USER GUIDE

NavKal™ (Dealer Version)

Navistar, Inc.

2701 Navistar Drive, Lisle, IL 60532 USA

TABLE OF CONTENTS

NAVKAL™ ENGINE CONTROL MODULE (ECM) PROGRAMMING SOFTWARE	1
INTRODUCTION	1
ACRONYMS	1
GETTING STARTED.	2
INSTALLING THE NAVKAL™ SOFTWARE	
	2
SOFTWARE UPDATES	6
VEHICLE CONNECTION	10
DIAGNOSTIC INTERFACE CABLE INFORMATION	10
INTERFACE DEVICE SELECTION	10
CONNECTING SOFTWARE	12
NAVKAL [™] SOFTWARE	13
USING SOFTWARE	13
FEATURES	14
Vehicle Information Window	14
Screen Prompts	15
Programming Tip	16
Sniffer Tab and Datalink Traffic Tab	17
Diagnostic Trouble Codes (DTC) Window	18
Campaigns Tab - J1939	19
Campaigns Tab - J1708	21
Parameter Upgrades Tab	23
Blank Module Flashing Tab	25
Select Engine Window	26
Select Blank Modules Window	27
Process Requests Tab	28
Module History Tab.	31
SERVICE MESSAGES	33
DIAGNOSTIC TROUBLE CODES	34
DTC TAB	34
DTC IDENTIFICATION	34
DTC TYPE	35
VIEWING FREEZE FRAME DATA	35
CLEARING DTCS	35

i

Table 1 Summary of Changes

Section	Description	Revision Number
None (before Introduction)	Added contact information	2
	Added information on Installing NavKal™	2
Getting Started	Added note about Internet connection requirements for software updates	2
	Updated note on firewall configuration	3
Vehicle Connection	Updated list of supported interface cables and added steps for device selection	2
NavKal™Software	Added information on Programming Tip window and Module History tab	2
	Added and revised several notes	2
Getting Started	Updated note regarding DNS addresses in installation section	3
NavKal [™] Software	Added J1707 and J1939 Campaigns tabs	4

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 block wheels 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.
- Protect your eyes.
- Do not expose batteries to flames or sparks.
- Do not smoke in workplace.

CONTACT INFORMATION

If you have any questions about NavKal™, see the contact Information below.

• Dealers: Please open an iKNOw case file.

• Customers: Pleased email psc@navistar.com

• Phone: (800) 355–0088

NAVKAL™ ENGINE CONTROL MODULE (ECM) PROGRAMMING SOFTWARE

NOTE – This section contains a brief overview of NavKal™ calibration software and was current at the time of publication. Due to the automatic updating function in NavKal™, screens and functions may differ from this manual.

INTRODUCTION

NOTE – To diagnose a specific engine control system failure, always refer to the diagnostic manual for the system being serviced.

NavKal™ calibration software provides the capability to:

- View available updates.
- · Program blank modules.
- Update calibrations, parameters, and horsepower.
- Display and clear active and previously active Diagnostic Trouble Codes (DTCs).
- View and print Programming Verification Code (PVC).
- Detect active modules on various vehicle networks and easily identify communication problems.

ACRONYMS

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

- ACM Aftertreatment Control Module
- DPF Diesel Particulate Filter
- DTC Diagnostic Trouble Code
- · ECM Engine Control Module
- ESN Engine Serial Number
- EST Electronic Service Tool
- FMI Failure Mode Indicator
- KOEO Key ON, Engine OFF
- SPN Suspect Parameter Number
- DCU Doser Control Unit

GETTING STARTED

INSTALLING THE NAVKAL™ SOFTWARE

It is strongly recommended that all Terminate and Stay Resident (TSR) programs like the Quicktime® program, CD player programs, or Pocket PC programs be terminated prior to loading or starting the NavKal™ software. These programs interfere with the efficient operation of the NavKal™ program and can cause errors reading and programming the ESC / BC.

To install the NavKal™ software:

- 1. Prior to installation, a NavKal[™] product key must be obtained for each computer on which the NavKal[™] software is to be installed.
- 2. Using the web browser of your choice, navigate to the NavKal[™] page on Navistar's service software site:
 - hhttp://www.navistarservicesoftware.com/index.php/navkal/
- 3. Click the DOWNLOAD button to download the NavKal [™] software.
- 4. When the file has finished downloading, click NAVKAL SETUP.EXT to run the software and begin installation. The first page of the Setup Wizard appears.



0000428109

Figure 1 Setup Wizard — Welcome Page

- 5. Click NEXT to continue.
- 6. Read through the License Agreement. When finished, click I AGREE to proceed with installation. When installation is complete, the final page of the wizard is displayed.



0000428111

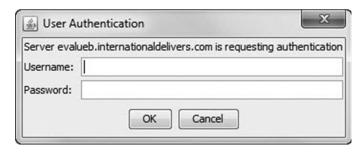
Figure 2 Setup Wizard — Competing NavKal Setup

7. Ensure that the RUN NAVKAL box is checked.

NOTE – The first time NavKal[™] is installed on a specific computer, you are prompted to enter their product key. If the product key box is blank, open an EZ-Tech[®] case file.

8. Click FINISH to launch the program.

IMPORTANT – User permissions are automatically granted during the first logon of the application.



0000410461

Figure 3 User Authentication Window

9. The User Authentication window appears (Figure 3). Enter your username and password and click OK.

NOTE - When you log in for the first time, the software will start and begin to update itself.

NOTE – The NavKal[™] program will not function until you have successfully logged in at least once while connected to the network. You may need to consult with the technical computer support staff if the NavKal[™] program cannot connect to the Navistar site. Error messages will be generated if connection to Navistar fails. Internet firewalls must be configured to allow two-way communication to the following Navistar host names:

- *.navistar.com
- *.internationaldelivers.com
- *.amazonaws.com
- *.cloudfront.net

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

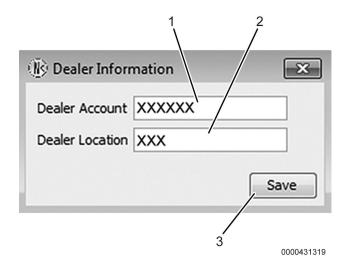
Installation Error Messages

The error messages that may appear during the installation process are self explanatory. Some sample messages are included in the table below:

Text
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 NavKal™ support page for assistance.
http://www.navistarservicesoftware.com/index.php/navkal/
You've exceeded the number of registrations allowed for this product. Please visit the NavKal [™] support page for assistance.
http://www.navistarservicesoftware.com/index.php/navkal/
An Internet connection to the NavKal™ 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 NavKal™ offline for 30 remaining days. If a connection to the NavKal™ Server cannot be established by then, your product will stop working.
On some computers, NavKal [™] has to be run in administrator mode. Follow these steps: 1. On the Windows desktop, right-click the NavKal [™] icon. 2. In the right-click menu, select OPEN FILE LOCATION. 3. Right-click NavKal.exe. 4. Click RUN AS ADMIN.
You have already activated the maximum number of usernames permitted by your license.

NOTE - Refer to http://www.navistarservicesoftware.com/index.php/800-codes/ for additional error codes.

Dealer Information



- 1. Dealer Account entry field
- 2. Dealer Location entry field

3. Save button

Figure 4 Dealer Information

When using NavKal[™] for the first time, the Dealer Information screen is automatically displayed (Figure 4).

Do the following:

- 1. Enter 6-digit Dealer Account number (Figure 4, Item 1)
- 2. Enter 3-digit Dealer Location number (Figure 4, Item 2).
- 3. Click SAVE (Figure 4, Item 3).



Figure 5 NavKal File Menu

If Dealer information has been previously entered and saved in NavKal™ (or any Navistar service application), NavKal™ will not prompt you to enter the information when you open the software.

Existing Dealer information can be updated:

- 1. Select UPDATE DEALER INFORMATION in the File menu (Figure 5, Item 1).
- 2. Update 6-digit Dealer Account number (Figure 4, Item 1)
- 3. Update 3-digit Dealer Location number (Figure 4, Item 2).
- 4. Click SAVE. (Figure 4, Item 3)

SOFTWARE UPDATES

NavKal[™] software provides automatic software updates directly from Navistar any time the tool is connected to the Internet. Upon starting the program, you may notice an update message that NavKal[™] will require a restart after updates have been completed. NavKal[™] software 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.

VEHICLE CONNECTION

DIAGNOSTIC INTERFACE CABLE INFORMATION

The following communication adapters have been verified with NavKal™ software:

- NEXIQ Technologies USB- Link[™], USB- Link[™] 2
- Noregon Systems, Inc. DLA+, DLA+ 2.0, DLA+ Wireless, DLA+ 2.0 Wireless
- Dearborn Group DPA4+, DPA5+

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

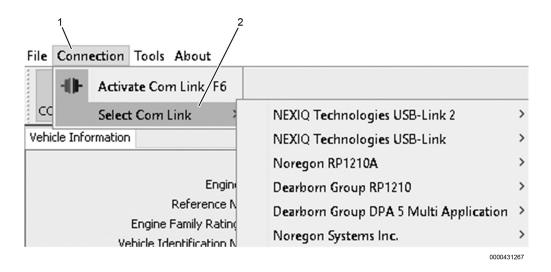


To prevent a malfunction of the NavKal[™] software, use only a USB cable to connect to the computer for programming. Do not use wireless or Bluetooth[®] connections for programming.

INTERFACE DEVICE SELECTION

NOTE – NavKal[™] software will auto connect to the vehicle without having you select the protocol when the following procedure is complete.

If NavKal[™] software fails to auto connect, use the following procedure:



1. Connection menu

2. SelectCom Link menu

Figure 6 Select Com Link

- Start NavKal[™] software.
- 2. In the Connection menu (Figure 6, Item 1), select SELECT COM LINK (Figure 6, Item 2).
- 3. Choose cable / interface device.
 - a. NEXIQ Technologies

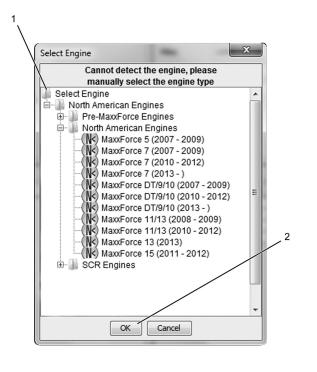
- USB-Link
 - J1708 All pre-Navistar® (pre 2007) electronic engines
 - J1939 All Navistar® engines (2007 present)
- USB-Link 2
 - J1708 All pre-Navistar® (pre 2007) electronic engines
 - J1939 All Navistar® engines (2007 present)

b. Noregon

- DLA+, DLA+ 2.0, DLA+ Wireless, DLA+ 2.0 Wireless
 - J1708 All pre-Navistar® (pre 2007) electronic engines.
 - J1939 All Navistar[®] engines (2007 present)
- c. Dearborn Group
 - DG DPA 4/4 Plus USB, USB, DPA5
 - J1708 All pre-Navistar® (pre 2007) electronic engines
 - J1939 All Navistar® engines (2007 present)

CONNECTING SOFTWARE

- 1. Key ON, Engine OFF.
- Using interface cable, connect EST to PC and vehicle's diagnostic connector.
- 3. Start the NavKal[™] software and select the appropriate interface device (refer to Interface Device Section). A detection process will begin and connect automatically.



1. Engine folder

2. OK button

0000333161

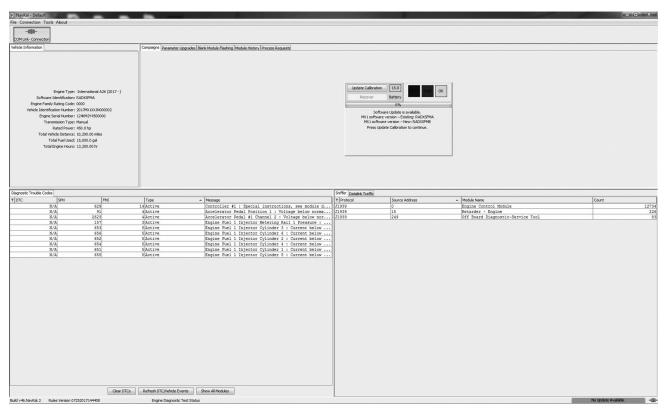
Figure 7 Engine Select

NOTE – If NavKal[™] software cannot detect the Engine Serial Number (ESN), then the engine may need to be selected.

4. In the File menu, open the SELECT ENGINE folder (Figure 7, Item 1). Then, select associated engine from pop-up box and click OK (Figure 7, Item 2).

NAVKAL™ SOFTWARE

USING SOFTWARE



0000428147

Figure 8 NavKal™ Main Screen

NavKal™ displays vehicle information once connection is made (Figure 8).

FEATURES

Default NavKal™ Panes

Vehicle Information Window



0000430777

Figure 9 Vehicle Information Window

The Vehicle Information Window (Figure 9) provides vehicle information for the connected vehicle. Displayed information includes items such as:

- Engine type
- Software ID
- Engine family rating code
- VIN

- ESN
- Transmission type
- Horsepower rating
- Total fuel

- Total hours
- Total miles

Screen Prompts



0000431268

Figure 10 Ignition Key ON



Figure 11 Ignition Key OFF

When updating calibration, changing parameters, or programming a blank module, NavKal[™] software will direct you when to perform a key cycle to complete the update or change process. Follow screen prompts for key cycles . NavKal[™] screen prompts will become highlighted YELLOW for Key ON (Figure 10) or RED for Key OFF (Figure 11) when key cycle is required.

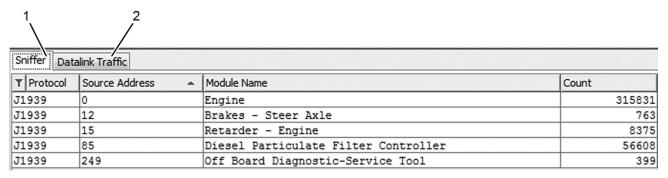
Programming Tip



Figure 12 Programming Tip

To reduce programming issues, follow PROGRAMMING TIP (Figure 12) instructions to remove extra modules from the datalink.

Sniffer Tab and Datalink Traffic Tab



0000431386

1. Sniffer tab

2. Datalink Traffic tab

Figure 13 Sniffer Tab and Datalink Traffic Tab

The SNIFFER tab (Figure 13, Item 1) provides real-time monitoring of the network activity for each module on the various data links. This tab is used to identify if the individual modules are present and communicating on the vehicle networks.

The DATALINK TRAFFIC tab (Figure 13, Item 2) displays messages that are on the datalink in use.

Diagnostic Trouble Codes (DTC) Window

N/A 4765 3 Active DOCIT signal Out of Range HIGH Engine N/A 4765 4 Active DOCIT signal Out of Range LOW Engine 0 4765 2 Active DOCIT signal erratic, intermittent, or inc Engine N/A 3242 3 Active DPFIT signal Out of Range HIGH Engine N/A 3242 4 Active DPFIT signal Out of Range LOW Engine 0 3242 2 Active DPFIT signal erratic, intermittent, or inc Engine N/A 3246 3 Active DPFOT signal erratic, intermittent, or inc Engine N/A 3246 4 Active DPFOT signal Out of Range HIGH Engine N/A 3246 4 Active DPFOT signal Out of Range LOW Engine 0 3246 2 Active DPFOT signal erratic, intermittent, or inc Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	DTC	SPN	FMI	Type -	Message	Module
N/A 4765 4 Active DOCIT signal Out of Range LOW Engine 0 4765 2 Active DOCIT signal erratic, intermittent, or inc Engine N/A 3242 3 Active DPFIT signal Out of Range HIGH Engine N/A 3242 4 Active DPFIT signal Out of Range LOW Engine 0 3242 2 Active DPFIT signal erratic, intermittent, or inc Engine N/A 3246 3 Active DPFOT signal Out of Range HIGH Engine N/A 3246 4 Active DPFOT signal Out of Range LOW Engine N/A 3246 4 Active DPFOT signal Out of Range LOW Engine 0 3246 2 Active DPFOT signal erratic, intermittent, or inc Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	N/A	655	5	Active	Injector 5 open load/circuit	Engine Co.
0 4765 2 Active DOCIT signal erratic, intermittent, or inc Engine N/A 3242 3 Active DPFIT signal Out of Range HIGH Engine N/A 3242 4 Active DPFIT signal Out of Range LOW Engine 0 3242 2 Active DPFIT signal erratic, intermittent, or inc Engine N/A 3246 3 Active DPFOT signal Out of Range HIGH Engine N/A 3246 4 Active DPFOT signal Out of Range HIGH Engine N/A 3246 2 Active DPFOT signal Out of Range LOW Engine 0 3246 2 Active DPFOT signal erratic, intermittent, or inc Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	N/A	4765	3	Active	DOCIT signal Out of Range HIGH	Engine Co.
N/A 3242 3 Active DPFIT signal Out of Range HIGH Engine N/A 3242 4 Active DPFIT signal Out of Range LOW Engine 0 3242 2 Active DPFIT signal erratic, intermittent, or inc Engine N/A 3246 3 Active DPFOT signal Out of Range HIGH Engine N/A 3246 4 Active DPFOT signal Out of Range LOW Engine 0 3246 2 Active DPFOT signal out of Range LOW Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	N/A	4765	4	Active	DOCIT signal Out of Range LOW	Engine Co.
N/A 3242 4 Active DPFIT signal Out of Range LOW Engine 0 3242 2 Active DPFIT signal erratic, intermittent, or inc Engine N/A 3246 3 Active DPFOT signal Out of Range HIGH Engine N/A 3246 4 Active DPFOT signal Out of Range LOW Engine 0 3246 2 Active DPFOT signal erratic, intermittent, or inc Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	0	4765	2	Active	DOCIT signal erratic, intermittent, or inc	Engine Co.
0 3242 2 Active DPFIT signal erratic, intermittent, or inc Engine N/A 3246 3 Active DPFOT signal Out of Range HIGH Engine N/A 3246 4 Active DPFOT signal Out of Range LOW Engine 0 3246 2 Active DPFOT signal erratic, intermittent, or inc Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	N/A	3242	3	Active	DPFIT signal Out of Range HIGH	Engine Co.
N/A 3246 3 Active DPFOT signal Out of Range HIGH Engine N/A 3246 4 Active DPFOT signal Out of Range LOW Engine 0 3246 2 Active DPFOT signal erratic, intermittent, or inc Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	N/A	3242	4	Active	DPFIT signal Out of Range LOW	Engine Co.
N/A 3246 4 Active DPFOT signal Out of Range LOW Engine 0 3246 2 Active DPFOT signal erratic, intermittent, or inc Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	0	3242	2	Active	DPFIT signal erratic, intermittent, or inc	Engine Co.
0 3246 2 Active DPFOT signal erratic, intermittent, or inc Engine N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	N/A	3246	3	Active	DPFOT signal Out of Range HIGH	Engine Co.
N/A 563 9 Previously Anti-Lock Braking (ABS) Active Transmi	N/A	3246	4	Active	DPFOT signal Out of Range LOW	Engine Co.
	0	3246	2	Active	DPFOT signal erratic, intermittent, or inc	Engine Co.
N/A 639 14 Previously Drivetrain Message Timeout Transmi	N/A	563	9	Previously	Anti-Lock Braking (ABS) Active	Transmiss.
	N/A	639	14	Previously	Drivetrain Message Timeout	Transmiss.

0000429744

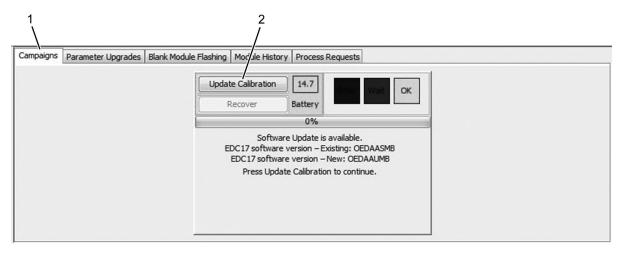
Figure 14 DTC Window

The DTC window (Figure 14) displays all active and previously active DTCs from all modules on the Datalink. DTCs can also be cleared in this window. The DTC window is displayed in all of the software default sessions and will allow you to:

- · Display active DTCs
- Display pending DTCs
- Clear DTCs
- · Refresh DTC / vehicle events

Campaigns Tab - J1939

All Navistar Engines (2007 to Present)



0000428116

1. Campaigns tab

2. Update Calibration button

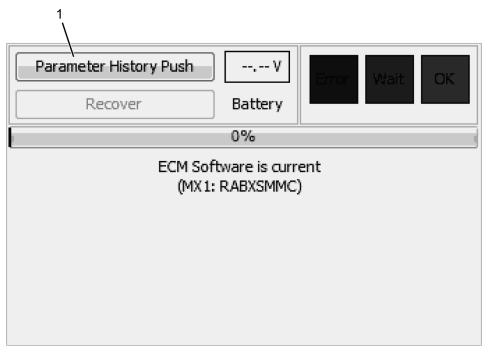
Figure 15 Campaigns Tab

NOTE - Connect the Midtronics SMART Charger before programming the ECM.

1. Select the CAMPAIGNS tab (Figure 15, Item 1). This tab indicates if calibration update is available and displays the existing and new calibration to program ECM.

This tab also monitors battery voltage and displays the battery charge state in color:

- RED = 9.0 10.4 volts
- YELLOW = 10.5 12.4 volts
- GREEN = 12.5 volts or higher



0000466795

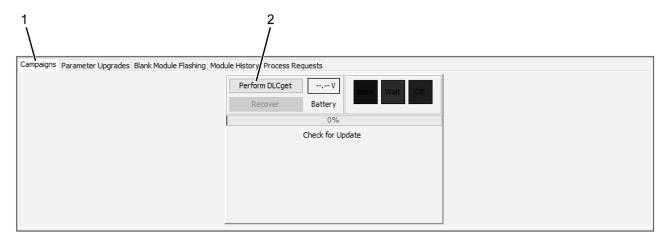
1. Parameter History Push button

Figure 16 Parameter History Push Button

- 2. PARAMETER HISTORY PUSH button (Figure 16, Item 1) allows the user to update the Navistar database with any parameter changes done in Navistar® Engine Diagnostics (NED).
- 3. To begin update of ECM, click UPDATE CALIBRATION (Figure 15, Item 2) and follow highlighted screen prompts for key cycles.

Campaigns Tab - J1708

All Navistar Electronics Tab (pre-2007)



0000466796

1. Campaigns Tab

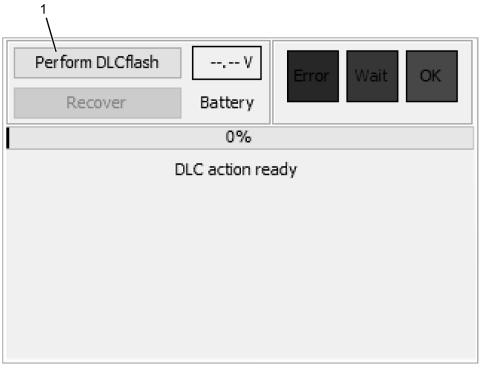
2. Perform DLCget button

Figure 17 Campaigns Tab

- 1. Select the CAMPAIGNS tab (Figure 17, Item 1). This tab:
 - Allows user to perform programming actions on J1708 engines.
 - Allows user to update the Navistar database with any parameter changes done in ServiceMaxx® J1708.

NOTE – Use the mouse to select the command that needs to be performed when prompted by DLCget or DLCflash.

2. To begin calibration, click PERFORM DLCGE (Figure 17, Item 2)) and follow highlighted screen prompts for key cycles.



0000466794

1. Perform DLCflash button

Figure 18 Perform DLCflash

3. After the file has downloaded, click PERFORM DLCFLASH (Figure 18, Item 1)) and follow highlighted screen prompts for key cycles.

Parameter Upgrades Tab

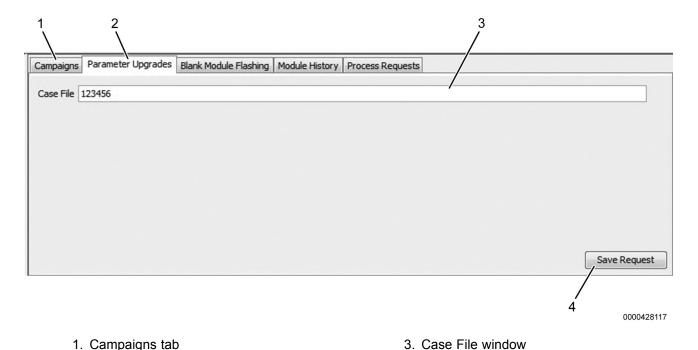


Figure 19 Parameter Upgrade Case File

4. Save Request button

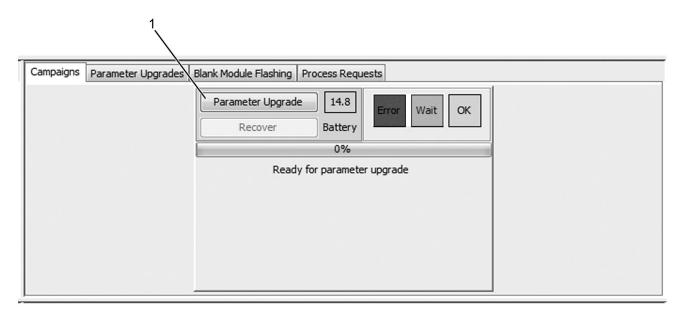
NOTE – International® or IC Bus® dealers must complete a case file prior to submitting an upgrade request. Customers must contact Tech Services for parameter changes. Visit the NavKal™ webpage for more information: http://www.navistarservicesoftware.com/index.php/navkal/

NOTE - NavKal™ must be connected to the Internet to complete the parameter upgrade process.

1. Select the PARAMETER UPGRADES tab (Figure 19, Item 2).

2. Parameter Upgrades tab

- 2. Enter appropriate case file number into Case File window (Figure 19, Item 3).
- 3. Click SAVE REQUEST (Figure 19, Item 4) and follow highlighted screen prompts for key cycles. When the request is saved, select the PROCESS REQUESTS tab.
- 4. Select the CAMPAIGNS tab (Figure 19, Item 1) to complete programming.



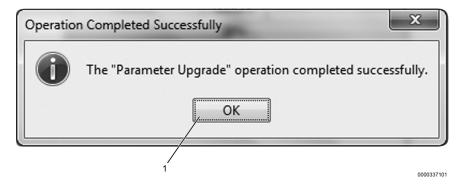
0000337181

1. Parameter Upgrade button

Figure 20 Parameter Upgrade

NOTE - Process request task must be performed before next step.

5. Click PARAMETER UPGRADE (Figure 20, Item 1).



1. OK button

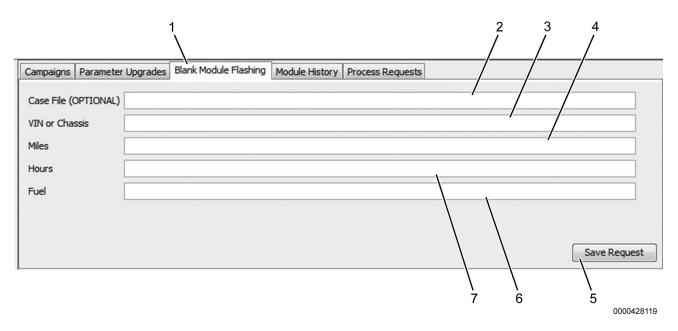
Figure 21 Parameter Upgrade Operation Complete

6. NavKal™ will verify that the upgrade has been completed successfully. Click OK (Figure 21, Item 1).

Blank Module Flashing Tab

Allows technician to request programming a blank module.

NOTE – NavKal™ must be connected to the Internet to complete the blank module programming process.



- 1. Blank Module Flashing tab
- 2. Case File
- 3. VIN or Chassis
- 4. Miles

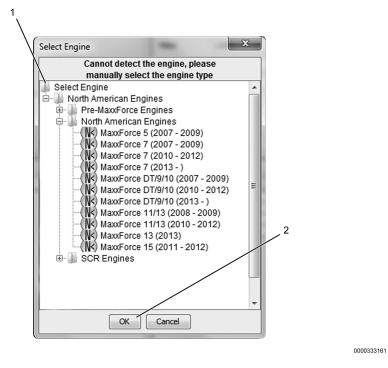
- 5. Hours
- 6. Fuel
- 7. Save Request button

Figure 22 Blank Module Flashing

- 1. Select the BLANK MODULE FLASHING tab (Figure 22, Item 1).
- 2. Input VIN or Chassis number (Figure 22, Item 3).
- 3. Input vehicle Miles (Figure 22, Item 4).
- 4. Input vehicle Hours (Figure 22, Item 7).
- 5. Input vehicle Fuel (Figure 22, Item 6).
- 6. Click SAVE REQUEST (Figure 22, Item 5) and follow highlighted screen prompts for key cycles.

NOTE – Vehicle miles, hours, and fuel information must be entered correctly or the Process Request may fail.

Select Engine Window



1. Select Engine

2. OK button

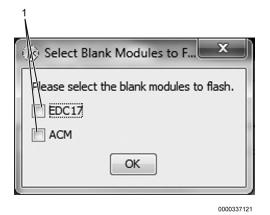
Figure 23 Engine Platform

- 1. Select associated engine platform located in the SELECT ENGINE folder (Figure 23, Item 1).
- 2. Click OK (Figure 23, Item 2).

Select Blank Modules Window

NOTE - All modules associated with the engine platform selection will be shown.

From this window, the technician will select the replacement module to be flashed.



1. Select module checkbox (2)

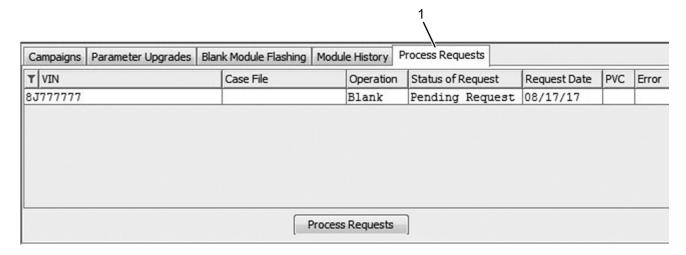
Figure 24 Blank Module Selection

- 1. Check the BLANK MODULE boxes (Figure 24, Item 1) for the modules you want to flash.
- 2. Follow highlighted screen prompts for key cycles.

Process Requests Tab

From the Process Requests tab, NavKal™ will upload the designated files to process the request. File upload status will be confirmed.

NOTE - NavKal™ must be connected to the Internet to complete the process request.

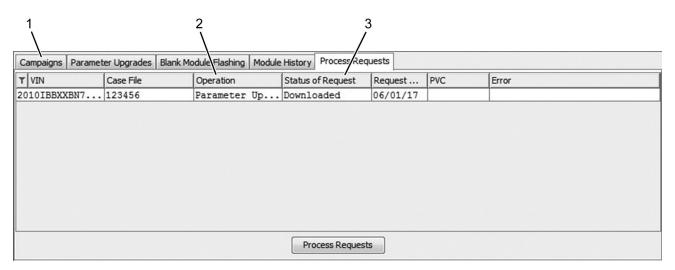


0000428120

1. Process Requests tab

Figure 25 Pending Requests

1. Select the PROCESS REQUESTS tab (Figure 25, Item 1).



0000428121

- 1. Campaigns tab
- 2. Operation display

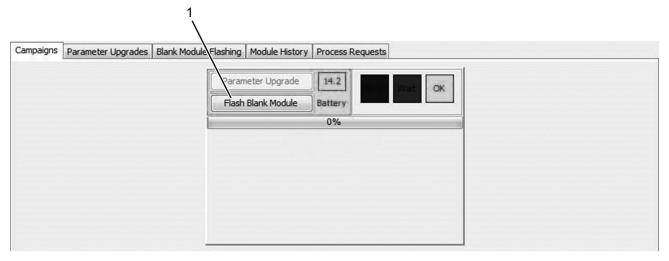
3. Status of Request display

Figure 26 Process Request Downloaded

 After the PROCESS REQUESTS task is complete, the OPERATION field (Figure 26, Item 2) will display PARAMETER UPGRADED and the STATUS OF REQUEST field (Figure 26, Item 3) will display DOWNLOADED.

NOTE - NavKal™ will verify that upgrade has been completed successfully.

3. Select the CAMPAIGNS tab (Figure 26, Item 1) to complete the update.

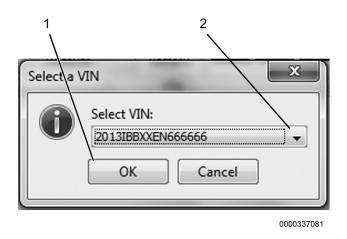


0000428123

1. Flash Blank Module button

Figure 27 Flash Blank Module

4. Click FLASH BLANK MODULE (Figure 27, Item 1) and follow screen prompts for key cycles.



1. OK button

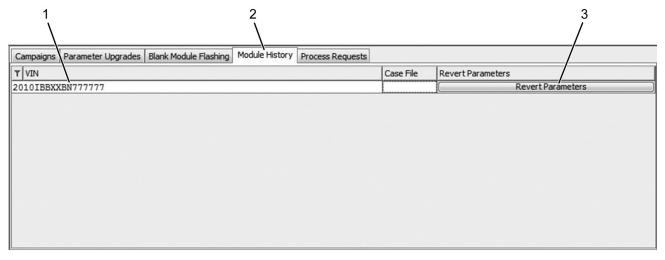
2. VIN selection

Figure 28 Associated VIN

5. In the Select a VIN window, select the associated VIN (Figure 28, Item 2) and click OK (Figure 28, Item 1). Follow screen prompts for key cycles.

Module History Tab

The Module History tab provides the option to revert parameters to the original programmed state if issues exist after the Calibration Update.



0000428124

- 1. VIN
- 2. Module History tab

1. Yes button

3. Revert Parameters button

Figure 29 Module History

- 1. In Module History tab (Figure 29, Item 2), identify VIN (Figure 29, Item 1) with incorrect parameters.
- 2. Click REVERT PARAMETERS (Figure 29, Item 3).
- 3. When file is done loading, click PROGRAM ENGINE to revert parameters to original settings.

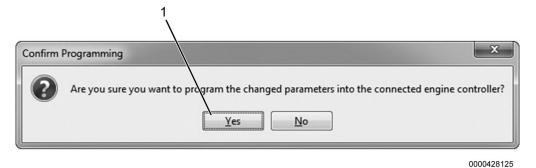
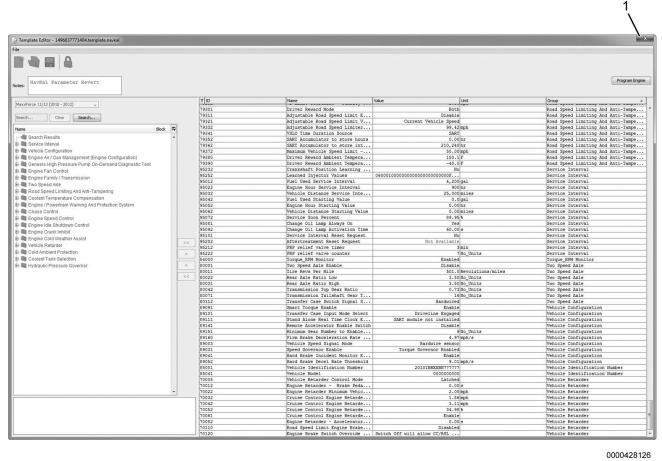


Figure 30 Confirm Programming

4. Click YES (Figure 30, Item 1) to confirm programming.



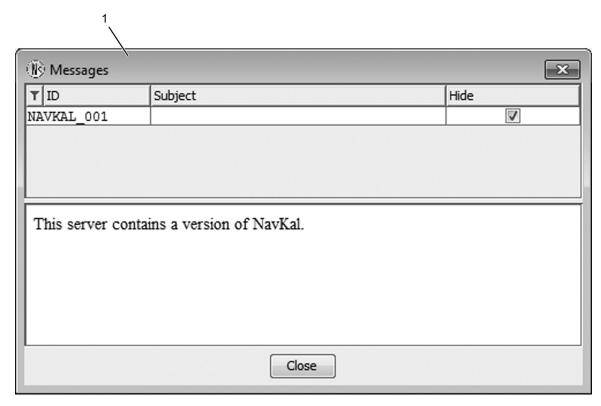
0000428126

1. X (Exit) button

Figure 31 Template Editor

Click the X in the upper right corner of the window (Figure 31, Item 1) to close the Template Editor window when programming is complete.

SERVICE MESSAGES



0000333281

1. Messages window

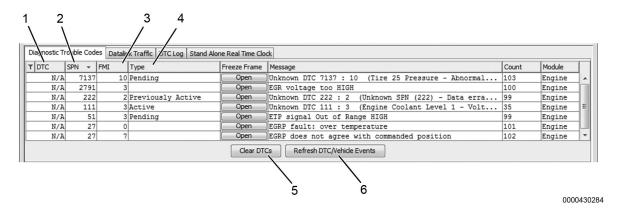
Figure 32 NavKal™ Service Messages

After an update, important messages about this updated version are displayed in the Messages window (Figure 32, Item 1). To disable a previous message and prevent it from being displayed in the future, check the box in the HIDE column for individual messages to be disabled.

DIAGNOSTIC TROUBLE CODES

DTC TAB

DTCs can be viewed and cleared from any session menu using the DTC tab.



- 1. Diagnostic Trouble Code (DTC) column (pre-2010)
- Suspect Parameter Number (SPN) column
- Failure Mode Indicator (FMI) column

- 4. Type column (Active / Previously Active / Pending)
- 5. Clear DTCs button
- Refresh DTC/Vehicle Events button

Figure 33 DTC Tab

DTC IDENTIFICATION

DTC identification is accomplished using two fault code identifiers. These two identifiers, known as the SPN and the FMI, are displayed in the DTC Window.

Identifier Type	Description	
Suspect Parameter Number (SPN)	The SPN identifies the individual component causing the DTC.	
Failure Mode Indicator (FMI)	The FMI identifies the fault or condition effecting the individual component.	
Diagnostic Trouble Code (DTC)	The DTC is a 3-digit or 4-digit number used to identify DTCs. This 3-digit or 4-digit number is only used on pre-2010 engines.	

NOTE – 2010 model year vehicles no longer utilize DTC identification by number. DTCs are now identified using the SPN and FMI only.

DTC TYPE

DTC Type	Description
Active	Faults that are currently present.
Previously Active	Historical faults that may be set by intermittent conditions, or by an operating condition which is not currently present.
Pending	Faults that occurred on the first drive cycle. Such faults become Active if they are detected again on the second drive cycle.
Healing	Healing DTCs are previously active faults that were not detected on a subsequent drive cycle. If the same fault is not detected for three consecutive drive cycles, it becomes Previously Active. If it is detected again within three drive cycles, it returns to the Active state.

VIEWING FREEZE FRAME DATA

Freeze frame data is a snapshot of the engine operating condition at the time the fault was detected. To view freeze frame data for a particular fault, click the button in the Freeze Frame column.

CLEARING DTCS

All inactive DTCs can be cleared from the ECM using the following procedure.

- 1. Click CLEAR DTCS.
- 2. Select modules to clear DTCs from.
- 3. Click OK.
- 4. Cycle the ignition switch.