USER GUIDE

Service Diagnostics Solutions (SDS)

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SAFETY INFORMATION

This manual provides general and specific maintenance procedures essential for reliable engine operation and your safety. Since many variations in procedures, tools, and service parts are involved, advice for all possible safety conditions and hazards cannot be stated.

Read safety instructions before doing any service and test procedures for the engine or vehicle. See related application manuals for more information.

Obey Safety Instructions, Warnings, Cautions, and Notes in this manual. Not following Warnings, Cautions, and Notes can lead to injury, death, or damage to the engine or vehicle.

Safety Terminology

Terms are used to stress your safety and safe operation of the engine: Warning, Caution, and Note.

Warning: A warning describes actions necessary to prevent or eliminate conditions, hazards, and unsafe practices that can cause personal injury.

Caution: A caution describes actions necessary to prevent or eliminate conditions that can cause damage to the engine or vehicle.

Note: A note describes actions necessary for correct, efficient operation.

Work Area

- Keep work area clean, dry, and organized.
- Keep tools and parts off the floor.
- Make sure the work area is ventilated and well lit.
- Make sure a first aid kit is available.

Protective Measures

- Wear protective safety glasses and shoes.
- Wear correct hearing protection.
- Wear cotton work clothing.
- Wear sleeved, heat protective gloves.
- Do not wear rings, watches, or other jewelry.
- Restrain long hair.

Vehicle

- Shift transmission to Neutral, set parking brake, and install wheel chocks before doing diagnostic or service procedures.
- Clear the area before starting the engine.

Safety Equipment

- Use correct lifting devices.
- Use wheel chocks and stands.

Engine

- The engine should be operated or serviced only by qualified individuals.
- Provide necessary ventilation when operating engine in a closed area.
- Keep combustible material away from engine exhaust system and exhaust manifolds.
- Install all shields, guards, and access covers before operating engine.
- Do not run engine with unprotected air inlets or exhaust openings. If unavoidable for service reasons, put protective screens over all openings before servicing engine.
- Shut engine off and relieve all pressure in the system before removing panels, housing covers, and caps.
- If an engine is not safe to operate, tag the engine and ignition key.

Fire Prevention

- Make sure charged fire extinguishers are in the work area.

NOTE – Check the classification of each fire extinguisher to make sure that the following fire types can be extinguished:

1. Type A – Wood, paper, textiles, and rubbish
2. Type B – Flammable liquids
3. Type C – Electrical equipment

Batteries

- Always disconnect the main negative battery cable first.
- Always connect the main negative battery cable last.
- Avoid leaning over batteries.
- Wear safe eye protection.
- Do not expose batteries to flames or sparks.
- Do not smoke in workplace.

SERVICE DIAGNOSTICS SOLUTIONS

NOTE – This section contains a brief overview of Service Diagnostic Solutions software, and was current at the time of publishing. Due to the automatic update function in Service Diagnostic Solutions software, screens and functions may differ from this manual.

INTRODUCTION

Service Diagnostics Solutions is a diagnostic and programming service tool for International® Truck and IC Bus®. It is a full-featured PC application. Coverage includes all J-1939 International® electronic engine systems, allowing you to run special tests, change parameters, and view and graph engine data. This is the top-of-the-line tool for dealers and fleets. The application updates periodically, enabling you to have the most up-to-date coverage.

NOTE – To diagnose specific electronic control system failures, always refer to the diagnostic manual for the system being serviced.

Software Capabilities

- Control system monitoring
- View, snapshot recording, save, playing
- Diagnostic trouble codes (DTC), view, clear
- Freeze frame data
- HD-OBD monitors
- Service bay tests
- Actuator tests
- Sensor intermittent faults
- Cold start test
- Air management test
- Cylinder cutout test
- Engine fan test (If equipped)
- High pressure pump test
- Aftertreatment system tests
- Sensor calibrating
- Part replacement and service interval resets
- Programmable parameters
- Engine feature settings
- Read, write programmable parameters

ACRONYMS

Following is a list of acronyms and their meanings used in this document:

Acronym	Description
DPF	Diesel Particulate Filter
DTC	Diagnostic Trouble Code
ECM	Electronic Control Module
ESN	Engine Serial Number
EST	Electronic Service Tool
FMI	Failure Mode Indicator
PVC	Programming Verification Code
SPN	Suspect Parameter Number
KOEO	Key ON, Engine OFF
KOER	Key ON, Engine Running
MIN	Minimum
MAX	Maximum

GETTING STARTED

SYSTEM REQUIREMENTS

Minimum Requirements

- Microsoft® Windows® 10
- 1GHz Intel® Core™ 2 Duo, AMD Athlon™ X2 or better
- 2GB (32-bit) or 4GB (64-bit) of RAM
- 10GB of free hard disk space
- High-speed internet connection needed for software updates
- 1024 x 768 pixel (or better) display
- One or more RP1210A compatible communication devices with SAE J1939 support (See Diagnostic Interface Cable Information) (page 13)

Improved system performance will occur with the installation of increased RAM.

SOFTWARE INSTALLATION

NOTE – When purchasing the software from a dealer, a product key must be obtained for each computer on which the software is to be installed. Product keys expire and must be reactivated to allow access to the program.

To install the Service Diagnostics Solutions (SDS) software:

1. Click on the following link to open in a web browser:

   https://version-navistar-com.s3.us-east-2.amazonaws.com/sds/Service+Diagnostics+Solutions+Setup.exe

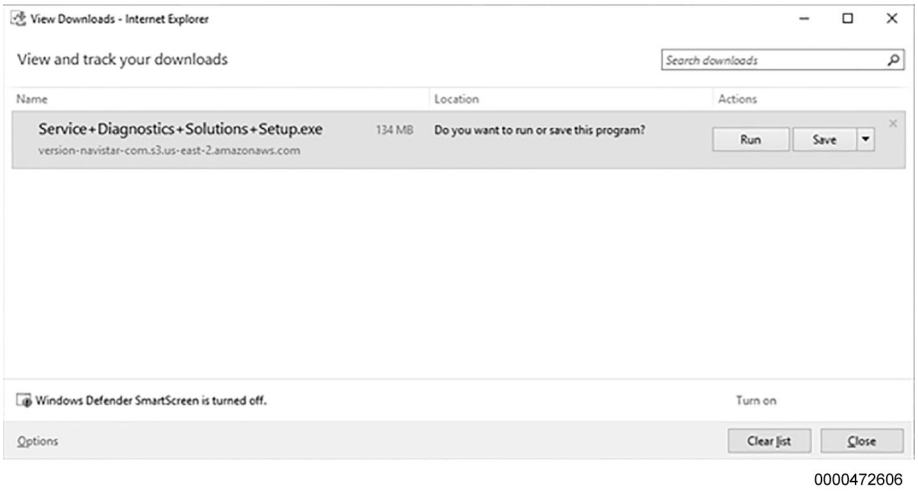

Figure 1 Download Screen

2. From the Download screen, select **Service+Diagnostics+Solutions+Setup.exe,** and select **Run**.

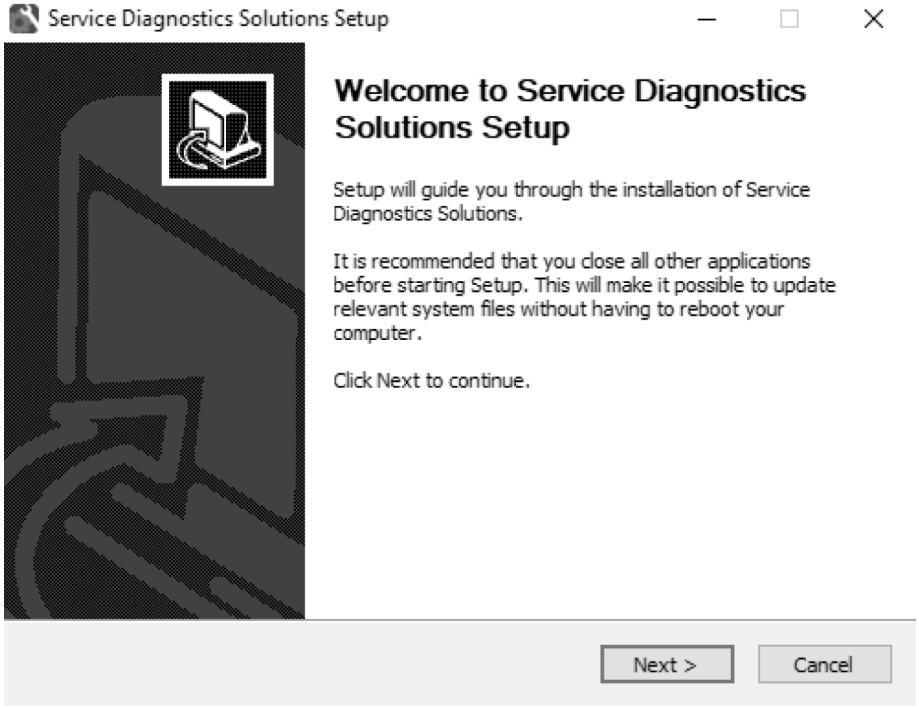

Figure 2 Setup Wizard: Welcome

3. Close all other applications before starting setup.
4. Follow screen prompts in setup wizard.
5. Select **Next** to continue.

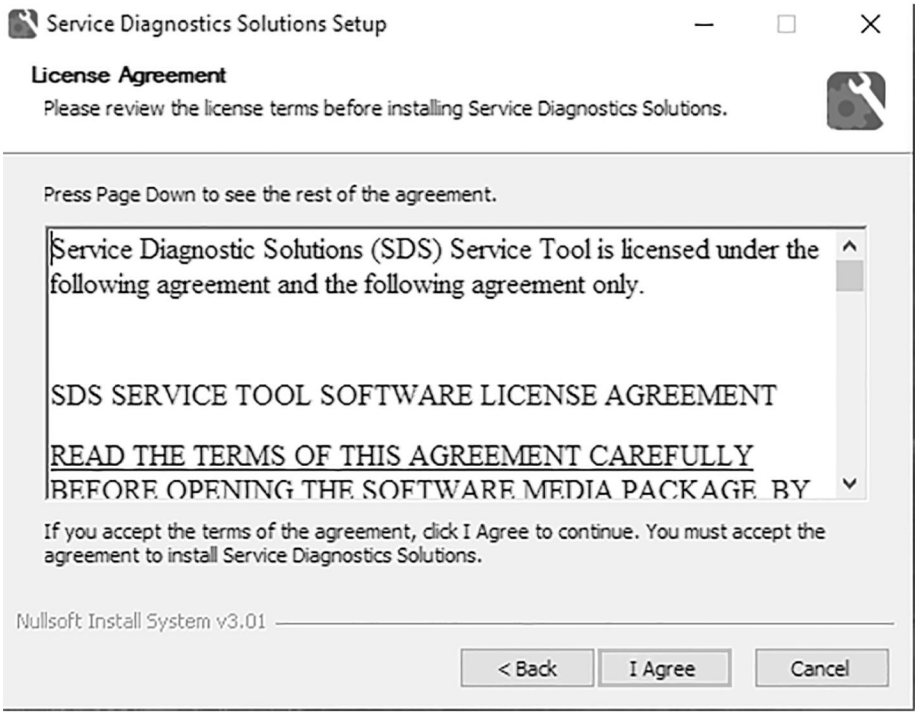

Figure 3 Setup Wizard: License Agreement

6. Read through the License Agreement. When finished, select **I Agree** to continue with the installation.

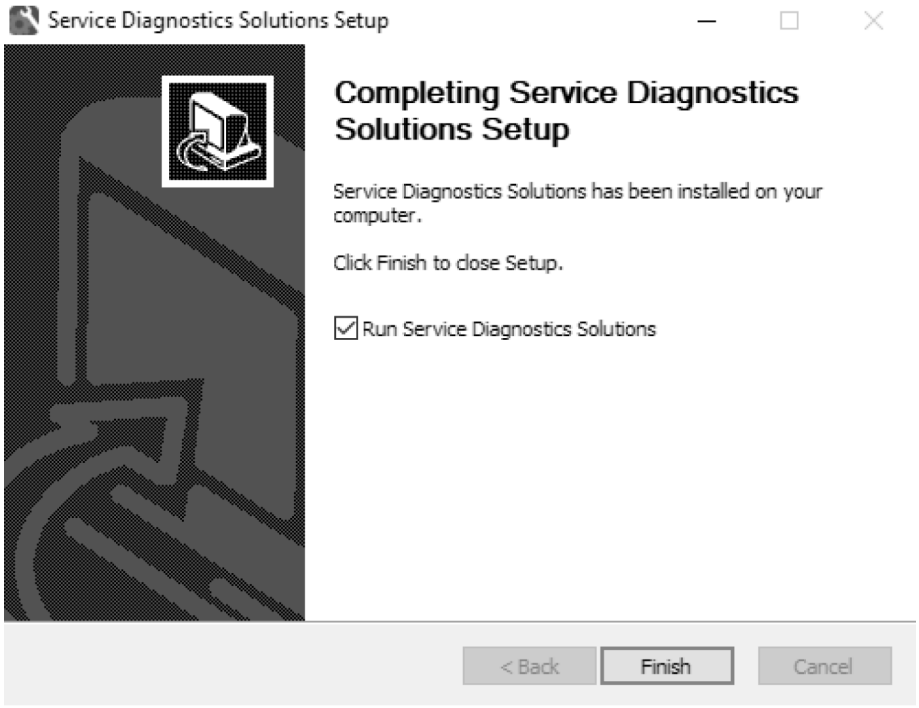

Figure 4 Setup Wizard: Finish

NOTE – Automatic software updates are provided directly from Navistar when a newer version is available. The tool checks for updates during startup when connected to the internet.

7. Ensure Run Service Diagnostics Solutions box is checked and select **Finish** to launch the program.

Figure 5 Product Key Entry

NOTE – If the key was not entered correctly (or there is some other problem), an error message will be displayed. Refer to Installation Error Messages (page 12) for more information. Resolve the issue indicated before proceeding.

8. Enter product key obtained for this computer and then select **OK**.

Figure 6 Existing User Prompt

9. Ensure key was entered correctly and select **Yes** at Existing User prompt (Figure 6).
   a. If you already have a Navistar-issued username and password for applications such as Diamond Logic® Builder (DLB), NavKal™ or Navistar Engine Diagnostics (NED), select **Yes** and proceed to Step 13.
   b. If you do not already have a Navistar-issued username and password, select **NO** and proceed to Step 10.

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Figure 7 New User Registration

10. The Registration window appears. Complete form in this window. Required fields are indicated by an asterisk (*).

11. Select **OK**.

Once registration is completed successfully, the following message is displayed:

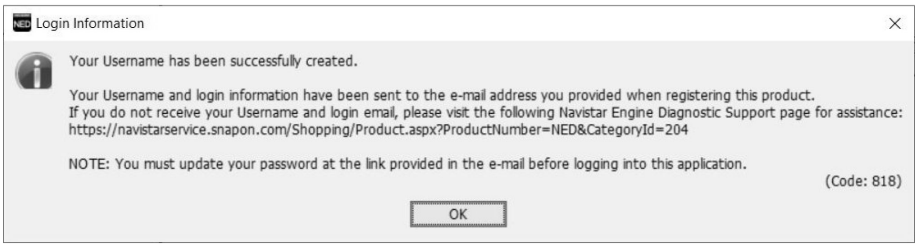


Figure 8 Username Successfully Created

12. An email will be sent to the address provided on the registration form. Follow the instructions provided in this email to complete the registration process. When finished, select **OK** in the window shown above.

NOTE – You MUST change your password by following the instructions provided in the email before proceeding. The default password cannot be used to log into the application.

13. The User Authentication window appears. Enter your username and password and select **OK**.

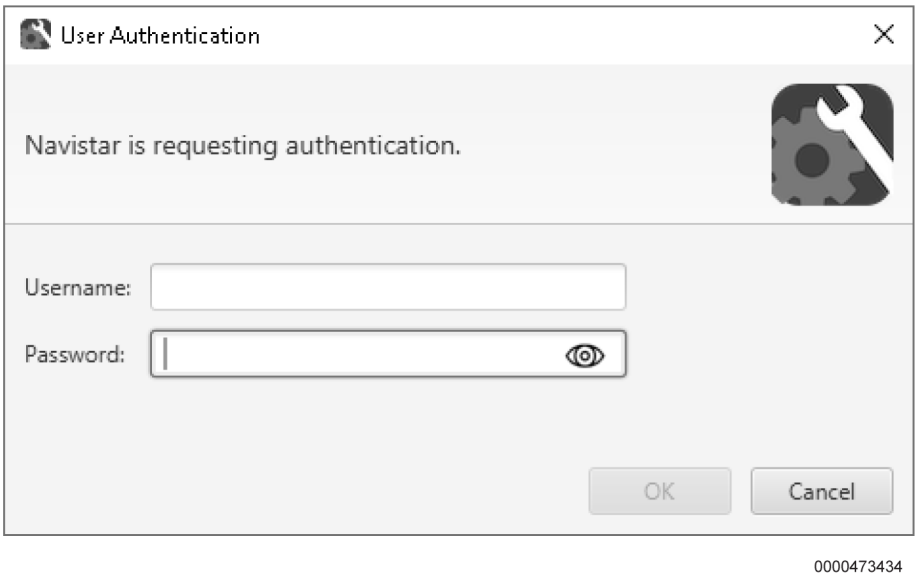


Figure 9 User Authentication Window

Once you are logged in for the first time, the software will start and begin to update itself.

NOTE – The Service Diagnostics Solutions program or software will not function until the user has successfully logged in at least once while connected to the network. The user may need to consult with the technical computer support staff if the Service Diagnostics Solutions program or software cannot connect to the Navistar site. Error messages will be generated if connection to Navistar fails. Your Internet firewalls must be configured to allow two-way communication to the following Navistar host names:

- **d2mutuy95x2dyc.cloudfront.net**
- **evalueb.internationaldelivers.com**

Be aware that the underlying IP addresses for these hosts are subject to change and may vary by region. When possible, grant access by host name rather than IP address.

Installation Error Messages

The error messages that may appear during the installation process typically contain explanatory text to help in troubleshooting. Some sample messages are shown in the table below. In some cases, the table also includes additional troubleshooting information. For more information on resolving these messages, please visit the Navistar Service Software support website:

https://navistarservice.snapon.com/Navistar/Default.aspx

NOTE – Before attempting to register the software with a product key, please ensure that you have an active User ID with a password that has not expired.

Code	Text
800	The product key provided is terminated. Please visit the support page for assistance.
801	The product key provided does not match the software that you are attempting to activate. Please re-enter the product key to verify or visit the Service Diagnostics Solutions support page for assistance.
802	Your product key has expired. Please visit the support page for assistance.
803	You've exceeded the number of registrations allowed for this product. Please visit the Service Diagnostics Solutions support page for assistance.
804	An unknown error has occurred. Please visit the support page for assistance.
805	Application unsupported. Please visit the support page for assistance.
806	The prior product key provided is terminated. Please visit the support page for assistance.
807	The product key provided was not found. Please re-enter the product key to verify or visit the support page for assistance.
808	An error has occurred while attempting to register the software. Please visit the support page for assistance.
809	We're sorry, we can't connect to the server right now. Please check your connection and try again or visit the support page for assistance.
810	An Internet connection to the Service Diagnostics Solutions server could not be established; press 'OK' to continue in offline mode. Your license will be verified each time you log into the system. You can keep accessing Service Diagnostics Solutions offline for 30 remaining days. If a connection to the Service Diagnostic Solutions Server cannot be established by then, your product will stop working. Verify that the following Navistar hosts are not blocked by a firewall or a web filter: • evalueb.internationaldelivers.com • d2mutuy95x2dyc.cloudfront.net
811	An Internet connection to the server could not be established. You must resolve this issue before the application can be used. This error occurs when the license key has expired due to being offline for 30 days or more.

Code	Text
812	An Internet connection to the server could not be established. You must resolve this issue before the application can be used. On some computers, Service Diagnostics Solutions has to be run in administrator mode. Follow these steps: 1. On the Windows desktop, right-click the Service Diagnostics Solutions icon. 2. In the right-hand menu, select OPEN FILE LOCATION. 3. Right-click SERVICE DIAGNOSTICS SOLUTIONS.EXE. 4. Select RUN AS ADMIN.
813	Please enter your product key. If you do not have a product key, please visit the support page for assistance. The entered product key was not correct. Be sure to include the entire key. (It should be 19 characters total, not including dashes.)
814	You have already activated your maximum number of Usernames permitted by your license.
815	A server side error has occurred and is being examined. Please visit the support page for assistance.
816	The provided key is a renewal key. Please re-enter a previous product key to continue or visit the support page for assistance. Renewal keys allow the license granted by a full key to the software to be extended past its original expiration date. They cannot be used by themselves (without a full product key). Enter the full product key whose expiration date is to be extended.
817	The Username or Password that you entered was incorrect. Please try again or visit the support page for assistance.

INTERFACE CABLE INFORMATION

CAUTION

To prevent a malfunction of the SDS software, use only a USB cable to connect to the computer for programming. Do not use wireless or Bluetooth® connections for programming.

NOTE – Only the NEXIQ Technologies® – USB-Link™ 2 and USB-Link™ 3 adapters are approved for battery electric vehicle (BEV) use. Please refer to Navistar Tool 08-801-01 for additional information.

The following communication adapters have been verified with all Service Diagnostics Solutions software:

- NEXIQ Technologies® – USB-Link™ 2 and USB-Link™ 3
- Noregon® Systems, Inc. – DLA+ 2.0, DLA+ 2.0 Wireless
- Other RP1210A compliant interface devices may work with Service Diagnostics Solutions.

Please refer to each manufacturer's website for further information.

SOFTWARE UPDATES

SDS provides automatic software updates directly from Navistar any time the tool is connected to the internet. Upon starting the program, you may notice the software downloading the update. When complete, the SDS software will require a restart automatically. SDS is fully functional when the Electronic Service Tool (EST) is not connected to the internet, but the EST should be connected often to check for available updates.

NOTE – Blank Module and Parameter Change programming requires a connection to the internet.

LICENSING

SDS Basic

SDS Basic allows calibration updates and campaigns for ECM programming.

NOTE – When SDS Basic License is installed, Parameter Upgrade and Blank Module Flash will not be shown.

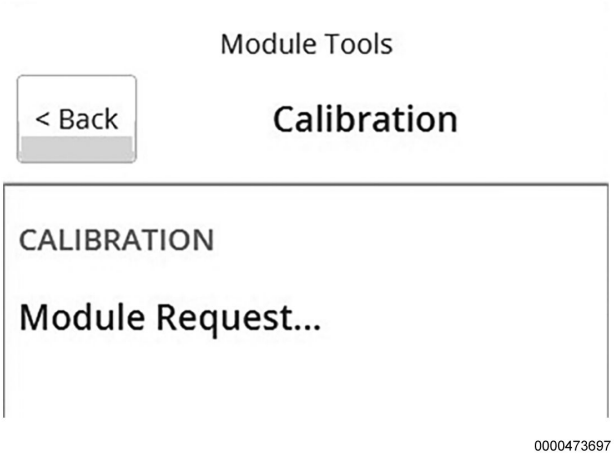


Figure 10 SDS Basic License

SDS Pro

SDS Pro allows calibration updates and campaigns for ECM programming, along with Parameters Upgrades, and Blank Module Flashing.

NOTE – When SDS Pro license is installed, Parameter Upgrade and Blank Module will be shown.

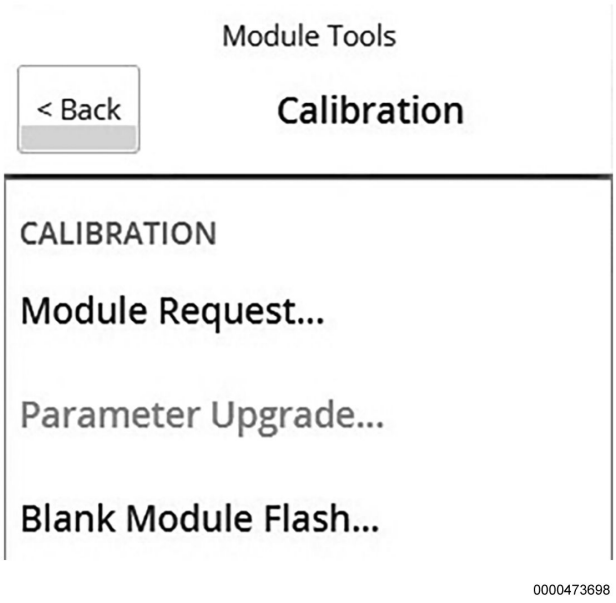
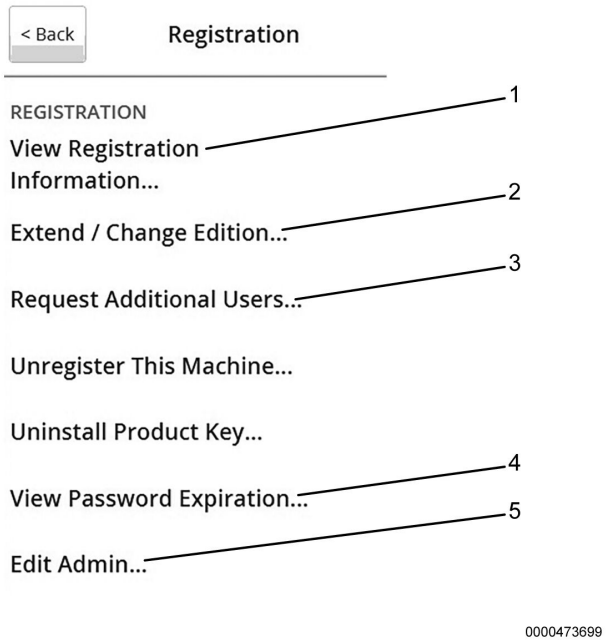


Figure 11 SDS Pro License

Registration Menu

The Registration menu lists options for managing Service Diagnostics Solutions users, passwords, and product keys.



1. View Registration Information
2. Extend / Change Edition
3. Request Additional Users
4. View Password Expiration
5. Edit Admin

Figure 12 Registration Menu

View Registration Information

Select **View Registration Information** menu option (Figure 12, Item 1) to display the Registration Information window.

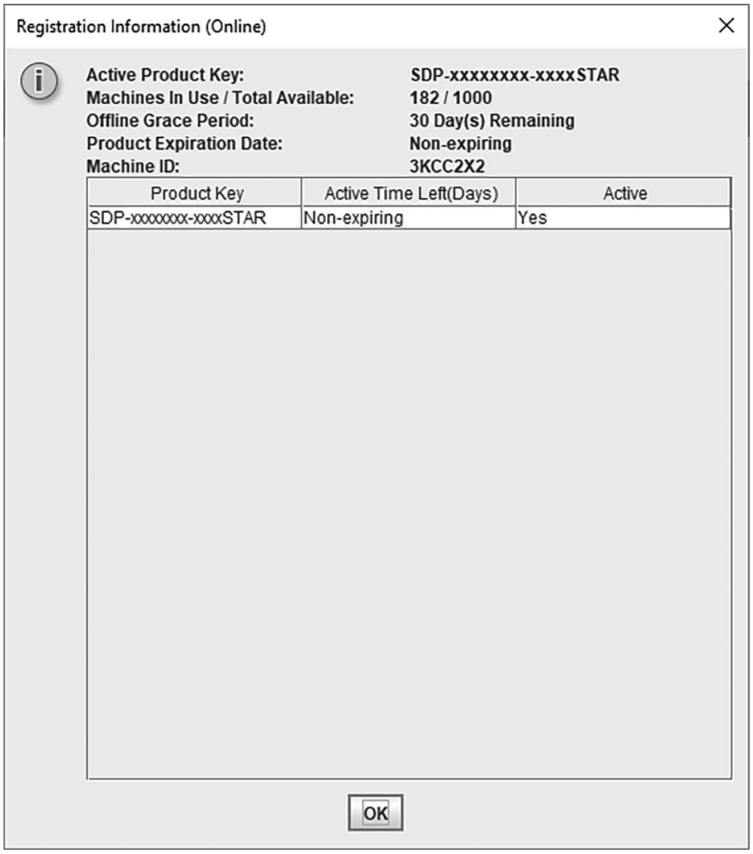


Figure 13 Registration Information Window

The Registration Information window (Figure 13) provides a listing of current license(s) installed on the computer.

Extend / Change Edition

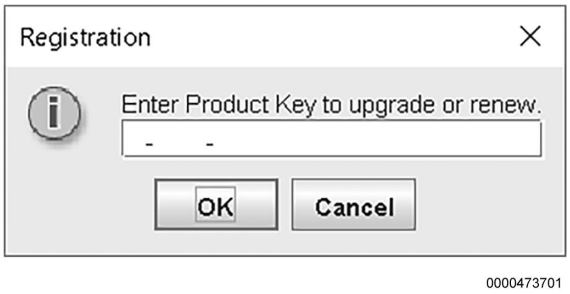


Figure 14 Enter Product Key

NOTE – The Extend / Change Edition menu option is used to upgrade from SDS Basic to SDS Pro and to extend the license when purchasing an additional product key. To upgrade SDS, contact your local International® dealer to purchase an SDS Pro Key.

1. Select **Extend / Change Edition** menu option (Figure 12, Item 2) to display Registration window.

2. Enter SDS product key in Registration window (Figure 14).

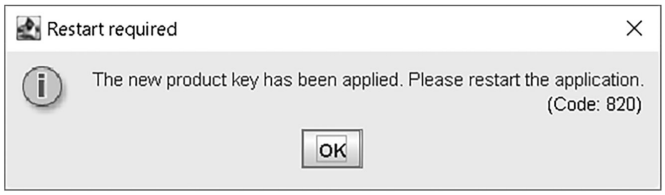


Figure 15 Restart Required

NOTE – After entering the product key for SDS Pro, the Parameter Upgrade and Blank Module Flashing menu items will be unlocked.

3. Select **OK** (Figure 15) to restart the application and use the upgraded or renewed application.

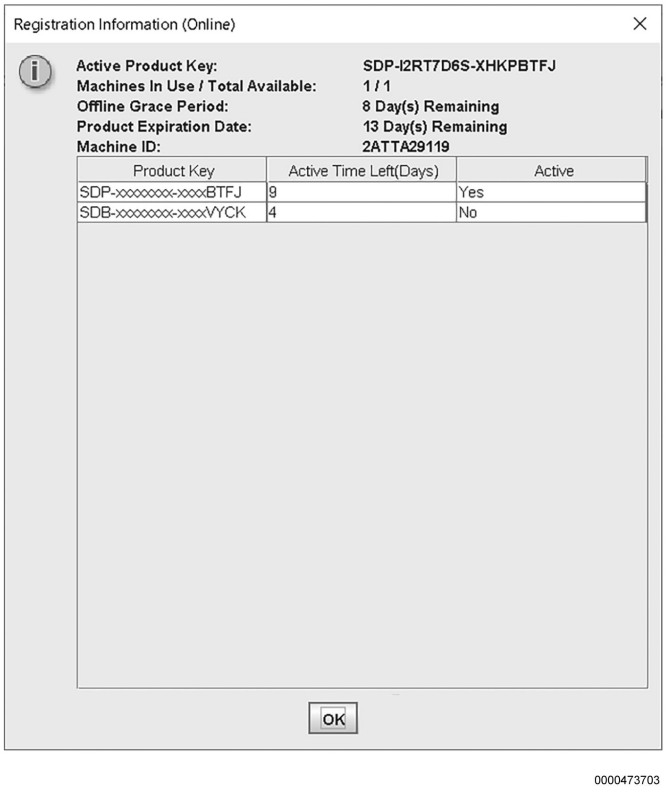


Figure 16 Registration Information

NOTE – If the SDS Basic Product Key is active when SDS Pro is installed, SDS Pro will be active and SDS Basic will be inactive until SDS expires.

4. Select **View Registration Information** menu option (Figure 12, Item 1) to verify license status.

Request Additional Users

Figure 17 Registration Information

To request additional users, select the **Request Additional Users** menu option (Figure 12, Item 3) to open the Registration window (Figure 17) and complete the required fields. An email will be sent with a new username and temporary password.

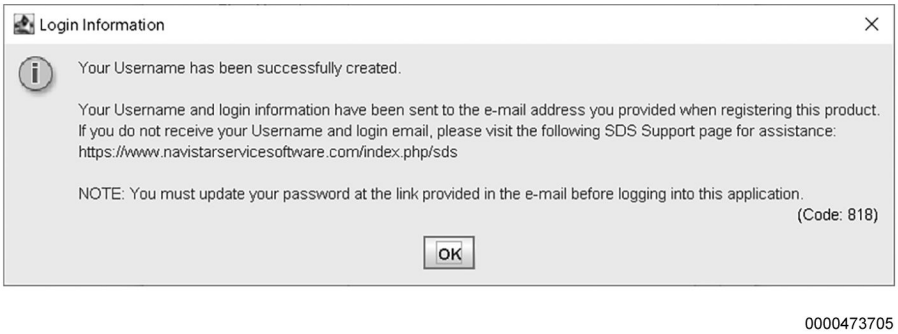


Figure 18 Login Information

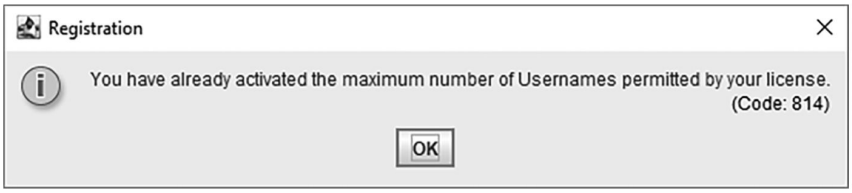


Figure 19 Maximum Number of Usernames

NOTE – Product keys authorize a limited number of usernames.

A registration error (Figure 19) displays if additional usernames are requested beyond the authorized number.

Unregister Machine

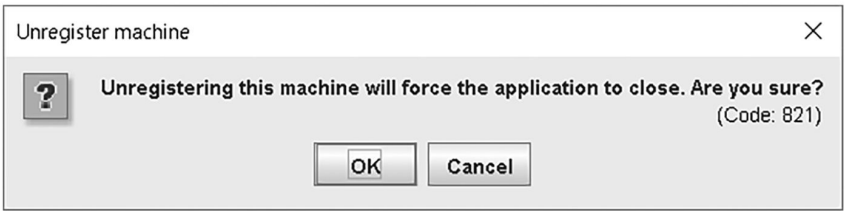


Figure 20 Unregister Machine

IMPORTANT – Select **OK** to unregister this machine. Unregistering a machine allows a new machine to be registered with the product key. To register a new machine, follow the instructions in the Software Installation (page 4) section.

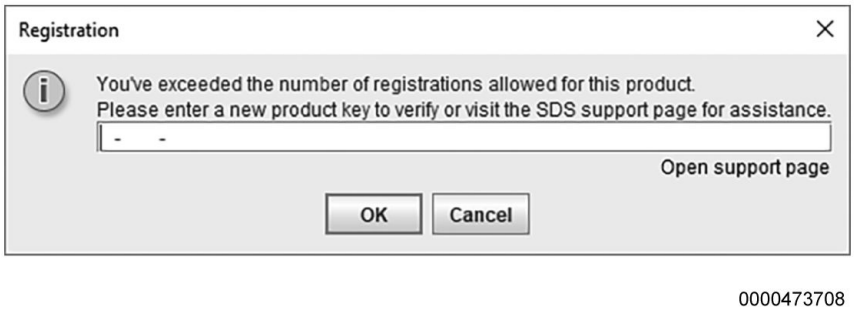


Figure 21 Enter New Product Key

NOTE – Product keys are authorized for a limited number of machines.

If a product key is used on more than the maximum authorized number of machines, a registration error (Figure 21) will be displayed.

View Password Expiration

Select the **View Password Expiration** menu option (Figure 12, Item 4) to display password expiration information.

Figure 22 Password Expiration

Edit Admin

Select **Edit Admin** menu option (Figure 12, Item 5) to display list of usernames.

Figure 23 Edit Admin

NOTE – The first user to log into the application after it has been registered is the administrator. Only this person can perform administrative actions until additional administrators are added.

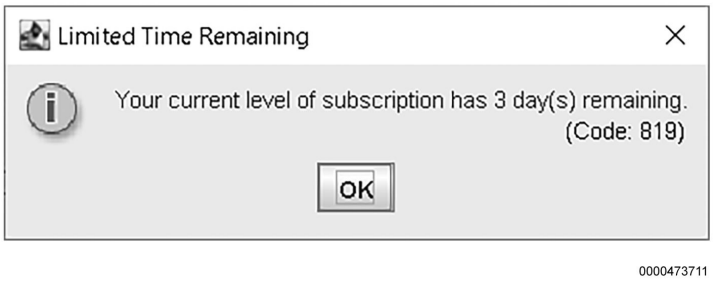


Figure 24 Subscription Notification

NOTE – When there is limited time left on activated product key, SDS will inform the user.

VEHICLE CONNECTION

OPEN SDS SOFTWARE

To open SDS software:

1. Start SDS application. Using one of the following options:

    A. Double-click the **SDS** icon on your desktop.

    B. Desktop Icon: Right-click on the SDS icon on your desktop and select **Open**.

    C. From Windows Start menu, select **Select Service Diagnostics Solutions**.

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Figure 25 Service Diagnostics Solutions Icon

2. The User Authentication window appears. Enter your username and password and select **OK**.

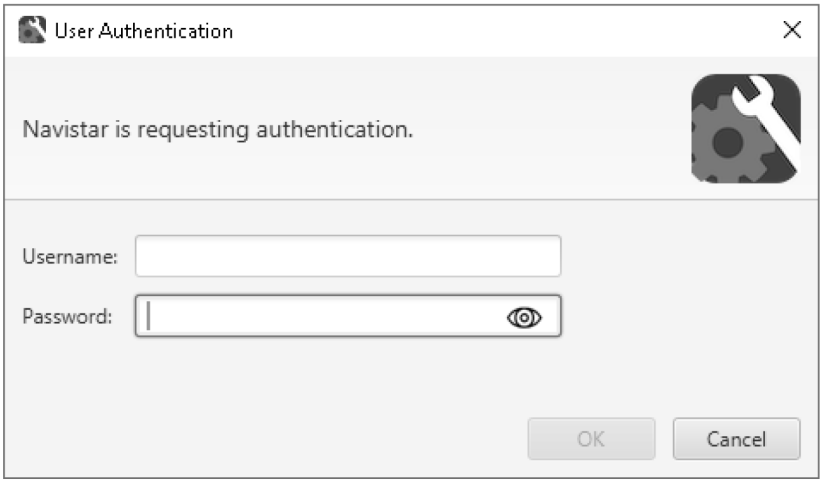

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Figure 26 User Authentication Window

INTERFACE DEVICE SELECTION

1. Turn vehicle ignition to Key ON, Engine OFF.
2. Connect interface cable between laptop and the vehicle's 9-pin diagnostic connector.
3. Launch SDS software. A detection process will begin and connect automatically.

NOTE – Selecting interface cable may be necessary, if many different cables are being used.

Figure 27 Menu

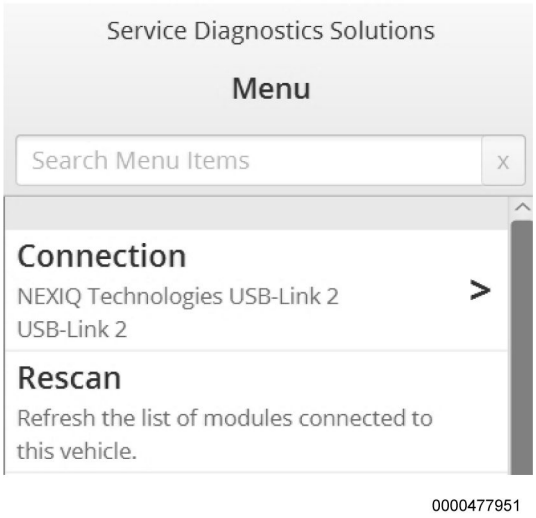


Figure 28 Menu - Connection Selection

4. Go to the **Menu > Connection** and select adapter you are using.

RESCAN

You can rescan all connected modules by selecting **Rescan** in the menu. This helps when trying to diagnose a module that keeps dropping off the network.

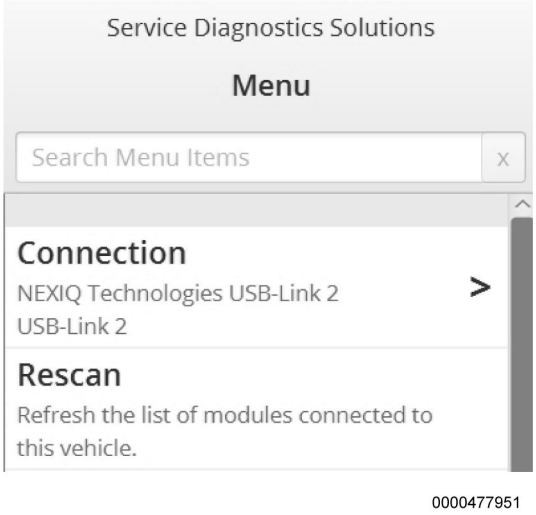


Figure 29 Rescan

For convenience, when selecting **Menu**, use the search field to find items within the SDS menu.

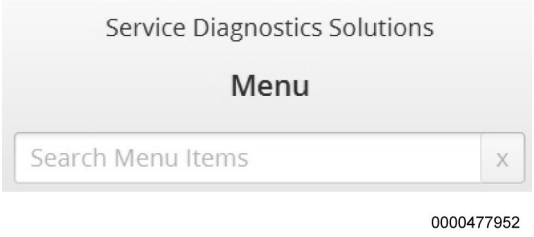


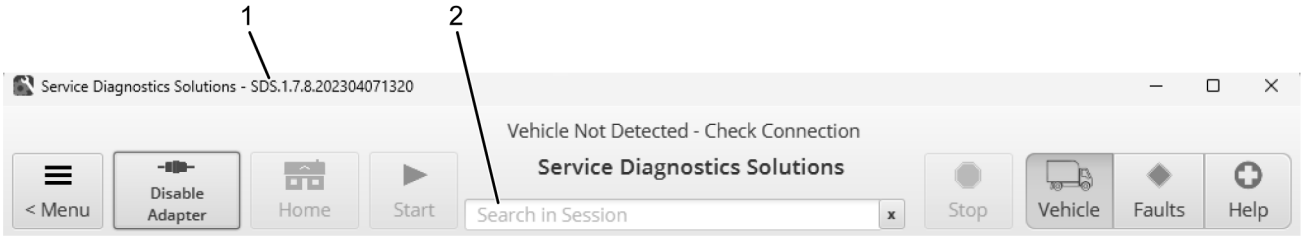
Figure 30 Menu Search Information

SDS LAYOUT OVERVIEW

Upper Action Bar

The upper action bar displays the following control options: **Menu, Disable / Enable Adapter, Return to Home, Start / Cancel Test and Procedures, Reset, Program Edited Parameters, View Vehicle Information, Fault Codes** and **Help information**.

NOTE – Adapter Error Alert will display below the upper action bar when the adapter detects connection errors. Select the Info link for details of the detected error.



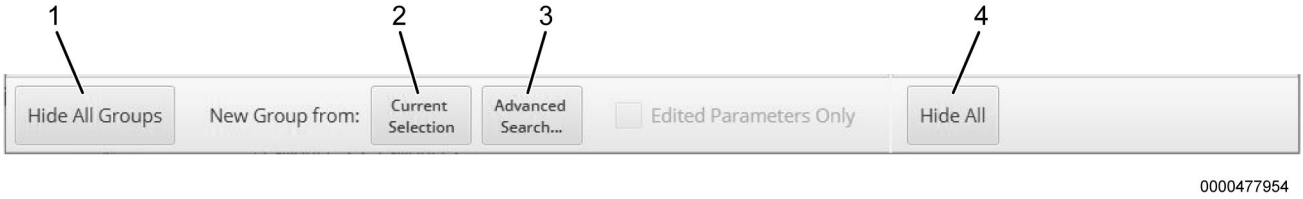
1. SDS version number
2. Search in session

Figure 31 Upper Action Bar

Item	Description
1. SDS version number	SDS version number is the software version.
2. Search in Session	**Search in Session** offers a quick way to search signals or parameters within the opened session.

Lower Action Bar

This area displays options for hiding or collapsing large lists that are showing within an opened session or vehicle panel.



1. Hide All Groups
2. Current Selection
3. Advanced Search
4. Hide All

Figure 32 Lower Action Bar

Item	Description
1. Hide All / Hide All Groups	**Hide All / Hide All Groups** collapses a large list of modules into a smaller, less detailed list.
2. Current Selection	**Current Selection** creates a new group for all selected signals.
3. Advanced Search	**Advanced Search** opens the library of all signals to choose from.

Menu

Select **Menu** to open options including tests, procedures, programming, signals recording, recording playback, module tools, save, load parameters, flash calibration, and other settings and tools.

Figure 33 Menu Button

Menu items will load selections that are available to the connected or simulated module.

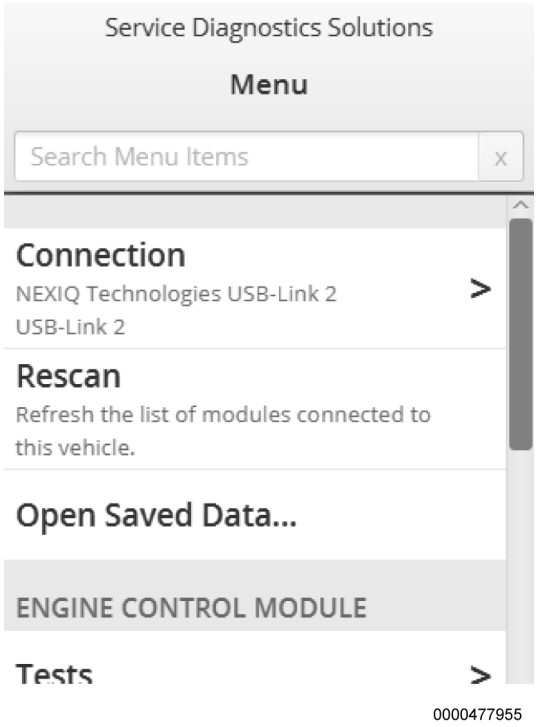


Figure 34 Menu List

Enable / Disable

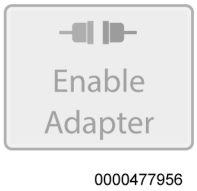
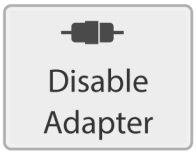


Figure 35 Enable Adapter Option



0000477957

Figure 36 Disable Adapter Option

- Enable – Enables the interface cable.
- Disable – Disables the interface cable.

Action Bar Functions

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Figure 37 Home Option

To return to the home session, select **Home**.

0000477958

Figure 38 Undo All Option

To undo all edited changes made to parameters before programming, select **Undo All**.

0000472573

Figure 39 Start Option

To run the operation you chose, select **Start**. Depending on the operation, you may need to select **Start Test, Start, Start Logging, Procedure, Start Recording, Program**, or **Reset**.

0000472619

Figure 40 Stop Option

To stop the operation you chose, select **Stop**. Depending on the operation, you may need to select **Stop Test, Cancel Test, Cancel Procedure, Stop Recording**. This is used to stop or cancel the activity that was started in the current session. If the option is shadowed out, the operation cannot be canceled.

Vehicle

0000472623

Figure 41 Vehicle Option

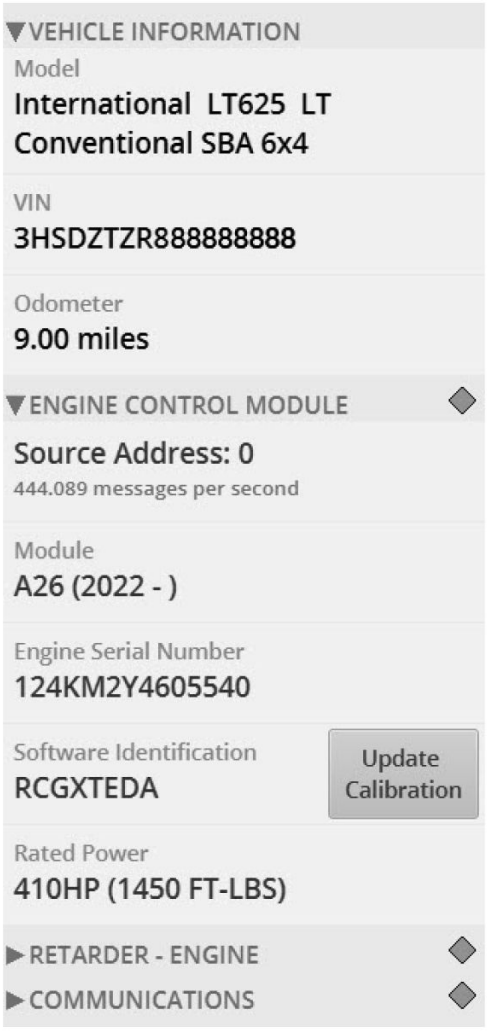


Figure 42 SDS Vehicle Information Panel

To display information on all connected modules, select **Vehicle**. Select any module to expand details on the selected module. If modules are actively talking on the datalink, a GREEN diamond is displayed next to the module name.

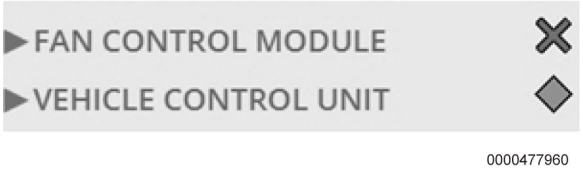


Figure 43 SDS Module Communication Status

If the module is no longer communicating, a RED X is displayed next to the module name.

Help

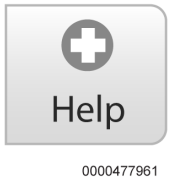


Figure 44 Help Option

For more information about the current session, select **Help**.

Faults

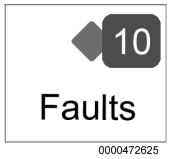
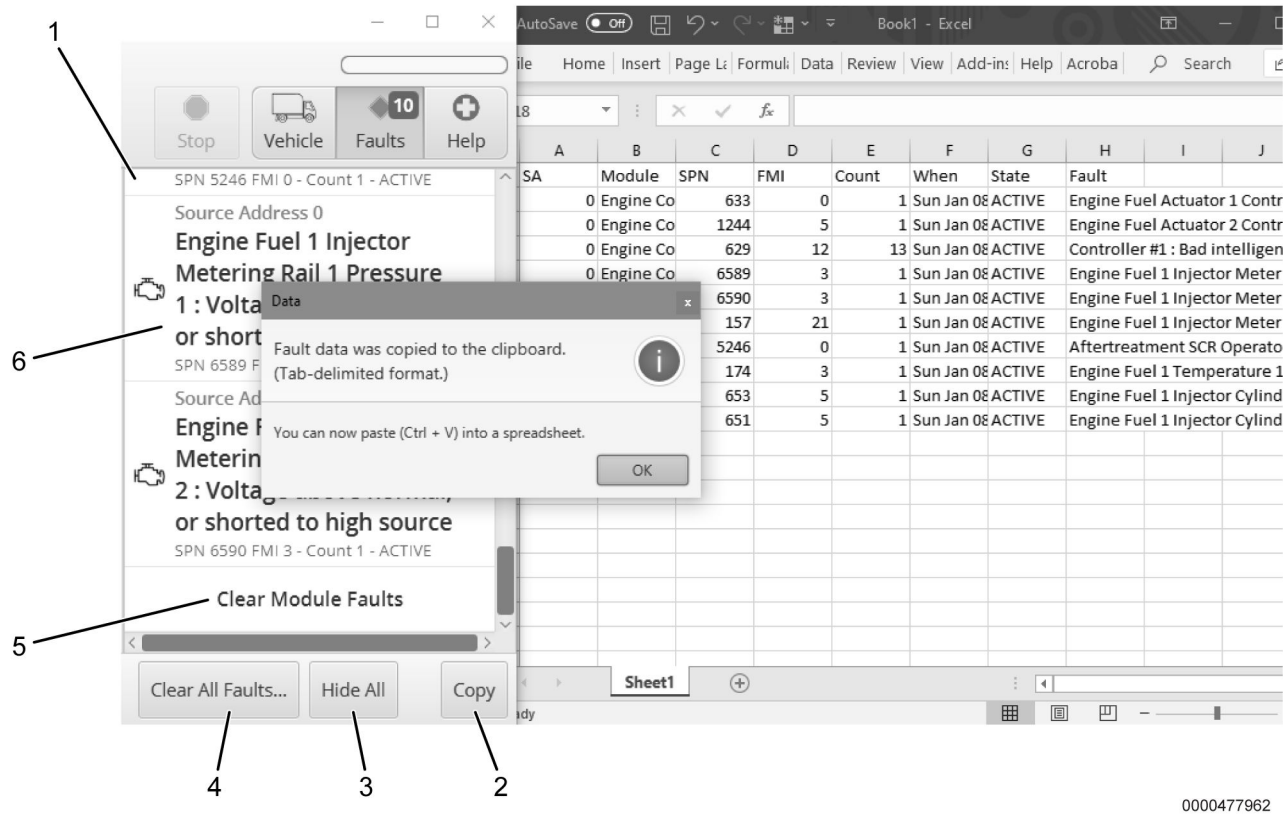


Figure 45 Faults Option

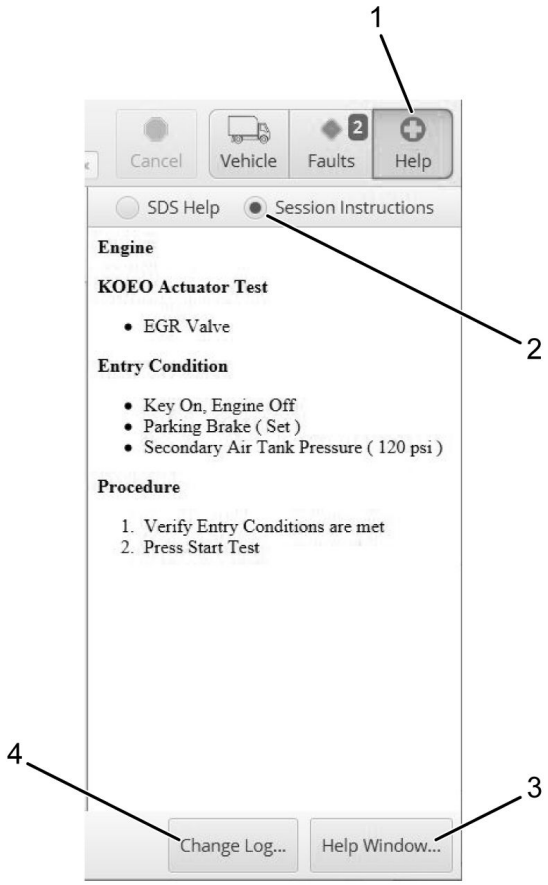
To view all the faults detected from each connected module, select **Faults**. The number in the small RED box indicates the amount of detected active faults.



1. Fault code panel
2. Copy
3. Hide All
4. Clear All Faults
5. Clear Module Faults
6. Freeze Frame

Figure 46 SDS Faults Copied to Spreadsheet

Item	Description
1. Fault Code Panel	Fault code panel displays all detected faults from every connected module.
2. Copy	Select **Copy** to copy faults to the clipboard so you can past them into a spreadsheet.
3. Hide All	**Hide All** collapses a large list of faults into smaller lists of modules.
4. Clear All Faults	**Clear All Faults** clears faults from all selected modules.
5. Clear Module Faults	**Clear Module Faults** only clears the faults from the selected module.
6. Freeze Frame	Freeze Frame loads the Freeze Frame data for any selected fault.



1. Help panel
2. Session Instructions
3. Help Window
4. Change Log

Figure 47 Help Panel

Item	Description
1. Help Panel	The **Help Panel** displays information for the opened session.
2. Session Instructions	Session Instructions displays specific information and steps for the opened session.
3. Help Window	Selecting**Help Window** enlarges the help window.
4. Change Log	Selecting **Change Log** opens the link to SDS version change log.

REPORTS

Health Report

After connecting to the vehicle, the Health Report software opens the Health Report — Scan Checkpoint box.

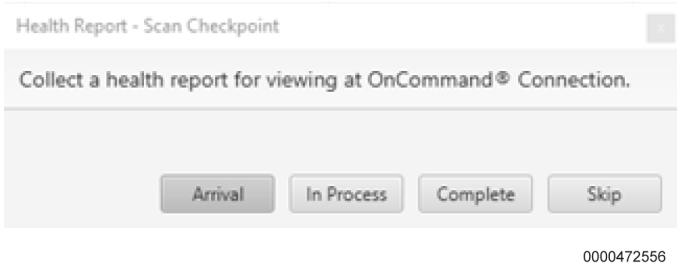


Figure 48 Health Report

To aid in the diagnostic process, request a health report.

1. To collect a health report, select a scan option.
   a. Select **Arrival** before performing repairs.
   b. Select **In Process** if the vehicle is at the dealership and being serviced.
   c. Select **Complete** after you have completed all repairs.
2. To cancel collection of a health report, select **Skip**.

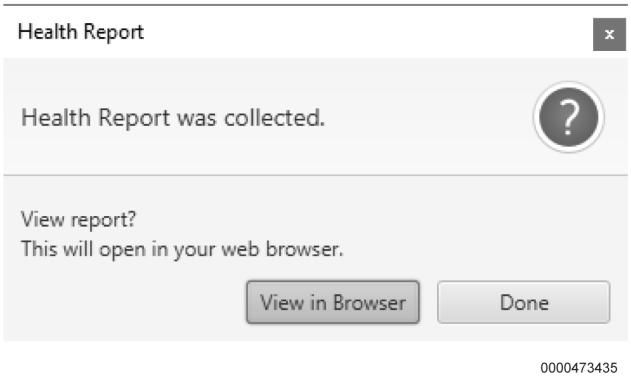
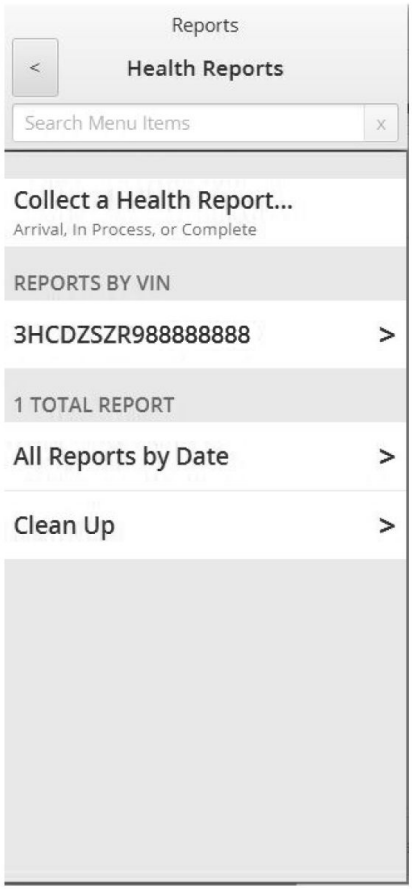


Figure 49 Health Report was Collected

NOTE – After each successful collection of a health report, the confirmation box appears. Select View in Browser to open in your default internet browser. Select Done to close the confirmation box. To save the web page report use the Print option and print to PDF.



0000477964

Figure 50 Health Reports

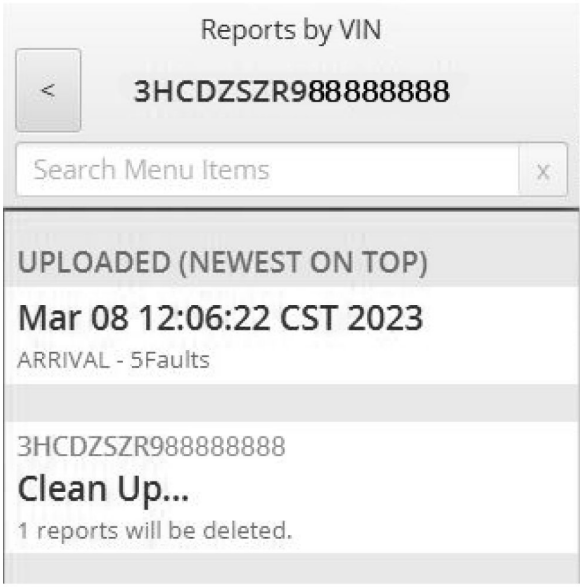


Figure 51 Activity by VIN

Health Reports can be viewed by VIN or by date. Select on the VIN listed to view health reports for that particular VIN. To delete health reports from the software, select **Clean Up** to clean up all VINs, or select on a particular VIN to delete it from the software.

Technical Service Reports

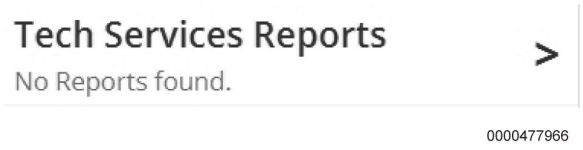


Figure 52 Technical Services Reports

To send information to technical support, use the **Technical Services Reports** feature.

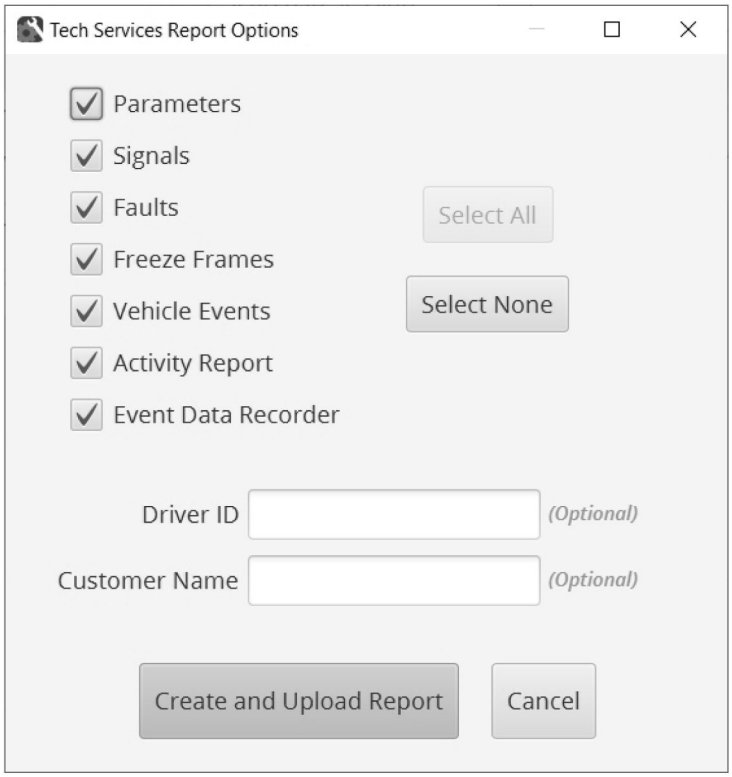


Figure 53 Tech Service Reports Window

To create a custom report, select **Technical Services Report Upload** and check the data you want in the custom report. Selecting **Create and Upload Report** will complete your request.

Open Saved Data

All saved data, reports, and test results are saved in the Desktop folder: SDS Saved Data.

SIGNAL MONITOR

SDS can monitor, record, and play back signals sent from the Engine Control Module (ECM). This section explains how to use these features.

Show Graph

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Figure 54 Show Graph

This function will display the first 10 signals at the top of a signal list.

List Expand / Collapse

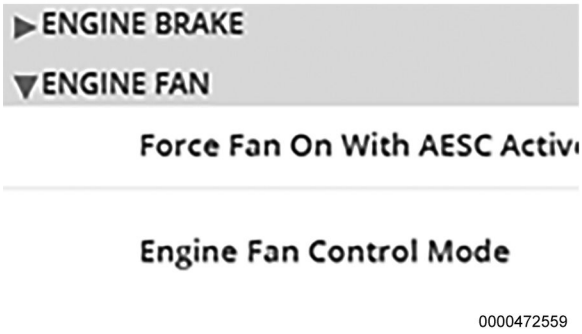

Figure 55 List Expand / Collapse

To expand the list, select the **triangle pointing right**.

To collapse the list select the **triangle pointing down**.

Signal Settings

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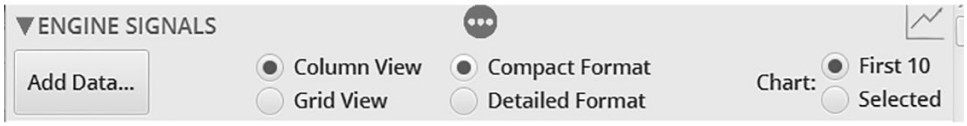
Figure 56 Signal Settings Icon

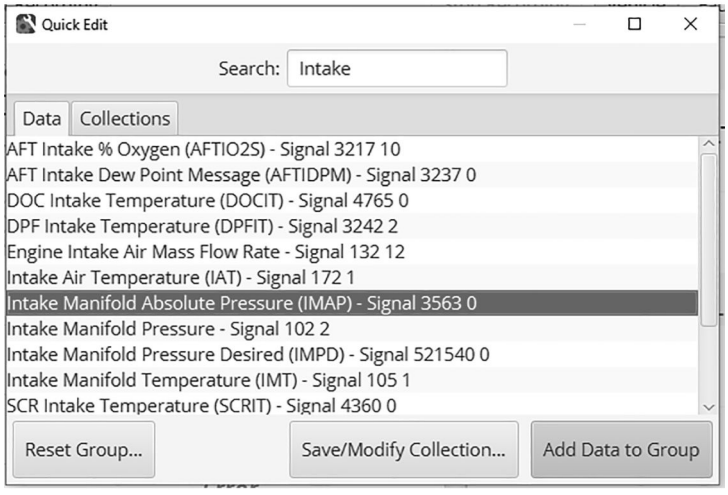


0000472794

Figure 57 Signal Settings

Selecting the signal settings icon above any signal table will display a list of options:

- Column View – Listed in one column
- Grid View – List is divided into five columns
- Compact Format – Name, Value, Units
- Detailed Format – Name, Value, Units, ID, Sample rate, Min-Max, Raw Value
- Chart – Opens chart view of signals.
- Add Data – Opens Quick Edit – Add or move signals to the top of the list, and save for collections for quick loading of favorite choices.



0000472792

Figure 58 Quick Edit

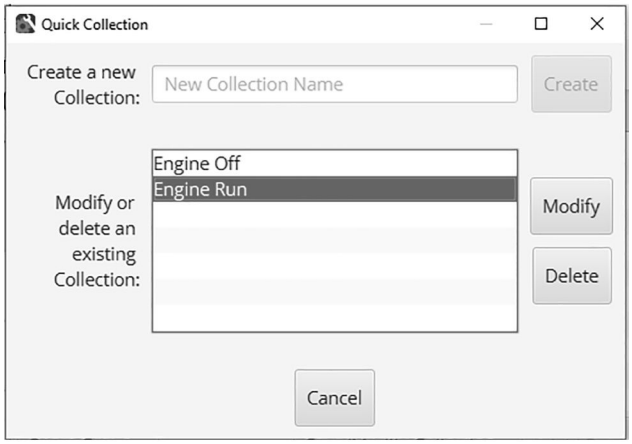


Figure 59 Quick Collection

Changing Units of Measurement

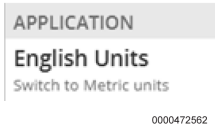


Figure 60 Units of Measure

To change units of measurement to metric or English, go to **Menu > Application**. SDS will save the new setting as the default, until the user changes it back.

Start Recording

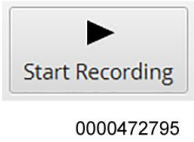


Figure 61 Start Recording

Starts recording all signals in the session.

Stop Recording

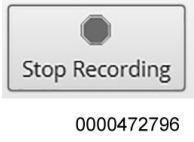


Figure 62 Stop Recording

Stops the recording and saves it to the SDS Saved Data Folder.

DATA RECORDINGS (PLAYBACK)

All tests and most procedures will automatically record signals and some create test results. These are saved in the SDS Saved Data Folder.

Saved Recordings

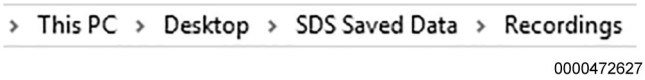


Figure 63 Saved Recordings

All Recordings are saved in the Desktop folder: SDS Saved Data \ Recordings.

Data Storage Location

By default, the SDS Data Store Location is located on the active user's Desktop in the "SDS Saved Data" folder. To update the Data Store Location:

1. Select **Menu**.
2. Select **Settings**.
3. Select **DATA STORE LOCATION**.
4. Navigate to location where you want to store the data.

Record File Naming Convention

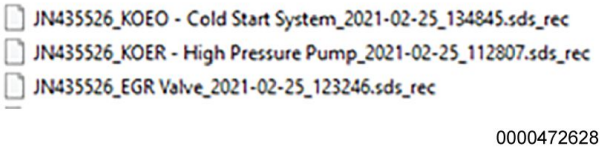
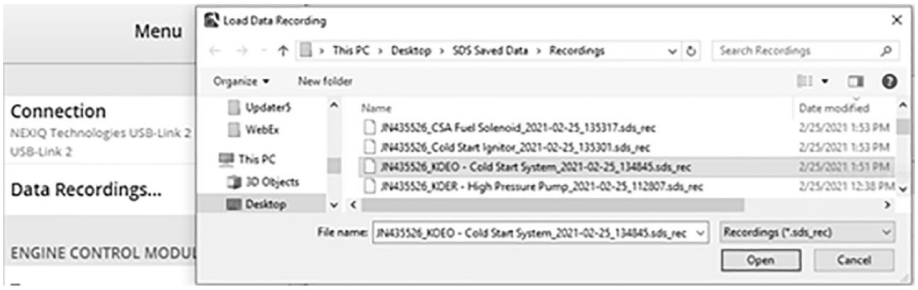


Figure 64 Record File Naming Conventions

Recordings are named using the following method.

- Last 8 digits of VIN - Test Name - Date - Time

Data Recording Playback

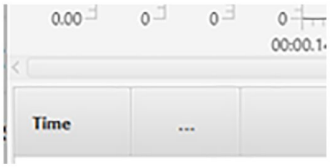


0000472629

Figure 65 Data Recording Playback 1

1. Go to Menu and select **Open Saved Data.**

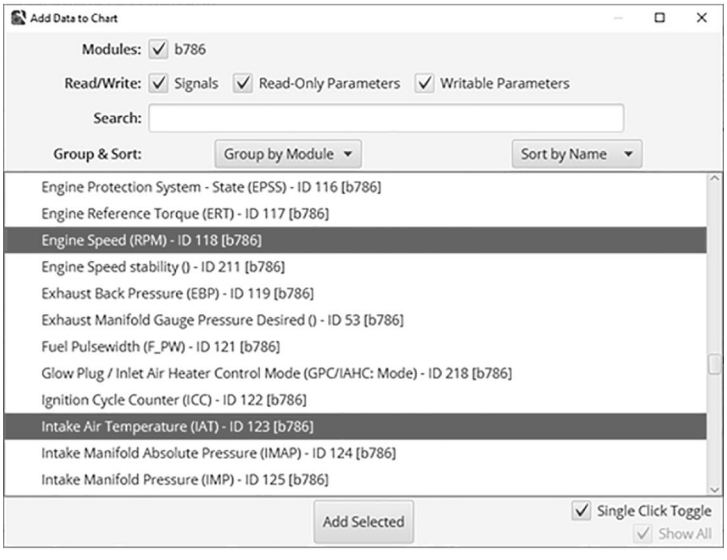
2. Select a recording.



0000472630

Figure 66 Data Recording Playback 2

3. Select **Add Data** to select signals for the chart.



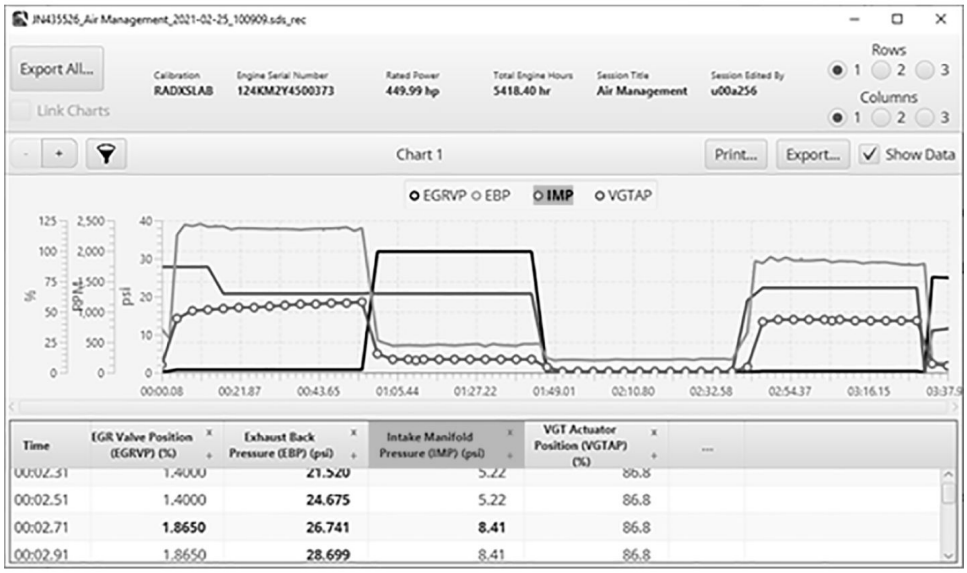
0000472631

Figure 67 Add Selected Signals

4. Select signals. You can select up to 10 signals per chart.

5. Select **Add Selected** to populate chart with selected signals.

6. Remove any signal by selecting **X** next to a signal name.



0000472632

Figure 68 Signal Trace

7. See signal trace by selecting **Signal Name**.

Zoom In / Zoom Out

0000472633

Figure 69 Zoom In / Zoom Out

- Zoom in by selecting the **+** button.
- Zoom out by selecting the **-** button.

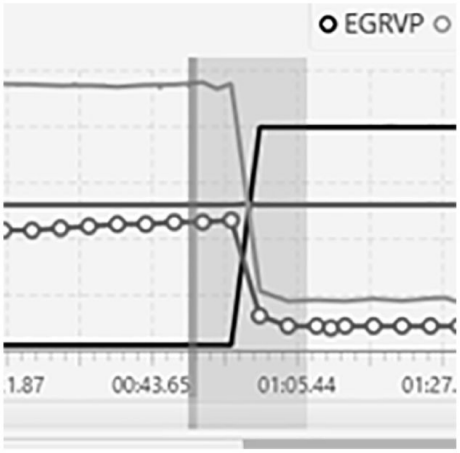


Figure 70 Zoom In / Zoom Out Example

- Zoom a selected area by selecting and dragging within the graph.

Using Filters

Filters can be added to any signal in the Data Recording playback.

Figure 71 Using Filters

1. Select the **+** next to the signal name.

Figure 72 Edit Filter

2. Select and enter filter conditions.

3. Close filter window and filter information will set and display next to signal name.

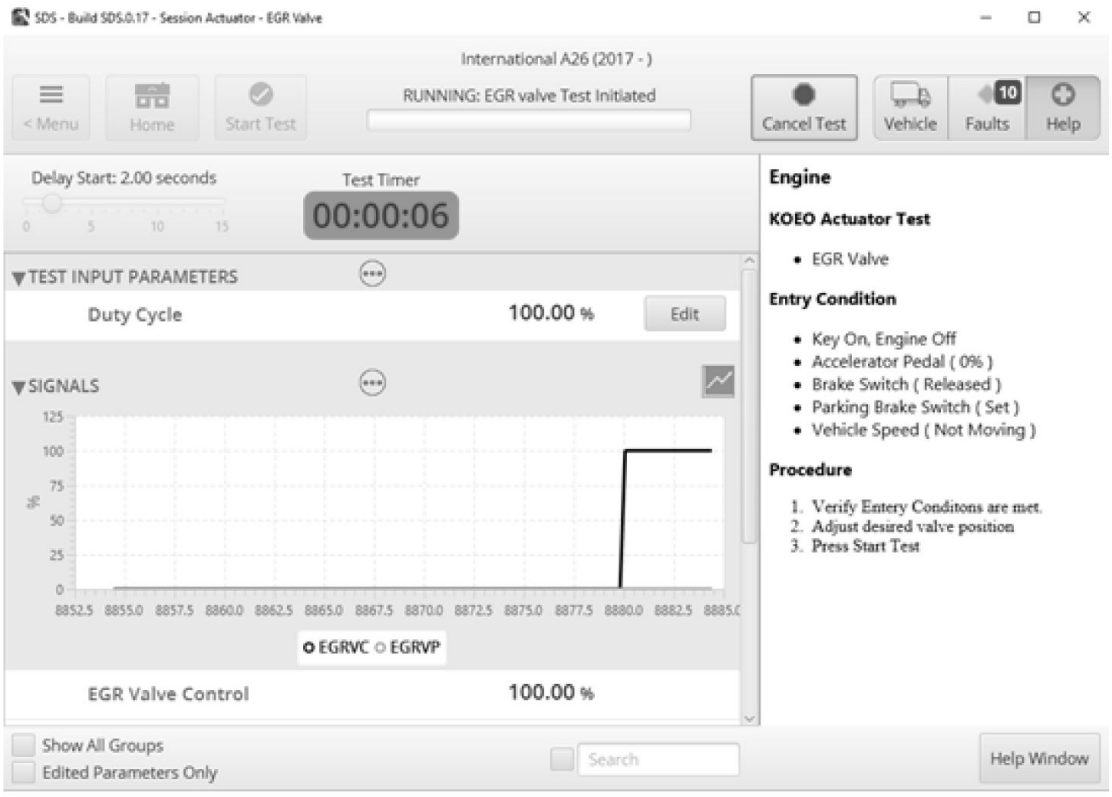
0000472575

Figure 73 Edit Filter Icon

4. Select **Filter Icon** to enable filter. Select it again to disable it.

TEST SESSION

Test Session View



0000472576

Figure 74 Test Session View

This is a typical test session and below is a brief description viewed in this screenshot.

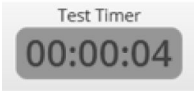
Delay Start

0000472577

Figure 75 Delay Start

Delay Start can be used when extra time is needed to move from SDS to area being tested before the test starts.

Test Timer



0000472578

Figure 76 Test Timer

Displays Test Run time.

Test Input Parameters

0000472580

Figure 77 Test Input

Some tests have Input allowing various test options.

PROGRAMMABLE PARAMETERS

Parameters are used to configure the all powertrain modules to set all needed features to the connected vehicle.

NOTE – Save the parameter file before making any programming changes.

Programming Session

From Menu, each Powertrain Module will have a Programming session within it. For convenience, some sessions will have Parameters divided up into sub-systems for easy programming of any select system.

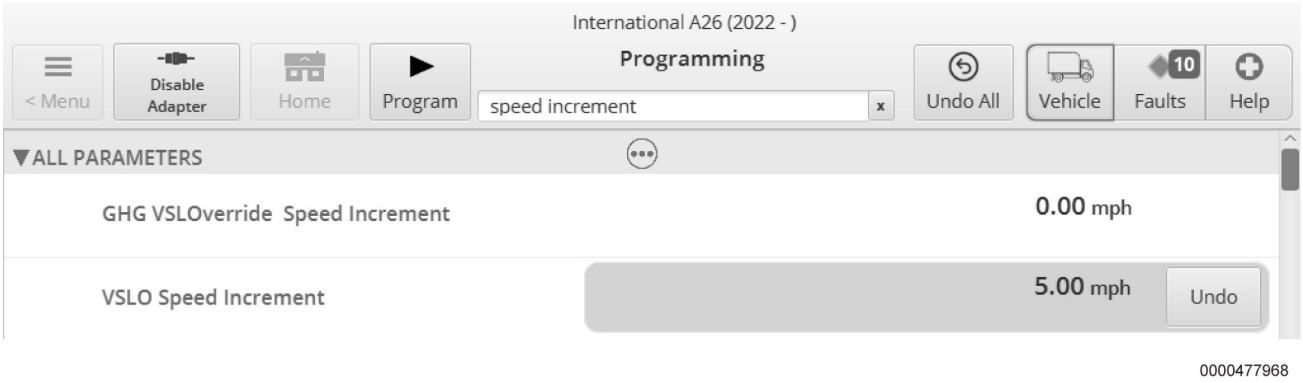


Figure 78 All Parameter Session

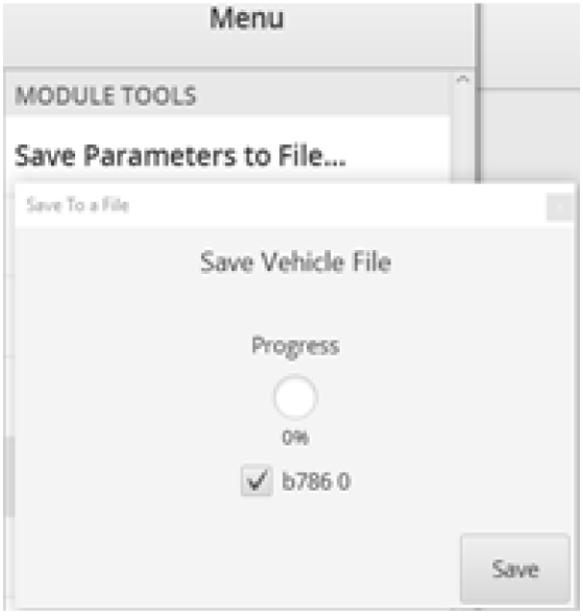
1. Select All Parameters to list all available parameters connected to the Engine Control Module (ECM).
2. Select **Edit** to change Parameter value.
3. Select **Enter**. The value is locked in and the button now displays Undo.

NOTE – Pressing the Undo All button will undo all edits that haven't yet been programmed.

4. Press the **Program** button to complete the programming.

Save Parameters to a File

1. From Menu, go to Module Tools and select **Save Parameters to File**.
2. A popup window will display all connected modules that have parameters.
3. Add a check mark to the **Modules to save Parameters from**.
4. Select the **Save** button.



0000472582

Figure 79 Save Parameters to File

Load Parameters from File

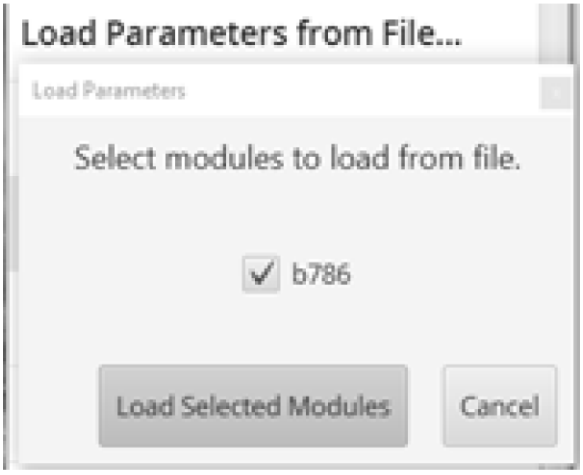


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Figure 80 Load Parameters from File

1. The Select File window will appear. Select previously saved parameter file.
2. Add a check mark next to desired modules to load parameters into.

NOTE – If all parameters do not load, new calibration may have removed some old parameters. Take note of what isn't loaded for reference.

3. Select **Load Selected Modules**.

4. Parameters are loaded into the All Parameters session.

5. Select **Program**.

Programming Failure

Programming all parameters may fail if you do not have authorization to program all of the parameters selected.

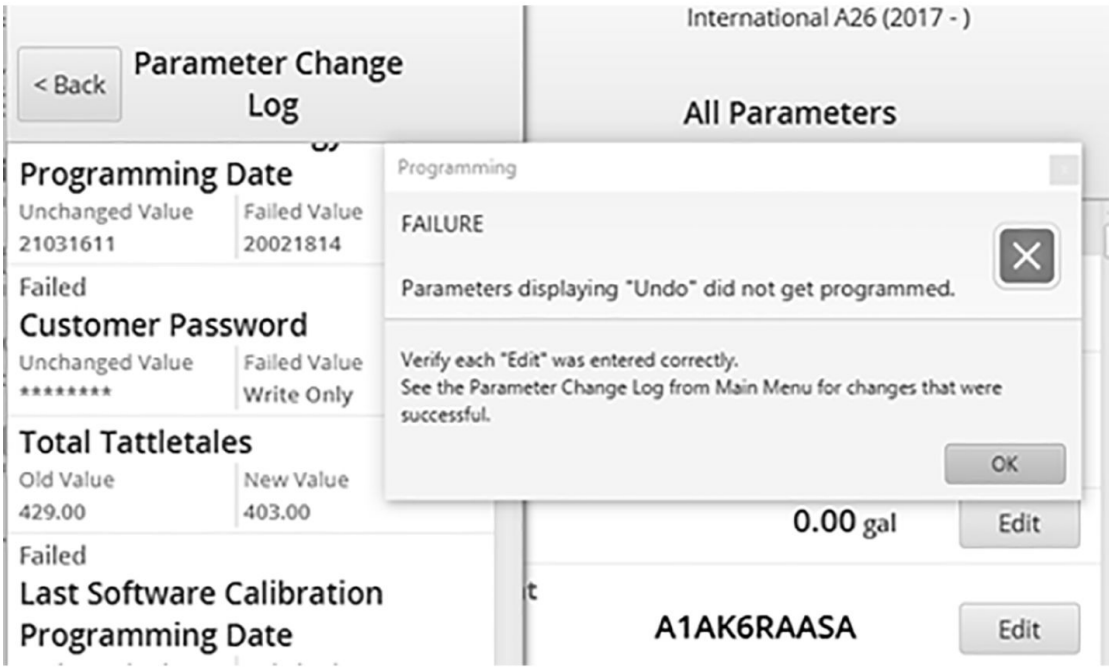


Figure 81 Parameter Change Log

After programming parameters, Programming Failure message appears. Parameter Change Log will also show up in the Menu, displaying failures.

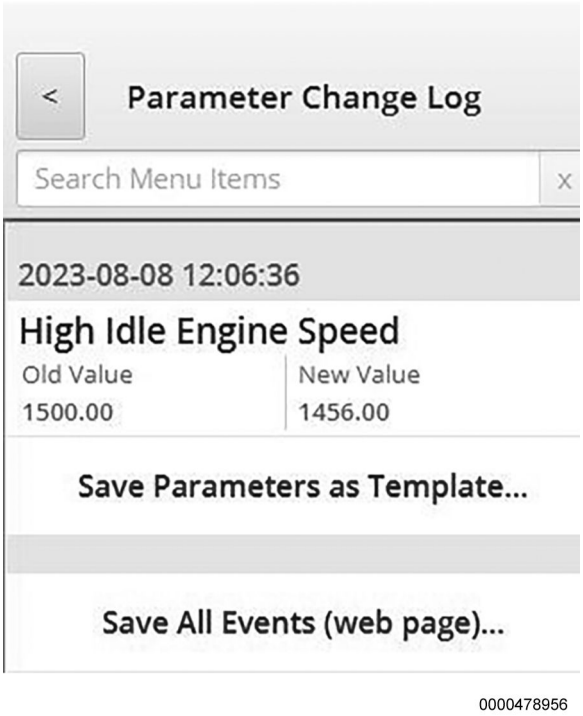


Figure 82 Last Service Tool Date

NOTE – Selecting Save All Events will create a HTML file. It is recommended to save the web page using the Print > print to PDF option.

Follow the steps below to document and receive support when the programming has failed.

1. Select **Save Parameters as Template** or **Save All Events (web page)** to save changes for reference.
2. Select **Undo All** option to undo changes when parameters fail to program.
3. Send Programming Event Log to technical support. See Technical Services Reports section for detailed instructions.

CALIBRATION UPDATE

Supported modules are automatically checked for calibration updates. If an update is available, a you can start the update by selecting **Update Calibration**.

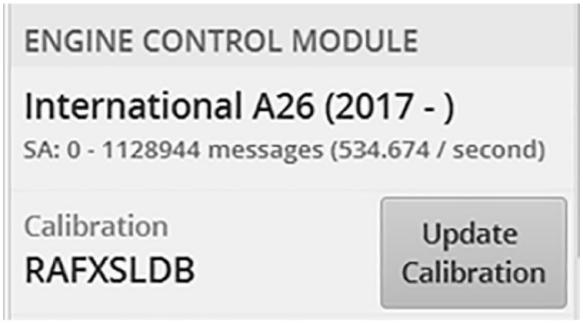


Figure 83 Calibration Update

Update Calibration is in the Vehicle Panel, next to Module Calibration ID.

Figure 84 Update Calibration

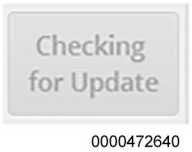


Figure 85 Checking for Update

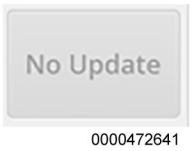


Figure 86 No Update

NOTE – Limited functions will be available in SDS when connected to an unsupported engine.

Item	Description
Update Calibration	Update is available
Checking for Update	Scanning calibration update rules

Item	Description
No Update	No updates are available
Unavailable	Engine connected is not supported in SDS

Starting the Update

1. Connect a smart charger before programming. Current voltage is displayed during calibration update.
2. Select **Update Calibration**.

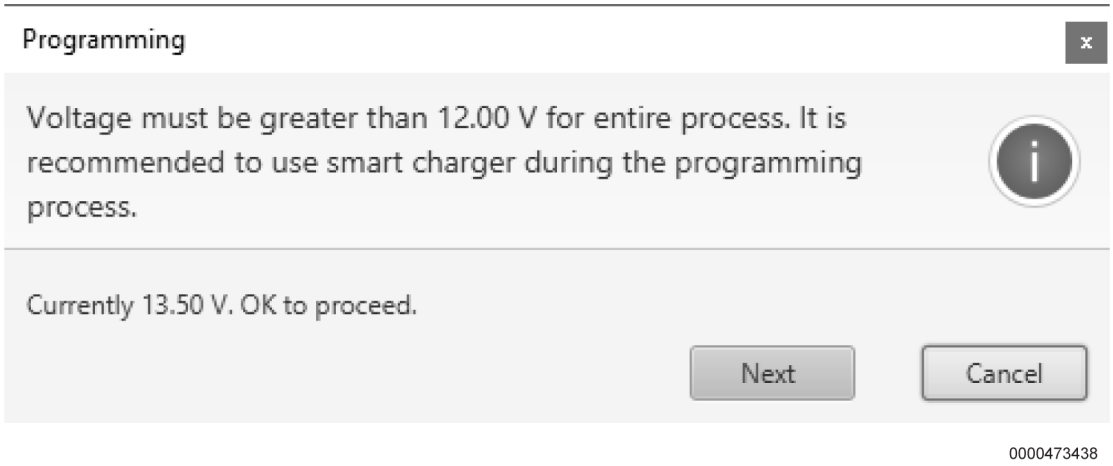


Figure 87 Update Calibration Voltage

3. Select **Next** to proceed or **Cancel.**

NOTE – When connected to the internet, requests are processed automatically.

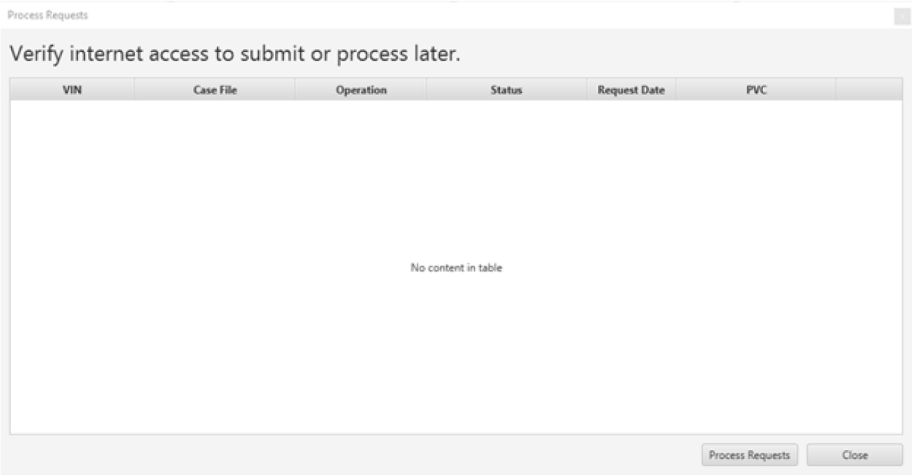


Figure 88 Verify Internet Access

4. Select **Process Requests** after programming has been completed. A finished request will display **Programming Verification Code (PVC)**.

Vehicle Control Unit (VCU) Calibration Update

Supported modules are automatically checked for calibration updates. If an update is available, a user can start the update by selecting the Upgrade button. To view the calibration status, find Vehicle Control Unit (VCU) in the module list and expand the section.

Figure 89 VCU Calibration Update

To update the calibration of the Vehicle Control Unit (VCU), prerequisites must be met. When all modules have sufficient versions, SDS will allow calibration updates to the VCU. Select **Upgrade** to perform the calibration upgrade.

Figure 90 VCU No Calibration Update

If there is no calibration update available, or the module prerequisites are not met, SDS displays **NO UPDATE**.

BLANK FLASH REQUEST

The Blank Flash Request function allows the technician to request programming a blank module.

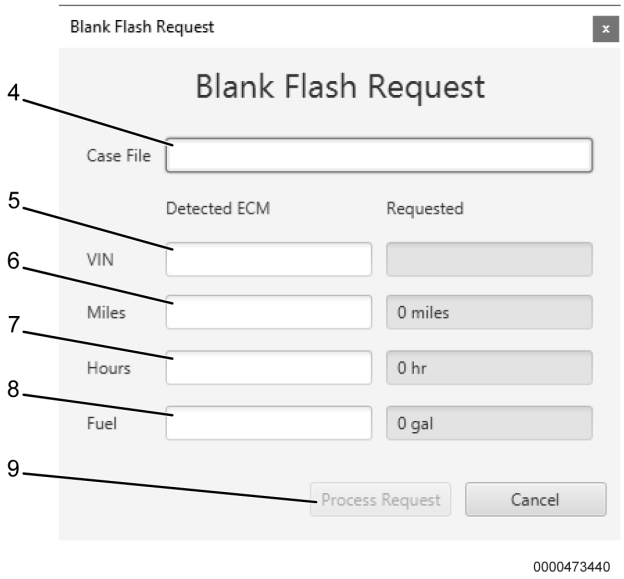


Figure 91 Blank Flash Request

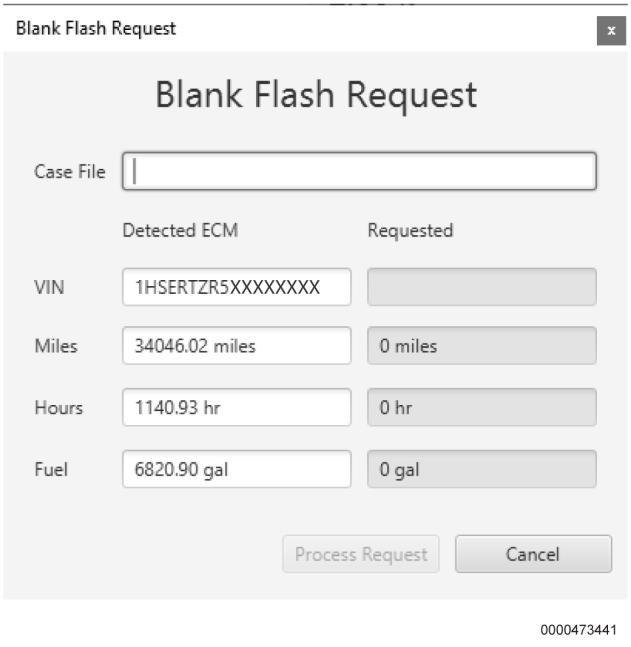


Figure 92 Blank Flash Request

1. Select **Menu**.
2. Select **Calibration**.
3. Click **Blank Flash Request**.

4. Input Case File Number.
5. Input VIN or Chassis number.
6. Input vehicle Miles.
7. Input vehicle Hours.
8. Input vehicle Fuel.
9. Select **Process Request**.

NOTE – If reprogramming a module that's already programmed, SDS will populate the Detected ECM information in the left column. Enter necessary values on the right to program them into the module.

NOTE – The values can be converted from Metric to Imperial by entering the value in metric, followed by the unit. For example, enter "100 km" for SDS to convert to 62 miles. Enter "100 L" to convert to 26.42 gallons.

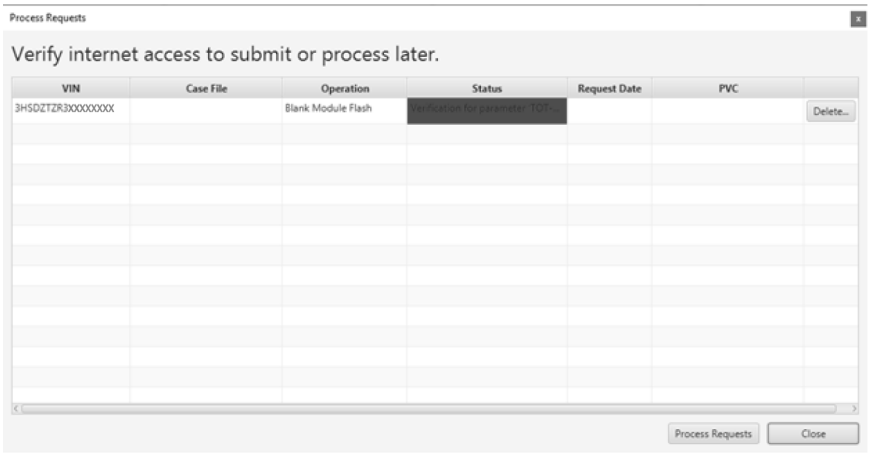
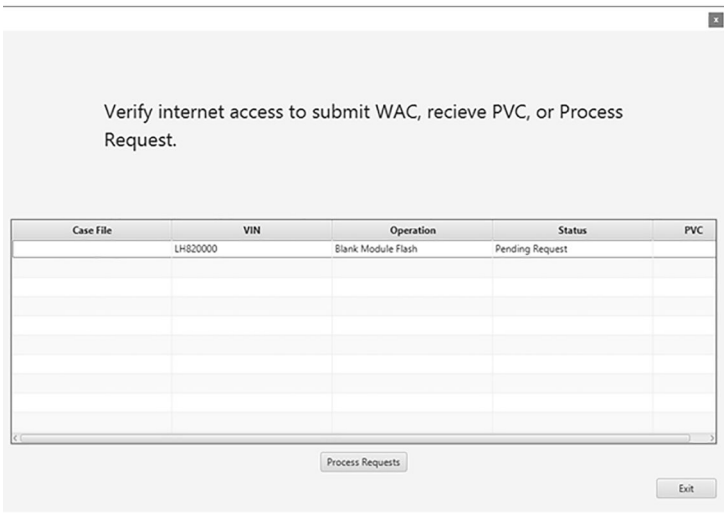


Figure 93 Verify Entered Values

NOTE – Verification is done to ensure values entered are greater than those in the database. If values are not entered correctly, the Process Request may fail.



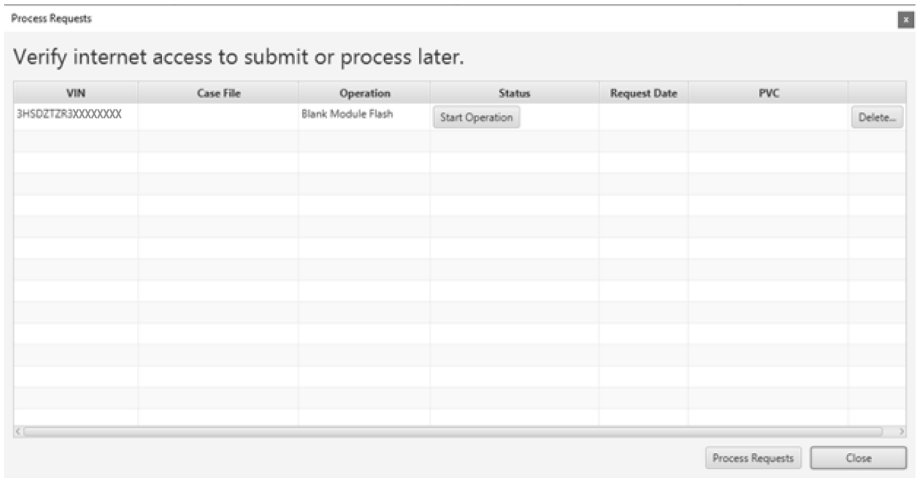
0000472645

Figure 94 Verify Internet Access to Submit WAC

Module Request Window

The Module Request window can be opened from **Menu > Calibration > Module Request**.

From the Module Request window, SDS will upload the designated files to process the request. File upload status will be confirmed.



0000473443

Figure 95 Verify Internet Access to Submit or Process Later

NOTE – After the Blank Module Flash operation is complete, you will be prompted to collect a health report. Select SKIP to decline collection.

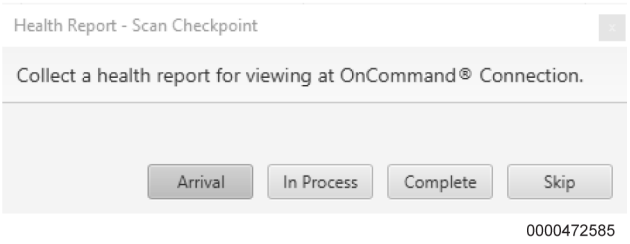


Figure 96 Health Report Scan Checkpoint

After the Blank Module Flash operation is complete, you will be prompted to collect a health report. Select **Skip** to decline collection.

Electric Vehicle Blank Vehicle Control Unit (VCU) Programming

Upon connection to the electric vehicle, SDS will automatically save a parameter file for programming. This file is in the SDS Data Store Location. By default, the Electric Vehicle SDS Data Store Location is “\Desktop\SDS Saved Data\evBackups”.

To blank program VCU, see detailed steps below.

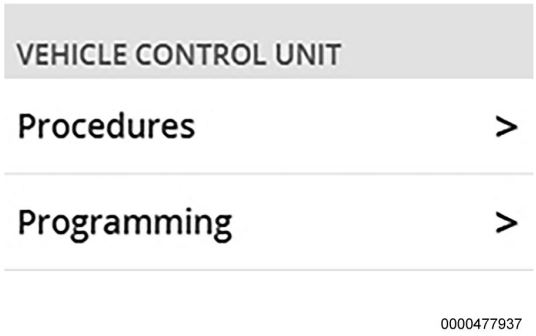
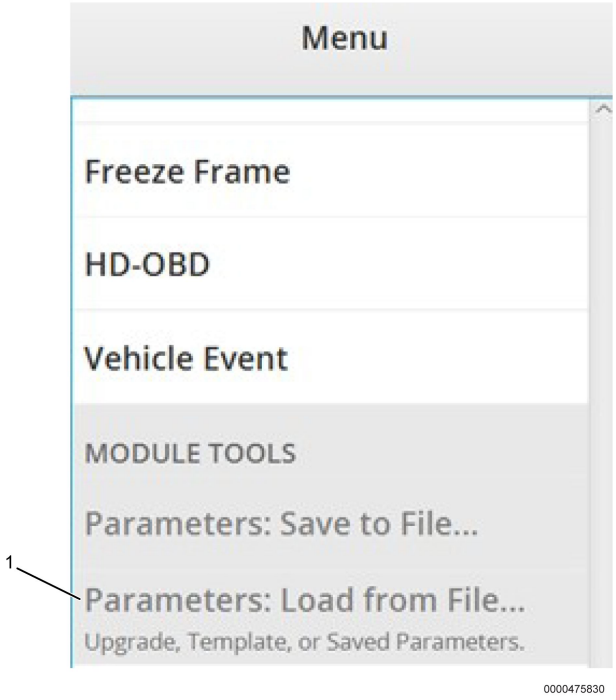


Figure 97 VCU Menu

1. Select **Menu**, scroll to **Vehicle Control Unit**, select **Procedures**, select **VCU Blank Flash**.

Figure 98 VCU Blank Flash

2. Select vehicle model, then select **Flash VCU** from toolbar.
3. Select **OK** after procedure has been completed.
4. Follow Post Flash Process located in Help Menu in SDS.



1. Parameters: Load from File

Figure 99 Load Parameters

5. Load parameters from file after Post Flash Process has been completed.

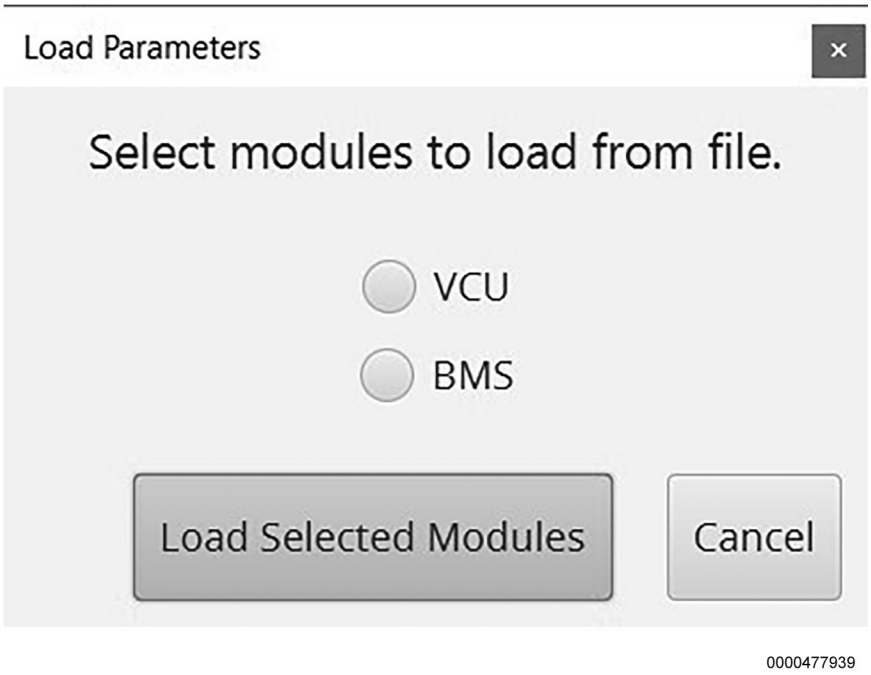


Figure 100 Load Selected Modules

6. Select **OK** after parameters are loaded.

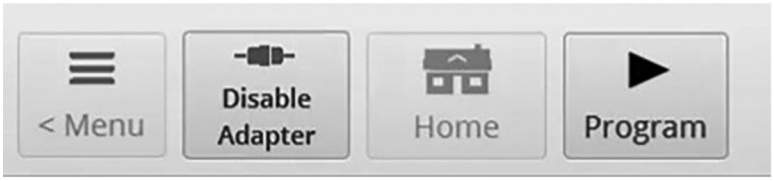


Figure 101 Tool Bar

7. Click Program button in tool bar to complete process.

Electric Vehicle Blank S-Box Programming

To blank program Battery Management System (BMS), see detailed steps below.

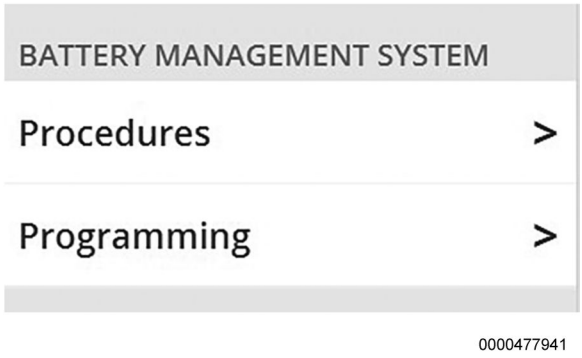


Figure 102 Battery Management System (BMS) Menu

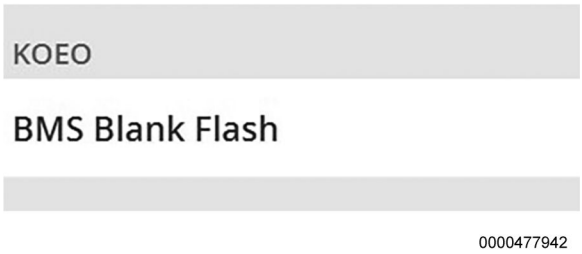


Figure 103 Blank Flash

1. Select **Menu**, scroll to **Battery Management System**, select **Procedures**, and then select **BMS Blank Flash**.

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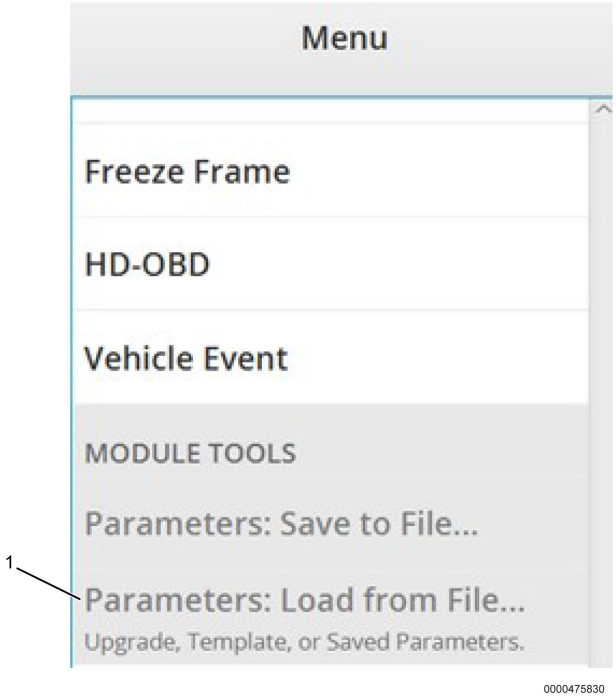
Figure 104 Battery Configuration

2. Determine if vehicle is a 2-string, six high-voltage batteries, or a 3-string, nine high-voltage batteries, configuration.
   a. If vehicle is a 2-string configuration, select **2-String**, then select **Flash BMS** in toolbar.
   b. If vehicle is a 3-string configuration, select **3-String**, then select **Flash BMS** in toolbar.
3. Select **OK** after procedure has been completed.
4. Follow Post Flash Process located in Help Panel under Session Instructions.



1. Parameters: Load from File

Figure 105 Load Parameters

5. Select **Menu**, scroll to **Module Tools** section, select **Parameters: Load to File** after Post Flash Process has been completed.

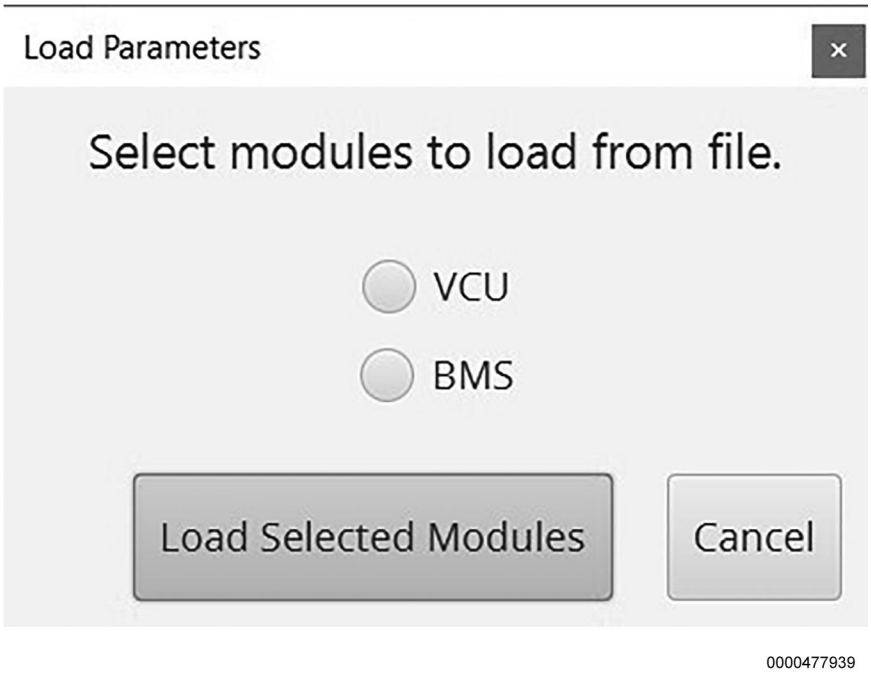


Figure 106 Load Selected Modules

6. Select appropriate saved file and select **BMS**, and select **Load Selected Modules** when prompted.
7. Select **OK** after parameters are loaded.

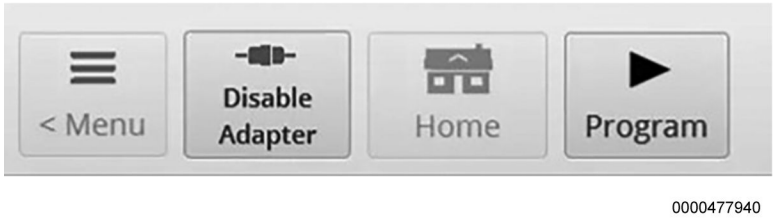


Figure 107 Tool Bar

8. Select **Program** in tool bar to complete process.

PARAMETER UPGRADE

Parameter upgrades are approved through the Navistar Dealer Network.

Internet access to the Navistar Dealer Network is required.

The following programming changes are not supported outside of the Navistar Dealer Network:

- Emission changes involving emissions label replacement
- Horsepower upgrade
- Engine replacement programming
- Component serial number updates

To Start an Upgrade Request

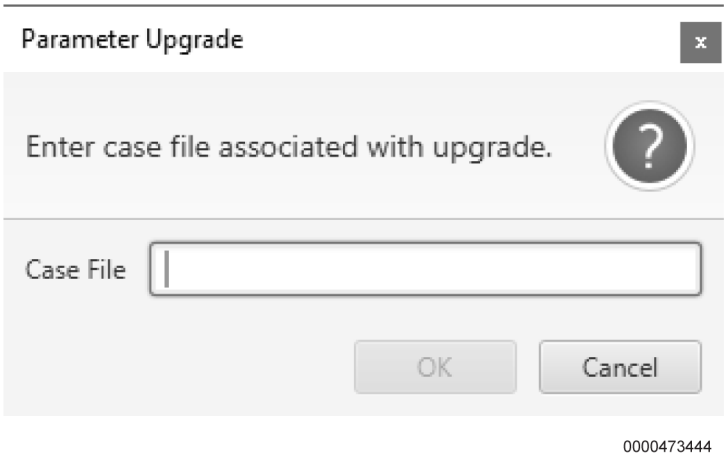
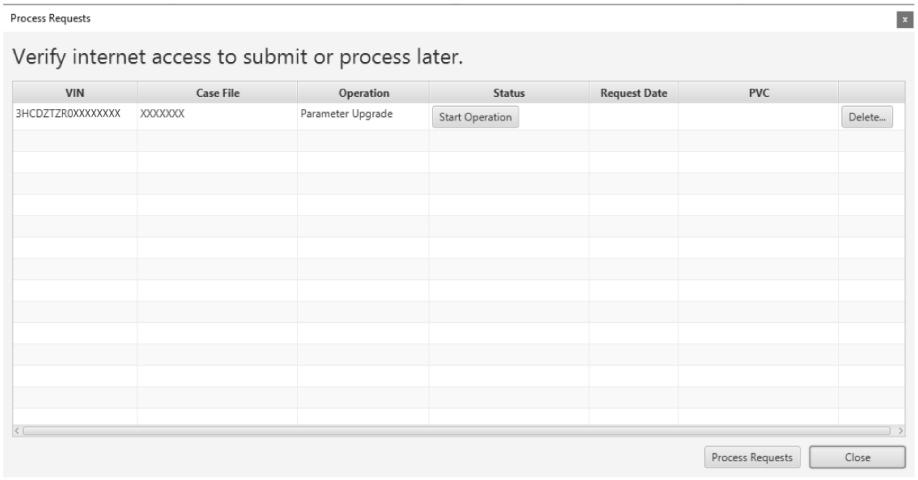


Figure 108 Enter Case File Associated with Upgrade

1. From Menu, go to **Calibration** and select **Parameter Upgrade**.
2. Enter relevant case file number and select **OK**.



0000473446

Figure 109 Process Requests Window, Parameter Upgrade

NOTE – The Process Request window appears automatically.

3. Select **Start Operation** to complete parameter programming.

Module Requests

This window displays all process requests completed by the user.

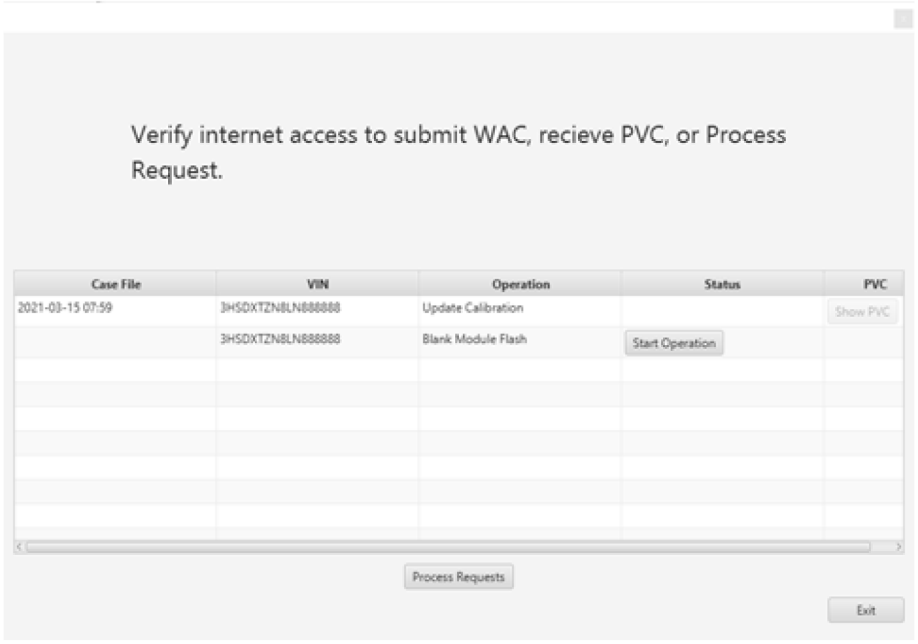


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Figure 110 Process Requests Window

If status shows Pending, select **Process Requests** to complete this action.

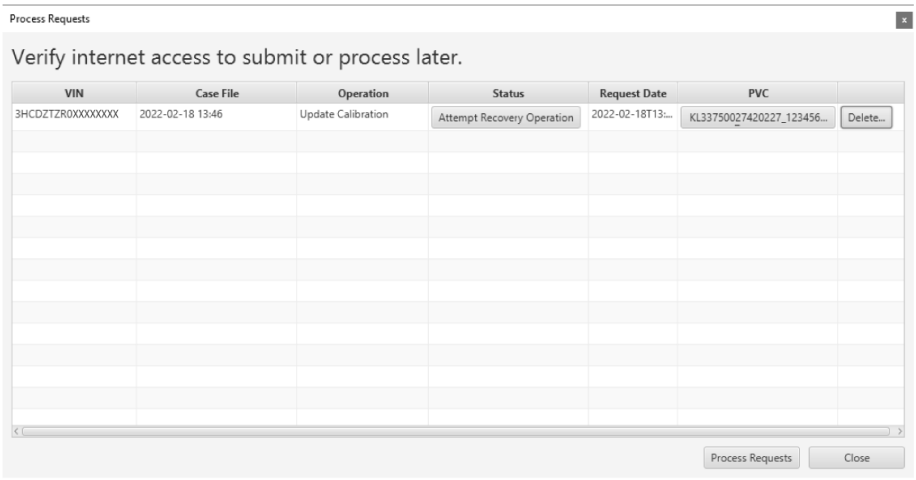

Figure 111 Process Requests Window

This window also displays the recovery option if a failure has occurred. When available, select **Attempt Recovery Operation**.

SESSION VIEW

Current Selection Function

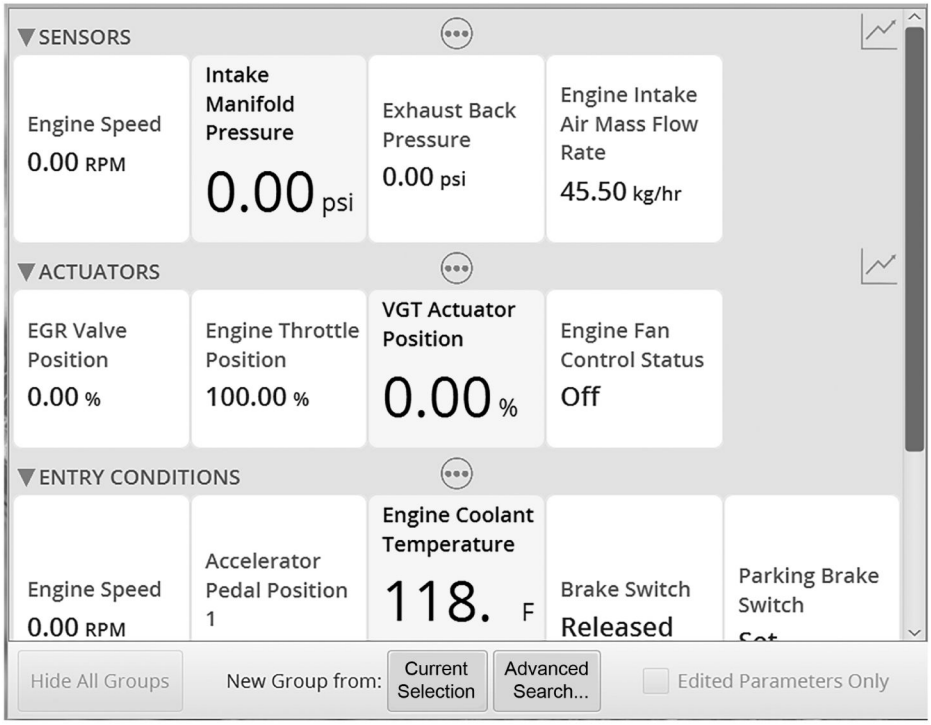

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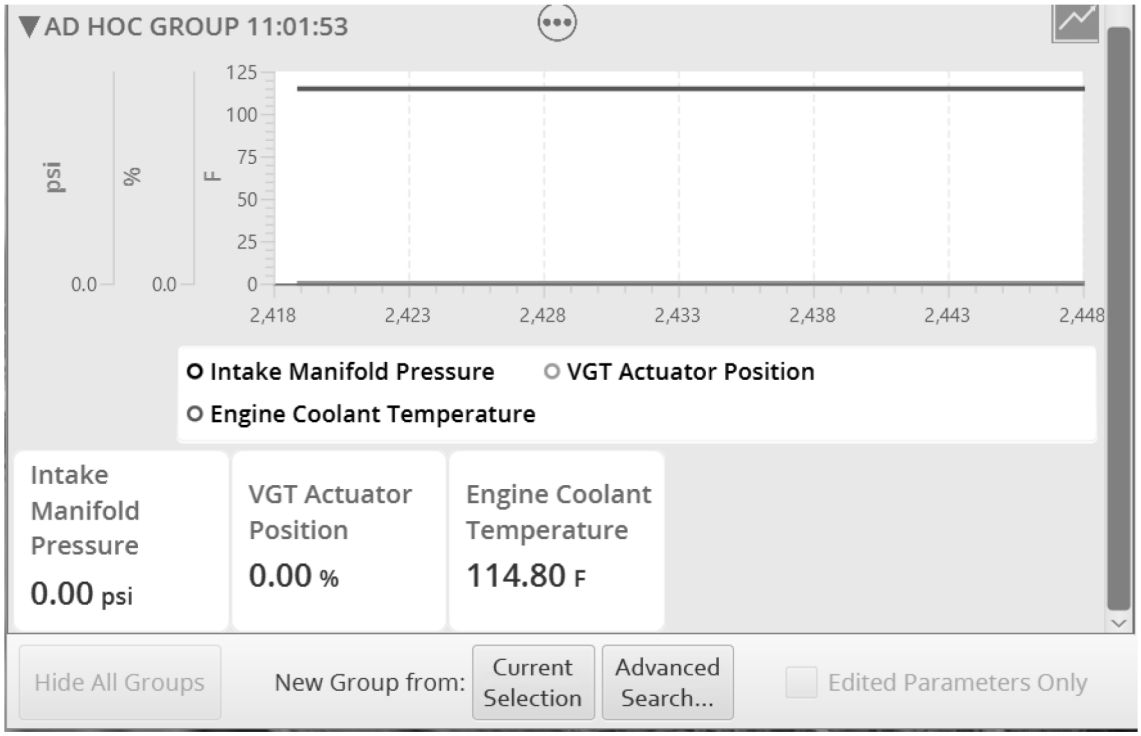
Figure 112 Selected Signals in Table

1. Selecting signals will highlight signals in the table and graph. A single-click on any signal will select it, and another single-click will deselect it.



0000477916

Figure 113 Selected Signals in Graph

2. Selecting **Current Selection** creates new group for all selected signals.

Advanced Search Function

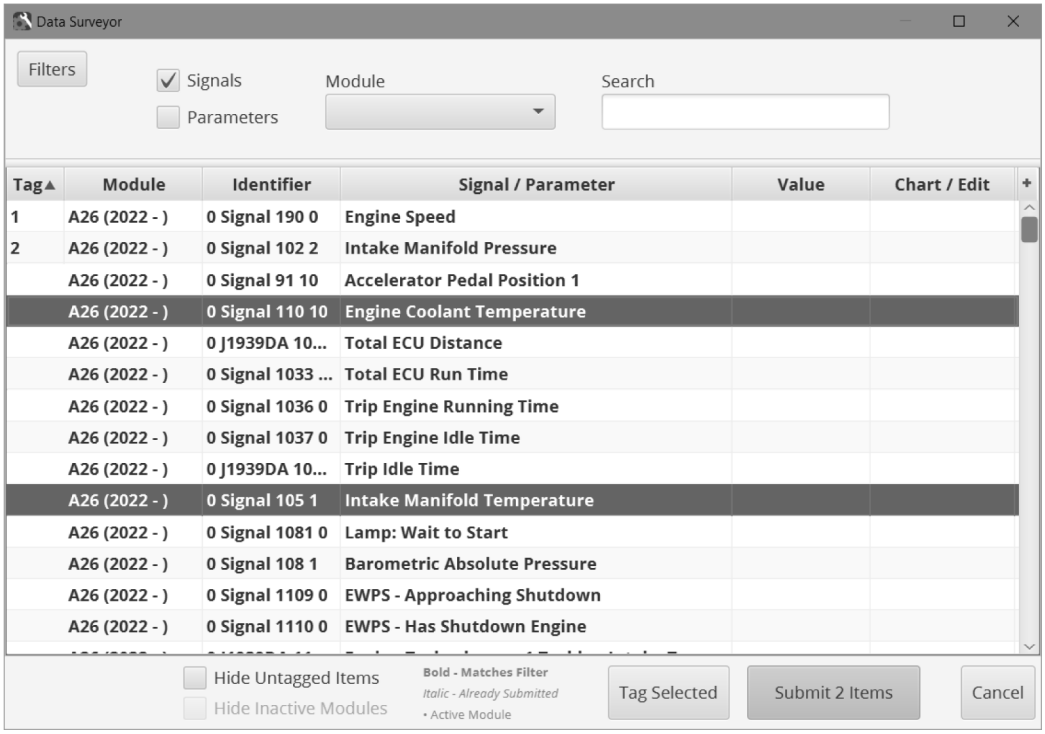


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Figure 114 Selected Signals in List

1. Selecting **Advanced Search** opens library of all signals to choose from.
2. To add one signal, select it from the list. To add multiple signals, hold **Ctrl** and right-click on each signals.
3. Select **Tag Selected** to attach signals to your new list.
4. Select **Submit** to create a new group for all selected signals.

SESSION EDITOR

Session Editor Control Panel

Create, import, export, or modify any existing session using **Session Editor**.

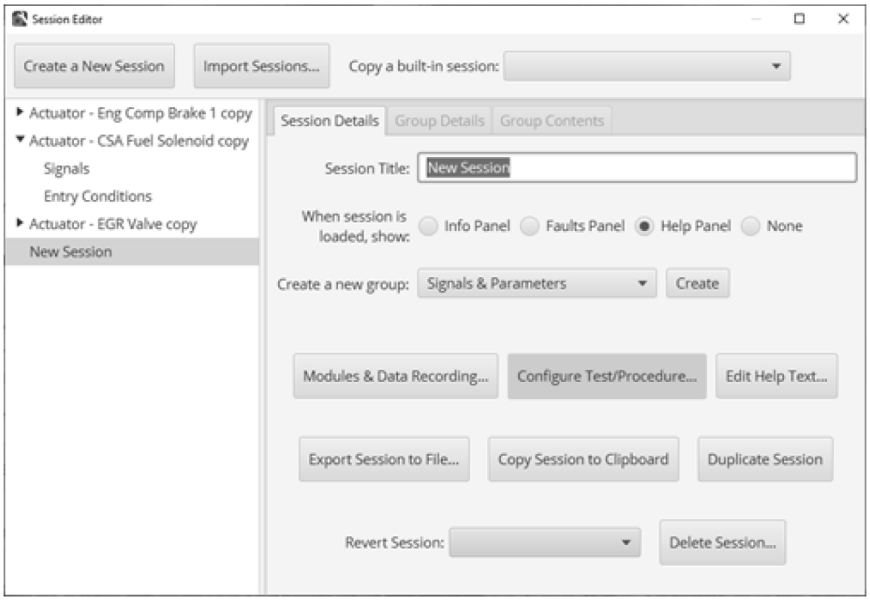

Figure 115 Session Editor

Create a New Session

Figure 116 Create a New Session

User Created Sessions

Created sessions are located in the main menu and on left-side of the **Session Editor**. Selecting the expand arrow will display the groups within the session.

Remove User Created Sessions

Open the **Session Editor**, select any created session on the list side of the editor, and press **Delete Session**.

Duplicate Session

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Figure 117 Duplicate Session

This option creates an exact copy of a session and can be used to make minor changes between two sessions.

Save Changes

There are two ways to save. When the Session Editor is open, changes are saved as they are being made. When the Session Editor is closed, all changes made during the editing process will save. The session will be available in the menu under **SESSIONS** with your session title.

Session Title

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Figure 118 Session Title

This session title appears in the menu and the recorded file name.

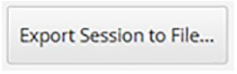
Import Sessions

0000472594

Figure 119 Import Sessions

Load previously saved session file another user has exported.

Export Session to File



0000472646

Figure 120 Export Sessions to a File

Exports any created session to file, that can be imported in another users account or computer.

Copy a Built-in Session

Figure 121 Copy a Built-in Session

Select any built-in session to be edited. Saved sessions will not overwrite built-in sessions. They are added outside of the Test / Procedures menu.

Show Panel When Session is Opened

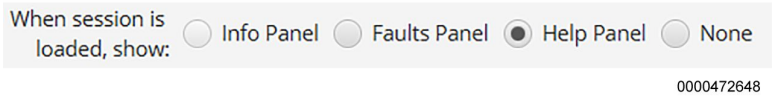


Figure 122 Show Panel When Session is Opened

Select which panel will be shown when a session is opened.

Create New Group

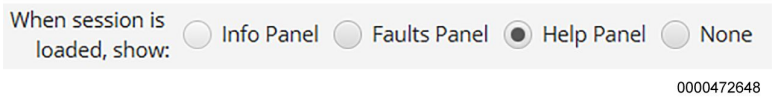


Figure 123 Create New Group

Groups are signals or Parameters seen in a session. Add a new group by selecting **Create**.

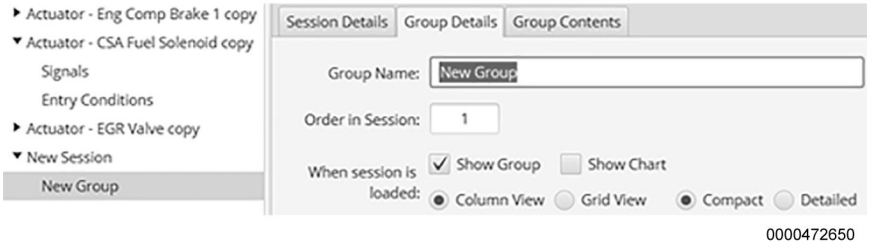
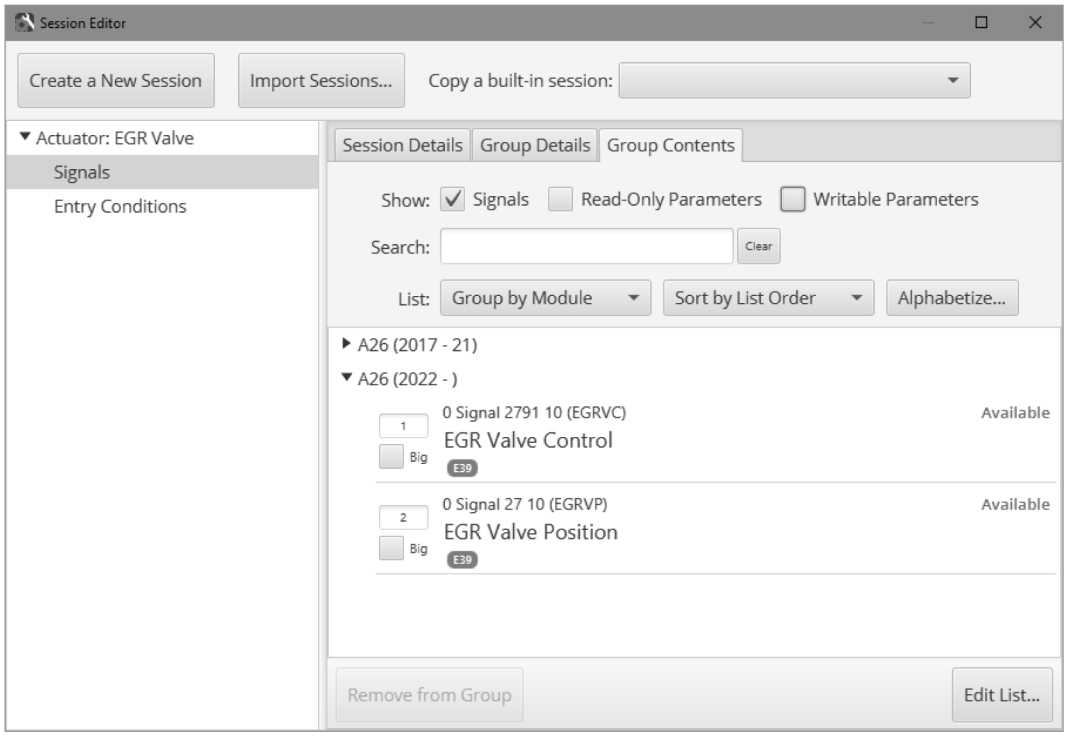


Figure 124 Add New Group

1. Select **New Group**.
2. Enter a name for the group.
3. Select the order position of the new group.
4. Select how the new group should be displayed.

5. Select **Group Contents** to add signals or parameters within a group.



0000477918

Figure 125 Group Contents

6. Select **Edit List**, located in lower right corner, to add signals or parameters to the group.

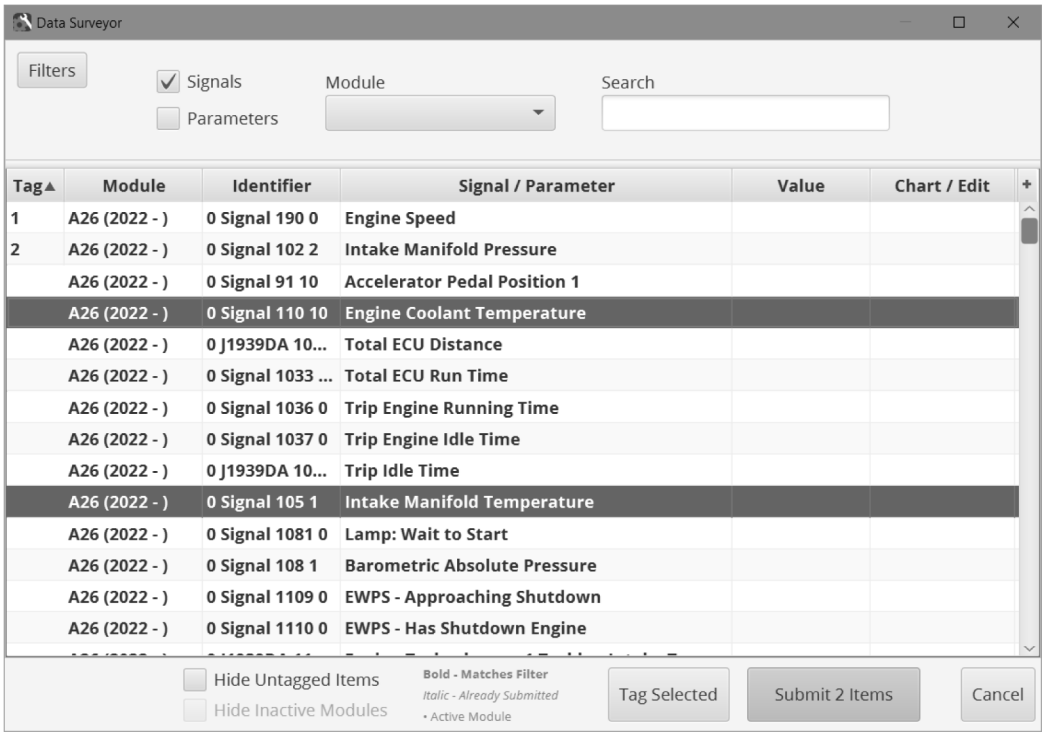


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Figure 126 Library for All Signals

NOTE – To untag the selected signals, select Untag Selected to make a new group.

7. Select signals from list, hold **Ctrl**, and right-click to choose multiple signals.
8. Select **Tag Selected** to attach to a group.
9. Select **Submit** to complete your request.

Module & Data Recording

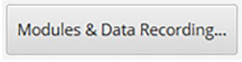

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Figure 127 Module and Data Recording

This offers added data to be included in the session recording file.

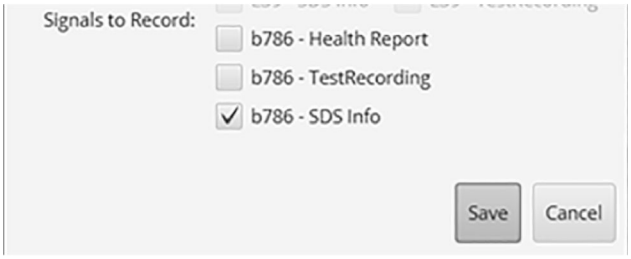

Figure 128 Signals to Record

Data Item	Description
Health Report	Saves health report data to recording file.
TestRecording	Saves all signals to recording file.
SDS Info	Saves all vehicle panel information to recording file.

Edit Help Text

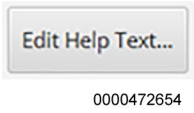

Figure 129 Edit Help Text

Opens a text editor for the Help Panel.

SIMULATION MODE

Simulation mode will show all tests, procedures, signals, and parameters that are available for the simulated mode.

Menu Section

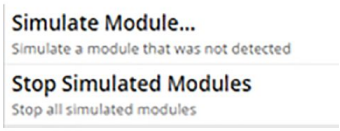

Figure 130 Simulate Mode

1. To start simulation, go to **Menu > Settings > Modules** and select **Simulate Module**.
2. A popup screen displays a list of available simulations.

NOTE – The interface cable will turn off communication while running the simulation.

3. Select the relevant engine model and select **OK**.
4. To return tool to normal operation select **Stop Simulation**.

CAN TRAFFIC LOGS

This feature allows the user to capture, view, and export CAN traffic logs.

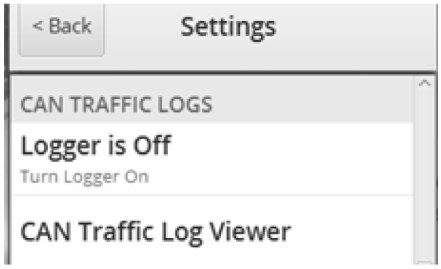

Figure 131 CAN Traffic Logs

Open CAN Traffic Log Viewer

1. Go to **Menu > Settings > CAN Traffic Logs**.
2. Select **CAN Traffic Log Viewer**.

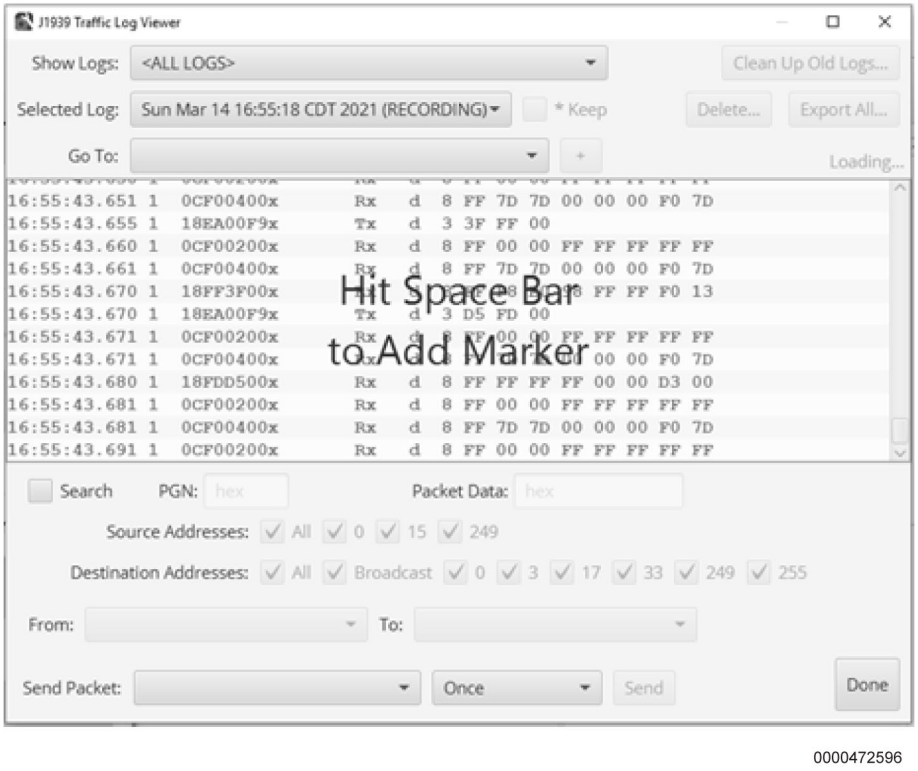

Figure 132 CAN Traffic Log Viewer

3. Turn Logger ON / OFF.

NOTE – Logger will remain ON until you turn it OFF. Best practice is to open viewer, turn Logger ON, capture data, and turn Logger OFF.

Add Markers

You can add markers to the data using the **space bar** on the keyboard.

1. With Logger turned ON, move pointer into Traffic area and select a line to highlight signal.

   Press **space bar** to mark a spot in the data.

2. Repeat Steps 1 and 2 as needed.

View Logs

To view the logs for a specific VIN, select that VIN from the list.

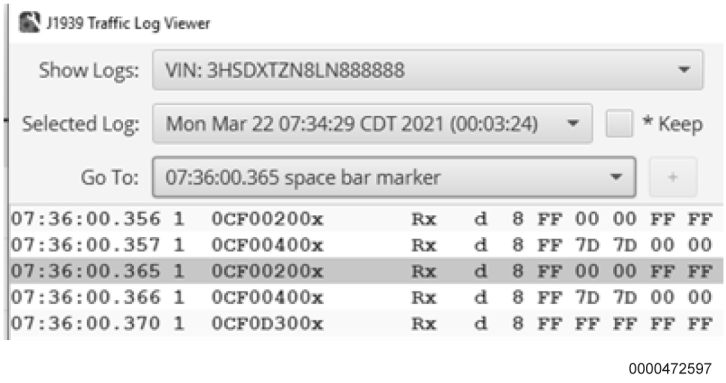

Figure 133 Show Logs

Selected Log

Select the data and time from the pre-selected log.

Go To

Locates the marker you placed in the log.

CAN Log Managemenrt

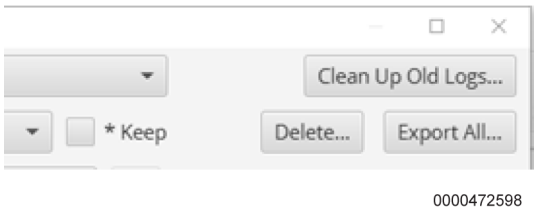

Figure 134 CAN Log Management

Clean Up Old Logs

Uploads the captured logs to the server.

Export All

Exports the selected log.

Keep

Saves the selected log for as long as it's marked **Keep**.

Search

Allows you to add filters regarding what to search for in the captured log.

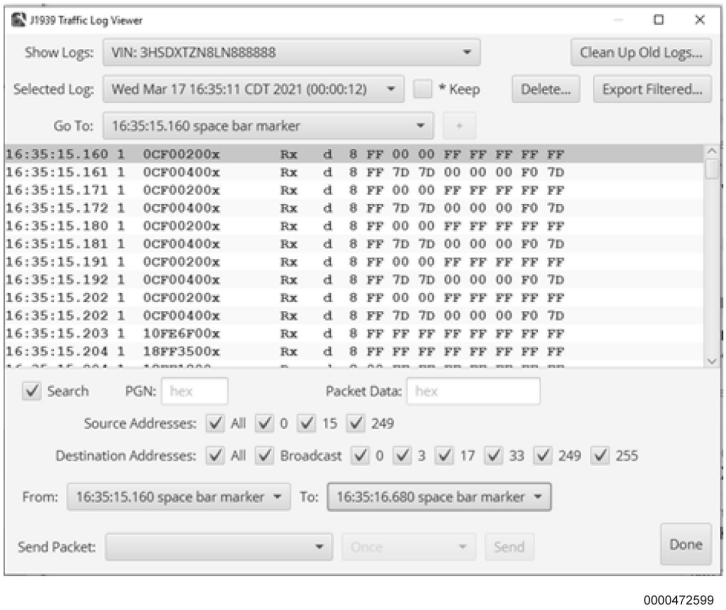

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Figure 135 Search

Use the filters in the search area to pinpoint the desired captured data. Select **Export Filtered** to save the file.