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Manual: _____ Publication Number: _____

Vehicle Model: _____ Model Year: _____

Do you find procedures properly organized and easy to follow? ☐ Yes ☐ No

If not, please explain: _____

_____

_____

Manual page numbers: _____

Are there any important procedures or other information presently not in this manual that you would like to see included? ☐ Yes ☐ No

If yes, please describe: _____

_____

_____

Did you find any errors in the procedures or illustrations? ☐ Yes ☐ No

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Mack Trucks, Inc.

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V-MAC® III Support Software User's Guide

SERVICE DIAGNOSTICS

CUSTOMER DATA PROGRAMMING

DEALER PROGRAMMING SOFTWARE

New — July 2004

ATTENTION

The information in this manual is not all inclusive and cannot take into account all unique situations. Note that some illustrations are typical and may not reflect the exact arrangement of every component installed on a specific chassis.

The information, specifications, and illustrations in this publication are based on information that was current at the time of publication.

SAFETY INFORMATION

SAFETY INFORMATION

Advisory Labels

Cautionary *signal words* (Danger-Warning-Caution) may appear in various locations throughout this manual. Information accented by one of these signal words must be observed to minimize the risk of personal injury to service personnel, or the possibility of improper service methods which may damage the vehicle or cause it to be unsafe. Additional Notes and Service Hints are used to emphasize areas of procedural importance and provide suggestions for ease of repair. The following definitions indicate the use of these advisory labels as they appear throughout the manual:

⚠ DANGER

Activities associated with* Danger *indicate that death or serious personal injury may result from failing to heed the advisory. Serious personal injury may be equated to career-ending injury.

⚠ WARNING

Activities associated with *Warning* indicate that personal injury may result from failing to heed the advisory. In this case, personal injury is not equated to career-ending injury, but results in possible change in quality of life.

⚠ CAUTION

*Activities associated with **Caution** indicate that product damage may result from failing to heed the advisory. Caution is not used for personal injury.*

NOTE

A procedure, practice, or condition that is essential to emphasize.

SERVICE HINT

A helpful suggestion that will make it quicker and/or easier to perform a procedure, while possibly reducing service cost.

Service Procedures and Tool Usage

Anyone using a service procedure or tool not recommended in this manual must first satisfy himself thoroughly that neither his safety nor vehicle safety will be jeopardized by the service method he selects. Individuals deviating in any manner from the instructions provided assume all risks of consequential personal injury or damage to equipment involved.

Also note that particular service procedures may require the use of a special tool(s) designed for a specific purpose. These special tools must be used in the manner described, whenever specified in the instructions.

⚠ WARNING

1. **Before starting a vehicle, always be seated in the driver's seat, place the transmission in neutral, apply the parking brakes and push in the clutch pedal.**
2. **Before working on a vehicle, place the transmission in neutral, set the parking brakes, and block the wheels.**
3. **Before towing the vehicle, place the transmission in neutral and lift the rear wheels off the ground, or disconnect the driveline to avoid damage to the transmission during towing.**

⚠ DANGER

Engine-driven components such as Power Take-Off (PTO) units, fans and fan belts, driveshafts and other related rotating assemblies, can be very dangerous. Do not work on or service engine-driven components unless the engine is shut down. Always keep body parts and loose clothing out of range of these powerful components to prevent serious personal injury. Be aware of PTO engagement or nonengagement status. Always disengage the PTO when not in use.

⚠ DANGER

Do not work under a vehicle that is supported only by a hydraulic jack. The hydraulic jack could fail suddenly and unexpectedly, resulting in severe personal injury or death. Always use jackstands of adequate capacity to support the weight of the vehicle.

REMEMBER,
SAFETY . . . IS NO ACCIDENT!

SAFETY INFORMATION

Mack Trucks, Inc. cannot anticipate every possible occurrence that may involve a potential hazard. Accidents can be avoided by recognizing potentially hazardous situations and taking necessary precautions. Performing service procedures correctly is critical to technician safety and safe, reliable vehicle operation.

The following list of general shop safety practices can help technicians avoid potentially hazardous situations and reduce the risk of personal injury. DO NOT perform any services, maintenance procedures or lubrications until this manual has been read and understood.

- Perform all service work on a flat, level surface. Block wheels to prevent vehicle from rolling.
- DO NOT wear loose-fitting or torn clothing. Remove any jewelry before servicing vehicle.
- ALWAYS wear safety glasses and protective shoes. Avoid injury by being aware of sharp corners and jagged edges.
- Use hoists or jacks to lift or move heavy objects.
- NEVER run engine indoors unless exhaust fumes are adequately vented to the outside.
- Be aware of hot surfaces. Allow engine to cool sufficiently before performing any service or tests in the vicinity of the engine.
- Keep work area clean and orderly. Clean up any spilled oil, grease, fuel, hydraulic fluid, etc.
- Only use tools that are in good condition, and always use accurately calibrated torque wrenches to tighten all fasteners to specified torques. In instances where procedures require the use of special tools which are designed for a specific purpose, use only in the manner described in the instructions.
- Do not store natural gas powered vehicles indoors for an extended period of time (overnight) without first removing the fuel.
- Never smoke around a natural gas powered vehicle.

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ABOUT THIS MANUAL

INTRODUCTION TO V-MAC® SUPPORT SOFTWARE

Software Organization

This version of V-MAC support software is made up of two separate applications.

- Service Support Software consists of two programs:
  - — *SERVICE DIAGNOSTICS*
  - — *CUSTOMER DATA PROGRAMMING*
- Dealer Programming Software consists of one program (*DEALER PROGRAMMING*) that incorporates all functions contained in *DATA PROGRAMMING* and *PRODUCT SOFTWARE PROGRAMMING.*

NOTE

These two applications (Service Support Software and Dealer Programming Software) are available by software download from the MACK Extranet and as a single CD-ROM that must be set up in two different directories.

ONLINE HELP FUNCTION

Each of the V-MAC support software programs is now equipped with an online help function (similar to Windows Help), which provides all of the information contained in this user guide. Simply press **F1** to access online help.

Software Distribution

The customer edition of V-MAC support software contains the Service Support Software application only, whereas the dealer edition includes both the Service Support Software and the Dealer Programming Software applications.

User Guide Organization

The SOFTWARE INSTALLATION section guides the user through installation of both applications and provides information concerning hardware requirements, vehicle connections and software configurations. This section also provides accessing instructions.

The SERVICE DIAGNOSTICS section provides screen summaries, feature descriptions and programming information for the *SERVICE DIAGNOSTICS* program.

The CUSTOMER DATA PROGRAMMING section provides screen summaries, feature descriptions and programming information for the *FLEET DATA* and *CUSTOMER DATA PROGRAMMING* program.

The DEALER PROGRAMMING SOFTWARE section provides screen summaries and programming information for the *DEALER PROGRAMMING* program and V-MAC Online web-based software, as well as programming instructions and worksheets for reprogramming and reflashing the Electronic Control Units (ECUs) and the Vehicle Information Profiler (V.I.P.™), version 4.0.

The GLOSSARY section provides definitions for commonly used V-MAC terms and abbreviations.

The FEATURE INDEX section provides a comprehensive index of V-MAC features.

Two feature location flow charts are located at the back of this book.

- *SERVICE DIAGNOSTICS* features for Step 2 and above are outlined in **8-358-1**.
- *CUSTOMER DATA PROGRAMMING* features for Step 2 and above are outlined in **8-358-2**.

V-MAC II USER INFORMATION

Although the V-MAC support software covers both V-MAC II and III systems, this user guide is designed to support V-MAC III. However, user information for V-MAC II is provided via online help and through the V-MAC II User Guide (8-302).

SOFTWARE INSTALLATION

SOFTWARE INSTALLATION INTRODUCTION

About Installation

Installation of V-MAC support software consists of installing both Service Support Software and Dealer Programming Software. Because the installation procedure is similar for both applications, only the Service Support Software installation will be described.

The installation programs were designed to install V-MAC support software on a Windows® 2000 Professional, XP Professional or higher computer.

NOTE

V-MAC support software cannot run directly from the program CD-ROM provided by Mack Trucks, Inc., and therefore, MUST be installed on the hard drive. The original program CD-ROM should be saved as a backup copy of the software.

NOTE

SERVICE DIAGNOSTICS, *CUSTOMER DATA PROGRAMMING* and *DEALER PROGRAMMING* are designed to run individually and cannot be run at the same time.

Installation Requirements

Before installing this software, be sure that the minimum hardware requirements are met. (Refer to “Hardware Requirements” on page 8.)

SOFTWARE INSTALLATION DESCRIPTION AND OPERATION

Installing V-MAC Support Software

To install the V-MAC support software (CD-ROM) on a CD-ROM drive, use the following procedure:

1. Insert CD-ROM into the CD-ROM drive (usually drive D:\).
2. Review the “Readme.txt” for further installation instructions.

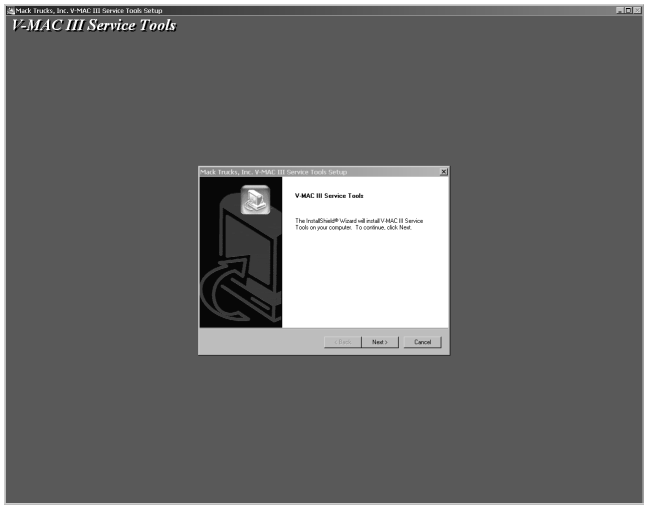

Figure 1 — Setup Screen

3. At the Setup status screen, click on the ***Next*** button.
4. At the License Agreement screen, page down to read the Service Support Software License Agreement. Click on the ***Yes*** button to accept the agreement or click on the ***No*** button to reject the agreement and close the setup.

NOTE

To install V-MAC III Service Tools, you must accept this agreement.

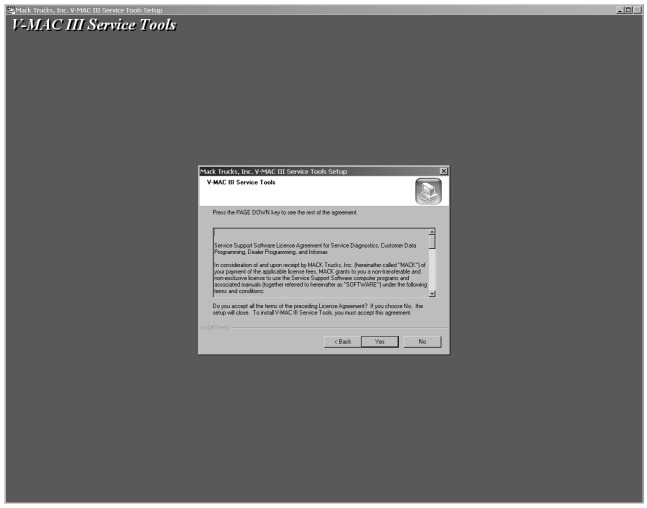

Figure 2 — License Agreement Screen

5. At the Choose Destination Folder screen, click on the ***Next*** button to use the MACK recommended destination folder or click on the ***Browse*** button to select another folder destination.

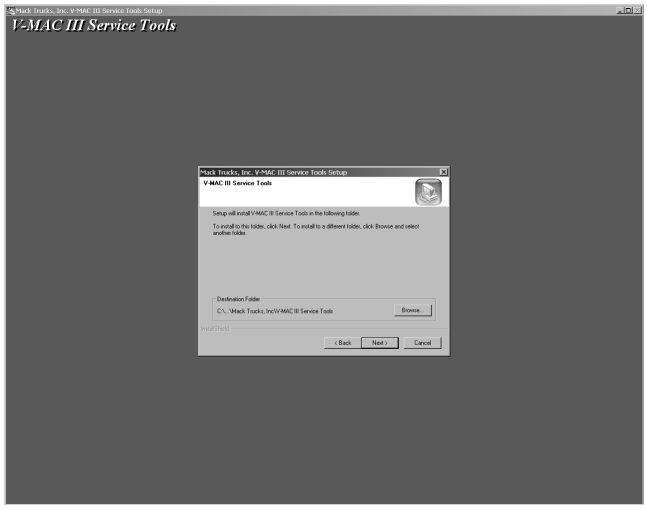

Figure 3 — Choose Destination Folder

NOTE

Mack Trucks, Inc. does not recommend changing the destination folder.

6. If all of the settings are correct, click on the ***Next*** button to continue.

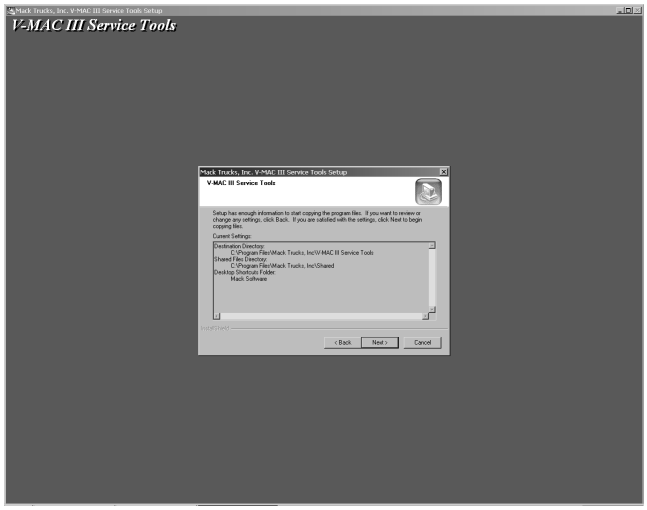

Figure 4 — Copy Files

The computer will begin copying the files.

NOTE

The system may ask you to view the Service Text. It is recommended that you do because the Service Text may contain special installation notes and other important information.

7. When installation is complete, click on the ***Finish*** button.

   Repeat the process to install Dealer Programming.

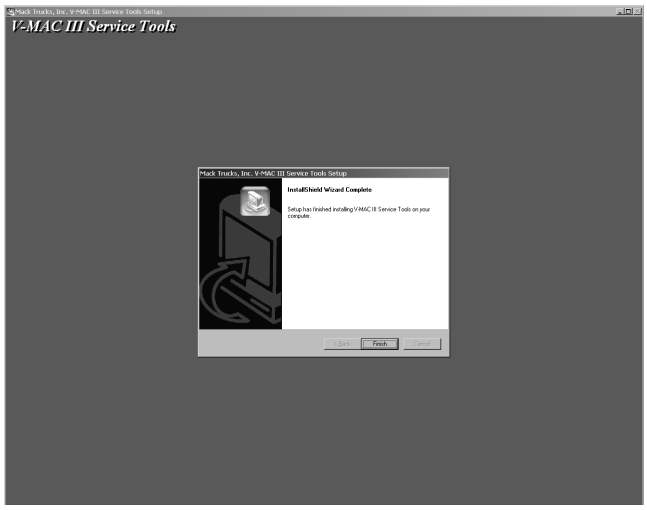

Figure 5 — Installation Complete

Remember to remove the CD-ROM from the drive and store properly.

Connecting the Computer to the Vehicle

To use V-MAC support software, the computer must be connected to the vehicle using a communication interface (RP1210A-compliant serial link adapter). Refer to “Communication Interface” on page 9 for communication interface information.

USING THE DATALINK ADAPTER

To connect the datalink adapter:

1. Turn the computer on and let it boot (start) completely.
2. Connect the datalink adapter end to the associated communication port on the computer.

   Depending on the configuration of the computer, it may be necessary to use an adapter or gender changer. Adapters and gender changers are readily available at most electronic supply stores.
3. Connect the J1708 connector of the RP1210A-compliant data link adapter to the serial communications port on the vehicle (located under the dash to the left of the steering column).
4. Turn the ignition key to the *ON* position.

To disconnect the datalink adapter:

1. Turn the ignition key to the *OFF* position.
2. Disconnect the J1708 connector of the RP1210A-compliant datalink adapter from the serial communications port on the vehicle.
3. Disconnect the datalink adapter end of the RP1210A-compliant datalink adapter from the serial port on the computer (remove any adapters or gender changers).
4. Turn the computer off.

Accessing V-MAC Support Software

Always remember to connect the interface and turn the ignition key to the *ON* position before accessing V-MAC support software.

This software includes three separate programs:

- *SERVICE DIAGNOSTICS*
- *CUSTOMER DATA PROGRAMMING*
- *DEALER PROGRAMMING*

Two methods can be used to access V-MAC support software:

- MACK Software folder
- Start Menu

USING THE MACK SOFTWARE FOLDER

1. Double-click on the MACK software folder located on the PC’s desktop.
2. Double-click on the desired application to run.

USING THE START MENU

1. Click on the ***Start*** button.
2. Select ***Programs***.
3. Select ***Mack Software***.
4. Select the desired program.

Configuring the Software

Before using V-MAC support software, it must be properly configured.

To configure the Service Support Software:

1. Start either *SERVICE DIAGNOSTICS* or *CUSTOMER DATA PROGRAMMING*. For Service Diagnostics, click on the ***Utilities*** button and then the ***Preferences*** button. For Customer Data Programming, click on the ***Preferences*** button.
2. Select Preferences.
3. Choose settings for each of the fields (refer to the "SOFTWARE CONFIGURATION FIELDS" on page 7).
4. Click on the ***OK*** button.

To configure the Dealer Programming Software:

1. Start *DEALER PROGRAMMING* and click on the ***Utilities*** tab.
2. Select ***Preferences.***
3. Choose settings for each of the fields (refer to the "SOFTWARE CONFIGURATION FIELDS" on page 7).
4. Click on the ***OK*** button.

SOFTWARE CONFIGURATION FIELDS

Communications Port — Most systems will use COM 1 as the communications port.

RP1210A Device Name — Most systems will use J1708 as the protocol.

International Unit Type — Set to either metric or English display units.

Language — At this time, only English is available.

Exiting V-MAC Support Software

NOTE

Always exit V-MAC support software before turning off the computer.

There are three ways to exit V-MAC support software:

- Click on the ***Quit*** button (from the main menu).
- Select ***File*** and then ***Exit*** (for Dealer Programming).
- Click on the **X** in the top right corner of the screen at any time.

NOTE

Always cycle the key switch after exiting *CUSTOMER DATA PROGRAMMING*.

Uninstalling V-MAC Software

To access the Uninstall program, use the following steps:

1. Click on the ***Start*** button.
2. Select ***Settings***.
3. Select ***Control Panel***.
4. Select ***Add/Remove Programs***.
5. Select the appropriate file.
6. Click on the ***Add/Remove*** button.

For assistance with installing or uninstalling V-MAC support software, please contact the Mack Trucks, Inc. Systems Support Center (800-247-0039). Hours are 8:00 a.m. to 5:00 p.m. (Eastern time), Monday through Friday.

SOFTWARE INSTALLATION SPECIAL TOOLS AND EQUIPMENT

Hardware Requirements

If you are planning to purchase a new desktop PC, this is the current recommended minimum configuration. Although PCs with lesser configuration may run MACK applications, this is the minimum configuration recommended for new purchases:

FOR DESKTOP:

Processor — Pentium III, 500 MHz Minimum; 1.0 GHz or faster preferred

Operating System — Microsoft® Windows 2000 Professional or XP Professional

RAM — 128 MB minimum; 256 MB preferred

Hard Drive — 10 GB minimum; 40 GB preferred

RS-232 Serial Communications Port — 16550 UART equipped DB9 9-pin serial port (mandatory)

Input Devices — Mouse or other pointing device

Removable or Other (Storage) Media — CD-ROM drive 24X or faster minimum; 3.5″ floppy disk drive recommended

Display — SVGA Color (1024 X 768)

101 KEY Keyboard

Parallel or USB Port — Recommended for printer

V-MAC® Datalink Adapter — RP1210A-compliant datalink adapter

FOR NOTEBOOK PC:

Processor — Pentium III, 500 MHz Minimum; 1.0 GHz or faster preferred

Operating System — Microsoft® Windows 2000 Professional or XP Professional

RAM — 128 MB minimum; 256 MB preferred

Hard Drive — 10 GB minimum; 40 GB preferred

RS-232 Serial Communications Port — 16550 UART equipped DB9 9-pin serial port (mandatory)

Removable or Other (Storage) Media — Swappable CD-ROM/Floppy disk drive

PCMCIA Slots — 2

Display — 14.1″, active color

Parallel or USB Port — Recommended for printer

V-MAC® Datalink Adapter — RP1210A-compliant datalink adapter

Communication Interface

The V-MAC support software can be used with a serial link adapter.

SERIAL LINK ADAPTER

The MACK data serial link adapters endorsed as certified and recommended for use with the V-MAC support software include the Kent-Moore J 38351-D and the RP1210A-compliant J 45537 PLC adapter model.

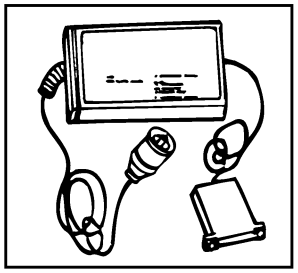

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Figure 6 — Serial Link Adapter

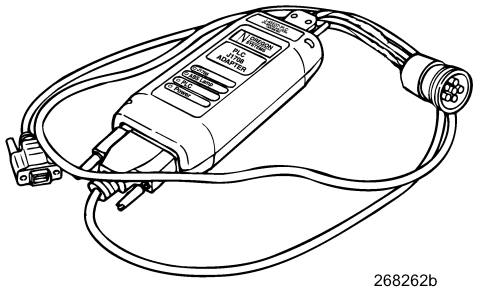

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Figure 7 — RP1210A-Compliant Adapter, J 45537

NOTE

J 38351, J 38351-A, J 38351-B and J 38351-C cannot be used as the communication interface for the V-MAC support software.

NOTE

V-MAC support software is not compatible with Personal Digital Assistants (PDAs) such as PalmPilot™* software. Therefore, ensure that your PDA synchronization software is not running when using the V-MAC software. To do otherwise may cause interference in reading the COM port. Or, you can choose another computer to use PDAs.

* PalmPilot™ is a trademark of the 3 Com Corporation.

SERVICE DIAGNOSTICS

SERVICE DIAGNOSTICS INTRODUCTION

About Service Diagnostics

The V-MAC system offers a variety of diagnostic tools and modes which can be accessed using *SERVICE DIAGNOSTICS*.

Although this version of *SERVICE DIAGNOSTICS* can be used with both V-MAC II and V-MAC III systems, the instructions contained in this manual were designed to support V-MAC III. For V-MAC II user information, refer to the online help and the V-MAC II User Guide (8-302).

Accessing Service Diagnostics

There are two ways to access *SERVICE DIAGNOSTICS*:

- If there is a Mack Software folder on the desktop, double-click on the folder. Then select the *SERVICE DIAGNOSTICS* icon.
- If there is no icon on the desktop, access the start menu, select ***Programs*** and select ***Mack Programs***. Then select ***Service Diagnostics***.

Online Help Function

This version of V-MAC support software features an online help function (similar to Windows Help). The online help includes all of the information contained in this user guide. Simply press **F1** to view the help topics.

Additional Information

The current **V-MAC III Service Manual, 8-211**, provides a complete description of the operation of the V-MAC III system, as well as instructions for performing diagnostics and repairs of system components.

For additional assistance, please contact the Mack Trucks, Inc. System Support Center at (800) 247-0039. Hours are 8:00 a.m. to 5:00 p.m. (Eastern time), Monday through Friday.

SERVICE DIAGNOSTICS VISUAL IDENTIFICATION

Refer to **Service Diagnostics for Windows (Version 2.8) Feature Location Flow Chart for V-MAC III, Step 2 and higher (8-358-1)** for an overview of Service Diagnostics features and functions.

Screen Summaries

Whenever Service Diagnostics (or Customer Data Programming) is launched, a pop-up screen will appear displaying the type of datalink connection being used. Below is an example of the RP1210A connection. Click on the ***OK*** button to acknowledge the message. The Service Diagnostics Main Menu will appear (please refer to “SERVICE DIAGNOSTICS MENU” on page 12 for more information).

Figure 8 — Datalink Connection Message (Using RP1210A Connection)

NOTE

If a different datalink adapter is desired, please refer to the “UTILITIES MENU” on page 13 for instructions.

SERVICE DIAGNOSTICS MENU

The Service Diagnostics Menu presents the available Service Diagnostics portion of the V-MAC Support Software. From this menu, you can access the following screens: Monitor Parameters, Fault Codes, Diagnostics, Special Diagnostic Modes and Utilities.

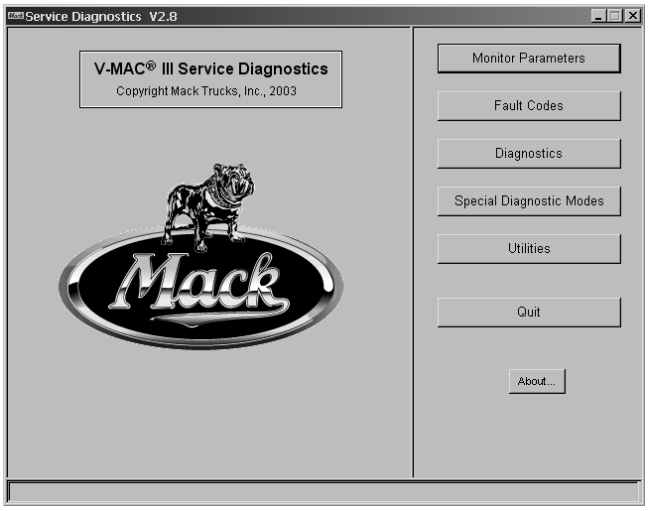

Figure 9 — Service Diagnostics Main Menu

Click on the ***Monitor Parameters*** button to use the parameter monitoring capabilities (refer to the "SAE PARAMETER MENU SELECTION SCREEN" on page 15).

Click on the ***Fault Codes*** button to view and clear faults (refer to "FAULT CODES MENU" on page 17).

Click on the ***Diagnostics*** button to use the V-MAC system's diagnostic tools (refer to "DIAGNOSTIC TOOLS MENU" on page 17).

Click on the ***Special Diagnostic Modes*** button to use the special diagnostic modes (refer to "SPECIAL DIAGNOSTIC MODES MENU" on page 18).

Click on the ***Utilities*** button to customize the Service Diagnostics configuration (refer to "UTILITIES MENU" on page 13).

Click on the ***Quit*** button to exit the program.

UTILITIES MENU

The Utilities Menu allows you to modify several functions which affect the way the program operates when performing operations from other parts of the program.

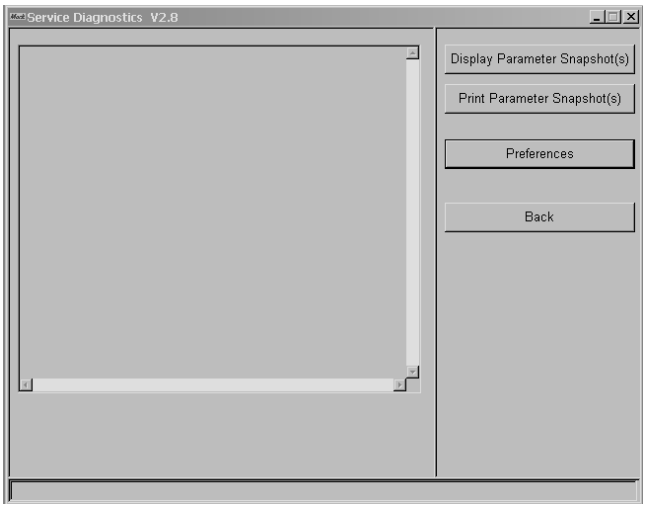

Figure 10 — Utilities Menu

Click on the ***Display Parameter Snapshot(s)*** button to select a snapshot to be displayed.

Click on the ***Print Parameter Snapshot(s)*** button to select a snapshot to be printed.

Click on the ***Preferences*** button to access the current configuration settings (please refer to "PREFERENCES ENTRY FORM" on page 14 for instruction).

Click on the ***Back*** button to return to the Service Diagnostic menu.

PREFERENCES ENTRY FORM

The Preferences entry form, selected from the Utilities Menu screen, consists of three viewable forms: Common, Service Software and Dealer Programming. When using Service Diagnostics or Customer Data Programming, the Common entry form is used. For information on using the Preferences entry form with Dealer Programming, please refer to “PREFERENCES ENTRY FORM” on page 130.

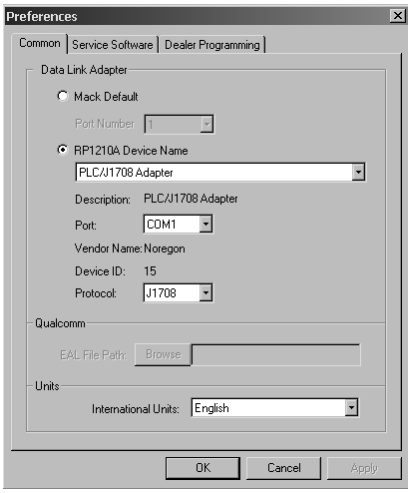

Figure 11 — Preferences Common Entry Form

The primary function of the Common entry form is to select the datalink adapter type and to select the units of measure.

NOTE

In order to use an RP1210A-compliant adapter, the associated driver software must be installed prior to selecting the adapter type. Please refer to the documentation that came with your datalink adapter for instructions.

Click on the ***Common*** tab.

To modify the RP1210A-compliant adapter type selection, do the following:

1. Click on the ***RP1210A Device Name*** radio button.
2. Click on the ***Device Name*** drop-down arrow and select the adapter desired.
3. Click on the ***Port*** drop-down arrow and select the com port desired.
4. Click on the ***Protocol*** drop-down arrow and select the protocol type desired (protocol 1708 is recommended).
5. Click on the ***Apply*** button to save the change.
6. Click on the ***OK*** button to save changes.

NOTE

Do not use the “Mack Default” selection as your adapter type.

To modify the Units of Measure, click on the ***International Units*** drop-down arrow and select from English, Imperial English or Metric. Click on the ***Apply*** button to save the change.

SAE PARAMETER MENU SELECTION SCREEN

The SAE Parameter Menu Selection Screen allows you to choose which of the parameters you want displayed during a monitoring session. Up to 30 items may be selected for Standard Display and an additional 7 items may be selected for Advanced Display. You can also change the default list of parameters from this submenu.

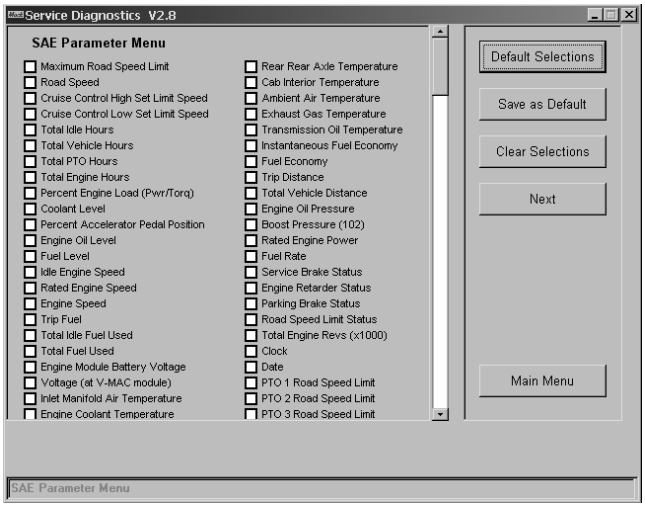

Figure 12 — SAE Parameter Menu Selection Screen

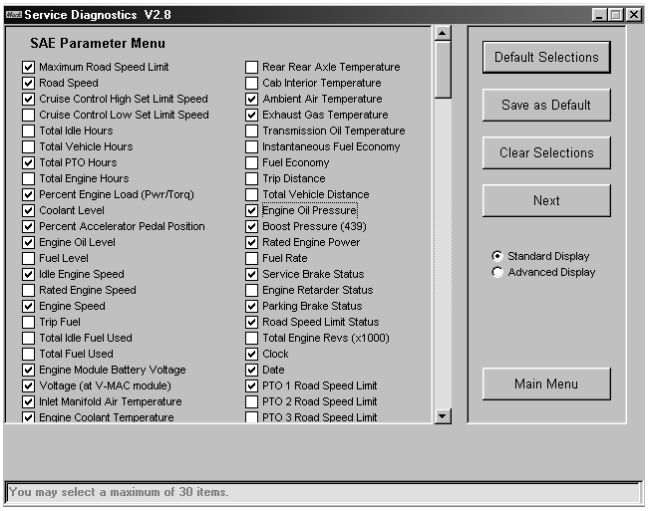

Figure 13 — SAE Parameter Menu Selection Screen (for ASET™ AC Engines Only)

Click on the ***Default Selections*** button to select the default parameters.

Click on the ***Save as Default*** button to save the current selections as the default. Note that there can only be one set of default parameters.

Click on the ***Clear Selections*** button to clear the current parameter selections.

Click on the ***Next*** button to begin parameter monitoring with the current selections (refer to “PARAMETER MONITORING DISPLAY SCREENS” on page 19).

Click on the ***Main Menu*** button to return to the Service Diagnostics menu.

Below is a table containing the available items in the SAE Parameter Menu Selection screen.

SAE PARAMETER MENU SELECTIONS

Maximum Road Speed Limit	Front Rear Axle Temperature
Road Speed	Rear Rear Axle Temperature
Cruise Control High Set Limit Speed	Cab Interior Temperature
Cruise Control Low Set Limit Speed	Ambient Air Temperature
Total Idle Hours	Exhaust Gas Temperature
Total Vehicle Hours	Transmission Oil Temperature
Total PTO Hours	Instantaneous Fuel Economy
Total Engine Hours	Fuel Economy
Percent Engine Load (Pwr/Torq)	Trip Distance
Coolant Level	Total Vehicle Distance
Percent Accelerator Pedal Position	Engine Oil Pressure
Engine Oil Level	Boost Pressure
Fuel Level	Rated Engine Power
Idle Engine Speed	Fuel Rate
Rated Engine Speed	Service Brake Status
Engine Speed	Engine Retarder Status
Trip Fuel	Parking Brake Status
Total Idle Fuel Used	Road Speed Limit Status
Total Fuel Used	Total Engine Revs (x1000)
Engine Module Battery Voltage	Clock
Voltage (at V-MAC module)	Date
Inlet Manifold Air Temperature	PTO 1 Road Speed Limit
Engine Coolant Temperature	PTO 2 Road Speed Limit
Fuel Temperature	PTO 3 Road Speed Limit
Engine Oil Temperature	PTO 4 Road Speed Limit

FAULT CODES MENU

The Fault Codes Menu allows you to view and clear faults. From this submenu, you can enter the All Active Faults screen, Controller Fault Table and choose the controller type.

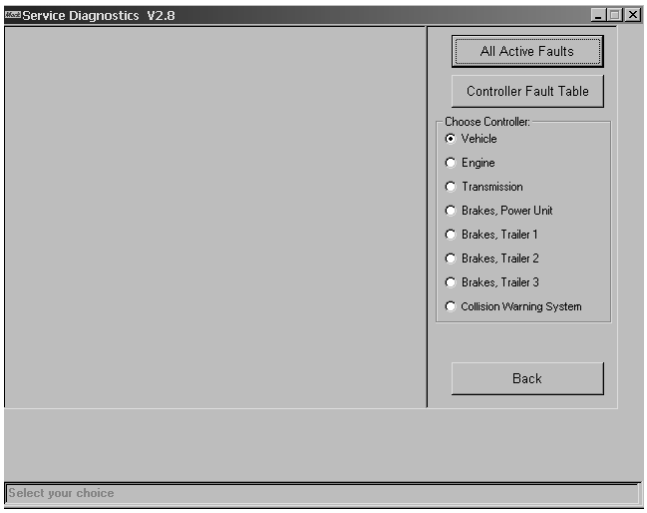

Figure 14 — Fault Codes Menu

Click on the ***All Active Faults*** button to view the Active Faults display screen (refer to “ALL ACTIVE FAULTS DISPLAY SCREEN” on page 19).

Select a desired controller — click on the appropriate radio button — to view under the Choose Controller area of the screen.

Then, click on the ***Controller Fault Table*** button to view the specified controller of the Fault Table display screen (refer to “CONTROLLER FAULT TABLE DISPLAY SCREEN” on page 20).

Click on the ***Back*** button to return to the Service Diagnostics menu.

DIAGNOSTIC TOOLS MENU

The Diagnostic Tools Menu contains the following seven screens: Vehicle Information, Programming History, Switch Status Display, Vehicle Data Log Display, Maintenance Data Log Display, Adaptive Cruise Control Status, Fault Reporter Configuration, and Calibrate Throttle Pedal. Each screen contains functions to aid in diagnosing vehicle problems and acquiring vehicle information.

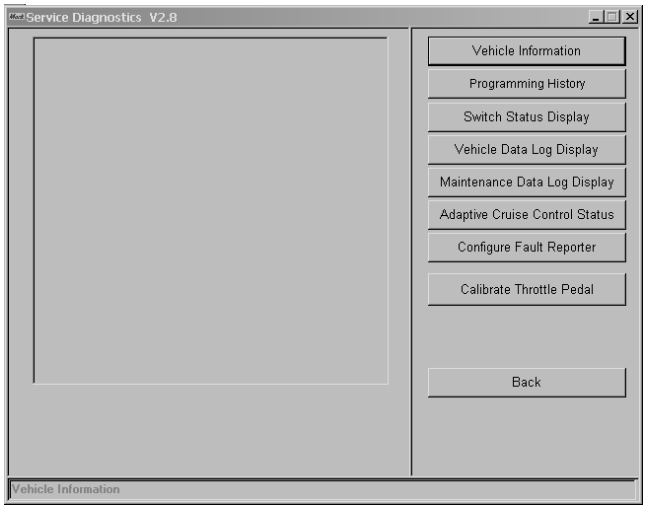

Figure 15 — Diagnostic Tools Menu

Click on the ***Vehicle Information*** button to view the Vehicle Information display screen (refer to “VEHICLE INFORMATION DISPLAY SCREEN” on page 22).

Click on the ***Programming History*** button to view the programming history for each ECU (refer to “PROGRAMMING HISTORY DISPLAY SCREEN” on page 23).

Click on the ***Switch Status Display*** button to view the current status of a variety of switches (refer to “SWITCH STATUS DISPLAY SCREEN” on page 23).

Click on the ***Vehicle Data Log Display*** button to view the Vehicle Data Log (refer to “VEHICLE DATA LOG DISPLAY SCREEN” on page 23).

Click on the ***Maintenance Data Log Display*** button to view the Maintenance Data Log (refer to “MAINTENANCE DATA LOG DISPLAY SCREEN” on page 24).

Click on the ***Adaptive Cruise Control Status*** button to view the current status of faults in SmartCruise (refer to “ADAPTIVE CRUISE CONTROL SCREEN” on page 25).

Click on the ***Configure Fault Reporter*** button to set the Fault Reporter to run under *Occurrence Mode* or *History Mode* and to select what type of faults should be captured (refer to “FAULT REPORTER CONFIGURATION SCREEN” on page 26).

Click on the ***Calibrate Throttle Pedal*** button to run the Calibrate Throttle Pedal function if an accelerator pedal has been replaced (refer to “CALIBRATE THROTTLE PEDAL DIALOG SCREEN” on page 27).

Click on the ***Back*** button to return to the Service Diagnostics menu.

SPECIAL DIAGNOSTIC MODES MENU

The Special Diagnostic Modes Menu contains the following eight screens: Chassis Dyno Mode, Cylinder Cut-Out Test, Engine Run-Up Test, Engine Compression, Engine Brake Test, Wiggle Wire Test, Cylinder Balance Test, and VTG Test. Each screen contains functions to aid in testing vehicle performance and diagnosing vehicle problems.

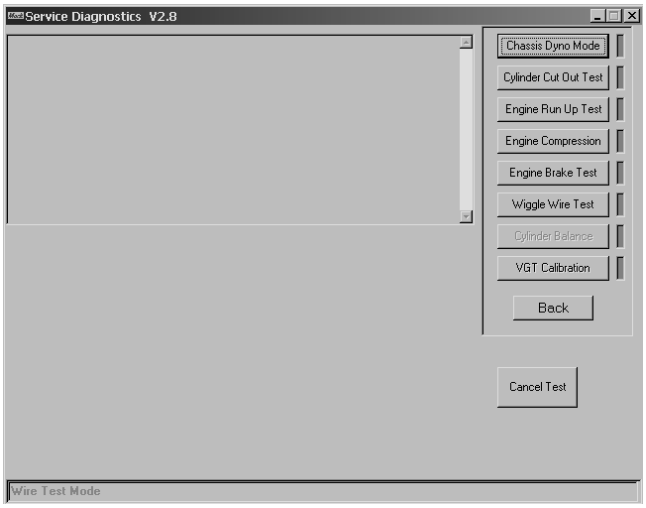

Figure 16 — Special Diagnostic Modes Menu

Click on the ***Chassis Dyno Mode*** button to initiate Chassis DYNO Mode (refer to “CHASSIS DYNO MODE DISPLAY SCREEN” on page 27). Cycle power with key switch before continuing with other tests.

Click on the ***Cylinder Cut-Out Test*** button to initiate specialized cylinder tests (refer to “CYLINDER CUT-OUT TEST DISPLAY SCREEN” on page 28). Cycle power with key switch before continuing with other tests.

Click on the ***Engine Run-Up Test*** button to initiate testing on the unit pumps (refer to “ENGINE RUN-UP TEST SCREEN” on page 28). Cycle power with key switch before continuing with other tests.

Click on the ***Engine Compression*** button to initiate a specialized cylinder compression test (refer to “ENGINE COMPRESSION TEST SCREEN” on page 29). Cycle power with key switch before continuing with other tests.

Click on the ***Engine Brake Test*** button to run engine brake solenoid test (refer to “ENGINE BRAKE TEST SCREEN” on page 29). Cycle power with key switch before continuing with other tests.

Click on the ***Wiggle Wire Test*** button to initiate the wiggle wire test (refer to “WIGGLE WIRE TEST SCREEN” on page 30). Cycle power with key switch before continuing with other tests.

Click on the ***Cylinder Balance Test*** button to initiate the cylinder balance test (refer to “CYLINDER BALANCE TEST” on page 30). Cycle power with key switch before continuing with other tests.

Click on the ***VTG Test*** button to initiate the VTG test (refer to “VTG VANE POSITION CALIBRATION TEST” on page 31). Cycle power with key switch before continuing with other tests.

Click on the ***Back*** button to return to the Service Diagnostics menu.

PARAMETER MONITORING DISPLAY SCREENS

The Parameter Monitoring screen, accessed from the ***Monitor Parameters*** button, allows you to monitor the parameters selected, view faults, change the idle speed and take a picture of the current displayed screen.

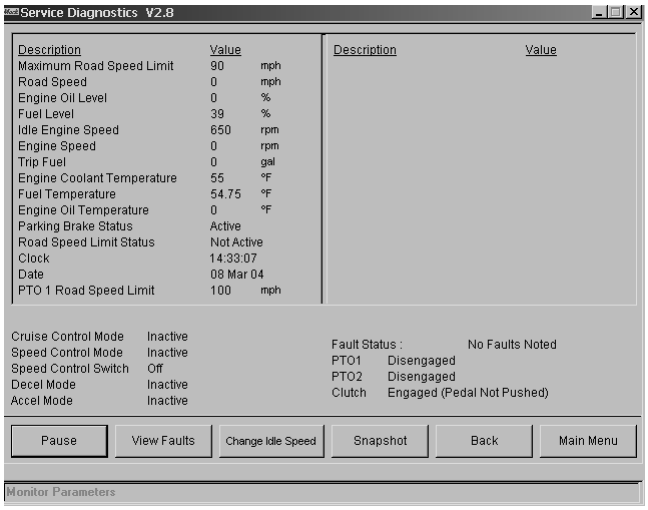

Figure 17 — Parameters Monitoring Standard Display Screen

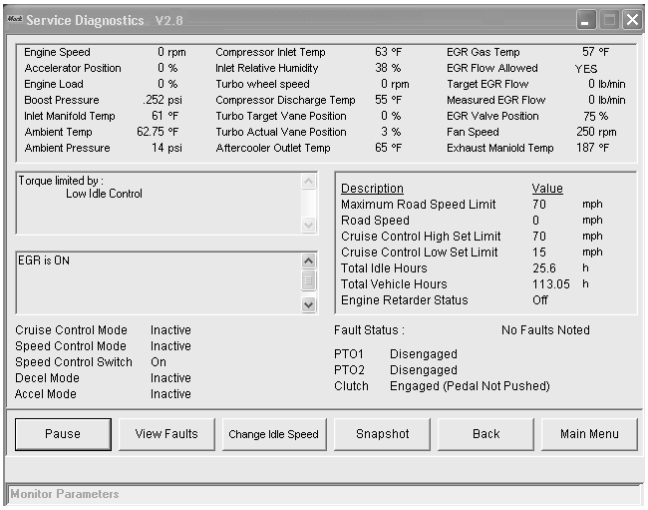

Figure 18 — Parameters Monitoring Advanced Display Screen (for ASET™ AC Engines Only)

NOTE

The Parameters Monitoring Advanced Display screen is for ASET™ AC engines (1MS334 or higher EECU software) only.

First, make your selections using the SAE Parameter Menu screen and then click on the ***Next*** button to continue (see Figure 12).

Click on the ***Pause*** button to pause live monitoring.

Click on the ***View Faults*** button to view the fault table.

Click on the ***Change Idle Speed*** button to change the low-idle speed (please refer to “CHANGE IDLE SPEED ENTRY FORM” on page 32 for instructions).

NOTE

Engine must be running with park brake set and accelerator not depressed.

Click on the ***Snapshot*** button to take a picture of the current display screen.

Click on the ***Back*** button to return to the SAE Parameter menu.

Click on the ***Main Menu*** button to return to the Service Diagnostics menu.

The parameter values are continuously updated as the data is received on the serial data line. If active faults are detected during a monitoring session, the Fault Status item on the screen will change from “No Faults Noted” to “Faults Occurred.” To find out what the fault is, click on the ***View Faults*** button.

ALL ACTIVE FAULTS DISPLAY SCREEN

The Active Faults screen allows you to view faults that are presently occurring. A description of the fault is displayed in a scrollable window.

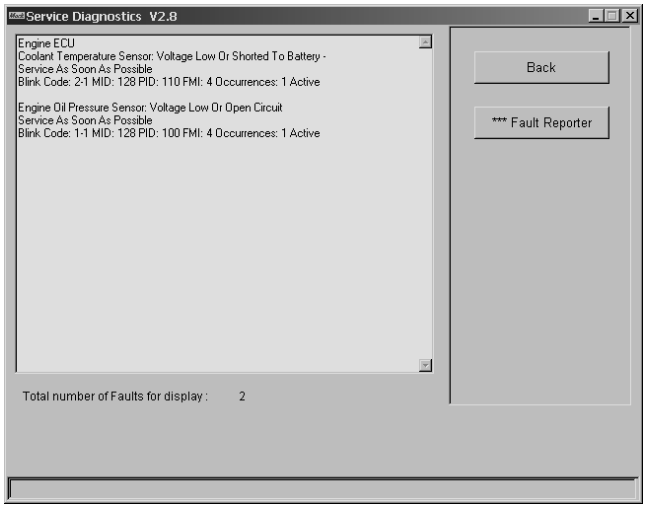

Figure 19 — All Active Faults Display

Click on the ***Fault Reporter*** button to view, print, save and/or clear faults from the fault record (refer to “FAULT REPORTER SCREEN” on page 20).

Click on the ***Back*** button to return to the Fault menu.

CONTROLLER FAULT TABLE DISPLAY SCREEN

The Controller Fault Table screen displays the current faults and allows you to print and clear the fault codes.

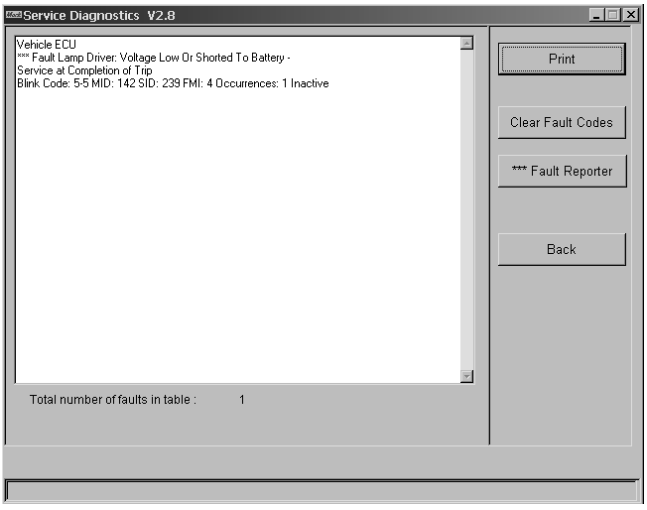

Figure 20 — Controller Fault Table Display Screen

Click on the ***Print*** button to print the Fault Table display screen.

Click on the ***Clear Fault Codes*** button to clear the Fault Table.

Click on the ***Fault Reporter*** button to view, print, save and/or clear faults from the fault record (refer to “FAULT REPORTER SCREEN” on page 20).

Click on the ***Back*** button to return to the Fault menu.

FAULT REPORTER SCREEN

The Fault Reporter screen displays detailed information during and around the time when a fault occurs. The Fault Reporter logs any fault found on a vehicle. This information can be viewed, printed, saved and erased. The Fault Reporter can contain up to four faults and has two operating modes: Occurrence (default) and History.

Occurrence Mode records operating conditions that exist when a fault is detected via the J1587 line. When a fault becomes active, the data is written to the Fault Reporter and saved. Although information will not be lost to an intermittent power failure, it can be overwritten if a new fault becomes active. Therefore, it is recommended that the fault be viewed and printed if a record is needed.

History Mode checks the operating data every few seconds until a fault is detected that matches a specified trigger fault. When detected, the fault and its operating condition are written and saved to the Fault Reporter. The data will not be overwritten because Fault Reporter becomes “frozen” to provide a history of what was happening on the chassis just before the fault occurred. To overwrite the data, a technician must reset the history mode or change the Fault Reporter to occurrence mode. Some history information may be lost if an intermittent power failure occurs before the trigger fault is detected.

The Fault Reporter can log faults from the transmission controller, ABS, Vorad, Qualcomm and the Engine and Vehicle ECUs. Four registers, or “buckets,” of memory, are available to log faults. The first bucket holds the most recent fault.

NOTE

Fault Reporter will not always log the most recent fault because of active time limits and the fact that times can vary between buckets. For example, if a fault comes in and all the buckets are in use, the fault will be dropped. The active faults must become inactive by clearing the Fault Reporter (refer to “CLEARING FAULT REPORTER” on page 21).

One bucket is reserved for Engine ECU faults and another for Vehicle ECU faults. The fourth bucket is reserved for either an Engine or Vehicle ECU fault.

Each bucket can look for a specific fault. Each bucket has a MID filter, a PID or SID filter and a FMI filter. Any of these filters can be set to log “ALL.” Consequently, you can set up a log to record all PID 100 faults from any MID.

NOTE

The tool requires that the user have some knowledge of the J1587 protocol because there is no help by design.

Each bucket also has a time limit for which it will be active (60 seconds by default) and can log the fault for a total of 10 times. Once a bucket’s time limit has expired, it becomes available to log another fault. Fault Reporter will enter faults into the oldest available bucket that allows the fault to pass in that bucket’s filters. Data in Fault Reporter moves out and into the fault log table to be replaced with new data.

NOTE

History Mode writes operation data to all four buckets every two seconds (programmable) in a circular loop.

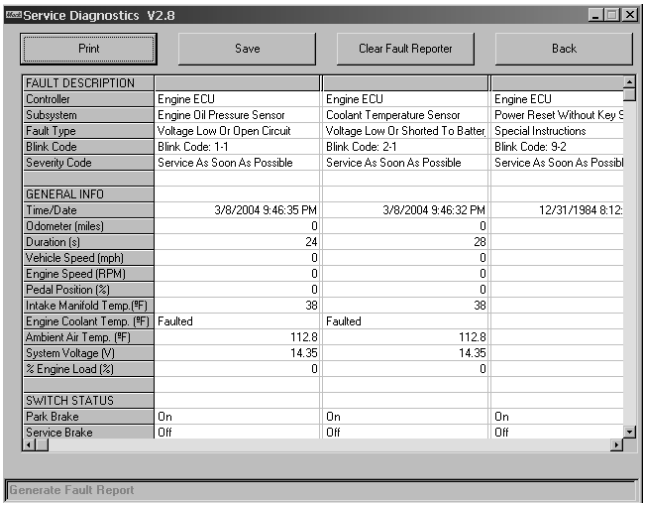

Figure 21 — Fault Reporter Screen

Click on the ***Print*** button to print the Fault Reporter Table display screen.

Click on the ***Save*** button to save data to the appropriate directory.

Click on the ***Clear Fault Reporter*** button to remove faults from the Fault Reporter table.

NOTE

It is recommended that if you clear faults from the Fault Reporter, clear the ECU fault tables also so that they and Fault Reporter stay synchronized.

Click on the ***Back*** button to return to the Active Faults Table display.

CLEARING FAULT REPORTER

There are four ways to clear data from the Fault Reporter:

- Clear Fault Reporter directly.
- Clear either fault table (VECU or EECU).
- Switch between History and Occurrence modes.
- Allow Fault Reporter to automatically clear data if a fault does not become active after 50 engine starts.

FAULT REPORTER LOG ITEMS

Fault Reporter will log the following when a fault is discovered:

Item	Description
Time & Date Stamp	Time & Date Stamp when fault first occurred
Vehicle Distance	Odometer reading when fault first occurred
MID	MID of the module reporting the fault
PID or SID	PID or SID of fault
FMI	Fault FMI
Duration	Amount of time the fault was active
Vehicle Speed	Vehicle speed when fault became active
Engine Speed	Engine speed when fault became active
Accelerator Pedal	Pedal position when fault became active
Switches	All switch positions
Intake Temperature	Intake Manifold Temp. when fault active
Coolant Temperature	Engine Coolant Temp. when fault active
Ambient Air Temperature	Ambient temperature when fault active
Voltage	System voltage
Percent Engine Load	Percent engine load when fault became active
Speed Control Status	Cruise/brake/set/decel/resume/clutch modes
Inputs Faulted	Fault Reporter will tag critical items in this list that were faulted when a fault occurred: engine speed, vehicle speed, intake, coolant and ambient temperature
Time of up to 8 secondary occurrences	

NOTE: If the service tool finds a fault in the fault log that is also in the Fault Reporter, it will tag (***) to that fault, indicating that more information is available.

VEHICLE INFORMATION DISPLAY SCREEN

The Vehicle Information screen displays vehicle information and allows you to change the governor type. Changing the governor type affects the way the accelerator position is used to determine the driver's desired power or speed but doesn't affect the engine power or torque rise. You may choose the All Speed governor or an "automotive" type Mini-Max governor.

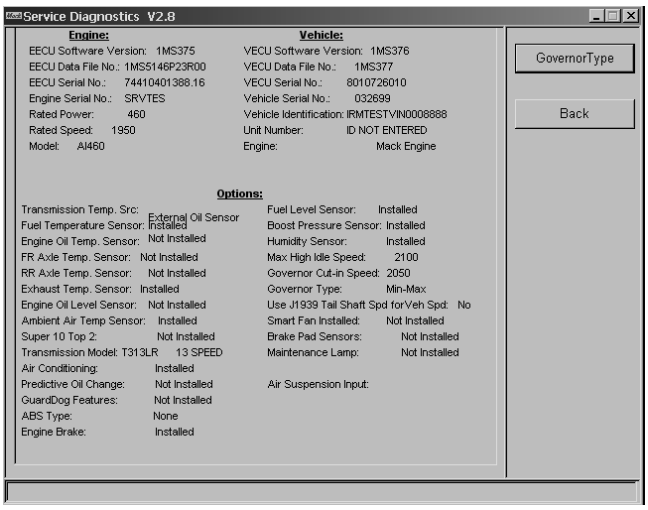

Figure 22 — Vehicle Information Display Screen

Click on the ***Governor Type*** button to change the governor type. Cycle power with the key switch for the governor change to take effect.

NOTE

When changing the governor type, make sure the engine is not running.

Click on the ***Back*** button to return to the Diagnostic Tools menu.

PROGRAMMING HISTORY DISPLAY SCREEN

The Programming History screen shows the programming history of the Vehicle and Engine ECU OEM, vehicle and engine data, customer data and fleet data.

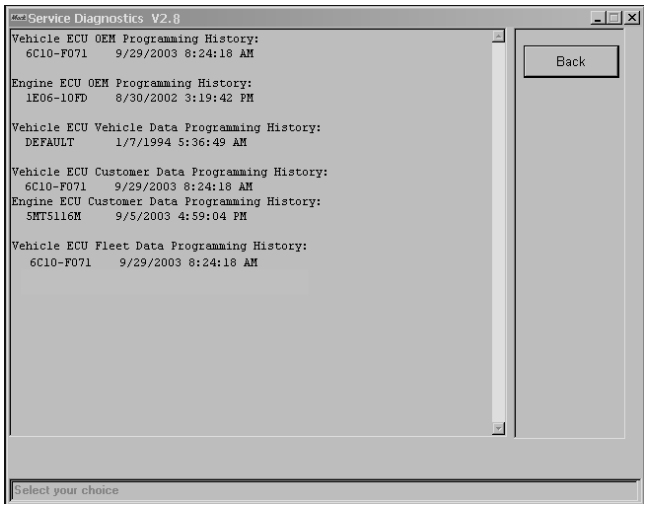

Figure 23 — Programming History Display Screen

Click on the ***Back*** button to return to the Diagnostic Tools menu.

SWITCH STATUS DISPLAY SCREEN

The Switch Status screen monitors and displays the current status of the cab-mounted switches. It is especially useful for diagnosing wiring problems associated with these switches.

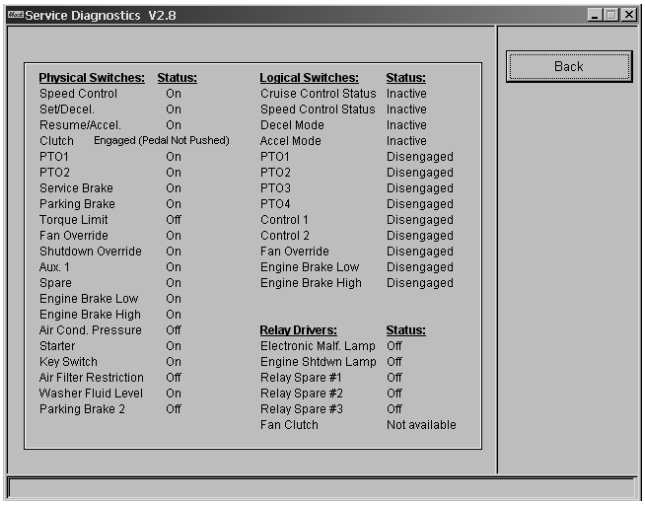

Figure 24 — Switch Status Display Screen

Click on the ***Back*** button to return to the Diagnostic Tools menu.

VEHICLE DATA LOG DISPLAY SCREEN

The Vehicle Data Log screen displays the life and trip information of the vehicle. The items shown under “Life” are the totals for each item. The totals accumulate from the date the vehicle was built or from the date the V-MAC module was changed or reprogrammed.

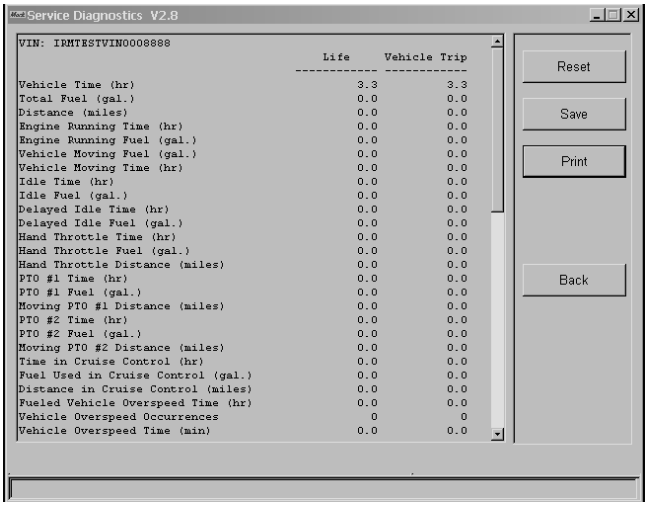

Figure 25 — Vehicle Data Log Display Screen

Click on the ***Reset*** button to reset the trip values of the Vehicle Data Log to zero.

Click on the ***Save*** button to save the Vehicle Data Log. A pop-up window will appear and ask for a location to save the text file information.

Click on the ***Print*** button to print the Vehicle Data Log.

Click on the ***Back*** button to return to the Diagnostic Tools menu.

MAINTENANCE DATA LOG DISPLAY SCREEN

The Maintenance Data Log screen displays maintenance items such as oil change and allows you to reset an item.

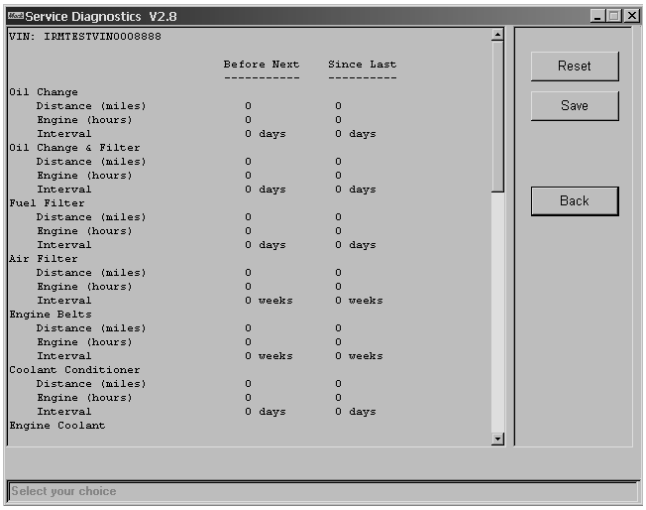

Figure 26 — Maintenance Data Log Display Screen

Click on the ***Reset*** button to call up the Maintenance Reset screen. Select the maintenance item you want to reset by clicking on the appropriate button.

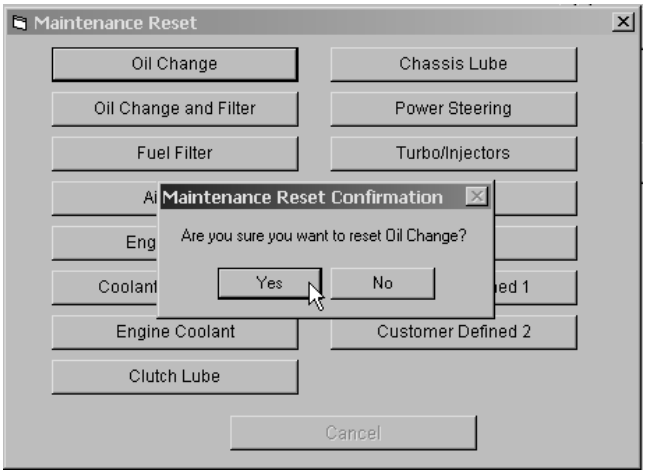

Figure 27 — Maintenance Reset Screen

When a maintenance item is selected, the Maintenance Reset Confirmation pop-up box will appear, asking if you are sure you want to reset the item. Click on the ***Yes*** button to reset the maintenance item, and return to the Maintenance Data Log screen.

Then, click on the ***Save*** button to save the Maintenance Data Log. A pop-up window will appear and ask for a location to save the text file information.

Click on the ***Cancel*** button to exit the Maintenance Reset screen

Click on the ***Back*** button to return to the Diagnostic Tools menu.

NOTE

To see changes made to maintenance items, you must back out and re-enter the Maintenance Data Log Display screen.

ENABLE PREDICTIVE OIL CHANGE MESSAGE

If available, the Enable Predictive Oil Change message permits you to enable this feature after an oil change reset. This feature must first be enabled in OEM Data (on the MACK database) via the **F3** Update Option screen of V-MAC.

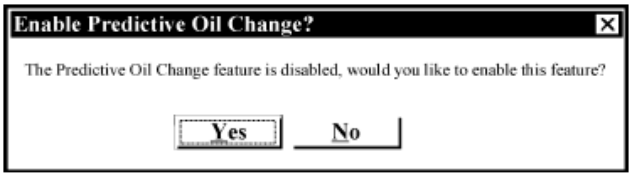

Figure 28 — Enable Predictive Oil Change Message

Click on the ***Yes*** button to enable Predictive Oil Change. A Caution message (see Figure 29) will appear with a list of qualifications. If the vehicle meets the requirement's list, click on the ***Yes*** button. The Predictive Oil Change feature will now be enabled.

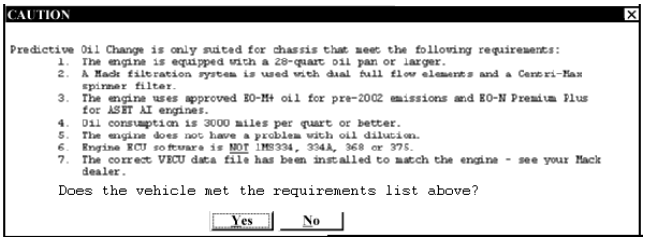

Figure 29 — Caution Message

N O T E

If available, Predictive Oil Change can only be enabled/disabled when resetting the oil change or oil & filter change.

N O T E

If available, as a standalone feature, Predictive Oil Change is supported with VECU software 1MS336 or higher.

N O T E

Predictive Oil Change is not available on MR and LE models. Predictive Oil Change must not be enabled if the engine ECU software is 1MS334, 1MS334A, 1MS368 or 1MS375.

For more information on Predictive Oil Change, refer to the “SERVICE DIAGNOSTICS FUNCTIONS” table on page 35.

ADAPTIVE CRUISE CONTROL SCREEN

The Adaptive Cruise Control screen allows you to view a detected fault in active cruise control. For more information about Adaptive Cruise Control, refer to the “SERVICE DIAGNOSTICS FUNCTIONS” table on page 35.

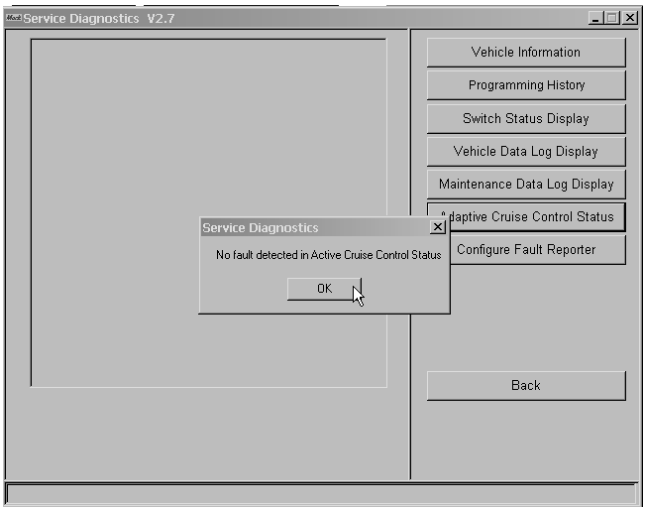

Figure 30 — Adaptive Cruise Control Screen

Click on the ***Adaptive Cruise Control*** button to view a detected fault.

Click on the ***Yes*** button to disable Adaptive Cruise Control and re-enable standard cruise control.

N O T E

Notify the driver that Adaptive Cruise Control is disabled.

Click on the ***Back*** button to return to the Diagnostic Tools menu.

N O T E

Additional information on Adaptive Cruise Control is available in the Eaton® VORAD® (EVT-300) Collision Warning System/SmartCruise® Troubleshooting Manual, 8-335.

FAULT REPORTER CONFIGURATION SCREEN

The Fault Reporter Configuration screen allows you to set the Fault Reporter to run under *Occurrence Mode* or *History Mode*. For more information refer to the “SERVICE DIAGNOSTICS FUNCTIONS” table on page 35.

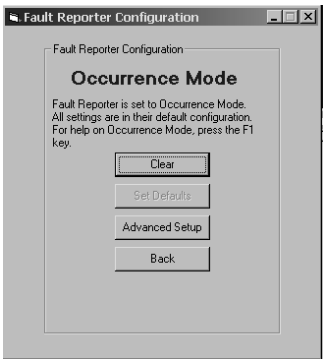

Figure 31 — Fault Reporter Configuration Screen

Click on the ***Clear*** button to clear data in the Fault Reporter.

NOTE

Data will be erased if you clear it; therefore, print a copy of the data before clearing the Fault Reporter if a record of the fault is desired.

Click on the ***Set Defaults*** button to select Fault Reporter default settings.

Click on the ***Advanced Setup*** button to select *Occurrence Mode* or *History Mode*, choose what type of faults to capture, decide the snapshot time between logged records, and define how long a record should be “saved” before being overwritten (refer to “FAULT REPORTER ADVANCED SETUP SCREEN” on page 26).

Click on the ***Back*** button to return to the Diagnostic Tools menu.

FAULT REPORTER ADVANCED SETUP SCREEN

The Fault Reporter Advanced Setup screen, accessed from the Fault Reporter Configuration screen, allows you to select the type of operating mode (History or Occurrence) to record a fault and four filters to record specific faults of interest.

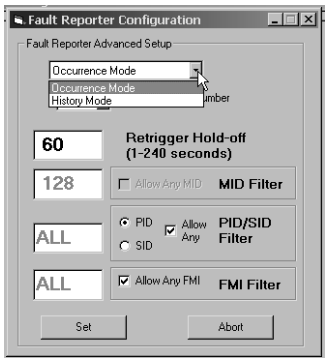

Figure 32 — Fault Reporter Advanced Setup Screen

NOTE

Expertise in J1587 protocol is required to program filters. Do not attempt to program filters if you have no such expertise. Improper configuration of the Fault Reporter Advanced Setup may lead to the omission of pertinent diagnostic information from the Fault Reporter table. Please refer to the Troubleshooting/SAE Message Descriptions section found in the V-MAC® III Service Manual, Mack Trucks, Inc. publication number 8-211, for additional information.

The Fault Reporter Advanced Setup screen also contains the Retrigger Hold-Off function, which decides how long the Fault Reporter will delay writing another incident of a previously recorded fault. For information on Fault Reporter Advanced Setup, refer to the “SERVICE DIAGNOSTICS FUNCTIONS” table on page 35.

CALIBRATE THROTTLE PEDAL DIALOG SCREEN

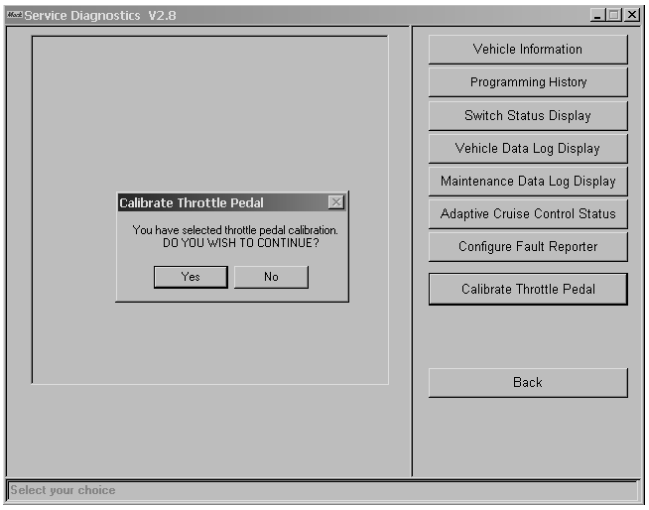

Figure 33 — Calibrate Throttle Pedal Dialog Screen

The Calibration Throttle Pedal procedure is available for Mack engines beginning with 1MS376 VECU software.

Click on the ***Calibrate Throttle Pedal*** button in the Diagnostics menu. The Calibrate Throttle Pedal dialog screen will appear.

Click on the ***Yes*** button to calibrate the throttle pedal (or click on the ***No*** button to cancel the procedure). The Calibrate Throttle Pedal Procedure Dialog screen will appear with a set of instructions.

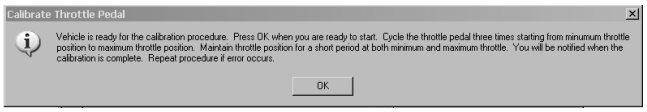

Figure 34 — Procedure Dialog Screen

The instructions are as follows:

1. Click on the ***OK*** button.
2. Press the accelerator pedal down and release (for a total of about 2 seconds from the down and up position of the accelerator pedal). Repeat two more times.
3. If the procedure is successful, you will receive a pop-up message indicating a successful calibration.
4. If the procedure fails, repeat the procedure.

To run this test on a Cummins engine, please refer to the “CUMMINS CALIBRATE THROTTLE PEDAL DIALOG SCREEN” on page 34.

CHASSIS DYNO MODE DISPLAY SCREEN

The Chassis Dyno Mode screen allows the vehicle to be operated on a dynamometer without creating a service brake fault code. During normal operation, V-MAC will drop the vehicle out of cruise control mode if a rapid deceleration without a service brake application is detected. During the chassis dyno mode, V-MAC ignores deceleration without a service brake application, allowing the vehicle to be operated on a dynamometer with cruise control turned in the ON position.

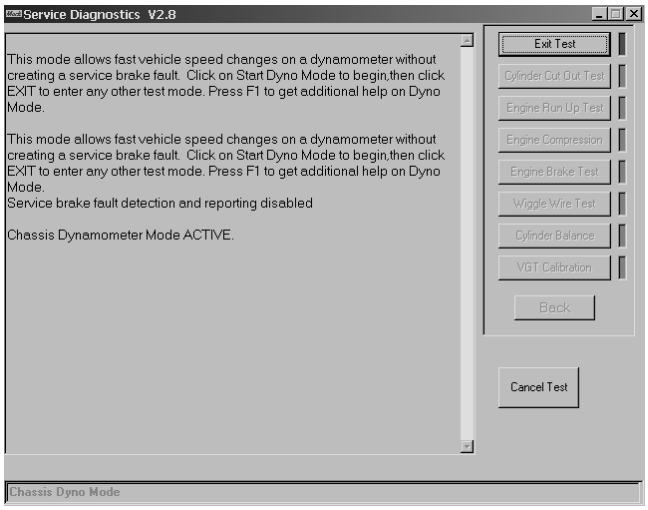

Figure 35 — Chassis Dyno Mode Screen

Click on the ***Chassis Dyno Mode*** button from the Special Diagnostics menu.

Click on the ***Start Test*** button to begin.

Click on the ***Exit*** button to enter another test mode.

Click on the ***Back*** button to return to the Diagnostic Tools menu.

NOTE

Be sure to cycle the key switch *OFF*, and wait at least 7 seconds. Then cycle the key switch back *ON* after the dynamometer tests are completed. Do NOT put the chassis back into operation with the Chassis DYNO Mode enabled.

CYLINDER CUT-OUT TEST DISPLAY SCREEN

The Cylinder Cut-Out Test screen allows you to individually test each cylinder at low idle to help identify the source of rough running or engine miss. For more information on this test, please refer to the “SERVICE DIAGNOSTICS FUNCTIONS” table on page 35.

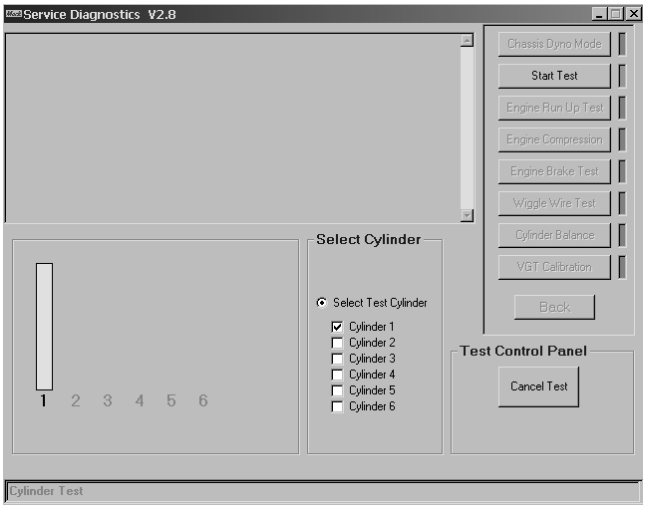

Figure 36 — Cylinder Cut-Out Test Screen

Click on the ***Cylinder Cut-Out Test*** button from the Special Diagnostics menu.

Select the appropriate test cylinder in the “Select Test Cylinder” area of the screen. The example in Figure 36 has selected cylinder 1.

Then, click on the ***Start Test*** button to test the selected cylinder.

Click on the ***Stop Test*** or ***Cancel Test*** button to end the test. Cycle power with key switch before continuing with other tests.

Click on the ***Back*** button to return to the Service Diagnostics menu.

ENGINE RUN-UP TEST SCREEN

The Engine Run-Up Test screen allows you to check the fuel delivery of each individual unit pump/injector pair to diagnose low power complaints and problems with rough running. This test will run up each pump three times. For more information on this test, please refer to the “SERVICE DIAGNOSTICS FUNCTIONS” table on page 35.

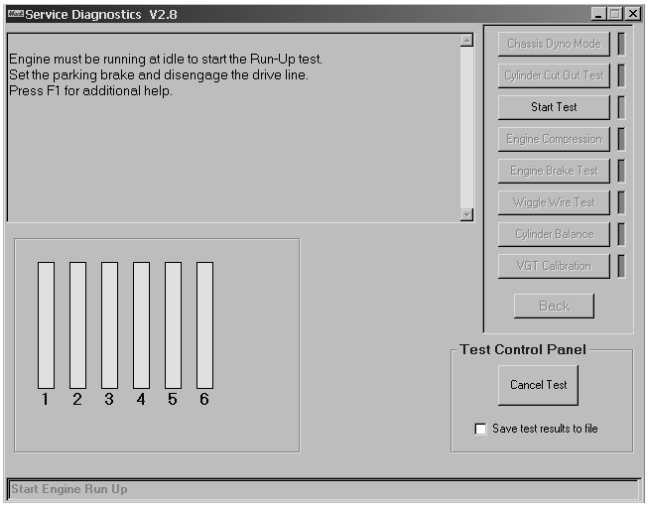

Figure 37 — Engine Run-Up Test Screen

NOTE

The engine must be running at idle with the parking brake ON and the driveline disengaged.

Click on the ***Engine Run-Up Test*** button from the Special Diagnostics menu.

Click on the ***Start Test*** button to test each individual unit pump/injector pair. Click the ***Stop Test*** button to end test. Cycle power with key switch before continuing with other tests.

To cancel a test, click on the ***Cancel Test*** button in the Test Control Panel area of the screen.

NOTE

To generate a report and save results, select “Save Test Results to File” — located at the bottom of the screen — and run test. At the finish of the test, a pop-up window will appear and ask for a location to save the text file.

Click on the ***Back*** button to return to the Service Diagnostics menu.

ENGINE COMPRESSION TEST SCREEN

The Engine Compression Test screen allows you to isolate and test the compression of each cylinder to help diagnose low power complaints and problems with rough running. For more information on this test, please refer to the "SERVICE DIAGNOSTICS FUNCTIONS" table on page 35.

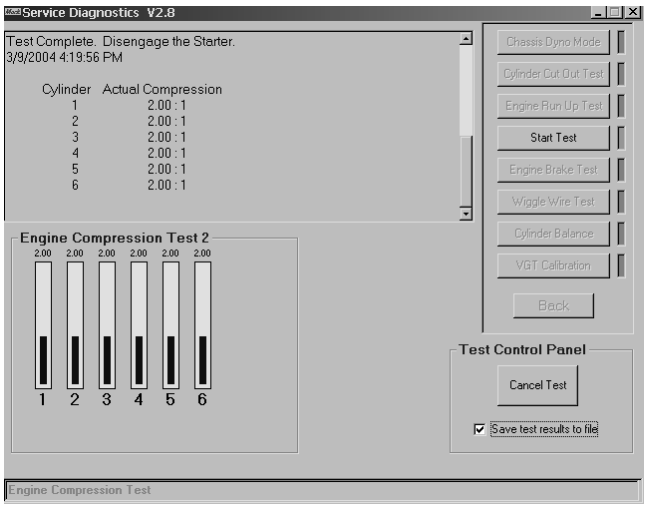

Figure 38 — Engine Compression Test Screen

Click on the ***Engine Compression*** button from the Special Diagnostics menu.

Click on the ***Start Test*** button to initiate the engine compression test.

NOTE

To generate a report and save results, select "Save Test Results to File" — located at the bottom of the screen — and run test. At the finish of the test, a pop-up window will appear and ask for a location to save the text file.

NOTE

The Starter must be engaged when prompted to run this test.

Click on the ***Stop Test*** button when finished.

Click on the ***Cancel Test*** button to end the test or allow the test to end itself. Cycle power with key switch before continuing with other tests.

Click on the ***Back*** button to return to Service Diagnostics menu.

ENGINE BRAKE TEST SCREEN

The Engine Brake Test screen lets you verify that the engine brake solenoids are electrically operational. For more information on this test, please refer to the "SERVICE DIAGNOSTICS FUNCTIONS" table on page 35.

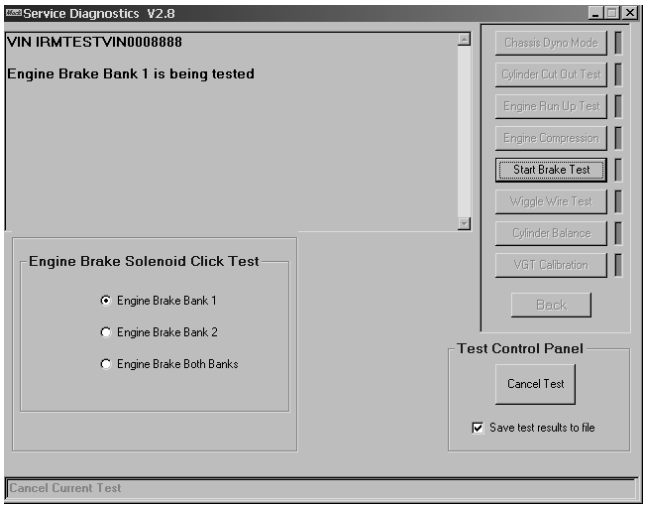

Figure 39 — Engine Brake Test Screen

Click on the ***Engine Brake Test*** from the Special Diagnostics menu.

Choose the engine brake to be tested under the Engine Brake Test area of the screen.

Then, click on the ***Start Brake Test*** button to initiate the engine brake solenoid test.

NOTE

Parking brake must be set to perform the current test.

NOTE

While test is being performed, listen for "clicking" sounds under the valve covers.

NOTE

To generate a report and save results, select “Save Test Results to File” — located at the bottom of the screen — and run test. At the finish of the test, a pop-up window will appear and ask for a location to save the text file.

Click on the ***Stop Test*** or ***Cancel Test*** button to end the test. Cycle power with key switch before continuing with other tests.

Click on the ***Back*** button to return to the Service Diagnostics menu.

WIGGLE WIRE TEST SCREEN

The Wiggle Wire Test screen helps to detect open or short conditions in the vehicle wiring harness or connectors. The test can be invoked at any time.

NOTE

It is assumed that a technician will supervise while the Wiggle Wire Test is running.

When the ***Start*** button is clicked, the test will run automatically and continuously. When the ***Exit*** button is clicked, the technician can go to any other screen in Service Diagnostics and monitor parameters or faults as appropriate. For more information on this test, please refer to the “SERVICE DIAGNOSTICS FUNCTIONS” table on page 35.

NOTE

For Step 5 systems (VECU s/w 1MS316A), this test is supported in the VECU only. For Step 8 and above systems (VECU s/w 1MS336, 1MS336A, 1MS349, and 1MS364 and EECU s/w 1MS327, 1MS363, 1MS334A and 1MS368), this test is supported in both the VECU and EECU.

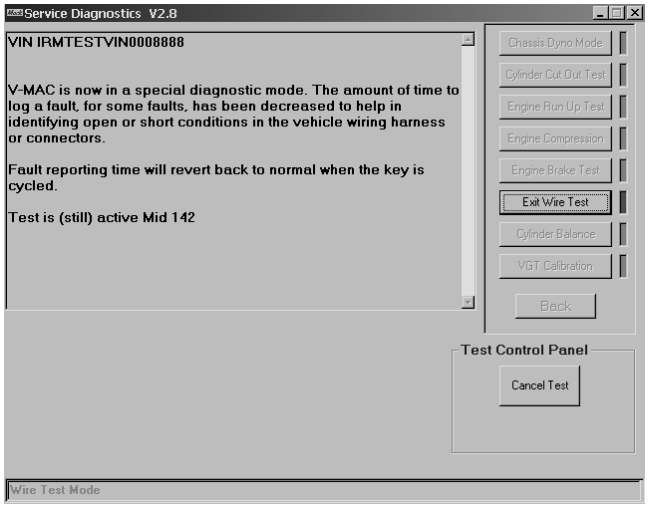

Figure 40 — Wiggle Wire Test Screen

Click on the ***Wiggle Wire Test*** button from the Special Diagnostics menu.

Click on the ***Start Wire Test*** button to enable wiggle wire mode.

Click on the ***Cancel Test*** button to cancel the test.

Click on the ***Exit Wire Test*** button to end the test. Cycle power with key switch before continuing with other tests.

Click on the ***Back*** button to return to the Service Diagnostics menu.

CYLINDER BALANCE TEST

The Cylinder Balance Test screen shows you how the Engine ECU is balancing the cylinders by measuring how much fuel is being displaced. The screen will display a graphical representation of a deviation from the average fuel usage.

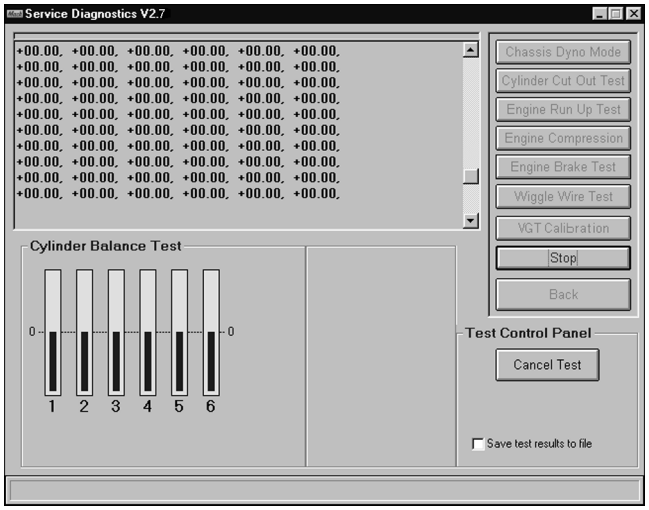

Figure 41 — Cylinder Balance Test Screen

Click on the ***Start Balance Test*** button to begin the test.

Click on the ***Stop*** button to stop the test.

Click on the ***Cancel Test*** button to cancel the test.

Click on the ***Back*** button to return to the Service Diagnostics menu.

NOTE

The Cylinder Balance Test is supported for Step 4 (EECU s/w 1MS38P2) ONLY.

VTG VANE POSITION CALIBRATION TEST

The VTG Vane Position Calibration Test screen helps to aid in determining whether boost pressure or power complaints are due to incorrect calibration. The test will automatically program the Engine ECU with the vane position's calibration data. Or, the tool will indicate that the sensor is out of range and should be replaced.

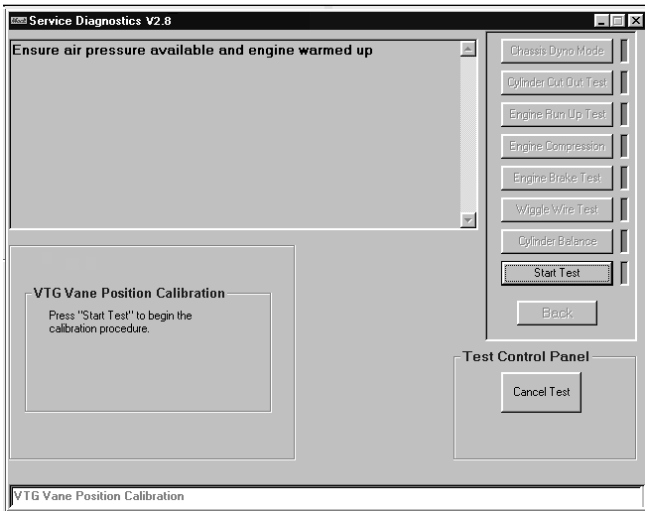

Figure 42 — VTG Vane Position Calibration Test Screen

Typically, this test is run when a new VTG Vane unit is installed.

NOTE

It is recommended that the technician performing this test have an assistant confirm that the actuator reaches its 0% and 100% stopped positions.

NOTE

To perform this test, the engine must be off, the ignition key turned to the ON position, the coolant temperature above 140°F and the turbocharger relatively cool (not to operating temperature). Also, ensure that primary and secondary air pressure is at least 110 psi.

NOTE

To generate a report and save results, select "Save Test Results to File" — located at the bottom of the screen — and run test. At the finish of the test, a pop-up window will appear and ask for a location to save the text file.

Click on the ***Start Test*** button to begin the VTG Vane Position Calibration test. Ensure that an assistant monitors the movement of the actuator.

Click on the ***Stop*** button to stop the test if needed.

Click on the ***Cancel Test*** button to cancel the test if needed.

Click on the ***Back*** button to return to the Service Diagnostics menu.

NOTE

The VTG Vane Position Calibration Test is supported for Step 2 and higher ASET™ AC engines (with EECU s/w 1MS334A, 1MS368, 1MS368A and 1MS378) only.

NOTE

If the actuator does not visibly reach its 100% stopped position, the test results have failed, even if the diagnostic tool reports a successful test. Either the air pressure is too low or the mechanism is binding and must be replaced.

CHANGE IDLE SPEED ENTRY FORM

The Change Idle Speed entry form, accessed from the Parameter Monitor Display screen, is used to change the low idle speed setting.

NOTE

To change the idle speed, the engine must be running with the park brake set and accelerator pedal not depressed.

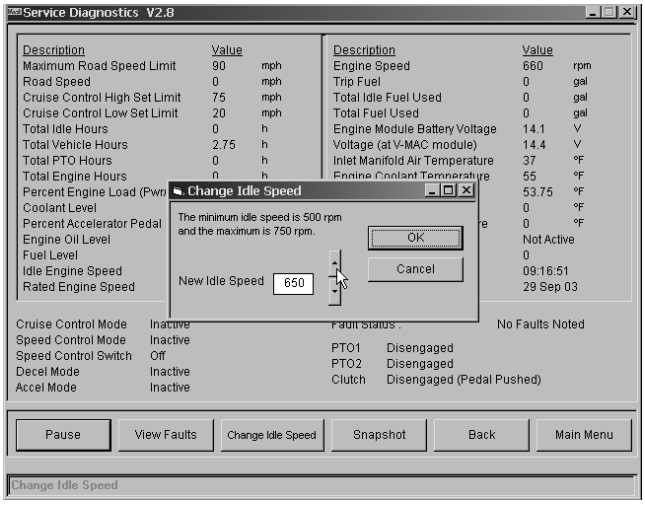

Figure 43 — Change Idle Speed Entry Form

Click on the ***Change Idle Speed*** button to launch the Change Idle Speed entry form. Adjust the new idle speed using the ***Up & Down*** arrow controls as shown in Figure 43. Click the ***OK*** button to accept the new idle speed or click on the ***Cancel*** button to exit the entry form without saving changes.

Cummins Screen Summaries

The following screens will appear if the vehicle is equipped with a Cummins engine (to identify that you are connected to a Cummins ECU, launch Service Diagnostics and go to Vehicle Information screen located in the Diagnostics portion of the software).

CUMMINS SERVICE DIAGNOSTICS MAIN MENU

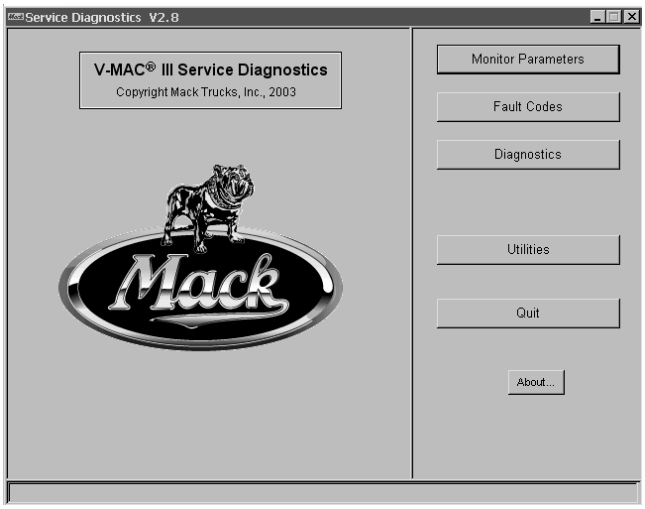

Figure 44 — Cummins Service Diagnostics Main Menu

This menu lists the available options for a vehicle equipped with a Cummins engine.

Click on the ***Monitor Parameters*** button to use the parameter monitoring capabilities (refer to the “CUMMINS SAE PARAMETER MENU SELECTION SCREEN” on page 33).

Click on the ***Fault Codes*** button to view and clear faults (refer to “FAULT CODES MENU” on page 17).

Click on the ***Diagnostics*** button to use the V-MAC system’s diagnostic tools (refer to “CUMMINS DIAGNOSTIC TOOLS MENU” on page 33).

Click on the ***Utilities*** button to customize the Service Diagnostics configuration (refer to “UTILITIES MENU” on page 13).

Click on the ***Quit*** button to exit the program.

CUMMINS SAE PARAMETER MENU SELECTION SCREEN

The Cummins SAE Parameter Menu Selection Screen allows you to chose which parameters you want to display during a monitoring session.

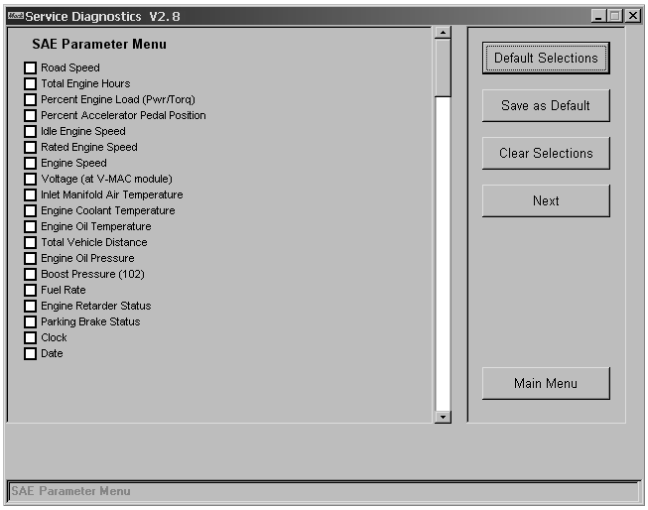

Figure 45 — Cummins SAE Parameter Menu Selection Screen

Click on the ***Default Selections*** button to select the default parameters.

Click on the ***Save As Default*** button to save the current selections as the default. Note that there can only be one set of default parameters.

Click on the ***Clear Selections*** button to clear the current parameter selections.

Click on the ***Next*** button to begin parameter monitoring with the current selections.

Click on the ***Main Menu*** button to return to the Cummins Service Diagnostics Menu.

CUMMINS DIAGNOSTIC TOOLS MENU

The Cummins Diagnostic Tools Menu contains three screens: Vehicle Information, Programming History and Calibrate Throttle Pedal. Each screen contains functions to aid in diagnosing vehicle problems and acquiring vehicle information.

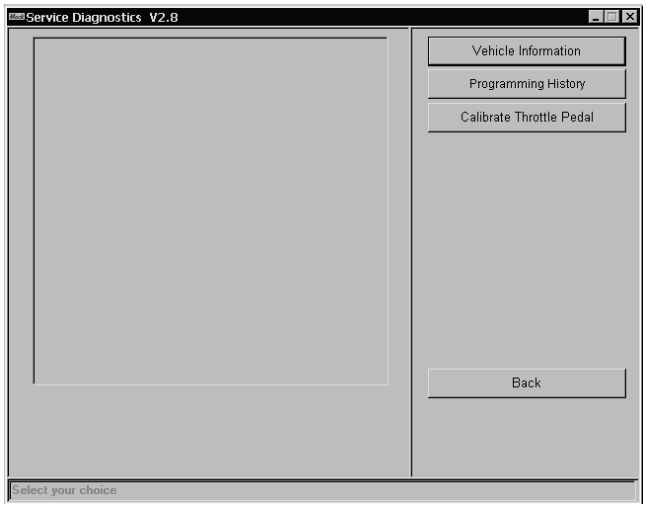

Figure 46 — Cummins Diagnostic Tools Menu

Click on the ***Vehicle Information*** button to view the Vehicle Information display screen (refer to “VEHICLE INFORMATION DISPLAY SCREEN” on page 22).

Click on the ***Programming History*** button to view the programming history for each ECU (refer to “PROGRAMMING HISTORY DISPLAY SCREEN” on page 23).

Click on the ***Calibrate Throttle Pedal*** button to access the Calibrate Throttle Pedal Screen (refer to “CUMMINS CALIBRATE THROTTLE PEDAL DIALOG SCREEN” on page 34).

Click on the ***Back*** button to return to the Cummins Service Diagnostics Main Menu.

CUMMINS CALIBRATE THROTTLE PEDAL DIALOG SCREEN

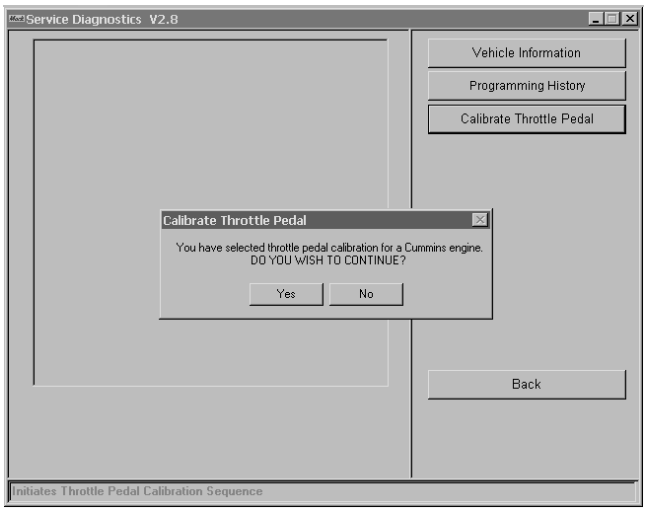

Figure 47 — Cummins Calibrate Throttle Pedal Dialog Screen

Click on the ***Calibrate Throttle Pedal*** button. The Calibrate Throttle Pedal dialog screen will appear.

Click on the ***Yes*** button to calibrate the throttle pedal (or click on the ***No*** button to cancel the procedure). The Calibrate Throttle Pedal Procedure dialog screen will appear.

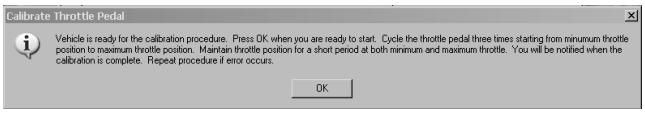

Figure 48 — Cummins Calibrate Throttle Pedal Procedure Dialog Screen

A pop-up window will appear with instructions. The instructions are as follows:

1. Click on the ***OK*** button.
2. Press the accelerator pedal down and release (for a total of about 2 seconds from the down and up position of the accelerator pedal). Repeat two more times.
3. If the procedure is successful, you will receive a pop-up message indicating a successful calibration.
4. If the procedure fails, repeat the procedure.

STEP/SOFTWARE IDENTIFICATION FOR V-MAC III

Step Level System	VECU Software P/N	EECU Software P/N
2 †		1MS334A
3 †		1MS368 1MS368A
4 †		1MS378
4	1MS312A	1MS38P2
5	1MS316A	1MS317
6	1MS320	
7	1MS328	1MS326
7A		1MS326A
8	1MS336	1MS327 1MS327 Ω (12MS413AM)
8A	1MS336A	
9	1MS349	1MS363
9B*	1MS364	
10*	1MS369	1MS375
11*	1MS376	

† — For ASET™ AC engines

* — For ASET™ AI engines

Ω — For integral barometric sensor

SERVICE DIAGNOSTICS DESCRIPTION AND OPERATION

SERVICE DIAGNOSTICS FUNCTIONS

Function	Description	Location	Instructions
Active Faults While Monitoring List	Presents a list of all controllers that transmitted active faults during the current monitoring session.	→Monitor Parameters →Next (Parameter Monitoring)	If any faults occurred during the current monitoring session, this screen will automatically appear upon exiting the Parameter Monitoring display screen. To exit the screen, click on the ***OK*** button.
Calibrate Throttle Pedal	Allows the user to calibrate the throttle pedal.	→Service Diagnostic →Diagnostics (Calibrate Throttle Pedal)	1. Click on the ***Yes*** button to begin the procedure. 2. Press the throttle pedal down and release (for about a total of 2 seconds). 3. Press the throttle pedal down and release (for about a total of 2 seconds). 4. Press the throttle pedal down and release (for about a total of 2 seconds). 5. A “procedure successful” or “procedure failed” message will appear after the procedure is complete. Repeat the process if unsuccessful. **NOTE:** This feature is available for all engines with Step 11 (1MS376) VECU s/w. **This feature is also available** with a Cummins engine (using Mack Trucks Cummins Service Diagnostic Software).
Capturing Display Screen Snapshots	Allows the user to take a picture or “snapshot” of the current Parameter Monitoring display screen.	→Monitor Parameters →Next (Parameter Monitoring)	Click on the ***Snapshot*** button to create a display screen snapshot. **NOTE:** Each snapshot will be saved in the V-MACa file named **vmxxxxxx.prn** (where “xxxxxx” stands for the serial number of the vehicle). If no file exists, a new file will be created in the **vmacss** directory. Each snapshot can be viewed and/or printed at a later time.
Changing Engine Idle Speed	Allows the user to change the idle speed during live or paused parameter monitoring.	→Monitor Parameters →Next (Parameter Monitoring)	1. Click on the ***Change Idle Speed*** button to bring up the Engine Idle Speed entry form. **NOTE:** The current speed will be displayed if it is within the allowable range (500 to 750 rpm or 500–700 rpm with 1MS375 and 1MS378 EECU s/w). Otherwise, the initial engine speed will be set at 650 rpm. 2. Type in the desired engine idle speed and click on the ***OK*** button. **NOTE:** The new engine idle speed must be between 500 and 750 rpm or 500–700 rpm with 1MS375 and 1MS378 EECU s/w. If it is not within this range, a message will appear instructing the user to enter a speed between this range.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Changing the Governor Type	Allows the user to change the governor type between All Speed and Min-Max. **NOTE:** Changing the governor selection will not affect the engine power rating or torque rise. It will only affect how the accelerator position is used to determine the driver's desired power or speed.	→Diagnostics →Vehicle Information	Click on the ***Governor Type*** button to toggle between All Speed and Min-Max. The main advantage of the All Speed governor is its load-sensing ability, which enables the engine to maintain a preselected engine speed for PTO applications. This governor uses the throttle pedal position to control engine speed. If an increase in engine load requires more horsepower to maintain the engine speed, the All Speed governor increases the horsepower automatically (within limits). All engine speeds are controlled in this way, from low idle with no load to high idle with full load. The Min-Max governor may be regarded as faster and more responsive but may be too sensitive for some drivers or applications. This governor has a more direct or proportional response to the throttle pedal; it uses the throttle pedal position to control engine power. If the pedal is depressed halfway, the engine will deliver 50% of the power. If the pedal is depressed another 10%, it will deliver 60% of the available power. The Min-Max governor regulates engine speed only at the minimum (0%) or maximum (100%) throttle position. In the range between the minimum and maximum positions, the driver controls the speed by adjusting the throttle pedal position. **NOTE:** Once the governor type is changed, a message will appear instructing the user to cycle the ignition.
Chassis DYNO Mode	Programs V-MAC to ignore deceleration without service brake application.	→Special Diagnostic Modes →Chassis DYNO Mode	During normal operation, V-MAC will drop a vehicle out of cruise control if a rapid deceleration occurs without service brake application. With this mode enabled, the vehicle can be operated on a dynamometer with cruise control enabled. **NOTE:** Be sure to cycle the ignition (turn the key OFF, wait 7 seconds, then turn the key ON again) after the dynamometer tests are completed. Do NOT put the chassis back into operation with *Chassis DYNO Mode* enabled.
Clearing Current Selections	Allows the user to clear the current selections.	→Monitor Parameters	At any time, press the ***Clear Selections*** button to erase the current selections.
Clearing Fault Tables	Allows the user to clear the fault table for any given controller that is displayed.	→Fault Codes →Fault Table	Click on the ***Clear Fault Codes*** button for confirmation. **NOTE:** If a fault occurs after the fault table is cleared and before the power to the controller is cycled (turned OFF and then ON again), the fault may not be entered into the controller's fault table. Therefore, a request to view the fault table immediately after it has been cleared may not accurately display faults that occurred after the table was cleared. To view faults that occurred after clearing the table, use the ***Active Faults*** selection from the Fault menu.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Cylinder Balance Test	Allows the technician to see how the EECU is balancing the cylinders by measuring how much fuel is being displaced.	→Special Diagnostic Modes →Cylinder Test	This test is available for Step 4 systems (EECU 1MS38P2) only. The upper portion of the Cylinder Balance Test display screen shows the results of the cylinder balance test. **NOTE**: The numbers displayed represent the correction needed to match the desired mg/stroke (as determined by the calibration code). **NOTE**: Test results must be interpreted according to firing order (1-5-3-6-2-4). It isn't unusual for a cylinder before or after a "bad" cylinder in the firing order to also be high or low in fuel, as compared to the mean. This can also be true with cylinders 360 degrees out of phase with the problem cylinder. However, the flow of these sister cylinders is usually in the opposite direction.
Cylinder Cut-Out Test	Individually tests each of the cylinders at low idle to help identify the source of rough running or an engine miss.	→Special Diagnostic Modes →Cylinder Test	To use the cylinder cut-out test, the vehicle speed must be at 0 mph and the parking brake must be set. For Step 4 systems (EECU software 1MS38P2), the throttle position must be at 0%. To initiate a test, select the cylinder to be cut out and click on the ***Start Cut-Out*** button.
Default Display Settings	Allows the user to change the communications port, display units (i.e., metric vs. English) and language used in the V-MAC programs.	→Utilities	1. Select the desired unit for each item: Communications Port — Most systems will use COM 1 as the communications port. International Unit Type — Set to either metric or English display units. Language — At this time, the only language available is English. 2. Click on the ***Save Default Settings*** button.
Engine Brake Test	Verifies that the engine brake solenoids are electrically operational.	→Special Diagnostic Modes →Engine Brake Test	This test is available for Step 7 and higher EECU software (s/w) and Step 2 and higher EECU s/w (for ASET™ AC engines) only. Please see the "STEP/ SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34. To use the engine brake test, the key switch must be on while the engine is not running (engine rpm = 0). Once the test is active, the solenoid(s) will turn on and off about once per second and produce a faint clicking sound. Absence of the clicking sound may indicate a wiring problem. The software will automatically cycle the key switch. **NOTE:** Engine brake should be off during the test.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Engine Compression Test	Isolates and tests the compression of each individual cylinder to diagnose low power complaints and problems with rough running. Engine should be at operating temperature to perform this test to rule out a cold engine start.	→Special Diagnostic Modes →Engine Compression Test	This test is available for Step 7 and higher EECU s/w and Step 2 and higher EECU s/w (for ASET™ AC engines) only. Please see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34. Characterizes each cylinder's compression stroke via a ratio (compression time/ expansion time). An engine with good compression has a ratio between 1.85 to 1.95. Each cylinder should be compared with other cylinders in the engine, but not with those from other engines. When the start button is clicked, the technician will be instructed to engage the starter. The test mode will prevent engine fueling. **NOTE:** To run this test, the engine must be off, the transmission in neutral with the clutch pedal released and the parking brake set.
Engine Run-Up Test	Checks the fuel delivery of each individual unit pump/ injector pair to diagnose low power complaints and problems with rough running.	→Special Diagnostic Modes →Engine Run-Up Test	This test is available for Step 7 and higher EECU s/w and Step 2 and higher EECU s/w (for ASET™ AC engines) only. Please see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34. When the test is active, the system automatically cuts out each cylinder. The engine ECU then injects fuel at a fixed rate through the remaining five cylinders and measures the acceleration rate. The test will be performed 18 times, three times for each cylinder. Once completed, the acceleration rates can be compared to determine if one of the cylinders has a fuel delivery problem. Results should be compared from cylinder to cylinder for that engine, rather than from engine to engine. Cylinders with LOW accelerations may be injecting too much fuel. Cylinders with HIGH accelerations may not be injecting enough fuel. **NOTE:** To run this test, the engine must be running, the transmission in neutral with the clutch pedal released and the parking brake set.
Fault Monitoring During Live Parameter Monitoring	Checks for active and inactive faults during monitoring.	→Monitor Parameters →Next (Parameter Monitoring)	If an active fault is detected during a live monitoring session, the *Fault Status* item on the display screen will change from "No Faults Noted" to "Fault Noted." This message will remain on the display screen until the fault becomes inactive.
Fault Reporter	Logs detailed information during and around the time when a fault occurs.	→Active Faults or Controller Fault Table →Fault Reporter	For Step 8 and higher VECU s/w. Please see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34. The Fault Reporter will log information about vehicle conditions when a fault occurs if set in *Occurrence Mode*. Or, Fault Reporter will log information about vehicle conditions just before a fault occurs if set in *History Mode*.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Fault Reporter Advanced Setup	Selects the type of operating mode to record faults.	→ Diagnostics →Configure Fault Reporter (Advanced Setup)	For Step 8 and higher VECU s/w. Please see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34. **NOTE:** Only the third and fourth MID filters can be changed by the operator (the default is ALL). The first and second MID filters are limited to personnel who have expertise in J1587 protocol. The Fault Reporter will record faults from all devices on the J1587 line (for example, ABS/ATC, transmission controller, headway controller and so on).
Fault Reporter Configuration	Allows the user to configure the Fault Reporter to run under *Occurrence Mode* or *History Mode*.	→ Diagnostics →Configure Fault Reporter	For Step 8 and higher VECU s/w. Please see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34. In *Occurrence Mode*, select what type of faults to capture by defining MID, PID, and FMI filters for up to 4 fault records. In *History Mode*, select what type of faults to capture and the snapshot time between recorded records. With *Occurrence Mode**, define how long a record should be "saved" before being overwritten. * **NOTE:** If there is an intermittent power loss, historical data can be lost if in *History Mode*.
Live Parameter Monitoring	Allows the user to monitor the current selection of parameters. Parameter values are continuously updated as information is received on the J1587 serial data line.	→Monitor Parameters	Once all desired parameters have been selected, click on the ***Next*** button to begin monitoring. **NOTE:** If an active fault occurs, indicating that a certain parameter value is incorrect or is not being generated by the controller, the word "FAULT" will appear. The data for that parameter will return as soon as the fault becomes inactive. **NOTE:** If all parameters remain constant when it is suspected that some should change, check that the serial data line has not become disconnected. Refer to the "Parameter Selection" sections for details concerning parameter selection.
Parameter Selection (Using Default Selections)	Allows the user to select the current default parameters for monitoring.	→Monitor Parameters	Click on the ***Default Selections*** button. **NOTE:** Once the default parameters have been selected, they can be modified by clicking on desired parameters. Refer to the "Live Parameter Monitoring" function for instructions on monitoring parameters.
Parameter Selection (Using SAE Parameter Menu)	Allows the user to select individual parameters for monitoring. A maximum of 30 parameters can be selected.	→Monitor Parameters	Click on the desired parameter. A check mark will appear in the box, indicating that it has been selected. To deselect a parameter, click on the parameter again (the check mark will disappear). Refer to the "Live Parameter Monitoring" function for instructions on monitoring parameters.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Paused Parameter Monitoring	Allows the user to freeze the display with the current parameter values on the screen.	→Monitor Parameters →Next (Parameter Monitoring)	To pause monitoring, click on the ***Pause*** button. To return to live monitoring, click on the ***Play*** button.
Predictive Oil Change	Examines the operation of the vehicle since the last oil change to determine when the oil should next be changed. Predictive Oil Change uses the average vehicle speed and average fuel economy since the last oil change to predict the oil change interval.	→Diagnostics →Maintenance Data Log Display	If available, Predictive Oil Change is a standalone feature and is available for CV, DM and RB models with Step 8, 1MS336 or higher VECU s/w. To operate this feature, enable Predictive Oil in OEM Data on the MACK database via the F3 Update Option screen of V-MAC. **NOTE:** Predictive Oil can be enabled or disabled only when the Oil Change or Oil & Filter Change maintenance items are reset. **NOTE:** This feature is not available on MR and LE models. Predictive Oil Change must not be enabled if the engine ECU software is 1MS334, 1MS334A, 1MS368, 1MS368A, 1MS375 or 1MS378. **NOTE:** Predictive Oil is suited for chassis only that meet the following requirements: • The engine is equipped with a 28-quart oil pan. • A Mack filtration system is used with dual full flow elements and a Centri-Max® spinner filter. • The engine uses approved EO-M+ oil for pre-2002 emissions and EO-N Premium Plus for ASET™ AI engines. • Oil consumption is 3000 miles per quart or better. • The engine does not have a problem with oil dilution. • Engine ECU software is NOT 1MS334, 1MS334A, 1MS363, 1MS368, 1MS368A, 1MS375 or 1MS378. • The correct VECU data file has been installed to match the engine — ask your MACK dealer.
Printing Display Screen Snapshots	Allows the user to print snapshots that were created during parameter monitoring.	→Utilities	1. Click on the ***Print Parameter Snapshot(s)*** button to bring up the Parameter Snapshot selection screen. 2. Select the appropriate file.
Printing Fault Tables	Allows the user to print a snapshot of the current fault table.	→Fault Codes →Fault Table	1. Click on the ***Print*** button. 2. Follow the instructions in the Print menu.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Resetting the Maintenance Data Log	Allows the user to reset the Maintenance Monitor schedule.	→Diagnostics →Maintenance Data Log Display	Click on the ***Reset*** button. Then choose the maintenance item(s) to be reset. **NOTE:** Up to 15 maintenance items can be reset. If the Predictive Oil Change feature (see *Predictive Oil Change*) is installed, the user can enable or disable the feature following a reset of the Oil Change maintenance item or the Oil & Filter Change maintenance item.
Resetting the Vehicle Data Log	Allows the user to reset vehicle trip information.	→Diagnostics →Vehicle Data Log Display	Click on the ***Reset*** button.
Saving Default Selections	Allows the user to save the current selections as the default.	→Monitor Parameters	Once all of the desired parameters have been selected, click on the ***Save as Default*** button to save the current selections to the default file.
Saving Parameter Defaults	Allows the user to save the current settings to the default file.	→Utilities	1. Click on the ***Save Default Settings*** button to bring up the Default File Location entry form. 2. In the Default File Location entry form, enter the correct path for the data file and click on the ***OK*** button (if the default path is correct, click on the ***OK*** button). **NOTE:** Do not rename the default file.
Saving the Maintenance Data Log	Allows the user to save the current Maintenance Monitor schedule.	→Diagnostics →Maintenance Data Log Display	Click on the ***Save*** button. **NOTE:** The data file for the maintenance data log will be named **vmxxxxxx.mtn** (where “xxxxxx” stands for the vehicle serial number).
Saving the Vehicle Data Log	Allows the user to save life and vehicle trip information logged by DataMax™.	→Diagnostics →Vehicle Data Log Display	Click on the ***Save*** button. **NOTE:** The data file for the vehicle data log will be named **vmxxxxxx.trp** (where “xxxxxx” stands for the vehicle serial number).
Selecting Datalink Adapter	Permits user to select a datalink adapter.	→Utilities →Preferences →Common Entry Form	1. Click on the ***Preferences*** button. 2. Click on the ***Common*** tab. 3. To modify the RP1210A-compliant adapter type selection, do the following: a. Click on the ***RP1210A Device Name*** radio button. b. Click on the ***Device Name*** drop-down arrow and select the adapter desired. c. Click on the ***Port*** drop-down arrow and select the com port desired. d. Click on the ***Protocol*** drop-down arrow and select the protocol type desired (protocol J1708 is recommended). 4. Click on the ***Apply*** button to make the change. 5. Click on the ***OK*** button to save changes.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
VTG Vane Position Calibration	Calibrates the VTG vane position actuator.	→Special Diagnostic Modes →VTG Vane Position Calibration	This test is available for Step 2 and higher EECU s/w (for ASET™ AC engines) only. Please see table on page 34. This test aids in determining whether boost pressure or power complaints are due to incorrect calibration. To use the VTG vane position calibration, the engine must be off, the ignition key turned to the ON position, and the coolant temperature above 140°F. Primary and secondary air pressure must be at least 110 psi. The actuator requires 95 psi to reach 100% vane position. **NOTE:** If the turbocharger is too hot to touch, the engine should be idled and then permitted to cool before the calibration is performed. If the actuator does not visibly reach its 100% stopped position, the test results have failed, even if the diagnostic tool reports a successful test. Either the air pressure is too low or the mechanism is binding and must be replaced.
Viewing Active Faults	Allows the user to view faults that are presently occurring. Each fault description identifies the controller responsible, severity, physical description, blink code (including MID, PID/SID and FMI) and current status of the fault.	→Fault Codes →Active Faults	The number of currently active faults will appear in the *Total number of faults for display* field. If there are more than 4 active faults, the scroll bar will appear. **NOTE:** If a displayed fault becomes inactive, it will be displayed as inactive temporarily and then will be removed.
Viewing Adaptive Cruise Control Status	Allows the user to view detected fault in active cruise control.	→Diagnostics →Adaptive Cruise Control Status	This feature is available for Step 7 and higher VECU s/w and EECU s/w, or Step 2 and higher EECU s/w (for ASET™ AC engines) only. Please see table on page 34. **NOTE:** When an Adaptive Cruise Control fault occurs, all cruise functions will be disabled. The user may disable Adaptive Cruise Control and re-enable standard cruise control, which requires reprogramming the VECU. Please refer to the Eaton® VORAD® (EVT-300) Collision Warning System/SmartCruise® Troubleshooting Manual, 8-335, for information. **NOTE:** The driver should be notified when standard cruise is operational without the adaptive feature. Eaton® SmartCruise® (optional) will decrease vehicle speed when it detects that the vehicle is too close to a preceding vehicle. SmartCruise will resume cruise speed when the proper minimum distance is re-established. This screen displays the current status of active fault if SmartCruise or cruise control is not operational. A fault message will occur if SmartCruise (in vehicles equipped with SmartCruise) is defective.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Viewing Display Screen Snapshots	Allows the user to view snapshots that were created during parameter monitoring.	→Utilities	1. Click on the ***Display Parameter Snapshot(s)*** button to bring up the Parameter Snapshot selection screen. 2. Select the appropriate file.
Viewing Electronic Configuration Information	Allows the user to view information concerning the electronic configuration of the V-MAC system.	→Diagnostics →Vehicle Information	Vehicle information includes VECU (software version, data file number and serial number), vehicle serial number, VIN and unit number. Engine information includes EECU (software version, data file number and serial number), rated power, rated speed, engine model and serial number.
Viewing Fault Tables	Allows the user to select and view the fault table of a specific controller. A fault table is a history of all faults that a controller has detected since the table was last cleared. Each fault history includes the fault description (controller responsible, severity, physical description, blink code and current status) and the number of times the fault was logged (up to a maximum of 15).	→Fault Codes →Controller Fault Table	The number of currently inactive faults will appear in the *Total number of faults in table* field. If there are more than 4 faults, the scroll bar will appear. **NOTE:** In order to view a fault table, the engine must be OFF with the key in the ON position. **NOTE:** If a fault occurs after the fault table is cleared and before the power to the controller is cycled (turned OFF and then ON again), the fault may not be entered into the controller's fault table. Therefore, a request to view the fault table immediately after it has been cleared may not accurately display faults that occurred after the table was cleared. To view faults that occurred after clearing the table, use the ***Active Faults*** selection from the Fault menu.
Viewing Programming Histories	Allows the user to view the programming history for each of the controllers.	→Diagnostics →Programming History	The types of programming histories include OEM, Customer data programming, Vehicle data programming and Fleet data programming.
Viewing the Maintenance Data Log	Allows the user to view the status of the Maintenance Monitor schedule (i.e., *Before Next* and *Since Last*).	→Diagnostics →Maintenance Data Log Display	Refer to the Maintenance Monitor section in *CUSTOMER DATA PROGRAMMING* for more information concerning maintenance schedules. If the Predictive Oil Change feature (see *Predictive Oil Change*) is installed and enabled, the Oil & Filter Change maintenance item data will be replaced with Predictive Oil Change maintenance item data. If the GuardDog™ maintenance function (see *GuardDog™ Enabled*) is enabled, the status of the GuardDog™ maintenance items will be displayed at the bottom of the log, following the 15 standard Maintenance items. Please see table on page 34.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Viewing the Switch Status Display	Allows the user to view the current status of all V-MAC control switches. This feature is useful for diagnosing wiring problems. The first column of the Switch Status display screen shows the physical status. This reflects the primary operation of the switch. The second column shows the logical status. This reflects any additional operations that the switch performs.	→Diagnostics →Switch Status Display	**NOTE:** If the ignition is cycled — turned OFF and then ON again — while monitoring the switch status, the display update will stop and an error message will appear. If the switch has been reassigned (using the *Switch Assignments* feature in *CUSTOMER DATA PROGRAMMING*), the logical status of the new operation will be displayed. Example: If the Engine Brake Low switch on the instrument panel is in the ON position, the Switch Status display screen should indicate that the physical status of the switch (*Engine Brake Low*) is “On”. Now assume that the Engine Brake Low switch has been reassigned to function as the PTO 3 switch. In this case, the physical status of *Engine Brake Low* should be “On,” however the logical status of *Engine Brake Low* should be “Off” and the logical status of *PTO 3* should be “Engaged”. If the Brake Pad sensors (see *GuardDog™ Enabled*) are installed as part of the GuardDog™ maintenance feature, the physical switches — Aux.1 and Spare — are replaced with brake pads, front and brake pads, rear, respectively. The Air Restriction switch, Washer Fluid Level switch, and the Parking Brake 2 switch have been added to the physical switch list (for Step 8 and higher VECU s/w, see table on page 34).
Viewing the Vehicle Data Log	Allows the user to view life and vehicle trip information.	→Diagnostics →Vehicle Data Log Display	For a summary of vehicle life and trip information, refer to the DataMax™ Summary Information.

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Wiggle Wire Test	Enables Wiggle Wire Mode. This test increases the system's sensitivity to faults on sensors and wiring. When troubleshooting an intermittent problem, placing the system in Wiggle Wire Mode — and then "wiggling" the wires in the vicinity of the offending sensor or circuit while monitoring faults — will help identify the problem circuit.	→Special Diagnostic Modes →Wiggle Wire Test	For Step 5 systems, the Wiggle Wire Test is supported in the VECU only. For Step 8 and higher VECU and EECU s/w and Step 2 and higher EECU s/w (for ASET™ AC engines), the Wiggle Wire Test is supported in both the VECU and EECU. This test helps to shorten the diagnostic times on the following VECU-supported sensors: • Accelerator Pedal: J3-4, J3-5, J3-6 • Electronic Malfunction Lamp: J3-9 • Engine Shutdown Lamp: J3-8 • Exhaust Temperature: J2-7, J2-8 • Front Drive Axle Temperature: J2-1, J2-3 • Rear Drive Axle Temperature: J2-4, J2-1 • Fuel Level: J1-18 • Road Speed Sensor: J2-11, J2-12 • Speedometer: J1-3 • Tachometer: J1-4 • Transmission Oil Temperature: J2-1, J2-2

SERVICE DIAGNOSTICS FUNCTIONS (CONTINUED)

Function	Description	Location	Instructions
Wiggle Wire Test (continued)			For Step 8 and higher EECU s/w and Step 2 and higher EECU s/w (for ASET™ AC engines), this test helps to shorten the diagnostic times on the following EECU-supported sensors (please refer to above list for VECU-supported sensors): • *Aftercooler Outlet Air Temperature: J2-84 • Ambient Air Temperature: J2-27, J2-29, *J2-68 • *Boost Pressure: J2-35, J2-49, J2-50 • *Combustion Air Humidity-Temperature: J2-30, J2-47, J2-83 (for Air Humidity) and J2-65 (for Air Temperature) • *Compressor Discharge Temperature: J2-67, J2-85 • Coolant Temperature: J1-17, J1-26, *J2-86, *J2-87 • *EGR Valve Drive: J2-16, J2-17 • Engine Coolant Level: *J1-11, *J1-12, *J1-13, J2-3, J2-26 • Engine Oil Level: J1-1, J1-13, *J2-21, *J2-22 • Engine Oil Pressure: J1-25, J1-32, J1-34, *J2-25, *J2-28, *J2-45 • Engine Oil Temperature: J1-5, J1-26, *J2-64, *J2-81, *J2-82 • Exhaust Brake: J1-39 • Fan Clutch: J1-9 • Fuel Temperature: J1-26, J1-28, *J2-81 • Inlet Air Pressure: J1-15, J1-35, J1-36 • Inlet Manifold Temperature: J1-2, J1-26, *J2-61, *J2-80 • *VTG Turbocharger Vane Position: J2-26, J2-51, J2-69 • Wastegate Output: J1-8 * For Step 2 and higher EECU s/w for ASET™ AC engines only.

DataMax™ Summary Information

DataMax™ vehicle life and trip data summary information is defined/calculated according to the following chart.

DataMax™ Item	Definition/Calculation
Active Fault Occurrences	Number of times an Engine or Vehicle ECU fault was active.
Active Fault Time	Amount of time an Engine or Vehicle ECU fault was active.
Average Cruise Speed	Cruise distance ÷ cruise time
Average Driving Speed	Distance ÷ vehicle moving time
Average Speed	Distance ÷ key switch ON occurrences
*Cranking Time (Steps 5–9)***	Amount of time that the starter was ON.
Cruise Fuel Economy	Cruise distance ÷ cruise fuel
Delayed Idle Fuel +	Fuel consumed during delayed (qualified) idle.
Delayed Idle Time +	Amount of time that a delayed (qualified) idle occurred. Delayed (qualified) idle is the time that the vehicle idles after exceeding the *Idle Logging Delay* threshold.
Distance	Distance covered by the vehicle (all conditions).
Distance in Cruise Control	Distance covered while cruise control was active.
Distance Traveled in Engine Sweet Spot @	Distance traveled while engine is running at its most efficient speed.
Driving Fuel Economy	Distance ÷ vehicle moving fuel
Engine Overspeed Company Threshold — Max	Maximum engine speed exceeded over the *Engine Overspeed, Company Limit* threshold, yet was below the *Engine Overspeed (Severe)* threshold. Life information only.
Engine Overspeed Company Threshold Time	Amount of time that engine speed exceeded the *Engine Overspeed, Company Limit* threshold, yet was below the *Engine Overspeed (Severe)* threshold. **NOTE:** The company threshold is the value that the driver is instructed not to exceed, usually to promote good fuel economy.
*Engine Revolutions***	Engine revolutions (within 100).
Engine Running Fuel	Fuel consumed by the engine.
Engine Running Time	Amount of time that the engine was running.
Fan Clutch Cycles	Number of times the fan turned ON. Life information only.
Fuel Used in Cruise Control	Fuel consumed while cruise control was active.
Fuel Used in Engine Sweet Spot @	Amount of fuel used while engine is running at its most efficient speed.
*Fueled Engine Overspeed Time**	Amount of time that engine speed exceeded the *Engine Overspeed with Fuel* threshold while fuel was being delivered to the engine, either via cruise control or the accelerator pedal. **NOTE:** This value will continue to log, even if the engine speed exceeds the *Engine Overspeed, All Conditions* or *Engine Overspeed (Severe)* threshold, provided that fuel is still being delivered to the engine.

DataMax™ Item	Definition/Calculation
Fueled Vehicle Overspeed Time	Amount of time that vehicle speed exceeded the *Vehicle Overspeed with Fuel* threshold while fuel was being delivered to the engine, either via cruise control or the accelerator pedal. **NOTE:** This value will continue to log, even if the vehicle speed exceeds the *Vehicle Overspeed, All Conditions* threshold, provided that fuel is still being delivered to the engine.
Hand Throttle Distance	Distance traveled while the hand throttle was active.
Hand Throttle Fuel	Fuel consumed while the hand throttle was active.
Hand Throttle Time	Amount of time that the hand throttle was active. Hand throttle is considered active when speed control is active, all four PTOs are OFF and vehicle speed is less than the *Hand Throttle Max Road Speed* threshold.
Hard Braking Occurrences	Number of times that vehicle deceleration exceeded the *Hard Braking* threshold.
Idle Fuel	Fuel consumed during idle.
Idle Time	Engine is running and vehicle speed is zero.
*Key Switch ON Occurrences***	Number of times that the ECU was powered up.
*Maximum Engine Speed**	Maximum engine speed for the current vehicle trip and life of the vehicle. Life information only.
*Maximum Vehicle Speed**	Maximum vehicle speed for the current vehicle trip and life of the vehicle. Life information only.
Moving PTO 1 Distance	Distance covered while PTO 1 was ON, the engine was running, and the vehicle was moving.
*Moving PTO 1 Fuel***	Fuel used while PTO 1 was ON, the engine was running, and the vehicle was moving.
*Moving PTO 1 Time***	Time that PTO 1 was ON, the engine was running, and the vehicle was moving.
Moving PTO 2 Distance	Distance covered while PTO 2 was ON, the engine was running, and the vehicle was moving.
*Moving PTO 2 Fuel***	Fuel consumed while PTO 2 was ON, the engine was running, and the vehicle was moving.
*Moving PTO 2 Time***	Time that PTO 2 was ON, the engine was running, and the vehicle was moving.
PTO 1 Fuel	Fuel used while PTO 1 was ON and the engine was running (includes Moving PTO 1 Fuel).
PTO 1 Time	Amount of time that PTO 1 was ON and the engine was running (includes Moving PTO 1 Time). PTO speed control does not have to be ON.
PTO 2 Fuel	Fuel used while PTO 2 was ON and the engine was running (includes Moving PTO 2 Fuel).
PTO 2 Time	Amount of time that PTO 2 was ON and the engine was running (includes Moving PTO 2 Time). PTO speed control does not have to be ON.
Severe Engine Overspeed Occurrences	Number of times that engine speed exceeded the *Engine Overspeed (Severe)* threshold (indicating abuse of the engine). Life information only.
Severe Engine Overspeed — Max Value	Maximum engine speed in excess of the *Engine Overspeed (Severe)* threshold (indicating abuse of the engine). Life information only.

DataMax™ Item	Definition/Calculation
Time in Cruise Control	Amount of time that cruise control was active. With the exception of Step 6 and earlier systems, cruise control is not considered active when it is cancelled with the clutch or service brake.
Time in Sweet Spot	Amount of time while engine is running at its most efficient speed.
Total Fuel	All fuel used.
Total Fuel Economy	Distance ÷ total fuel
Traction Loss Occurrences	Number of times that vehicle acceleration exceeded the *Traction Loss* threshold.
*True Idle Fuel***	Fuel used during true idle.
*True Idle Time***	Amount of time that a true idle occurred. During true idle: PTO 1 and PTO 2 are OFF, speed control is disabled, the engine is running, accelerator pedal position is less than 2% and vehicle speed is 0 mph. **NOTE:** PTO 3 and PTO 4 are not considered when calculating true idle.
Vehicle Moving Fuel	Fuel consumed while the vehicle is moving.
Vehicle Moving Time	Amount of time that the vehicle was moving.
Vehicle Overspeed — Max	Maximum vehicle speed in excess of the *Vehicle Overspeed, All Conditions* threshold. Life information only.
Vehicle Overspeed Occurrences	Number of times that vehicle speed exceeded the *Vehicle Overspeed, All Conditions* threshold.
Vehicle Overspeed Time	Amount of time that vehicle speed exceeded the *Vehicle Overspeed, All Conditions* threshold.
Vehicle Time	Amount of time that the key was in the ON position.
% Cruise Distance	(Cruise distance ÷ distance) x 100
% Cruise Fuel	(Cruise fuel ÷ total fuel) x 100
% Cruise Time	(Cruise time ÷ vehicle time) x 100
% Delayed Idle Fuel	(Delayed idle fuel ÷ total fuel) x 100
% Delayed Idle Time	(Delayed idle time ÷ total time) x 100
% Distance in Sweet Spot	Sweet Spot distance ÷ distance
% Driving Time	(Vehicle moving time ÷ vehicle time) x 100
% Fuel Used in Sweet Spot	(Sweet Spot fuel ÷ total fuel) x 100
% Idle Fuel	(Idle fuel ÷ total fuel) x 100
% Idle Time	(Idle time ÷ vehicle time) x 100
*% PTO Distance — All**	([Sum of all PTO moving distance] x 100) ÷ distance
% PTO Fuel — All	([PTO 1 fuel ÷ PTO 2 fuel] x 100) ÷ total fuel
% PTO Time — All	([PTO 1 time ÷ PTO 2 time] x 100) ÷ key switch ON occurrences
% Time in Sweet Spot	(Sweet Spot time ÷ vehicle time) x 100
*% True Idle Fuel***	(True idle fuel ÷ total fuel) x 100
*% True Idle Time***	(True idle time ÷ vehicle time) x 100

\+ Delayed Idle is defined as the total amount of idle time that is accumulated after a predefined delay period has expired. This is intended for future use in driver incentive programs where an appropriate amount of “free idle” time is granted due to traffic lights, etc.

* Items are not available on V-MAC III 1MS312/312A software.

** Items are not available on V-MAC III 1MS369 (VECU s/w). Can be restored using InfoMax™ 4.0 software.

@ Items are not available on V-MAC III 1MS312/312A or 1MS316/316A software.

CUSTOMER DATA PROGRAMMING

CUSTOMER DATA PROGRAMMING INTRODUCTION

About Customer Data Programming

The V-MAC system offers a variety of customer options and features which can be programmed using *CUSTOMER DATA PROGRAMMING*.

Although this version of *CUSTOMER DATA PROGRAMMING* can be used to program both V-MAC II and V-MAC III systems, the programming instructions contained in this manual were designed to support V-MAC III. For V-MAC II user information, refer to the online help and the V-MAC II User Guide (8-302).

Accessing Customer Data Programming

There are two ways to access *CUSTOMER DATA PROGRAMMING*.

- If there is a Mack Software folder on the desktop, double-click on the folder. Then select the *CUSTOMER DATA PROGRAMMING* icon.
- If there is no icon on the desktop, access the start menu, select ***Programs*** and select ***Mack Programs***. Then select ***Customer Data Programming.***

Online Help Function

This version of V-MAC support software features an online help function (similar to Windows Help). The online help includes all of the information contained in this user guide. Simply press **F1** to view the help topics.

Additional Information

The current **V-MAC III Service Manual, 8-211**, provides a complete description of the operation of the V-MAC III system, as well as instructions for performing diagnostics and repairs of system components.

The phone number for the V-MAC Software Support Center is (800) 247-0039. Hours are 8:00 a.m. to 5:00 p.m. (Eastern time), Monday through Friday.

Password Protection

ENTERING THE PASSWORD

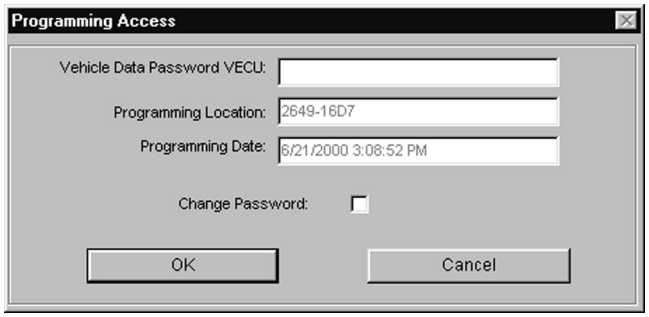

Figure 49 — Password Entry Screen

Many of the options available in *CUSTOMER DATA PROGRAMMING* are protected by a Programming Access security screen. To access the selected option, enter the appropriate password.

A password can be any combination of numbers and/or letters and is not case sensitive. However, the password will be transferred to the vehicle in upper case regardless if lower or higher case letters are used. There are four different types of passwords organized according to where the information is stored.

For information stored in the vehicle ECU, there are three areas for passwords:

- Vehicle Data
- Customer Data
- Fleet Data

For information stored in the engine ECU, there is one area for password:

- Customer Data

Once the appropriate password has been entered into the field, click on the ***OK*** button to continue programming.

CHANGING THE PASSWORD

To change the current password, enter the current password into the field and click on the box next to the *Change Password* field.

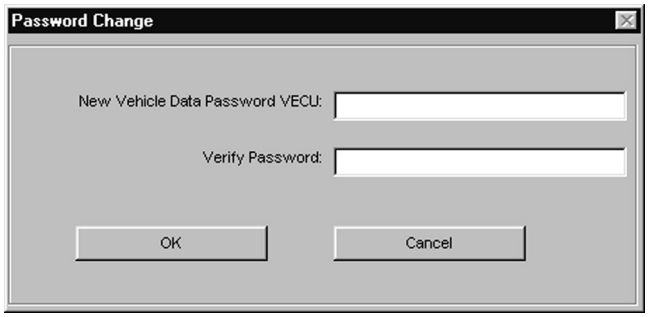

Figure 50 — Password Change Screen

1. Enter the new password in the *New Password* field.
2. Re-enter the new password in the *Verify Password* field.
3. Click on the ***OK*** button.

CUSTOMER DATA PROGRAMMING VISUAL IDENTIFICATION

Refer to **Customer Data Programming for Windows (Version 2.8) Feature Location Flow Chart for V-MAC III, Step 2 (8-358-2) and above** for an overview of *CUSTOMER DATA PROGRAMMING* features and functions.

Screen Summaries

Whenever Customer Data Programming (or Service Diagnostics) is started, a pop-up screen will appear displaying the type of datalink connection being used. Below is an example of the RP1210A connection. Click on the ***OK*** button to acknowledge the message. The Customer Data Programming Main Menu will appear (please refer to Figure 52).

Figure 51 — Datalink Connection Message (Using RP1210A Connection)

NOTE

If a different datalink adapter is desired, please refer to the “UTILITIES MENU” on page 13 for instructions.

CUSTOMER DATA PROGRAMMING MENU

The Customer Data Programming Menu offers you 10 choices.

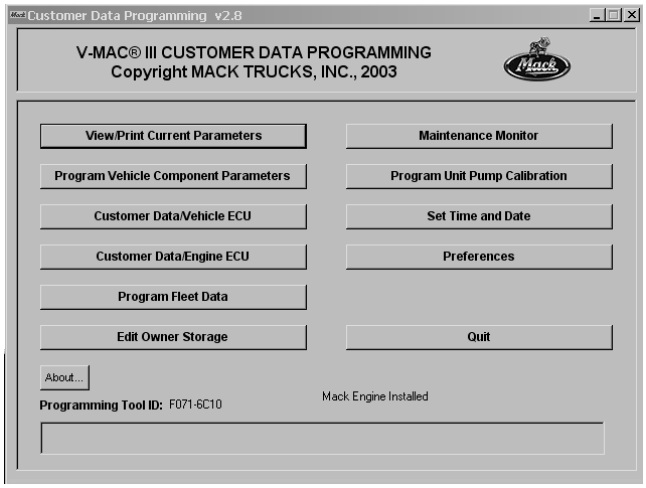

Figure 52 — Customer Data Programming Menu

NOTE

A line in the lower right side of the screen displays information concerning the type of engine installed. If an Eaton® Super 10 Top 2 or Allison HD transmission is installed, that information will also be displayed.

NOTE

A line in the lower left side of the screen displays the Programming Tool ID hard drive serial number, used for programming history.

Click on the ***View/Print Current Parameters*** button to view or print current parameters (refer to "VIEW/PRINT REPORT SELECTION SCREEN" on page 54).

Click on the ***Program Vehicle Component Parameters*** button to program vehicle component parameters (refer to "PROGRAM VEHICLE COMPONENT PARAMETERS ENTRY FORM" on page 55).

Click on the ***Customer Data/Vehicle ECU*** button to program customer parameters stored in the vehicle ECU (refer to "VEHICLE ECU CUSTOMER DATA MENU" on page 55).

Click on the ***Customer Data/Engine ECU*** button to program customer parameters stored in the engine ECU (refer to "ENGINE ECU CUSTOMER DATA ENTRY FORM" on page 56).

Click on the ***Program Fleet Data*** button to program fleet parameters (refer to "FLEET DATA MENU" on page 56).

Click on the ***Edit Owner Storage*** button to edit the Owner Storage entry form (refer to "EDIT OWNER STORAGE ENTRY FORM" on page 57).

Click on the ***Maintenance Monitor*** button to program Maintenance Monitor schedules (refer to "MAINTENANCE MONITOR ENTRY FORM" on page 57).

Click on the ***Program Unit Pump Calibration*** button to calibrate the unit pumps (refer to "UNIT PUMP CALIBRATION ENTRY FORM" on page 60).

Click on the ***Set Time and Date*** button to set the VECU time and date (refer to "SET TIME AND DATE SCREEN" on page 60).

Click on the ***Preferences*** button to set the configuration of the software (refer to "PREFERENCES ENTRY FORM" on page 14 in Service Diagnostics).

Click on the ***Quit*** button to exit the program.

VIEW/PRINT REPORT SELECTION SCREEN

The View/Print Report Selection screen, accessed from the Customer Data Programming Menu, lets you view and/or print the current customer parameters which are stored in the V-MAC module. No password is needed to select this option because only viewing, not modifying, the data is allowed.

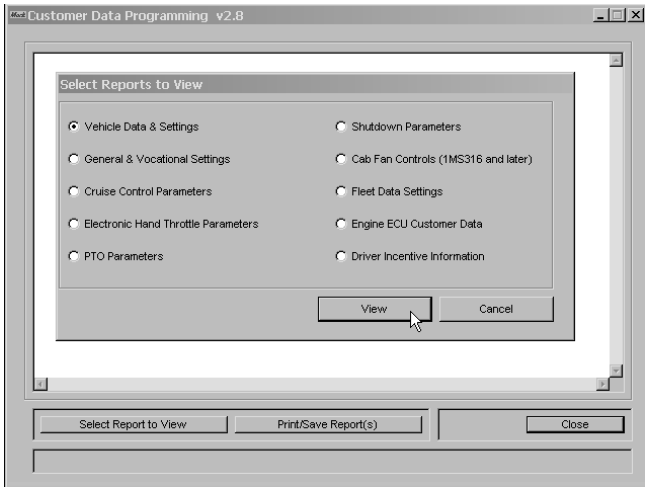

Figure 53 — View/Print Report Screen

Click on the ***Select Report to View*** button to call up the Select Report to View pop-up screen.

Click on the ***View*** button to see the current selection.

Click on the ***Print/Save Report(s)*** button to print the current selection.

- Select ***Vehicle Data & Settings*** to view/print the Vehicle Data & Settings display screen.
- Select ***General & Vocational Settings*** to view/print the General & Vocational Settings display screen.
- Select ***Cruise Control Parameters*** to view/print the Cruise Control Parameters display screen.
- Select ***Electronic Hand Throttle Parameters*** to view/print the Electronic Hand Throttle Parameters display screen.
- Select ***PTO Parameters*** to view/print the PTO Parameters display screen.
- Select ***Shutdown Parameters*** to view/print the Shutdown Parameters display screen.
- Select ***Cab Fan Controls*** to view/print the Cab Fan Controls display screen.
- Select ***Fleet Data Settings*** to view/print the Fleet Data Settings display screen.
- Select ***Engine ECU Customer Data*** to view/print the Engine ECU Customer Data display screen.
- Select ***Driver Incentive Information*** to view/print Driver Incentive Information.

Click on the ***Cancel*** button to return to the Customer Data Programming menu.

PROGRAM VEHICLE COMPONENT PARAMETERS ENTRY FORM

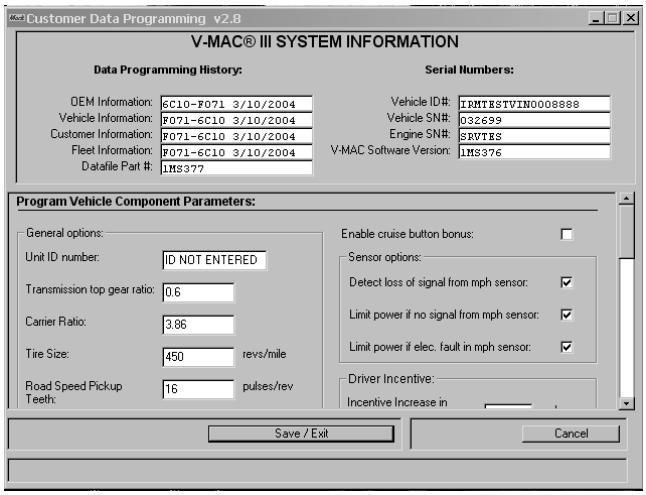

Figure 54 — Program Vehicle Component Parameters Entry Form

This entry form, accessed from the Customer Data Programming Menu, is used to program various vehicle component parameters and features. The allowable limits for each feature are displayed at the bottom of the screen. For detailed features descriptions, refer to the “VEHICLE COMPONENT PARAMETERS” table on page 71.

VEHICLE ECU CUSTOMER DATA MENU

The Vehicle ECU Customer Data Menu, accessed from the Customer Data Programming Menu, offers you nine choices in where you can program features and options associated with customer data.

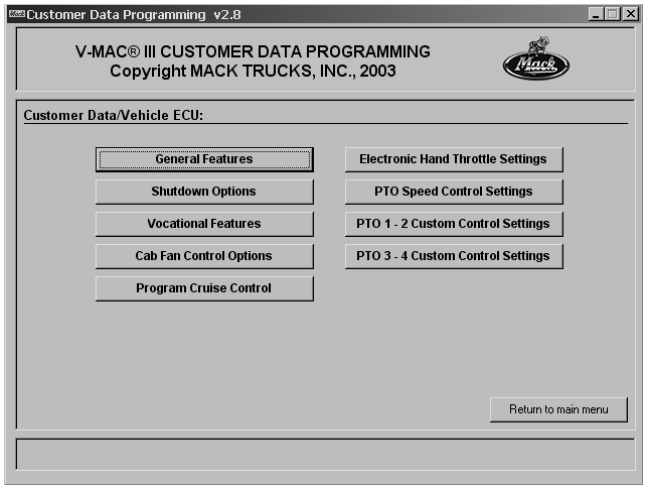

Figure 55 — Vehicle ECU Customer Data Menu

Click on the ***General Features*** button to program general features (refer to "GENERAL FEATURES ENTRY FORM" on page 61).

Click on the ***Shutdown Options*** button to program shutdown options (refer to "SHUTDOWN OPTIONS ENTRY FORM" on page 61).

Click on the ***Vocational Features*** button to program vocation features (refer to "VOCATIONAL FEATURES ENTRY FORM" on page 61).

Click on the ***Cab Fan Control Options*** button to program cab fan controls (refer to "CAB FAN CONTROLS ENTRY FORM" on page 62).

NOTE

Cab Fan Control options are only available for Step 5 and above.

Click on the ***Program Cruise Control*** button to program cruise control options (refer to "CRUISE CONTROL OPTIONS ENTRY FORM" on page 62).

NOTE

When ***Program Cruise Control Options*** is selected, a program status screen may appear. This is a warning to make sure that PTO 2 is turned *OFF* before changing cruise settings.

Click on the ***Electronic Hand Throttle Settings*** button to program electronic hand throttle settings (refer to "ELECTRONIC HAND THROTTLE SETTINGS ENTRY FORM" on page 62).

Click on the ***PTO Speed Control Settings*** button to program standard settings for all PTOs (refer to "PTO SPEED CONTROL SETTINGS ENTRY FORM" on page 63).

Click on the ***PTO 1-2 Custom Control Settings*** button to program custom settings for PTO 1 and PTO 2 (refer to "PTO 1-2 CUSTOM SETTINGS ENTRY FORM" on page 63).

Click on the ***PTO 3-4 Custom Control Settings*** button to program custom settings for PTO 3 and PTO 4 (refer to "PTO 3-4 CUSTOM SETTINGS ENTRY FORM" on page 63).

Click on the ***Return to main menu*** button to return to the Customer Data Programming menu.

ENGINE ECU CUSTOMER DATA ENTRY FORM

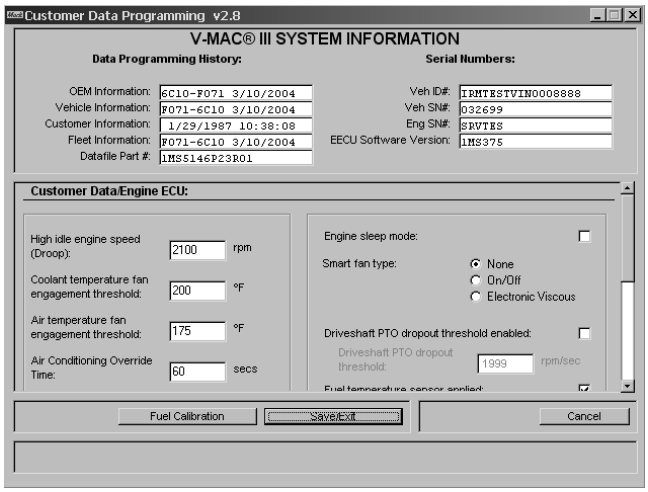

Figure 56 — Engine ECU Customer Data Entry Form

This entry form, accessed from the Customer Data Programming Menu, is used to program parameters stored in the EECU. The allowable limits for each feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the "CUSTOMER DATA/EECU FEATURES" table on page 99.

FLEET DATA MENU

The Fleet Data Menu, accessed from the Customer Data Programming Menu, offers six choices where you can program parameters and settings associated with fleet data.

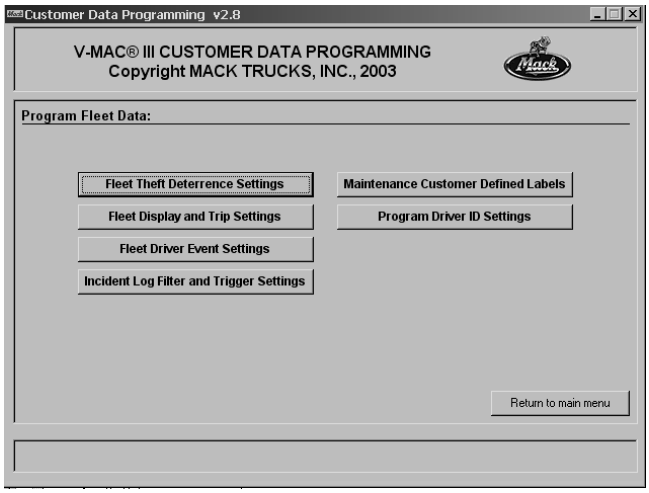

Figure 57 — Fleet Data Menu

Click on the ***Fleet Theft Deterrence Settings*** button to program theft deterrence parameters (refer to “THEFT DETERRENCE PARAMETERS ENTRY FORM” on page 64).

Click on the ***Fleet Display and Trip Settings*** button to program display and trip settings (refer to “FLEET DISPLAY AND TRIP PARAMETERS ENTRY FORM” on page 64).

Click on the ***Fleet Driver Event Settings*** button to program driver event settings (refer to “FLEET DRIVER EVENT SETTINGS ENTRY FORM” on page 65).

Click on the ***Incident Log Filter and Trigger Settings*** button to program incident log filter and trigger settings (refer to “INCIDENT LOG FILTER AND TRIGGER SETTINGS ENTRY FORM” on page 65).

Click on the ***Maintenance Customer Defined Labels*** button to program the customer defined labels that are used in the Maintenance Monitor (refer to “MAINTENANCE CUSTOMER DEFINED LABELS ENTRY FORM” on page 65).

Click on the ***Driver ID Settings*** button to program driver ID settings (refer to “DRIVER ID SETTINGS ENTRY FORM” on page 66).

Click on the ***Return to main menu*** button to return to the Customer Data Programming menu.

EDIT OWNER STORAGE ENTRY FORM

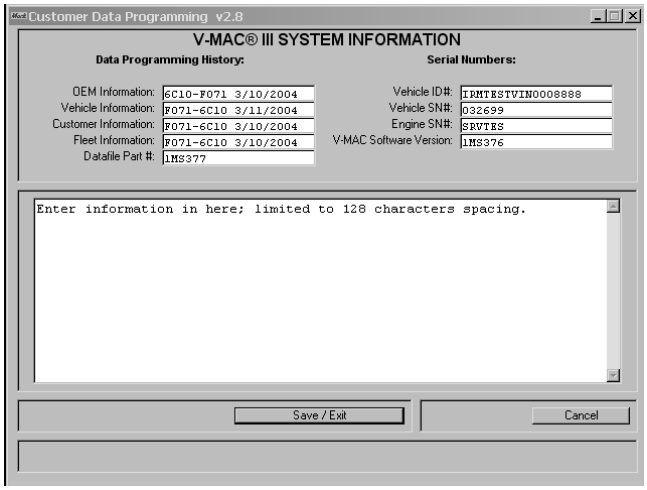

Figure 58 — Edit Owner Storage Entry Form

This entry form, accessed from the Customer Data Programming Menu, is used to store customer information. For detailed instructions, refer to the “CUSTOMER DATA PROGRAMMING FUNCTIONS” table on page 70.

MAINTENANCE MONITOR ENTRY FORM

The Maintenance Monitor entry form, accessed from the Customer Data Programming Menu, allows you to set maintenance intervals according to distance, engine hour or date. Or, if desired, set the maintenance items to the Mack defaults.

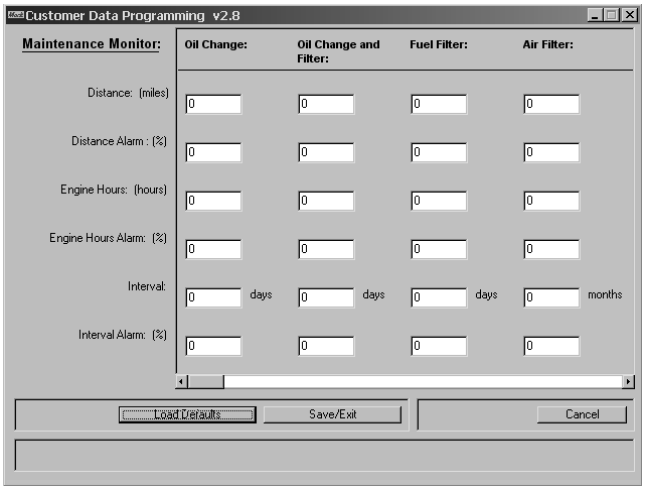

Figure 59 — Maintenance Monitor Entry Form

To change an item, type in the appropriate field and click on the **Save/Exit** button to save data in the module. Or click on the ***Load Defaults*** button to view and choose from three predefined maintenance intervals (Line Haul Type 1 Defaults, Line Haul Type 2 Defaults or Short Haul Defaults).

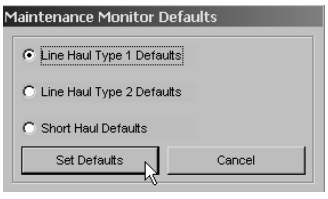

Figure 60 — Mack Maintenance Defaults

Click on the appropriate radio button (e.g., click on “Line Haul Type 1 Defaults). To accept the change, click on the ***Set Defaults*** button or click on the ***Cancel*** button to not accept the change.

The table below lists the available maintenance items and parameter ranges.

Maintenance Item	Interval Type	Range
Oil Change	Distance	0 or 10,000 to 70,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 200 to 1000 hours
	Hours Alarm	0 to 255%
	Date	0 to 180 days
	Date Alarm	0 to 255%
Oil Change and Filter	Distance	0 or 10,000 to 70,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 200 to 1000 hours
	Hours Alarm	0 to 255%
	Date	0 to 180 days
	Date Alarm	0 to 255%
Fuel Filter	Distance	0 or 10,000 to 70,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 200 to 1000 hours
	Hours Alarm	0 to 255%
	Date	0 to 180 days
	Date Alarm	0 to 255%
Air Filter	Distance	0 or 10,000 to 100,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 250 to 5000 hours
	Hours Alarm	0 to 255%
	Date	0 to 18 months
	Date Alarm	0 to 255%
Engine Belts	Distance	0 or 10,000 to 200,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 250 to 10,000 hours
	Hours Alarm	0 to 255%
	Date	0 to 30 months
	Date Alarm	0 to 255%
Coolant Conditioner	Distance	0 or 10,000 to 70,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 200 to 1000 hours
	Hours Alarm	0 to 255%
	Date	0 to 180 days
	Date Alarm	0 to 255%

Maintenance Item	Interval Type	Range
Engine Coolant	Distance	0 or 50,000 to 200,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 1000 to 10,000 hours
	Hours Alarm	0 to 255%
	Date	0 or 6 to 30 months
	Date Alarm	0 to 255%
Clutch Lube	Distance	0 or 10,000 to 30,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 to 300 hours
	Hours Alarm	0 to 255%
	Date	0 to 3 months
	Date Alarm	0 to 255%
Chassis Lube	Distance	0 or 10,000 to 40,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 200 to 400 hours
	Hours Alarm	0 to 255%
	Date	0 or 1 to 6 months
	Date Alarm	0 to 255%
Power Steering	Distance	0 or 10,000 to 100,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 1000 to 10,000 hours
	Hours Alarm	0 to 255%
	Date	0 to 18 months
	Date Alarm	0 to 255%
Turbo/Injectors	Distance	0 or 50,000 to 200,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 1000 to 10,000 hours
	Hours Alarm	0 to 255%
	Date	0 or 6 to 30 months
	Date Alarm	0 to 255%
Gear Oil	Distance	0 or 250,000 to 600,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 1600 to 10,000 hours
	Hours Alarm	0 to 255%
	Date	0 or 12 to 48 months
	Date Alarm	0 to 255%
Fan Clutch	Distance	0 or 25,000 to 500,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 or 1000 to 50,000 hours
	Hours Alarm	0 to 255%
	Date	0 to 72 months
	Date Alarm	0 to 255%

Maintenance Item	Interval Type	Range
Customer Defined 1/2	Distance	0 to 600,000 miles
	Distance Alarm	0 to 255%
	Engine Hours	0 to 10,000 hours
	Hours Alarm	0 to 255%
	Date	0 to 72 months
	Date Alarm	0 to 255%

UNIT PUMP CALIBRATION ENTRY FORM

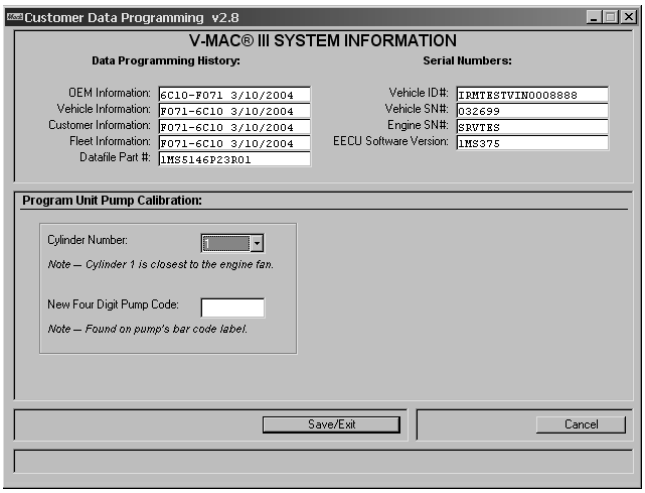

Figure 61 — Unit Pump Calibration Entry Form (ASET™ AI Engine)

Unit Pump Calibration Entry Form (for ASET™ AC Engine)

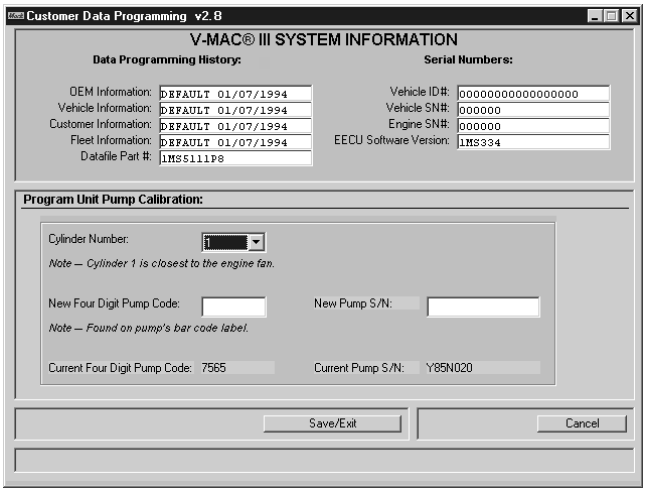

Figure 62 — Unit Pump Calibration Entry Form (ASET™ AC Engine)

These entry forms, accessed from the Customer Data Programming Menu, are used to enter the unit pump calibration codes. For detailed instructions, refer to “CUSTOMER DATA PROGRAMMING FUNCTIONS” table on page 70.

SET TIME AND DATE SCREEN

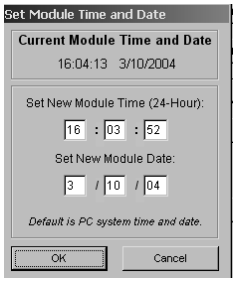

Figure 63 — Set Time and Date Screen

This screen, accessed from the Customer Data Programming Menu, is used to set the vehicle time and date to the PC time and date. For detailed instructions, refer to the “CUSTOMER DATA PROGRAMMING FUNCTIONS” table on page 70.

NOTE

The time and date settings are not retained in VECU memory if power to the VECU is lost (for example, when the vehicle battery or the harness connector is disconnected). Therefore, when power is restored to the VECU (for example, reconnecting the battery or the VECU harness connector), reset the time and date before returning the vehicle to service.

NOTE

The V.I.P.™ time setting can be changed using the V.I.P.™ display without affecting the VECU time and date settings.

GENERAL FEATURES ENTRY FORM

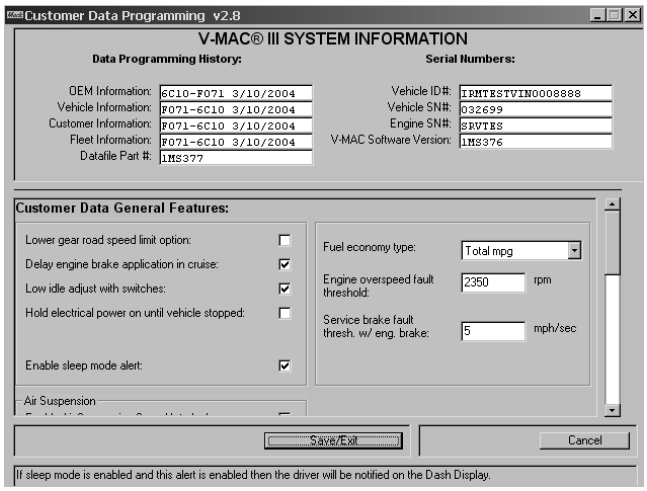

Figure 64 — General Features Entry Form

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program general features stored in the VECU. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “CUSTOMER DATA/VECU — GENERAL FEATURES” table on page 76.

SHUTDOWN OPTIONS ENTRY FORM

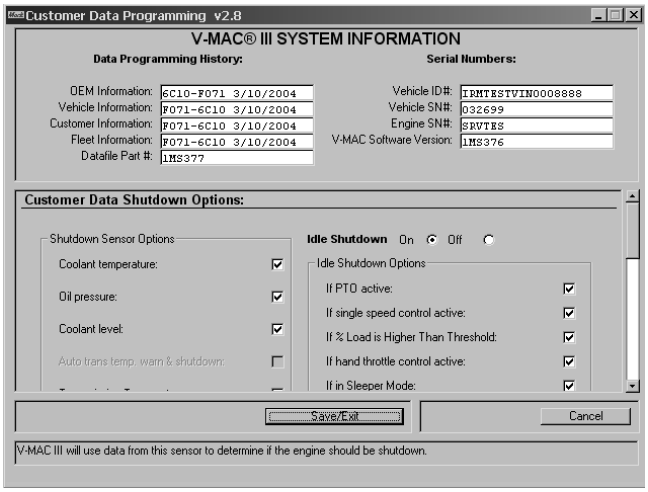

Figure 65 — Shutdown Options Entry Form

NOTE

For vehicles with Step 4 or Step 5 (1MS38P2 and 1MS317 EECU) software, be sure to disable the Idle Shutdown parameter in Customer Data Programming prior to programming the modules. Failure to do so may result in possible programming failure and damage to the modules.

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program idle shutdown. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “CUSTOMER DATA/VECU — SHUTDOWN OPTIONS” table on page 79.

VOCATIONAL FEATURES ENTRY FORM

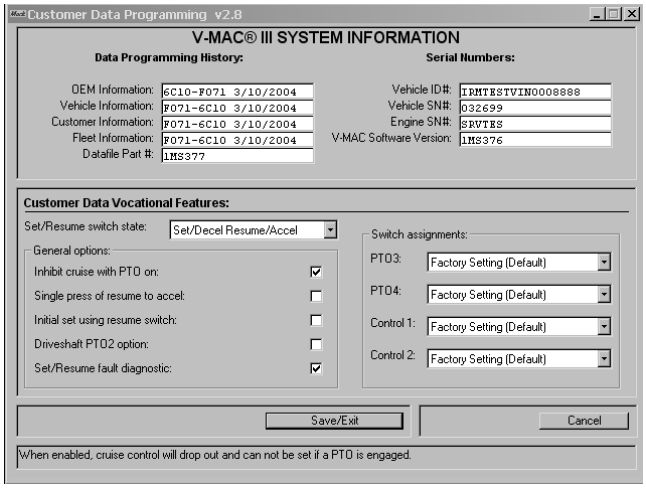

Figure 66 — Vocational Features Entry Form

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program vocational features stored in the VECU. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed features descriptions, refer to the “CUSTOMER DATA/VECU — VOCATIONAL FEATURES” table on page 84.

CAB FAN CONTROLS ENTRY FORM

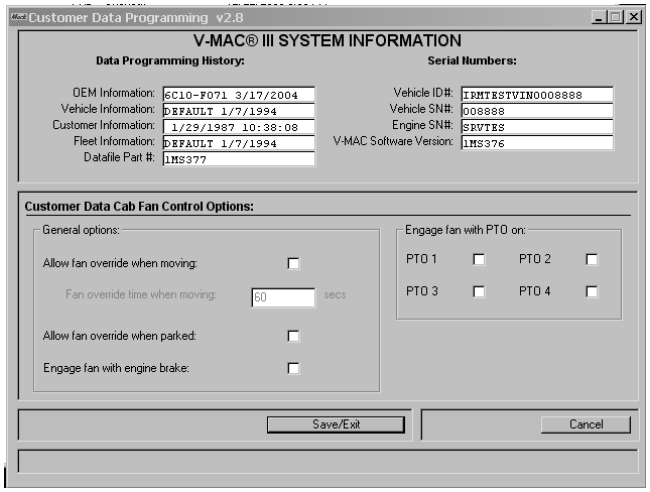

Figure 67 — Cab Fan Controls Entry Form

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program cab fan parameters stored in the VECU. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “CUSTOMER DATA/VECU — CAB FAN CONTROLS” table on page 86.

NOTE

This option is available for Step 5 and above systems only.

CRUISE CONTROL OPTIONS ENTRY FORM

NOTE

When this option is selected, a program status screen may appear. This is a warning to make sure that PTO 2 is turned *OFF* before changing cruise settings.

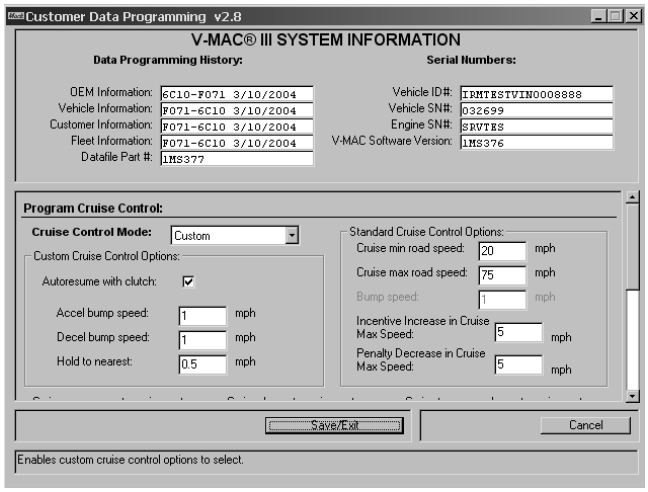

Figure 68 — Cruise Control Entry Form

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program cruise control. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “CUSTOMER DATA/VECU — CRUISE CONTROL FEATURES” table on page 87.

ELECTRONIC HAND THROTTLE SETTINGS ENTRY FORM

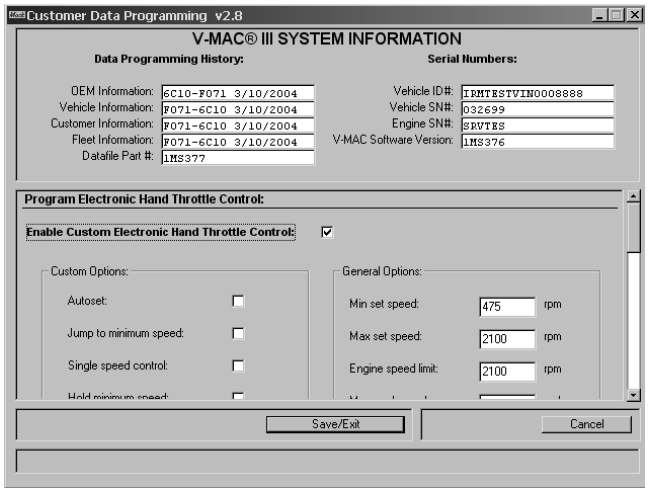

Figure 69 — Electronic Hand Throttle Settings Entry Form

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program the electronic hand throttle. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “CUSTOMER DATA/ VECU — ELECTRONIC HAND THROTTLE (EHT) FEATURES” table on page 90.

PTO SPEED CONTROL SETTINGS ENTRY FORM

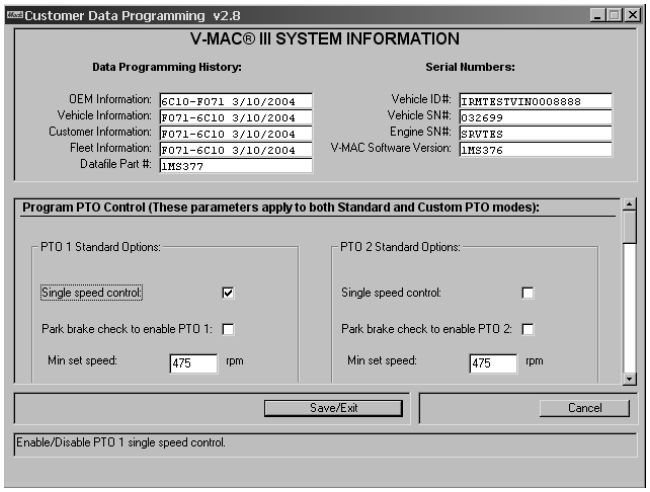

Figure 70 — PTO Speed Control Settings Entry Form

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program standard features for each PTO. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “CUSTOMER DATA/VECU — PTO SPEED CONTROL SETTINGS” table on page 93.

PTO 1-2 CUSTOM SETTINGS ENTRY FORM

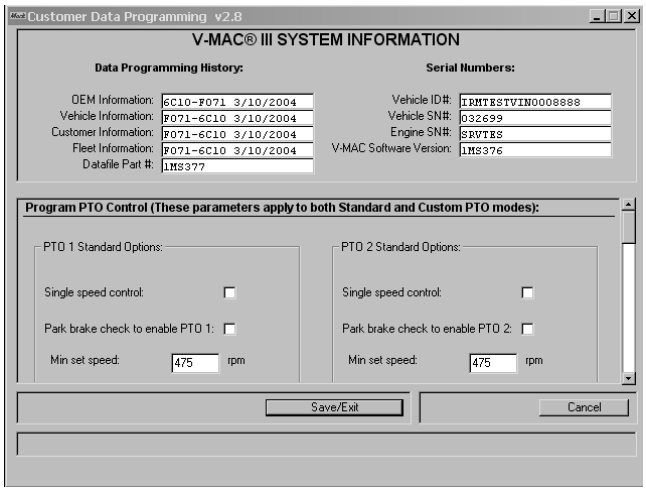

Figure 71 — PTO 1-2 Custom Settings Entry Form

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program custom settings for PTO 1 and PTO 2. When applicable, the allowable limits for each feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “CUSTOMER DATA/ VECU — CUSTOM PTO SETTINGS” table on page 95.

PTO 3-4 CUSTOM SETTINGS ENTRY FORM

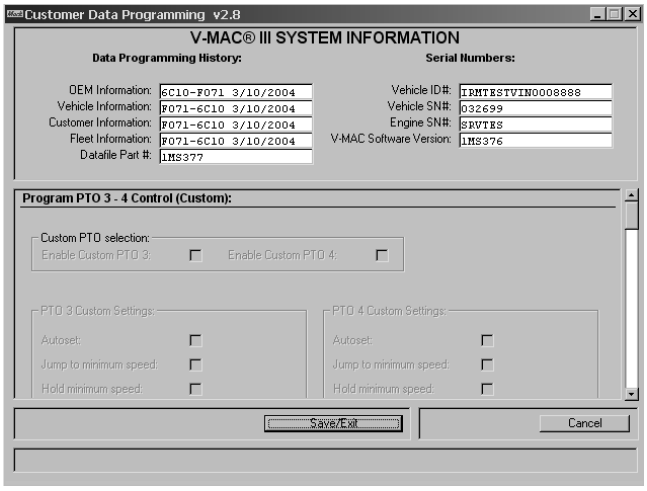

Figure 72 — PTO 3-4 Custom Settings Entry Form

This entry form, accessed from the Vehicle ECU Customer Data Menu, is used to program custom settings for PTO 3 and PTO 4. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “CUSTOMER DATA/ VECU — CUSTOM PTO SETTINGS” table on page 95.

THEFT DETERRENCE PARAMETERS ENTRY FORM

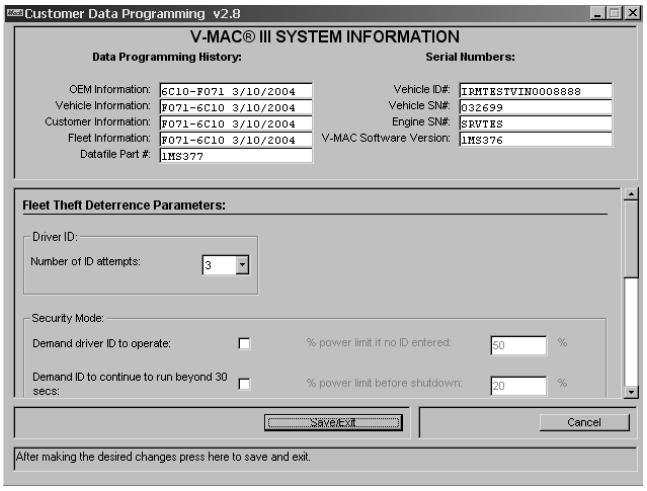

Figure 73 — Theft Deterrence Parameters Entry Form

This entry form, accessed from the Fleet Data Menu, is used to program theft deterrence parameters. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “FLEET DATA — THEFT DETERRENCE FEATURES” table on page 103.

FLEET DISPLAY AND TRIP PARAMETERS ENTRY FORM

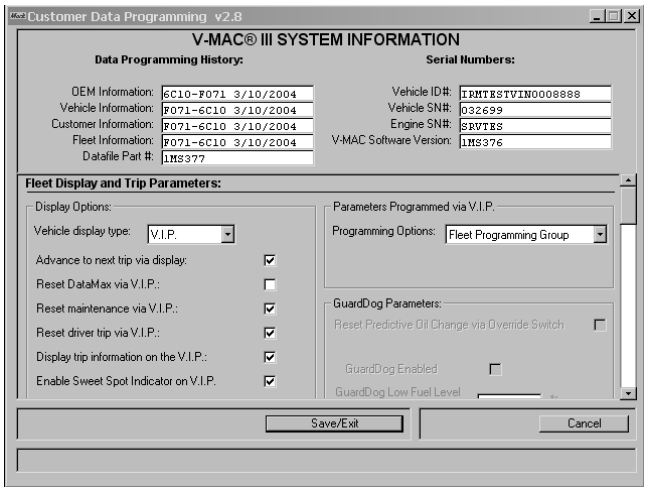

Figure 74 — Fleet Display and Trip Parameters Entry Form

NOTE

The following Driver Incentive dialog window will appear. If you enable the Driver Incentive parameter, you must also set the related incentive Road Speed Limit (in the Program Vehicle Component Parameters entry form) and Cruise (in the Customer Data/Vehicle ECU, Program Cruise Control entry form) parameters.

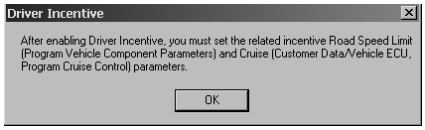

Figure 75 — Driver Incentive Dialog Window

This entry form, accessed from the Fleet Data Menu, is used to view fleet display and program trip parameters. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. For detailed feature descriptions, refer to the “FLEET DATA — DISPLAY AND TRIP SETTINGS” table on page 105.

FLEET DRIVER EVENT SETTINGS ENTRY FORM

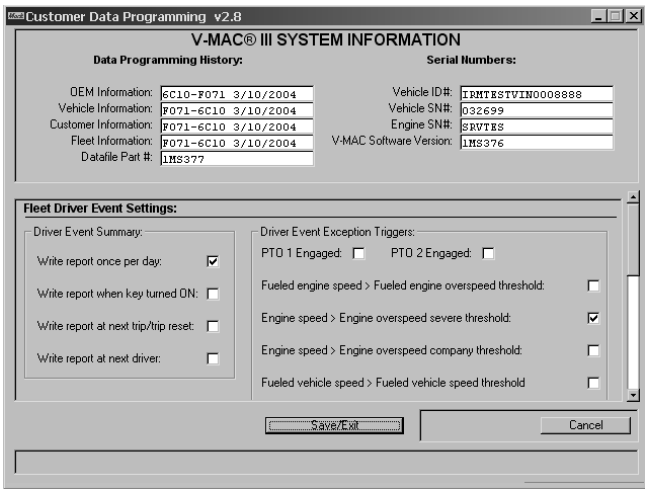

Figure 76 — Fleet Driver Event Settings Entry Form

This entry form, accessed from the Fleet Data Menu, is used to program driver event settings. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. Driver events are records of things that drivers do during the normal course of their jobs. For example, Driver Event data can report on how well drivers obey road and engine speed limits. This entry form is used in conjunction with InfoMax™ (if available) to provide reports. For more information, refer to the “FLEET DATA — DRIVER EVENT SETTINGS” table on page 116.

INCIDENT LOG FILTER AND TRIGGER SETTINGS ENTRY FORM

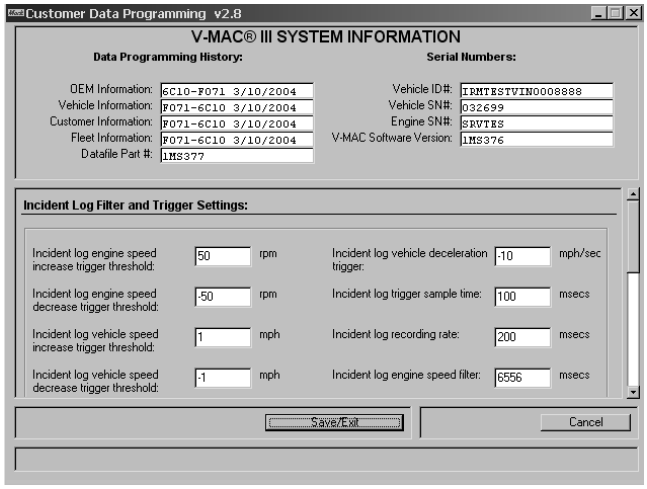

Figure 77 — Incident Log Filter and Trigger Settings Entry Form

This entry form, accessed from the Fleet Data Menu, is used to program incident log filter and trigger settings. When applicable, the allowable limits for a feature are displayed at the bottom of the screen. Vehicle Incidents contain information about how a vehicle was being driven before and after conditions have been detected by the V-MAC module, suggesting that an accident or other catastrophic event has occurred. This entry form is used in conjunction with InfoMax™ (if available) to provide reports.

A data logger generates the incident report on board the vehicle. During normal operation, a sample of vehicle speed, engine speed and the state of up to eight switches are stored at a programmable rate. This rate can be set using Customer Data Programming. At another programmable rate, the data logger determines vehicle and engine speed by watching for a change in vehicle speed greater than 10 mph/sec or engine speed greater than 50 rpm/sec. If both are detected, an incident report is triggered. For more information, refer to the “FLEET DATA — INCIDENT LOG FILTER AND TRIGGER SETTINGS” table on page 118.

MAINTENANCE CUSTOMER DEFINED LABELS ENTRY FORM

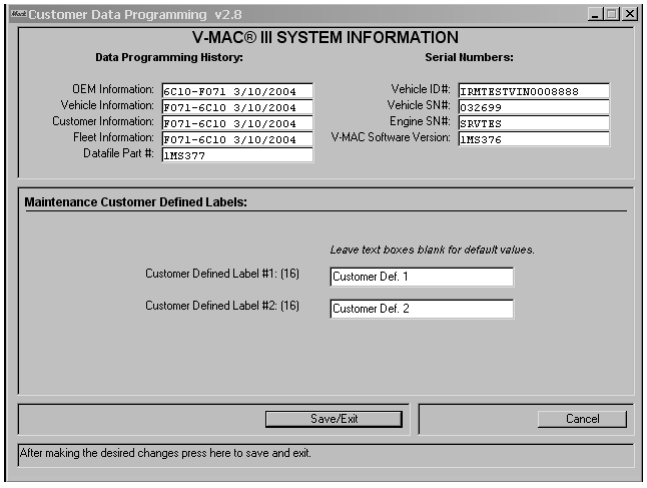

Figure 78 — Maintenance Customer Defined Labels Entry Form

This entry form, accessed from the Fleet Data Menu, is used to program customer defined labels. For detailed feature descriptions, refer to the “FLEET DATA — CUSTOMER DEFINED LABELS” table on page 120.

DRIVER ID SETTINGS ENTRY FORM

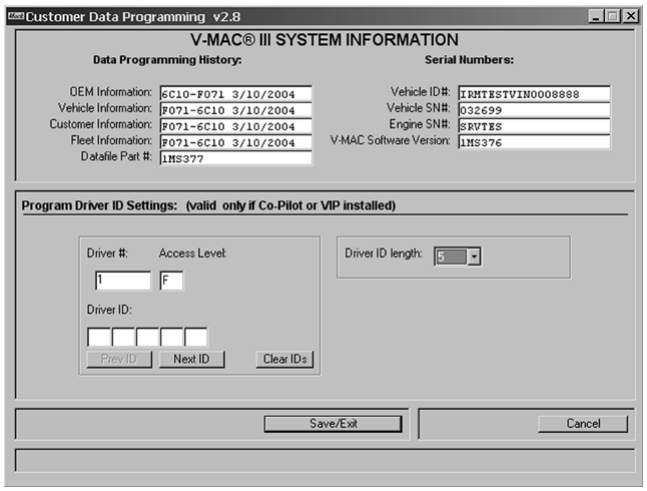

Figure 79 — Driver ID Settings Entry Form

This entry form, accessed from the Fleet Data Menu, is used to program driver ID and access level restrictions for each driver ID. For detailed feature descriptions, refer to the “FLEET DATA — DRIVER ID SETTINGS” table on page 120.

Cummins Screen Summaries

The following screens will appear if the vehicle is equipped with a Cummins engine.

CUMMINS CUSTOMER DATA PROGRAMMING MENU

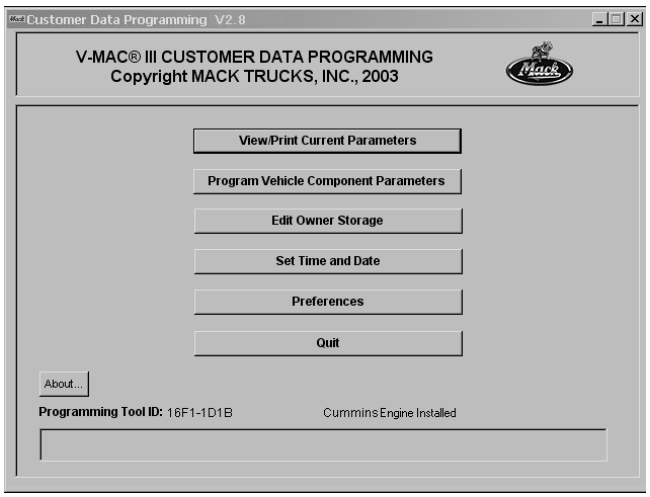

Figure 80 — Cummins Customer Data Programming Menu

NOTE

A line in the lower right side of the screen shows that a Cummins Engine is installed.

NOTE

A line in the lower left side of the screen displays the Programming Tool ID hard drive serial number, used for programming history.

This menu lists the available programming options for a vehicle equipped with a Cummins engine.

Click on the ***View/Print Current Parameters*** button to view or print current parameters (refer to “CUMMINS VIEW/PRINT REPORT SELECTION SCREEN” on page 67).

Click on the ***Program Vehicle Component Parameters*** button to program vehicle component parameters (refer to “CUMMINS VEHICLE COMPONENT PARAMETERS ENTRY FORM” on page 67).

Click on the ***Edit Owner Storage*** button to edit the Owner Storage entry form (refer to “EDIT OWNER STORAGE ENTRY FORM” on page 57).

Click on the ***Set Time and Date*** button to set the VECU time and date (refer to “SET TIME AND DATE SCREEN” on page 60).

Click on the ***Utilities*** button to set the configuration.

Click on the ***Quit*** button to exit the program.

CUMMINS VIEW/PRINT REPORT SELECTION SCREEN

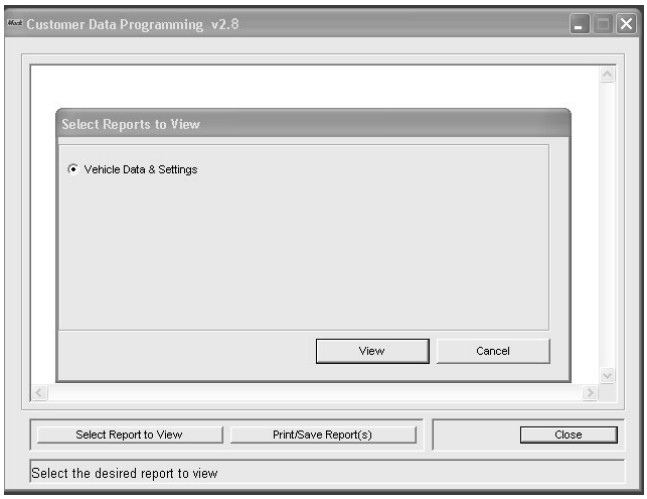

Figure 81 — Cummins View/Print Selection Screen

Click on the ***Select Report to View*** button to call up the Select Report to View pop-up screen.

Click on the ***View*** button to view the current selection.

Click on the ***Print/Save Report(s)*** button to print the current selection.

- Select ***Vehicle Data & Settings*** to view/print the Vehicle Data & Settings display screen.

Click on the ***Cancel*** button to return to the Customer Data Programming menu.

CUMMINS VEHICLE COMPONENT PARAMETERS ENTRY FORM

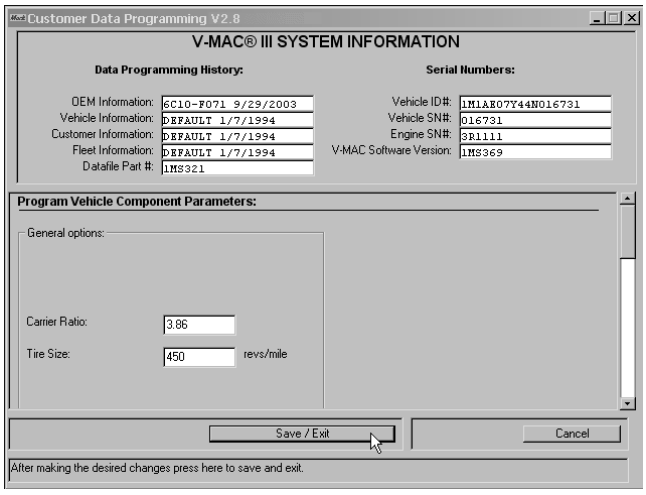

Figure 82 — Vehicle Component Parameters Entry Form

This entry form is used to program various vehicle component parameters and features. The allowable limits for each feature are displayed at the bottom of the screen.

CUSTOMER DATA PROGRAMMING DESCRIPTION AND OPERATION

Theft Deterrence System Summary

The V-MAC III system has the ability to limit unauthorized vehicle use by requiring the driver to enter an access code through the dash display unit.

SECURITY MODES

The V-MAC III theft deterrence system offers two security modes for continued running.

Limited Power Mode

When this mode is enabled, the vehicle will start without a valid access code but will only run at limited power. There is no time limit with this mode, but engine power will be restricted. To use this mode of security, enable the *Demand Driver ID to Operate* feature (refer to the “FLEET DATA — THEFT DETERRENCE FEATURES” table on page 103).

Limited Time Mode

When this mode is enabled, the vehicle will start without a valid access code but will shut down after 30 seconds unless a valid access code is entered. In addition, engine power can be restricted for the initial 30-second period. With this mode of security, there is a time limit and engine power is restricted. To use this mode of security, enable the *Demand ID to Continue Running Beyond 30 Seconds* feature (refer to the “FLEET DATA — THEFT DETERRENCE FEATURES” table on page 103).

ACCESS LEVEL RESTRICTIONS

The driver access code can be programmed with specific restrictions, regardless of the security mode selected. Four different levels of access are available:

Full Access

This type of access code has no restrictions on power, driving time or distance.

Limited Power Access

This type of access code allows the operator to start the vehicle, but the vehicle will have restricted power.

Limited Speed Access

This type of access code allows the operator to start the vehicle, but the vehicle will have restricted road speed.

Theft Access

This type of access code allows the operator (usually a thief) to start and drive the vehicle with full power. However, the engine will shut down after a specified time or distance. This level of access is designed for emergency situations. After the driver gives this code to a thief, the vehicle will start and drive normally, but the vehicle will shut down and can be recovered without endangering personnel.

Maintenance Monitor Summary

The V-MAC III system monitors maintenance intervals and issues alerts for a variety of items. In particular, the Maintenance Monitor system:

- Allows the user to set maintenance intervals.
- Monitors maintenance thresholds.
- Broadcasts maintenance alerts to the driver.

If installed, GuardDog™, an active monitoring feature of V-MAC, tracks real-time occurrences that require maintenance. GuardDog™ determines when maintenance for a selected item is needed, using various sensor inputs and algorithms. The driver is notified of maintenance through the electronic dash or the V.I.P.™. GuardDog™ and the Maintenance Monitor system can work separately or together.

NOTE

GuardDog™ is available for CH, CV and CX model chassis. The vehicle must be equipped with a version 4.0 V.I.P.™ (1MS351 or higher software) and a VECU with 1MS349 for E-Tech™ engines or 1MS364 for ASET™ AI engines to support the sensors GuardDog™ uses to monitor the vehicle systems.

NOTE

GuardDog™ is not available for MR and LE models or vehicles with an ASET™ AC engine.

PROGRAMMING MAINTENANCE INTERVALS

The Maintenance Monitor system provides three methods for programming maintenance intervals:

- Setting custom maintenance intervals using the Maintenance Monitor entry form.
- Setting maintenance intervals to MACK defaults using the ***Load Defaults*** selection in the Maintenance Monitor entry form.
- Setting oil change intervals using driving habits. Predictive Oil Change can only be set in Service Diagnostics.

MONITORING MAINTENANCE THRESHOLDS

The V-MAC III system monitors the status of each of the maintenance items. Once the maintenance threshold is reached, an alert is issued.

BROADCASTING MAINTENANCE ALERTS

As soon as a maintenance alert is issued, it is broadcast to the driver (unless Alert Blackout mode is currently enabled). To program Alert Blackout mode parameters, refer to page 114.

NOTE

If Alert Blackout mode is enabled at the time that the alert is issued, the alert will be held until the *Alert Blackout Stop Time, GMT* threshold is reached. Once this threshold is reached, the alert will be broadcast to the driver.

After the initial broadcast, the maintenance alert will be broadcast every time the vehicle is started (until maintenance is performed and the alert is reset).

In addition, reminders can also be programmed for scheduled times throughout the day.

CUSTOMER DATA PROGRAMMING FUNCTIONS

Function	Description	Location/Password	Instructions
Edit Owner Storage	Allows the user to enter information such as major component part numbers and dates of repair.	Location →Edit Owner Storage Password Vehicle Data (VECU)	Type in the desired information in the field and click on the ***Save/Exit*** button. Limited to 128 characters spacing.
Maintenance Monitor Schedule	Allows the user to set maintenance intervals according to distance, engine hour or date. A maintenance alarm can also be set for each interval. This alarm is based on a percentage of the interval.	Location →Maintenance Monitor Password Fleet Data (VECU)	1. Type in the distance, engine hour or date interval for each item. 2. If a maintenance alarm is desired, enter the appropriate percent for each interval. Example: If the distance interval is set at 10,000 miles and the distance alarm interval is set at 80%, the alarm will be issued at 8,000 miles (8,000 is 80% of 10,000). An alarm of 85% is set when Predictive Oil Change is enabled. Customers can change this. 3. Click on the ***Save/Exit*** button. **NOTE:** To set maintenance intervals to MACK defaults, click on the ***Load Defaults*** button and select the appropriate option. **NOTE:** If Predictive Oil Change is enabled, all oil change items are disabled. Also, all Oil Change & Filter items, except for Distance Alarm, are disabled.
Unit Pump Calibration	Calibrates the Electronic Unit Pumps (EUPs).	Location →Program Unit Pump Calibration Password None	1. Select the unit pump cylinder location. 2. Type in the four-digit calibration code (and pump serial # for ASET™ AC engines). 3. Click on the ***Save/Exit*** button. **NOTE:** Don't mix Standard and CCRS pumps. Both use four-digit pump numbers.
Set Time and Date	Sets the VECU time and date.	Location →Set Time and Date Password Fleet Data (VECU)	There are two ways to set the VECU time and date: • Type in the desired time and date and click on the ***OK*** button. • Click on the ***OK*** button (without changing anything) to set the VECU time and date to the current PC time and date.
Print Current Parameters	Allows the user to print the current parameter settings.	Location →View/Print Current Parameters Password None	Once this option is selected, the View/Print Report selection screen will appear. 1. Select the appropriate report (vehicle & data settings, PTO parameters, etc.) by clicking on the circle next to the desired report. 2. Click on the ***Print*** button.
View Current Parameters	Allows the user to view the current parameter settings.	Location →View/Print Current Parameters Password None	Once this option is selected, the View/Print Report selection screen will appear. 1. Select the appropriate report (vehicle and data settings, PTO parameters, etc.) by clicking on the circle next to the desired report. 2. Click on the ***View*** button.
Utilities	Sets the PC configuration.	Location →Utilities →Preferences Password None	1. Select the Com Port setting (please refer to "Selecting Datalink Adapter" on page 41). 2. Select International Unit type. 3. Select Language type. 4. Click on the ***Apply/OK*** button.

VEHICLE COMPONENT PARAMETERS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Unit ID Number	Programs the unit identification number.	Range Max.16 characters Default ID not entered	Location →Vehicle Component Parameters (General Options) Password Vehicle Data (VECU)	The unit ID number is set by the owner of the vehicle and is different from the Vehicle Identification Number (VIN); it is used mainly in a separate fleet management software package sold by Mack called InfoMax™ Fleet Management Software. The Unit IDs are used to track the vehicle in the InfoMax™ database.
Transmission Top Gear Ratio	Sets the highest gear ratio of the transmission (fastest truck speed gear).	Range 0.00 to 2.55 Default Factory Set based on transmission installed	Location →Vehicle Component Parameters (General Options) Password Vehicle Data (VECU)	This parameter is used by the *Lower Gear Road Speed Limit* parameter to determine if the vehicle is in top gear. If the transmission is changed from one type to another, the top gear ratio may be different. If the top gear ratio changes, the *Transmission Top Gear Ratio* setting must be changed.
Carrier Ratio	Sets the gear ratio of the rear axle carrier(s), which is used by V-MAC to calculate accurate road speed information.	Range 2.0 to 18.0 Default Factory Set	Location →Vehicle Component Parameters (General Options) Password Vehicle Data (VECU)	**NOTE:** If the rear axle carrier(s) is replaced, and the new ratio is different from the ratio that is currently stored in V-MAC, the *Carrier Ratio* setting must be changed to match the new ratio.
Tire Size	Sets the tire size, which is used by V-MAC to calculate accurate road speed information.	Range 300 to 600 revs/mile Default Factory Set based on the tires installed	Location →Vehicle Component Parameters (General Options) Password Vehicle Data (VECU)	Tire size affects accurate road speed calculation because different sized tires travel a different number of revolutions per mile. If tire sizes are changed, it will be necessary to change the *Tire Size* setting. Tire revs/mile information can be obtained from the tire manufacturer.
Road Speed Pickup Teeth	Sets the number of teeth on the speedometer drive gear (tone wheel).	Range 4 to 100 pulses/rev. Default 16 pulses/rev.	Location →Vehicle Component Parameters (General Options) Password Vehicle Data (VECU)	This parameter is set at 16 pulses per mile because this is the only option currently available. **NOTE:** For accurate speedometer readings, always make sure that the Road Speed Pickup Teeth parameter is set to 16 pulses per mile.
Road Speed Limit	Sets the maximum vehicle speed limit.	Range 40 to 100 mph Default N/A	Location →Vehicle Component Parameters (General Options) Password Vehicle Data (VECU)	V-MAC will not allow vehicle speed to exceed the value set for this parameter unless specific circumstances exist (see “Enable Cruise Button Bonus”). **NOTE:** If the *Enable Cruise Button Bonus* feature is enabled, it may be possible to exceed the *Road Speed Limit* value using the speed control switches.

VEHICLE COMPONENT PARAMETERS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Lower Gear Road Speed Limit	Sets the fastest road speed that can be attained in any gear below the highest gear of the transmission.	Range 40 to 85 mph or the *Road Speed Limit* Default 65 mph	Location →Vehicle Component Parameters (General Options) Password Vehicle Data (VECU)	This parameter is similar to the *Road Speed Limit* parameter; limiting road speed in all gears except the highest gear of the transmission. The purpose of this feature is to encourage the driver to operate the vehicle in high gear where maximum fuel economy can be attained. **NOTE:** If an Eaton® Super 10 Top 2 transmission is installed, this feature will not be available.
Engine Load Threshold for No MPH Signal	Sets the engine load threshold for the inactive road speed sensor fault.	Range 20 to 100% Default 40%	Location →Vehicle Component Parameters (Threshold Options) Password Vehicle Data (VECU)	If the *Engine Threshold for No MPH Signal* parameter is set too low, this will increase the likelihood of a road speed sensor fault becoming active. Once a road speed fault is active, engine speed control will drop out and the engine will return to idle when the engine load threshold is reached. This parameter setting can be helpful for customers operating turbo-unloaders with various engine load requirements. For maximum detection, select a lower number.
Failed MPH Sensor Engine Power Limit	Limits engine power if V-MAC detects a road speed sensor failure.	Range 10 to 100% Default 50%	Location →Vehicle Component Parameters (Threshold Options) Password Vehicle Data (VECU)	This feature can function only when the *Detect Loss of Signal from MPH Sensor* feature is enabled and the *Limit Power if No Signal from MPH Sensor* or *Limit Power if Electrical Fault in MPH Sensor* feature is enabled. Customers who desire no power limit should select the maximum engine power limit (100%). However, it is important to note that with the maximum engine power limit selected, it is possible to defeat the set *Road Speed Limit* (if there is an active road speed sensor fault).
Battery Low Voltage Fault Threshold	Sets the low battery voltage threshold.	Range 10 to 12 volts Default 10.5 volts	Location →Vehicle Component Parameters (Threshold Options) Password Vehicle Data (VECU)	If battery voltage drops below the *Battery Low Voltage Fault Threshold* value (with key switch ON and the engine not running), a fault indication will alert the driver.
Alternator Low Voltage Fault Threshold	Sets the low alternator voltage threshold.	Range 10 to 12 volts Default 11.5 volts	Location →Vehicle Component Parameters (Threshold Options) Password Vehicle Data (VECU)	If alternator voltage drops below the *Alternator Low Voltage Fault Threshold* value (while the engine is running), a fault indication will alert the driver.

VEHICLE COMPONENT PARAMETERS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Alternator High Voltage Fault Threshold	Sets the high alternator voltage threshold.	Range 12 to 17 volts Default 16 volts	Location →Vehicle Component Parameters (Threshold Options) Password Vehicle Data (VECU)	If alternator voltage exceeds the *Alternator High Voltage Fault Threshold* value (while the engine is running), a fault indication will alert the driver.
Engine Brake Engagement Delay in Cruise	Determines the speed above the *Cruise Control Set Speed* at which point the engine brake is activated.	Range 1 to 10 mph Default 2 mph	Location →Vehicle Component Parameters (Engine Brake) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34).
Engine Brake Disengagement in Cruise	Determines the speed above the cruise control set speed at which point the engine brake is de-activated.	Range 0.5 to 9 mph Default 0.5 mph	Location →Vehicle Component Parameters (Engine Brake) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34). This value must be lower than the *Engine Brake Engagement Delay in Cruise* feature value.
Enable Cruise Button Bonus	Allows the user to set the *Cruise Max Road Speed* parameter to a value greater than the *Road Speed Limit*. When this feature is disabled, the option of setting *Cruise Max Road Speed* parameter higher than the *Road Speed Limit* is not available.	Range Enabled/Disabled Default Disabled	Location →Vehicle Component Parameters Password Vehicle Data (VECU)	With this feature enabled, the *Road Speed Limit* threshold can only be exceeded by using the Accel switch. Therefore, the driver must use the speed controls to get the “bonus” vehicle speed. **NOTE:** Once the *Cruise Max Road Speed* setting is changed, it will remain at the set value (even if the *Enable Cruise Button Bonus* feature is then disabled). Therefore, if the *Cruise Max Road Speed* parameter was set at a greater value than the *Road Speed Limit* parameter, and then the *Enable Cruise Button Bonus* feature is disabled, the *Cruise Max Road Speed* value will remain higher than the *Road Speed Limit* value and the driver can exceed the *Road Speed Limit*.
Detect Loss of Signal from MPH Sensor	Activates the fault code that indicates an inactive road speed sensor.	Range Enabled/Disabled Default Enabled	Location →Vehicle Component Parameters (Sensor Options) Password Vehicle Data (VECU)	An inactive road speed sensor condition exists when the circuit is electrically complete, but the sensor is not transmitting information to V-MAC with engine underload. Tampering with or misadjusting the road speed sensor may generate this condition. **NOTE:** The fault code will remain active after correct adjustment is performed. Forward movement of the vehicle is required for the fault to become inactive.

VEHICLE COMPONENT PARAMETERS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Limit Power if No Signal from MPH Sensor	Limits engine power to the *Failed MPH Sensor Engine Power Limit* setting if no signal is detected from the road speed sensor.	Range Enabled/Disabled Default Enabled	Location →Vehicle Component Parameters (Sensor Options) Password Vehicle Data (VECU)	If this option is disabled, engine power will not be limited, although a fault (blink code 4-1, failure mode 8) will still be logged. Tampering or misaligning the MPH sensor causes this condition. If this option is enabled, a power limit must be set. The default is a limit of 50% of engine power.
Limit Power if Electrical Fault from MPH Sensor	Limits engine power to the *Failed MPH Sensor Engine Power Limit* setting if a road speed sensor electrical fault is detected.	Range Enabled/Disabled Default Enabled	Location →Vehicle Component Parameters (Sensor Options) Password Vehicle Data (VECU)	If this option is disabled, engine power will not be limited, although an electrical fault will still be logged.
Customer Torque Limit	Specifies the maximum engine torque level for all gear ratios numerically higher (lower gears) than the ratio set in *Customer Torque Limit Gear Ratio*.	Range 500 to 2,200 lb-ft Default 2,000 lb-ft	Location →Vehicle Component Parameters (Torque Options) Password Vehicle Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. To set torque limit, enter the *Customer Torque Limit Gear Ratio* to activate the desired torque restriction. **NOTE:** Appointing this torque level lower than the normal engine peak torque output can restrict engine performance for specified gear ratios.
Customer Torque Limit Gear Ratio	Sets transmission gear ratio above the engine torque (lower gear) limit specified by the user.	Range 1 to 65 Default 1	Location →Vehicle Component Parameters (Torque Options) Password Vehicle Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. **NOTE:** Entered ratio should be a ratio that is in the transmission. The torque limit values can limit but not override factory settings.
Torque Limit Ramp-Up Time	Identifies the maximum time needed for the engine to revert to normal or full power.	Range 1 to 10 sec Default 1 sec	Location →Vehicle Component Parameters (Torque Options) Password Vehicle Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. Engine will ramp to full power when the vehicle reaches a higher gear than specified for *Customer Torque Limit Gear Ratio*.
Enable Torque Limit with PTO	Enables torque limit with PTO ON to the customer defined values if enabled.	Range Enabled/Disabled Default Disabled	Location →Vehicle Component Parameters (Torque Options) Password Vehicle Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. When disabled, no torque limit is used with PTO engaged when vehicle is stationary.

VEHICLE COMPONENT PARAMETERS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Enable if Fault Incorrect Gear Ratio	Logs a fault (blink code 4-1, failure mode 11 [failure mode not identifiable]) and restricts power or engine speed if V-MAC detects vehicle is in an incorrect gear ratio.	Range Enabled/Disabled Default Disabled	Location →Vehicle Component Parameters (Torque Options) Password Vehicle Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. This feature must be enabled to work. When enabled, this feature will log a road speed sensor fault (blink code 4-1, failure mode 11) if V-MAC detects an invalid transmission-gear ratio and will then limit engine power. (This fault will not become inactive until the VECU sees a valid gear ratio underload.) About 15% of full power is still available to assist in downshifts when in limited power mode. **NOTE:** This feature is recommended for highway applications only.
Incentive Increase in Road Speed Limit	Permits the user to set a road speed increase if the driver enters the incentive mode of the *Driver Incentive* feature.	Range 0 to 20 mph or a calculated value based on the *Road Speed Limit* Default 5 mph	Location →Vehicle Component Parameters (Driver Incentive) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only. This feature encourages the driver to operate the vehicle within the incentive mode range programmed by the user. This feature works best when used with a V.I.P.™ display, which can notify the driver when the vehicle road speed is either in incentive or penalty mode. **NOTE:** For the *Incentive Increase in Road Speed Limit* feature to function, it must first be turned on in OEM data and enabled by selecting the *Driver Incentive* function (located in Fleet Data — Display and Trip Settings entry form). Please refer to the "DRIVER INCENTIVE" function on page 111 for further instruction.
Penalty Decrease in Road Speed Limit	Permits the user to set a road speed decrease to be applied if the driver enters the penalty mode of the *Driver Incentive* feature.	Range 0 to 20 mph or a calculated value based on the *Road Speed Limit* Default 5 mph	Location →Vehicle Component Parameters (Driver Incentive) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only. This feature discourages the driver from operating the vehicle outside the incentive mode range programmed by the user. This feature works best when used with a V.I.P.™ display, which can notify the driver when the vehicle road speed is either in incentive or penalty mode. **NOTE:** For the *Penalty Decrease in Road Speed Limit* feature to function, it must first be turned on in OEM data and enabled by selecting the *Driver Incentive* function (located in Fleet Data — Display and Trip Settings entry form). Please refer to the "DRIVER INCENTIVE" function on page 111 for further instruction.

VEHICLE COMPONENT PARAMETERS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Speed Limit Adjustment Rate	Permits the user to set the rate of change when switching between the incentive, base, and penalty stages of the *Driver Incentive* feature.	Range 0 to 20 mph/sec Default 0.5 mph/sec	Location →Vehicle Component Parameters (Driver Incentive) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only. **NOTE:** For the *Speed Limit Adjustment Rate* feature to function, it must first be turned on in OEM data and enabled by selecting the *Driver Incentive* function (located in Fleet Data — Display and Trip Settings entry form). Please refer to the "DRIVER INCENTIVE" function on page 111 for further instruction.

CUSTOMER DATA/VECU — GENERAL FEATURES

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Lower Gear Road Speed Limit Option	Limits vehicle speed to the *Lower Gear Road Speed Limit* setting when the transmission is in lower gears.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	**NOTE:** Do NOT enable the *Lower Gear Road Speed Limit Option* if the vehicle has a MACK transmission with eight speeds or less. This would allow the possibility of the gear steps dropping the engine out of operating range. This option is not available for vehicles with Eaton Super 10 Top 2 transmissions.
Delay Engine Brake Application in Cruise	Allows V-MAC to delay engine brake application while in Cruise mode.	Range Enabled/Disabled Default Enabled	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	In situations such as descending a hill, it may be possible for the vehicle to overrun the *Cruise Max Road Speed* setting. With the *Delay Engine Brake Application in Cruise* option enabled, the engine brake will turn on at 2 mph above the *Cruise Max Set Point* setting and turn off at 0.5 mph above the *Cruise Max Road Speed* setting.
Low Idle Speed Adjust with Switches	Enables the ability to change the engine low idle speed by using the speed control switches on the dashboard.	Range Enabled/Disabled Default Enabled	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	This feature cannot be enabled for vehicles with Allison Automatic Transmissions.
Hold Electrical Power ON Until Vehicle Stopped	Keeps the accessory relay energized (when the key is turned off) until the vehicle comes to a stop.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	The *Hold Electrical Power ON Until Vehicle Stopped* feature is useful if a driver is suspected of turning the key off when going downhill to prevent DataMax™ from logging an overspeed. Beginning with Step 6 (VECU s/w 1MS320), this option is not available for vehicles with Eaton® Super 10 Top 2 transmissions.

CUSTOMER DATA/VECU — GENERAL FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Enable Sleep Mode Alert	Displays an alert on the V.I.P.™ which states that the *Engine Sleep Mode* feature has been enabled.	Range Enabled/Disabled Default Enabled	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only and only for vehicles equipped with a V.I.P.™ **NOTE:** The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function. If *Engine Sleep Mode* is enabled, the engine will not start with no indication that a security measure is enabled. To display an alert which states that *Engine Sleep Mode* is enabled, the user must enable the *Engine Sleep Mode Alert* feature.
Enable Air Suspension Speed Interlock	Enables the air suspension speed interlock function.	Range Yes/No Default No	Location →Customer Data/VECU →General Features (Air Suspension) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. For this feature to function, the air suspension input must be installed.
Air Suspension Polarity	Allows the VECU to see a 12-volt input from the air suspension switches.	Range On/Off Default On	Location →Customer Data/VECU →General Features (Air Suspension) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. When enabled, the VECU detects a 12-volt input from the air suspension switches as the air suspension is deflated, thereby limiting engine and road speed. For this feature to function, the air suspension input must be installed. **NOTE:** This feature must be disabled in order to use the *Driveshaft PTO 2 Option*.
Air Suspension Active Dashboard Alert	Determines if the driver will be notified via the electronic dash when the air suspension is active.	Range Yes/No Default No	Location →Customer Data/VECU →General Features (Air Suspension) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. For this feature to function, the air suspension input must be installed.
Road Speed Limit When Air Suspension Active	Sets the fastest vehicle speed that can be achieved when the air suspension is active.	Range 5 to 25 mph Default 15 mph	Location →Customer Data/VECU →General Features (Air Suspension) Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. For this feature to function, the air suspension input must be installed.

CUSTOMER DATA/VECU — GENERAL FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Fuel Economy Type	Sets the type fuel economy displayed on the dash for vehicles equipped with a Co-Pilot or V.I.P.™	Range Total MPG/Driving MPG Default Total MPG	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	Total MPG — All fuel consumed; shows the effects of idle operation on overall fuel economy. Driving MPG — Fuel consumed when moving; shows only fuel mileage while driving.
Cruise Switch Disables Super 10 Top 2	Allows the driver to activate the Top 2 feature (automatic shift after 9th gear) using the Cruise ON/OFF switch.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	This feature is available for Step 6 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only and will only appear if an Eaton® Super 10 Top 2 transmission is installed (does not apply to Lightning™ Transmissions). When enabled, the Top 2 feature can be regulated with the cruise control on/off switch. If the switch is ON, Top 2 Mode is activated and the transmission will shift automatically when the transmission is placed in 9th gear. If the switch is turned off, Top 2 Mode is inactive and the transmission will have to be shifted manually. **NOTE:** Cruise control does not have to be active for this feature to function.
Engine Overspeed Fault Threshold	Sets the threshold for the *Engine Overspeed* fault condition.	Range 1500 to 2500 rpm Default 2350 rpm	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	**NOTE:** Exceeding the overspeed setting will log a fault (PID 190, failure mode 0, speed high) in V-MAC but will not turn on the electronic malfunction light on the dashboard.
Service Brake Fault Threshold with Engine Brake	Allows the user to set a higher threshold for the service brake fault when the engine brake is engaged.	Range 5 to 10 mph/sec Default 5 mph/sec	Location →Customer Data/VECU →General Features Password Customer Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. A service brake fault can sometimes be logged when the engine brake is engaged (for example, if the vehicle is slowed faster than the threshold). For those situations, the *Service Brake Fault Threshold with Engine Brake* feature allows the user to set a higher threshold for the service brake fault.

CUSTOMER DATA/VECU — SHUTDOWN OPTIONS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Coolant Temperature	Controls whether V-MAC will use data from the coolant temperature sensor to determine if the engine should be shut down. If this option is enabled, a warning will occur at 223°F and shutdown will occur at 227°F.	Range Enabled/Disabled Default Enabled	Location →Customer Data/VECU →Shutdown Options (Sensor Options) Password Customer Data (VECU)	When this option is disabled, V-MAC is strictly a warning system.
Oil Pressure	Controls whether V-MAC will use data from the oil pressure sensor to determine if the engine should be shut down based on oil psi versus RPM.	Range Enabled/Disabled Default Enabled	Location →Customer Data/VECU →Shutdown Options (Sensor Options) Password Customer Data (VECU)	When this parameter is disabled, V-MAC is strictly a warning system.
Coolant Level	Controls whether V-MAC will use data from the coolant level sensor to determine if the engine should be shut down.	Range Enabled/Disabled Default Enabled	Location →Customer Data/VECU →Shutdown Options (Sensor Options) Password Customer Data (VECU)	When this option is disabled, V-MAC is strictly a warning system.
Automatic Transmission Temperature Warning and Shutdown	Controls whether V-MAC will use data from the automatic transmission temperature sensor to determine if the engine should be shut down. If this option is enabled, a warning will occur at 247°F and shutdown will occur at 255°F.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options (Sensor Options) Password Customer Data (VECU)	This option will only appear if an automatic transmission is detected. **NOTE:** When this parameter is disabled, V-MAC does not provide a warning for high transmission temperature. For some older chassis with Allison HD automatic transmissions, the transmission oil temperature sensor is connected to the coolant level sensor (instead of a direct and individual connection). Therefore, what appears to be a coolant level fault may actually be a transmission oil temperature fault. If equipped, there is also a transmission oil temperature warning light which may help to determine if the fault is related to coolant level or transmission oil temperature. **NOTE:** If the transmission oil temperature sensor is connected to the coolant level sensor, the *Coolant Level* option must be enabled to protect the transmission.

CUSTOMER DATA/VECU — SHUTDOWN OPTIONS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Transmission Temperature	Controls whether V-MAC will use data from the transmission temperature sensor to determine if the engine should be shut down. If this option is enabled, a warning will occur at 310°F, and shutdown will occur at 328°F.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options (Sensor Options) Password Customer Data (VECU)	This option will only appear if a transmission oil temperature sensor is detected (CX only and vehicles with electronic dash). When this parameter is disabled, V-MAC is strictly a warning system.
Exhaust Temperature	Controls whether V-MAC will use data from the exhaust temperature sensor to determine if the engine should be shut down. If this option is enabled, a warning will occur at 1100°F and shutdown will occur at 1150°F.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options (Sensor Options) Password Customer Data (VECU)	This option will only appear if a pyrometer is detected (CX only and vehicles with electronic dash). When this option is disabled, V-MAC is strictly a warning system. **NOTE:** An exhaust temperature shutdown may damage valves and seats, although it will usually prevent the more serious damage that would result from a temperature increase past the shutdown threshold.
Idle Cooldown Feature Enabled	Allows a cooldown period (the engine will idle for up to 3.5 minutes after the key is turned off) if the V-MAC system determines that the turbocharger is at or above 450°F. **NOTE:** Parking brake must be on for this feature to work.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options Password Customer Data (VECU)	This feature is available for Step 6 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. **NOTE:** To shut down immediately, cycle the key twice or press the Shutdown Override switch after turning the key off. If this feature is enabled, engine shutdown will be postponed for up to 3.5 minutes if the turbocharger is hot. If disabled, engine shutdown will occur when the key is turned off. **NOTE:** All switched accessories will turn off once the engine has shut down. **NOTE:** If a pyrometer is installed on a CX model chassis, V-MAC will use the pyrometer reading to determine the temperature of the turbocharger. Shutdown will occur as soon as the temperature drops below 450°F or the cooldown period has elapsed (whichever comes first).
Idle Shutdown	Enables or disables Idle Shutdown.	Range ON/OFF Default OFF	Location →Customer Data/VECU →Shutdown Options Password Customer Data (VECU)	**NOTE:** For vehicles with Step 4 or Step 5 (1MS38P2 and 1MS317 EECU) software, be sure to disable the Idle Shutdown parameter in Customer Data Programming prior to programming the modules. Failure to do so may result in possible programming failure and damage to the modules.

CUSTOMER DATA/VECU — SHUTDOWN OPTIONS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Idle Shutdown if PTO Active	Controls whether idle shutdown features will function if PTO is engaged.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	V-MAC requires electrical input from the PTO circuit for this function to operate.
Idle Shutdown if Single Speed Control Active	Controls whether idle shutdown features will function if Single Speed Control (SSC) is engaged.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	V-MAC requires electrical input from the PTO circuit for SSC to function or the hand throttle to be running a SSC function.
Idle Shutdown if % Load Used Higher Than Threshold	Controls whether engine power output will affect idle shutdown. If disabled, idle shutdown will not occur above this threshold.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	This feature is used to prevent idle shutdown in turbo-unloader applications, where engine power may be high during pumping operations but no PTO input is used.
Idle Shutdown if Hand Throttle Control Active	Controls whether idle shutdown features will function if hand throttle speed control is engaged.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	If enabled, idle shutdown will operate even when the Hand Throttle is applied. If disabled, idle shutdown will not operate if the Hand Throttle is applied.
Idle Shutdown if in Sleeper Mode	Controls whether idle shutdown features will function if Sleeper Mode is enabled. If enabled, idle shutdown features will function and Sleeper Mode will be cancelled. If disabled, when the driver enables Sleeper Mode, idle shutdown will be cancelled until the vehicle is moved. **NOTE:** Engine will not shutdown if *Sleeper Mode with PTO 4 Fast Idle Active* is engaged without Sleeper Mode also engaged.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU) →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. **NOTE:** Sleeper Mode is enabled whenever the driver presses the override switch, service brake or accelerator pedal when the idle shutdown warning lamp/alarm is on.

CUSTOMER DATA/VECU — SHUTDOWN OPTIONS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Idle Shutdown if in Sleeper Mode with PTO 4 Fast Idle	Controls whether idle shutdown features will function if Sleeper Mode is enabled and the engine is operating at a fast idle in response to PTO 4 switch input. If enabled, idle shutdown features will function and Sleeper Mode will be cancelled.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. **NOTE:** Engine will not shutdown if *Sleeper Mode with PTO 4 Fast Idle Active* is engaged without Sleeper Mode also engaged. **NOTE:** If this option is disabled and the following conditions exist (vehicle is parked, PTO 4 is engaged, speed control is active and the driver enables Sleeper Mode), idle shutdown will be canceled until the vehicle is moved. **NOTE:** Sleeper Mode is enabled whenever the driver presses the override switch, service brake or accelerator pedal when the idle shutdown warning lamp/alarm is on.
Ambient Air Temperature Option	Controls when Sleeper Mode is allowed based on the outside air temperature. **NOTE:** Not available on CV models beginning January 2004.	Range Enabled/Disabled Default Disabled (Step 6)/ Enabled (Step 7 and above)	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	Starting with Step 7 (VECU s/w 1MS328), an additional customer programmable feature was added to enhance the Idle Shutdown function. When enabled, the customer must enter a minimum and maximum temperature. If Sleeper Mode is enabled and ambient air temperature is above the maximum (air conditioning needed) or below the minimum (heat needed), Sleeper Mode continues to operate and the engine stays on. If ambient air temperature falls between the set temperature while Sleeper Mode is active, Sleeper Mode cancels and the system reverts back to normal Idle Shutdown mode. The engine will shutdown after the Idle Shutdown Time has ended. When disabled, Idle Shutdown uses standard parameters to determine Idle Shutdown. **NOTE:** To use this feature, an ambient air temperature sensor must be installed and enabled and Idle Shutdown with Sleeper Mode disabled. **NOTE:** During the warning period, the electronic malfunction lamp will flash quietly instead of the normal shutdown lamp and alarm turning on and waking the driver. (Selection of ambient air temperature sensor is located in OEM Data on the main frame via the F3 Update Option screen of V-MAC.)

CUSTOMER DATA/VECU — SHUTDOWN OPTIONS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Minimum Ambient Air Temperature	Sets the minimum outside air temperature below which Sleeper Mode continues to operate.	Range –5 to 80°F Default 60°F	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. For more information on this feature, see Ambient Air Temperature Option.
Maximum Ambient Air Temperature	Sets the maximum outside air temperature above which Sleeper Mode continues to operate.	Range 0 to 125°F Default 80°F	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. For more information on this feature, see Ambient Air Temperature Option.
Idle Shutdown Timer	Controls the length of time that the engine can idle before shutdown occurs. If the engine begins idling with the coolant temperature lower than the *Idle Shutdown Warm-Up Temperature* threshold, the time limit set by the *Idle Shutdown Timer* feature will be added to the time limit set by the *Idle Shutdown Warm-Up Timer* feature.	Range 1 to 999 minutes Default 10 minutes	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	Example: If the *Idle Shutdown Timer* feature is set at 5 minutes and the *Idle Shutdown Warm-Up Timer* parameter is set at 10 minutes, the vehicle will run for 15 minutes (after the *Idle Shutdown Warm-Up Temperature* is reached) before shutdown. However, if the engine begins idling with the coolant temperature at or above the warm-up temperature, only the time limit set by the *Idle Shutdown Timer* feature will apply. **NOTE:** Once an engine shutdown occurs with the engine at or above the warm-up temperature, the *Idle Shutdown Warm-Up Timer* setting will be ignored when the engine is restarted. In the example above, the vehicle will only run for 5 minutes (the *Idle Shutdown Timer* setting) before shutting down again.
Idle Shutdown Warm-Up Timer	Controls the amount of warm-up time allowed after the engine has reached the *Idle Shutdown Warm-Up Temperature* threshold.	Range 0 to 199 minutes Default 5 minutes	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	See *Idle Shutdown Timer* limitations.
Idle Shutdown Warm-Up Temperature	Controls the temperature at which the *Idle Shutdown Warm-Up Timer* begins its count.	Range 0° to 255°F Default 80°F	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	

CUSTOMER DATA/VECU — SHUTDOWN OPTIONS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Idle Shutdown Warning Time	Sets the length of time between the idle shutdown warning and actual shutdown.	Range 5 seconds to Idle Shutdown time. Default 30 seconds	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. **NOTE:** This time period has generally been 30 seconds. When Sleeper Mode is enabled, the *Idle Shutdown Warning Time* should be set higher because more time may be necessary.
Idle Shutdown % Load Threshold	Sets the threshold for the *If Power Used Higher Than Threshold* option.	Range 0 to 100% Default 20%	Location →Customer Data/VECU →Shutdown Options (Idle Shutdown Options) Password Customer Data (VECU)	This parameter refers to the percent of engine power. **NOTE:** Monitor in Service Diagnostics.

CUSTOMER DATA/VECU — VOCATIONAL FEATURES

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Set/Resume Switch State	Defines how the speed control Set and Resume switches can function.	Range Set/Decel–Res/Accel or Set/Accel–Res/Decel Default Set/Decel–Res/Accel	Location →Customer Data/VECU →Vocational Features Password Customer Data (VECU)	The *Set/Resume Switch State* feature is primarily for vocational applications for which body builders have special interface requirements for the speed control system.
Inhibit Cruise Control with PTO ON	Programs V-MAC to disengage cruise control (and not allow cruise control to be re-engaged) when a PTO is turned on.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Vocational Features (General Options) Password Customer Data (VECU)	If this option is disabled, cruise control will continue to run with a PTO engaged. Regardless of whether this option is enabled or disabled, engine speed is limited to the PTO *Engine Speed Limit* threshold for that PTO.
Single Press of Resume to Accelerate	Allows the driver to resume cruise control (after it has dropped out) by pressing and holding the Resume switch; vehicle speed will resume (and continue to increase) until the switch is released.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Vocational Features (General Options) Password Customer Data (VECU)	

CUSTOMER DATA/VECU — VOCATIONAL FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Initial Set using Resume Switch	Allows the driver to use the Resume switch to set speed control.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Vocational Features (General Options) Password Customer Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. **NOTE:** This feature is only available if speed control has not already been set. Once speed control has been set, the Resume switch will act as the Accel switch.
Driveshaft PTO 2 Option	Programs V-MAC to treat PTO 2 as a Driveshaft PTO.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Vocational Features Password Customer Data (VECU)	**NOTE:** PTO 2 and the parking brake must be engaged for operation as a Driveshaft PTO. **NOTE:** In order to use this option, the *Enable Air Suspension Speed Interlock* feature must be disabled.
Set/Resume Fault Diagnostic	Programs V-MAC to log a fault if the Set (blink code 7-3) or Resume (blink code 7-4) switch is shorted to 12 volts (with the speed control switch on) or held for 60 seconds.	Range Enabled/Disabled Default Enabled	Location →Customer Data/VECU →Vocational Features Password Customer Data (VECU)	The speed control switch must be in the ON position for this feature to function. **NOTE:** It may be necessary to disable this feature for certain custom speed control applications.
Switch Assignments	Reassigns certain switches from their original use to other inputs for speed control.	Range Two auxiliary switches, fan clutch override switch and engine brake low switch can be reassigned as PTO 3, PTO 4, Control 1 or Control 2 Default No switches reassigned.	Location →Customer Data/VECU →Vocational Features Password Customer Data (VECU)	Switch reassignments are required only if the function of a switch is changed for use as an engagement, dropout, temporary dropout or PTO in the speed control system. Only one physical switch (engine brake low, spare, aux. 1 and fan clutch override) can be used for each reassigned (logical) switch, and the physical switch can be used only once. For Step 8 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only, if the Brake Pad sensor is installed, the Spare and Aux. 1 switches are not available. **NOTE:** Some factory installed features may make use of the two auxiliary switches and are not available for reassignment in this case.

CUSTOMER DATA/VECU — CAB FAN CONTROLS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Allow Fan Override When Moving	Allows the driver to engage the fan while the vehicle is moving for the amount of override time set by the *Fan Override Time When Moving* parameter.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Cab Fan Controls (General Options) Password Customer Data (VECU)	Fan overrides can be set so that it is possible to engage the fan clutch when parked or moving. Fan overrides can also be completely disabled. Only applicable for vehicles equipped with on/off fans and fan override switches.
Fan Override Time When Moving	Programs the override time, for the *Allow Fan Override When Moving* feature.	Range 0 to 1500 seconds Default 60 seconds	Location →Customer Data/VECU →Cab Fan Control Options (General Options) Password Customer Data (VECU)	Fan overrides can be set so that it is possible to engage the fan clutch when parked or moving. Fan overrides can also be completely disabled. Only applicable for vehicles equipped with on/off fans and fan override switches.
Allow Fan Override When Parked	Allows the driver to engage the fan to prevent fan cycling from occurring while the vehicle is parked (i.e., the driver is sleeping).	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Cab Fan Control Options (General Options) Password Customer Data (VECU)	Fan overrides can be set to engage the fan clutch when parked or moving. Fan overrides can also be completely disabled. **NOTE:** The *Allow Fan Override When Parked* feature will automatically disengage above 2100 rpm. **NOTE:** The driver cannot overspeed the fan using the override switch. If the operator engages the override switch and engine speed exceeds any programmed threshold, the override will be cancelled. Requires an optional dash-mounted override switch. Only applicable for vehicles equipped with on/off fans and fan override switches.
Engage Fan with Engine Brake	Engages the fan when the engine brake is engaged (provided the engine brake switch is in the HIGH or number 2 position).	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Cab Fan Control Options Password Customer Data (VECU)	This feature is available for Step 5 and higher VECU s/w systems (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. With this feature enabled, the fan will engage approximately 5 seconds after the engine brake engages and will disengage 10 seconds after the engine brake disengages. **NOTE:** If rated engine speed is exceeded, the fan will disengage. **NOTE:** This feature increases usable braking power, not maximum braking power. Only applicable for vehicles equipped with on/off fans and fan override switches.

CUSTOMER DATA/VECU — CAB FAN CONTROLS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Engage Fan with PTO ON	Engages the fan when the specified PTO is engaged.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Cab Fan Control Options Password Customer Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. **NOTE:** The fan will disengage if engine speed exceeds any of the programmed thresholds. **NOTE:** If rated engine speed is exceeded, the fan will disengage. Only applicable for vehicles equipped with ON/OFF fans and fan override switches.

CUSTOMER DATA/VECU — CRUISE CONTROL FEATURES

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Cruise Control Mode	Allows the user to choose the cruise control mode.	Range Standard, Custom or Disabled Default Standard	Location →Customer Data/VECU →Cruise Control Password Customer Data (VECU)	If *Standard Cruise Control* mode is selected, only standard cruise settings will apply. Any custom cruise settings will be erased. To avoid losing any custom cruise settings, save before exiting screen. If *Disabled Cruise Control* mode is selected, all parameters will be disabled and any custom cruise settings will be erased.
Disable Cruise Control	Disables cruise control.	Range Standard, Custom or Disabled Default Standard	Location →Customer Data/VECU →Cruise Control (Cruise Control Mode) Password Customer Data (VECU)	Whenever *Disable Cruise Control* is selected from the *Cruise Control Mode* drop-down list, cruise will not operate. This option is intended for vocational and in-city applications. Applies to all software levels.
Autoresume with Clutch	Programs cruise control to automatically resume after a shift (once the clutch has been re-engaged).	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Cruise Control (Custom Cruise Control) Password Customer Data (VECU)	If this option is disabled, cruise control will drop out after a shift and it will be necessary to press the Resume switch after releasing the clutch pedal to re-engage cruise control. The *Cruise Control Mode* option must be selected to Custom and be enabled for this feature to function.
Accel Bump Speed	Allows the user to program a set speed increase to coincide with one quick "bump" of the Accel switch.	Range 0–2 mph/bump Default 1 mph/bump	Location →Customer Data/VECU →Cruise Control (Custom Cruise Control) Password Customer Data (VECU)	The *Cruise Control Mode* option must be selected to Custom and enabled for this feature to function.

CUSTOMER DATA/VECU — CRUISE CONTROL FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Decel Bump Speed	Allows the user to program a set speed decrease to coincide with one quick "bump" of the Decel switch.	Range 0–2 mph/bump Default 1 mph/bump	Location →Customer Data/VECU →Cruise Control (Custom Cruise Control) Password Customer Data (VECU)	The *Cruise Control Mode* option must be selected to Custom and enabled for this feature to function.
Hold to Nearest	Ensures that before any change in road speed can occur (using the Set, Accel or Decel switch), V-MAC will find the nearest increment of the *Hold to Nearest* setting and apply the change in road speed to that value. If disabled, any change in road speed (using the Set, Accel or Decel switch) will apply to the current speed.	Range 0, 0.25, 0.5 or 1.0 mph Default 0.5 mph	Location →Customer Data/VECU →Cruise Control (Custom Cruise Control) Password Customer Data (VECU)	The *Cruise Control Mode* option must be selected to Custom and enabled for this feature to function. Example: Assume that the current road speed is 63.4 mph, the *Accel Bump Speed* parameter is set to 2 mph and the *Hold to Nearest* parameter is set to 1.0 mph. If the driver bumps the Accel switch, V-MAC will determine that 63 mph is the nearest increment of 1.0 to 63.4 mph and add the 2 mph bump to 63 mph. The resulting speed (after one bump) will be 65.0 mph. In the above example, if the *Hold to Nearest* parameter is set to 0 (meaning it is disabled), the resulting speed (after one bump) will be 65.4 mph.
Cruise Min Road Speed	Controls the minimum vehicle speed to engage and remain in cruise.	Range 15 to 35 mph Default 20 mph	Location →Customer Data/VECU →Cruise Control (Standard Cruise Settings) Password Customer Data (VECU)	If vehicle speed drops below this speed, cruise control will drop out and cannot be set.
Cruise Max Road Speed	Controls the maximum vehicle speed that can be obtained in cruise control.	Range 40 mph to the *Road Speed Limit* value (or 40 to 100 mph if the *Cruise Button Bonus* option is enabled) Default 75 mph	Location →Customer Data/VECU →Cruise Control (Standard Cruise Settings) Password Customer Data (VECU)	The *Cruise Max Road Speed* limit should be set 2 to 3 mph below the *Road Speed Limit* threshold to allow the driver some extra speed for passing when needed. This value may be higher than the *Road Speed Limit* if cruise button bonus is enabled.
Bump Speed	Allows the user to program a set speed increase or decrease to coincide with one quick "bump" of the Accel or Decel switch.	Range 0, 0.5, 1, 2 mph/bump Default 1 mph/bump	Location →Customer Data/VECU →Cruise Control (Standard Cruise Settings) Password Customer Data (VECU)	This standard cruise option is only available if the *Cruise Control* mode is set to STANDARD.

CUSTOMER DATA/VECU — CRUISE CONTROL FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Incentive Increase in Cruise Max Speed	Allows the user to program a maximum cruise speed increase be granted if the driver enters the "incentive mode" of the *Driver Incentive* function.	Range 0 to 20 mph or a calculated value based on the *Road Speed Limit* Default 5 mph	Location →Customer Data/VECU →Cruise Control (Standard Cruise Settings)	This feature is available for Step 10 and higher VECU software (1MS369 and higher). **NOTE:** For the *Incentive Increase in Cruise Max Speed* feature to function, it must first be turned on in OEM data and enabled by selecting the *Driver Incentive* function (located in Fleet Data — Display and Trip Settings entry form). Please refer to the "DRIVER INCENTIVE" function on page 111 for further instruction. **NOTE:** This feature is available for both Standard and Custom Cruise Control modes.
Penalty Decrease in Cruise Max Speed	Allows the user to program a maximum cruise speed decrease be applied if the driver enters the "penalty mode" of the *Driver Incentive* function.	Range 0 to 20 mph or a calculated value based on the *Road Speed Limit* Default 5 mph	Location →Customer Data/VECU →Cruise Control (Standard Cruise Settings)	This feature is available for Step 10 and higher VECU software (1MS369 and higher). **NOTE:** For the *Penalty Decrease in Cruise Max Speed* feature to function, it must first be turned on in OEM data and enabled by selecting the *Driver Incentive* function (located in Fleet Data — Display and Trip Settings entry form). Please refer to the "DRIVER INCENTIVE" function on page 111 for further instruction. **NOTE:** This feature is available for both Standard and Custom Cruise Control modes.

CUSTOMER DATA/VECU — CRUISE CONTROL FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Engagement and Dropout Requirements	Designates one or more switches as a requirement for cruise control operation. The state of each switch (ON or OFF) can be programmed as an engagement, dropout or temporary dropout requirement for cruise control.	Range Required ON, Required OFF, Ignore Default Ignore	Location →Customer Data/VECU →Cruise Control (Custom Cruise Control) Password Customer Data (VECU)	The *Cruise Control Mode* option must be selected and enabled for these features to function. **NOTE:** If PTO 1, PTO 2, PTO 3 or PTO 4 is selected as an engagement requirement, the *Inhibit Cruise with PTO ON* option must be disabled. **NOTE:** If a switch is programmed as an engagement requirement when it is in the ON position, turning the switch off once cruise is engaged will not disable cruise unless that switch was programmed as a dropout requirement when it is in the OFF position.

CUSTOMER DATA/VECU — ELECTRONIC HAND THROTTLE (EHT) FEATURES

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Enable Custom EHT Control	Allows the user to program custom Electronic Hand Throttle (EHT) control options.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Elect. Hand Throttle Control Password Customer Data (VECU)	**NOTE:** PTO switches cannot be used for hand throttle initialization. PTO switches cause hand throttle dropout.
Autoset	Programs V-MAC to automatically jump to the hand throttle *Min Set Speed* (without pressing the Set switch) when hand throttle speed control is enabled.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	The hand throttle *Autoset* feature is similar to the *Jump to Min Speed* feature; it can be used as a fast idle setting, or for numerous remote control applications.
Jump to Min Speed	Programs V-MAC to jump to the hand throttle *Min Set Speed* setting when the Set switch is pressed.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	If this feature is disabled, the hand throttle speed cannot be set unless the engine speed is above the *Min Set Speed* setting. **NOTE:** If the *Min Set Speed* parameter is set lower than the *Low Idle Speed* setting (programmed in *SERVICE DIAGNOSTICS*), speed control will be set but the engine speed will not drop below the *Low Idle Speed* setting.
Single Speed Control (SSC)	Enables the hand throttle single speed control mode; engine speed will automatically go to the *Electronic Hand Throttle SSC RPM* setting if *Autoset* is enabled.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	EHT single speed control can be overridden with the accelerator pedal (up to the EHT *Engine Speed Limit* setting).

CUSTOMER DATA/VECU — ELECTRONIC HAND THROTTLE (EHT) FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Hold to Minimum Speed	Ensures that the minimum engine speed (set in the hand throttle *Min Set Speed* feature) is maintained whenever hand throttle speed control is active.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	This option is automatically enabled if hand throttle *Autoset*, *Jump to Min Speed* or *Single Speed Control* feature is enabled. If engine speed is dragged below the hand throttle *Min Set Speed* value, more fuel will be injected to get back up to the minimum speed setting.
Dropout Above Maximum Speed	Disengages hand throttle speed control if engine speed exceeds the hand throttle *Max Set Speed* setting.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	This feature cannot be enabled if the hand throttle *Autoset* feature is enabled.
Electronic Hand Throttle SSC RPM	Sets the engine speed for EHT operation in *Single Speed Control* mode.	Range 475 to 2100 rpm Default 625 rpm	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	The *Electronic Hand Throttle SSC RPM* setting should be greater than the hand throttle *Min Set Speed* and less than both the hand throttle *Max Set Speed* and *Engine Speed Limit* settings.
Accel Bump Speed	Allows the user to program a set engine speed increase to coincide with one quick “bump” of the Accel switch.	Range 0 to 2000 rpm/bump Default 0 rpm/bump	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	
Decel Bump Speed	Allows the user to program a set engine speed decrease to coincide with one quick “bump” of the Decel switch.	Range 0 to 2000 rpm/bump Default 0 rpm/bump	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	
Hold to Nearest	Ensures that before any change in engine speed can occur (using the Accel or Decel switch), V-MAC will find the nearest increment of the *Hold to Nearest* setting and apply the change in engine speed to that value.	Range 0 or nearest 5 to nearest 2000 rpm Default 0	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	Example: Assume that the current engine speed is 1364 rpm, the *Accel Bump Speed* parameter is set to 50 rpm and the *Hold to Nearest* parameter is set to Nearest 25 rpm. If the driver bumps the Accel switch, V-MAC will determine that 1375 is the nearest increment of 25 to 1364 rpm and add the 50 rpm bump to 1375 rpm. The resulting speed (after one bump) will be 1425 rpm. In the above example, if the *Hold to Nearest* parameter is set to Nearest 10, the resulting speed (after one bump) will be 1410 rpm because the nearest value to 1364 would be 1360.

CUSTOMER DATA/VECU — ELECTRONIC HAND THROTTLE (EHT) FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Accel Ramp Rate	Sets the rate at which engine speed increases when the Accel switch is pressed.	Range 50 to 2000 rpm/sec Default 100 rpm/sec	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	Not applicable unless custom EHT settings are enabled.
Decel Ramp Rate	Sets the rate at which engine speed decreases when the Decel switch is pressed.	Range 50 to 2000 rpm/sec Default 100 rpm/sec	Location →Customer Data/VECU →Elect. Hand Throttle Control (Custom Options) Password Customer Data (VECU)	Not applicable unless custom EHT settings are enabled.
Min Set Speed	Controls the minimum engine speed allowed for Electronic Hand Throttle (EHT) operation; hand throttle speed control will not operate below this engine speed. Engine speed must be at or above this setting before EHT will operate.	Range 475 to 2100 rpm Default 475 rpm	Location →Customer Data/VECU →Elect. Hand Throttle Control (General Options) Password Customer Data (VECU)	**NOTE:** If the *Low Idle Speed Adjust with Switches* feature is enabled, the hand throttle *Min Set Speed* value must be set to 475 rpm (because the *Low Idle Speed Adjustment with Switches* feature drops the engine speed to 500 rpm before using the speed control switches to set the new low idle speed). If the hand throttle *Min Set Speed* value is greater than 500 rpm, it may not be possible to set low idle with the speed control switches. **NOTE:** For normal operation, if the engine speed drops below this value, speed control will drop out.
Max Set Speed	Sets the maximum engine speed that can be achieved using the speed control switches.	Range 750 to 2100 rpm Default 2100 rpm	Location →Customer Data/VECU →Elect. Hand Throttle Control (General Options) Password Customer Data (VECU)	**NOTE:** Engine speed cannot exceed this limit using the Accel switch; however, engine speed can be increased up to the hand throttle *Engine Speed Limit* threshold using the accelerator pedal.
Engine Speed Limit	Controls the maximum engine speed allowed with the Electronic Hand Throttle (EHT) engaged.	Range 750 to 2100 rpm Default 2100 rpm	Location →Customer Data/VECU →Elect. Hand Throttle Control (General Options) Password Customer Data (VECU)	This speed cannot be exceeded with the accelerator pedal or the switches.
Max Road Speed	Sets the maximum vehicle speed threshold for hand throttle speed control.	Range 0 to 20 mph or cruise *Min Road Speed* Default 10 mph	Location →Customer Data/VECU →Elect. Hand Throttle Control (General Options) Password Customer Data (VECU)	**NOTE:** Hand throttle speed control will not operate above this vehicle speed; however, cruise control will operate if vehicle speed is at or above the cruise control *Min Road Speed* setting.

CUSTOMER DATA/VECU — ELECTRONIC HAND THROTTLE (EHT) FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Ramp Rate	Programs the rate at which the engine speed increases and decreases when the Accel and Decel switches are used.	Range 50 to 2000 rpm/sec Default 100 rpm/sec	Location →Customer Data/VECU →Elect. Hand Throttle Control (General Options) Password Customer Data (VECU)	Not applicable if Custom EHT settings are enabled. This rate is also used when the hand throttle *Single Speed Control (SSC)* feature is engaged or resumed.
Engagement and Dropout Requirements	Designates one or more of the assigned switches (programmed in *Switch Assignments*) as requirements for electronic hand throttle speed control operation. The state of each switch (ON or OFF) can be programmed as an engagement, dropout or temporary dropout requirement for hand throttle control.	Range Required ON, Required OFF, Ignore, Pedal Pushed, Pedal NOT Pushed Default Ignore	Location →Customer Data/VECU →Elect. Hand Throttle Control (General Options) Password Customer Data (VECU)	**NOTE:** Control 1 and Control 2 must be defined in the *Switch Assignments* field in order to be used as requirements. **NOTE:** At least one dropout condition must be specified. **NOTE:** If a switch is programmed as an engagement requirement when it is in the ON position, turning the switch off once EHT control is engaged will not disable EHT control unless that switch was programmed as a dropout requirement when it is in the OFF position.

CUSTOMER DATA/VECU — PTO SPEED CONTROL SETTINGS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Single Speed Control (SSC)	Programs V-MAC to apply the PTO *Preset Speed* setting when PTO speed control is enabled.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	
Park Brake Check to Enable PTO	Specifies whether the parking brake must be applied for single speed control settings to be in effect when the PTO is engaged.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	If this parameter is enabled, the parking brake must be applied for the *Preset Speed* setting to be used. If disabled, the *Preset Speed* setting will be in effect without the parking brake being applied. Essentially, this parameter is a short-cut for setting the parking brake as an engagement requirement for PTO operation. **NOTE:** Park Brake engagement requirements for PTO 2 cannot be changed if Driveshaft PTO is selected.

CUSTOMER DATA/VECU — PTO SPEED CONTROL SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Min Set Speed	Sets the minimum engine speed allowed for PTO operation; PTOs will not operate below this engine speed. Engine speed must be at or above this setting before speed control for the PTO will operate.	Range 475 to 2100 rpm Default 475 rpm	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	For normal operations, if engine speed drops below this value, speed control will drop out.
Max Set Speed	Sets the maximum engine speed that can be achieved using the speed control switches.	Range 750 to 2100 rpm Default 2100 rpm	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	Although this limit cannot be exceeded using the Accel switch, engine speed can be increased up to the *Engine Speed Limit* threshold using the accelerator pedal. This parameter must not be set at a value less than the mode's *Minimum Set Speed* setting.
Max Road Speed Dropout	Sets the vehicle speed threshold for PTO dropout; Speed Control will not operate above this vehicle speed.	Range 0 to 20 mph or Cruise Min mph unless Driveshaft PTO is enabled. Default 10 mph	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	
Engine Speed Limit	Sets the maximum engine speed allowed with PTO speed control engaged; this speed cannot be exceeded with the accelerator pedal or the switches.	Range 750 to 2100 rpm Default 1800 rpm	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	**NOTE:** Because this is the absolute engine speed limit when a PTO is engaged, use caution when setting a value greater than the PTO *Max Set Speed* parameter.
Preset Speed	Sets the engine speed to be used when PTO single speed control is engaged.	Range 475 to 2100 rpm Default 1000 rpm	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	For this function to operate, the PTO *Single Speed Control (SSC)* option must be enabled.
Ramp Rate	Programs the rate at which engine speed increases and decreases when the Accel and Decel switches are used.	Range 50 to 2000 rpm/sec Default 100 rpm/sec	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	This rate is also used when PTO single speed control is engaged and resumed.

CUSTOMER DATA/VECU — PTO SPEED CONTROL SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Road Speed Limit	Sets the maximum fueled vehicle speed allowed when PTO (1, 2, 3 or 4) is engaged.	Range 0 to 100 mph Default 100 mph	Location →Customer Data/VECU →PTO Speed Control Settings Password Customer Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. For each PTO, a road speed limit can be applied. If V-MAC receives a PTO engaged signal, the vehicle road speed limit will be limited to this value. **NOTE**: This parameter doesn't override the normal vehicle *Road Speed Limit* setting. **NOTE**: Speed Control will still drop-out at the *PTO Maximum Road Speed Setting*. The PTO road speed limit will be restricted under accelerator pedal, speed control, and Cruise control operations. However, if the engine is forced to ride on the low idle governor, the low idle governor will take priority. This way, the vehicle is restricted to the PTO road speed limit (provided that the transmission is in a reasonable gear for road speed).

CUSTOMER DATA/VECU — CUSTOM PTO SETTINGS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Autoset	Programs V-MAC to jump automatically to the PTO *Min Set Speed* (without pressing the Set switch) when PTO speed control is enabled with variable speed control. When enabled with *Single Speed Control*, V-MAC automatically goes to the *Preset Speed*.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	The PTO *Autoset* feature is similar to the *Jump to Min Speed* feature; it can be used as a fast idle setting, or for numerous remote control applications.
Jump to Minimum Speed	Programs V-MAC to jump to the PTO *Min Set Speed* when the Set switch is pressed.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	If this feature is disabled, PTO speed control cannot be set unless engine speed is above the PTO *Min Set Speed*. **NOTE:** If the PTO *Min Set Speed* parameter is set lower than the *Low Idle Speed* parameter, PTO speed control will be set but engine speed will not drop below the *Low Idle Speed* setting (programmed in *SERVICE DIAGNOSTICS*).

CUSTOMER DATA/VECU — CUSTOM PTO SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Hold to Minimum Speed	Programs V-MAC to not allow engine speed to drop below the PTO *Min Set Speed*.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	If engine speed is dragged below this setting, more fuel will be injected to get engine speed back up to the PTO minimum set. This option is automatically enabled if PTO *Autoset*, or *Single Speed Control (SSC)* features are enabled.
Dropout Above Maximum Speed	Programs V-MAC to disengage PTO speed control if engine speed exceeds the PTO *Max Set Speed*.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	This feature cannot be enabled if the PTO *Autoset* feature is enabled.
Accel Bump Speed	Allows the user to program a set engine speed increase to coincide with one quick “bump” of the Accel switch. The *Bump Speed* must be an even multiple of the *Hold to Nearest* setting (unless none is specified).	Range 0 to 2000 rpm/bump Default 0 rpm/bump	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	
Enable Custom PTO	Enables Custom PTO when selected.	Range Enabled/Disabled Default Disabled	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	
Decel Bump Speed	Allows the user to program a set engine speed decrease to coincide with one quick “bump” of the Decel switch. The *Bump Speed* must be an even multiple of the *Hold to Nearest* setting (unless none is specified).	Range 0 to 2000 rpm/bump Default 0 rpm/bump	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	

CUSTOMER DATA/VECU — CUSTOM PTO SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Hold to Nearest	Ensures that before any change in engine speed can occur (using the Accel or Decel switch), V-MAC will find the nearest increment of the PTO *Hold to Nearest* setting and apply the change in engine speed to that value.	Range 5 to 2000 rpm Default 0 rpm	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	Example: Assume that the current engine speed is 1336 rpm, the *Accel Bump Speed* parameter is set to 100 rpm and the *Hold to Nearest* parameter is set to Nearest 50 rpm. If the driver bumps the Accel switch, V-MAC will determine that 1350 is the nearest increment of 50 to 1336 rpm and add the 100-rpm bump to 1350 rpm. The resulting speed (after one bump) will be 1450 rpm. In the above example, if the *Hold to Nearest* parameter is set to Nearest 25, the resulting speed (after one bump) will be 1425 rpm because the nearest value to 1336 would be 1325 rpm.
Accel Ramp Rate	Programs the rate at which engine speed increases when the Accel switch is pressed. While in *Single Speed Control*, engine speed ramps up to the *Preset Speed* at this rate.	Range 50 to 2000 rpm/sec Default 100 rpm/sec	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	
Decel Ramp Rate	Programs the rate at which engine speed decreases when the Decel switch is pressed.	Range 50 to 2000 rpm/sec Default 100 rpm/sec	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	

CUSTOMER DATA/VECU — CUSTOM PTO SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Engagement and Dropout Requirements	Designates one or more switches as requirements for PTO operation. The state of each switch (ON or OFF) can be programmed as an engagement, dropout or temporary dropout requirement for PTO speed control.	Range Required ON, Required OFF, Ignore, Pedal Pushed or Pedal NOT Pushed Default Ignore	Location →Customer Data/VECU →PTO Custom Settings (1-2/3-4) Password Customer Data (VECU)	**NOTE:** PTO 3, PTO 4, Control 1 and Control 2 must be defined in the *Switch Assignments* field in order to be used as engagement or dropout requirements. **NOTE:** At least one dropout condition must be specified. **NOTE:** If a switch is programmed as an engagement requirement when it is in the ON position, turning the switch off will not disable speed control unless the switch was also programmed as a dropout requirement when it is in the OFF position. **MINIMUM RULE:** The Minimum Rule states that the system will choose the minimum value from the PTOs that are engaged 1. The lowest active *Min Set Speed* is the minimum*. 2. The lowest active *Max Set Speed* is the maximum*. 3. The lowest active *Max Vehicle Speed* is used for drop out. 4. The lowest active *Engine Speed Limit* is used (true even when speed control is not active). 5. The lowest active *Preset Single Speed* is used. 6. The lowest active *Ramp Rate* is used. 7. Single speed takes precedence over variable speed. 8. For Step 4 (VECU s/w 1MS312/312A) software, non-Autoset takes precedence over *Autoset*. 9. For Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34), the lowest active *Road Speed Limit* is used. * * This becomes true once the Set/Decel or Resume/Accel inputs are toggled or held to 12 volts. To lower a speed without using these inputs, set an *Engine Speed Limit*.

CUSTOMER DATA/EECU FEATURES

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
High Idle Engine Speed (Droop)	Sets the maximum no load engine speed.	Range 1850 to 2100 rpm 2050 to 2100 rpm* 2120 to 2170 rpm** Default 2100/2170** rpm	Location →Customer Data/EECU Password Customer Data (EECU)	The *High Idle Engine Speed* parameter basically controls how quickly the power cuts off when revving the engine, typically during an upshift. *For ASET™ AI and AC engines. **For all ASET™ AMI engines.
Coolant Temperature Fan Engagement Threshold	Sets the coolant temperature threshold for engaging the ON/OFF fan only (not available for electronic viscous fan).	Range 190°F to 210°F Default 200°F	Location →Customer Data/EECU Password Customer Data (EECU)	Setting a lower temperature will cause the fan to engage earlier. Likewise, setting a higher temperature will cause the fan to engage later.
Air Temp. Fan Engagement Threshold	Sets the air temperature threshold for engaging the ON/OFF fan only (not available for electronic viscous fan).	Range 130°F to 175°F Default 175°F	Location →Customer Data/EECU Password Customer Data (EECU)	An ON/OFF fan type is required for this feature to operate. Setting a lower temperature will cause the fan to engage earlier. Likewise, setting a higher temperature will cause the fan to engage later.
Air Conditioning Override Time	Sets the amount of time that the ON/OFF fan remains ON when the Air Conditioning (A/C) system stops requesting fan operation with the vehicle parked, and the A/C system no longer requires fan operation (not available for electronic viscous fan).	Range 1 to 300 seconds (5 minutes) Default 60 seconds	Location →Customer Data/EECU Password Customer Data (EECU)	Requires an ON/OFF-type engine fan. If this parameter is programmed to 0, the air conditioning fan will engage and disengage with A/C pressure while the vehicle is parked. When parameter is set and the vehicle is moving, the engine fan will operate normally. The engine fan will engage as needed by the A/C system and disengage when no longer needed by the climate control system.
Engine Sleep Mode	Enables *Engine Sleep Mode* so that the engine will not start, even if a valid theft deterrence access code is entered. This feature must be disabled to start the vehicle.	Range Enabled/Disabled Default Disabled	Location →Customer Data/EECU Password Customer Data (EECU)	As with theft deterrence, Engine Sleep Mode is intended to slow a thief down to the point at which it is undesirable to steal the vehicle. This feature is aimed at customers who have limited yard security or who have vehicles parked on lots for extended periods of time. If *Engine Sleep Mode* is enabled, the engine will not start with no indication that a security measure is enabled. To display an alert which states that *Engine Sleep Mode* is enabled, the vehicle must have a Vehicle Information Profiler (V.I.P.™) and the user must enable the *Engine Sleep Mode Alert* feature. **NOTE:** Because the engine will not start when the *Engine Sleep Mode* feature is activated, it cannot be enabled at the factory or at the distributor. The customer only, can enable it as needed.

CUSTOMER DATA/EECU FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Smart Fan Type Installed	Activates diagnostics for the ON/OFF fan or electronic viscous fan.	Range None/On-Off/Electronic Viscous Default Factory Set	Location →Customer Data/EECU Password Customer Data (EECU)	If this feature is disabled, the fan drive will not be controlled by V-MAC and cannot be overridden using the override switch on the dash. **NOTE:** Do NOT enable the *Smart Fan Installed* feature if a fan clutch is not installed. **NOTE:** The Electronic Viscous option is only available for Step 2 and higher EECU s/w for ASET™ AC engine and Step 10 and higher EECU s/w for ASET™ AI engine (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34).
Driveshaft PTO Dropout Enabled	Employs special measures (in addition to the standard Driveshaft PTO controller) to limit engine overspeed when a sudden load dump (release of engine load) is detected.	Range Enabled/Disabled Default Disabled	Location →Customer Data/EECU Password Customer Data (EECU)	If the *Driveshaft PTO Dropout* feature is disabled, a load dump will not be detected by V-MAC, and engine overspeed will only be limited by the standard controller. **NOTE:** The *Driveshaft PTO Dropout* feature can interfere with Driveshaft PTO operation and should only be enabled if there is excessive overspeeding during a load dump.
Driveshaft PTO Dropout Threshold	Sets the engine acceleration threshold for the *Driveshaft PTO Dropout* option.	Range 1000 to 2000 rpm/sec Default 2000 rpm/sec	Location →Customer Data/EECU Password Customer Data (EECU)	This feature is available for Step 5 and higher EECU s/w and Step 2 and higher EECU s/w for ASET™ AC engine (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34). **NOTE:** The *Driveshaft PTO Dropout* feature can interfere with Driveshaft PTO operation and should only be enabled if there is excessive overspeed during a load dump.
Fuel Temperature Sensor Applied	Enables the fuel temperature sensor diagnostics.	Range Enabled/Disable Default Enabled	Location →Customer Data/EECU Password Customer Data (EECU)	This feature must be enabled for all ASET™ AI engines. Not available for ASET™ AC EECU s/w 1MS334 and higher.
Oil Level Sensor Available	Activates diagnostics for a Jaeger oil level sensor.	Range Enabled/Disabled Default Disabled	Location →Customer Data/EECU Password Customer Data (EECU)	
Output Boost Pressure on J1587	Provides a way to transmit boost pressure sensor information to a service tool.	Range Enabled/Disabled Default Disabled	Location →Customer Data/EECU Password Customer Data (EECU)	If a boost pressure sensor is installed, enable the *Output Boost Pressure on J1587* feature. Not available for ASET™ AC EECU s/w 1MS334 and higher.

CUSTOMER DATA/EECU FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Engine Brake Installed	Specifies that an engine brake is installed so that V-MAC can control it properly.	Range Enabled/Disabled Default Enabled	Location →Customer Data/EECU Password Customer Data (EECU)	**NOTE:** Do not enable this feature unless an engine brake is installed. **NOTE:** Beginning with Step 8 (EECU s/w 1MS327), an engine brake diagnostic will be active whenever the engine brake is marked as installed. Therefore, the brake should only be programmed as installed at initial engine programming if the engine has a brake system. **NOTE:** For ASET™ engines, the engine brake will not engage until the coolant temperature reaches 125°F.
MACK PowerLeash™ Engine Brake Installed	Specifies that the MACK PowerLeash™ engine brake is installed so that V-MAC can control it properly.	Range Enabled/Disabled Default Enabled	Location →Customer Data/EECU Password Customer Data (EECU)	**NOTE:** Do not enable this feature unless a MACK PowerLeash™ engine brake is installed. **NOTE:** This feature is available for ASET™ AC Step 3 EECU s/w 1MS368 and higher.
Exhaust Brake Installed	Specifies that an exhaust brake is installed so that V-MAC can control it properly.	Range Enabled/Disabled Default Disabled	Location →Customer Data/EECU Password Customer Data (EECU)	**NOTE:** Do not enable unless an exhaust brake is installed. This feature is for exports only.
Oil Temperature Sensor Available	Activates diagnostics for an oil temperature sensor.	Range Enabled/Disabled Default Disabled	Location →Customer Data/EECU Password Customer Data (EECU)	
Allow Fan Override When Moving	Allows the driver to engage the fan so that fan cycling will not occur while the vehicle is moving.	Range Enabled/Disabled Default Disabled	Location →Customer Data/EECU Password Customer Data (EECU)	Available on E-Tech™ engines with Step 4 (1MS38P2) EECU s/w only. Fan overrides can be set so that it is possible to engage the fan clutch when parked or moving. Fan overrides can also be completely disabled. The override time is set by the *Fan Override Time When Moving* parameter.
Fan Override Time When Moving	Programs the override time for the *Allow Fan Override When Moving* option.	Range 0 to 1500 seconds Default 60 seconds	Location →Customer Data/EECU Password Customer Data (EECU)	Available on E-Tech™ engines with Step 4 (1MS38P2) EECU s/w only. Fan overrides can be set so that it is possible to engage the fan clutch when parked or moving. Fan overrides can also be completely disabled.

CUSTOMER DATA/EECU FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Allow Fan Override When Parked	Allows the driver to engage the fan so that fan cycling will not occur while the vehicle is parked (i.e., the driver is sleeping).	Range Enabled/Disabled Default Disabled	Location →Customer Data/EECU Password Customer Data (EECU)	Available on E-Tech™ engines with Step 4 (1MS38P2) EECU s/w only. Fan overrides can be set so that it is possible to engage the fan clutch when parked or moving. Fan overrides can also be completely disabled. **NOTE:** The *Allow Fan Override When Parked* feature will automatically disengage above 2100 rpm. **NOTE:** The driver cannot overspeed the fan using the override switch. If the fan is engaged due to the override and engine speed exceeds any programmed threshold, the override will be cancelled.
Air Conditioning Installed Option	Supports those vehicles that are not equipped with air conditioning but are equipped with an engine on/off fan.	Range Enabled/Disabled Default Factory Set	Location →Customer Data/EECU Password Customer Data (EECU)	Available for Step 7 and higher EECU s/w and Step 2 and higher EECU s/w for ASET™ AC engines (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34). When disabled and without air conditioning (A/C) installed, V-MAC will ignore any signal or lack of signal (12 or 0 volts) from the A/C freon high pressure switch (located at EJ1-7 of the ASET™ AI EECU and EJ1-35 on the ASET™ AC EECU) and will not lock the air operated fan ON. V-MAC will, however, continue to control the engine on/off fan through input received from an optional dash-mounted on/off engine fan switch and customer-defined input from the *Intake Manifold Air Temperature* and *Coolant Temperature* sensors. When enabled and with an A/C system and *Air Operated Engine Fan Installed*, V-MAC will use information from the high freon pressure switch circuit and the other sensor inputs listed above to help control the customer programmable Smart Engine Fan functions.

CUSTOMER DATA/EECU FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Fuel Calibration	Calibrates the DataMax™ fuel usage reported by V-MAC.	Range –20 to +20% Default 0% = no correction	Location →Customer Data/Engine EECU Password Customer Data (EECU)	Enter the actual amount of fuel used during the last trip in the *Actual Trip Fuel* field. For detailed instructions for determining the actual amount of fuel used, refer to “Determining Actual Fuel Consumed” on page 121. **NOTE:** The calibration factor must be between 80 and 120% (the *Actual Trip Fuel* value entered must be within 20% of the *Calculated Trip Fuel* value displayed). For example, if 100 gallons is displayed in the *Calculated Trip Fuel* field, then the *Actual Trip Fuel* entered must be between 80 and 120 gallons.

FLEET DATA — THEFT DETERRENCE FEATURES

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Number of ID Attempts	Sets how many times the driver can attempt to enter an incorrect driver ID access code before V-MAC shuts down the engine.	Range 1 to 20 attempts Default 3 attempts	Location →Fleet Data →Fleet Theft Deterrence Settings (Driver ID) Password Fleet Data (VECU)	A Co-Pilot or Vehicle Information Profiler (V.I.P.™) dash display is required for this function to operate.
Demand Driver ID to Operate	Enables the Limited Power security mode. V-MAC will limit engine power until a valid access code is entered.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Theft Deterrence Settings (Security Mode) Password Fleet Data (VECU)	A Co-Pilot or V.I.P.™ dash display is required for this feature to function. The power limit for Limited Power mode is programmed in the *% Power Limit if No ID Entered* option. **NOTE:** If the *Demand Driver ID to Operate* option is enabled, the *Demand ID to Continue Running Beyond 30 Seconds* option will be disabled. These two security modes cannot be enabled at the same time.
Limited Power: *% Power Limit if No ID Entered*	Sets the power limit for the Limited Power security mode; engine power will be limited to this setting until a valid access code is entered.	Range 10 to 50% Default 50%	Location →Fleet Data →Fleet Theft Deterrence Settings (Security Mode) Password Fleet Data (VECU)	The *Demand ID to Operate* option must be enabled for this feature to function. For a summary of security options, refer to “Theft Deterrence System Summary” on page 68. A Co-Pilot or V.I.P.™ dash display is required for this feature to function.

FLEET DATA — THEFT DETERRENCE FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Demand ID to Continue Running Beyond 30 Seconds	Enables the Limited Time security mode. V-MAC will limit engine power and shut down after 30 seconds unless a valid access code is entered.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Theft Deterrence Settings (Security Mode) Password Fleet Data (VECU)	The power limit for Limited Time mode is programmed in the *% Power Limit Before Shutdown* option. **NOTE:** If the *Demand ID to Continue Running Beyond 30 Seconds* option is enabled, the *Demand ID to Operate* option will be disabled. These two security modes cannot be enabled at the same time.
Limited Time: *% Power Limit Before Shutdown*	Sets the power limit for the Limited Time security mode; engine power will be limited to this setting until either a valid access code is entered or 30 seconds pass and the engine shuts down.	Range 10 to 50% Default 20%	Location →Fleet Data →Fleet Theft Deterrence Settings (Security Mode) Password Fleet Data (VECU)	The *Demand ID to Continue Running Beyond 30 Seconds* option must be enabled for this feature to function. For a summary of security options, refer to Theft Deterrence System Summary. A Co-Pilot or V.I.P.™ dash display is required for this feature to function.
Access T: *Distance Before Shutdown*	Sets the distance threshold used by V-MAC to shut down the vehicle when a Level T (theft) access code has been entered.	Range 0 to 50 miles Default 1 mile	Location →Fleet Data →Theft Deterrence Settings (Access Level T) Password Fleet Data (VECU)	A Co-Pilot or V.I.P.™ dash display is required for this feature to function and must be enabled in the Fleet Display and Trip Parameters entry form.
Access T: *Distance Remaining After Shutdown Lamp ON*	Sets the distance threshold used by V-MAC to turn on the shutdown warning lamp when a Level T (theft) access code has been entered.	Range 0 to Distance Before Shutdown setting. Default 0.5 miles	Location →Fleet Data →Theft Deterrence Settings (Access Level T) Password Fleet Data (VECU)	A Co-Pilot or V.I.P.™ dash display is required for this feature to function and must be enabled in the Fleet Display and Trip Parameters entry form. The warning lamp will remain ON for this specified distance, after which the engine will shut down.
Access T: *Time Before Shutdown*	Sets the time threshold used by V-MAC to shut down the vehicle when a Level T (theft) access code has been entered.	Range 0 to 99 min Default 5 min	Location →Fleet Data →Theft Deterrence Settings (Access Level T) Password Fleet Data (VECU)	A Co-Pilot or V.I.P.™ dash display is required for this feature to function and must be enabled in the Fleet Display and Trip Parameters entry form.
Access P: *% Mechanic Power Limit*	Sets the engine power limit when a Level P (power limited) access code has been entered.	Range 0 to 100% Default 50%	Location →Fleet Data →Theft Deterrence Settings (Access Level P) Password Fleet Data (VECU)	A Co-Pilot or V.I.P.™ dash display is required for this feature to function and must be enabled in the Fleet Display and Trip Parameters entry form.

FLEET DATA — THEFT DETERRENCE FEATURES (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Access S: *Mechanic Road Speed Limit*	Sets the engine power limit when a Level S (speed limited) access code has been entered.	Range 10 to 50 mph Default 12 mph	Location →Fleet Data →Theft Deterrence Settings (Access Level S) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. A Co-Pilot or V.I.P.™ dash display is required for this feature to function and must be enabled in the Fleet Display and Trip Parameters entry form. **NOTE:** V-MAC will not allow the *Low Idle Speed* setting (programmed in *SERVICE DIAGNOSTICS*) to be overridden.

FLEET DATA — DISPLAY AND TRIP SETTINGS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Vehicle Display Type	Specifies what type of dash display, if any, is installed.	Range None, Co-Pilot, V.I.P.™ Default None	Location →Fleet Data →Fleet Display and Trip Settings (Display Options) Password Fleet Data (VECU)	Vehicle Information Profiler (V.I.P.™) is available for Step 5 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34).
Advance to Next Trip via Display	Allows the driver to advance to the next trip by pressing a button on the Co-Pilot/V.I.P.™	Range Enabled/Disabled Default Enabled	Location →Fleet Data →Fleet Display and Trip Settings (Display Options) Password Fleet Data (VECU)	A Co-Pilot or V.I.P.™ dash display is required for this feature to function. The *Vehicle Display Type* feature must be set to Co-Pilot or V.I.P.™ for this feature to function. Specifying a new trip will close the current trip and advance DataMax™ to the next trip. DataMax™ can store up to 12 trips for Steps 5–7 VECU s/w, up to 10 trips for Steps 8–9B and up to 4 trips for Step 10 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only.
Reset DataMax™ via V.I.P.™	Allows the driver to clear trip information (stored in the vehicle data log) by pressing a button on the V.I.P.™	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Display and Trip Settings (Display Options) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w only and also requires a V.I.P.™ dash display. DataMax™ can store up to 12 trips for Steps 5–7 VECU s/w, up to 10 trips for Steps 8–9B VECU s/w, and up to 4 trips for Step 10 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only. The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function.

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Driver Reset Maintenance Items via V.I.P.™	Allows the driver to reset maintenance issues by pressing a button on the V.I.P.™	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Display and Trip Settings (Display Options) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only and also requires a V.I.P.™ dash display. The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function. This feature is automatically available when the Owner-Operator Program Group is selected (Step 8 VECU s/w and higher).
Reset Driver Trip via V.I.P.™	Allows the driver to reset driver trip information (stored in DataMax™) by pressing a button on the V.I.P.™ Two Driver Display trips exist that can be viewed on the V.I.P.™ This option permits the driver to reset his/her displayed trip(s) by pressing a button on the V.I.P.™	Range Enabled/Disabled Default Enabled	Location →Fleet Data →Fleet Display and Trip Settings (Display Options) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only and also requires a V.I.P.™ dash display. DataMax™ stores up to 2 Driver Display trips. **NOTE:** The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function.
Display Trip Information on V.I.P.™	Allows the driver to display one current trip information on the V.I.P.™	Range Enabled/Disabled Default Enabled	Location →Fleet Data →Fleet Display and Trip Settings (Display Options) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only and requires V.I.P.™ dash display. **NOTE:** The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function.
Enable Sweet Spot Indicator on V.I.P.™	Enables or disables “Sweet Spot” information display on the V.I.P.™ V-MAC will transfer “Sweet Spot” indicator lamp real time across J1587 for use by the V.I.P.™ and/or dash LCD when this feature is enabled.	Range Enabled/Disabled Default Enabled	Location →Fleet Data →Fleet Display and Trip Settings (Display Options) Password Fleet Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. When enabled, the V.I.P.™ indicator status will illuminate when the engine is operating at top efficiency (the “Sweet Spot”) for the amount of power required.

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Programming Options via V.I.P.™	Allows the user to select V.I.P.™ programming options via a packaged group.	Range NO OPTIONS, Fleet Programming Group or Owner-Operator Programming Group Default NONE	Location →Fleet Data →Fleet Display and Trip Settings (Parameters Programmed in V.I.P.™ Options) Password Fleet Data (VECU)	This feature is available for Step 7 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only and requires a V.I.P.™ dash display. The Fleet Programming Group package contains the following features: • Autoresume with Clutch (allows the driver to reprogram Cruise Control Autoresume via the V.I.P.™) • Engine Brake Delay in Cruise (allows the *Engine Brake Delay in Cruise* to be enabled/ disabled via the V.I.P.™) • Governor Type (permits the governor type to be selected via the V.I.P.™) • Idle Cooldown (allows Idle Cooldown to be enabled via the V.I.P.™) • Low Idle Speed Setting (For Step 8 and higher VECU s/w [see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34] only. Allows the user to change the engine low idle speed via the V.I.P.™)

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Programming Options via V.I.P.™ (continued)				The Owner-Operator Programming Group package contains the above Fleet Programming Group features and includes the following additional features: • Clear Electronic Faults (allows the user to clear faults via the V.I.P.™) • Cruise Control Maximum Speed (permits the user to reprogram the Cruise Control Maximum via the V.I.P.™) • Fuel Calibration (allows the user to reset the EECU Fuel Calibration correction via the V.I.P.™) • Fuel Economy Target (permits the user to program the Fuel Economy Target via the V.I.P.™) • Fuel Economy Type (allows the user to choose the Fuel Economy Type via the V.I.P.™) • Idle Shutdown (permits the Idle Shutdown to be enabled/disabled via the V.I.P.™) • Maintenance Reset via V.I.P.™ (allows the driver to reset maintenance issues via the V.I.P.™) • Road Speed Limit (permits the driver to reprogram the vehicle road speed limit via the V.I.P.™)

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Reset Predictive Oil Change via Override Switch	Allows the driver to reset Predictive Oil Change using the override switch.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	If available, Predictive Oil Change is a standalone feature and available for CV, DM and RB models with Step 8, 1MS336 or higher VECU s/w. **NOTE:** Predictive Oil Change is suited for chassis only that meet the following requirements: • The engine is equipped with a 28-quart oil pan. • A Mack filtration system is used with dual full flow elements and a Centri-Max® spinner filter. • The engine uses approved EO-M+ oil for pre-2002 emissions and EO-N Premium Plus for ASET™ AI engines. • Oil consumption is 3000 miles per quart or better. • The engine does not have a problem with oil dilution. • Engine ECU software is NOT 1MS334, 1MS334A, 1MS363, 1MS368, 1MS368A, 1MS375, or 1MS378 • The correct VECU data file has been installed to match the engine — ask your MACK dealer. To operate this feature, enable Predictive Oil in OEM Data on the main frame via the F3 Update Option screen of V-MAC and in this location of CDP. **NOTE:** Predictive Oil Change is not available for MR and LE models. Predictive Oil Change must NOT be enabled if the engine ECU software is 1MS334, 1MS334A, 1MS363, 1MS368, 1MS368A, 1MS375, or 1MS378.

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
GuardDog™ Enabled	Enables the GuardDog™ maintenance function.	Range Enabled/Disabled Default Enabled when enabled in OEM Data	Location →Fleet Data →Fleet Display and Trip Settings (GuardDog™ Parameters) Password Fleet Data (VECU)	This feature is available for E-Tech™ engines with VECU s/w 1MS349 and for ASET™ AI engines with VECU s/w 1MS364 and data file 1MS371 only and also requires that the vehicle have a version 3.0 V.I.P.™ display with 1MS351 software. The following are the available GuardDog™ VECU-supported sensors: • Brake Pad Wear (optional for CH, CV and CX series only) • Coolant Level Low • Fuel Level • Wiper Fluid Level (for CH, CV and CX series only) The following are the available GuardDog™ EECU-supported sensors: • Air Restriction (for CH, CV and CX series only) • Oil Level (for CH, CV and CX series only) — To operate this feature, enable GuardDog™ in OEM Data on the main frame via the F3 Update Option screen of V-MAC and in this location of CDP.
GuardDog™ Low Fuel Level Warning Threshold %	Sets the threshold percentage for the GuardDog™ Low Fuel Warning	Range 1 to 50% Default 13%	Location →Fleet Data →Fleet Display and Trip Settings (GuardDog™ Parameters) Password Fleet Data (VECU)	This feature is available for E-Tech™ engines with VECU s/w 1MS349 and for ASET™ AI engines with VECU s/w 1MS364 and data file 1MS371 only and also requires that the GuardDog™ function be enabled.
Fleet Fuel Economy Target	Sets the fleet reference fuel economy value.	Range 0 to 25 mpg Default 7.0 mpg	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Driver Incentive	Allows the user to select what driver incentive function is enabled.	Range Disabled, Incentive Mode, Penalty Mode, Incentive and Penalty Mode Default Disabled	Location →Fleet Data →Fleet Display and Trip Settings Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only. **NOTE:** This feature works best when used with a V.I.P.™ display, which can notify the driver when the vehicle road speed is either in incentive or penalty mode. Disabled: No incentive plan. Incentive Mode: Vehicle speed limit and cruise maximum speed can be increased if recent fuel mileage exceeds a target. Once the speeds are increased, they will remain at higher values until the recent fuel mileage drops below a threshold. Penalty Mode: Vehicle speed limit and cruise maximum speed can be decreased if the driver fails to maintain a minimum fuel mileage level. Once the speeds are decreased, they will remain at "below baseline" levels until the fuel mileage improves. Incentive and Penalty Mode: Both modes are enabled. However, the V.I.P.™ will display the Incentive mpg only when this parameter is selected. **NOTE:** For the *Driver Incentive* function and its related Driver Incentive features to work, it must first be turned on in OEM data. Finally, it must be selected in Customer Data Programming. 1. Access the MACK database using V-MAC Online and enter the V-MAC F3 Update Options screen. 2. Set *MPG Incentive Program* to "Y" for YES. (This option applies to all the Driver Incentive-related features available in V-MAC Customer Data Programming.) 3. Download the VECU reprogramming data file to your computer's hard drive using V-MAC Online. 4. Program the VECU reprogramming data file into the VECU using V-MAC Dealer Programming software. 5. Upload the VECU verification file to the MACK database using V-MAC Online. 6. Enable the *Driver Incentive* function by selecting the desired mode in Fleet Data — Display and Trip Settings entry form. *If you fail to perform this last task, the other driver incentive-related features (found in Vehicle Component Parameters and Cruise Control Features) will not appear in Customer Data Programming.*

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Driver Incentive (continued)				**NOTE:** When the *Driver Incentive* function is enabled, you must also set the following Driver Incentive-related features: In Vehicle Component Parameters, set the *Incentive Increase in Road Speed Limit, Penalty Decrease in Road Speed Limit,* and *Speed Limit Adjustment Rate* features (see page 76). In Cruise Control Features, set the *Incentive Increase in Cruise Max Speed* and *Penalty Decrease in Cruise Max Speed* features (see pages 88 and 89).
Incentive-to-Base Hysteresis	Returns *Vehicle Speed* and *Cruise Maximum Speed* limits to their base levels if fuel economy falls below the fleet fuel economy target.	Range 0.05 to 0.5 mpg Default 0.1 mpg	Location →Fleet Data →Fleet Display and Trip Settings Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only. This parameter prevents the incentive vehicle speed limit for being added or removed too often by placing a hysteresis band around the fuel economy (reward) target. For example, if the driver is being rewarded, the running mpg average would have to dip below the target minus this value before the increased vehicle speed and cruise maximum speed limits are removed. **NOTE:** The *Driver Incentive* function must be selected for this feature to function.
Fleet Fuel Economy Penalty Threshold	Applies a penalty decrease in the *Vehicle Speed* and *Cruise Maximum Speed* limits if fuel economy falls below the *Fleet Fuel Economy Penalty Threshold* value.	Range 0 to 25 mpg Default 5.0 mpg	Location →Fleet Data →Fleet Display and Trip Settings Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only. This parameter is the fleet fuel economy “lower” or penalty target mpg. When this parameter is enabled, the maximum attainable vehicle speed will be reduced if the driver doesn’t surpass the set threshold. **NOTE:** The *Driver Incentive* function must be selected for this feature to function.
Penalty-to-Base Hysteresis	Returns *Vehicle Speed* and *Cruise MaxSpeed Limits* to their base levels if fuel economy rises above the *Fleet Fuel Economy Penalty Threshold*.	Range 0.05 to 0.5 mpg Default 0.1 mpg	Location →Fleet Data →Fleet Display and Trip Settings Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only. This parameter prevents the “penalty” *Vehicle Speed* limit for being added or removed too often by placing a hysteresis band around the fuel economy (penalty) target For example, if the driver is being penalized, the running mpg average would have to rise above the penalty threshold plus this value before the normal vehicle speed limit is restored.

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Incentive/ Penalty Fuel Economy Sample Size	Uses a range in miles to determine if the vehicle speed limit should be in incentive or penalty mode based on the rolling mpg average.	Range 20 to 250 miles Default 25 miles	Location →Fleet Data →Fleet Display and Trip Settings Password Vehicle Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only. Example: If the sample size is set to 25 miles, the last 25 miles of data is viewed to determine the rolling mpg average. This rolling mpg average is then compared to the incentive or penalty mpg thresholds.
Data Save Mode	Determines how DataMax™ logs additional trip information (beyond 10 trips).	Range Wrap Around, Stop After Last Trip, Leave Last Trip Open Default Wrap Around	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	Wrap Around — DataMax™ will wrap back to trip 1 and overwrite the information. Stop After Last Trip — DataMax™ will discontinue logging information until trip information is reset. Leave Last Trip Open — DataMax™ will leave the last trip open (i.e., the driver will not be able to advance to the next trip) until trip information is reset.
Idle Data Type on V.I.P.™	Sets the type of idle data that will be displayed on the V.I.P.™	Range Total Idle, True Idle, Qualified Idle Default Total Idle	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	Total Idle — Logged when the engine is running and no vehicle speed. *True Idle — Logged when PTO 1 and PTO 2 are OFF, speed control is disabled, the engine is running, accelerator pedal position is less than 2% and no vehicle speed. (* Not available with Step 10 and higher VECU s/w.) Qualified Idle — Logged when the engine has idled for longer than the *Idle Logging Delay* threshold. This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only and also requires V.I.P.™ dash display. **NOTE:** The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function.
Request Driver Name at Every Startup?	Programs V-MAC to request a driver name every time the engine is started.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only and also requires a V.I.P.™ dash display. **NOTE:** The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function.
Source of Driver Name for Trip	Describes the source of the driver trip names for DataMax™ tracking purposes.	Range Do not attach a name, Use theft deterrence ID, Use list of names, Use a driver entered code Default Use theft deterrence ID	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only and also requires a V.I.P.™ dash display. **NOTE:** The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function.

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Length of Driver Trip Code	Sets the length of all driver entered trip codes.	Range 1 to 10 characters Default None	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the "STEP/SOFTWARE IDENTIFICATION FOR V-MAC III" table on page 34) only and also requires V.I.P.™ dash display. **NOTE:** The *Vehicle Display Type* feature must be set to V.I.P.™ for this feature to function.
Maintenance Reminder Broadcast Schedule	Determines when maintenance alert reminders will be broadcast; after the initial alert has been broadcast, the alert will also be broadcast every time the vehicle is started. In addition, the user can program V-MAC to broadcast a reminder alert at specified times each day (4 a.m., 8 a.m., 12 p.m., etc). If the specified time is enabled, the maintenance alert will be broadcast at that time.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	Examples of time zone offsets: • Eastern/Standard (–5) • Australia (+10)
Blackout Mode Enabled	Enables Alert Blackout mode, which suppresses all maintenance alerts issued during a set period of time.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	Alert Blackout mode is generally used to suppress maintenance alerts while the driver is sleeping. The start and stop times for Alert Blackout mode are set in the *Alert Blackout Mode Start Time* and *Alert Blackout Mode Stop Time* parameters.
Alert Blackout Start Time	Sets the time for the beginning of Alert Blackout mode.	Range 12:00 a.m. to 11:00 p.m. hours Default 8:00 p.m.	Location →Fleet Data →Fleet Display and Trip Settings (Blackout Options) Password Fleet Data (VECU)	Alert Blackout mode must be enabled for this parameter to be set (see *Blackout Mode Enabled*). Any alerts that were issued after the *Alert Blackout Start Time* threshold was reached will be disregarded until the *Alert Blackout Stop Time* threshold is reached.
Alert Blackout Stop Time	Sets the time for the ending of Alert Blackout mode.	Range 12:00 a.m. to 11:00 p.m. hours Default 8:00 p.m.	Location →Fleet Data →Fleet Display and Trip Settings (Blackout Options) Password Fleet Data (VECU)	Alert Blackout mode must be enabled for this parameter to be set (see *Blackout Mode Enabled*). Any alerts that were issued after the *Alert Blackout Start Time* threshold was reached will be disregarded until the *Alert Blackout Stop Time* threshold is reached.
Engine Overspeed, Company Limit	Sets the threshold for the *Engine Overspeed, Company Limit* condition (overspeed beyond the fleet's recommended target).	Range 1500 to 2500 rpm Default 2150 rpm	Location →Fleet Data →Fleet Display and Trip Settings (Overspeed Options) Password Fleet Data (VECU)	The *Engine Overspeed, Company Limit* threshold is often set at rated engine speed, or typically 1800 rpm. DataMax™ will log the total accumulated overspeeds, and also the maximum value for the current trip.

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Engine Overspeed Logging (Severe)	Sets the threshold for the *Engine Overspeed (Severe)* condition.	Range 1500 to 2500 rpm Default 2500 rpm	Location →Fleet Data →Fleet Display and Trip Settings (Overspeed Options) Password Fleet Data (VECU)	DataMax™ will log the number of occurrences and the maximum overspeed value for the life of the vehicle.
Engine Overspeed Logging with Fuel	Sets the threshold for the *Fueled Engine Overspeed* condition.	Range 1500 to 2150 rpm Default 2150 rpm	Location →Fleet Data →Fleet Display and Trip Settings (Overspeed Options) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. DataMax™ will log the total accumulated time that the vehicle was in overspeed during the trip. The *Engine Overspeed Logging with Fuel* parameter is useful for tracking engine overspeeds when the engine brake is not on.
Vehicle Overspeed Logging with Fuel	Sets the threshold for the *Fueled Vehicle Overspeed* condition (with fuel being supplied, rather than when moving downhill).	Range 40 to 100 mph Default 65 mph	Location →Fleet Data →Fleet Display and Trip Settings (Overspeed Options) Password Fleet Data (VECU)	DataMax™ logs the total accumulated time that the vehicle was in overspeed during the trip. The *Vehicle Overspeed Logging with Fuel* threshold is useful if the company provides incentives to drive below the *Road Speed Limit* setting.
Vehicle Overspeed Logging, All Conditions	Sets the threshold for the *Vehicle Overspeed, All Conditions* state (the fleet’s recommended limit under any circumstances).	Range 40 to 100 mph Default 80 mph	Location →Fleet Data →Fleet Display and Trip Settings (Overspeed Options) Password Fleet Data (VECU)	DataMax™ logs the total accumulated time that the vehicle was in overspeed, the number of occurrences and the maximum value happening during the current trip.
Idle Logging Delay	Sets the threshold for a qualified idle; if the engine idles longer than the specified time period, it will be logged as a qualified idle.	Range 0 to 1092 minutes Default 0	Location →Fleet Data →Fleet Display and Trip Settings (Overspeed Options) Password Fleet Data (VECU)	Refer to the *Idle Data Type on V.I.P.™* feature for idle type definitions.
Hard Braking Threshold	Sets the deceleration threshold for hard braking; when deceleration exceeds this value, V-MAC will log a hard braking occurrence.	Range –12 to –1 mph/sec Default –8 mph/sec	Location →Fleet Data →Fleet Display and Trip Settings (Overspeed Options) Password Fleet Data (VECU)	
Traction Loss Threshold	Sets the threshold for traction loss; when acceleration exceeds this value, a traction loss occurrence will be logged.	Range 1 to 12 mph/sec Default 8 mph/sec	Location →Fleet Data →Fleet Display and Trip Settings Password Fleet Data (VECU)	

FLEET DATA — DISPLAY AND TRIP SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Custom Parameters	To support special requirements, a Custom Defined Statement may be provided as part of the vehicle's original build. Some statements contain settings that are programmed in the *Custom Parameter 1* and *Custom Parameter 2* fields.	Range 0 to 65535 Default 0	Location →Fleet Data →Fleet Display and Trip Settings (Overspeed Settings) Password Fleet Data (VECU)	

FLEET DATA — DRIVER EVENT SETTINGS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Write Report Once per Day	Programs V-MAC to write a Driver Event summary report at a specified time each day.	Range Enabled/Disabled Default Enabled	Location →Fleet Data →Fleet Driver Event Settings (Fleet Driver Event Summary) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. The exact time of day is specified in the *Driver Event Summary Time* parameter.
Write Report When Key Turned ON	Programs V-MAC to write a Driver Event summary report each time the key is turned on.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Fleet Driver Event Summary) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.
Write Report at Next Trip/ Trip Reset	Programs V-MAC to write a Driver Event summary report at the start of a new trip.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Fleet Driver Event Summary) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.
Write Report at Next Driver	Programs V-MAC to write a Driver Events summary report each time a new driver starts.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Fleet Driver Event Summary) Password Fleet Data (VECU)	This feature is available for Step 10 and higher VECU s/w (see the table on page 34) only.
Driver Event Summary Time	Sets the time of day when the daily report will be generated.	Range 0:00 to 23:00 (GMT) Default 0:00	Location →Fleet Data →Fleet Driver Event Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only. The *Write Report Once per Day* option must be enabled for this feature to function.

FLEET DATA — DRIVER EVENT SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Driver Event Exception Trigger: *PTO 1 Engaged*	Triggers a Driver Event when PTO 1 is engaged.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Driver Event Exception Triggers) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.
Driver Event Exception Trigger: *PTO 2 Engaged*	Triggers a Driver Event when PTO 2 is engaged.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Driver Event Exception Triggers) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.
Driver Event Exception Trigger: *Fueled Engine Speed*	Triggers a Driver Event when the *Fueled Engine Overspeed* threshold is exceeded.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Driver Event Exception Triggers) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.
Driver Event Exception Trigger: *Severe Engine Speed*	Triggers a Driver Event when the *Engine Overspeed (Severe)* threshold is exceeded.	Range Enabled/Disabled Default Enabled	Location →Fleet Data →Fleet Driver Event Settings (Driver Event Exception Triggers) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.
Driver Event Exception Trigger: *Company Limit Engine Speed*	Triggers a Driver Event when the *Engine Overspeed, Company Limit* threshold is exceeded.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Driver Event Exception Triggers) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.
Driver Event Exception Trigger: *Fueled Vehicle Overspeed*	Triggers a Driver Event when the *Fueled Vehicle Overspeed* threshold is exceeded.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Driver Event Exception Triggers) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.

FLEET DATA — DRIVER EVENT SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Driver Event Exception Trigger: *Vehicle Overspeed All Conditions*	Triggers a Driver Event when the *Vehicle Overspeed, All Conditions* threshold is exceeded.	Range Enabled/Disabled Default Disabled	Location →Fleet Data →Fleet Driver Event Settings (Driver Event Exception Triggers) Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.
Driver Event Summary List	These parameters set which items will be included in the Driver Event summary report.	Up to 10 items may be selected.	Location →Fleet Data →Fleet Driver Event Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34) only.

FLEET DATA — INCIDENT LOG FILTER AND TRIGGER SETTINGS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Incident Log Filter and Trigger Settings	These parameters are used to customize the triggers for the incident log.		Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34). **NOTE:** Unless the incident log is being triggered incorrectly, a change to these settings is not recommended.
Incident Log Engine Speed Increase Trigger Threshold		Range 10 to 200 rpm Default 50 rpm	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).
Incident Log Engine Speed Decrease Trigger Threshold		Range –200 to –10 rpm Default –50 rpm	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).
Incident Log Vehicle Speed Increase Trigger Threshold		Range 0.5 to 25 mph Default 1 mph	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).

FLEET DATA — INCIDENT LOG FILTER AND TRIGGER SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Incident Log Vehicle Speed Decrease Trigger Threshold		Range –25 to –0.5 mph Default –1 mph	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).
Incident Log Vehicle Acceleration Trigger		Range 0.5 to 100 mph/sec Default 10 mph	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).
Incident Log Vehicle Deceleration Trigger		Range –100 to –0.5 mph/sec Default –10 mph	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).
Incident Log Trigger Sample Time		Range 100 to 2500 msec Default 100 msec	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).
Incident Log Recording Rate		Range 100 to 2500 msec Default 500 msec	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).
Incident Log Engine Speed Filter		Range 1639 to 65535 msec Default 6556 msec	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).

FLEET DATA — INCIDENT LOG FILTER AND TRIGGER SETTINGS (CONTINUED)

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Incident Log Vehicle Speed Filter		Range 1639 to 65535 msec Default 6556 msec	Location →Fleet Data →Incident Log Filter and Trigger Settings Password Fleet Data (VECU)	This feature is available for Step 5 and higher VECU s/w (see the “STEP/SOFTWARE IDENTIFICATION FOR V-MAC III” table on page 34).

FLEET DATA — CUSTOMER DEFINED LABELS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Customer Defined Labels	Allows the user to define the *CUST DEF 1* and *CUST DEF 2* labels in the Maintenance Monitor schedule.		Location →Fleet Data →Maintenance Customer Defined Labels Password Fleet Data (VECU)	Type in the desired name for each label. These names will appear in the Maintenance Monitor schedule.

FLEET DATA — DRIVER ID SETTINGS

Feature	Description	Range/Default	Location/Password	Limitations, Service Hints, Related Topics
Driver ID Settings	Allows the user to assign driver IDs and access restriction levels.	Access Levels: F — Full Access P — Power Limited S — Speed Limited T — Theft	Location →Fleet Data →Program Driver ID Settings Password Fleet Data (VECU)	1. Type in the individual driver ID. 2. Select the appropriate access level. 3. Click on the ***Next ID*** button for next driver. 4. Click on the ***Clear IDs*** button to clear ID. **NOTE:** Use the following access restriction levels as described below. • Access Level F — Is used for full access. • Access Levels P or S — Is used for limited access. • Access Level T — Is used when someone is attempting to steal the vehicle.

Determining Actual Fuel Consumed

To use the fuel calibration feature, an accurate determination of fuel consumption must first be made by performing these steps:

- Initial Fuel Fill
- Vehicle Operation
- Final Fuel Fill

Initial Fuel Fill

1. Allow the vehicle to sit overnight, or for a minimum of eight hours, so that the fuel in the tanks has had time to cool to ambient temperature.
2. Move the vehicle to the fueling station and shut off the engine.

   The vehicle should be parked on a level surface. If there is any question about the surface being level, make a chalk mark on the pavement to indicate the location of the front axle. This reference point will be used when the vehicle is brought back for the final fuel fill. The pump used to dispense the fuel should be accurate, and should be the pump that is normally used to fill the vehicle.
3. If the vehicle is equipped with dual fuel tanks, close the connecting line valve.

NOTE

On dual tank dual-draw systems, it may be necessary to check the fuel level in both tanks on initial fill and final fill.

4. Dispense fuel into the tank(s) until the level of fuel just contacts the bottom outboard (low side) of the fuel filler neck.

   Do not overfill. The more accurate and consistent the initial and final fills are, the more accurate the data will be. If equipped with dual fuel tanks, accurately fill both tanks. Then open the fuel tank connecting line valve.
5. Reset the trip values in the DataMax™ log.

Vehicle Operation

Operate the vehicle for a minimum of 500 miles, or until at least half the available fuel has been consumed. The more fuel consumed, the more accurate the calibration factor will be.

NOTE

For the best results, several tanks of fuel may be consumed. For these intermediate fills, it is only necessary to use an accurate filling station (preferably the same station that was used for the initial fill) and record the amount of fuel added.

Final Fuel Fill

1. Allow the vehicle to sit overnight so that the fuel in the tank(s) has a chance to cool.

   For optimum accuracy, ambient temperature for the final fill should be equal to, or 10° lower than, the ambient temperature when the fuel tank(s) was initially filled.
2. Move the vehicle to the same filling station that was used for the initial fuel. If applicable, place the front axle over the chalk marks. Close the fuel tank connecting line valve if the vehicle is equipped with dual fuel tanks.
3. Fill the fuel tank(s) to the exact same level as the initial fill (level with the bottom outboard side [low side] of the fuel filler neck).
4. Reopen the fuel tank connecting line valve.
5. Record the fuel meter reading. Then add the amount of fuel recorded for any intermediate fills. This figure represents the actual fuel consumed.

DEALER PROGRAMMING SOFTWARE

DEALER PROGRAMMING

Introduction

V-MAC Dealer Programming Software, which supports V-MAC I, V-MAC II and V-MAC III, allows the user to reprogram the data file or software file for an ECU. In the previous (DOS) versions of V-MAC support software, Dealer Programming Software was divided into two separate programs: *MACK DATA PROGRAMMING* (MDP) and *PRODUCT SOFTWARE PROGRAMMING* (PSP). With the Windows version of Dealer Programming Software, both MDP and PSP functions are provided in one program (*DEALER PROGRAMMING*). Version 2.9.12 covers V-MAC I, II and III.

ACCESSING DEALER PROGRAMMING SOFTWARE

There are two ways to access *DEALER PROGRAMMING.*

- If there is a Mack Software folder on the desktop, double-click on the folder. Then double-click ***V-MAC Dealer Programming Software***.
- If there is no icon on the desktop, access the start menu and select ***Programs*** and select ***Mack Programs*** and ***V-MAC Dealer Programming Software***. Then click ***V-MAC Dealer Programming***.

ONLINE HELP FUNCTION

This version of V-MAC support software features an online help function (similar to Windows Help). The online help includes all of the information contained in this user guide. Simply press **F1** to view the help topics.

ADDITIONAL INFORMATION

The current **V-MAC III Service Manual, 8-211**, provides a complete description of the operation of the V-MAC III system, as well as instructions for performing diagnostics and repair of system components.

The phone number for the V-MAC Software Support Center is (800) 247-0039. Hours are 8:00 a.m. to 5:00 p.m. (Eastern time), Monday through Friday.

DEALER GENERAL PROGRAMMING INFORMATION

Electronic Control Unit (ECU)

The V-MAC I and II system had one ECU, but the V-MAC III system has both an engine ECU and a vehicle ECU. Because V-MAC III requires separate programming for each ECU, programming procedures have been modified to allow the user to program each ECU individually.

NOTE

When the VECU is reprogrammed, ensure that you save and restore the Customer Data information because odometer mileage will be lost.

V-MAC III Configuration

To determine the current system configuration, use the following steps:

1. Determine the VECU Purchase P/N — Look at the part number next to *ASS'Y w/SW* on the VECU label.
2. Determine the EECU Purchase P/N — Look at the part number on the EECU label.
3. Determine the VECU Hardware and Software P/Ns — Access the MACK database using V-MAC Online. Click on the ***Vehicle Information for Class 6-7-8***. Then select the ***F11 Vehicle ECU Part Number Change*** entry form from the Electronically Controlled Vehicles menu. Look at the part number displayed next to ***VECU H/W Part Number*** and look at the software part number displayed next to ***Software Version***.
4. Determine the EECU Hardware and Software P/Ns — Access the MACK database using V-MAC Online. Click on the ***Vehicle Information for Class 6-7-8***. Then select the ***F9 Vehicle ECU Part Number Change*** entry form from the Electronically Controlled Vehicles menu. Look at the part number displayed next to ***EECU H/W Part Number*** and look at the software part number displayed next to ***Software Version***.

V-MAC II Configuration

To determine the current system configuration, use the following steps:

1. Determine the ECU Purchase P/N — Look at the “V-MAC II CONFIGURATION” table on page 126, and refer to the Hardware P/N and Software P/N.
2. Determine the ECU Hardware P/N — Look at the part number on the ECU label.
3. Determine the ECU Software P/N — Look at the *ECU Software Version* field in the *SERVICE DIAGNOSTICS* Vehicle Information display screen.

NOTE

To determine the Vehicle Information Profiler (V.I.P.™) software version, access the V.I.P.™ display and follow these steps:

1. From the main menu, select ***General Information*** and click the ***Enter*** button.
2. Select ***Vehicle ID*** and click the ***Enter*** button. View the V.I.P.™ part number and software version.

V-MAC III CONFIGURATION TABLE

Vehicle ECU			
Step	**VECU Purchase P/N**	**VECU Hardware P/N**	**VECU Software P/N**
4	12MS411M2	12MS48M2	1MS312A
5	12MS411M3	12MS48M3	1MS316A
6	12MS411M4	12MS48M4	1MS320
7	12MS411M5	12MS48M5	1MS328
8	12MS411M6	12MS48M6	1MS336
8A	12MS411M7	12MS48M6	1MS336A
9	12MS411M8	12MS48M6	1MS349
9B*	12MS411M9	12MS48M6	1MS364
10*	12MS411M10	12MS48M6	1MS369
11*	12MS411M11	12MS48M6	1MS376
Engine ECU			
Step	**EECU Purchase P/N**	**EECU Hardware P/N**	**EECU Software P/N**
2†	12MS520M	12MS415M	1MS334
3†	12MS528M	12MS425M	1MS368
3A†	12MS528AM	12MS425AM	1MS368A
4†	12MS532M	12MS425M	1MS378
4	12MS510M2	12MS410M2	1MS38P2
5	12MS514M	12MS410M2	1MS317
7	12MS517M	12MS410M2	1MS326
7A	12MS517AM 12MS517BM	12MS410M2	1MS326A
8	12MS518M 12MS523M&	12MS413M 12MS413AM&	1MS327
9*	12MS526M	12MS413AM	1MS363
10	12MS530M	12MS426M	1MS375

* For ASET™ AI engines

† For ASET™ AC engines

& For integral barometric sensor

V-MAC II CONFIGURATION TABLE

ECU			
Step	**ECU Purchase P/N**	**ECU Hardware P/N**	**ECU Software P/N**
4	12MS59M6 12MS59M7 12MS59M8	12MS54M5 12MS59M5 12MS59M6	1MS34A 1MS34B 1MS34B
6	12MS59M9	12MS59M7	1MS36
7	12MS59M10	12MS54M7	1MS39
8	12MS59M11	12MS54M7	1MS315

V-MAC I AND FIC CONFIGURATION TABLE

V-MAC I MODULE		
Hardware P/N	**Software P/N**	**Production Date**
12MS51M	VMP100	02-1990*
12MS51M2	VMP101	11-1990
12MS51M3	VMP111	10-1991
12MS51M4	VMP111	08-1992
12MS51M5	VMP111	09-1992
12MS51M6	VMP121	06-1993
12MS51M7	VMP121	11-1993
FIC MODULE		
Hardware P/N	**Software P/N**	**Production Date**
12MS45M	SW011V23	02-1990*
12MS45M2	SW011V25	11-1990
12MS45M3	B0101V10**	10-1991
12MS45M4	B0101V12	09-1992
12MS45M5	B0101V12	11-1993

* – No longer in use

** – Software version changes when programmed with Mack Dealer Programming ver. 3.4.

Dealer Programming File Nomenclature

Dealer programming software consists of two programming portions: product software and data file programming. Both kinds of programming have different file types. The product software file-programming portion of Dealer Programming uses two different types of files:

- A customer data file is created whenever you save customer parameters.
- A product software file is downloaded from the MACK database via V-MAC Online and reprograms (flashes) the ECU software or V.I.P.™ software.

The data file-programming portion of Dealer Programming uses three different types of files:

- A customer data file is created whenever you save customer parameters.
- A reprogramming (reference) data file is downloaded from the MACK database via V-MAC Online and reprograms the ECU data.
- A verification file is created after programming is completed. It is then uploaded to the MACK database via V-MAC Online.

THE DATA FILE EXTENSION

Each data file has a name and is recognized by its file extension, or the last three characters that are separated by a period. For example, the familiar Word document file extension is always identified by ".doc."

For MACK programming files, the file extension reflects the type of data file it is and the ECU it is associated with. For example, the V-MAC III class 8 vehicle programming data file is always identified by ".rfv," or reprogramming file, for vehicle.

Below are data file extension tables for V-MAC III class 8 vehicles. Use these tables to identify files when saving customer data or downloading, programming and uploading from and to the MACK database.

NOTE

Files may vary in size from version to version. The software is designed to adjust to different sizes and remains operational.

V-MAC III DATA FILE EXTENSIONS

File Type	VECU Extension	EECU Extension
Customer Data File	.dtv	.dte
Reprogramming Data File	.rfv	.rfe
Verification Data File	.vev	.vee
Product Software File	.sfv	.sfe

V-MAC I AND II DATA FILE EXTENSIONS

File Type	ECU Extension
Customer Data File	.dta
Reprogramming Data File	.ref
Verification Data File	.ver
Product Software File	.prd
Extension File (V-MAC II only)	.ext

V.I.P.™ DATA FILE EXTENSIONS

File Type	V.I.P.™ Extension
Product Software File	.vip

V-MAC Dealer Programming Phases

Both product software programming and data file programming involve phases.

PRODUCT SOFTWARE PROGRAMMING (PSP)

Reprogramming a product software file involves three distinct phases:

1. The first phase is downloading.
   Downloading is receiving a product software file from the MACK database and transferring the file to your PC using V-MAC Online.
2. The second phase is saving customer data.
   Saving a customer data file is done prior to programming the ECU using V-MAC Dealer Programming software.
3. The third phase is programming.
   Programming (flashing) is loading a product software file that was downloaded from the MACK database into the ECU using V-MAC Dealer Programming software.

DATA FILE PROGRAMMING (MDP)

Reprogramming a data file is similar to product software programming, but involves three distinct phases:

1. The first phase is downloading.
   Downloading is receiving a data file from the MACK database and transferring the file to your PC using V-MAC Online.
2. The second phase is programming.
   Programming is loading a data file that was downloaded from the MACK database into the ECU using V-MAC Dealer Programming software.
3. The third phase is uploading.
   Uploading is transferring a verification data file (created during programming with V-MAC Dealer Programming software) from your PC to the MACK database using V-MAC Online.

NOTE

For vehicles with Step 4 or Step 5 (1MS38P2 and 1MS317 EECU) software, be sure to disable the Idle Shutdown parameter in Customer Data Programming prior to programming the modules. Failure to do so may result in possible programming failure and damage to the modules.

DEALER PROGRAMMING SOFTWARE COMPUTER REQUIREMENTS

Programming with Dealer Programming Software has two requirements:

- V-MAC Online access (via MACK*net*)
- V-MAC® Support Software for Windows (current version)

For other computer requirements, please refer to “SOFTWARE INSTALLATION SPECIAL TOOLS AND EQUIPMENT” on page 8.

DEALER PROGRAMMING SOFTWARE VISUAL IDENTIFICATION

Dealer Programming Software Screen Summaries

V-MAC DEALER PROGRAMMING MENU

Figure 83 — V-MAC Dealer Programming Menu

To view the available programming options (refer to “PROGRAMMING BAR” on page 129), click on ***Programming*** from the toolbar at the top of the screen or click on the ***V-MAC Navigator*** bar located vertically to the left of the screen (refer to “V-MAC NAVIGATOR BAR” on page 129 for detailed instructions on how to use the Navigator bar).

To save customer data and view the available programming options, click on ***Utilities*** from the toolbar or click on the ***V-MAC Navigator*** bar located vertically to the left of the screen to access the Utilities bar (refer to “UTILITIES BAR” on page 130).

V-MAC NAVIGATOR BAR

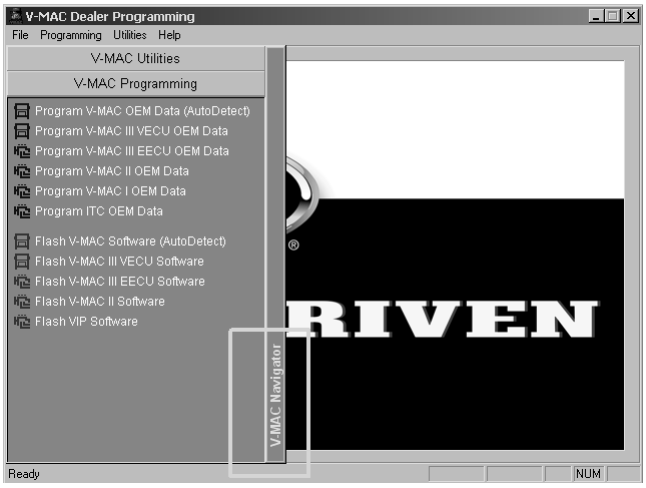

Figure 84 — V-MAC Navigator Bar

The V-MAC Navigator tool is a sliding vertical bar containing the available programming functions and utility options.

Click on the ***V-MAC Navigator*** bar (a vertical bar on the left-hand side of the *DEALER PROGRAMMING* Menu) to “slide” out the bar for viewing.

Click on the ***V-MAC Programming*** bar to view the available programming options (refer to “PROGRAMMING BAR” on page 129).

Click on the ***V-MAC Utilities*** bar (located above V-MAC Programming) to save customer data and view the available programming options (refer to “UTILITIES BAR” on page 130).

PROGRAMMING BAR

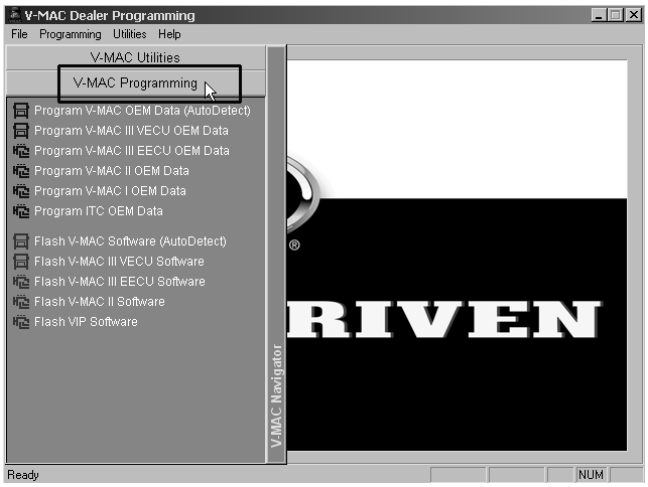

Figure 85 — V-MAC Programming Bar

Click on ***Program V-MAC OEM Data (AutoDetect)*** to let the system detect the V-MAC level and type required for the attached vehicle and to program the VECU or EECU (as appropriate) with a reprogramming data file (refer to “PROGRAM V-MAC III OEM DATA ENTRY FORM” on page 134).

Click on ***Program V-MAC III VECU OEM Data*** to program the VECU with a reprogramming data file (refer to “PROGRAM V-MAC III OEM DATA ENTRY FORM” on page 134).

Click on ***Program V-MAC III EECU OEM Data*** to program the EECU with a reprogramming data file (refer to “PROGRAM V-MAC III OEM DATA ENTRY FORM” on page 134).

Click on ***Program V-MAC II OEM Data*** to program the ECU with a reprogramming data file (refer to “PROGRAM V-MAC III OEM DATA ENTRY FORM” on page 134).

Click on ***Program V-MAC I OEM Data*** to program the ECU with a reprogramming data file (refer to “PROGRAM V-MAC III OEM DATA ENTRY FORM” on page 134).

Click on ***Program ITC OEM Data*** to program the ECU with a reprogramming data file (refer to “PROGRAM V-MAC III OEM DATA ENTRY FORM” on page 134).

Click on ***Flash V-MAC Software (Auto Detect)*** to let the system detect the V-MAC level and type required for the attached vehicle and to program the VECU or EECU (as appropriate) with a product software file (refer to “FLASH V-MAC III SOFTWARE ENTRY FORM” on page 133).

Click on ***Flash V-MAC III VECU Software*** to program the VECU with a product software file (refer to “FLASH V-MAC III SOFTWARE ENTRY FORM” on page 133).

Click on ***Flash V-MAC III EECU Software*** to program the EECU with a product software file (refer to “FLASH V-MAC III SOFTWARE ENTRY FORM” on page 133).

Click on ***Flash V-MAC II Software*** to program the ECU with a product software file (refer to “FLASH V-MAC III SOFTWARE ENTRY FORM” on page 133).

Click on ***Flash V.I.P.™ Software*** to program the Vehicle Information Profiler (V.I.P.™) with a product software file (refer to “FLASH V.I.P.™ SOFTWARE ENTRY FORM” on page 134).

UTILITIES BAR

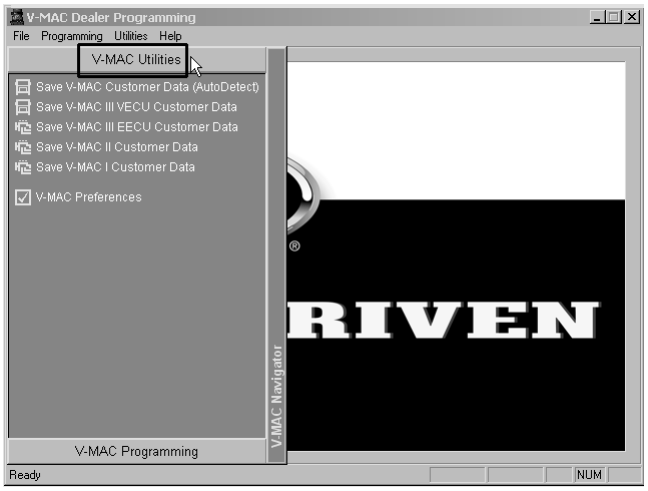

Figure 86 — V-MAC Utilities Bar

Click on the ***V-MAC Utilities*** bar located above the V-MAC Programming Bar to access the V-MAC Utilities screen.

Click on ***Save V-MAC Customer Data (AutoDetect)*** to let the system detect the V-MAC level and type required for the attached vehicle and to save customer data for the VECU or EECU (as appropriate). Refer to “SAVE CUSTOMER DATA ENTRY FORM” on page 133.

Click on ***Save V-MAC III VECU Customer Data*** to save customer data for the VECU (refer to “SAVE CUSTOMER DATA ENTRY FORM” on page 133).

Click on ***Save V-MAC III EECU Customer Data*** to save customer data for the EECU (refer to “SAVE CUSTOMER DATA ENTRY FORM” on page 133).

Click on ***Save V-MAC II Customer Data*** to save customer data for the ECU (refer to “SAVE CUSTOMER DATA ENTRY FORM” on page 133).

Click on ***Save V-MAC I Customer Data*** to save customer data for the ECU (refer to “SAVE CUSTOMER DATA ENTRY FORM” on page 133).

Click on ***V-MAC Preferences*** to customize the configuration settings (refer to “PREFERENCES ENTRY FORM” on page 130).

PREFERENCES ENTRY FORM

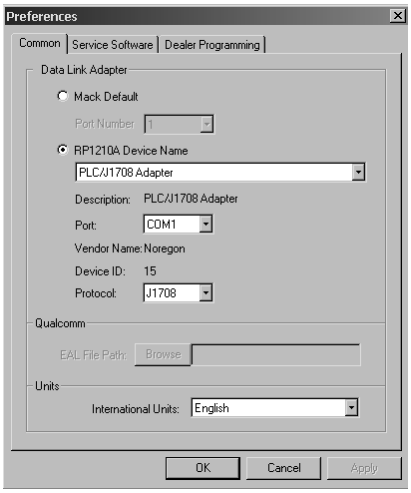

Figure 87 — Preferences Entry Form

The Preferences entry form consists of three screens: Common, Service Software and V-MAC Dealer Programming and is used to configure the PC for operation with *DEALER PROGRAMMING*. Out of these three screens, the Common entry form and Dealer Programming entry form are primarily used.

To access the Preferences entry form, click on Utilities from the toolbar and then select V-MAC Preferences from the drop-down list.

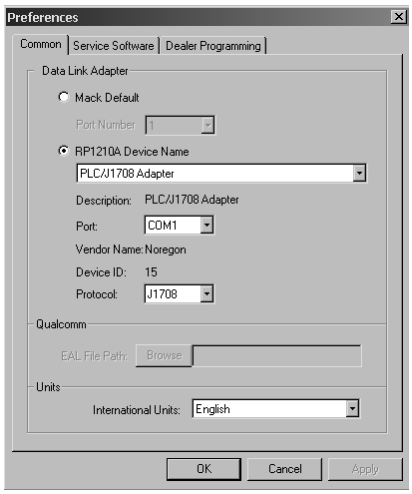

Figure 88 — Preferences (Common) Entry Form

The Common entry form is used to specify the communications port to be employed.

Click on the ***Common*** tab.

To modify the RP1210A-compliant adapter type selection, do the following:

a. Click on the ***RP1210A Device Name*** radio button.

b. Click on the ***Device Name*** drop-down arrow and select the adapter desired.

c. Click on the ***Port*** drop-down arrow and select the com port desired.

d. Click on the ***Protocol*** drop-down arrow and select the protocol type desired (protocol 1708 is recommended).

e. Click on the ***Apply*** button to make the change.

f. Click on the ***OK*** button to save changes.

NOTE

Do not use the Mack default setting.

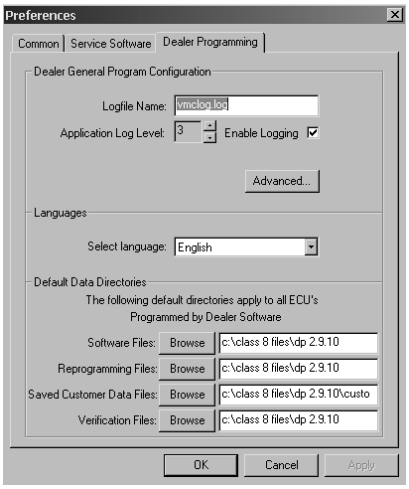

Figure 89 — Preferences (Dealer Programming) Entry Form

With the Dealer Programming entry form, you can choose the directory location to save downloaded files.

NOTE

It is recommended that all files be downloaded to and programmed from the computer hard drive. Doing this removes the floppy disk drive as a potential source of downloading and programming failure. Additionally, programming is generally faster and more reliable when performed from the computer hard drive. Verification files should also be saved to the hard drive for subsequent upload to V-MAC Online.

Directory settings can be configured for the following files:

— Software Files

— Reprogramming Files (ECU reprogramming data and product software files)

— Saved Customer Files (ECU customer data files)

— Verification Files (ECU verification files)

Click on the ***OK*** button to save the current settings as the default. Or, if you want to select another directory location, click on the ***Browse*** button for each file type. The Select Directory window will appear.

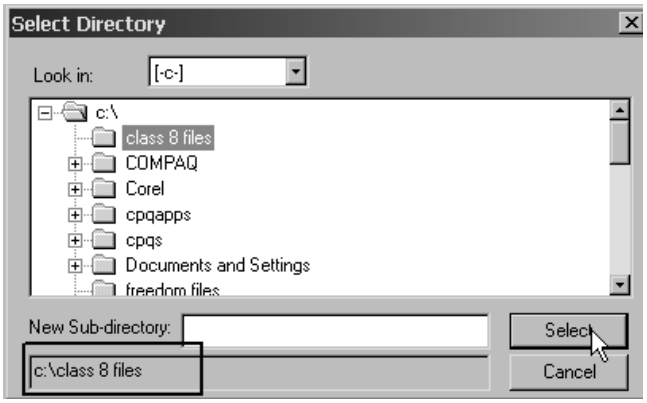

Figure 90 — Select Directory Window

Highlight the folder where you want to save the files. The example above uses “class 8 files.” The status field will show c:\class 8 files as selected. Click on the ***Select*** button to accept the configuration and exit the window.

You may also create a new sub-directory folder to save the files. In the New Sub-Directory field, type in the name for the new folder and click on the ***Select*** button.

The Mack Configuration Manager dialog window will appear, asking if you want to create the new sub-directory folder. Click on the ***Yes*** button to accept or click on the ***No*** button to decline.

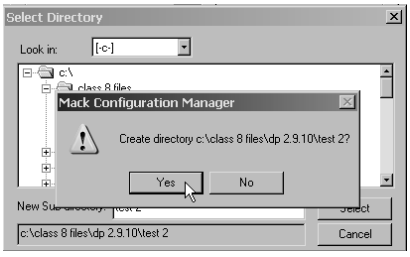

Figure 91 — Mack Configuration Manager Dialog Window

For V.I.P.™ programming, the “flash,” or programming, baud rate may be adjusted. Click on the ***Advanced*** button on the Dealer Programming entry form as illustrated in Figure 92.

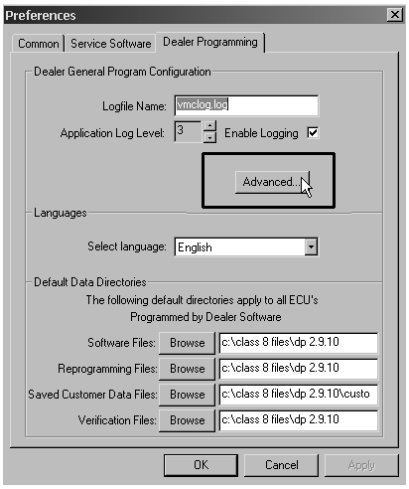

Figure 92 — Dealer Programming Entry Form (Advanced Button)

The Advanced VIP Flash Speed window will appear.

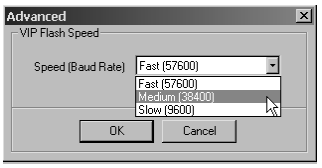

Figure 93 — Advanced VIP Flash Speed Window

Click on the ***Speed [Baud Rate]*** drop-down arrow and select a speed of “Slow,” “Medium” or “Fast.” After you have made your selection, click on the ***OK*** button to accept the changes and close the window

For V-MAC Programming, 9600 baud rate is used.

In the Dealer Programming entry form, program error and debugging information logging can be customized using the *Enable Logging*, *Application Log Level* and *Logfile Name* fields. These functions are used primarily by internal Mack personnel.

SAVE CUSTOMER DATA ENTRY FORM

NOTE

Saving customer data must be done prior to programming an ECU with the product software file. If you do not save customer data, odometer readings may be lost.

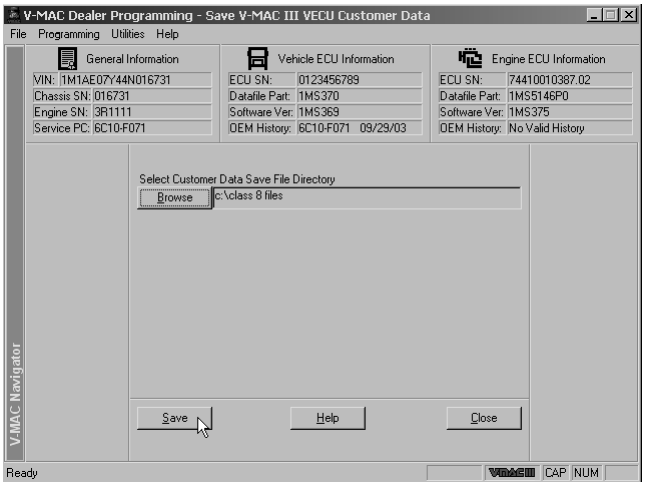

Figure 94 — Save Customer Data Entry Form

You can save customer data for the vehicle and/or engine ECU. The saved data can be programmed back into the ECU during data file reprogramming.

Click on the ***Browse*** button and select the directory in which the customer data file will be saved.

Click on the ***Save*** button to start saving the customer data file.

Click on the ***Close*** button to abort programming.

FLASH V-MAC III SOFTWARE ENTRY FORM

NOTE

Prior to flashing the product software file, please save customer data. If you do not save customer data, odometer readings may be lost (please refer to “SAVE CUSTOMER DATA ENTRY FORM” on page 133 for more information).

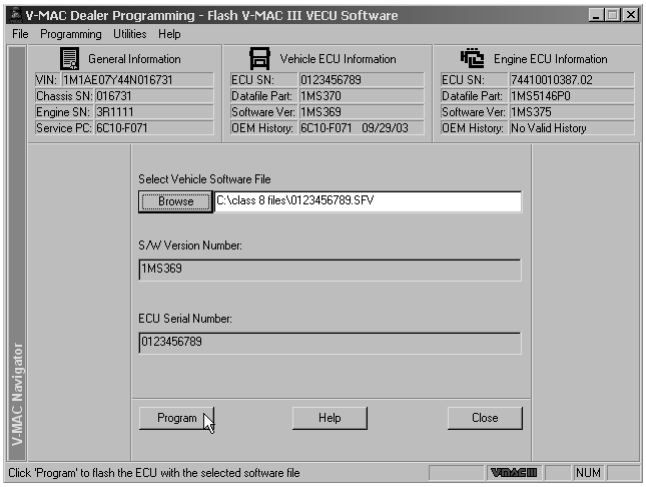

Figure 95 — Flash V-MAC III Software Entry Form

1. In the *Select Vehicle Software File* or *Select Engine Software File* field, click on the ***Browse*** button and select the appropriate product software file.

   The ECU software version and serial number will be displayed.

2. If the ECU serial number and software version are correct, connect computer to vehicle using the datalink adapter and click on the ***Program*** button to begin programming.

   Once programming has begun, do not interrupt the process.

NOTE

It will take up to 30 minutes to program the VECU, and up to 45 minutes to program the EECU.

3. Cycle the ignition when prompted.

Click on the ***Close*** button to exit.

FLASH V.I.P.™ SOFTWARE ENTRY FORM

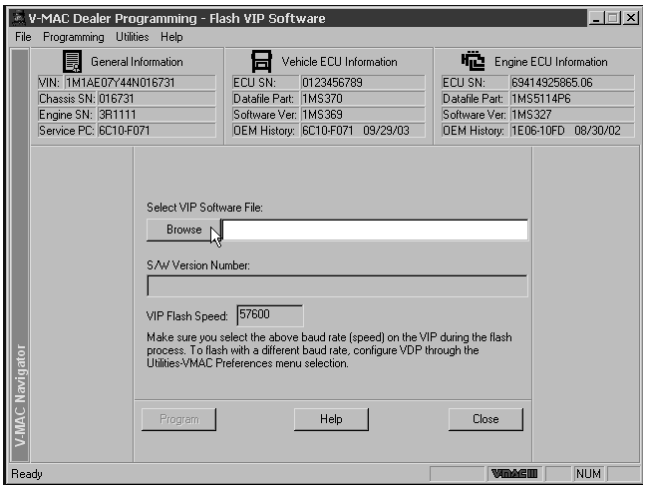

Figure 96 — Flash V.I.P.™ Software Entry Form

1. In the *VIP Software File* field, click on the ***Browse*** button and select the appropriate product software file.

   The V.I.P.™ software version number will be displayed.

NOTE

The VIP Flash Speed field will display the current speed of the VIP. If you want to select a different speed, please refer to “PREFERENCES ENTRY FORM” on page 130.

2. If the V.I.P.™ software version number is correct, click on the ***Program*** button to begin programming.

   Once programming has begun, do not interrupt the process.

NOTE

It will take about 30 minutes to program the V.I.P.™

3. A pop-up screen will appear after downloading is complete. It will prompt the user to cycle the key switch and click the ***OK*** button to complete the process.

Click on the ***Close*** button to exit.

NOTE

V.I.P.™ does not require data file programming.

PROGRAM V-MAC III OEM DATA ENTRY FORM

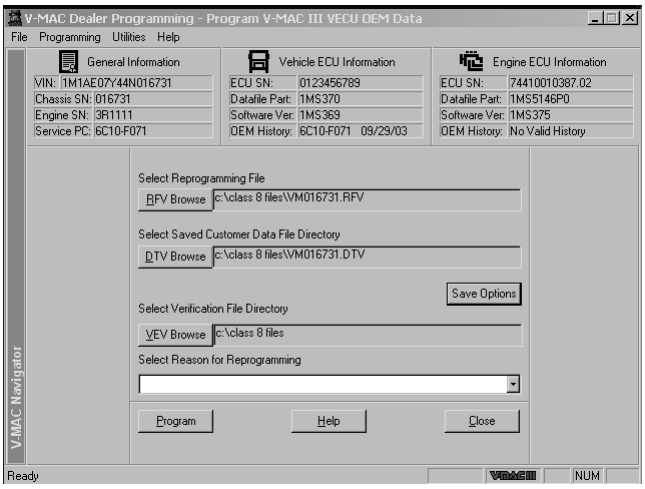

Figure 97 — Program V-MAC III OEM Data Entry Form

NOTE

If product software programming is required, it must be done before data file programming.

1. In the *Select Reprogramming File* field, click on the ***Browse*** button and select the appropriate reprogramming data file.
2. In the *Select Saved Customer Data File Directory* field, click on the ***Browse*** button and select the directory for the customer data file.
3. In the *Select Verification File Directory* field, click on the ***Browse*** button and select the directory where the verification file will be saved.
4. In the *Select Reason for Reprogramming* field, click on the drop-down arrow and select the appropriate reason for programming.
   - Choose ***1. Validate Data Currently in Module*** when verifying that the data in the ECU is identical to data on the database.

NOTE

For programming Type 1 (Verifying/ reprogramming ECU data file), *DEALER PROGRAMMING* will determine if the data on the floppy disk matches the data in the ECU.

- Choose ***2. Replacement of a Module*** when replacing or upgrading an ECU.
- Choose ***3. Erase both Vehicle and Customer Passwords*** when erasing customer passwords.
- Choose ***4. Enable/Disable a Feature*** when upgrading the data file after using F3 Update Options on the database.
- Choose ***5. Horsepower Change*** when updating the data file after a horsepower change.
- Choose ***6. Program after a CDS/ Extension Change*** when updating CDS/Extension data.
- Choose ***7. Program after V-MAC Software Upgrade*** when reprogramming after a product software upgrade.

NOTE

Not all these choices may be available.

The Program V-MAC III OEM Datafile entry form also allows the option to save specific units of customer data (for the VECU only). Click on the ***Save Options*** button. The Save Options screen will appear.

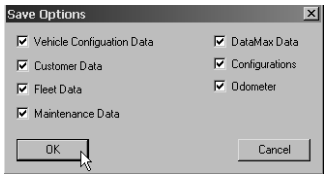

Figure 98 — Save Options Screen (VECU Only)

As the Mack default setting, all the items listed will be selected automatically. Deselect those items you do not wish to save for the VECU.

NOTE

Do not deselect the ODOMETER data or mileage may be lost.

NOTE

For the Save Options function to work, customer data for the VECU must be saved prior to flashing the VECU when programming the product software file or before programming the reprogramming data file.

Make your selections and then click on the ***OK*** button to save changes or click on the ***Cancel*** button to exit if you do not want to make changes.

5. Click on the ***Program*** button to start programming.

V-MAC Online Screen Summaries

The following section is an introduction to the V-MAC Online screens available through MACK*net* (accessed via the MACK Extranet). This section is meant to familiarize you with the various V-MAC Online screens. For detailed information on how to use V-MAC Online, please refer to “USING V-MAC ONLINE AND DEALER PROGRAMMING” on page 144.

MACK*net* LOG ON SCREEN

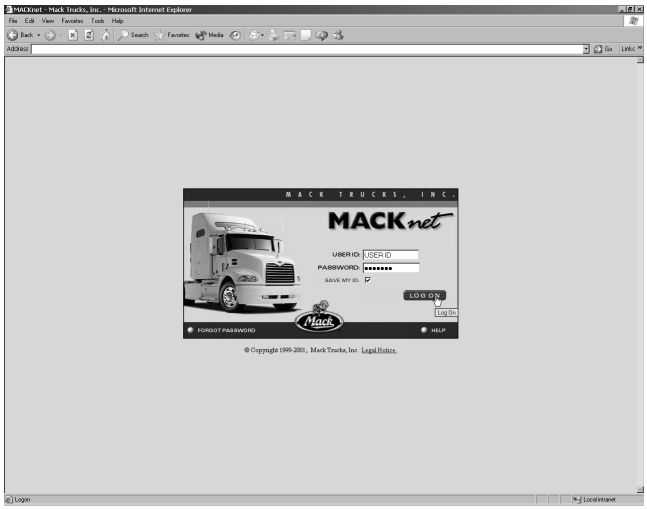

Figure 99 — MACK*net* Log On Screen

The MACK*net* Log On screen allows you to enter the MACK database and use the V-MAC Online software.

1. Enter your user identification information in the ***User ID*** field.
2. Enter your password in the ***Password*** field. If you want the PC you are using to remember your user ID, click on the ***Save My ID*** check box. You will still be required to enter your password.
3. Click on the ***Log On*** button to enter the V-MAC Online Main Menu.

V-MAC ONLINE MAIN SCREEN

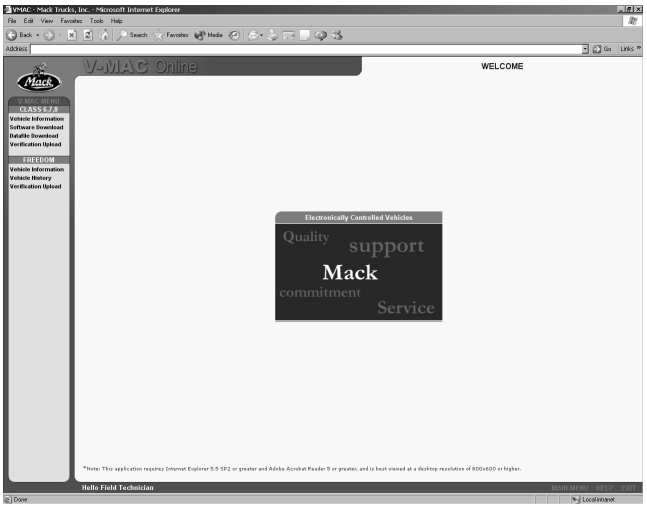

Figure 100 — V-MAC Online Main Menu

The V-MAC Online Menu provides four options to choose from for class-8 vehicles: Vehicle Information, Product Software Download, Datafile Download and Verification Upload.

1. Click on ***Vehicle Information*** (for class 6-7-8) to enter the MACK Trucks Host Menu (refer to “MACK TRUCKS HOST MENU” on page 136).
2. Click on ***Product Software Download*** to enter the Product Software Download entry form (refer to “SOFTWARE DOWNLOAD ENTRY FORM” on page 142).
3. Click on ***Datafile Download*** to enter the Datafile Download entry form (refer to “DATAFILE DOWNLOAD ENTRY FORM” on page 142).
4. Click on ***Verification Upload*** to enter the Verification Upload entry form (refer to “VERIFICATION UPLOAD ENTRY FORM” on page 143).

MACK TRUCKS HOST MENU

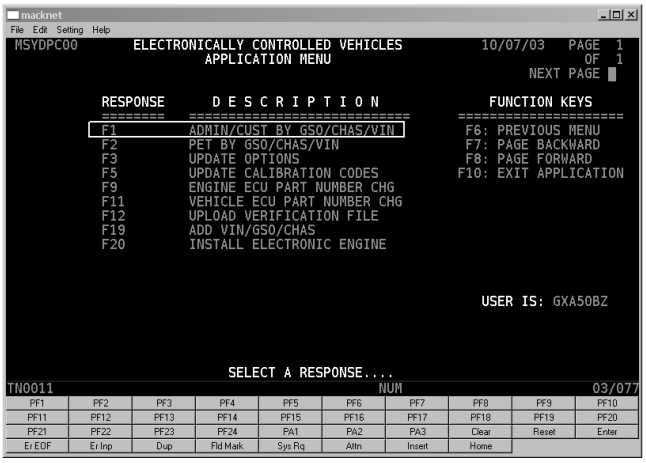

Figure 101 — Mack Trucks Host Menu

The Mack Trucks Host menu, accessed from the Vehicle Information screen, contains the Electronically Controlled Vehicles Application menu where you can view and modify vehicle and engine information for class-8 vehicles.

Select the ***F1*** key to access the Administrative/ Customer Information by GSO/CHASSIS or VIN entry form. This screen displays vehicle information (refer to “F1 — ADMINISTRATIVE/ CUSTOMER INFORMATION BY GSO/CHASSIS OR VIN ENTRY FORM” on page 137).

Select the ***F3*** key to access the Update Options form (refer to “F3 — UPDATE OPTIONS ENTRY FORM” on page 137).

Select the ***F5*** key to access the Update Calibration Codes entry form (refer to “F5 — UPDATE CALIBRATION CODES ENTRY FORM” on page 138).

Select the ***F9*** key to access the Engine ECU Part Number Change entry form (refer to “F9 — EECU PART NUMBER CHANGE ENTRY FORM” on page 140).

Select the ***F11*** key to access the Vehicle ECU Part Number Change entry form (refer to “F11 — VECU PART NUMBER CHANGE ENTRY FORM” on page 140).

Select the ***F19*** key to access the Add VIN/GSO/Chassis entry form (refer to “F19 — ADD VIN/GSO/CHASSIS ENTRY FORM” on page 141).

Select the ***F20*** key to access the Install Engine entry form (refer to “F20 — INSTALL ENGINE ENTRY FORM” on page 141).

F1 — ADMINISTRATIVE/CUSTOMER INFORMATION BY GSO/CHASSIS OR VIN ENTRY FORM

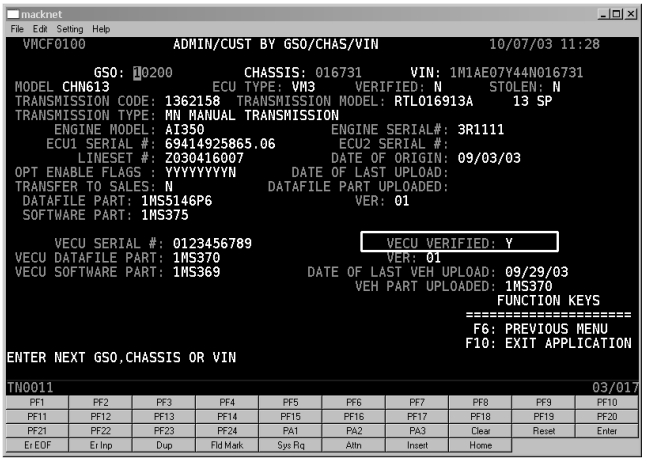

Figure 102 — F1 Entry Form

The F1 entry form permits you to view customer information and general vehicle information by GSO/Chassis or VIN. To view the information, type in the GSO/Chassis number or VIN and hit the ***Enter*** key. Hit the ***F6*** key to return to the MACK HOST menu or hit the ***F10*** key to exit the screen.

F3 — UPDATE OPTIONS ENTRY FORM

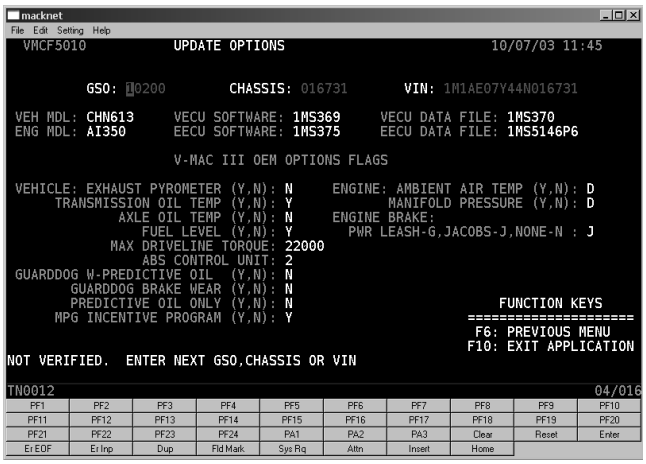

Figure 103 — F3 Entry Form

The F3 entry form displays what options have been enabled and also allows you to enable or disable options for the particular chassis. Items with an “N” next to them indicate that option is disabled. Items with a “Y” next to them indicate that option is enabled. To enable or disable options, follow the steps below:

1. To enable an option, type over the “N” with a “Y” and hit the ***Enter*** key.
2. To disable an option, type over the “Y” with an “N” and hit the ***Enter*** key.
3. Hit the ***F6*** key to return to the Mack Trucks Host menu or hit the ***F10*** key to exit the screen. After you have enabled or disabled the options wanted, you must now program the chassis for these changes to take effect. Please refer to Dealer Programming “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128.

F5 — UPDATE CALIBRATION CODES ENTRY FORM

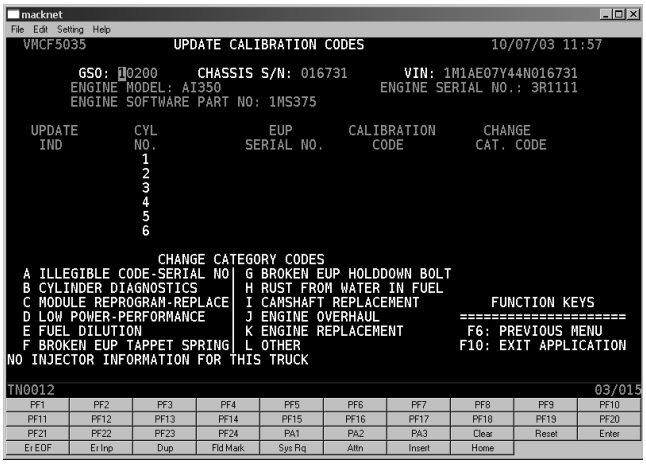

Figure 104 — F5 Entry Form

The F5 entry form permits you to view and update calibration codes. Type in the GSO/CHASSIS serial numbers or type in the VIN and press the ***Enter*** key. The entry form will then display the engine model, engine serial and engine software part numbers.

NOTE

If the GSO/CHASSIS serial numbers or VIN is not found in the database, a message near the lower left-hand side of the screen will be displayed, indicating that the GSO/CHASSIS or VIN was not found.

To change an Electronic Unit Pump (EUP) code, use the following steps:

1. In the Update Indicator column, enter “Y” over the “N” along side of the cylinder number of the EUP you want to change.
2. In the EUP Serial Number column, enter the new ***EUP*** serial number over the current number displayed.
3. In the Calibration Code column, enter the new ***Calibration Code*** number over the current number displayed.
4. In the Change Category Code column, enter the appropriate ***Code Letter*** that best describes the reason for the change. (Change Category Codes are listed at the bottom of the F5 screen.)
5. Hit the ***F6*** key to return to the Mack Trucks Host menu screen or hit the ***F10*** key to exit the screen when you have finished making your changes.

The following table contains the editing functions associated with the F5 — Update Calibration Codes entry form:

Column Item	Function
Update Indicator	N or Y must be displayed or an error message will be displayed in the lower left-hand corner of the screen.
Cylinder Number	This column will display cylinders 1 through 6.
EUP Serial Number	• If this column is blank, an error message will be displayed in the lower left-hand corner of the screen. • Second position of the existing EUP serial number contains either a “B” (standard EUP) or an “M” (CCRS). First position contains a “P” or “C” (remanufactured EUP). • Second position of the new EUP serial number (whether it contains a B or an M) must be the same for the other five existing EUP serial numbers. For example, if the new EUP serial number for cylinder number 1 is 0B2M15K, then the rest of the EUP serial numbers must also contain the B in the second position. • If the EUP is remanufactured, then a P will be in the first position and a B in the second position for the other EUPs. • Step 7 and earlier engines must have a B in the second position of all their EUP serial numbers or an error message will be displayed in the lower left-hand corner of the screen. • Step 8 ASET™ AI engines must have an M in the second position of all their EUP serial numbers or an error message will be displayed in the lower left-hand corner of the screen. ASET™ AC engines must have an X in the second position or Y in the first position of all their EUP serial numbers or an error message will display. • Engines with a “C” (remanufactured CCRS) in the first position will display an “M” in other EUPs. • If the EUP serial number is changed, the calibration code must also be changed or an error message will be displayed in the lower left-hand corner of the screen.
Calibration Code	• If this column is blank, an error message will be displayed in the lower left-hand corner of the screen. • If the calibration code is changed, the EUP serial number must also be changed or an error message will be displayed in the lower left-hand corner of the screen.
Change Category Code	If the EUP serial number and calibration code are changed, a change category code must be entered or an error message will be displayed in the lower left-hand corner of the screen.

F9 — EECU PART NUMBER CHANGE ENTRY FORM

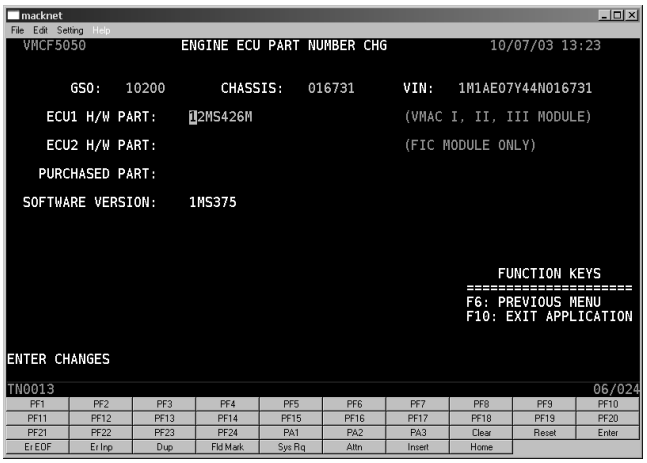

Figure 105 — F9 Entry Form

The F9 entry form allows you to change the Engine ECU hardware and purchase part numbers for a V-MAC or FIC module.

To change the information, enter the GSO/ CHASSIS serial numbers or VIN for the chassis you are selecting and perform the following steps:

1. In the ***ECU1 H/W Part*** field, type in the V-MAC ECU hardware part number and hit the ***Enter*** key.
2. In the ***ECU2 H/W Part*** field, type in the FIC module part number and hit the ***Enter*** key.
3. In the ***Purchased Part*** field, type in the Purchased part number and hit the ***Enter*** key. The software version number will display in the ***Software Version*** field.
4. Hit the ***F6*** key to return to the Mack Trucks Host menu screen or hit the ***F10*** key to exit the entry form.

F11 — VECU PART NUMBER CHANGE ENTRY FORM

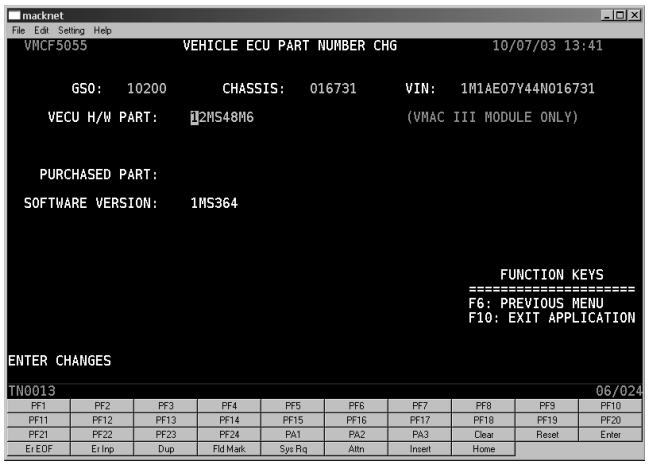

Figure 106 — F11 Entry Form

The F11 entry form allows you to change the Vehicle ECU part number for V-MAC III modules only. To change the information, enter the GSO/ CHASSIS serial numbers or VIN for the chassis you are selecting and use the following steps:

1. In the ***VECU1 H/W Part*** field, type in the V-MAC ECU hardware part number and hit the ***Enter*** key.
2. In the ***Purchased Part*** field, type in the Purchased part number and hit the ***Enter*** key. The software version number will display in the ***Software Version*** field.
3. Hit the ***F6*** key to return to the Mack Trucks Host menu screen or hit the ***F10*** key to exit the entry form.

F19 — ADD VIN/GSO/CHASSIS ENTRY FORM

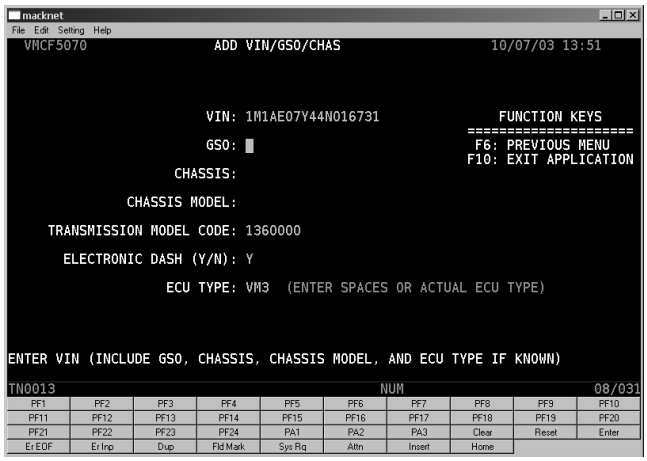

Figure 107 — F19 Entry Form

The F19 entry form allows you to add the VIN, GSO and Chassis. A record is created for a non-electronic VIN that has been converted to an electronic vehicle. To add the information, use the following steps:

1. Enter the VIN in the ***VIN*** field.
2. Enter the GSO serial number in the ***GSO*** field.
3. Enter the CHASSIS serial number in the ***Chassis*** field.
4. Enter the Chassis Model Number in the ***Chassis Model*** field.
5. Hit the ***Enter*** key when you are finished making your entries.
6. Hit the ***F6*** key to return to the Mack Trucks Host menu screen or hit the ***F10*** key to exit the entry form.

F20 — INSTALL ENGINE ENTRY FORM

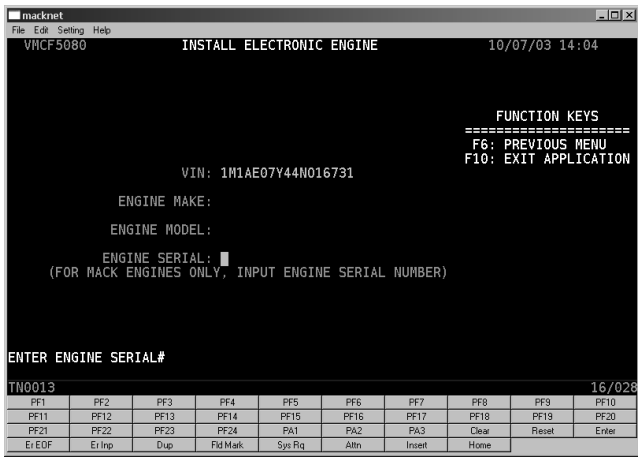

Figure 108 — F20 Entry Form

The F20 entry form allows you to assign an available electronic engine to a particular VIN. To assign an engine, use the following steps. After the engine is assigned, selection of the data file must be done for programming.

1. In the ***VIN*** field, type in the VIN of the chassis you want to have an engine assignment.
2. In the ***Engine Serial*** field, type in the Engine Serial number you want assigned to the selected chassis. You must program the chassis for the change to take place (please refer to “USING V-MAC ONLINE AND DEALER PROGRAMMING” on page 144).
3. Hit the ***Enter*** key when you are finished making your entries.
4. Hit the ***F6*** key to return to the Mack Trucks Host menu screen or hit the ***F10*** key to exit the entry form.

SOFTWARE DOWNLOAD ENTRY FORM

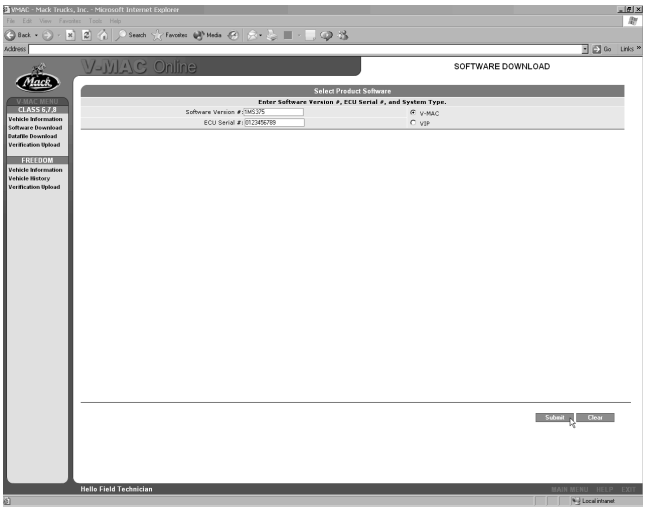

Figure 109 — Software Entry Form

The Software entry form permits you to download a product software file from the MACK database via V-MAC Online.

1. Select the system type. Click on the ***V-MAC*** button for class 8 vehicles. Or, click on the ***VIP*** radio button if you need to download a product software file for the Vehicle Information Profiler™ (V.I.P.™).

NOTE

The ECU Serial # field entry does not apply to the V.I.P.™

2. After you have selected the desired system type, enter the software version number in the ***Software Version #*** field, and enter the ECU serial number in the ***ECU Serial #*** field.

NOTE

If you do not know the ECU Serial #, you can find this information in the class 6-7-8 Vehicle Information/F1 entry form (see Figure 102).

3. If you need to clear your selections, click on the ***Clear*** button. Or, if you are ready to download the file, click on the ***Submit*** button. The File Download dialog box will appear, asking you to save the file.

4. Click on the ***Save*** button. The Save As window will appear to save the product software file. Download the file to your computer hard drive.

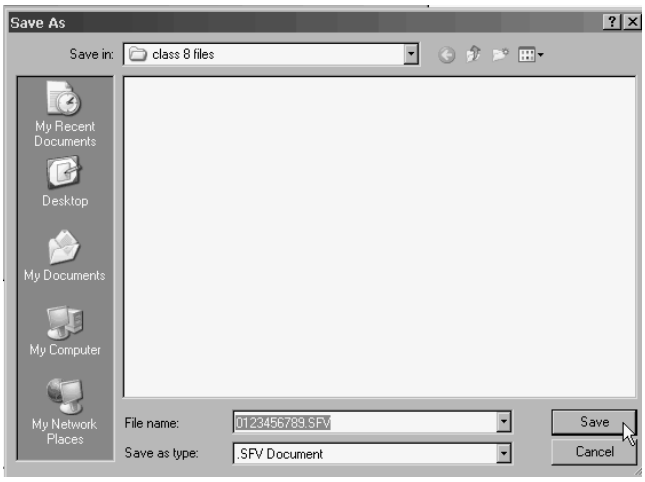

Figure 110 — Software Save As Window

DATAFILE DOWNLOAD ENTRY FORM

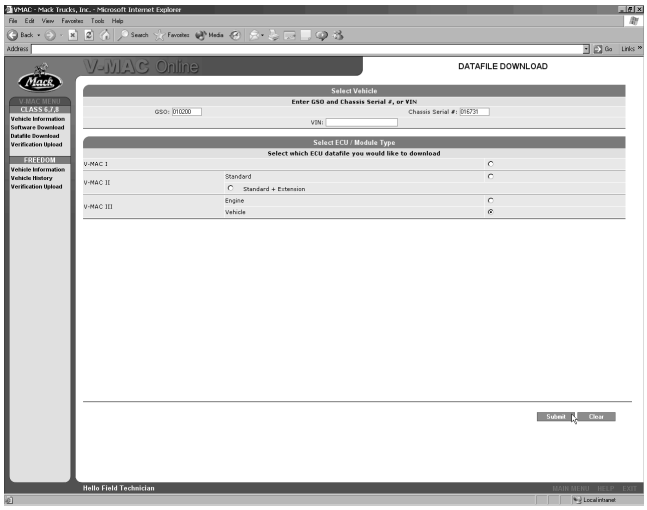

Figure 111 — Datafile Download Entry Form

The Datafile Download entry form permits you to download a reprogramming datafile from the MACK database via V-MAC Online.

1. Enter the GSO and Chassis Serial number in the ***GSO*** and ***Chassis Serial #*** fields. Or, enter the vehicle identification number in the ***VIN*** field.

2. Select the ECU/Module type and click on the appropriate ***V-MAC*** ECU radio button.

3. If you need to clear your selections, click on the ***Clear*** button. Or, if you are ready to download the file, click on the ***Submit*** button. The File Download dialog box will appear, asking you to save the file.
4. Click on the ***Save*** button. The Save As window will appear to save and download the reprogramming data file. Download the file to your computer hard drive.

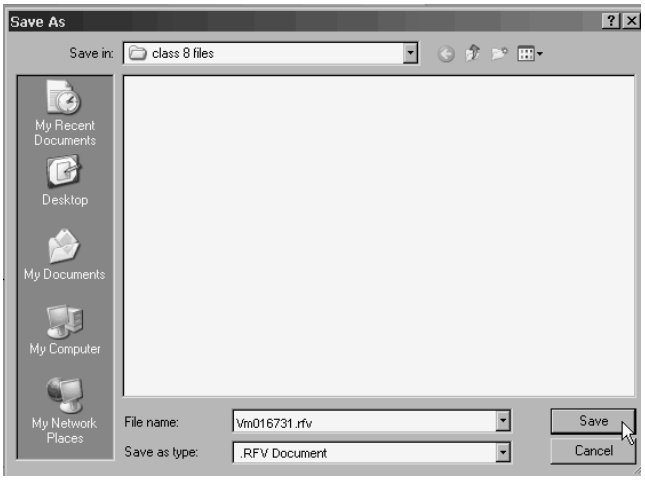

Figure 112 — Datafile Save As Window

VERIFICATION UPLOAD ENTRY FORM

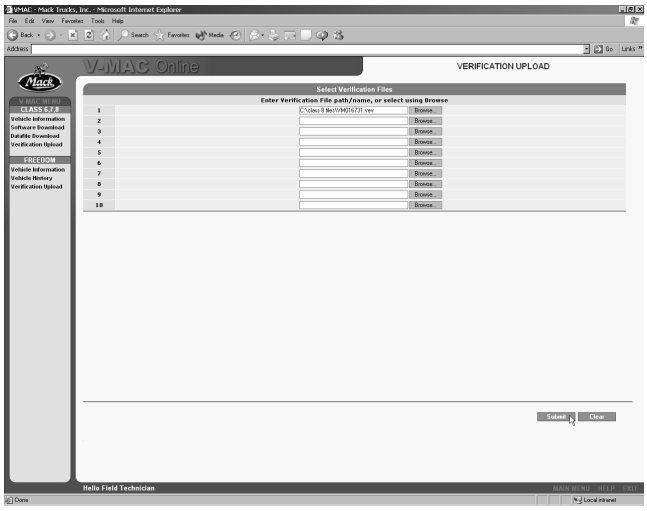

Figure 113 — Verification Upload Entry Form

The Verification Upload entry form allows you to upload a verification file to the MACK database via V-MAC Online. You can enter up to 10 verification files at one time.

1. Enter the verification file name in the numbered field entries. Or, simply click on the ***Browse*** button to select the desired verification file. If you click on the ***Browse*** button, a Choose File window will appear.

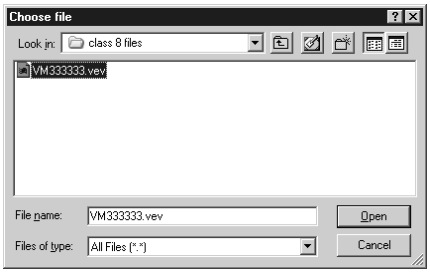

Figure 114 — Choose File Window

2. Click on the ***Look In*** drop-down arrow and select the location of the file on the PC hard drive.
3. Click on the verification file and click on the ***Open*** button. The selected file will automatically appear in the verification file field and will show the location where the file will be saved.
4. Click on the ***Submit*** button to begin uploading the file to the MACK database. Or, if you need to remove entries from the fields, click on the ***Clear*** button.

If the verification upload was successful, you will receive an “All Verification Successful” message.

Figure 115 — All Verification Successful Dialog Window

In the USING V-MAC ONLINE AND DEALER PROGRAMMING section (please refer to “USING V-MAC ONLINE AND DEALER PROGRAMMING” on page 144), you will learn how to use V-MAC Online in conjunction with Dealer Programming.

USING V-MAC ONLINE AND DEALER PROGRAMMING

Remember when using V-MAC Online that Dealer Programming software consists of two programming portions: product software and data file programming. As you may recall, both kinds of programming have different file types. Let us quickly review once more.

The product software file-programming portion of Dealer Programming uses two different types of files:

- A customer data file is created whenever you save customer parameters. This should be done prior to product software or data file programming.
- A product software file is downloaded from the MACK database via V-MAC Online and reprograms (flashes) the ECU software or V.I.P.™ software.

The data file-programming portion of Dealer Programming uses three different types of files:

- A customer data file is created whenever you save customer parameters. This should be done prior to product software or data file programming.
- A reprogramming (reference) data file is downloaded from the MACK database via V-MAC Online and reprograms the ECU data.
- A verification file is created after programming is completed. You then upload the file to the MACK database via V-MAC Online.

REVIEW DEALER PROGRAMMING PHASES

Both product software programming and data file programming involve phases.

Product Software Programming

Reprogramming a product software file involves three distinct phases.

1. The first phase is downloading.

   Downloading is receiving a product software file from the MACK database and transferring the file to your PC using V-MAC Online.

2. The second phase is saving customer data.

   Saving a customer data file is done prior to programming the ECU using V-MAC Dealer Programming software.

3. The third phase is programming.

   Programming (flashing) is loading a product software file that was downloaded from the MACK database into the ECU using V-MAC Dealer Programming software.

Data File Programming

Reprogramming a data file is similar to product software programming, but involves three distinct phases:

1. The first phase is downloading.

   Downloading is receiving a data file from the MACK database and transferring the file to your PC using V-MAC Online.

2. The second phase is programming.

   Programming is loading a data file that was downloaded from the MACK database into the ECU using V-MAC Dealer Programming software.

3. The third phase is uploading.

   Uploading is transferring a verification data file (created during programming with V-MAC Dealer Programming software) from your PC to the MACK database using V-MAC Online.

To sum it up

- **Downloading** is the way to receive information from the MACK database using V-MAC Online.
- **Programming** is the way to put the information into the vehicle's ECUs using Dealer Programming software.
- **Uploading** is the way to send the information back to the MACK database using V-MAC Online.

PUTTING IT TOGETHER

In this section, you will download and upload files using V-MAC Online and flash and program using Dealer Programming. The following example will use a file for a vehicle ECU. Your objective will be to upgrade the VECU to a higher level of software. For generic, basic programming steps, please refer to “Overview of Basic Programming Steps” on page 149.

Step 1 — Configure PC

Ensure that the PC has been configured properly. Please refer to “PREFERENCES ENTRY FORM” on page 130 for instruction.

NOTE

It is recommended that all files be downloaded to and programmed from the computer hard drive. Doing this removes the floppy disk drive as a potential source of downloading and programming failure. Additionally, programming is generally faster and more reliable when performed from the computer hard drive. Verification files should also be saved to the hard drive for subsequent upload to V-MAC Online.

Step 2 — Find Vehicle Information (for VECU)

Before you can download a file from the MACK database using V-MAC Online, you will need to record the following information:

- Vehicle Identification Number (VIN)
- VECU Serial Number

The above two items can be found via the V-MAC Online class 6-7-8 Vehicle Information/F1 entry form.

- VECU Software Version Number (in this case, you will need to know the next higher level of software to upgrade)

Step 3 — Save Customer Data (for VECU)

Hook up to the vehicle and launch V-MAC Dealer Programming software. Access the Save VECU Customer Data screen.

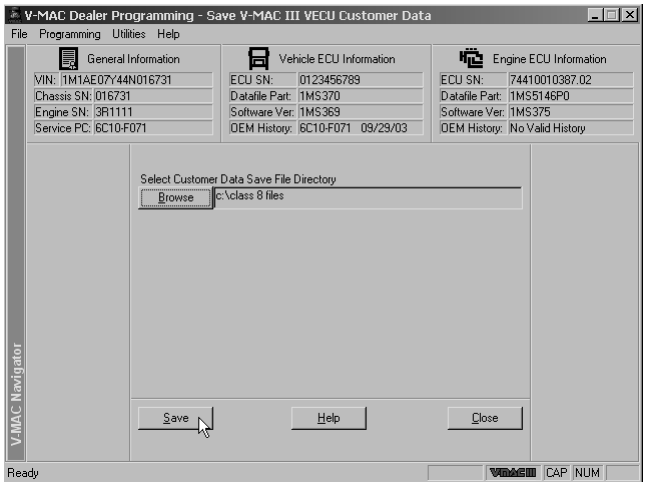

Figure 116 — Save VECU Customer Data Entry Form

Use the location on your computer’s hard drive and click on the ***Save*** button to save the VECU customer data (the file extension will be .dtv for V-MAC III VECU). Always save customer data prior to programming with a product software file or reprogramming a datafile unless instructed otherwise.

Step 4 — Download Software File (for VECU)

Enter the V-MAC Online Main Menu via MACK*net*. Refer to “MACKnet LOG ON SCREEN” on page 135 for instructions on how to enter the V-MAC Online Main Menu.

Once you have entered the V-MAC Online Main Menu, click on ***Software Download*** to enter the Software Download entry form.

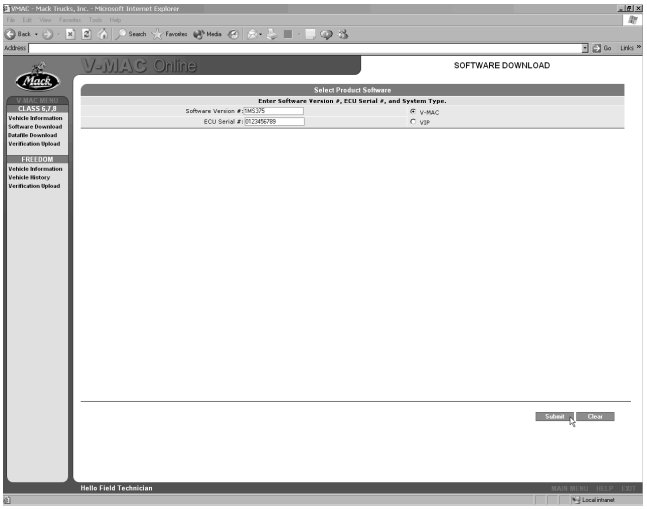

Figure 117 — Software Download Entry Form

When you have entered the Software Download entry form, type in the product software number that you are using to make the upgrade and the vehicle ECU serial number you recorded earlier. Select the vehicle system type (V-MAC) and then click on the ***Submit*** button. When you are finished saving the file, ensure that the software file was saved to the designated location (you can identify the VECU software file by its file extension — ″.sfv).

Step 5 — Download Datafile (for VECU)

While you are still in V-MAC Online, click on ***Datafile Download*** to enter the Datafile Download entry form.

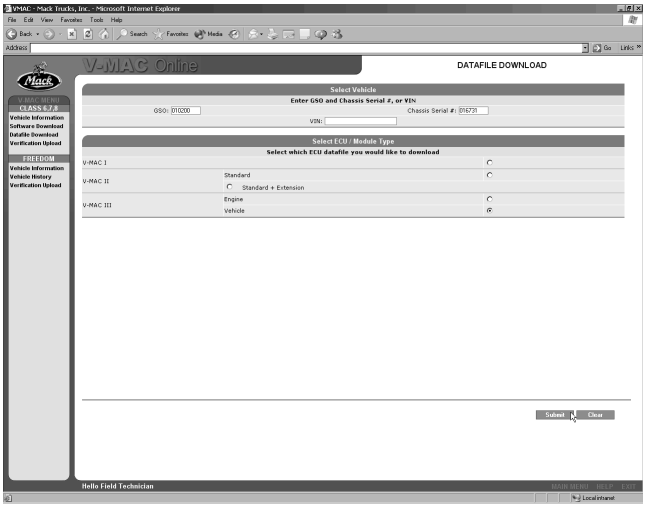

Figure 118 — Datafile Download Entry Form

When you have entered the Datafile Download entry form, enter the VIN or GSO/CHASSIS serial number and click on the ***V-MAC III Vehicle*** radio button. Click on the ***Submit*** button to download the datafile. When you are finished saving the file, ensure that the reprogramming datafile (the file extension will be .rfv for V-MAC III VECU) was saved to the designated location on the computer hard drive.

Step 6 — Program (Flash) VECU

NOTE

If you have not saved customer data at this point, please do so now. Refer to Step 3.

Launch V-MAC Dealer Programming software and enter the Flash III VECU screen.

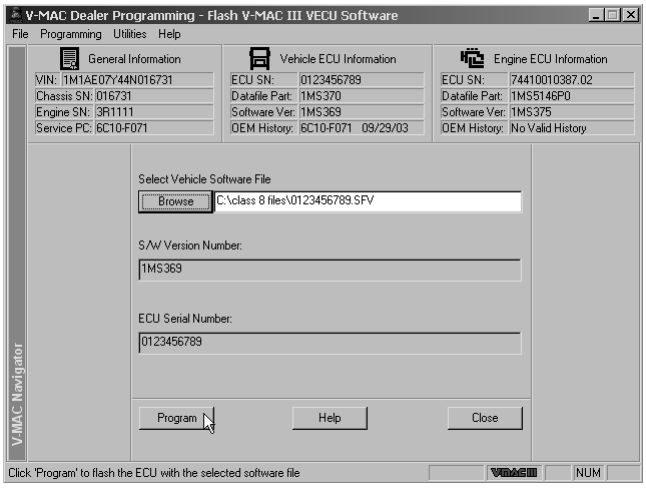

Figure 119 — Flash V-MAC III VECU Software Entry Form

Click on the ***Browse*** button to select the product software file. Click on the ***Program*** button to program (flash) the vehicle ECU. The flashing sequence will take up to 40 minutes. When the flashing session is over, wait for the “cycle the power” message and follow as instructed. When the flashing sequence is over and the software automatically transports you to the Dealer Programming Main Menu, check that the product software file (.sfv) is gone from the designated location on your PC hard drive.

Step 7 — Program VECU

While you are still in V-MAC Dealer Programming software, enter the Program III VECU OEM Data screen. After the fields fill with data, click on the ***RFV Browse*** button to open the reprogramming data file (.rfv). Click on the ***DTV Browse*** button to save the customer datafile (.dtv). Click on the ***VEV Browse*** button to select the verification file.

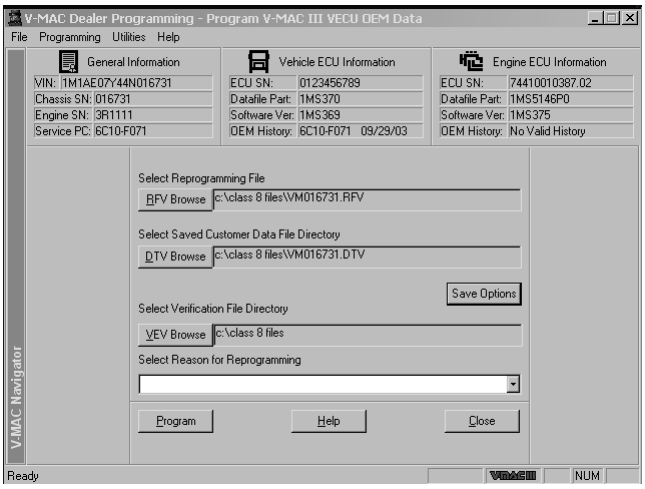

Figure 120 — Program V-MAC III VECU OEM Data Entry Form

Click on the ***Select Reason for Reprogramming*** drop-down arrow and choose “Program after Software Upgrade.” If desired, click on the ***Save Options*** button to select all, some or none of the available customer data sections.

NOTE

If you do not save customer data, odometer readings may be lost.

For more information on the Save Options function, refer to the “PROGRAM V-MAC III OEM DATA ENTRY FORM” on page 134.

Click on the ***Program*** button. When the reprogramming process is complete (up to 35 minutes), check that the reprogramming data file has been replaced with a verification file (.vev) in the designated location on your PC hard drive.

Step 8 — Upload Verification File

Re-enter V-MAC Online via MACK*net*, and click on ***Verification Upload***. The Verification Upload entry form will appear.

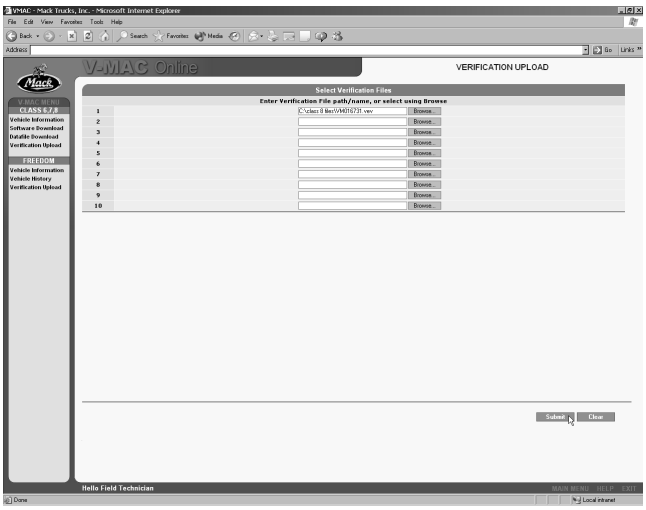

Figure 121 — Verification Upload Entry Form

Click on the ***Browse*** button to open and attach the verification file. Click on the ***Submit*** button to upload the verification file to the MACK database. When the upload is complete, check that the verification file is gone from the designated location on your PC hard drive.

Step 9 — View MACK Host Vehicle Information Screen

From the V-MAC Online Main Menu, click on ***Vehicle Information*** under the Class 6, 7 and 8 Vehicle heading. The Mack Trucks Host Menu screen will appear.

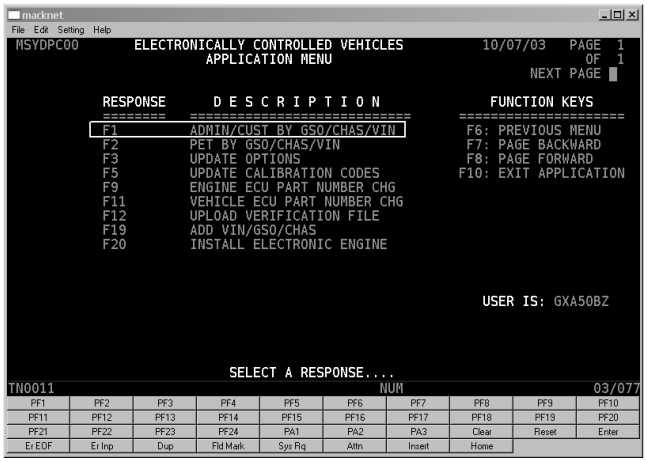

Figure 122 — Mack Trucks Host Menu

Click on the ***F1*** key to invoke the ADMIN/CUST BY GSO/CHAS/VIN screen.

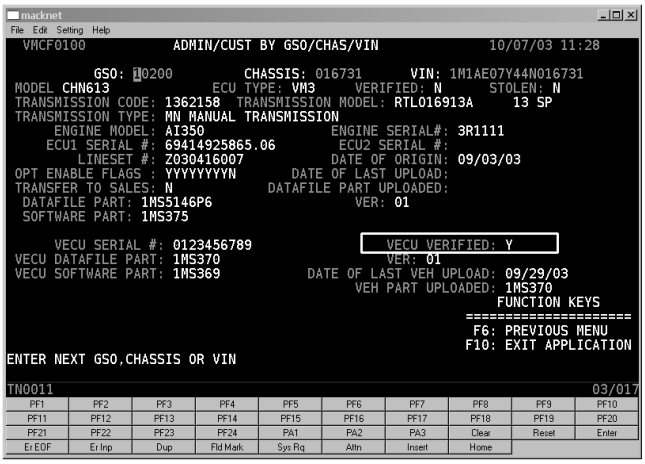

Figure 123 — F1 Entry Form

Enter the Chassis Model and Chassis Serial number or the VIN and hit the ***Enter*** key. Check that the verification file for the vehicle ECU was received. If the upload was successful, a “Y” for yes will appear next to “VECU Verified.”

PROGRAMMING INSTRUCTIONS

Overview of Basic Programming Steps

1. Determine which type of programming is needed (refer to the “SUMMARY OF PROGRAMMING TYPES” table on page 149).
2. Identify and photocopy the appropriate worksheet (refer to the “WORKSHEET IDENTIFICATION” table on page 150).
3. Perform each of the procedures for the specific programming type. Most worksheet items include references for detailed procedures that more fully explain how to complete a programming step. These “Detailed Programming Instructions” should only be used in conjunction with an appropriate worksheet (refer to “Detailed Programming Instructions” on page 152).

NOTE

If the vehicle is equipped with a Vehicle Information Profiler (V.I.P.™) display, the V.I.P.™ may beep during programming and display the following message: “A loss of communication on the J1587”. Disregard the message and acknowledge it only when the programming is complete to prevent the V.I.P.™ from beeping again.

STEP 1 — DETERMINING THE PROGRAMMING TYPE

Refer to the following chart to determine the type of programming.

SUMMARY OF PROGRAMMING TYPES

Type	Description of Programming Action	File(s) to Download
T1	Verifying/reprogramming ECU data file(s)	Reprogramming data file(s) — same version
T2	Replacing defective ECUs with the same P/N	Reprogramming data file(s) — same version
T3	Erasing customer passwords	Reprogramming data file(s) — same version
T4	Programming after F3 update	Reprogramming data file(s) — same version
T5	Programming after HP change	EECU reprogramming data file — new version
T6	Programming with new data file(s)	Reprogramming data file(s) — new version
T7	Reprogramming ECU software file(s) Reprogramming V.I.P.™ software file	Product software file(s) — same version Reprogramming data file(s) — same version (does not apply to V.I.P.™)
T8	Upgrading ECU software file(s)	Product software file(s) — new version Reprogramming data file(s) — new version
T9	Reprogramming CDS-EXT file(s)	Reprogramming data file(s) — new version

NOTE

The software will automatically run a comparison check for Type 1 and 4 through 6. However, in the case of VECU CDS-EXT file, the comparison checking may not be accurate; therefore, don't rely on data comparison for the VECU.

STEP 2 — IDENTIFYING THE APPROPRIATE WORKSHEET

Locate the worksheet that corresponds to the programming type.

WORKSHEET IDENTIFICATION TABLE

* — Applies to V-MAC I, FIC and V-MAC II modules, too.

Type	Description	Worksheet Location	Reason for Reprogramming
T1	Verifying/reprogramming VECU data file	Refer to TYPE 1 — VECU in Programming Worksheets	T1
T1	Verifying/reprogramming EECU* data file	Refer to TYPE 1 — EECU in Programming Worksheets	T1
T1	Verifying/reprogramming both data files	Refer to TYPE 1 — BOTH ECUs in Programming Worksheets	T1
T2	Replacing defective VECU with the same P/N	Refer to TYPE 2 — VECU in Programming Worksheets	T2
T2	Replacing defective EECU* with the same P/N	Refer to TYPE 2 — EECU in Programming Worksheets	T2
T2	Replacing both ECUs with the same P/N	Refer to TYPE 2 — BOTH ECUs in Programming Worksheets	T2
T3	Erasing VECU customer passwords	Refer to TYPE 3 — VECU in Programming Worksheets	T3
T3	Erasing EECU* customer passwords	Refer to TYPE 3 — EECU in Programming Worksheets	T3
T3	Erasing all customer passwords	Refer to TYPE 3 — BOTH ECUs in Programming Worksheets	T3
T4	Programming after VECU F3 update	Refer to TYPE 4 — VECU in Programming Worksheets	T4
T4	Programming after EECU* F3 update	Refer to TYPE 4 — EECU in Programming Worksheets	T4
T4	Programming after VECU and EECU F3 update	Refer to TYPE 4 — BOTH ECUs in Programming Worksheets	T4
T5	Programming after HP change	Refer to TYPE 5 (EECU ONLY) in Programming Worksheets	T5
T6	Programming VECU with new data file	Refer to TYPE 6 — VECU in Programming Worksheets	T1
T6	Programming EECU* with new data file	Refer to TYPE 6 — EECU in Programming Worksheets	T1
T6	Programming both ECUs with new data files	Refer to TYPE 6 — BOTH ECUs in Programming Worksheets	T1
T7	Reprogramming VECU software file	Refer to TYPE 7 — VECU in Programming Worksheets	T7
T7	Reprogramming EECU (for V-MAC II and V-MAC III only) software file	Refer to TYPE 7 — EECU in Programming Worksheets	T7
T7	Reprogramming VECU and EECU software files	Refer to TYPE 7 — BOTH ECUs in Programming Worksheets	T7

Type	Description	Worksheet Location	Reason for Reprogramming
T7	Reprogramming V.I.P™ software file	Refer to TYPE 7 — V.I.P.™ in Programming Worksheets	N/A
T8	Upgrading VECU software file	Refer to TYPE 8 — VECU in Programming Worksheets	T7
T8	Upgrading EECU (for V-MAC II and V-MAC III only) software file	Refer to TYPE 8 — EECU in Programming Worksheets	T7
T8	Upgrading VECU and EECU software files	Refer to TYPE 8 — BOTH ECUs in Programming Worksheets	T7
T9	Reprogramming CDS-EXT file	Refer to TYPE 9 — CDS-EXT in Programming Worksheets	T9

NOTE

Worksheets apply to V-MAC II programming also. The V-MAC II ECU should be considered as the EECU.

STEP 3 — PERFORMING PROGRAMMING PROCEDURES

Perform the procedures outlined in the worksheet.

Detailed Programming Instructions

REMOVING FUSES

Application: Vehicle (mechanical procedure)

NOTE

Before programming, all other control units using the J1587 line must be disabled. Failure to disable other control units will result in an inability to complete programming. If programming is incomplete, the ECU passwords will be out of phase and the ECU will be unusable.

Systems that may use the J1587 line include (but are not limited to): ABS/ATC, Automatic transmissions, Co-Pilot, V.I.P.™ and communication devices.

1. Determine all systems that use the J1587 line and remove the appropriate fuses (refer to the wiring diagrams provided with the vehicle).
2. Record the amperage and location of each fuse that is removed (to allow for proper re-installation once programming is complete).

CLEARING FAULT TABLES

Application: V-MAC Service Support Software

Path:

→SERVICE DIAGNOSTICS

→Fault Codes

→Clear Fault Codes

Clear the VECU and/or EECU fault table(s).

Refer to the SERVICE DIAGNOSTICS section for detailed instructions concerning fault tables.

SAVING CUSTOMER DATA

Application: V-MAC Dealer Programming Software

Path:

→DEALER PROGRAMMING

→Utilities

→Save Customer Data

NOTE

If EECU customer data cannot be saved, the electronic unit pumps must be recalibrated after programming is complete.

RE-ENTERING CUSTOMER PASSWORDS

Application: V-MAC Service Support Software

Path:

→CUSTOMER DATA PROGRAMMING

→(any choice except *View/Print* or *Program Unit Pump Calibration*)

Re-enter customer passwords, if applicable. Refer to the CUSTOMER DATA PROGRAMMING section for detailed instructions concerning customer passwords.

NOTE

After programming, all passwords will return to the default (10 blank spaces).

PROGRAMMING THE REPROGRAMMING DATA FILE

Application: V-MAC Dealer Programming Software

Path:

→DEALER PROGRAMMING

→Program VECU or EECU OEM Data

1. Insert the disk with the reprogramming data file(s) in the floppy drive.
2. Access DEALER PROGRAMMING.
3. Click on the ***V-MAC Programming*** tab.
4. Click on the appropriate selection (***Program V-MAC III VECU OEM Data*** or ***Program V-MAC III EECU OEM Data*** or ***Program V-MAC II OEM Data*** or ***Program V-MAC I OEM Data*** or ***Program ITC OEM Data***).
5. Select the vehicle/engine reprogramming file.

6. Select the customer data file (customer data must be saved prior to programming the product software or reprogramming the data file).
7. Select the directory for the verification data file.
8. Select the reason for reprogramming.
   - Choose ***1. Validate Data Currently in Module*** when verifying that the data in the ECU is identical to data on the database.

NOTE

For programming Type 1 (Verifying/ reprogramming ECU data file), the V-MAC III system will determine if the data on the hard drive matches the data in the ECU.

   - Choose ***2. Replacement of a Module*** when replacing or upgrading an ECU.
   - Choose ***3. Erase both Vehicle and Customer Passwords*** when erasing customer passwords.
   - Choose ***4. Enable/Disable a Feature*** when upgrading the data file after using F3 Update Options on the database.
   - Choose ***5. Horsepower Change*** when updating the data file after a horsepower change.
   - Choose ***6. Program after a CDS/ Extension Change*** when updating CDS/Extension data.
   - Choose ***7. Program after V-MAC Software Upgrade*** when reprogramming after a product software upgrade.
9. Click on the ***Save Options*** button. The Save Options screen will appear. The MACK default setting has all the items selected. Deselect what customer data options you do not want to save, if any, and click on the ***OK*** button.

NOTE

Do not deselect the ODOMETER data or mileage may be lost.

10. Click on the ***Program*** button.

NOTE

When reflashing an EECU from Step 4 to Step 5, turn off the exhaust brake option in the Engine ECU customer parameter using *CUSTOMER DATA PROGRAMMING* after OEM.

CHANGING THE ECU PART NUMBER

Application: Mack Trucks Host menu via V-MAC Online

Path:

→Host

→Electronically Controlled Vehicles

→F9 EECU Part Number Change or F11 VECU Part Number Change

1. Enter the VIN or GSO and serial number.
2. Enter the hardware part number in the *H/W Part* field and press **Enter**.

   The available software part numbers will appear.
3. Use the **TAB** key to move to the desired software part number, type **x** and press **Enter**.

USING THE F3 UPDATE OPTIONS SCREEN

Application: Mack Trucks Host menu via V-MAC Online

Path:

→Host

→Electronically Controlled Vehicles

→F3 Update Options

The F3 Update Options screen allows the user to modify the data file to reflect a change (enabling or disabling a feature or sensor).

NOTE

The ECU reprogramming data file must be downloaded (and the ECU must be reprogrammed) if changes are made to the feature options.

NOTE

Depending on the truck configuration, some options may not be available.

NOTE

The VECU reprogramming data file must be downloaded (and the VECU must be reprogrammed) if changes are made to sensor information stored in the VECU.

NOTE

The EECU reprogramming data file must be downloaded (and the EECU must be reprogrammed) if changes are made to sensor information stored in the EECU.

DOWNLOADING THE PRODUCT SOFTWARE FILE

Application: V-MAC Online

Path:

→Product Software

1. Connect to V-MAC Online and click on ***Product Software Download***.
2. Enter the desired software version, enter the ECU serial number and click on the ***V-MAC*** radio button.
3. Click on the ***Submit*** button.
   The File Download dialog box will appear, asking you to save the file. Click on the ***Save*** button.
4. Save the file to your PC hard drive.

DOWNLOADING THE REPROGRAMMING DATA FILE

Application: V-MAC Online

Path:

→Datafile

1. Connect to V-MAC Online and click on ***Datafile Download***.
2. Enter the VIN or GSO and Chassis number.
3. Click on the radio button next to “Vehicle” for a VECU file or next to “Engine” for an EECU file for V-MAC III system type.
4. Click on the ***Submit*** button.
   The File Download dialog box will appear, asking you to save the file. Click on the ***Save*** button.
5. The Save As dialog box will appear. Select the file and click the ***Save*** button and save the file to your PC hard drive.

UPLOADING THE VERIFICATION FILE

Application: V-MAC Online

Path:

→Verification

1. Connect to V-MAC Online and click on ***Verification Upload***.
2. Click on the ***Browse*** button and select the desired verification data file(s).
3. Click on the ***Submit*** button.
   A message will appear indicating that the file has been uploaded.

DOWNLOADING THE PRODUCT SOFTWARE V.I.P.™ FILE

Application: V-MAC Online

Path:

→Product Software

1. Connect to V-MAC Online, start V-MAC and click on ***Product Software Download***.
2. Click on the ***VIP*** radio button.
3. Enter the desired software version (refer to the V-MAC Configuration charts).
4. Click on the ***Submit*** button.
   The File Download dialog box will appear, asking to save the file. Click on the ***Save*** button and save the file to your PC hard drive.

RECALIBRATING THE EUPS

Application: V-MAC Service Support Software

Path:

→CUSTOMER DATA PROGRAMMING

→Program Unit Pump Calibration

Refer to the CUSTOMER DATA PROGRAMMING section for detailed instructions concerning EUP calibration.

FLASHING THE PRODUCT SOFTWARE FILE

Application: V-MAC Dealer Programming Software

Path:

→DEALER PROGRAMMING

→Flash VECU or EECU Software or V-MAC II ECU or V.I.P.™

NOTE

Prior to flashing the product software file, please save customer data unless instructed otherwise (refer to “SAVING CUSTOMER DATA” on page 152 for information).

1. Access DEALER PROGRAMMING.
2. Click on the ***V-MAC Programming*** tab.
3. Click on the appropriate selection (***Flash V-MAC Software [AutoDetect]*** or ***Flash V-MAC III VECU Software*** or ***Flash V-MAC III EECU Software*** or ***Flash V-MAC II Software*** or ***Flash V.I.P.™ Software***).
4. Select the vehicle/engine/V.I.P.™ reprogramming file (product software file) and click on the ***Browse*** button.

   The ECU or V.I.P.™ software version and serial number (serial number does not apply to V.I.P.™) will be displayed.
5. If the ECU or V.I.P.™ software version and serial number (serial number does not apply to V.I.P.™) is correct, click on the ***Program*** button.

   Once programming has begun, do not interrupt the process.

NOTE

It will take about 35 minutes to program the VECU, 45 minutes to program the EECU and 30 minutes to program V.I.P.™

6. Cycle the ignition when prompted.

Programming Worksheets

TYPE 1 — VECU

Use this worksheet when verifying the current data file or reprogramming the VECU with the same data file.

- ☐ Download the **VECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **VECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 1 — EECU

Use this worksheet when verifying the current data file or reprogramming the EECU with the same data file. (Applies to V-MAC I, FIC and V-MAC II modules, too.)

- ☐ Download the **EECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **EECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **EECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 1— BOTH ECUs

Use this worksheet when verifying the current data file or reprogramming both ECUs with the same data files.

- ☐ Download both **VECU** and **EECU** reprogramming data files (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** and **EECU** fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** and **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload **VECU** and **EECU** verification data files (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 2 — VECU

Use this worksheet when replacing a defective VECU with a new VECU that has the same purchase P/N.

- ☐ Download the **VECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Install a new **VECU**.
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **VECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 2 — EECU

Use this worksheet when replacing a defective **EECU** with a new **EECU** that has the same purchase P/N. (Applies to V-MAC I, FIC and V-MAC II modules, too.)

- ☐ Download the **EECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **EECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Install a new **EECU**.

Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).

- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **EECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 2 — BOTH ECUs

Use this worksheet when replacing both ECUs with new ECUs that have the same purchase P/Ns.

- ☐ Download both **VECU** and **EECU** reprogramming data files (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** and **EECU** fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** and **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Install new ECUs.
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload **VECU** and **EECU** verification data files (refer to“UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 3 — VECU

Use this worksheet when erasing the VECU customer passwords.

- ☐ Download the **VECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **VECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 3 — EECU

Use this worksheet when erasing the EECU customer passwords. (Applies to V-MAC I, FIC and V-MAC II modules, too.)

- ☐ Download the **EECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **EECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **EECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 3 — BOTH ECUs

Use this worksheet when erasing customer passwords for both ECUs.

- ☐ Download both **VECU** and **EECU** reprogramming data files (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** and **EECU** fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** and **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Upload **VECU** and **EECU** verification data files (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 4 — VECU

Use this worksheet when programming the VECU after modifying the data file using F3 Update Options.

- ☐ Modify the **VECU** data file using F3 Update Options (refer to “USING THE F3 UPDATE OPTIONS SCREEN” on page 153).
- ☐ Download the **VECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **VECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 4 — EECU

Use this worksheet when programming the EECU after modifying the data file using F3 Update Options. (Applies to V-MAC I, FIC and V-MAC II modules, too.)

- ☐ Modify the **EECU** data file using F3 Update Options (refer to “USING THE F3 UPDATE OPTIONS SCREEN” on page 153).
- ☐ Download the **EECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **EECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **EECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 4 — BOTH ECUs

Use this worksheet when programming both ECUs after modifying the data file using F3 Update Options.

- ☐ Modify both **VECU** and **EECU** data files using F3 Update Options (refer to “USING THE F3 UPDATE OPTIONS SCREEN” on page 153).
- ☐ Download both **VECU** and **EECU** reprogramming data files (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** and **EECU** fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** and **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload **VECU** and **EECU** verification data files (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 5 (EECU ONLY)

Use this worksheet when programming the EECU after the data file has been modified to reflect a horsepower change. (Applies to V-MAC I, FIC and V-MAC II modules, too.)

- ☐ Download the **EECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **EECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **EECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 6 — VECU

Use this worksheet when programming the VECU with a new data file.

- ☐ Download the **VECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **VECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 6 — EECU

Use this worksheet when programming the EECU with a new data file. (Applies to V-MAC I, FIC and V-MAC II modules, too.)

- ☐ Download the **EECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **EECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **EECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 6 — BOTH ECUs

Use this worksheet when programming both ECUs with new data files.

- ☐ Download both **VECU** and **EECU** reprogramming data files (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** and **EECU** fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** and **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload **VECU** and **EECU** verification data files (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 7 — VECU

Use this worksheet when reprogramming the VECU with the same product software file.

- ☐ Download the **VECU** product software file (refer to “DOWNLOADING THE PRODUCT SOFTWARE FILE” on page 154).
- ☐ Download the **VECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** product software file (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **VECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 7 — EECU

Use this worksheet when reprogramming the EECU with the same product software file. (Applies to V-MAC II module, too.)

- ☐ Download the **EECU** product software file (refer to “DOWNLOADING THE PRODUCT SOFTWARE FILE” on page 154).
- ☐ Download the **EECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **EECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **EECU** product software file (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **EECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 7 — BOTH ECUs

Use this worksheet when reprogramming both ECUs with the same product software files.

- ☐ Download both **VECU** and **EECU** product software files (refer to “DOWNLOADING THE PRODUCT SOFTWARE FILE” on page 154).
- ☐ Download both **VECU** and **EECU** reprogramming data files (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** and **EECU** fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** and **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** product software file (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Program the **EECU** product software (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload **VECU** and **EECU** verification data files (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 7 — V.I.P.™

Use this worksheet when reprogramming the V.I.P.™ with a same product software file.

- ☐ Download the **V.I.P.™** product software file (refer to “DOWNLOADING THE PRODUCT SOFTWARE V.I.P.™ FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Program the **V.I.P.™** product software file (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Reinstall all removed fuses.

TYPE 8 — VECU

Use this worksheet when reprogramming the VECU with a new product software file.

- ☐ Change the **VECU** part number (refer to “CHANGING THE ECU PART NUMBER” on page 153).
- ☐ Download the **VECU** product software file (refer to “DOWNLOADING THE PRODUCT SOFTWARE FILE” on page 154).
- ☐ Download the **VECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** product software file (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **VECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 8 — EECU

Use this worksheet when reprogramming the EECU with a new product software file. (Applies to V-MAC II module, too.)

- ☐ Change the **EECU** part number (refer to “CHANGING THE ECU PART NUMBER” on page 153).
- ☐ Download the **EECU** product software file (refer to “DOWNLOADING THE PRODUCT SOFTWARE FILE” on page 154).
- ☐ Download the **EECU** reprogramming data file (refer to “DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **EECU** fault table (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **EECU** product software file (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload the **EECU** verification data file (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 8 — BOTH ECUs

Use this worksheet when reprogramming both ECUs with new product software files.

- ☐ Change both **VECU** and **EECU** part numbers (refer to “CHANGING THE ECU PART NUMBER” on page 153).
- ☐ Download both **VECU** and **EECU** product software files (refer to “DOWNLOADING THE PRODUCT SOFTWARE FILE” on page 154).
- ☐ Download both **VECU** and **EECU** reprogramming data files (“DOWNLOADING THE REPROGRAMMING DATA FILE” on page 154).
- ☐ Remove applicable fuses (refer to “REMOVING FUSES” on page 152).
- ☐ Clear the **VECU** and **EECU** fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Save **VECU** and **EECU** customer data (refer to “SAVING CUSTOMER DATA” on page 152).
- ☐ Program the **VECU** product software file (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Program the **VECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Program the **EECU** product software (refer to “PRODUCT SOFTWARE PROGRAMMING (PSP)” on page 128).
- ☐ Program the **EECU** reprogramming data file (refer to “PROGRAMMING THE REPROGRAMMING DATA FILE” on page 152).
- ☐ Clear all fault tables (refer to “CLEARING FAULT TABLES” on page 152).
- ☐ Re-enter customer passwords (refer to “RE-ENTERING CUSTOMER PASSWORDS” on page 152).
- ☐ Reinstall all removed fuses.
- ☐ Upload **VECU** and **EECU** verification data files (refer to “UPLOADING THE VERIFICATION FILE” on page 154).

TYPE 9 — CDS-EXT

Use this worksheet when reprogramming the VECU after modifying the data file using the F3 Update Options.

- ☐ Update the CDS-EXT **VECU** data file using F3 Update Options (refer to “USING THE F3 UPDATE OPTIONS SCREEN” on page 153). If the vehicle is V-MAC II and already has an extension file, reflash. If the vehicle is a V-MAC III, refer to **Type 4 VECU**. For V-MAC II, update the ECU part number. For V-MAC III, update the CDS part number.

GLOSSARY

TECHNICAL TERMINOLOGY

Software Terminology

Button — A rectangular area that represents an option or reply.

Display Screen — A screen that displays information.

Entry Form — A screen, or portion of a screen, with one or more areas to be filled in by the user. These areas are called fields.

Message Box — A box (containing a message) that appears on the screen, as needed.

Menu — A screen, or portion of a screen, containing a list of items that can be selected.

Screen Status Line — An area located on the bottom of the screen that displays relevant information.

Selection Screen — A screen where the user can select items or settings.

Programming Security Screen — A security control screen that requires entering a password to gain access to certain programming options. If a valid password is not entered, the user will not be allowed to continue programming the selected option.

ABBREVIATIONS

CDP — Customer Data Programming

CDS — Customer Defined Statement

ECU — Electronic Control Unit

EECU — Engine Electronic Control Unit

EHT — Electronic Hand Throttle

EUP — Electronic Unit Pump

MDP — MACK Data Programming

PC — Personal Computer

PSP — Product Software Programming

PTO — Power Take-Off

RAM — Random Access Memory

SD — Service Diagnostics

SSC — Single Speed Control

VECU — Vehicle Electronic Control Unit

V.I.P.™ — Vehicle Information Profiler

V-MAC — Vehicle Management and Control System

VSC — Variable Speed Control

FEATURE INDEX

FEATURE INDEX