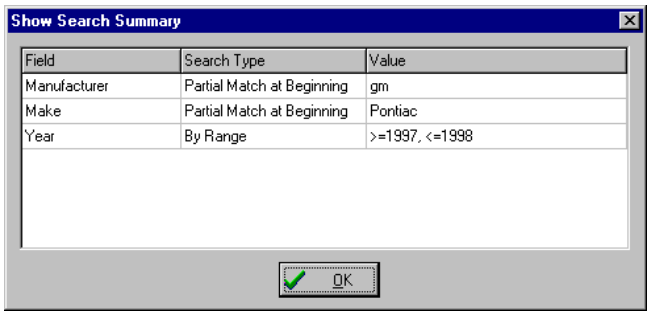
Starting Range - Enter the value where you want the search to start at. For the example above this would by 1997.

Ending Range - Enter the value where you want the search to end. For the example above this would by 1998.

Clear Button - Select this button to clear the entered range value.

Field Order: Select how you want the parameter's ordered in the fields section: alphabetically or logically.

View Summary Button: Select this button to open the Show Search Summary Screen which displays a summary of the field searches you have set up. The Field column displays the field that is to be searched. The Search Type column displays the type of search. The Value column displays the value that is being searched for.



New Search Button: Selecting this button clears all of the field searches you have currently setup, so you can start a new one.

OK Button: Select this button to begin the advanced search. The results of your search will be displayed in the Select Previous Vehicle Screen's data grid. If no vehicles are listed, then none of the previous vehicles met your search criteria.

Cancel Button: Select this button to close the screen without performing a search.

Clear Filter Button

If the previous vehicle listing is currently being filtered, (Filtered) is displayed in the screen's heading. Select the Clear Filter button to clear the advanced filter so that all of the previous vehicles are displayed.

Delete Vehicle Button

Select this button to delete the selected vehicle. If you delete a vehicle with saved recordings, all of the recordings for the vehicle will also be deleted. A confirm delete screen will be displayed. Select **OK** to delete the vehicle and **Cancel** to close the screen without deleting the vehicle.

Last Service Column
This column contains the date and time that the vehicle was last connected to the scan tool.

License Column
The vehicle's license plate number is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

State Column
The vehicle's state is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Manufacturer Column
The vehicle's manufacturer is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Make Column
The vehicle's make is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Model Column
The vehicle's model is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Owner Column
The vehicle's owner is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Enter New Vehicle Button
If the car you are connecting to is not listed, select this button to open the Enter New Vehicle Screen where you can enter vehicle data for a new vehicle. See Section 14.0 for information on this screen.

Edit Vehicle Data Button
If you want to edit the vehicle data for a previous vehicle, select on this button to open the Edit Vehicle Data Screen. This screen is the same as the Enter New Vehicle Screen (Section 14.0) except that it has the previous vehicle's information already selected. Make the changes you want and then select the **OK** button to save them. Select **Cancel** to close the screen without making any changes.

OK Button
Select this button to close the screen and save the vehicle data information you have entered and begin the vehicle communication process. The next screen that will be displayed is the Select Signal Set Screen. In this screen you must pick the type of data that the scan tool is scanning. See Section 24.0 for more information on the Select Signal Set Screen.

Cancel Button
Select this button to close the screen without selecting a vehicle.

Help Button
Select this button to open the help file to a relevant topic.

16.0 RECORDING VEHICLE DATA

With the Express and Basic software versions, the user can record, playback and/or save 18,000 frames of data. The Deluxe and Plus software versions allows the user to record unlimited vehicle data, play it back and/or save it. This help topic includes the steps to follow to make a vehicle recording.

Record Session Steps

1. Connect the scan tool to a vehicle.

2. Decide what vehicle information you want to record and go to the appropriate screen. See chart below.

When a recording is made, the software takes startup snapshot readings of the DTCs, O2 Test Results, and Inspection and Maintenance Monitors and then depending upon which software screen the recording was started from, specific vehicle data will be recorded. The following information can be recorded: Real-time vehicle data, DTC information, Inspection & Maintenance Monitors and O2 Test Results. The chart below identifies what screen you need to start the recording from to record the desired information.

To Record:	**Start Recording From:**
Real Time Vehicle Data (*see below for more information)	Any Screen except: DTC Screen, Inspection & Maintenance Screen, O2 Test Results Screen
DTC Information	DTC Screen or Inspection & Maintenance Screen
Inspection and Maintenance Monitors	DTC Screen or Inspection & Maintenance Screen
Oxygen Sensor Test Results	O2 Test Results Screen

*If you want to record vehicle data parameters:

> Select the data parameter set that you want to record in the Real Time Data Screen and display all the data parameters you want to record in the data grid. Only the displayed Available (Green) and Locked (Yellow) parameters will be recorded. (See Real Time Data Grid Screen for more information on displaying parameters in the grid). Start the record session from any software screen except: the DTC Screen, Inspection & Maintenance Screen, O2 Test Results Screen.
>
> NOTE: If the parameter set you are recording does not have the DTC CNT (Emission Related DTC Count) parameter in it or if it does have the DTC CNT parameter and this parameter is not being displayed in the real time data grid, the scan tool will only scan for DTCs once at recording start up. Any new DTCs that occur during the recording will not be shown. If you would like to scan for DTCs and record vehicle data make sure the parameter set you are recording has the DTC CNT parameter in it and displayed in the Data Grid.

3. Select the record icon  from the main toolbar or *Options\Record Data* in the software menubar. This will open the Record Data Options Screen where you can select your record options. After you have selected your options for the recording, select the **OK** button. The Record/Playback Toolbar will appear on the bottom of the screen. The software is not recording at this time, it is paused. (The data in the data grid will not be updating.)

4. Select the Record button  in the Record/Playback Toolbar from the appropriate software screen (See Step 2). There will be a slight pause, as the software collects the vehicle and software information that will be needed for configuring the scan tool for software playback. Then you will see the frame number begin increasing in the Frame box in the Record/Playback Toolbar.

5. The software is now recording. You can temporarily stop the recording by selecting the  pause button. Select the  stop button to end the record session. Select the  save button in the record/playback toolbar to open the Save Recorded Data Screen where you can save the recording. (If you have the Express or Basic Version, only the last 18,000 frames of data will be saved)

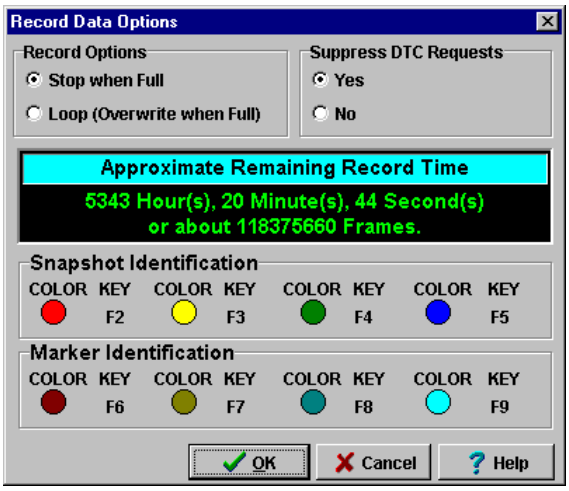
6. If you saved the record file, you can play it back now or at a later date. See Section 17.0 for information on playing back recorded files.

While making a recording, you may want to "mark" a specific event, occurrence or location on the recording. There are four markers available during recording. These are used to mark the data with a color so that the user can easily find that reference point during playback in the Charts screen. You can mark the data by selecting keyboard function keys F6-F9 which are each assigned a different color. Each marker can be selected an unlimited number of times.

You can also take snapshots during the recording of a predefined data parameter set by selecting function keys F2-F5. See Section 10.0 for information on setting up for, taking and viewing snapshots.

16.1 RECORD DATA OPTIONS

The Record Data Options Screen is used to select the record options and to initiate a record session. The Record Data Options Screen contains the following:



Record Options

- Stop When Full - If this option is selected, the software will stop recording at the end of available memory.

- Loop (Overwrite when Full) - When the software reaches the end of available memory, the recording will continue but it will begin overwriting the recorded data beginning at the oldest frame. When this happens the data at the beginning of the file will be lost.

Suppress DTC Requests

This option is provided so that users can suppress DTC requests while recording a time critical parameter. Otherwise if a stored DTC is set during the recording, the parameter you are recording will not be sampled while the software is collecting information about the DTC. Select **Yes** to suppress DTC requests and **No** to allow them.

NOTE: If the parameter set you are recording does not have the DTC CNT Emission Related DTC Count parameter in it or if it does have the DTC CNT parameter and this parameter is not being displayed in the real time data grid, the scan tool will only scan for DTCs once at recording start up. Any new DTCs that occur during the recording will not be shown. If you would like to scan for DTCs make sure the parameter set you are recording has the DTC CNT parameter in it and displayed.

Approximate Remaining Record Time

The amount of record time left on your hard disk drive is displayed in this box. It is designated in actual time and frames of data. The amount of data and length of time the scan tool can record is unlimited. To ensure that all of your hard drive memory is not filled with recordings, the software has settings which prevents the scan tool software from using all of the available memory on your hard drive. These settings are in the Advance Record Options Screen.

Selecting *Options/Advanced* in the menu bar opens the Advanced Record Options Screen where you can control the size of the record files and how much hard drive space remains free on your computer. Do not make any changes in this screen unless you understand completely what you are doing. The Advanced Record Options Screen contains the following:

Minimum Free Disk Space - Enter the amount of space (in MB) you would like to remain free (not used for recording or file storage by the scan tool) on your computer's hard disk drive.

IMPORTANT: To ensure Windows has enough operating room, it is recommended that you do not set Minimum Free Disk Space below 20 MB.

Maximum Record Size - Enter the maximum size of a record file in KB.

Restore Defaults Button - Select this button to return the settings to their factory default values - Minimum: 20 MB and Maximum: 500 KB.

OK Button - Select this button to close the screen and save any changes you have made.

Cancel Button - Select this button to close the screen without saving any changes.

Snapshot Identification

There are four custom snapshots available in the software. A snapshot captures the data values for a predefined parameter set and places two markers on the chart to show the starting and ending points of the snapshot. Snapshots are taken by selecting keyboard function keys F2-F5 while using the Scan Tool software to scan or record vehicle data. An unlimited number of snapshots can be taken. Snapshot data can be viewed in the Freeze Frame and Snapshot Data Screen.

Marker Identification

There are four markers available during recording. These are used to mark the data with a color so that the user can easily find that reference point during playback in the Charts screen. You can mark the data by selecting keyboard function keys F6-F9. Each marker can be selected an unlimited number of times. The color that is assigned to each function key is identified in this section.

Using Markers: While making a recording, you may want to "mark" a specific event, occurrence or location on the recording. For instance, you just started up Bear Hill, press function key F9; the engine just glitched, select F6; your speed is 65 mph, press function key F7; you are at the top of Bear Hill select F9 again. Each time a function key is pushed, the data is marked with the color of the button. When playing back the recorded file in the Charts Screen, the frames you selected will be marked with the marker color.

NOTE: You can also take snapshots during the recording of a predefined data parameter set by selecting function keys F2-F5. See Section 10.0 for information on snapshots.

OK Button

Once setup for a recording, select the **OK** button. The Record/Playback Toolbar will appear on the bottom of the screen. The software is not recording at this time, it is paused. Select the Record button to begin the recording.

Cancel Button

Select this button to exit the screen without beginning a recording.

16.2 RECORD/PLAYBACK TOOLBAR

The Record/Playback Toolbar will appear during a record or playback to control the record or playback session.

Resume Record (Record Only)
Select this button to start or resume recording vehicle data.

Playback
Select this button to playback vehicle data. In Record Mode: If the pause button is selected while recording, you can use this button to immediately playback what you have just recorded.

Pause
Select this button to temporarily stop the recording or playback.

Stop
Select this button to end the record or playback session. A Confirmation Screen will be displayed. Select Yes to end the record session without saving it, No to continue the record session and Save to save the record session in the Save Recorded Data Screen.

Clear Buffer (Record Only)
Select this button to clear all the frames of data from the record buffer. This will reset the frame number counter but not the time of frame.

Save Recording (Record Only)
Select this button to save the record session. This will open the Save Recorded Data Screen where you can save the data, play it back or attach notes to it. If you have the Express or Basic version only the last 18,000 frames of data will be saved. See Section 16.3 for more information.

Frame Number and Time of Frame
This is the number and time of the frame currently being recorded or played back. The time is shown in seconds and represents the time from the start of the recording.

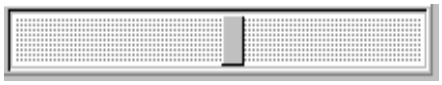
Playback Speed Multiplier
This is the speed the buffer data is playing back at. Increase the number to increase the playback speed. 0 means stopped. A negative number means the data is playing back in reverse at the specified playback speed multiplier.

 **First Frame** - While the recording is paused, select this button to go to the first frame of recorded vehicle data.

 **Previous Frame** - While the recording is paused, select this button to go to the previous frame of recorded vehicle data.

 **Next Frame -** While the recording is paused, select this button to go to the next frame of recorded vehicle data.

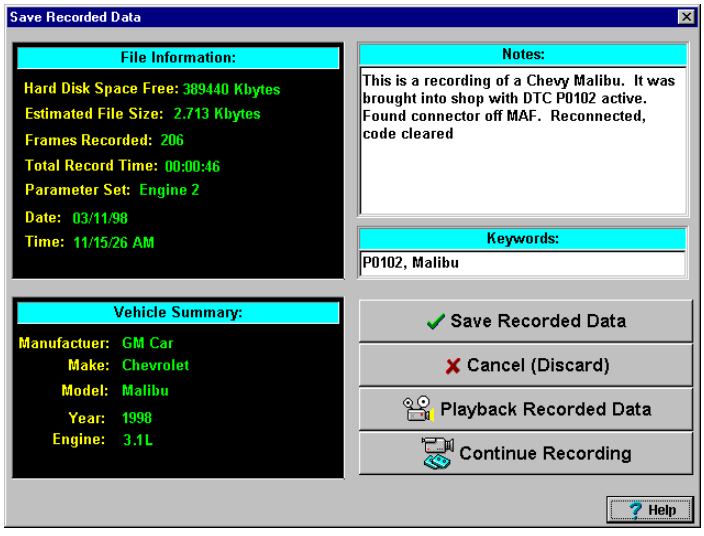
 **Last Frame** - While the recording is paused, select this button to go to the last frame of recorded vehicle data.

 **Track bar - Rough Frame Position**

While paused, use the track bar to quickly scroll forward or back through the recorded vehicle data.

16.3 SAVE RECORDED DATA SCREEN

Selecting the  Save Recording button in the Record/Playback toolbar opens the Save Recorded Data Screen where you can save the current record session, play it back, or attach notes to it. If you have the Express or Basic software version only the last 18,000 frames of data will be saved. The Save Recorded Data Screen contains the following:



File Information
Information on the recorded file is displayed in this section.

Hard Disk Space Free: The amount of free (unused) hard disk drive space (memory) on your computer is displayed here

Estimated File Size: This is the estimated size the record file will be if you save it.

Frames Recorded: This is the number of frames that were recorded.

Total Record Time: This is the length of time that data was recorded.

Parameter Set: This is the parameter set that was recorded.

Date: This is the date of the recording.

Time: This is the time that the record session ended.

Vehicle Summary
Information on the vehicle that was used for the recording is displayed here. You must have entered vehicle data, such as manufacturer, make and model, in the Enter New or Edit Vehicle Data Screen on this vehicle for specific information to be displayed in this section.

Notes
You can enter notes on the record session here.

Keywords
If you are saving the recording, enter keywords here so that you may quickly find this record file to playback in the Previously Recorded Scan Files Screen.

Save Recorded Data Button
Select this button to save the record session.

Cancel (Discard) Button
Select this button to end the record session without saving it.

Playback Recorded Data Button
Select this button to immediately playback recorded data.

Continue Recording Button
Select this button to close the screen and continue the record session. The recording is paused while in this screen.

Help Button
Select this button to open the help file to a relevant topic.

17.0 PLAYING BACK VEHICLE DATA

All the software versions allow the user to playback a saved vehicle data recording. This section includes the steps to follow to playback a recording followed by an overview of the Previously Recorded Scan Files Screen.

Playback Session Steps

1. Record and save vehicle data. See Section 16.0.

2. Enter the Previously Recorded Scan Files Screen by selecting the tool bar  playback icon, *Vehicle/Playback Recorded File* from the software menubar or the Playback Recorded File button from the Main Task Selection Screen.

3. Choose a recording from the Recordings by Vehicle Tab Screen and select the **OK** button.

4. The Previously Recorded Scan Files Screen will be closed. The Record/Playback tool bar will be displayed at the bottom of the screen. Select the  Playback button to begin playing back the record file. Select the  Pause button to temporarily stop the playback and the  Stop button to end the playback session. See Section 16.2 for more information on the Record/Playback Toolbar.

After you have finished the playback session, the software will be in browse mode. In this mode you can browse through the software screens without being connected to or attempting to connect to a vehicle. To connect to a vehicle, go to the Main Task Selection Screen or select the Start Over or Reset button in the Vehicle Communications Screen.

NOTE: When a recording is made, the software takes startup snapshot readings of the DTCs, O2 Test Results, and Inspection and Maintenance Monitors and then depending upon which software screen the recording was started from, specific vehicle data will be recorded. (See 16.0 Recording Vehicle Data) When playing back a file in the real time data grid, if the parameter values are N/A then they were not recorded.

NOTE: If the DTC CNT (Emission Related DTC Count) parameter was not recorded, then the DTCs displayed, if any, in the DTC Screen are the ones that were present in the vehicle at the start of the recording. If the DTC CNT parameter was recorded, then the DTCs displayed, if any, in the DTC Screen could have been set at the start of or during the recording. The time for the DTCs that were present at the start of the recording will be pre-existing. If they occurred during the recording, then the time that it was set at will be displayed.

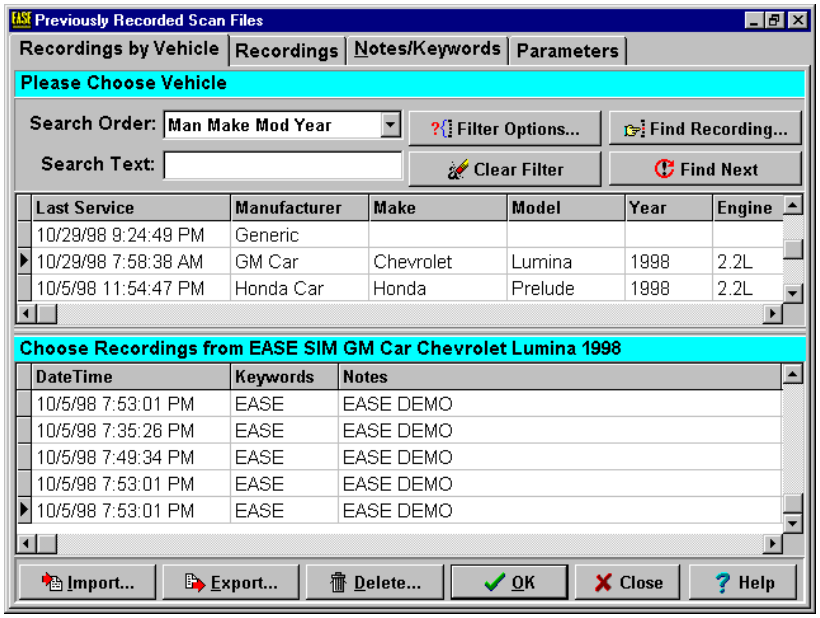
Previously Recorded Scan Files Screen

 Selecting the playback icon opens the Previously Recorded Scan Files Screen where you can select the recording to be played back. There are four tab screens in the Previously Recorded Scan Files Screen to help you review the recordings and find the one you want to playback. Select on the appropriate tab to view the different screens. Information on each tab screen follows this section.

- Recordings By Vehicle - This tab screen allows you to look at the recordings for each vehicle.
- Recordings - This tab screen lists all of the saved recordings.
- Notes/Keywords - This tab screen displays the notes and keywords for the selected recordings.
- Parameters - This tab screen lists the parameters that were recorded in the selected recordings.

17.1 RECORDINGS BY VEHICLE TAB

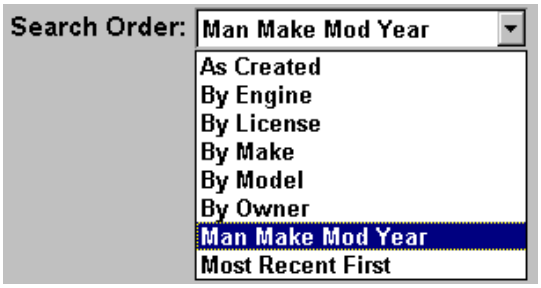
This screen contains a listing of all the previous vehicle's connected to the scan tool and their recordings (if any). In this screen you can select a recording to playback. A search engine is provided to help you quickly find the recording you are looking for.



The Recordings by Vehicle Tab Screen contains the following:

Search Order

You can arrange the information in the table alphabetically or numerically in the following orders: As Created, By Engine, By Model, By Make, Most Recent First, By License, Man Make Mod Year, By Owner. Select on the arrow in the right of the box to open a drop down box and select your preference.



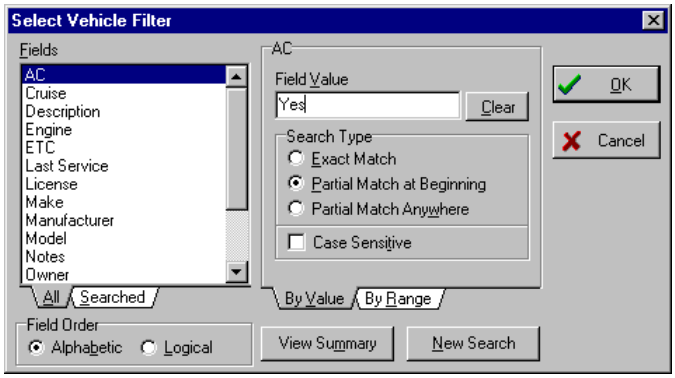
Search Text

Type the word or number you are searching for in this box. You can only search the beginning of the column selected in the Search Order Box.

Filter Options Button

Select this button to open the Select Vehicle Filter Screen where you can do advance searches on the previous vehicle listings to help you find the vehicle that you did a recording on. With an advanced search you can list all the GM vehicles you worked on or all the 1997-98 Ford vehicles with A/C and Cruise Control. You can even search the vehicle notes for a specific word(s).

The Select Vehicle Filter Screen contains the following:



Fields Section: Select the field that you want to set up a search in. There are two tab settings for this section of the screen: All and Searched. Select on the tab at the bottom of the section to change the tab setting.

All Tab: All the vehicle data fields you can set up searches on are listed here. Select the field that you want to set up a search on.

Searched Tab: All the vehicle data fields you have set up searches on are listed here. To modify a search setup select on the field.

Search Setup Section: There are two tab settings for this section of the screen: By Value and By Range. Select on the tab at the bottom of the section to change the tab setting.

By Value Tab: This tab allows you to set up a search for a specific field value.

Field Value - Enter the value you want to search for. This can be a letter, a number, a word, or any combination. Select the Clear button to clear the current field value.

Search Type - Select the kind of search you want to do for the field value.

- Exact Match: Search the selected data parameter field for an exact match for the value entered in the Field Value box.
- Partial Match at Beginning: Search the selected data parameter field for a partial match at the beginning of the field for the value entered in the Field Value box.
- Partial Match Anywhere: Search the selected data parameter field for a partial match anywhere in the field for the value entered in the Field Value box.

Case Sensitive - Select this check box if you only want to search for matches with the same case as the value entered in the Field Value box. Otherwise, advanced searches disregard the field value's case.

By Range Tab: Use this tab to set up a search for a range of values. For example 1997-1998.

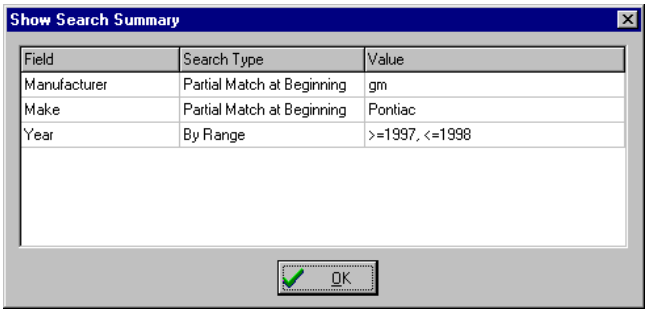
Starting Range - Enter the value where you want the search to start at. For the example above this would by 1997.

Ending Range - Enter the value where you want the search to end. For the example above this would by 1998.

Clear Button - Select this button to clear the entered range value.

Field Order: Select how you want the parameter's ordered in the fields section: alphabetically or logically.

View Summary Button: Select this button to open the Show Search Summary Screen which displays a summary of the field searches you have set up. The Field column displays the field that is to be searched. The Search Type column displays the type of search. The Value column displays the value that is being searched for.



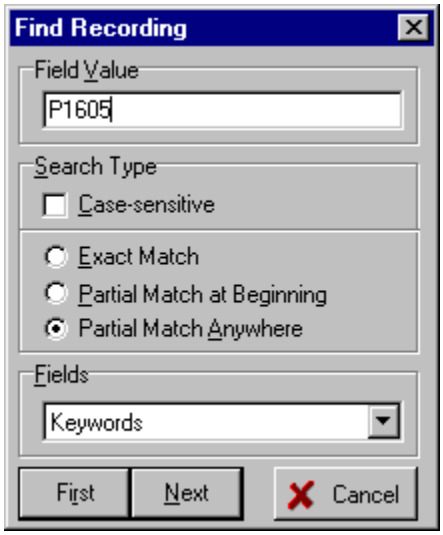
New Search Button: Selecting this button clears all of the field searches you have currently setup, so you can start a new one.

OK Button: Select this button to begin the advanced search. The results of your search will be displayed in the data grid. If no results are listed, then no records met your search criteria.

Cancel Button: Select this button to close the screen without performing a search.

Clear Filter Button
If the previous vehicle listing is currently being filtered, (Filtered) is displayed in the screen's heading. Select the Clear Filter button to clear the advanced filter so that all of the previous vehicles are displayed.

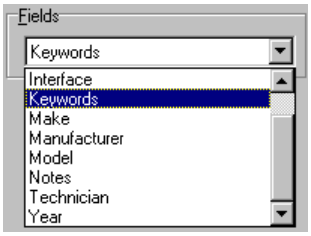
Find Recording Button
Selecting this button opens the Find Recording Screen where you can quickly search for a specific recording. The Find Recording Screen contains the following:



Field Value - Enter the value you want to search for.

Search Type - Select the kind of search you want to do for the field value.

- Case Sensitive: Select this check box if you only want to search for matches with the same case as the value entered in the Field Value box.
- Exact Match: Search the selected data parameter field for an exact match for the value entered in the Field Value box.
- Partial Match at Beginning: Search the selected data parameter field for a partial match at the beginning of the field for the value entered in the Field Value box.
- Partial Match Anywhere: Search the selected data parameter field for a partial match anywhere in the field for the value entered in the Field Value box.



Fields - Select on the arrow in the right of the box to open a drop down box. All the vehicle and recording data fields that you can search in are listed in the drop down box. Select the field you want to do a search in.

First Button - Select this button to find the first recording that matches your field search. An arrow will be displayed on the left side of the recording data grid pointing to the recording that matches the search. If no matches are found you will be informed.

Next Button - Select this button to find the next recording that matches your field search. If no more matches are found you will be informed.

Cancel - Select this button to close the Find Recording Screen without initiating a search.

Find Next Button
Select this button to find the next recording that matches the search you set up in the Find Recording Screen. If no more matches are found you will be informed. If you have not set up any searches, when you select this button the Find Recording Screen will be displayed.

Vehicle Data and Recording Data Grids
There are two data grids in the Recordings by Vehicle Tab Screen. The top one contains the previous vehicle information and the bottom one displays the recording information (if any). Select on a vehicle in the vehicle data grid and if there are any saved recordings for that vehicle they will be displayed in the recording data grid.

Vehicle Data Grid
The vehicle data grid contains information on the vehicles that were previously connected to the scan tool.

The following are columns displayed in the vehicle data grid.

Last Service Column: This column contains the date and time that the vehicle was last connected to the scan tool.

License Column: The vehicle's license plate number is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

State Column: The vehicle's state is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Manufacturer Column: The vehicle's manufacturer is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Make Column: The vehicle's make is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Model Column: The vehicle's model is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Year Column: The vehicle's model year is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Engine: The vehicle's engine size is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Owner Column: The vehicle's owner is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Recording Data Grid

The Recording Data Grid displays information on the saved recordings for the vehicle selected in the vehicle data grid.

The following are columns displayed in the recording data grid.

DateTime Column: This is the date and time the recording was saved

Keywords Column: These are keywords that were entered (if any) by the user to quickly identify the recording.

Record Notes Column: These are notes entered (if any) by the user about the recording.

Frame Count Column: This is the number of frames in the recording

Technician Name Column: This is the name of the technician that made the recording (if entered)

Interface Type Column: This is the vehicle's communication interface type.

DL Column: Yes is displayed if this recording was taken by the Data Logger. No, if not.

Import Button

Select this button to import a recording that was saved by another user of the EASE Scan Tool Software. Enter the name and location of the recording file you want to import in the Import Record Scan File Screen. The file extension for a recording file is *.est.

Vehicle information, such as manufacturer, make and model is saved in each recording file. When the recording file is imported, the software looks at the recorded vehicle's License Plate Number and State. If your software has a previous vehicle that matches the License Plate Number and State of the import file, then the recording is saved to that vehicle. If no match is found, then the software will add the vehicle to your software and save the recording to it.

Export Button

The Export button is used to save the selected recording to a file so that another user of the EASE Scan Tool Software can view it or to export it to a text file so that it can be used in other applications. Selecting this button opens the Export Recorded Scan File Screen.

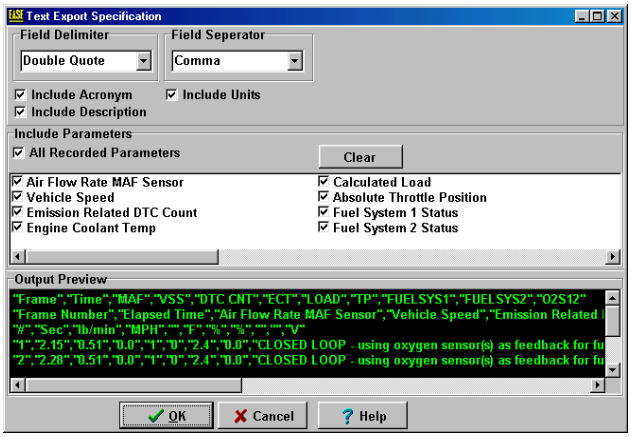
To export the recording as an EASE Scan Tool Recording:

Enter the file name and location where the export file is to be saved in the Export Recorded Scan File Screen. Verify that the Save as type is EaseScan Recordings (*.est). Select the Save button to save the file or Cancel to exit the screen without saving.

To export the recording as a text file:

Enter the file name and location where the export file is to be saved in the Export Recorded Scan File Screen. Change the Save as type: to Text File (*.txt) by selecting the down arrow to open a drop down box. Select the Save button to save the file or Cancel to exit the screen without saving.

When the Save button is selected, the Text Export Specification Screen is displayed. This screen is used to select which of the recorded data will be included in the text file, the field delimiter and field separator. Select the OK button to save the text file with the selections you made.



The Text Export Specification Screen contains the following.

Field Delimiter - Select which character, if any, will be used to mark the beginning and end of each field in this box: None, Single Quote, Double Quote, or Space

Field Separator - Select which character, if any, will be used to separate each field in this box: None, Comma, Semicolon, Space, or Tab

Include Acronym - Select this checkbox to include the parameter's Acronym in the text file.

Include Description - Select this checkbox to include the parameter's Description in the text file.

Include Units - Select this checkbox to include the parameter's Units in the text file.

Include Parameters Section - Select which of the recorded parameters will be included in the text file in this section. Select the All Recorded Parameters checkbox to include all the parameters. Select and deselect the checkbox next to each individual parameter to manually select which parameters will be included. Select the Clear button to clear all the parameter selections.

Output Preview - A preview of the text file is shown in this section.

OK Button - Select this button to save the text file with the selected parameters, field delimiter and field separator.

Cancel Button - Select this button to exit the screen without saving the text file.

Help Button - Select this button to open the Help file to a relevant topic.

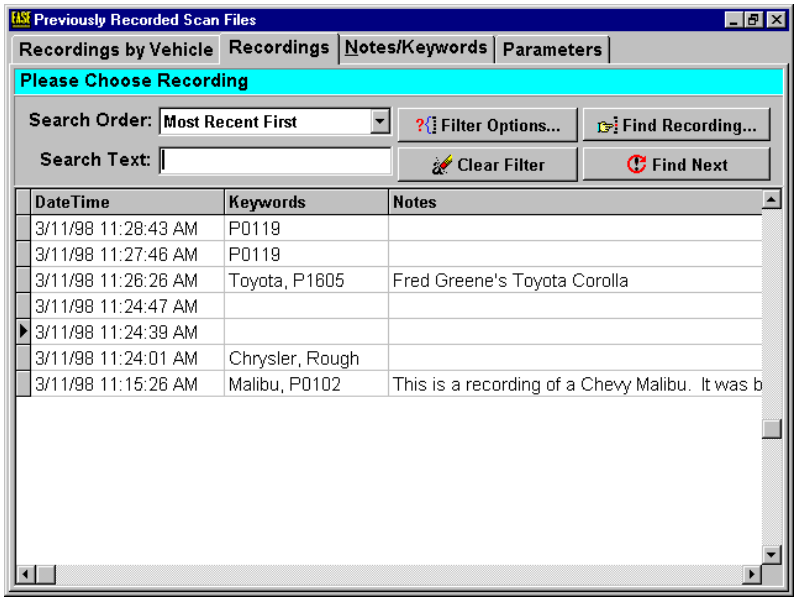
Delete Button
Select this button to delete the selected recording.

OK Button
Select this button after selecting a recording to playback. The Previously Recorded Scan Files Screen will be closed. The Record/Playback tool bar will be displayed at the bottom of the screen. Select the  Playback button to begin playing back the record file. Select the  Pause button to temporarily stop the playback and the  Stop button to end the playback session. See Section 16.2 for more information on the Record/Playback Toolbar. Another way to exit the screen and view the recording is by double-clicking on the recording you want to view.

Close Button
Select this button to close the screen.

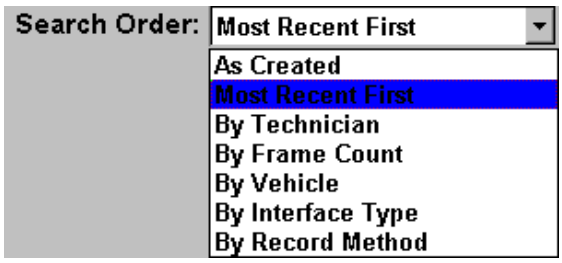
17.2 RECORDINGS TAB SCREEN

This tab screen lists all of the saved recordings. Select the recording you want to play back and then select the Recordings By Vehicle Tab. The recording you have selected will be in the top of the recording data grid. Select **OK** to view the recording. The Recordings Tab Screen contains the following:



Search Order

You can arrange the information in the recording data grid alphabetically or numerically in the following orders: As Created, Most Recent First, By Technician, By Frame Count, By Vehicle, By Interface Type, or By Record Method. Select on the arrow in the right of the box to open a drop box and select your preference.



Search Text

Type the word or number you are searching for in this box. You can only search the beginning of the column selected in the Search Order Box.

Filter Options Button

Select this button to open the Select Vehicle Filter Screen where you can do advance searches on the previous vehicle data fields. The Filter Options button is also available in the Recordings by Vehicle Tab. For more information on the Select Vehicle Filter Screen, see the Filter Options Button in the previous section: 17.1.

Clear Filter Button

If the recordings are currently being filtered, (Filtered) will be displayed in the screen's heading, select the Clear Filter button to clear the advanced filter so that all the recordings are displayed.

Find Recording Button
Selecting this button opens the Find Recording Screen where you can quickly search for a specific recording. The Find Recording button is also available in the Recording by Vehicle Tab Screen. For more information on the Find Recording Screen, see the Find Recording button in the previous section: 17.1.

Find Next Button
Select this button to find the next recording that matches the search you set up in the Find Recording Screen. If no more matches are found, you will be informed. If you have not set up any searches, when you select this button the Find Recording Screen will be displayed.

Recording Data Grid
The Recording Data Grid displays information on the saved recordings for the vehicle selected in the vehicle data grid.

The following are columns displayed in the recording data grid.

DateTime Column: This is the date and time the recording was saved

Keywords Column: These are keywords that were entered (if any) by the user to quickly identify the recording.

Record Notes Column: These are notes entered (if any) by the user about the recording.

Frame Count Column: This is the number of frames in the recording

Manufacturer Column: The vehicle's manufacturer is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Make Column: The vehicle's make is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Model Column: The vehicle's model is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

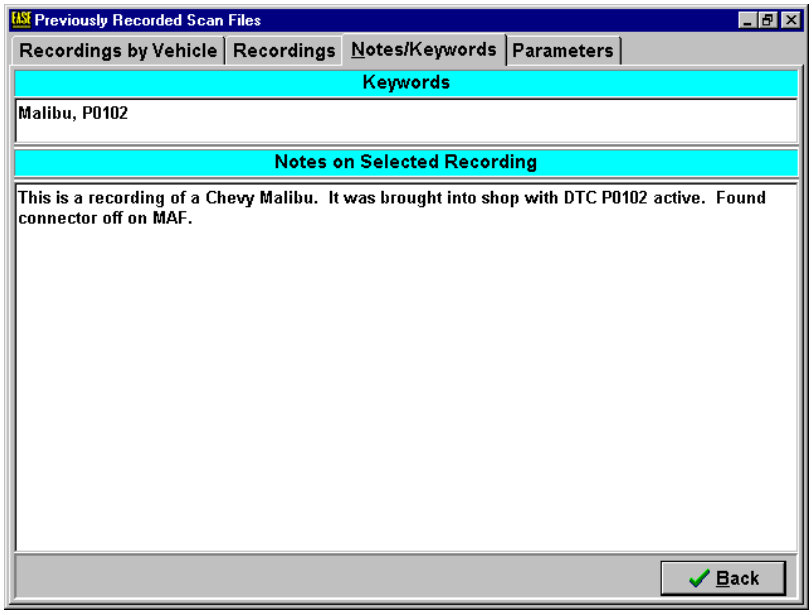
Year Column: The vehicle's model year is displayed here, if you entered it in the Enter New or Edit Vehicle Data Screen.

Technician Name Column: This is the name of the technician that made the recording (if entered)

Interface Type Column: This is the vehicle's interface type.

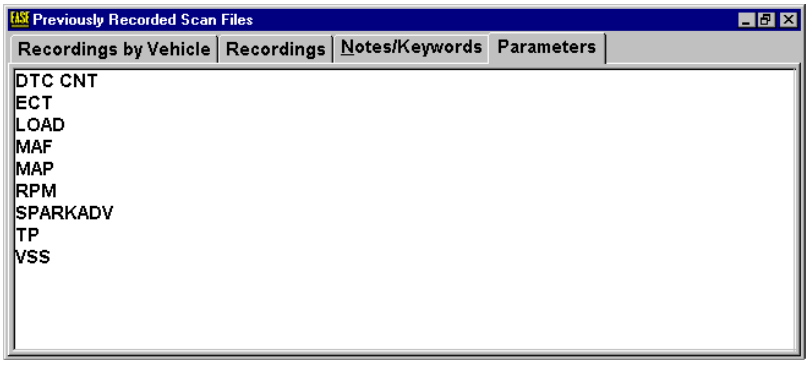
17.3 NOTES/KEYWORDS TAB

This tab screen displays the notes and keywords for the selected recording. You can also edit the keywords and notes. Type in the information and then select the **Back** button to save your entry and return to the Recordings by Vehicle tab screen. Right click on the screen with your mouse to open up the text editor.



17.4 PARAMETERS TAB

This tab screen lists the parameters that were recorded in the selected recording.



18.0 LOGIN SCREEN (DELUXE AND PLUS)

If one or many people use the same copy of the scan tool software, the Deluxe and Plus Versions allow each user to customize the software. Each user can configure the scan tool a different way. They can customize the screen colors, the order of the parameters on the data grid, notes, the bar graph tri-state colors, snapshots, and other preferences. Each user can also create their own parameter sets. Password protection is available to protect each user's customization.

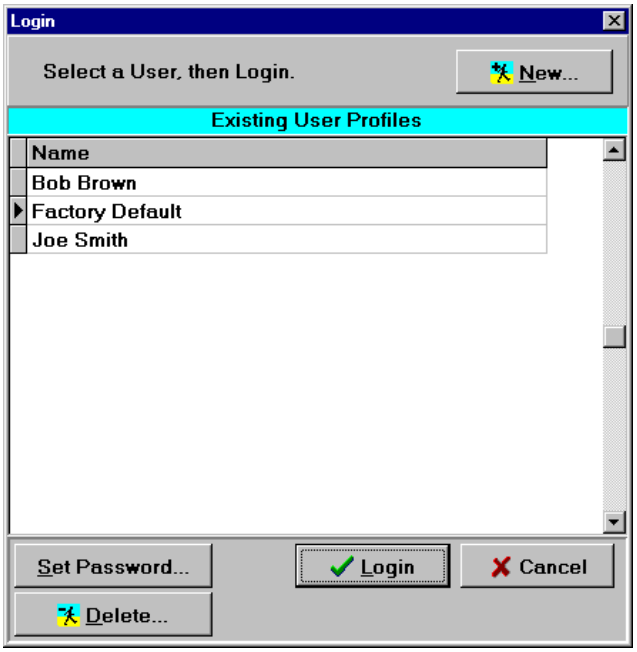
The software always starts with Factory Default as the user. To enter the Login screen, select the Login icon in the tool bar, *User/Login* from the menubar, or the Login button in the Main Task selection screen. Follow the steps below to log in.

New User: If you are a new user, select the New button. Enter your name in the Create New User Screen and select the **OK** button. Select your name in the Login screen and select the Login button. If you set a password, enter it when prompted. You are now logged in.

Existing User: If you are an existing user, select your name on the Login screen and select the Login button. If your login is password protected, enter your password when prompted. You are now logged in.

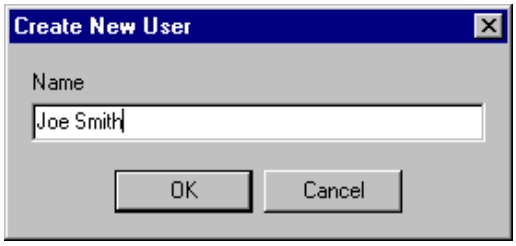
If you want to set a password, select your name in the Existing User Profiles section, then select the Set Password button to open the New Password Dialog Screen. Enter and confirm your password.

NOTE: When entering your password, please note the case. When verifying the login password, the software checks the case. If your password is dog and you enter DOG you will not be allowed to login. Always check the setting of your Caps Lock.



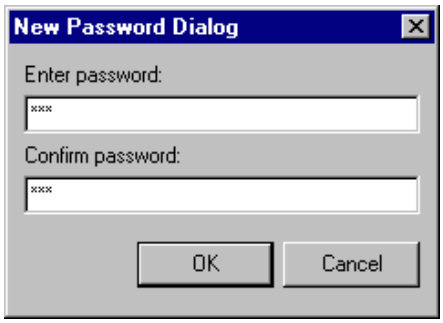
The Login Screen contains the following:

New Button
If you are a new user, select this button to open the Create New User Screen. Enter your name in the Name box and select **OK**. Select Cancel to exit the screen without entering a new name.



Existing User Profiles Section
The existing user names are displayed in this section.

Set Password Button
Select this button to set a password for the user selected in the Existing User Profiles Section. The New Password Dialog Screen will open. Enter your password in the Enter password box and then enter it again in the Confirm password box. Select the **OK** button to save this password to the selected user and cancel to exit the screen without setting a password.



IMPORTANT: Passwords are case sensitive.

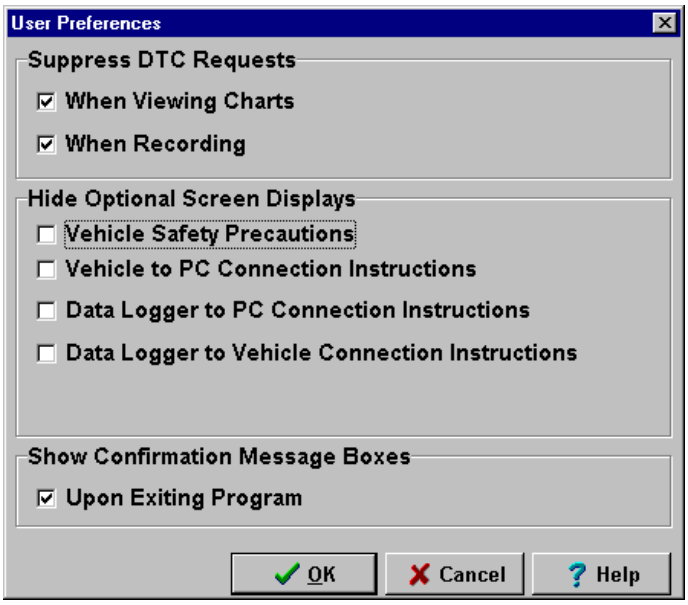
Delete Button
Select this button to delete the user selected in the Existing User Profiles Section.

Login Button
Select this button to login the user selected in the Existing User Profiles Section.

Cancel Button
Select this button to exit the Login Screen without logging in a new user.

19.0 USER PREFERENCES SCREEN

The User Preferences Screen allows users to suppress the DTC Alert Screen while viewing charts and recording data and to hide the optional screen displays. To open this screen select on *Options/Preferences* in the menu bar.



Suppress DTC Requests
It is important to suppress DTC requests when viewing a time critical parameter on a chart and during a recording. Otherwise each time a DTC is requested, the parameter(s) you are charting or recording will not be sampled. Check the check box next to When Viewing Charts to suppress DTC requests while you are viewing charts. Check the check box next to When Recording to suppress the DTC requests while recording.

Hide Optional Screen Displays (Deluxe and Plus)
Some of the screens in the software are for information purposes only. They provide useful information such as connection instructions and safety precautions. Once you are familiar with the scan tool, you can choose to no longer display some of these screens. Check the checkbox next to the screens you want to hide.

Show Confirmation Message Boxes (Deluxe and Plus)
This section is used to show/hide confirmation message boxes. If you want a confirmation screen to be displayed before the program is exited, check the checkbox next to Upon Exiting Program.

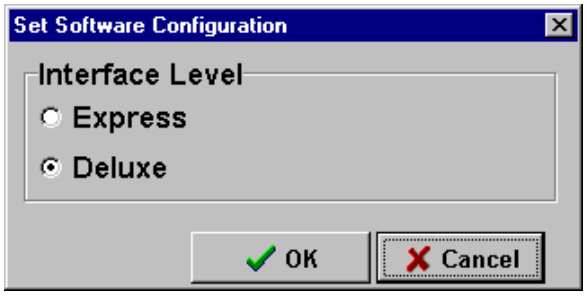
OK Button
Select on the OK button to close the screen and save your changes.

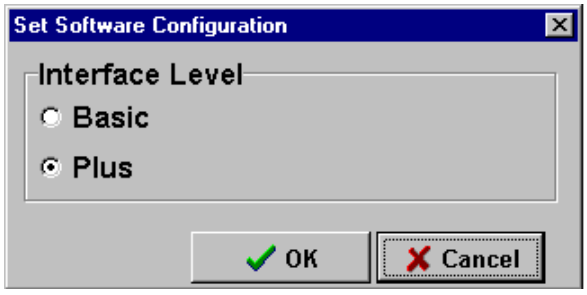
Cancel Button
Select on the Cancel button to close the screen without making any changes.

20.0 SET SOFTWARE CONFIGURATION SCREEN

Select on *Options/Set Software Configuration* in the software menu bar to open the Set Software Configuration Screen. This screen allows users to choose which software tool level to run: Professional: Express or Deluxe. (If you only have the Express Software version, you can not select the Deluxe Version). Personal: Basic or Plus. (If you only have the Basic Software version, you can not select the Plus Version.)

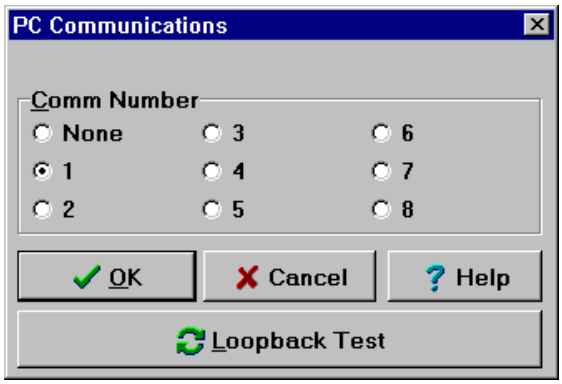
After you have selected the desired options, select the **OK** button. Select **Cancel** to exit the screen without making any changes.





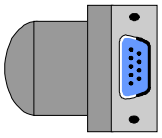
21.0 PC COMMUNICATIONS SCREEN

Select on *Options/Communications* in the menu bar or the **Set COM Port** button in the Vehicle Communications Screen to open the PC Communications Screen. This screen allows the user to select which of the PC's COM (serial) ports that the Scan Tool's serial interface cable is connected to. Select on the desired COM port number in the Comm Number box and select on the **OK** button. Select **Cancel** to exit the screen without making any COM port changes.



Loopback Test

If you are having difficulty connecting the scan tool software to the vehicle via the PC's COM(serial) port, a loopback connector is available to test that the PC's COM port is working correctly. The loopback connector is available from the EASE Sales Office or you can make your own with a DB9 or DB25 female connector. A Loopback Connector Diagram follows. (Loopback connectors are also available at your local computer store. Make sure it's wired as shown in the Loopback Connector Diagram or the Loopback Test will not work.)



LOOPBACK CONNECTOR

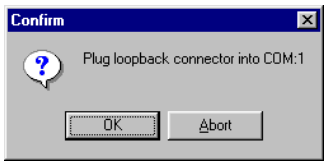
Follow the instructions below to test the PC's COM(serial) port using the Loopback Test.

1. Connect the EASE Loopback connector to the COM (Serial) port on the back of the computer that you plan to use with the scan tool.

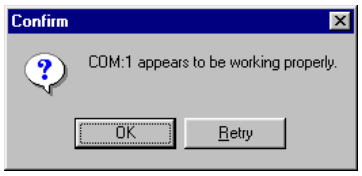
2. In the Vehicle Communications Screen select the Set COM Port button. The PC Communications Screen will be displayed.

3. In the PC Communications Screen select the COM port that you have the loopback connector connected to. Next select the Loopback Test button.

4. A Confirm Screen will be displayed. Select OK to continue the COM port Loopback test.



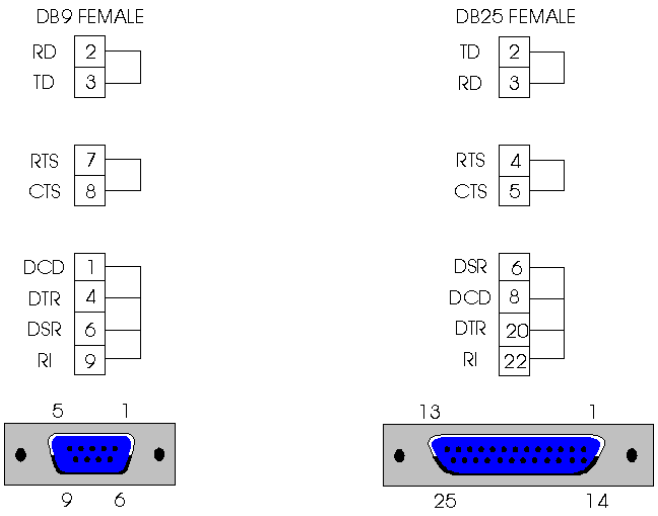
If the COM port passed the loopback test, a Confirm screen will be displayed. Select OK to close the screen and end the loopback test.



If the COM port did not pass the loopback test, an error screen will be displayed. Verify that you have selected the correct COM port and that the loopback connector is securely fastened to your computer and try the Loopback Test again.

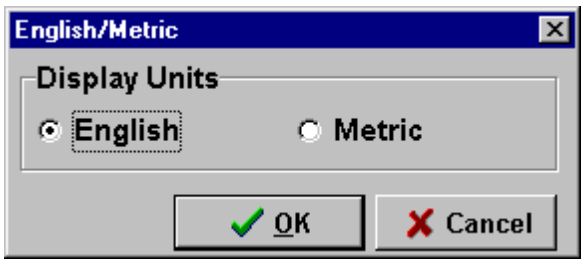
If your COM port fails the test again, you may have a problem with your COM (serial) port. Contact your local computer service technician for support on correcting this problem.

LOOPBACK CONNECTOR DIAGRAM



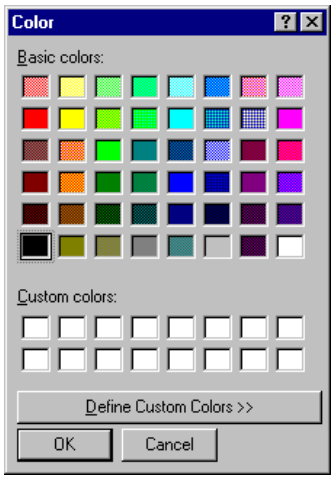
22.0 ENGLISH/METRIC SCREEN

Select on *Options/English/Metric* in the menu bar to open the English/Metric Screen. This screen is used to select which unit of measure you would like the data parameter values displayed in - English or Metric. Choose the desired unit of measure and select on the **OK** button.



23.0 COLOR SCREEN

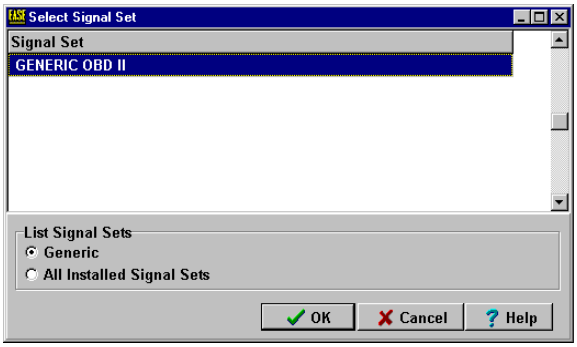
In the Color Screen, choose a new color for the component you have chosen from the basic color palette and then select the **OK** button.



If you would like to define a custom color, select on the **Define Custom Colors** button. Selecting this button will cause a color matrix to be shown. (If this button is unavailable, you are already viewing custom colors). To define a custom color, select a color in the color matrix. If necessary, use the slider bar at the right of the matrix to adjust the color attributes. Once you have finished defining the color, select the **Add to Custom Colors** button to add it to your Custom Colors palette. Select on the custom color in the Custom Colors palette and choose the **OK** button.

To close the Color screen without making any changes, select the **Cancel** button.

24.0 SELECT SIGNAL SET SCREEN



The Select Signal Set is used to select which type of data is to be scanned from the vehicle. This screen is displayed after a specific vehicle is selected in the Enter New Vehicle Data Screen or the Select Previous Vehicle Screen. It can also be opened by selecting *Vehicle\Select Signal Set* from the menubar. Select a Signal Set and select the OK button to continue the software to vehicle communications process.

The Select Signal Set Screen contains the following:

Signal Set Section

This section is used to select the signal set that will be scanned. The following signal sets are currently available.

Generic OBD II - If this option is selected, the scan tool scans generic OBD II data.

Ford Car Enhanced OBD II PCM - If this option is selected, the scan tool scans Ford enhanced powertrain data.

GM Enhanced - A separate signal set is available for each GM OBD II vehicle. The signal set that best matches the vehicle you selected in the Enter New Vehicle Data Screen or Select Previous Vehicle Screen will be displayed in this section. If more than one signal set is listed, pick the one that matches your vehicle. For a complete listing of all the available signal sets, select All Installed Signal Sets.

GM OBD I – A separate signal set is listed for each GM OBD I vehicle. The signal set(s) for the vehicle you selected in the Enter New Vehicle Data Screen or Select Previous Vehicle Screen will be displayed in this screen. If more than one signal set is listed, pick the one that best matches your vehicle. For a complete listing of all the available signal sets, select All Installed Signal Sets.

Ford EEC-IV - A separate signal set is listed for each GM OBD I vehicle. The signal set(s) for the vehicle you selected in the Enter New Vehicle Data Screen or Select Previous Vehicle Screen will be displayed in this screen. If more than one signal set is listed, pick the one that best matches your vehicle. For a complete listing of all the available signal sets, select All Installed Signal Sets.

List Signal Sets

Select which signal sets to display in the Signal Set Section in this section -- the signal set for the selected vehicle or all signal sets available in the installed software version.

OK Button

Select this button to continue the vehicle to software communication process with the selected signal set.

Cancel Button

Select this button to close the screen without selecting a signal set.

C. DATA LOGGER

The EASE Data Logger is a product of EASE Diagnostics that gathers vehicle data during road tests without a computer. The Data Logger requires the EASE scan tool software, which provides record and playback features, for operation. The Scan Tool Software is used to configure the Data Logger for recording specific vehicle data. After the Data Logger is configured, the user connects it to a vehicle and records the specified vehicle data along with markers and snapshots. The Data Logger is then connected to your PC. The Scan Tool software is used to retrieve, view, save and delete the recorded data.

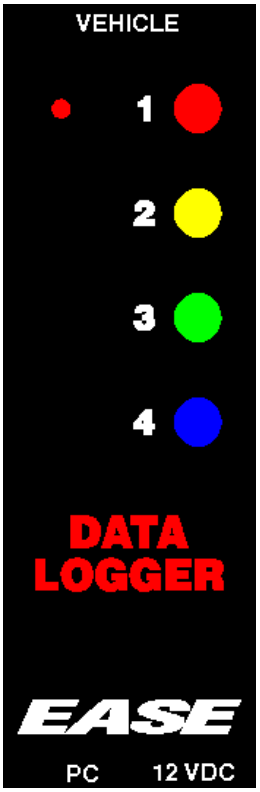
1.0 SETUP PROCEDURES

NOTICE

THIS PRODUCT IS DESIGNED TO OPERATE AT A VEHICLE'S NORMAL BATTERY VOLTAGE: 11-15 VOLTS DC. ANY OTHER VOLTAGE MAY DAMAGE THE EASE DATA LOGGER UNIT!

This section includes the following:

1. Connecting the Data Logger to your PC
2. Connecting the Data Logger to your Vehicle
3. Making a Recording with your Data Logger Unit
4. Playing Back and Saving a Recording From Your Data Logger Unit



1.1 CONNECTING THE DATA LOGGER TO YOUR PC

In order to configure the Data Logger for a recording and to retrieve recorded data from it the Data Logger must be connected to your PC.

IMPORTANT: While connected to the PC, the Data Logger must be powered by the AC Adapter. Plug the AC Adapter into the 12 VDC power jack on the side of the Data Logger Unit and the other end into an outlet. Only use the AC adapter supplied with the Data Logger to power it. Using other AC adapters could damage the Data Logger!!

Before you can connect the Data Logger to you computer, you must identify what type of COM (Serial) port your PC has available. For instructions on identifying your PC's COM port, see Identifying What Type of COM Port Connector Your PC has in Section VIII. Setup Procedures. After you have identified the type of COM port you PC has, follow the steps below that pertain to your type of COM port for connecting the Data Logger to your PC.

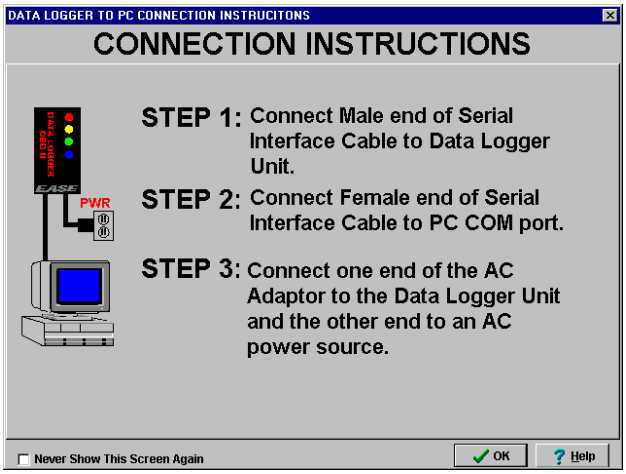
1. Connect one end of the serial interface cable to your PC's COM Port.

<u>If you have a 25-pin male connector COM Port</u>
If you have a 25-pin male connector, you will need a DB9 Male to DB25 Female adapter to connect the Data Logger to your PC. This adapter is not included with the Data Logger. You can buy this adapter at your local computer supply store. Attach this adapter to the available 25-pin male COM port on the back of your computer. Next attach one end of the Serial Interface Cable (DB9 male to DB9 female cable) to the adapter.

<u>If you have a 9-pin male connector COM Port</u>
Connect one end of the Serial Interface Cable (DB9 male to DB9 female cable) to the available COM Port on the back of the PC

2. Connect the other end of the serial interface cable to the PC connector located on the end of the Data Logger Unit.

3. Plug the AC Adapter into the 12 VDC power jack on the side of the Data Logger Unit and the other end into an outlet. The Data Logger unit will beep twice as it is powered up.



1.2 CONNECTING THE DATA LOGGER TO YOUR VEHICLE

In order for the Data Logger to record vehicle data, it must be connected to your vehicle. To do this you must first locate you vehicle's diagnostic connector. This connector is referred to as the Data Link Connector (DLC). On most vehicles the DLC is located under the driver's side dashboard in full view. While in the vehicle, this connector supplies power to the Data Logger Unit. See Locating Your Vehicle's Diagnostic Connector in Section VIII Setup Procedures.

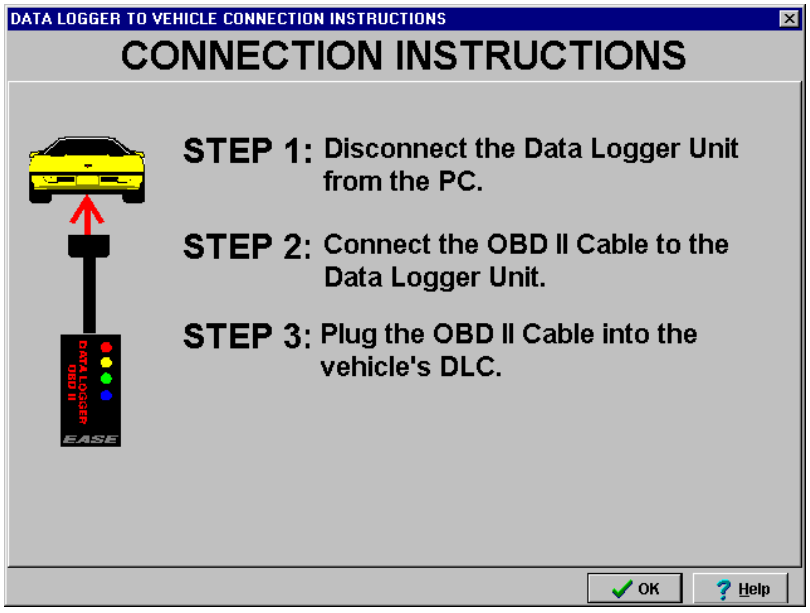
To connect the Data Logger to the vehicle:

1. If the Data Logger is currently connected to the PC, disconnect the serial interface cable from the Data Logger and the AC Adapter from the Power jack on the Data Logger.

2. Plug the Diagnostic Connector Cable to the Vehicle jack on the Data Logger Unit.

3. Connect the diagnostic connector end of the cable to the vehicle's diagnostic connector. The Data Logger unit will beep twice when it powers up.

You are now ready to record vehicle data.



1.3 CONFIGURING THE DATA LOGGER UNIT FOR A RECORDING

Follow the steps below to configure the Data Logger for a recording.

1. Connect one end of the serial interface cable to your PC's COM Port.

2. Connect the other end of the serial interface cable to the PC connector located on the end of the Data Logger Unit.

3. Plug the AC Adapter into the 12 VDC power jack on the side of the Data Logger Unit and the other end into an outlet. The Data Logger will beep twice.

4. Select the Select Data Logger button in the Main Task Selection Screen, the  Data Logger icon from the Main Toolbar or *Vehicle\Select Data Logger* from the software menu bar to open the Data Logger Task Selection Screen.

5. Select Configure Data Logger in the Data Logger Task Selection Screen.

6. The Data Logger to PC Connection Instructions Screen will be displayed. Select the OK button to close it.

7. The Data Logger Screens will open to the Configure Data Logger Tab screen. If the Data Logger is properly connected to the PC and powered up, in the Data Logger Information box, the Link will be Working and the Status will be Ready. The LED on the Data Logger unit will flash while it is connected to the PC and linked to the software. If not verify your cable connections and COM port selection. If the Status is Bad Firmware, go to the Firmware Upgrade screen and upload new firmware to the Data Logger.

8. Setup your Record Session. Select the Parameter Set you want to record, set the yellow, green and blue buttons as markers or snapshots, type in a Session Name, make a Record Option selection, and select Timestamp Each Frame if desired.

Check the Data Logger Date and Time settings in the Data Logger Information box. If they are incorrect, select the Set Date/Time Tab. In this screen set the Data Logger's date and time settings. After you have set the date and time, select the Configure Data Logger tab.

9. After you have finished making your recording setup selections, select the Configure Data Logger button. An Information Screen will be displayed when the Data Logger has been configured successfully and the Data Logger Unit will beep twice.

10. Close the Information Screen by selecting the OK button.

Disconnect the serial interface cable and AC adapter from the Data Logger Unit. You are now ready to record vehicle data.

1.4 RECORDING VEHICLE DATA

Follow the steps below to record vehicle data with the Data Logger.

1. Configure the Data Logger for a recording. See the previous section 1.4

2. Plug one end of the Diagnostic Connector Cable to the Vehicle jack on the Data Logger Unit.

3. Connect the diagnostic connector end of the cable to the vehicle's diagnostic connector. The Data Logger Unit will beep twice when its powered up.

4. Start the vehicle. Go for a test drive if desired.

5. Push the Red record button to start recording. You will hear a musical beep. The LED will flash while the Data Logger is initializing communications with the vehicle. Once communication is established, you will get a double beep and the LED will stay lit. The Data Logger is now recording. The Data Logger will continue recording until you select the Red button again to end the recording or until the Data Logger's memory is full. While the Data Logger is recording, the LED will stay lit.

6. While recording, you can select the Yellow, Green and Blue buttons as many times as you like. Selecting them will either take a snapshot or set a marker depending upon how you configured each button. When you select the Yellow, Green or Blue button you will hear a confirmation beep to let you know you pressed the button. The LED will flash while the Data Logger makes a marker or takes a snapshot. When it is complete, the Data Logger will beep twice.

7. To end the recording, select the Red button again. You will hear a musical beep and the LED will go out.

At this point you can either begin another recording by selecting the Red button again, disconnect the Data Logger from the vehicle and connect it to the PC to download the recording(s), or connect the Data Logger to another vehicle and make more recordings.

NOTE: If during a recording the Data Logger suddenly stops recording (the LED will go out), the Data Logger's memory may be full. Connect the Data Logger to the PC, go to the Configure Data Logger Tab screen and look at the Data Logger Information box. If Free is 0% and there is no remaining record time left, the memory is full. Save any or all of the recordings and then clear the recordings.

1.5 RETRIEVING RECORDINGS FROM YOUR DATA LOGGER UNIT

Follow the steps below to retrieve recordings from the Data Logger for immediate playback or to save them for future use.

1. Connect one end of the serial interface cable to your PC's COM Port.

2. Connect the other end of the serial interface cable to the PC connector located on the end of the Data Logger Unit.

3. Plug the AC Adapter into the 12 VDC power jack on the side of the Data Logger Unit and the other end into an outlet. The Data Logger will beep twice.

4. Select the Select Data Logger button in the Main Task Selection Screen, the  Data Logger icon from the Main Toolbar or *Vehicle\Select Data Logger* from the software menu bar to open the Data Logger Task Selection Screen.

5. Select Retrieve Recorded Data in the Main Task Selection Screen.

6. The Data Logger to PC Connection Instructions Screen will be displayed. Select the OK button to close it.

7. The Data Logger Screens will open to the Retrieve Recorded Data Tab screen. The recordings (if any) stored in the Data Logger will be listed in the recordings grid. If you select on a recording, the parameters that were recorded and captured as snapshots during the recording will be listed below.

NOTE: If no recordings are listed, your Data Logger may not be connected to the PC. Open the Configure Data Logger Tab screen. If the Data Logger is properly connected to the PC and powered up, the Link will be Working and the Status will be Ready in the Data Logger Information box. Also, the LED on the Data Logger unit will flash while it is connected to the PC and linked to the software. If not, verify your cable connections and COM port selection.

8. In this screen you can either playback, save or clear the recordings.

To playback a recording:

Select the recording in the recording section you want to playback and then select the Playback button. The Data Logger Screen will be closed and the Record/Playback tool bar will be displayed at the bottom of the screen. Select the  Playback button to begin playing back the recorded file. Select the  Pause button to temporarily stop the playback and the  Stop button to end the playback session.

To save a recording:

Select the recording in the recordings section you want to save and then select the Save button. The recording must be saved to a specific vehicle. Selecting the Save button opens the Select Previous Vehicle Screen where you must select a vehicle that was previously connected to the scan tool software or a new vehicle to save the recording to and then select the OK button. Next the Save Recorded Data Screen will be displayed so that you can attach notes and keywords, if desired, to the recording. After you have entered notes and keywords, select the Save Recorded Data button in this screen to save the recording. For more information on the Save Button see Section 2.2.

To save all the recordings at once:

Selecting the Save All button saves all of the recordings listed in the recordings section to one vehicle. Selecting this button opens the Select Previous Vehicle Screen where you must select a vehicle that was previously connected to the scan tool software or a new vehicle to save the recordings to and then select the OK button. Each of the recordings will be downloaded and saved to the vehicle. For more information on the Save All Button see Section 2.2.

Clearing the recordings

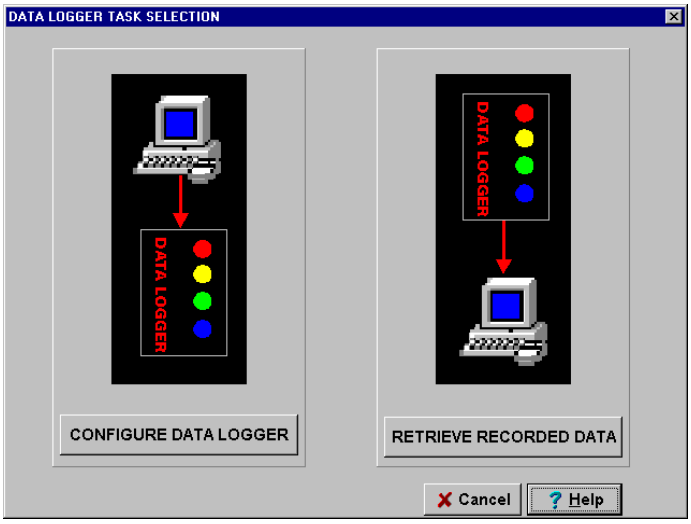
Select the Clear Recordings button to erase all of the recordings from the Data Logger. A Confirm Screen will be displayed. Select the Yes button to erase all of the recordings. Once the recordings are erased they cannot be recovered.

2.0 DATA LOGGER SOFTWARE SCREEN

Selecting the Select Data Logger button in the Main Task Selection Screen, the  Data Logger icon from the Main Toolbar or *Vehicle\Select Data Logger* from the software menu bar opens the Data Logger Task Selection Screen where the user decides if they want to configure the Data Logger for a recording or retrieve recorded data from the Data Logger. Information on the Data Logger Task Selection Screen is given below.

From the Main Task Selection Screen the software opens to the Data Logger Screens which contains four tab screens. Information on each tab screen follows this section.

- Configure Data Logger - Use this tab screen to configure the Data Logger for a recording.
- Retrieve Recorded Data - Use this tab screen to retrieve recorded data from the Data Logger.
- Set Date/Time - Use this tab screen to set the date and time of the Data Logger or PC.
- Firmware Upgrade - Use this tab screen to upgrade the Data Logger's firmware.



CONFIGURE DATA LOGGER Button
Select this button if you want to configure the Data Logger for a recording. The software will open to the Configure Data Logger tab screen where you can configure your Data Logger for a recording.

RETRIEVE RECORDED DATA Button
Select this button if you want to retrieve recorded data from the Data Logger. The software will open to the Retrieve Recorded Data Screen tab screen where you can playback, save, and clear recorded data from the Data Logger.

Cancel Button
Select this button to close the Data Logger Task Selection Screen and return to the scan tool software.

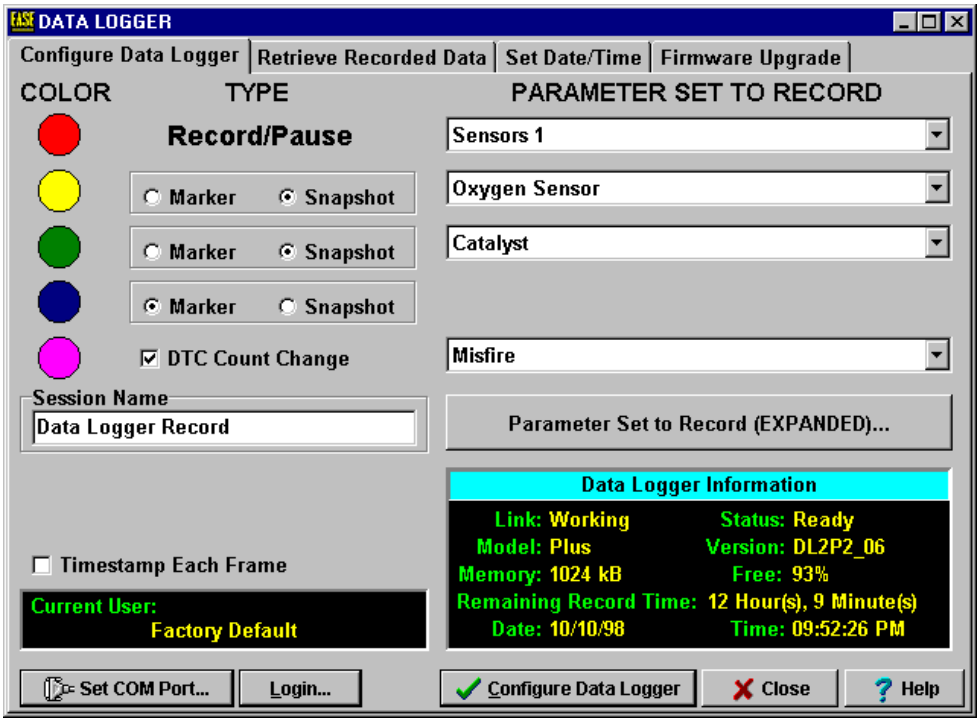
Help Button
Select this button to open the Help file to the Data Logger section.

2.1 CONFIGURE DATA LOGGER SCREEN

The Configure Data Logger Tab Screen is used to configure the Data Logger for a recording. In this screen you can select the parameter set you want to record and configure each Data Logger button as a snapshot or a marker. This screen also contains an information section which displays the link, status, model, version, memory, and the remaining record time of the Data Logger.

The Data Logger must be connected to the computer and powered up to configure it for a recording. When the Data Logger powers up, it beeps twice. If the Data Logger is properly connected to the PC and powered up, the Link will be Working and the Status will be Ready in the Data Logger Information box. The LED on the Data Logger unit will flash while it is connected to the PC and linked to the software. See Section 1.2 Connecting the Data Logger to Your PC for more information.

The Configure Data Logger Tab Screen contains the following.



Color

The Data Logger Unit has 4 colored buttons: Red, Yellow, Green, and Blue. The top 4 colored circles on the screen represent the 4 Data Logger buttons and the color of the marker that will be displayed in the Charts Screen when playing back a Data Logger recording which contains snapshots and/or markers. The last circle represents the marker color for DTC Count Change. This color will mark the frame(s) in the Charts Screen at which a DTC Count Change occurred.

Type
This column is used to set what function will be performed by each of the Data Logger buttons when it is selected.

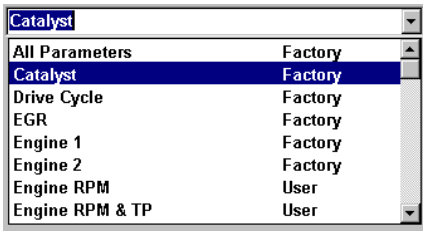
Record/Pause: The function of this button can not be changed. The Red button on the Data Logger is always used to begin and pause recordings.

Marker or Snapshot: The Yellow, Green and Blue Data Logger buttons can be configured to be markers or snapshots. Markers are used to mark the data at a special event, occurrence or location with a color so that the user can easily find that reference point during playback in the Charts Screen. A snapshot captures the data values for a predefined parameter set and places a marker on the chart to show when the snapshot was taken. Select if you would like the button to be used as a marker or snapshot. If you select snapshot, you must also select which parameter set you want to take a snapshot of when you select that particular button.

DTC Count Change: The Data Logger can be set to automatically take a snapshot of a predefined data parameter set each time a DTC is set. This feature is enabled here. Select the checkbox to enable this automatic snapshot at DTC Count Change. The parameter set that will be "snapped" is displayed in the Parameter Set To Record box that corresponds to the DTC Count Change.

The Data Logger checks for DTCs during initial connection to a vehicle. If the parameter set currently selected in the Parameter Set To Record box for the Red Record/Pause button has the DTC CNT Emission Related DTC Count parameter in it, DTCs will be scanned for every 2 seconds during a recording. If it does not, DTCs will not be scanned for during a recording regardless of the setting of the DTC Count Change.

Parameter Set to Record Boxes
These boxes are used to select which parameter set is recorded or captured for a snapshot when the corresponding Data Logger button is depressed. Select on the down arrow in the right of each box to display a drop down box showing a list of parameter sets. If you are the logged in user, any custom parameter sets that you have made will be included in the list along with the Factory ones. For information on the parameters included in the parameter sets, select on the Parameter Set to Record (EXPANDED) Button below the boxes.



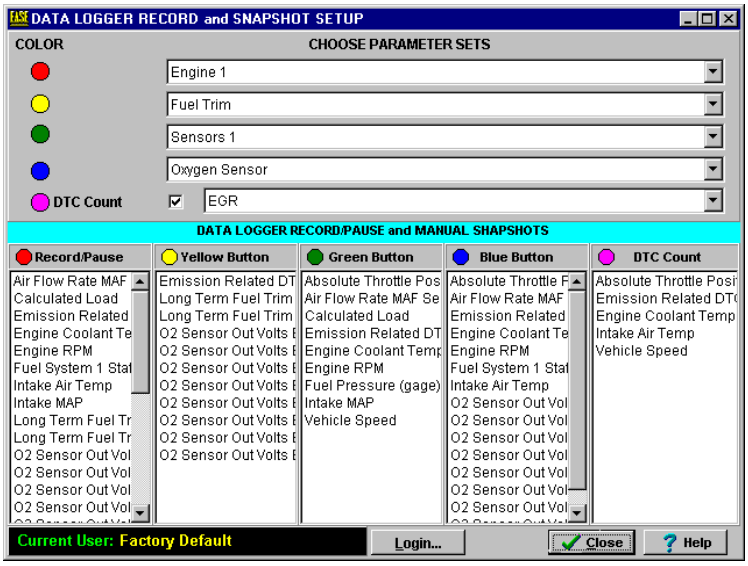
The data values of the parameter(s) in the parameter set displayed for the Red Record/Pause button in the Parameter Set To Record Box are the ones that will be recorded by the Data Logger. If a button is set as a snapshot, the data values of the parameters in the parameter set displayed in its corresponding Parameter Set To Record Box will be captured each time the Data Logger button is depressed. If a button is set as a marker, there is no parameter set to select.

Session Name
For identification purposes, enter a name for the record session here. This name will be displayed in the Session column of the Retrieve Recorded Data Tab Screen so that you can identify the recordings made with this configuration.

Timestamp Each Frame
If this option is selected, each frame is stamped with a time and a frame number.

Current User Box
The logged in User's name is displayed here. If no user is logged in, Factory Default is displayed.

Parameter Set to Record (Expanded) Button
If you would like to see which data parameters are included in each parameter set when you are assigning parameter sets to the recording and snapshots, select on this button to open the Data Logger Record and Snapshot Setup Screen.



The Data Logger Record and Snapshot Setup Screen contains the following:

Choose Parameter Sets Section: Assign a parameter set to each snapshot in this section.

There are four buttons on the Data Logger unit. Each button is identified by a color. The user can start and end the recording by selecting the red button and take a snapshot or marker by selecting one of the other Data Logger buttons.

Color - Each Data Logger button is identified by a color. The colored circle represents the color of the button on the Data Logger unit and the color of the marker that is displayed in the charts screen at the frame where a snapshot or marker was taken. (The Red (Record) button selection is not shown on the graph.)

Choose Parameter Sets Boxes - These boxes are used to assign a parameter set to each Data Logger button. Select on the down arrow in the right of each box to display a drop down menu showing a list of all of the available parameter sets. If you are a logged in user, your custom parameter sets will be included in the list along with the factory ones. Select a parameter set in the drop down menu. All the available parameters in the selected set are listed below in the Available Parameters column. The Red button is the Record/Pause button. The parameter set assigned to this button will be the one that is recorded. Only the first 20 parameters of a parameter set are recorded. If a button is set as a snapshot, each time the button is selected a snapshot is taken of the data for all of the parameters in the selected parameter set.

DTC Count Snapshot - The Data Logger checks for DTCs during initial connection to a vehicle. If the parameter set selected for the Red Record/Pause button has the DTC CNT Emission Related DTC Count parameter in it, stored DTCs will be scanned for every 2 seconds during a recording. If it does not, stored DTCs will not be scanned for during the recording regardless of the setting of the DTC Count Change. The Data Logger can be set to automatically take a snapshot of a predefined data parameter set each time a stored DTC is set.

To enable the automatic snapshot for each DTC change feature, select the checkbox next to the Choose Parameter Set box.

Available Parameters Columns: All of the parameters in the parameter set selected in the Choose Parameter Set box for each button are displayed in these columns. If the DTC Count snapshot is not enabled, a parameter column will not be displayed for it.

Current User Box - The logged in User's name is displayed here. If no user is currently logged in, Factory Default is displayed. Select the Login Button to login.

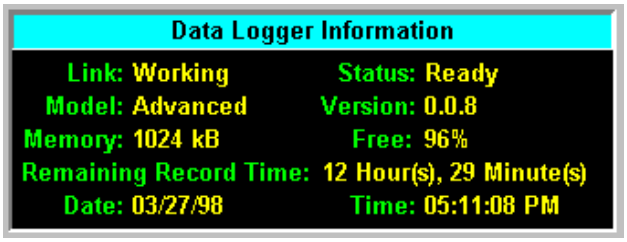
Login Button - Selecting this button opens the Login Screen, where the user can login so they can select their custom parameter sets for snapshots.

Close Button - Select this button to close the Data Logger Record and Snapshot Setup Screen.

Help Button - Select this button to open the help file to the Data Logger Record and Snapshot Setup Screen.

Data Logger Information Section

This section of the screen contains Data Logger status information. If N/A is displayed, the status is unknown because the Data Logger is not communicating with the software.



Link: The communication status between the Data Logger and software is displayed here. If Working is displayed, the Data Logger and software are successfully linked. If Not Working is displayed, the software is not linked to the Data Logger. selection. The LED on the Data Logger unit will flash while it is connected to the PC and linked to the software. Check the cable and power connections and the COM Port selection.

Status: The status of the Data Logger unit is displayed here.

Ready - The Data Logger is ready for configuration or recording retrieval.

N/A - The Data Logger is not communicating with the software so its status is unknown.

Bad Firmware - The Data Logger unit has bad firmware. If your Data Logger's firmware is bad, you will not be able to configure it or retrieve any data from it. Any recordings you had saved in it are lost. Go to the Firmware Upgrade tab screen to upload a firmware file to your Data Logger.

Full - The Data Logger's memory is full. If you want to make more recordings, you must first clear the recordings.

Low Battery - The Data Logger's battery is low. The Data Logger uses one 3V CR2032 Lithium battery. These batteries are available at your local electronics store. Instructions for changing the battery follow.

The Data Logger uses one 3V CR2032 Lithium coin type battery. Typical battery life is one year. These batteries are available at your local electronics store.

If the Status is Low Battery in the Data Logger Information Section of the Configure Data Logger Tab Screen, the Data Logger battery needs to be changed. To change the Data Logger battery follow the instructions below.

Important: All the recordings saved on the Data Logger unit will be lost when the battery is changed. If the Data Logger unit is still operational, retrieve all the recordings before you replace the battery.

1. Disconnect the Data Logger unit from the vehicle and PC.

2. Remove the two screws from the PC (DB9) and 12VDC endplate of the Data Logger unit.

3. Slide the circuit card out.

4. Remove the battery and put the new one in.

5. Slide the card back in the case and install the screws into the endplate.

6. Install the Data Logger firmware using the Firmware Upgrade Screen.

Model : The model of the Data Logger is displayed here.

Version: The firmware version loaded on the Data Logger is displayed here.

Memory: The total amount of memory available is displayed in kilobytes: 256 KB or 1024 KB.

Free: This is the percentage of the total memory that is available for recording data.

Remaining Record Time: This is the remaining amount of record time.

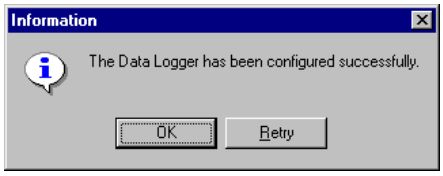
Date: This is the date setting the Data Logger is currently using.

Time: This is the time setting the Data Logger is currently using.

Set COM Port Button
Selecting this button opens the PC Communications Screen which allows the user to select which of the PC's COM (serial) ports that the Data Logger is connected to. See Section B 21.0 for information on the PC Communications Screen.

Login Button
Selecting this button opens the Login Screen, where the user can login so they can select their custom parameter sets to record with the Data Logger. See Section B 18.0 for information on the Login Screen.

Configure Data Logger Button
Select this button to configure the Data Logger for a recording with the recording configuration set in this screen. An Information Screen will be displayed to inform the user if the Data Logger was configured successfully.

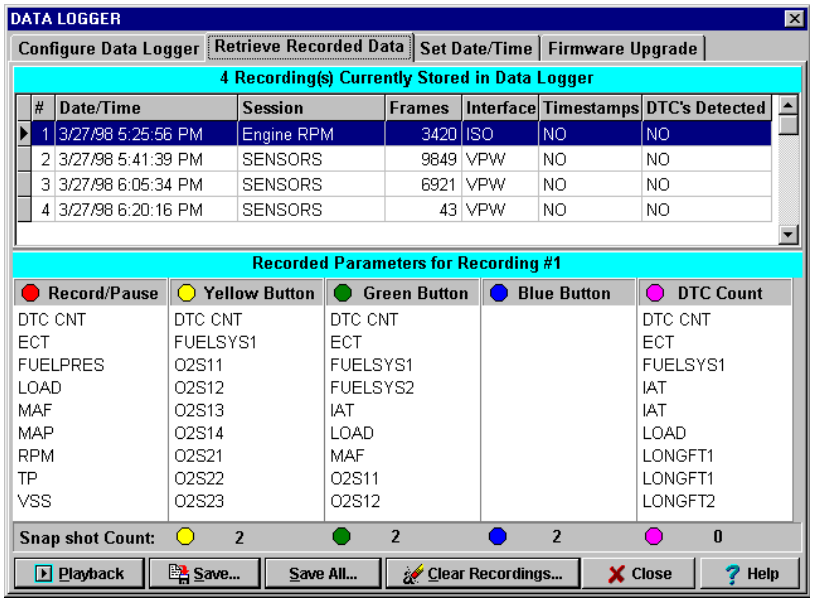


Close Button
Select this button to close the Data Logger Screens and return to the scan tool software screens.

2.2 RETRIEVE RECORDED DATA SCREEN

This tab screen is used to retrieve, playback, save and clear the recordings from the Data Logger.

The Data Logger must be connected to the computer and powered up to retrieve recordings from it. When the Data Logger powers up, it beeps twice. If the Data Logger is properly connected to the PC and powered up, the Link will be Working and the Status will be Ready in the Data Logger Information box. The LED on the Data Logger unit will flash while it is connected to the PC and linked to the software. See Section 1.2 Connecting the Data Logger to Your PC for more information.



Recordings Section
All of the recordings currently stored in the Data Logger are listed in this section.

Column: The number of the recording is listed here.

Date/Time Column: The date and time the recording was taken is listed here.

Session Column: The session name is listed in this column. This name can be set in the Session Name Box in the Configure Data Logger tab screen before you take a recording.

Frames: This is the total number of frames of data in the recording.

Interface: This is the communication interface type of the vehicle that the recording was made on.

Timestamps: Whether or not the recording was configured to Timestamp Each Frame in the Configure Data Logger tab screen is displayed in this column.

DTC's Detected: Yes is displayed if any DTCs were detected during the recording, otherwise No is displayed.

Recorded Parameters Section

This section displays the parameters that were recorded and captured as snapshots during the recording selected in the Recordings Section above. The Red Record/Pause column displays the parameters that were recorded in the recording. If any of the Yellow, Green, or Blue Data Logger buttons were set as snapshots, their columns display the parameters that were captured if a snapshot was taken during the recording. No parameters will be displayed if the button was set as a marker. If the DTC Count Change snapshot feature was enabled for the recording, the parameters that were captured if a DTC was set during the recording is displayed in the DTC Count column.

Snapshot Count

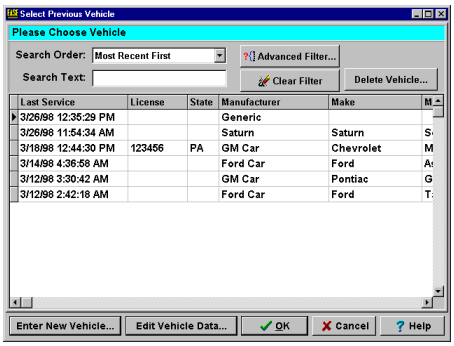
The total number of snapshots or markers taken during the recording is displayed in this row for each button.

Playback Button

Selecting this button retrieves the Data Logger recording selected in the Recordings Section for playback. The Data Logger Screen will be closed and the software will be opened to the Real Time Data Grid Screen. The Record/Playback tool bar will be displayed at the bottom of the screen. Select the  Playback button to begin playing back the record file. Select the  Pause button to temporarily stop the playback and the  Stop button to end the playback session. See Section B 16.2 for more information on the Record/Playback Toolbar.

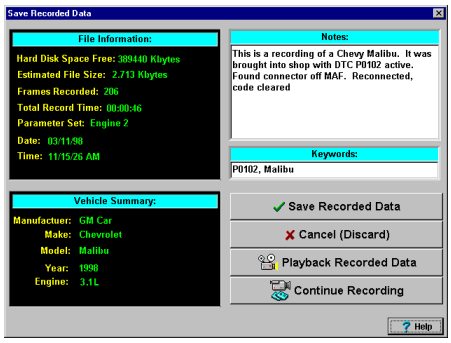
Save Button

Select this button to save the recording selected in the Recordings Section. The recording must be saved to a vehicle.



Selecting this button opens the Select Previous Vehicle Screen where you must select a vehicle that was previously connected to the scan tool software or a new vehicle to save the recording to. A search engine is provided so that you can quickly find the vehicle you are looking for. See Section B 15.0 for information on the Select Previous Vehicle Screen.

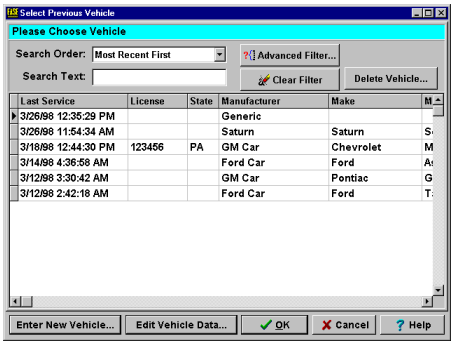
After you have selected the vehicle you are saving the recording to, select the OK button. The recording will be downloaded and saved to the selected vehicle. Select the Abort button to stop the download.



After the recording is successfully downloaded, the Save Recorded Data Screen is displayed so that you can attach keywords and notes, if desired, to the recording. After you have entered Notes and Keywords, select on the Save Recorded Data Button to save the recording to the vehicle specified in the Vehicle Summary box. Select the Cancel button to close the screen without saving the recording and Playback Recorded Data to play the file back. If you decide to play the file back at this time, the recording will not be saved to the vehicle. See Section B 16.3 for information on the Save Recorded Data Screen.

Save All Button

Select this button to save all of the recordings listed in the Recordings Section to one vehicle.

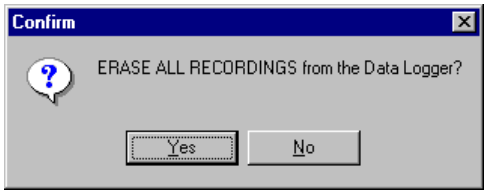


Selecting this button opens the Select Previous Vehicle Screen where you must select a vehicle that was previously connected to the scan tool software or a new vehicle to save all of the recordings to. A search engine is provided so that you can quickly find the vehicle you are looking for. See Section B 15.0 for information on the Select Previous Vehicle Screen.

After you have selected the vehicle you are saving the recordings to, select the OK button. Each of the recordings will be downloaded and saved to the selected vehicle.

Clear Recordings Button

Select this button to erase all of the recordings from the Data Logger. A Confirm Screen will be displayed. Select the Yes button to erase all of the recordings and No to close the confirm screen without erasing the recordings. Once the recordings are erased they can not be recovered. Save any of the files you want to keep before clearing the recordings.



Close Button

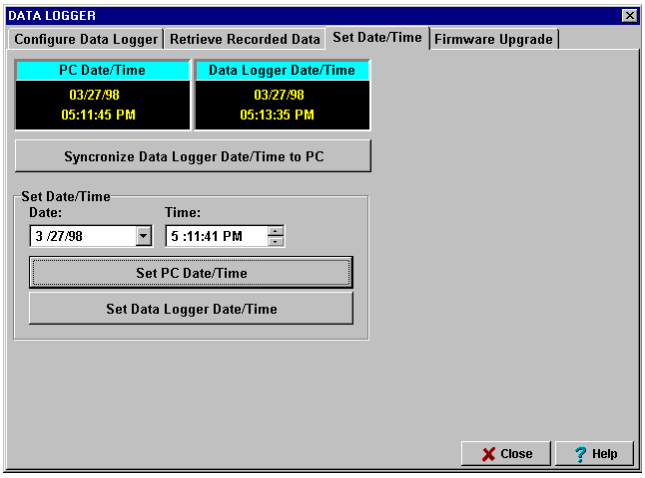
Select this button to close the Data Logger Screens and return to the scan tool software screens.

Help Button

Select this button to open the Help file to the Data Logger section.

2.3 SET DATE/TIME SCREEN

Use this tab screen to set the date and time of the Data Logger and PC.

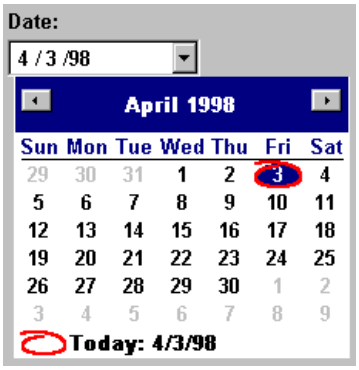


PC Date/Time
The current settings of the PC date and time are displayed here.

Data Logger Date/Time
The current settings of the Data Logger date and time are displayed here.

Synchronize Data Logger Date/Time to PC Button
Select this button to set the Data Logger date and time to the same settings as the PC's.

Set Date/Time Box
Use this box to set the date and time of the PC and/or Data Logger.



Date Box: If you want to change the date setting of the PC or Data Logger, enter the new date setting here. Selecting the down arrow in the right of the box opens a calendar where you can select the new date. Use the left and right arrows at the top of the calendar to view the previous and next months.

Time Box: If you want to change the time setting of the PC or Data Logger, enter the new time setting here.

Set PC Data/Time Button: Select this button to set the PC date and time settings to the values listed in the Date and Time Boxes.

Set Data Logger Date/Time Button: Select this button to set the Data Logger date and time settings to the values listed in the Date and Time Boxes.

Close Button
Select this button to close the Data Logger Screens and return to the scan tool software screens.

Help Button
Select this button to open the Help file to the Data Logger section.

2.4 FIRMWARE UPGRADE SCREEN

This tab screen is used to upgrade or reload the Data Logger firmware. The firmware is saved onboard your Data Logger unit and contains the program that the Data Logger needs to function.

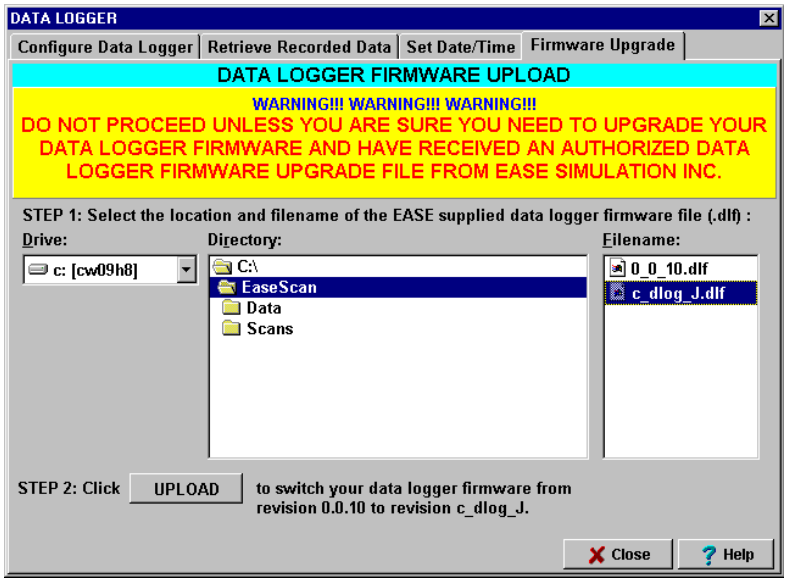
If the firmware is bad, Bad Firmware will be displayed as the Status in the Data Logger Information Section and the Data Logger will not function. To return it to operating condition, you will need to upload the firmware file you received with your Data Logger unit.

If you received a firmware upgrade file for your Data Logger, use this screen to upgrade the firmware in your Data Logger.

WARNING: Do not attempt to upgrade you Data Logger firmware unless you are sure you need to and have received an authorized Data Logger file from EASE. If you load the wrong firmware to your Data Logger it will no longer function.

To upload a firmware file to the Data Logger follow the steps below.
1. Select the Drive, Directory and Filename of the Data Logger firmware file (.dlf) .
2. Select the Upload button. The Uploading Firmware Screen will be displayed as the firmware is copied to the Data Logger. When the upload is complete, you will be informed if your Data Logger's upgrade was a success.

The Firmware Upgrade screen contains the following.



Drive Box
Select the Drive where the firmware file is in this box.

Directory Box
Select the Directory where the firmware file is in this box.

Filename
Select the firmware filename in this box. The extension of the firmware file is .dlf.

Upload Button
Select this button to upload the selected firmware file to the Data Logger unit.

Close Button
Select this button to close the Data Logger Screens and return to the scan tool software screens.

Appendix I. EASE Scan Tool Frequently Asked Questions

A list of questions most frequently asked about the EASE Scan Tool follows. If the problem you are having is not on the list, call our Technical Support Line or e-mail your question to techsupport@obd2.com

1) **I have all my cables connected but the software says 'Unable to Connect'. What do I do?**
   - Check that the correct COM Port is selected. When the correct port is selected and the key is in the on position in the vehicle, the Cable Status on the Vehicle Communication page will display 'Connected'.
   - Try starting the vehicle.
   - Check that the fuse in the vehicle for the DLC connector has not blown.
   - Ensure that none of the pins in the cable or connector are bent.
   - Ensure that the car alarm or theft system is off.
2) **Why can I only record 600 frames of data?**
   - The scan tool can save up to 600 frames of data when it is in scan mode. The scan tool must be in record mode in order to record longer than 600 frames. Make sure to push the record button on the tool bar to start a recording.
3) **I can't print a current report. What can I do?**
   - Save the report, open the saved report and print from there.
4) **I have an older Ford vehicle (not OBD II) and it is not in the select new vehicle list. How do I get real-time parameter data?**
   - If the vehicle is not in the Ford EEC-IV Select New Vehicle list then the vehicle does not support real-time parameter data. However, these vehicles still support KOEO/KOER tests.
5) **Print Screen prints a blank sheet of paper. What can I do?**
   - Select Alt-Print Screen on your keyboard then open Windows Paint (Program/Accessories) and select Edit/Paste. Then print the file from Paint.
6) **I'm trying to configure my Data Logger and the Data Logger Information on the Data logger Configure Data Logger screen displays that the Link is 'Working' but the Model displays 'Error'. What is wrong?**
   - The wrong COM (serial) port is selected. Select on the Set COM Port Button… and select the proper COM Port.
7) **I get an error when I first run the program that says "Invalid Float Value 1.0 in field two of Offsetmultiply, 1.0, -40.". I then get two Access Violation errors. What is the problem?**
   - The Regional Settings for your computer must be set to English (United States) for the program to run properly. To change your Regional Settings, select Start on the Windows task bar, then Settings, and then Control Panel. Select Regional Settings from the Control Panel window. Change the Regional Settings on the Regional Settings window to English (United States).
8) **I have the Ford Enhanced OBD II Tool but I can't get to the KOEO/KOER or input tests. Also, I can't get any enhanced parameters. What do I do?**
   - The Ford Car Enhanced OBD II PCM signal set must be selected to have access to any of the Ford Enhanced capabilities. The signal set screen is displayed whenever a New or Previous Vehicle is selected. Also, the signal set screen can be displayed via the menubar under *Vehicle/Select Signal Set…*. Once the Ford Enhanced OBD II PCM signal set is selected, the black box on the bottom of the parameter grid screen will say "Ford Car Enhanced OBD II PCM". To get to the KOEO/KOER tests and the Input tests select the DTC page and the selections appear on the top right of the screen.
9) **There are only seven (or less) parameters on the parameter grid screen no matter which parameter set I select. Where are all the rest of the parameters?**
   - To see more parameters, place your mouse on the scroll bar on the right side of the grid and click. This essentially pages down the list of parameters. To display more than seven parameters on the screen, hit the + button on the toolbar above the parameter grid. You can also display more parameters on the screen by selecting the Two-Column mode from the tool bar above the parameter grid. If you are running your computer display in Super VGA mode, you can also maximize the screen to allow even more parameters to be displayed.

10) How can I get my recorded data into an Excel spread sheet?

- The recordings made with the scan tool can be exported in a text (ASCII) format. This can then be imported to an Excel or another spreadsheet program. To export the recording, go to the Playback screen, and hit the Export button. The Export Scan File screen is displayed. At the bottom of the screen, where it says 'Save As type' select Text Files and then hit the Save button, to save the recording as a text file. This file can then be opened in Excel or another spreadsheet program.

11) The Scan Tool Launcher runs whenever I start up my computer. I no longer want this feature. How do I keep it from running on computer start-up?

- From the Windows task bar select Start/Settings, then Task Bar & Start Menu…. The Taskbar Properties window is displayed. On the Taskbar Properties screen, select the Start Menu Programs Tab. Select the Remove button. On the Remove Shortcuts/Folders screen, double click on 'Start Up'. Then click once on 'Ease Scan Tool Launcher' and click the Remove button. Then click the Close button to close the Remove Shortcuts/Folders screen. Then click the OK button to close the Taskbar properties window.

12) How do I uninstall my software properly?

- To uninstall the software properly, select the Start button from the Windows taskbar and then select Settings, and then Control Panel. From the Control Panel screen, select Add/Remove programs. Select the EASE Scan Tool you wish to uninstall and then select the Add/Remove button.

13) I just received my new update and need to uninstall and reinstall my software. Is there anything I can do so that I can keep my vehicle list and don't need to import all my recordings? Also, can I keep my user login's and user groups?

- If your previous software CD is dated 11/27/99 then you can just run the new software install without uninstalling the previous software. The vehicle list, recordings, users, and user groups will not be affected.
- If your previous software CD is dated before 11/27/99, before uninstalling the software, under the Data directory of every tool you are uninstalling, copy all the files called Vehicles.*, all the files called Scans.*, all the files called Schedules.*, and all the files called Persons.* to a temporary directory. Uninstall and reinstall the software and then copy the files from the temporary directory back to the same Data directory they were originally copied from. Note: These files, even though they have the same name for each tool, must be copied back to the same directory they were copied from. Note: The Scans directory is where all your recordings are saved, and is not removed when the software is uninstalled.

14) When I start my tool, I get an error message that says, "Corrupt Index…" or "Blob has been modified" or "Index out of date". What do I do?

- One of the tables, which the tool uses, has become corrupted. If you downloaded the demo software from the web site, you need to uninstall it before installing your purchased software. For more information on uninstalling the software, see question 12, How do I uninstall my software properly.
- One of the tables, which the tool uses, has become corrupted. If your software CD is dated the year 2000 or later, then you can just re-run the software install without uninstalling the previous software. The install will give you three choices: Modify, Repair, and Remove. Select the Repair option and continue with the install. Answer 'No' or 'Ignore' to any questions during the Repair. The vehicle list, recordings, users, and user groups will not be affected.
- One of the tables, which the tool uses, has become corrupted. You must uninstall the software using Add/Remove programs and then reinstall it from the installation CD. For more information on uninstalling the software, see question 12, How do I uninstall my software properly and question 13.

15) I can only see 2 or 3 parameters when I connect to the vehicle. What's wrong?

- Ensure that the All Parameters group is selected. The current parameter group can be changed by selecting the Choose Parameter Group button on the parameter grid screen.
- It's possible the vehicle has more than one controller. Most Chrysler vehicles (Jeep is one exception) and Kia vehicles have more than controller. An engine controller and a transmission controller. When a vehicle has two or more controllers, the scan tool displays the Controller Selection screen immediately after connecting to the vehicle. Select the Controller that has the higher PID count to see the larger group of parameters. The Controller Selection screen can also be displayed via the menubar by selecting Vehicle/Select Controller.

16) **My software will not stay connected with the vehicle. What's wrong?**
- If there are IR ports on your computer, it is possible that they are interfering with the serial port communications. Disable the IR ports on your computer when running the scan tool.

17) **Upon program start-up, I get an error that says 'Exception in Eprinter' and then get an access violation. What do I do?**
- It's possible that the printer driver that is installed on your computer is corrupted. Remove the printer driver and then reinstall it and then the scan tool software should run without error.

18) **I'm getting errors that do not make sense. Is there a way to check the integrity of my system?**
- The first step should be to run scan disk. After that, there are some system integrity checks that should be run if you have Windows 98. From the Windows task bar, select Start, then Programs, then Accessories, then System Tools, then System Information. From the System Information menu, select Tools, then System File Checker. Select Scan for Altered Files and then select the Start button. If there is a system error, select Restore and restore the file from your Windows 98 CD. Once the System File Checker is run, exit from the screen and then from the Tools menu again, select Registry Checker. Once that is complete, from the Tools menu again, check the Version Conflict Manager to check for any conflicting files.

19) **I received my Scan Tool Package but no User's Manual. Where is my User's Manual?**
- The User's Manual is now located on CD. It is in a PDF format and can only be read or printed using Adobe Acrobat Reader. Adobe Acrobat Reader is included on the same CD as the manual in the Reader folder. Alternatively, all of the information can be found in the Scan Tool Software Help. To purchase a printed copy of the User's Manual, call the EASE Sale's Office at 570-465-9060.

20) **I am connected to the vehicle and there are values in the parameter grid, but when I look on the charts, there aren't any traces (lines) in the charts for some of the parameters. How do I get all the traces to show on the charts?**
- Sometimes the actual possible Minimum and Maximum value for a particular parameter is so great, that the line is actually drawn very close to one of the axis and can't be seen. Hit the Autoscale button on the toolbar at the top of the screen (the button with the A on it) to immediately change the Minimum and Maximum values of the scale to the actual low and high value of the parameter since the scan was started.

- Wait for all the parameters that are displayed in the grid to have a value (no N/A's in the Value column) before displaying the charts.
- Most vehicles that connect with the VPW interface allow the packing of parameter data for faster information. Some do not. When this occurs, the traces do not appear as they should on the charts for all parameters. Try the following: If you have the GM Enhanced professional version 1.0.6.53 or earlier, or the GM Enhanced personal version 1.0.6.57 or earlier, or the Generic professional version 1.4.5.38 or earlier, or Generic personal version 1.4.5.41 or earlier, then create an icon on the desktop for the easescan.exe (or the gmobd2.exe if you have the GM OBD II Enhanced tool). Right click on the icon and select Properties from the menu that is displayed. On the Properties window, select the Shortcut tab. Where is says Target: , you will see the path to the exe. At the end of what is already typed in there (if there is a double quote there, enter the following after that), enter a space and then type nodpid. Click OK on the properties window and start the software using the icon you created. The tool should now connect. If you have GM Enhanced professional version 1.0.7.62 or later, or GM Enhanced personal version 1.0.7.65, or OBD II Generic professional version 1.4.10.42, or OBD II Generic personal version 1.4.10.45 or earlier, then under the Options menu on the parameter grid screen, select Fast Data Packets so that the check mark is no longer on and then reset the tool. The tool should now connect.

Vehicle Specific Questions

1) **I have an OBD II Kia vehicle and can't connect to the software. What can I do?**
- Connecting to a Kia vehicle can be tricky. There are typically two controllers that respond – a powertrain controller and a transmission controller. In order to keep the powertrain controller responding and therefore get the larger number of parameters on the screen, you need to do the following: Connect all hardware to the vehicle and computer and start the software. Select the vehicle and once the Communication Screen is displayed, start the engine. You'll notice after a short period of time, that the tool will disconnect. When this happens, turn the vehicle off and then quickly turn the key to the 'On' position only. The software will connect back up automatically. Go to the parameter grid screen and once the parameter values fill in, you can start the vehicle and the powertrain controller will remain in communication.

2) **I have an OBD II Subaru vehicle and the I/M monitors always say not completed. Is there something wrong with my vehicle?**
   - Some Subaru vehicles clear the I/M monitors when the vehicle is turned off. After driving the vehicle, leave it running and plug in the scan tool to check you monitors.

3) **I have an OBD II BMW vehicle and my Hand Held QuikCode will not communicate. What can I do?**
   - Some BMW vehicles will not connect to the Hand Held QuikCode until the vehicle is warmed up. Warm up the vehicle and then try again.

4) **I have an OBD II Ford vehicle and some of the generic data is reading 0 when there should be a value (O2 sensors, or vehicle speed for example). What is the problem and what can I do?**
   - Some OBD II Ford vehicles, even though they support a generic parameter, will never send any data other than zero. However, the Ford Enhanced Parameter signal set typically does include enhanced parameter data for the non-valid generic data. Also note, some Ford vehicles will start sending valid O2 data once the vehicle is warmed up.

5) **I tried using my GM OBD II Enhanced tool but almost all of the parameters fell out of the list after I connected to the vehicle. Why aren't they supported?**
   - The exact vehicle that you are trying to connect to with GM OBD II Enhanced tool must be vehicle selected when you try to connect the software. Check the VIN of the vehicle you are trying to read data from and select the appropriate vehicle (year, make, model, and engine size) from the Select New Vehicle screen. If the incorrect vehicle is selected, all but the generic parameters will fall out of the list. When the correct vehicle is selected, the parameters stay in the list.
   - The vehicle does not support the way the scan tool requests the information. If you have the Professional Version 1.0.6.53 or earlier, or the Personal version 1.0.6.57 or earlier, then create an icon on the desktop for the easescan.exe (or the gmobd2.exe if you have the GM OBD II Enhanced tool). Right click on the icon and select Properties from the menu that is displayed. On the Properties window, select the Shortcut tab. Where is says Target: , you will see the path to the exe. At the end of what is already typed in there (if there is a double quote there, enter the following after that), enter a space and then type nodpid. Click OK on the properties window and start the software using the icon you created. The parameters should now stay in the list. If you have Professional version 1.0.7.62 or later, or Personal version 1.0.7.65, then under the Options menu on the parameter grid screen, select Fast Data Packets so that the check box is no longer on and then reset the tool. The parameters should now stay in the list.

6) **I have a 1996 General Motors vehicle and the scan tool won't connect or all the values won't display with my Generic OBD II Scan Tool or my GM Enhanced OBD II scan tool. What can I do?**
   - Most GM vehicles allow packing of parameter data for faster information. Some vehicles do not. If the scan tool cable status says 'Connected' and you have the correct COM port selected and you still won't connect, you can try the following: If you have the GM Enhanced professional version 1.0.6.53 or earlier, or the GM Enhanced personal version 1.0.6.57 or earlier, or the Generic professional version 1.4.5.38 or earlier, or Generic personal version 1.4.5.41 or earlier, then create an icon on the desktop for the easescan.exe (or the gmobd2.exe if you have the GM OBD II Enhanced tool). Right click on the icon and select Properties from the menu that is displayed. On the Properties window, select the Shortcut tab. Where is says Target: , you will see the path to the exe. At the end of what is already typed in there (if there is a double quote there, enter the following after that), enter a space and then type nodpid. Click OK on the properties window and start the software using the icon you created. The tool should now connect. If you have GM Enhanced professional version 1.0.7.62 or later, or GM Enhanced personal version 1.0.7.65, or OBD II Generic professional version 1.4.10.42, or OBD II Generic personal version 1.4.10.45 or earlier, then under the Options menu on the parameter grid screen, select Fast Data Packets so that the check mark is no longer on and then reset the tool. The tool should now connect.

7) **I'm connected to a GM OBDI RWAL controller and can't determine what the error codes are. How do I figure it out?**
   - For the RWAL controller, the possible DTCs are listed on the Main DTC screen, however, the status (Fault or OK) is not displayed. To determine the RWAL DTC number, observe the flashing brake lamp on the vehicle dash. In counting the brake lamp flashes, count the number of short flashes starting from the long flash. Include the long flash as a count. Note that sometimes the first count sequence is short because the flashout started with the count already in progress. Subsequent counts, however, will be accurate. If there is more than one failure, only the first recognized failure code will be retained and flashed.