This user guide provides you with instructions on setting up and operating NGS PC.

In addition to the printed version of PATS Programming and CAN VIM Charts, they are also included in the NGS PC Help file. The documents are in Adobe® Portable Document Format (PDF) versions and requires Adobe® Acrobat® Reader version 6.0 or higher.

This guide can also be accessed through the Help tab located in the bottom left area of the NGS PC application.

In addition to the bookmarks to the left of the screen, links are provided for your convenience throughout this manual. They are red in color and underlined for easy identification. You can also use the listings in the table of contents as links.

**Graphics**
The graphics included in this manual are intended for reference only and may vary slightly from the actual item.

⚠️ **IMPORTANT**
*Information in this guide is subject to change without notice.*

*Please check our website at [www.hickok-inc.com](http://www.hickok-inc.com) for any possible changes that were made to this guide after printing.*

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Before using this equipment, carefully read, understand and follow instructions and safety messages on equipment and in this guide.

The guide cannot anticipate or provide advice and cautions for all situations encountered by technicians. With this in mind, always follow and refer to the manuals provided by the manufacturer or the vehicle or equipment being tested or used for all information and testing procedures whenever diagnosing, repairing or operating such vehicle or equipment.

Failure to follow the instructions, cautions and warnings provided here as well as those provided by the vehicle and equipment manufacturers can result in fire, explosion, bodily injury and property damage.

In addition to the information listed below, additional warnings and cautions are listed throughout the guide. Please read them carefully.

**Fuel vapors are toxic and explosive, which can cause severe injury or death.**

- Use proper ventilation to avoid breathing fuel vapors.
- Minimize contact with the skin with the use of gloves (such as nitrile gloves) when there is possibility of getting methanol fuel on your hands.
- If the skin is directly exposed, wash the area immediately and change any clothes that have become wet with fuel.
- Always wear approved safety glasses when testing. Should fuel get into eyes, flush eyes immediately with water and consult your physician.

**Vehicles emit flammable vapors which can ignite.**

- Keep flames, sparks, cigarettes and other ignition sources away from the vehicle at all times.
- In case of fire, never use water to fight flames caused by methanol or methanol blended gasoline. This will cause the flames to spread instead of extinguishing them.
Safety Information

- Use a dry chemical extinguisher to fight flames (preferably one marked ABC, though BC is acceptable). A foam extinguisher is acceptable only if it is ARF grade, which is resistant to alcohol.

**Before beginning any tests, make sure the test environment is safe and the vehicle meets these testing conditions:**

- Test area should be well ventilated.
- Vehicle should be in park.
- Wheels should be blocked.
- Engine should be at normal operating temperature.
- Vehicle should have normal exhaust flow.
- Keep all tester cables clear of exhaust manifolds and radiator fan blades.
- Use caution when testing on a vehicle while the engine is running (surfaces may become hot, electric cooling fans may turn on unexpectedly, etc.)
Installing the Software

This section covers installing the NGS PC Software onto your computer.

Requirements
Before installing the NGS PC application, you will need to have the following software installed on your computer if your operating system is Windows® XP or earlier.

Note: If you are running the Windows® Vista® operating system, it is important that you visit our website for current support information before installing any software.

• Microsoft® Internet Explorer 6 (with service pack 1 or higher)
• Microsoft® Windows® Installer 2.0 or higher
• Microsoft® .Net Framework 2.0 or higher (included on the CD)
• Microsoft® .Net Framework 2.0 or higher service packs (recommended)

For detailed information on the above software, please contact Microsoft® or visit their website at www.microsoft.com.

Installing Microsoft® .Net Framework 2.0
Note: This does not apply to computers running the Windows® Vista® operating system.

1. Determine if you need to install Microsoft® Windows® Installer 2.0 or higher on to your computer:

   • Click Start
   • Click Control Panel
   • Double click Add/Remove Programs

   Scroll through the list of applications:
   If Windows® Installer 2.0 (or higher) is listed—proceed to the next step in this procedure.
   If the program is not listed, or it is an earlier version—you need to install an updated version of the program (downloadable from www.microsoft.com) before proceeding.
Installing the Software

2. Determine if you need to install Microsoft® .Net Framework 2.0 on to your computer:
   - Click **Start**
   - Click **Control Panel**
   - Double-click **Add/Remove Programs**
   - Scroll through the list of applications:
     If .Net Framework 2.0 is listed—proceed to **Installing the NGS Upgrade Utility Program**.
     If the program is not listed, or it is an earlier version—you need to install the updated version (included on the CD) of the program. Please continue to the next step.

3. Insert the NGS PC application CD in to your computer’s CD-ROM drive. Note: If auto installation of the NGS PC application starts, simply cancel out of the installation and proceed to the next step.

4. Choose **RUN** from the Start menu.

5. Choose **Browse**.

6. In the browse box, select your CD-ROM drive.

7. Double click the **DOTNET** folder.

8. Double click **dotnetfx.exe**.

9. Click **OK**.

10. Follow the on-screen instructions to complete the installation.
Installing the Software

Installing the NGS PC Application

If Autorun is Enabled on Your PC
1. Insert (or re-insert) the NGS PC CD in to your computer’s CD-ROM drive. The installation should begin automatically.

If Autorun is Not Enabled on Your PC
1. Insert the NGS PC CD in to your computer’s CD-ROM drive.
2. Choose RUN from the Start menu.
3. Choose Browse.
4. In the browse box, select your CD-ROM drive.
5. Double click the NGS PC folder.
6. Double click setup.exe.
7. Click OK.
8. Follow the on-screen instructions to complete the installation.

Optional Software
The NGS PC Help Tab includes a version of this User Guide and the PATS Programming and CAN VIM Charts. They are in Adobe® Portable Document Format (PDF) and require Adobe® Reader® software version 6.0 or higher for viewing.

If you need to install this software you can download it from Adobe’s web site at www.adobe.com.

⚠ IMPORTANT
If you are running the Windows® Vista® operating system, it is important that you visit our web site at www.hickok-inc.com for current support information before installing any software.
Getting Started

This section describes the basic steps required to use NGS PC. For detailed information on each test, please refer to their individual sections.

Using the UMC Adapter
NGS PC now has support for Ford UBP modules. This support requires using the new UMC Adapter that is offered as an additional add on adapter if you have previously purchased your kit. The UMC Adapter is included with all new purchases of the NGS PC kit.

Connecting the UMC Adapter
The UMC adapter replaces the Medium CAN adapter. Simply attach it to the end of the NGS PC OBDII cable (Vehicle Interface Cable). Once the adapter is connected to the cable, there is no need to ever remove it. Therefore, you will no longer need to use the Medium CAN adapter.

About the UMC Adapter LEDs
When NGS PC starts communicating with the vehicle, the blue LED corresponding to the specific link will begin to blink as it sends and receives data from the vehicle.

The UMC adapter can also be used as a diagnostic link monitor with or without NGS PC. When connected to the vehicle and prior to selecting GO or GET DATA (if running NGS PC) the blue LED(s) corresponding to each specific link will blink at varying rates depending on the speed of the data communicating between modules.

This will let you know that you have a good connection and which links are active on the vehicle. When NGS PC is running, only one blue LED will show activity associated with NGS PC and the selected module communication link. The other LEDs will not show activity.

Connecting with the UMC Adapter
The UMC adapter eliminates the need to use the Medium Speed CAN cable. Once the adapter is connected to the cable, there is no need to ever remove it.
Using NGS PC Without the UMC Adapter

**IMPORTANT!** If you do not have the UMC adapter, you will still need your Medium CAN adapter for Medium CAN modules.

If you update your software and do not have the UMC adapter, the following message is displayed the first three times you launch your software:

![Message Box](image)

After the third launch you will not see this message box again. It is simply a reminder that the UMC adapter is available and how to purchase it.

Use the Medium Speed CAN adapter when prompted as outlined in the instructions.

If you do not have the UMC adapter and try to access a Medium CAN module you will see this message:

![Message Box](image)

When exiting a Medium CAN module and entering a High Speed CAN module you will see a message reminding you to remove the Medium CAN Adapter.
If a UBP module is selected the following message will appear:

![Message Image]

This will happen if you do not have the UMC Adapter attached. You MUST have the UMC Adapter to access diagnostics on a UBP module.

If you have the UMC adapter attached you will not see any messages regarding installing or removing the adapter.

**Connecting to a Vehicle**

*This procedure requires the following conditions:*

- Available USB port on the computer
- The vehicle's battery is in good condition (required by the Vehicle Interface Module)
- The vehicle's ignition key is in the *OFF* position

**Procedure:**

1. Plug the Vehicle Interface Cable into the computer's USB port.
2. Connect the module (or adapter) to the vehicle's OBDII connector.

**Caution**

The Vehicle Interface Module should connect easily to the OBDII connector. Forcing the module to fit will damage both connectors.

*To locate the vehicle's connector:*

The connector is normally found underneath the dashboard and within three feet of the driver.

Also, it may be hidden behind an access panel, ashtray, glove box etc. but should not require any tools to access it.
3. Check the vehicle’s shop manual to determine if the engine should be running. For most diagnostics, the vehicle should not be running except for self-tests labeled Key-On Engine Running (KOER).

4. Open the NGS PC application on your computer.

**Starting NGS PC**

After completing the hookup procedures you are ready to start NGS PC. There are 2 ways you can start the application:

From the Desktop:

1. Double click the NGS PC icon on your desktop.

From the Program Menu:

1. Click Start.
2. Click All Programs.
3. Click NGS PC.

License Agreement

NGS PC displays the license agreement the very first time you start the program.

Carefully read the agreement, and if you accept the terms of the agreement, click I Agree to continue starting the program.
Main Window
When you start NGS PC, the following window is displayed:

![Main Window Diagram]

Use this window to select the diagnostic settings for the test vehicle from the following pull-down menus:

- **Model**—model of the test vehicle
- **Year**—test vehicle’s model year
- **Module**—system you want to diagnose, such as a vehicle’s Powertrain Control Module

*Note: NGS PC displays the following message when a medium speed CAN adapter is required when selecting a medium speed CAN module.*

The following message is displayed when selecting a high speed CAN module after selecting a medium speed CAN module.

- **Action**—diagnostic function you want to perform, such as running the key-on engine running testing
The reference area is also accessed from this window. Use this area for the following:

- **Graph**—to view previously recorded graphed data
- **Options**—to set preferences for how you want units of measurement to be displayed, (such as degrees Celsius or degrees Fahrenheit) and to select the COM port or USB port to use
- **References**—to access the Hickok web site (and other sites you added) without having to open up an internet browser. Requires an active internet connection and ISP account.
- **Help**—to access the electronic version of this User Guide, the PATS Programming Chart, and to view basic information about NGS PC such as the software version
- **Exit**—use to exit and close the NGS PC application
Retrieving Stored DTCs

This section explains how to retrieve a vehicle's stored Diagnostic Trouble Codes (DTCs).

Procedure:

1. Select the test vehicle's model and year from the pull-down menus.

2. Select the system you want to diagnose from the Module pull-down menu.

   Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.

3. Select Get Stored Codes from the Action pull-down menu.

4. Click Go to display the Fault Codes screen.
Retrieving Stored DTCs

If there are stored codes...
The Fault Code screen displays the DTCs and a description of the faults.

Click Information (if not grayed out) to display additional information about the current fault.

If there are no stored codes...
NGS PC displays the following:

Click OK to return to the Main window.

Unable to Display All Faults
If the number of faults that can be listed is exceeded (limit varies based on module and/or vehicle), NGS PC will display a warning message.

- Click OK to close the warning,
- Address the displayed faults
- Re-test to view any additional faults they may still exist.
Clearing Stored DTCs

This section explains how to clear a vehicle's stored Diagnostic Trouble Codes (DTCs).

Clearing a stored code sends a message to the system that you are testing to clear all the recorded fault codes.

**Note:** If any warning lights are displayed because of the fault, clearing the code usually turns that warning light off. However, if the condition that caused the fault is still present, the code will return and the warning light will come on again.

**Procedure:**

1. Select the test vehicle's model and year from the pull-down menus.
2. From the Module pull-down menu, select the system you want to clear the DTCs from.
3. Select **Clear Stored Codes** from the Action pull-down menu.
4. Click **Go** to clear the stored codes. The following is displayed:
5. Click one of the following:
   • **Yes** to clear the stored codes
   • **No** to cancel clearing the codes

Once the codes are cleared, the following message is displayed:

![Message box](image)

Click **OK** to return to the Main window.
On-Demand Self-Tests

An on-demand self-test runs a sequence of tests and report the results, in the form of DTCs, to NGS PC. These tests are activated and controlled by the system you are testing.

During an on-demand self-test you may see certain functions activated (such as door locks, instrument lights, horn etc). This is a normal part of the on-demand self-test.

This sections explains how to run an on-demand self-test.

Procedure:

1. Select the test vehicle’s model and year from the pull-down menus.

2. Select the system you want to diagnose from the Module pull-down menu.

   Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.


4. Select Run Key-On Engine Off Test

   • Run Key-On Engine Running Test

   Note: Test times vary between vehicles/systems and may take several minutes to complete.

5. Click Go to run the self-test
Once the test is complete, NGS PC displays the **Fault Codes** screen if any DTCs are detected:

This screen displays the following:

- Number of faults
- The DTC and a description of the fault

*Note: If it is not grayed out, click More Information for additional information.*
Retrieving PIDs

PIDs (Parameter Identification Data) are values associated with the system you are testing and can provide you with data to help diagnose a vehicle. Examples of PID’s are voltage levels for sensors, switch position status, and the on/off status of an input or output from the system.

This section explains how to retrieve PIDs using NGS PC.

Procedure:

1. Select the test vehicle’s model and year from the pull-down menus.

2. Select the system you want to diagnose from the Module pull-down menu.

   Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.

3. Select Show Parameter List from the Action pull-down menu.

4. Click Go to display the Parameter Selection screen.

   Note
   Depending on the vehicle, it may take several minutes for NGS PC to load a complete list of parameters.
Once the parameters are loaded, NGS PC displays the **Parameters Selection** screen:

![Parameters Selection Screen](image)

7. Select the parameter(s) you wish to view.

8. Select an option:
   - **Continuous** (default) to continuously read and update the displayed parameter information
   - Uncheck **Continuous** if only one reading is desired
   - **Graph** to create a graph of the parameter information (see the section **Graphing & Recording PIDs** for further details on creating and working with graphs)

9. Click one of the following:
   - **Get Data** to display the parameter results
   - **Clear** to deselect the items in the parameter list

If **Get Data** is selected, the parameter value(s) and units are displayed in the **Parameter Results** screen:

From this screen you can select (click) the following:

- **Stop** (continuous display mode only) to stop the update of the parameter information
- **Info** (if displayed) for additional information
This section explains how to display, view and record retrieved parameter values and units in a graph format.

**To Graph a PID**

**Procedure:**

1. Select the test vehicle's model and year from the pull-down menus.

2. Select the system you want to diagnose from the Module pull-down menu.

   *Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.*

3. Select **Show Parameter List** from the Action pull-down menu.

4. Click **Go** to display the Parameter Selection screen.

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Once the parameters are loaded, NGS PC displays the **Parameters Selection** screen:

5. Select the parameter(s) you wish to graph.

   **Note:** In most cases, you can graph up to four parameters. However, a few parameters cannot be displayed as a graph. If you select this type of parameter, NGS PC displays the following message:

   **This parameter can not be graphed. Please select a different parameter to graph or uncheck the Graph check box.**

6. Select **Graph**.

7. Select one of the following:
   - **Continuous** (default) to continuously read and update the displayed parameter information
   - **Uncheck Continuous** if only one reading is desired

8. Click one of the following:
   - **Get Data** to display the Parameter Graph screen
   - **Clear** to deselect the items in the Parameter list
9. At the Parameter graph screen click **Graph** to start the graphing. The parameter value(s) and units are displayed as graphs.

![Graphing & Recording PIDs](image)

Click the following buttons to navigate the graphs:

- **Pan Up**
- **Zoom In**
- **Pan Down**
- **Zoom Out**

To scroll left to right, use the scroll bar displayed below the graphs.

10. Once you have started the graphing display, at any time you can click **Stop** to stop the graphing of the parameter information.

After stopping the graph, you can also do the following:

- **Back** to return to the Parameter Selection screen
- **Clear** to clear the graphed data

**Using the Scale Screen**

You can also scale the graph by changing the scale values using the Scale screen:

1. From the **Parameter Graph** screen, click the **Graph tab** located at the bottom of the screen
2. Click **Scale**...
3. Enter the new maximum and minimum Y-Axis values for each parameter and then click **OK**.
To Record a Graph
You can record and save the graphed data for viewing at any
time by doing the following:

1. Retrieve the parameters in a graphed format as explained
   earlier in this section.

2. From the Parameter Graph screen click the Graph tab.

3. Click Turn recording on…

   ![Parameter Graph Screen]

4. Enter a name for the recording file:

   ![Recording Dialog]

   Note: Any previously recorded and saved files are also listed in
   this screen. You can select a pre-existing file to save the recording
to, however, doing so will overwrite any existing data in that file.

5. Click OK.

6. Click Graph to begin recording.

Printing Graphs
NGS PC does not currently support
printing. However, you can use the
print screen function included with the
Windows® operating systems, or there are
many third party applications available
that will allow you to take screen shots that
you can then print out.

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**Graphing & Recording PIDs**

**To Stop Recording**
You can stop recording the graphed data at any time by doing the following:

1. From the Parameter Graph screen click **Stop**.

**To View or Delete Recordings**
You can view previously recorded graphed data at any time by doing the following:

1. From the **Parameter Graph** screen click the Graph tab.
2. Click **Playback...**. NGS PC displays the Playback File Selection screen:

3. Select the file you wish to view and then click one of the following:
   - **OK** to view the recording
   - **Cancel** to return to the Parameter Graph screen
   - **Delete** to delete the file
This section explains how to reprogram compatible keys and modules for Ford, Lincoln and Mercury vehicles equipped with the passive anti-theft system (PATS).

Because of the large number of combinations of PATS parameters, it is recommended that you refer to the vehicle’s shop manual in addition to these instructions.

About PATS Programming
PATS equipped vehicles can be divided into two types:

PATS I—applies to model years 1996–1998
PATS II—applies to model years 1998–current

NGS PC automatically determines which PATS type is applicable for programming keys when the model and year of the vehicle is selected.

Within each system type, vehicles contain PATS functionality in one of several modules:

- PCM  
- VIC  
- SCIL  
- HEC  
- ICM  
- PATS

General Guidelines
When programming keys, please keep the following in mind:

Vehicle Information—The PATS vehicle information is provided in the PATS Programming Chart. Information is grouped by vehicle make and model.

Spare Keys—If you need additional spare keys after completing this procedure, see Add New Keys.

Replacing Lost Keys—If all keys to the vehicle have been lost, cut new keys according to the minimum number of keys needed (see Keys in the PATS Programming Chart) and use the Erase and Reprogram Keys procedure.

Note: If the lost keys are found, they can be reprogrammed as extra keys.

Maximum Keys—The module will not accept a key if the maximum number of keys are already programmed into the

Caution
When programming keys, follow the procedures carefully and avoid selecting additional functions. Failure to follow the instructions can result in a no start condition and create the need for further diagnosis and repeat procedures.

IMPORTANT
Some models will require a minimum amount of keys to be programmed before the car will start. Consult the PATS Programming chart for more information.
vehicle (see PATS Programming Chart). You can check the NUMKEY PID to see if the maximum number of keys have been programmed.

**Theft Indicator**—Attempting to start the vehicle with an unprogrammed key can trigger the anti-scan feature, causing the theft indicator to flash rapidly. If this occurs:

1. Leave the key in RUN for 30 seconds to complete the anti-scan cycle.
2. Return to the beginning of the interrupted procedure.

**Add New Keys (Ignition Key Code Program)**

When the programmed keys are not available, this procedure allows NGS PC to add keys to PATS II systems.

*Note: For PATS I systems, or when the programmed keys are available, see Programming Without NGS PC.*

- Make sure to use blank unprogrammed keys.
- Make sure the vehicle’s battery is fully charged—disconnect NGS PC from the vehicle if the battery needs charging.

**Procedure:**

1. Locate the vehicle in the PATS Programming chart.
2. Cut the number of keys you want to add to the vehicle.
3. Note the module that contains PATS functionality (see the PATS Programming chart).
4. With NGS PC connected to the vehicle, insert an unprogrammed key in the ignition.
5. Turn the key to RUN—do not crank the engine.
6. At the NGS PC main screen, select the test vehicle’s model and year from the pull-down menus.
7. Select the module that contains PATS functionality from the Module pull-down menu.

**IMPORTANT**

*If all keys have been lost, use NGS PC to do an Ignition Key Code Erase procedure first.*
8. Select **PATS Key Programming**... from the Action pull-down menu.

9. Click **Go** to continue with PATS Programming. The PATS Selection screen is displayed:

If you have not yet gained security access, the PATS options are unavailable (grayed out).

Click **Enter Security Access** to continue.

Note: For security purposes, there is an eight to ten minute delay before you gain access.
7. After gaining security access, click **Ignition Key Code Program** to complete the procedure.

A message displays at the bottom of the screen to let you know the process is complete.

8. Disconnect NGS PC from the vehicle.

9. Turn the key to **OFF**.

10. Wait ten seconds and then turn the key to **RUN**.

   Repeat the above steps for any additional keys. Make sure to test the keys to be sure the vehicle starts.
Programming Without NGS PC

This procedure uses the vehicle’s programmed keys to add keys (up to the number of maximum keys) to the module without using NGS PC.

1. Locate the vehicle in the PATS Programming chart.
2. Cut the number of keys you want to add to the vehicle.
3. Check the number of keys (min.) to continue to the proper instructions:
   - For vehicles that require a minimum of one key, proceed to Single Key Procedure.
   - For vehicles that require a minimum of two keys, proceed to Dual Key procedure.

Single Key Procedure

Use this procedure for vehicles that require a minimum of one programmed key (see PATS Programming Chart).

1. Insert a programmed key into the ignition.
2. Cycle the key in the ignition by turning the key to RUN for at least three seconds, then turn it off.

   Within 5 seconds, complete the following steps:

3. Remove the key.
4. Insert the unprogrammed key into the ignition.
5. Turn the key to RUN. The theft indicator lights for two seconds (prove-out).
6. Test the keys to be sure the vehicle starts.
7. Repeat steps 3 through 6 to create additional spares. Keep in mind that you cannot program more keys than the number of Maximum keys (see PATS Programming Chart).
Dual Key Procedure
Use this procedure for vehicles that require a minimum of two programmed keys (see PATS Programming Chart).

1. Insert a programmed key in to the ignition.
2. Cycle the key in the ignition by turning the key to RUN for three seconds, then turn it off.
3. Remove the key.
   
   Within 5 seconds, complete the following steps:
4. Insert a second programmed key.
5. Cycle the key in the ignition by turning the key to RUN for three seconds, then turn it off.
6. Remove the key.
   
   Within 10 seconds, complete the following steps:
7. Insert the unprogrammed key.
8. Turn the key to RUN. The theft indicator lights for three seconds (prove-out).
9. Test the key to be sure the vehicle starts.
10. Repeat steps 1 through 9 to create additional spares. Keep in mind that you cannot program more keys than the number of Maximum keys (see PATS Programming Chart).
Erasing & Reprogramming Keys (Ignition Key Code Erase)

This procedure erases all programmed keys. Use it for unprogramming all keys (or lost keys), or when the ignition switch assembly has been replaced.

• Make sure to use blank *unprogrammed keys* when reprogramming

• Make sure the vehicle’s battery is fully charged—disconnect NGS PC from the vehicle if the battery needs charging.

Procedure:

1. Locate the vehicle in the PATS Programming chart.

2. Cut the number of keys you want to add to the vehicle.

3. Note the module that contains PATS functionality (see the PATS Programming chart).

4. With NGS PC connected to the vehicle, insert either a cut blank key, or a programmed key into the ignition.

5. Turn the key to **RUN**—do not crank the engine.

6. At the NGS PC main screen, select the test vehicle's model and year from the pull-down menus.

7. Select the module that contains PATS functionality from the Module pull-down menu.

8. Select **PATS Key Programming...** from the Action pull-down menu.
9. Click **Go** to continue with PATS Programming. The PATS Selection screen is displayed:

If you have not yet gained security access, the PATS options are unavailable (grayed out).

Click **Enter Security Access** to continue.

**Note:** For security purposes, there is an eight to ten minute delay before you gain access.

10. After gaining security access, click **Ignition Key Code Erase** to complete the procedure.

A message displays at the bottom of the screen to let you know the process is complete.

13. Disconnect NGS PC from the vehicle.

14. Turn the key to OFF.

   *All keys are now erased from the system.*
Setting the Spare Key Switch (PATS II only)

Use this function to control the ability to program additional keys to a vehicle using only the original programmed keys.

- Make sure to use blank *unprogrammed keys* when reprogramming
- Make sure the vehicle’s battery is fully charged—disconnect NGS PC from the vehicle if the battery needs charging.

Procedure:

1. Locate the vehicle in the PATS Programming chart.
2. Note the module that contains PATS functionality (see the PATS Programming chart).
3. With NGS PC connected to the vehicle, insert a programmed key into the ignition.
4. Turn the key to **RUN**—do not crank the engine.
5. At the NGS PC main screen, select the test vehicle’s model and year from the pull-down menus.
6. Select the module that contains PATS functionality from the Module pull-down menu.
7. Select **PATS Key Programming**... from the Action pull-down menu.
8. Click **Go** to continue with PATS Programming. The PATS Selection screen is displayed:

If you have not yet gained security access, the PATS options are unavailable (grayed out). Click **Enter Security Access** to continue.

*Note: For security purposes, there is an eight to ten minute delay before you gain access.*

9. After gaining security access, click one of the following:

**Enabled**—additional keys can be added with the use of the original programmed keys.

**Disabled**—additional keys cannot be added to the vehicle without using NGS PC.

A message displays at the bottom of the screen to let you know the process is complete.

**Resetting the Security ID (Parameter Reset)**

Use this procedure for vehicles that store the PATS information in a module other than the PCM. Typically, this function is performed after programming a key.

1. With NGS PC still attached to the vehicle and with security access granted, click **Reset Security ID**.

   A message displays at the bottom of the screen to let you know the process is complete.
Active commands (also known as bi-directional control) are temporary actions (that you can control) associated with the system you are testing. Examples of active commands are

- Battery Saver
- Cooling Fan
- EGR Control Solenoid
- Engine Coolant Temp.
- Front Windshield Wiper
- Fuel Injection
- Fuel Pump Relay
- Heated Backlight
- IAC Valve Opening
- Ignition Timing
- Illuminated Entry
- Interior Courtesy Lamps
- Output State Control
- Output Test Mode
- RAS Diagnostic Control
- Self-learning Control
- Warning Lamps and Chime
- One-touch Window Down/ACCY Sliding Door Memory Lock

Procedure:

1. Select the test vehicle’s model and year from the pull-down menus.

2. Select the system you want to diagnose from the Module pull-down menu.

Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.
3. Select **Show Active Commands** from the Action pull-down menu.

![Image of NGS PC User Guide](image)

4. Click **Go** to display the Active Command Selection screen.

5. From the Active Command Selection screen select the active command you want to run.

   Depending on the Active Command you select, one of two types of Active Command Display screens are displayed:
   - **Slider Control**
   - **Button Control**

   From these screens you can change the value of the active command. Also, if there is a PID value associated with the active command, the PID value is displayed. By setting the active command to a value, you can observe the results that the new value has on the PID.

   From the **Button Control** type screen, click one of the following:
   - **On** to set the active command values to **On**
   - **Off** to set the active command values to **Off**

   From the **Slider Control** type screen:
   - Drag the slider bar to select the desired active command value.
6. Click Activate! to start the active command.

7. Click Stop to stop the active command. If there is a PID associated with the active command, its value will continue to be retrieved until you move to another screen.

Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.
The Emissions / OBDII system selection allows you to access standard OBDII functions and parameters on the vehicle. This section explains diagnosing a vehicle’s Emissions / OBDII system using NGS PC.

**Retrieving Emissions / OBDII DTCs**

**Procedure:**

1. Select the test vehicle’s model and year from the pull-down menus.

2. Select **Emissions / OBDII** from the Module pull-down menu.

   *Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.*

3. Select **Get Stored Codes** from the Action pull-down menu.

4. Click **Go** to display the Fault Codes screen.
If there are stored codes...

The Fault Code screen displays the DTCs and a description of the faults.

Click Information (if not grayed out) to display additional information about the current fault.

If there are no stored codes...

NGS PC displays the following:

Click OK to return to the Main window.
Clearing Stored/Pending Emissions / OBDII DTCs

Procedure:

1. Select the test vehicle’s model and year from the pull-down menus.
2. Select Emissions / OBDII from the Module pull-down menu.
   
   Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.

3. Select Clear Stored/ Pending Codes from the Action pull-down menu.

4. Click Go to clear the stored codes. The following is displayed:
5. Click one of the following:
   - **Yes** to clear the stored codes
   - **No** to cancel clearing the codes

   Once the codes are cleared, the following message is displayed:

   ![Fault codes were cleared successfully](image)

   Click **OK** to return to the Main window.

### Retrieving Emissions / OBDII Freeze Frame Data

Freeze Frame data are values that were stored during an engine misfire event. These include the DTC that caused the Freeze Frame to be stored and important engine parameters such as fuel trims, vehicle speed, ignition timing advance, etc.

1. Select the vehicle’s model and year from the pull-down menus.

2. Select **Emissions / OBDII** from the Module pull-down menu.

   *Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.*
3. Select **Get Freeze Frame Data** from the Action pull-down menu.

![Image of NGS PC Diagnostics Area]

4. Click **Go** to display the Freeze Frame Data.

![Image of NGS PC Freeze Frame Data]

If there are no stored freeze frames...
NGS PC displays the following:

![Image of NGS PC stored freeze frame information]

Click **OK** to return to the Main window.
Retrieving Emissions / OBDII PIDs
Emissions / OBDII system PIDS data are standard OBDII diagnostic parameters.

1. Select the test vehicle's model and year from the pull-down menus.
2. Select Emissions / OBDII from the Module pull-down menu.
3. Select Show Parameter List from the Action pull-down menu.
4. Click Go to display the Parameter Selection screen.
5. Select the parameter(s) you wish to view.
6. Select an option:
   - Continuous (default) to continuously read and update the displayed parameter information (uncheck Continuous if only one reading is desired)

Note
Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.

Note
Depending on the vehicle, it may take several minutes for NGS PC to load a complete list of parameters.
Emissions / OBDII

- **Graph** to create a graph of the parameter information (see the section **Graphing & Recording PIDs** for further details on creating and working with graphs)

7. Click one of the following:
   - **Get Data** to display the parameter results
     The parameter value(s) and units are displayed in the Parameter Results screen. Select one of the following:
     - **Stop**— (continuous display mode only) to stop the update of the parameter information
     - **Info**— (if displayed) for additional information
   - **Clear** to deselect the items in the parameter list

**Retrieving Emissions / OBDII Pending Codes**

Pending code data are test results for emission-related powertrain components or systems that are continuously monitored during normal driving conditions.

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

If the test failed during the driving cycle, the DTC associated with that test will be reported. Test results reported by this mode do not necessarily indicate a faulty component or system.

1. Select the test vehicle's model and year from the pull-down menus.
2. Select **Emissions / OBDII** from the Module pull-down menu.

*Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.*
3. Select **Get Pending Codes** from the Action pull-down menu.

![Diagnosis Software Interface](image1)

4. Click **Go** to display the Fault Codes screen. The Fault Code screen displays the number of faults, the DTC, and a description of the fault.

![Fault Code Screen](image2)

Click **Information** (if not grayed out) to display additional information about the current fault.

**If there are no stored codes...**

NGS PC displays the following:

![No Pending Codes](image3)

Click **OK** to return to the Main window.
This section explains how to check/diagnose the vehicle’s Evaporative Emissions Control Systems (EVAP) for gross leaks.  

Note: This test is only for passenger cars and light duty trucks with Controller Area Network (CAN) technology. Medium duty trucks may fail the test due to the absence of a Fuel Tank Pressure (FTP) sensor.

**Procedure:**
Before you begin testing the system, be sure the vehicle meets these requirements:

- Fuel tank should be at least half full.
- Fuel temperature should be stabilized and the ambient temperature should be below 90°F.

1. Select the test vehicle’s model and year from the pull-down menus.
2. Select **Powertrain Control Mod.-CAN** from the Module pull-down menu.
3. Select **Evap Test** from the Action pull-down menu.
4. Click **Go** to display the EVAP Test screen.
5. Click **Start**. NGS PC displays the following message:

   **IMPORTANT**
   This test is designed for the diagnosis of gross leaks only.
EVAP Testing

6. Click **OK** after starting the vehicle's engine. The following message is displayed:

![Image of EVAP Testing message]

7. Click **Yes** to begin the test. The progress of each test is displayed in the lower right corner of the screen.

![Image of EVAP Testing progress]

The pass/fail result for each test is displayed below the Fuel Tank Pressure graph.

**Bleed down test**—Creates a vacuum in the system and then pulls it down to a preset level. If the EVAP system cannot pull a vacuum down to the preset level, it indicates a leak is present.

**Bleed up test**—Seals the system under vacuum and monitors the system for any bleed up or vacuum decay. If the system bleeds up too quickly, a vapor generation test is started to determine if fuel vapor expansion is the cause of the bleed up.

**Canister vent valve test**—Test the valve to see if it will vent the vacuum

8. After completing the test, check and clear any DTCs that may have been generated.

**Caution**

Vapor pressure and evaporation becomes a factor when the ambient temperature rises above 90°F. This will affect the test results.
A power balance test provides you with data to help diagnose a vehicle misfire by monitoring each cylinder for a 35% or more drop in the RPM. This sections explains how to run a power balance test.

**Procedure:**

*Before you begin make sure the air conditioner and all other accessories are turned off and the engine is idling.*

1. Select the test vehicle’s model and year from the pull-down menus.

2. From the Module pull-down menu select:
   - **Powertrain Control Mod.** for non-CAN vehicles
   - **Powertrain Control Mod.-CAN** for CAN vehicles

3. Select **Power Balance** from the Action pull-down menu.

4. Click **Go** to display the Select Engine window.

5. Select the appropriate engine size. **IMPORTANT! Do not click OK at this time.**
6. **For automatic transmissions**—Place the vehicle in gear with your foot holding the brake and allow the engine to idle. Do not allow the vehicle to roll or move as it will affect the accuracy of the test.

**For manual transmissions**—Place the vehicle in neutral with the parking brake applied and allow the engine to idle. Do not allow the vehicle to roll or move as it will affect the accuracy of the test.

7. Click **OK** at the select engine window to display the power balance graph screen.

8. Click **Graph** to start the power balance test.

RPM measurements are listed down the left side of the graph; the cylinder numbers are listed along the bottom of the graph.

The number of misfires recorded for a particular cylinder is listed under the cylinder number. The cylinder with the highest count typically is the problem cylinder.

**Blue Bar**—Current/real time readings

**Outlined Bar**—History of readings since starting the test. To clear the history, click **Clear**.

**Zoom In/Zoom Out Buttons**—Click to view the graph at a higher or lower level.

**Stop**—Click to stop graphing.

---

**IMPORTANT!**
For accurate test results, only run the vehicle’s engine at idle—do not accelerate at any time during the test.

**For best results…**
Allow the power balance test to run for 30 seconds, clear the history, and repeat several times while looking for patterns.
Power Balance Test

For non-CAN vehicles only:

**Display Mode (ACTUAL/ENHANCED)**—For more subtle misfires or normally rough running engines, switch to ACTUAL mode. Using ACTUAL mode and zooming in on the graph allows you to see which cylinder has the largest loss of power. The misfiring cylinder will have a much higher count than borderline cylinders. Follow normal diagnostics for rough running engines on borderline cylinders.

Use the ENHANCED mode for smoother running engines with a more definite misfire.

For CAN Diesel vehicles only:

**Cylinder Kill /Cylinder Restore**—With diesel engines, killing a cylinder helps to pinpoint the misfire. Select the cylinder you wish to kill from the pull-down menu and then click **Kill Cylinder**. The cylinder is restored when you either click **Restore Cylinder**, or by default after approximately 30 seconds.
Some vehicles have additional actions that are similar to the Self-Test functions, but are not covered in the other sections of the User Guide. This includes tests such as the Front/Rear Wiper Self Test and the Vehicle in Motion I/O Test.

This section explains those actions. Remember, not every action described here is available on all vehicles.

The following is a list of some of the additional actions:

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<thead>
<tr>
<th>Module</th>
<th>Action</th>
</tr>
</thead>
<tbody>
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<td>GEM/Central Timer Module</td>
<td>• Front Wiper Self-Test/Rear Wiper Self-Test</td>
</tr>
<tr>
<td></td>
<td>• Door Locks</td>
</tr>
<tr>
<td>Restraint Control Module</td>
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</tr>
<tr>
<td>Front Electric/Audio Control/Front Control Module</td>
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</tr>
<tr>
<td>Driver Seat Module</td>
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</tr>
<tr>
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<td>• Tones Test</td>
</tr>
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<td></td>
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</tr>
</tbody>
</table>

Note: If an On-Demand DTC is encountered during one of these tests, NGS PC displays the Fault Code screen (see the section On-Demand Self-Tests for further details).
Other Actions

Procedure:

1. Select the test vehicle’s model and year from the pull-down menus.

2. Select the system you want to diagnose from the Module pull-down menu.

   Note: Not all of the systems listed are available for diagnosing. The availability of a system depends upon the vehicle selected and optional equipment installed. NGS PC displays an error message if a selected system is not available.

3. Select an action from the Action pull-down menu.

4. Click Go to run the test.

   Note: Test times vary between vehicles/systems and may take several minutes to complete.
Flashing Modules

**IMPORTANT!** Flashing modules requires the optional NGS Web Flash package. The package includes a J2534 Compliant cable for use with the Ford Module Programming software application from Motorcraft® (subscription to the Motorcraft® web site required—see www.motorcraft.com for details).

**Setup**
Before you can begin using NGS Web Flash, you will need to do the following:

- Install the driver software
- Purchase and install a subscription for the Ford Module Programming Software

Please note: The Windows® 98 operating system is not compatible with NGS Web Flash. Please see our web site at www.hickok-inc.com for a current list of compatible Windows® operating systems.

**Procedure:**

1. Plug the NGS Web Flash cable into your computer’s available USB port. Windows detects the new hardware and starts the **Found New Hardware Wizard**.

2. At the **Welcome** screen, when asked if Windows can connect to Windows Update to search for software, select **No, not this time** and then click **Next** to continue.

3. When prompted, insert the installation CD, select **Install the software automatically (Recommended)** and then click **Next** to continue.

4. A dialog box opens warning you that the software you are installing has not passed Windows Logo testing. Click **Continue Anyway** to proceed with the installation.

5. To complete the installation, click **Finish** when prompted at the **Found New Hardware Wizard**.

*If you already have a subscription, please skip this step—installation is complete and NGS Web Flash is ready for use.*

6. Go to the Motorcraft® web site at www.motorcraft.com and
purchase a subscription for the Ford Module Programming Software. Download and install the software according to Motorcraft’s instructions.

Installation is complete and NGS Web Flash is ready for use.

**To Use the Web Flash Cable**

Use the cable according to the instructions for the Ford Module Programming software. For additional/updated information, including troubleshooting, see our web site at [www.hickok-inc.com](http://www.hickok-inc.com).

- **Green flashing LED**—cable is operating properly.
- **Red continuous LED**—device driver software not installed.
- **No LED**—there is a problem with the computer’s USB port. Check to make sure the port is working properly.
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