SpeedPAC User's Manual

Overview

SpeedPAC is a product designed for the aftermarket tire installation shops for use in correcting the vehicle's speedometer after installing tires other than the stock size. SpeedPAC can correct the speedometer for any change of tire size or gear ratio within the limits of the vehicle's PCM. SpeedPAC is connected to the vehicle via the vehicle's DLC (Data Link Connector) and programs the vehicle's computer without having to touch anything under the hood. Vehicle speedometer readings are corrected by reprogramming the speed correction factor in the vehicle's PCM without altering any of the stock programming in the vehicle. Programming usually takes less than 5 minutes.

SpeedPAC is a multi-use product and is designed to operate on as many vehicles as the shop wishes. SpeedPAC comes installed with "loads" to program twenty vehicles. Additional programming loads are available for purchase to allow SpeedPAC to program an unlimited number of vehicles.

SpeedPAC is designed to operate on most American trucks from model year 2000 forward. Included with SpeedPAC is a list of vehicles it supports. You can check this list in advance to see if a particular vehicle in question is supported. Alternately, you can simply connect SpeedPAC to a vehicle and test to see if it connects correctly.

SpeedPAC can also read, display and clear out vehicle Diagnostic Trouble Codes (DTCs), thus turning off the "Check Engine" light. Codes are displayed on the large, easy to read, touch screen and give detailed descriptions of the trouble codes found.

SpeedPAC Operational Details

To program a vehicle PCM for speedometer calibration SpeedPAC must go through a lock process. During this process SpeedPAC will determine the exact format of the vehicle PCM and also determine where in memory the calibration values are stored.

Once locked to a vehicle SpeedPAC is then able to intelligently read and write to the vehicle PCM. SpeedPAC can then read out and display and DTCs found in the vehicle. It can also clear out the trouble codes, thus extinguishing the "Check Engine" light (MIL – Malfunction Indicator Light) without using up one of the programming loads.

To program the speedometer select the Speedometer Calibration option. Here you have the choice for correcting the speedometer for new tire size and also for new final drive axle ratios if supported on the particular vehicle. Speedometer values can be corrected for larger or smaller than stock tires. First select the size tire *which is currently programmed in the vehicle*. This is almost always the stock tire. SpeedPAC needs this information to know the correct value to adjust the speedometer. Then enter the size of the tires being installed on the vehicle. A similar process is done for the gear ratio if that has been changed.

By then touching START PROGRAMMING the user will begin the programming process. The operator must stay with the vehicle and cycle the ignition as instructed by SpeedPAC. After successfully programming the vehicle the unit will decrement its available load count and then return to the main menu.

The next time SpeedPAC is connected to a vehicle it will again go through the gather vehicle information process and establish to what vehicle it is connected. If it is connected to the same vehicle to which it was just connected it will return to the main menu and it will still contain the programming information for this vehicle. You can repeatedly reprogram the vehicle several times if tire size adjustments are necessary to obtain the correct speed. This vehicle can also be returned back to the stock settings as long as the SpeedPAC is not connected to any other vehicle. Once the SpeedPAC is connected to a different vehicle, even if this vehicle is not actually programmed, the "link" to the previous vehicle is lost and the SpeedPAC must again re-lock to this vehicle.

Each time SpeedPAC programs a new vehicle it decrements its programming load count. SpeedPAC can repeatedly reprogram this same vehicle and not use any additional program loads provided no other vehicle is connected to the SpeedPAC in the interim. If this vehicle is returned to stock the program load will be returned to the SpeedPAC. Once all the programming loads have been used SpeedPAC can no longer program vehicles for speedometer corrections until additional loads have been purchased and installed. However, it can still be connected to new vehicles and used to read and clear out DTCs.

Additional programming loads can be added to SpeedPAC at any time by contacting Performance Automotive Systems to arrange their purchase. To obtain the loads the user

must either perform an internet update session, wherein SpeedPAC is connected to the internet via a USB cable to his computer, or by having an SD card mailed to him. The programming load file will then be updated to reflect the additional loads purchased.

The loads can be downloaded at any time and they will simply add to any remaining loads still available in the unit.

SpeedPAC can only correct a speedometer for the range of tire sizes allowed by the vehicle's PCM. Note that some vehicle's PCMs limit the tire sizes to a range due to requirements of the ABS controller or other internal reasons. Therefore SpeedPAC must also enforce this limitation. If the user attempts to enter a size above or below the range supported by the vehicle he will be displayed a message and will not be permitted to enter this value. Note that the user has the choice, at his discretion, to enter the *closest* tire size that the vehicle will allow and program that value. However, in this case the speedometer will be only partially corrected but it will be closer than it was.

SpeedPAC can also return the last programmed vehicle back to stock by enabling the Return To Stock menu item. The user can go to the Vehicle/Owner Information Setting Screen and scroll to the bottom of the list. There he will find the option to enable the Return To Stock feature. Selecting this option will momentarily re-enable the Return To Stock option on the programming selections screen. When he goes into Speedometer Calibration this button will appear and allow him to return to stock. Returning a vehicle to stock will return one of the programming loads. When the unit powers off the option will again be hidden, but it can be brought back again if required.

Installing SpeedPAC

With the key in the off position, connect one end of the cable to the port on the lower left side of SpeedPAC (fig L). Locate the Data Link Connector (DLC) under the driver's side dash panel. Plug the cable into the DLC. Make sure the cable is plugged in completely to ensure a good connection (fig M).

Figure L

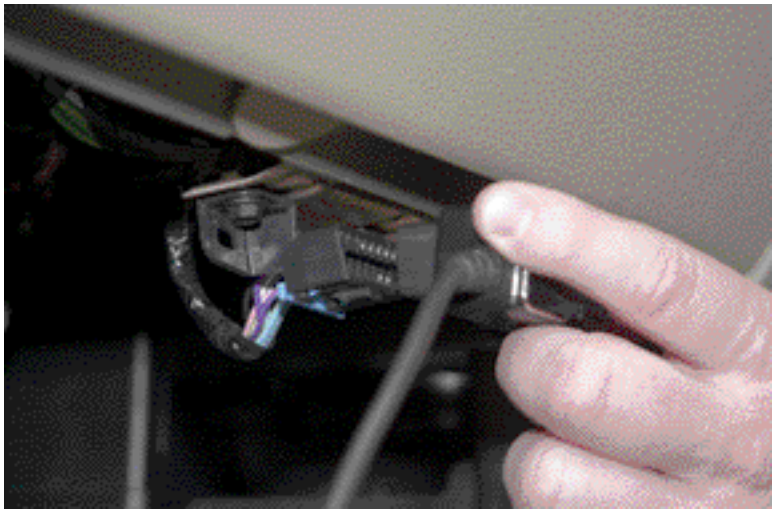


Figure M

Using SpeedPAC

The power key (the button to the right of the display with the blue ring) has three functions.

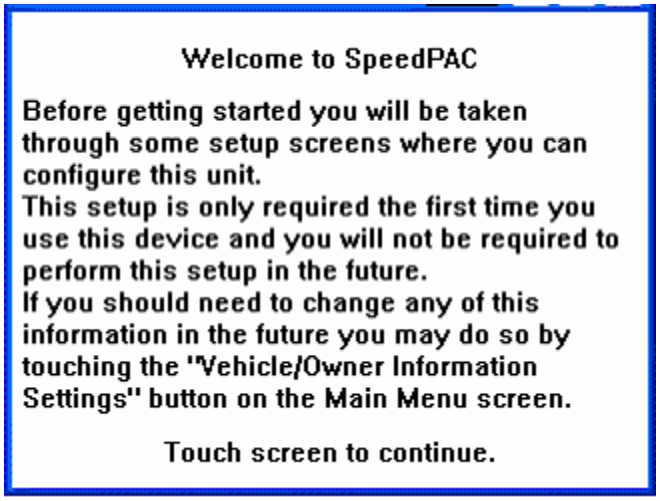
1. Press the button until the blue ring illuminates to power on the unit.
2. Press it momentarily and releasing within ½ - ¾ second will toggle the display between its day and night settings.
3. Press and holding for 1 second or more will power down the unit.

SpeedPAC comes with a touch sensitive screen. All operations with SpeedPAC are accomplished by touching one of the "buttons" displayed on the screen.

Most screens offer a HELP button. This will be located in the center position of the bottom row of keys. The help text displayed will be specific for whatever screen is currently being displayed. Touch the HELP button at any time for help understanding the operation of that screen. Touch the OK button on the help screen to close it.

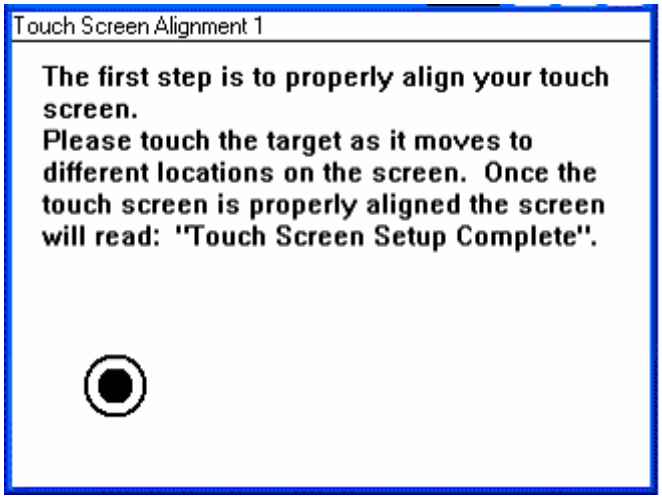
First Time Only Initialization

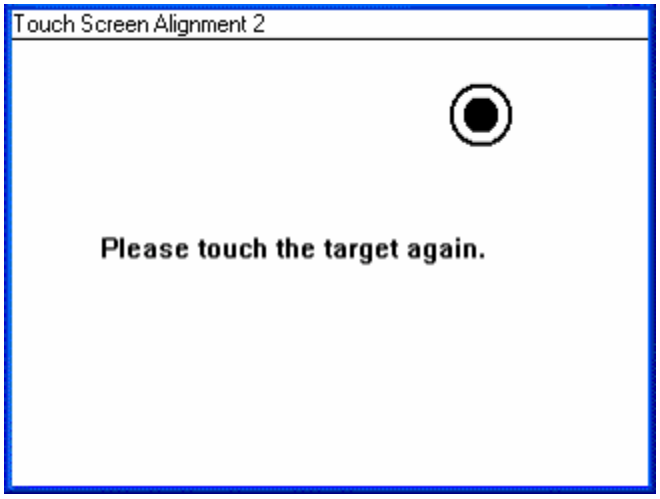
These are only shown the very first time the unit is powered up and are required for standard SpeedPAC touch screen alignment and other settings.

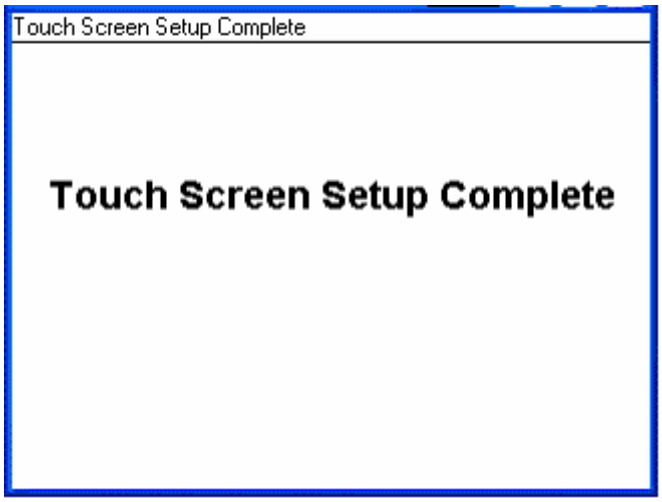


Touch Screen Alignment

SpeedPAC is shipped without aligning the touch screen. This is left so that it can be tailored to the individual preference of the user. By touching the targets on these two screens the alignment will be set. Remember, if you decide later that you would like to change this setting you can come back to this screen and realign the screen at any time by touching the "Vehicle/Owner Information" button on the Main Menu and selecting "Touch Screen Alignment".







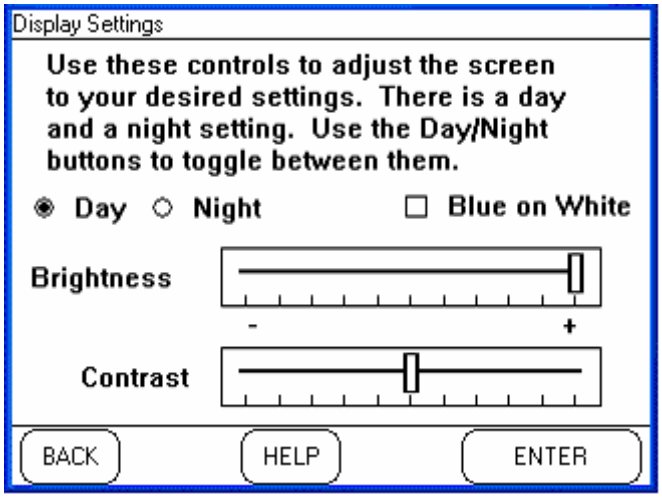
Display Settings

SpeedPAC maintains two sets of display settings; one for day and another for night time viewing. You will notice that a setting which is appropriate for daylight viewing is much too bright for nighttime viewing. We have provided default settings for both. The last setting viewed with this screen will be the setting that will be used until it is manually changed. While running SpeedPAC you can change between day and night settings at any time by pressing the power key for ½ second.

Adjust the display brightness and contrast by moving the slider bar to the right or left. You may also set the display to be **White text** with a **Blue background** (Blue on White not checked) or **Blue text** with a **White background** (Blue on White checked). Most people may prefer to use the white background during the day and the blue background during the night.

Be sure to toggle between Day and Night to set both settings. Exit the screen with the settings you wish to use at the time as the current selection.

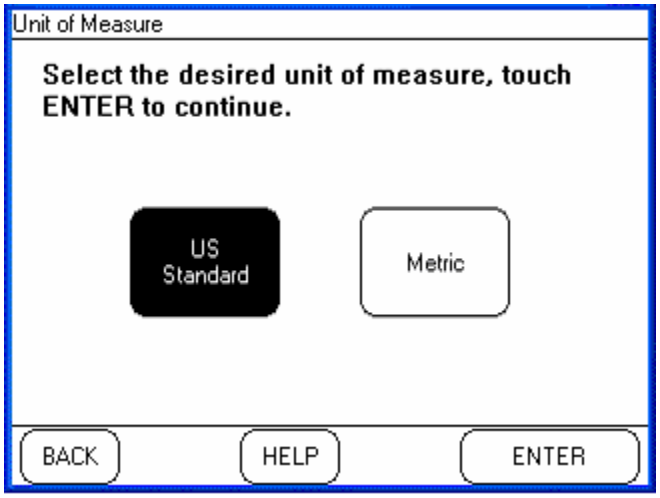
Touch ENTER after making display adjustments.



Unit of Measure

SpeedPAC can display its data in either US Standard Units or metric units. You can switch at any time to see data in either format. All displays will follow this setting.

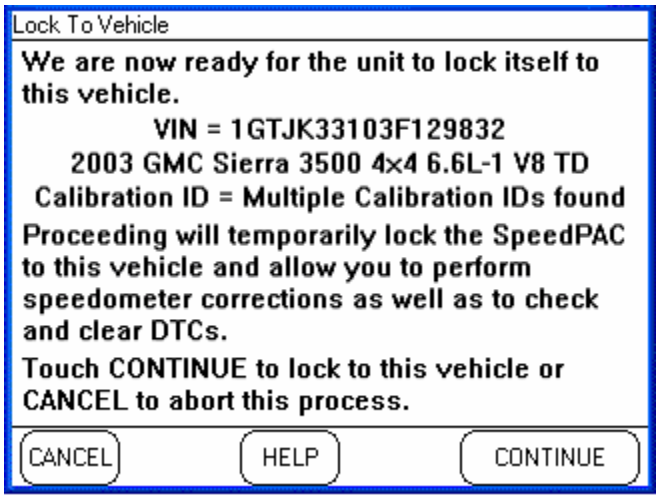
Select the unit of measure for all displays and touch ENTER to continue.



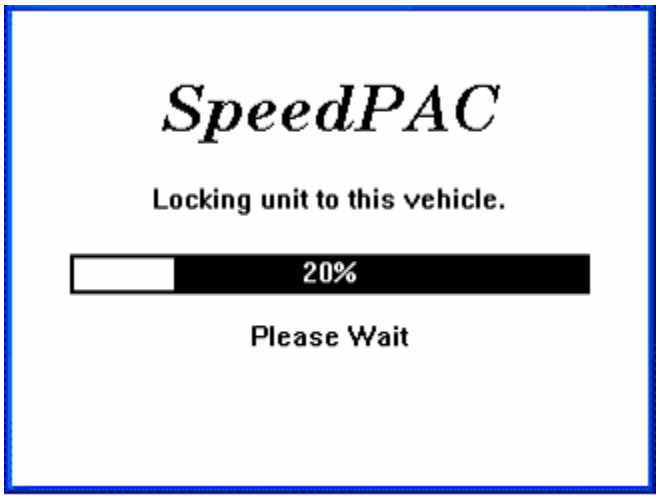
Connecting To a New Vehicle

Each time the unit powers up after the first time it will attempt to connect to the vehicle and display the "Gathering Vehicle Information" screen. The ignition must be in the ON or run position for SpeedPAC to communicate with the vehicle's computer.

If the ignition is in the off position SpeedPAC will fail to communicate and display the Retry screen. Otherwise it will display the specifics of the vehicle to which it is connected.

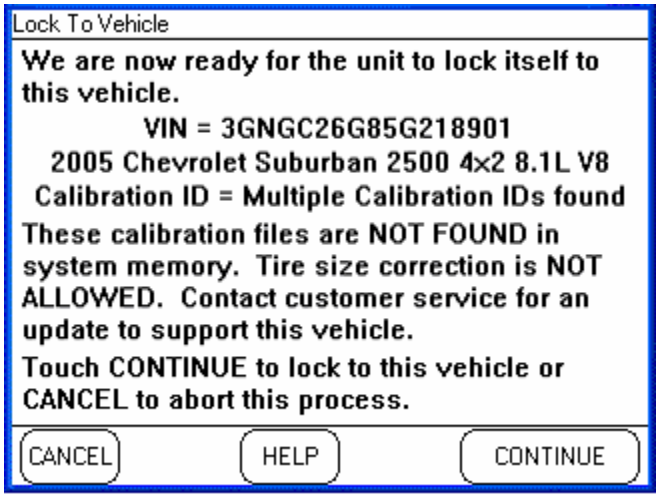

Lock To Vehicle
We are now ready for the unit to lock itself to this vehicle.
VIN = 1GTJK33103F129832
2003 GMC Sierra 3500 4x4 6.6L-1 V8 TD
Calibration ID = Multiple Calibration IDs found
Proceeding will temporarily lock the SpeedPAC to this vehicle and allow you to perform speedometer corrections as well as to check and clear DTCs.
Touch CONTINUE to lock to this vehicle or CANCEL to abort this process.
CANCEL
HELP
CONTINUE

Touch the CONTINUE key to lock to the vehicle to proceed and be allowed to program tire size. Note that locking to the vehicle *does not* use a programming load, only programming a tire or gear correction factor uses a load. Selecting CONTINUE will allow SpeedPAC to initialize its internal files for working with this vehicle. Some additional questions will be asked after the lock process.



Calibration Not Found

There may be cases when SpeedPAC is connected to a vehicle that contains calibration files not recognized by the current software in the unit. This can happen when the tuning files in the vehicle were released after the tuning files in SpeedPAC were produced. In this case the following screen will be displayed.

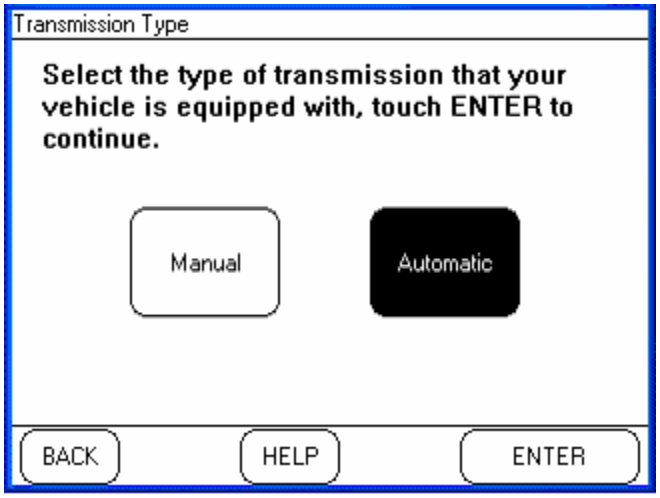


When in this condition SpeedPAC cannot support tire size correction on this vehicle until an update is obtained for the tuning files in the unit. Contact customer service and they can provide you with the necessary files. See the sections in this document about downloading updates to your SpeedPAC.

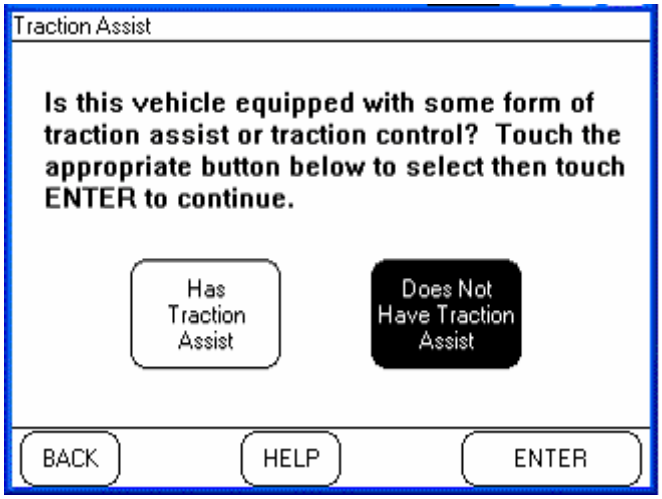
Transmission Type

After locking to the vehicle SpeedPAC will continue to ask additional questions required to know exactly how to program the speedometer correction values.

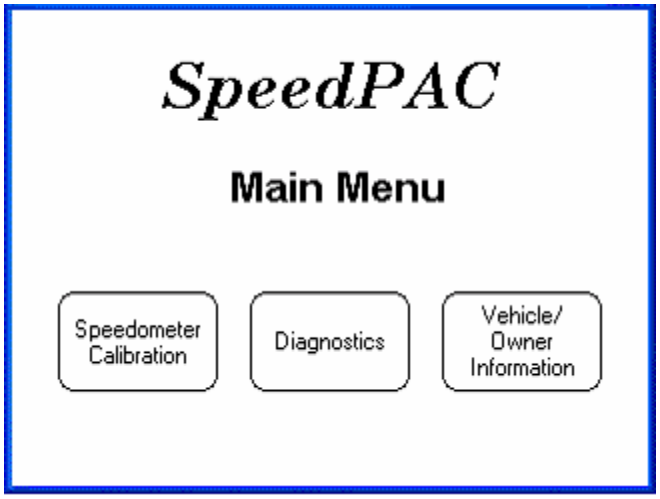
Selecting between automatic or manual transmission configures SpeedPAC to know which data is valid for your vehicle. The transmission in your vehicle cannot be determined from the VIN and must be entered manually.



Similarly SpeedPAC must be told about the traction assist capabilities of the vehicle.



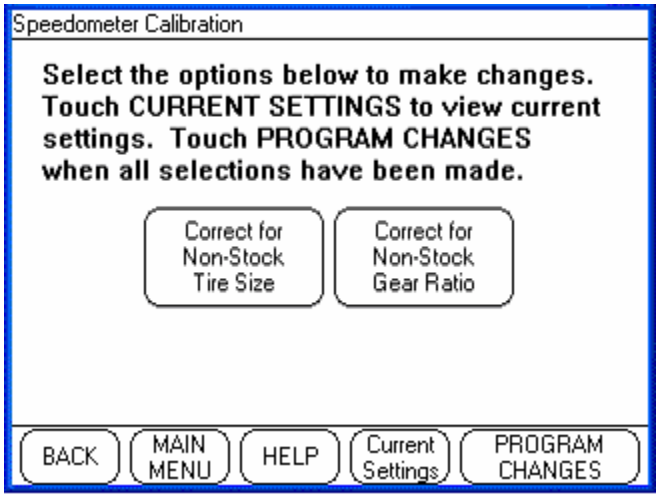
After all the data is entered SpeedPAC will show a summary of all the vehicle information entered. If any of the data is incorrect touch Make Changes to go back and alter the data. Otherwise touch ENTER to go to the main menu.



Speedometer Calibration

SpeedPAC can correct the vehicle speedometer for changes to the vehicle's gear ratios and tire sizes. To perform this correction the unit needs to know both the original settings as well as the new settings.

NOTE: The original equipment tire size can be found on the label in the driver-side door jamb. Verify that the size shown on the label is the same as what is printed on the sidewall of the tires installed on the vehicle.

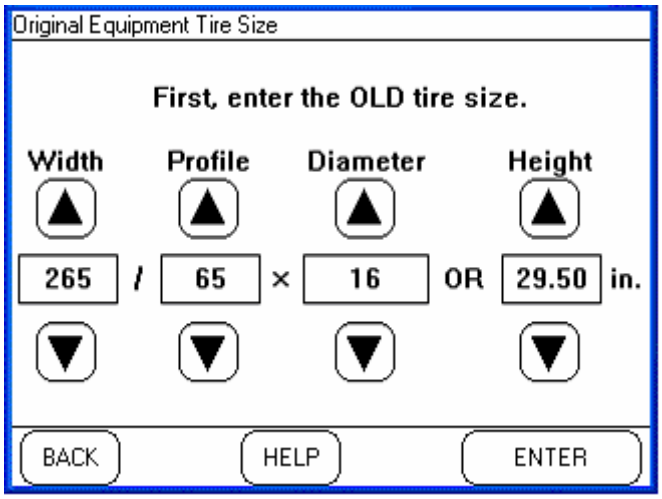


Tire Size

First, enter the old tire size. Generally, if the vehicle has never been programmed before, the old tire size is the size of the original tires fitted to the vehicle. This can be found on the label in the driver-side door jamb. You can either enter the tire size from the tire width, height and aspect ratio or you can measure the actual height of the tire. Entering tire height should be to the nearest ¼ inch or 5mm. Use the up and down arrows to enter the correct tire dimensions or height.

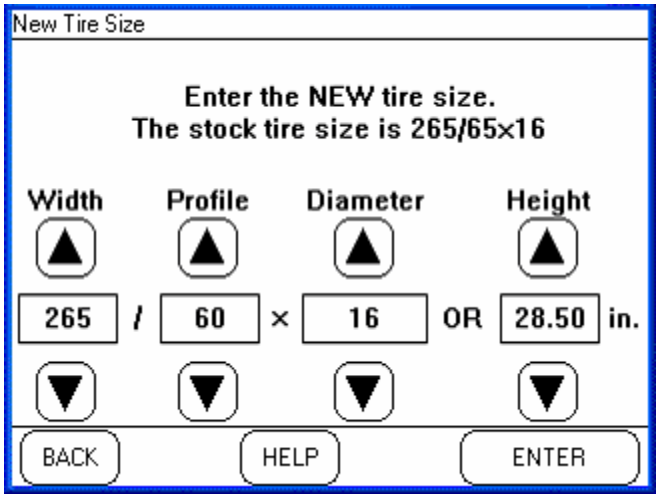
However, if this vehicle has already been programmed with a non-stock tire size then you must now enter the size that is *currently programmed* into the vehicle.

Touch ENTER after making all selections.

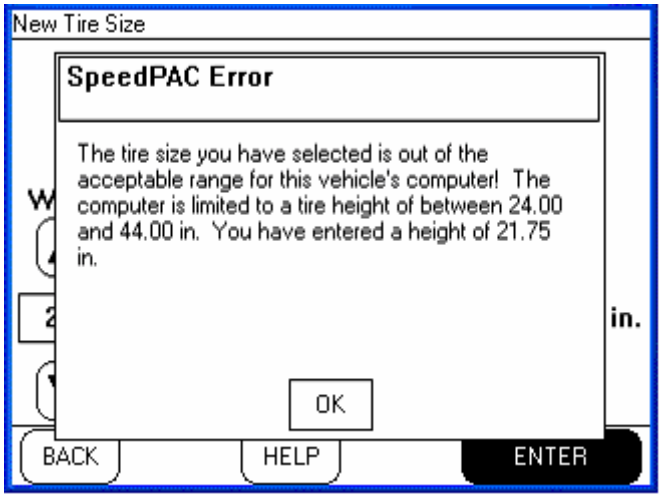


Second, enter the New Tire Size as shown on the sidewall of the tires that are currently being installed on the vehicle.

Touch ENTER after making all selections.



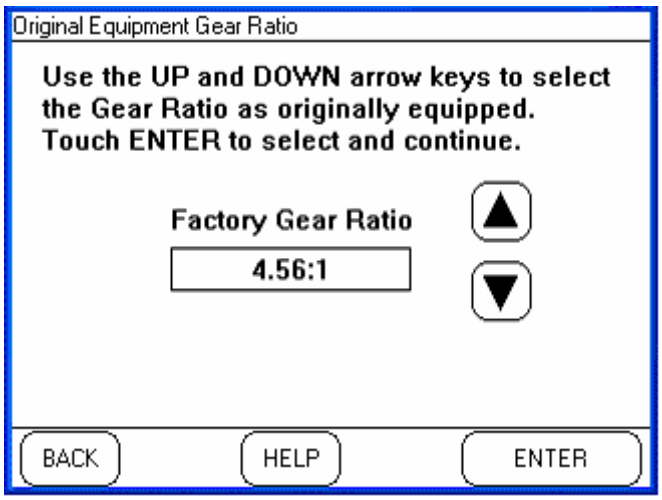
Note that when you enter the new tire size you might see an error message stating that the new tire height is out of range. This can happen on vehicles whose computer can only handle tire heights within a certain range. In this case the following screen will be displayed. You must go back and enter a valid tire size. If the actual size tire being mounted is outside the range of permitted tires you have the choice of entering the nearest valid tire size or aborting the programming process.



Gear Ratio

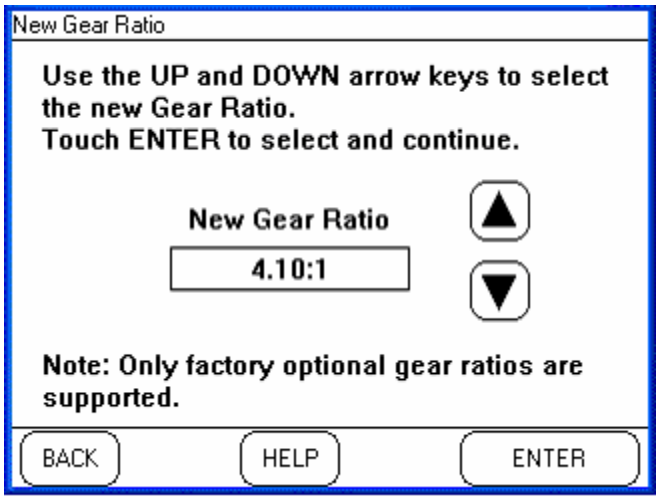
First, use the up and down arrows to enter the Original Gear Ratio as shown on the label in the driver-side door jamb.

Touch ENTER after making all selections.



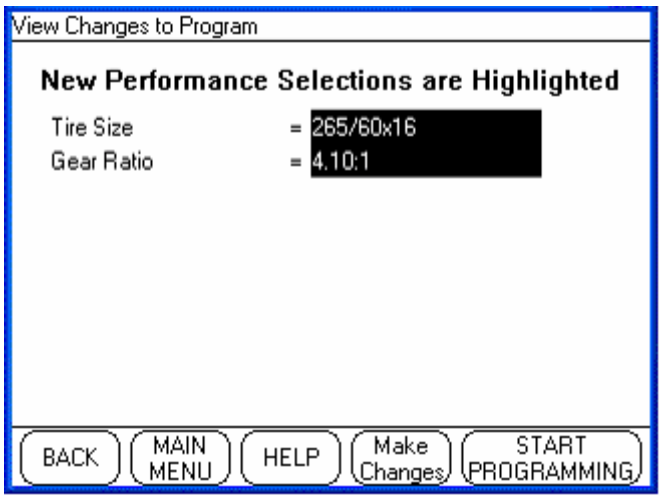
Second, use the up and down arrows to enter the New Gear Ratio currently installed on the vehicle.

Touch ENTER after making all selections.



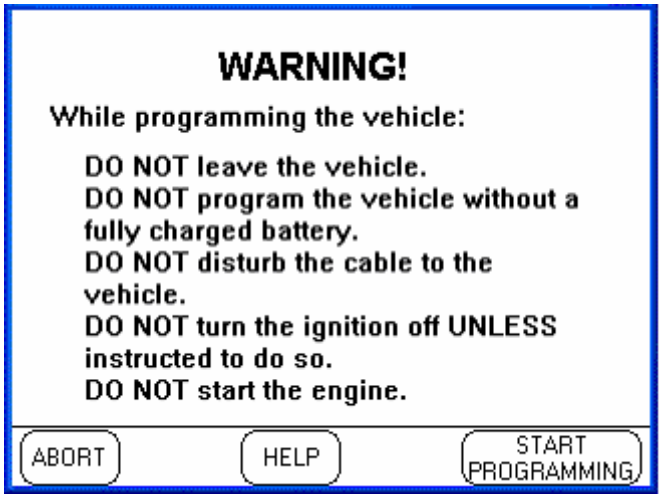
Programming New Changes

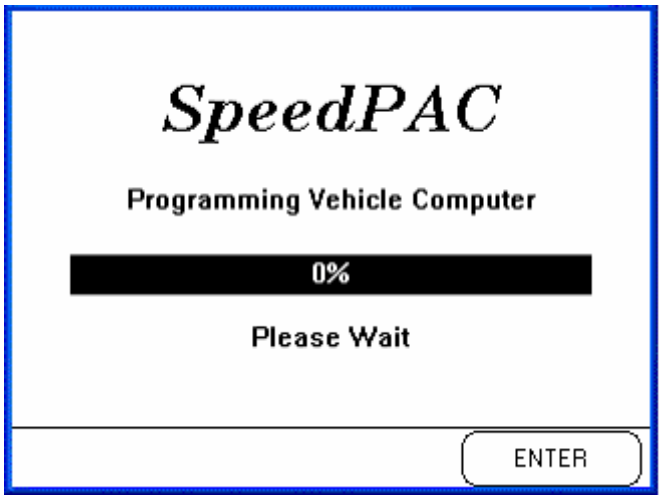
From the Speedometer Calibration Main Menu, touch PROGRAM CHANGES to see a complete list of all of the changes before reprogramming the vehicle.



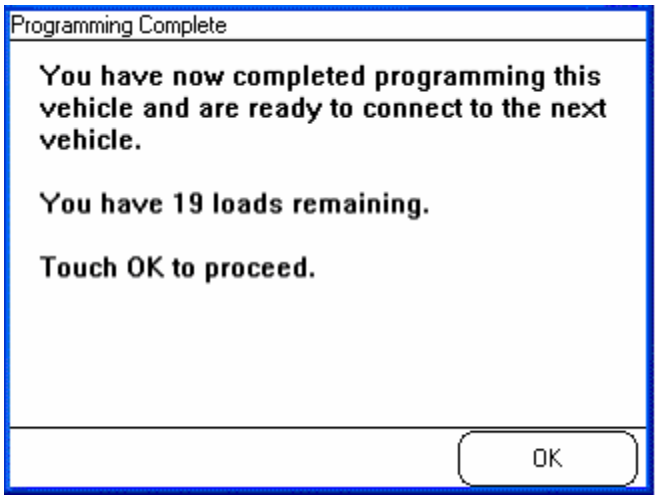
If you wish to make more changes before programming the vehicle, touch MAKE CHANGES. If all of the changes are correct touch START PROGRAMMING to begin the programming process. SpeedPAC will lead you through some simple instruction screens requiring you to cycle the ignition on and off, simply follow the instructions on the screen. These Instruction screens may vary depending upon Year, Make, & Model and are not shown in this manual. Whenever you are given instructions to turn the ignition on or off you must switch the ignition *before* touching the OK button. The programming process may fail if you do not follow the instructions exactly.

On average the programming process takes approximately 5 minutes.
The vehicle's engine cannot be running during the programming process.
Never leave the vehicle unattended during the programming process. To get a more accurate prediction of the programming time refer to the Vehicle Support/Programming Time List included with your SpeedPAC.

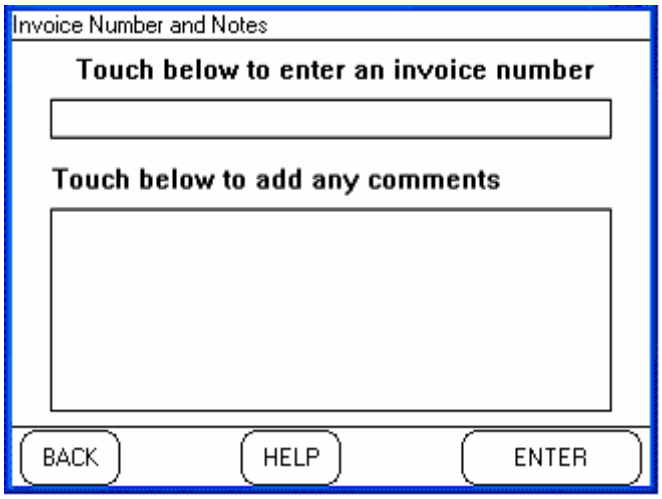


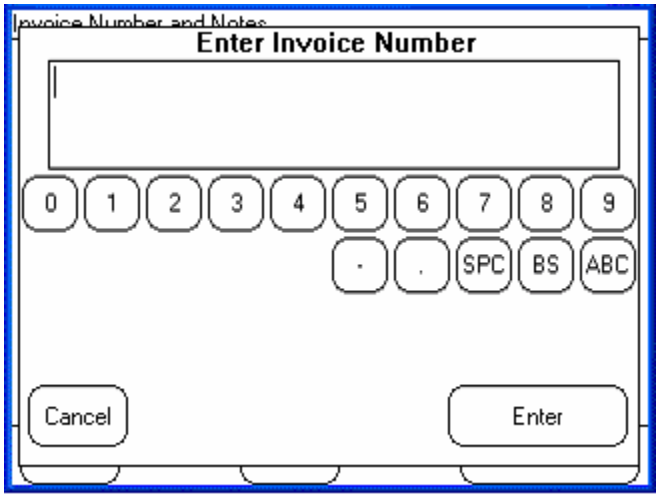


When the programming process has completed successfully you will see the following screen. This screen will reflect that your programming session has used one of the programming loads.

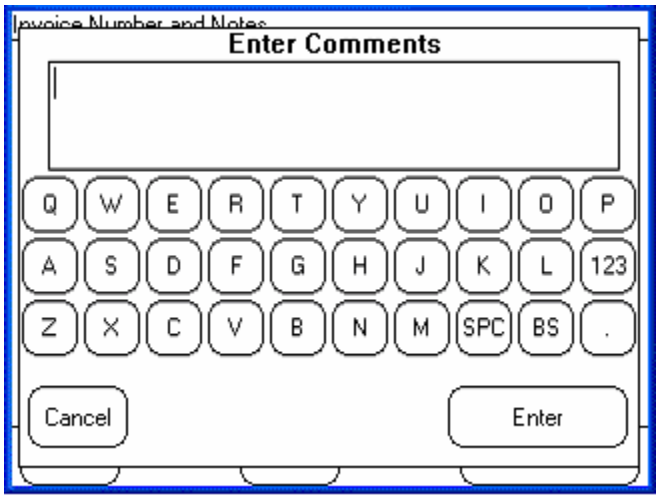


After this you have the option of entering your own invoice number for your records. This can be any alpha-numeric string. Touch the box to enter the invoice number.

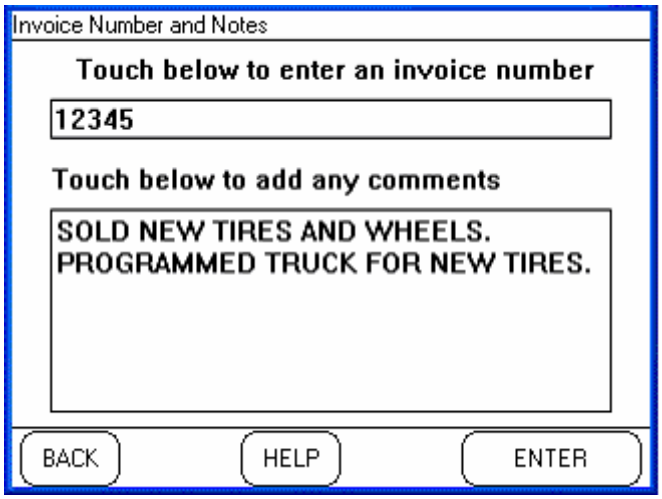




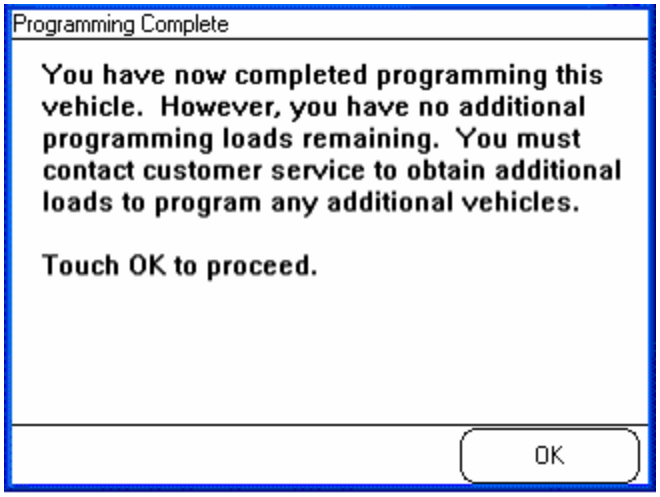
You can also enter any comments you wish. Touch the comments box to enter the text.



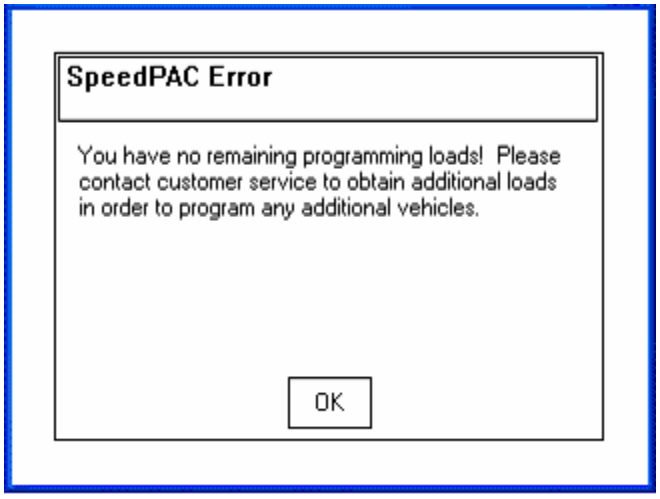
Touch ENTER to complete the session. This data will then be stored in the log file maintained in the unit.



If the programming session just completed used the last programming load available on SpeedPAC the following screen will be displayed. You must now purchase additional loads to be able to program speedometer corrections into any more vehicles.



Once the loads are used the next time you try to go to Speedometer Calibration the following error message will be displayed. Note that you can still view and clear diagnostic trouble codes (DTCs) without programming loads.

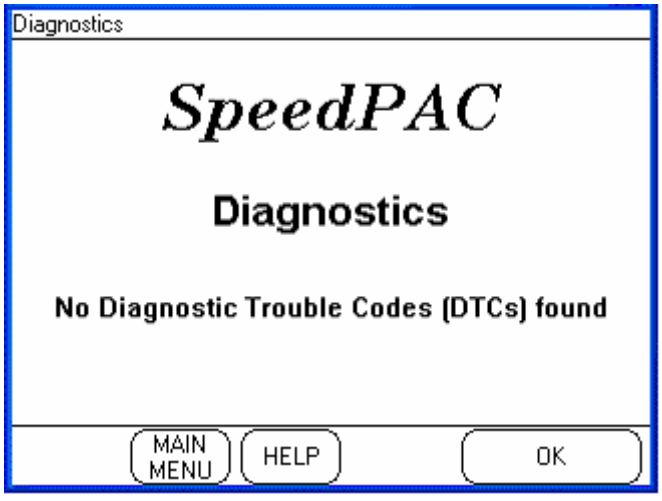


Diagnostics Program

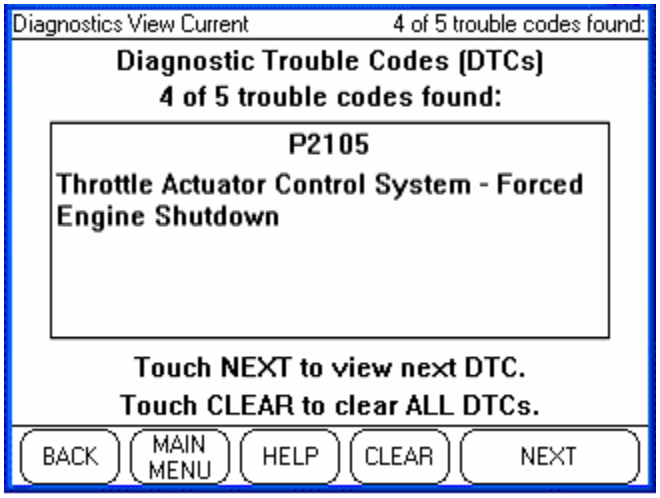
The Diagnostics program allows you to read and clear Diagnostic Trouble Codes (DTCs). The program not only displays the code, it also gives a description of what the code means. Use the Diagnostic program to trouble shoot problems and clear any codes after making the necessary repairs. Clearing the codes will also turn off any check engine lights that may have been triggered during the failure.

Enter the Diagnostic program from SpeedPAC's Main Menu by touching DIAGNOSTICS.

If there are no DTCs presently active in the PCM the screen will read No Diagnostic Trouble Codes Found.



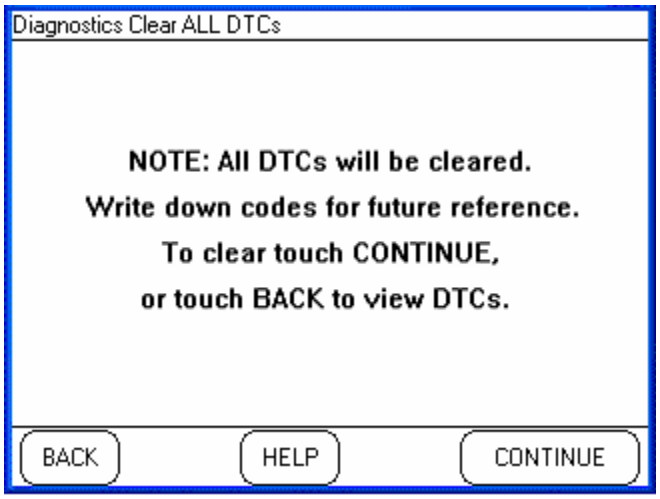
If SpeedPAC detects any codes it will display all the codes read one at a time.



If multiple codes are found, the display will show 1 of x trouble codes found. Touch NEXT to see the other codes. Touch CLEAR to clear **all** of the DTCs.

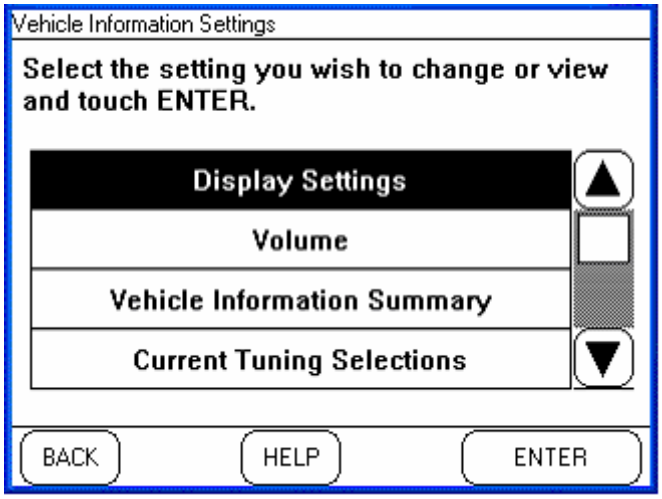
Clearing DTCs

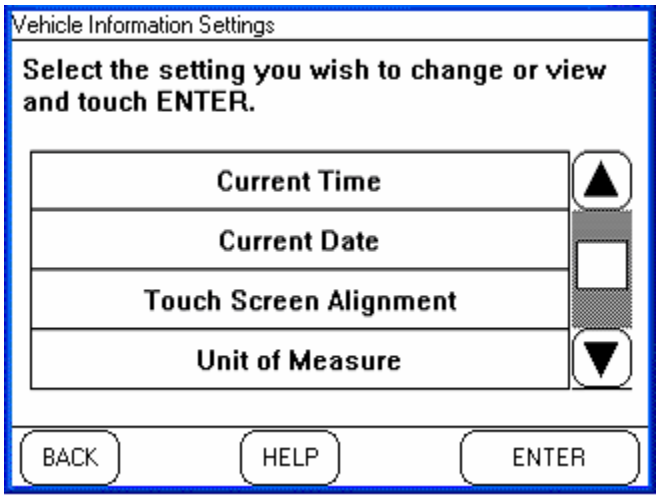
The clearing process will not allow you to clear individual codes. This is a limitation of the vehicle's computer, not SpeedPAC. It's always a good idea to write down the codes and their information for future reference. The screen will notify you that all of the codes are about to be cleared. Touch BACK if you wish to keep the codes without clearing them.

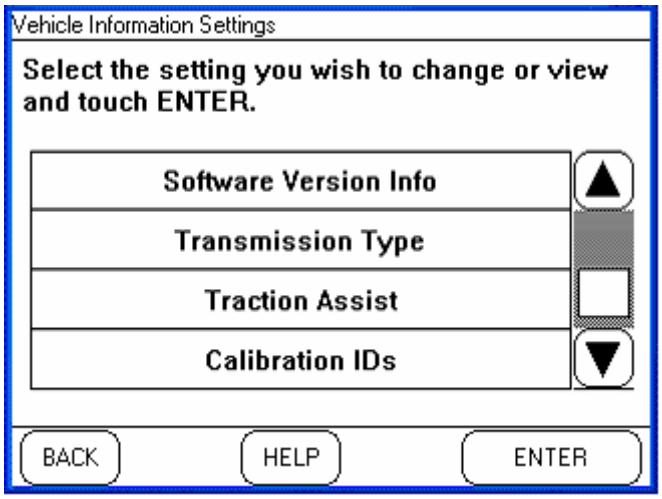


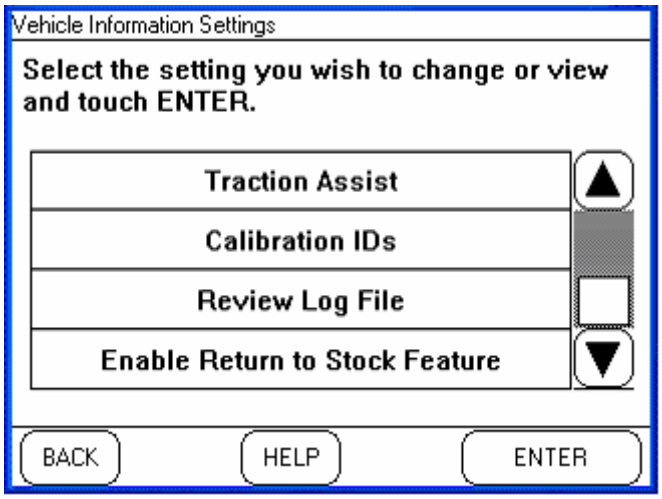
Vehicle/Owner Information

The Vehicle/Owner Information program gives you the ability to review or configure various overall settings for SpeedPAC such as display settings, volume, basic vehicle information, etc. These items can be viewed or changed at any time.



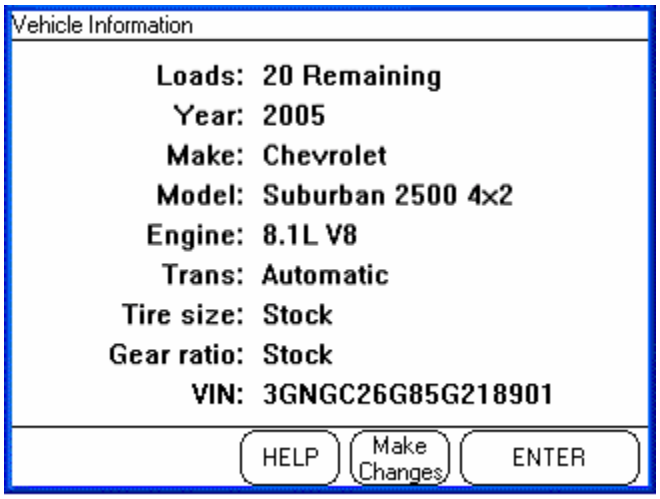



Vehicle Information Settings
Select the setting you wish to change or view and touch ENTER.
Software Version Info
Transmission Type
Traction Assist
Calibration IDs
BACK
HELP
ENTER


Vehicle Information Settings
Select the setting you wish to change or view and touch ENTER.
Traction Assist
Calibration IDs
Review Log File
Enable Return to Stock Feature
BACK
HELP
ENTER

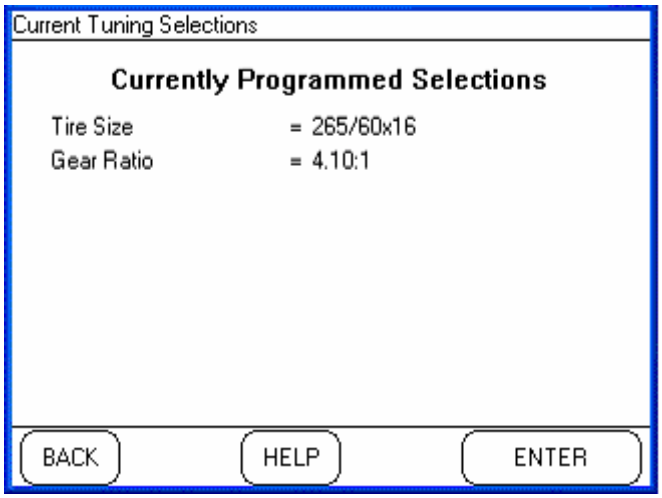
Vehicle Information Summary

This screen will show you a summary of the information about the current vehicle connected to SpeedPAC. This screen will also show you the number of loads remaining for programming vehicles.



Current Tuning Selections

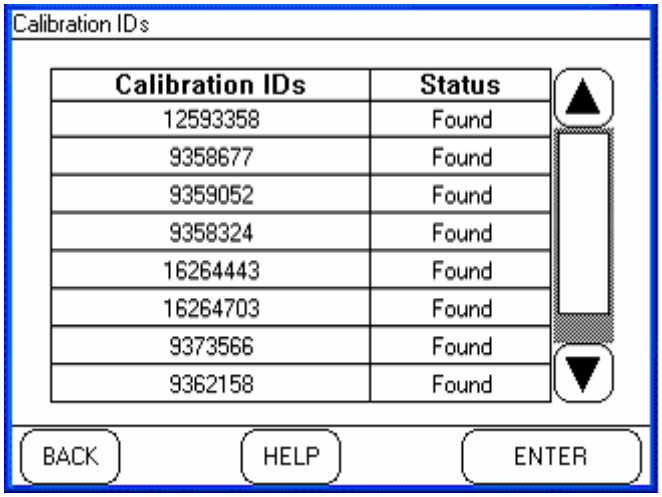
Any time you wish to review your current tuning selections you can go to the Vehicle/Owner Information program and scroll down and select Current Tuning Selections. This will show you all the settings you have selected for your vehicle at the current time. When the vehicle is in a fully stock condition (no speedometer correction applied) all these items will display Stock.



Calibration IDs

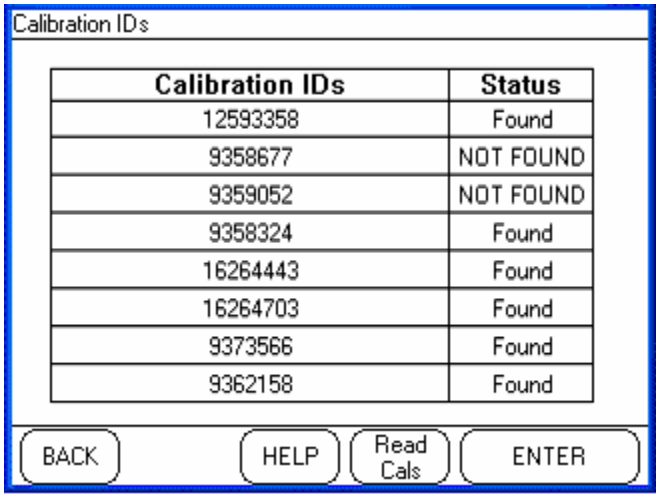
When SpeedPAC locked to your vehicle it communicated with the vehicle's electronic control unit. It then read the identification of the various calibration files contained within the ECM. This information is required by SpeedPAC to perform its speedometer correction functions. This information is available for display to the user.

To access this information you must start from the Main Menu and then go into Vehicle/Owner Information. Scroll down toward the bottom and find Calibration IDs, select this and touch ENTER. This will display the names of all the calibrations from your vehicle.



Calibration IDs / Reading Calibration Files

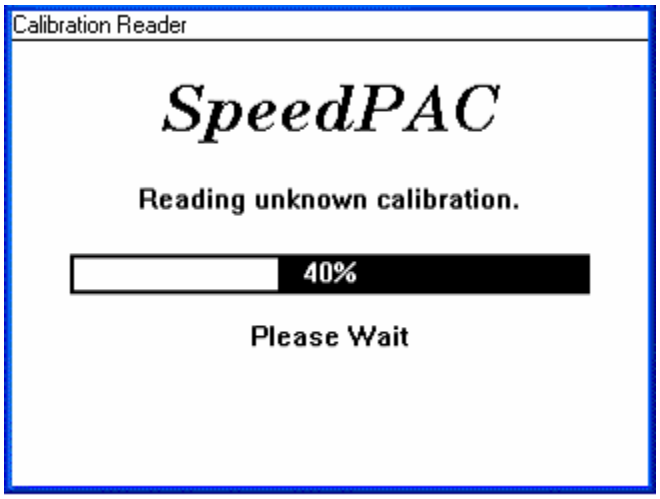
When SpeedPAC locks to your vehicle there may be cases where some of the calibration tuning files are not recognized. This can happen if the tuning files in your computer were produced after SpeedPAC was shipped from the factory. In this case SpeedPAC will have found a calibration in your vehicle but not a matching calibration in its internal databases.



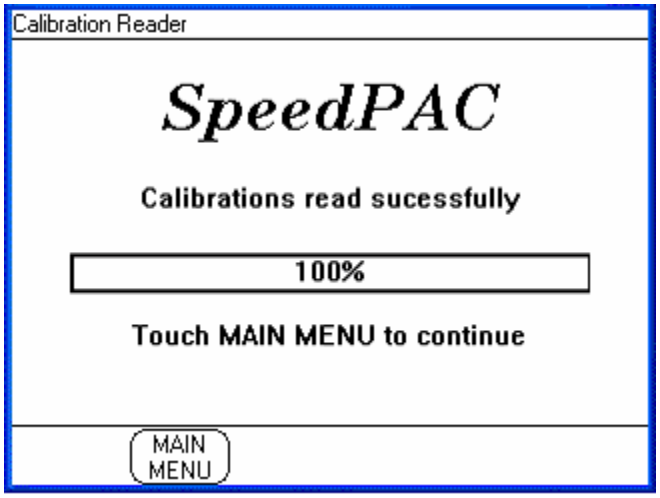
If this is the case then you will need to update your calibration files within SpeedPAC before it can program your vehicle. You will need to contact Performance Automotive Systems customer service and obtain an update to your unit. The customer service representative may ask you to go to this screen and report which calibrations are listed as "NOT FOUND". This will help to determine which calibration files are missing from your unit. He will then arrange for you to get the necessary update.

There may be cases where customer service may ask you to have SpeedPAC read the calibration files out of your vehicle. After they have been read Performance Automotive Systems will obtain them from you (via either an internet download or by having the unit returned to Performance Automotive Systems) and use these files to generate the missing calibrations you require.

To perform the calibration file read return to this screen and touch the READ CALS button. SpeedPAC will then display the following screens as it reads the calibrations.



Note that during the process of reading it may be required to cycle the vehicle ignition. Simply follow the instructions displayed on the screens.



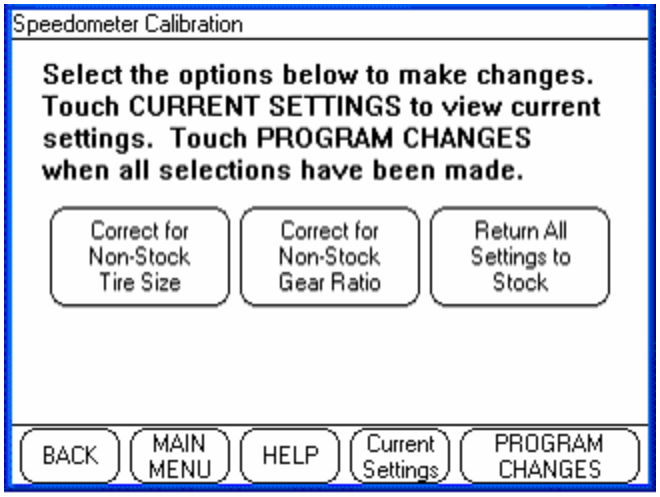
The calibration files will now be read and will be ready to be sent in to Performance Automotive Systems. After Performance Automotive Systems updates them you will receive an update to your SpeedPAC and you will then be able to program your vehicle.

Return to Stock

If you wish to return the last vehicle connected back to stock you can enable the Return To Stock feature. To do this go to the Vehicle/Owner Information Settings list, scroll down and select Enable Return To Stock. The next time you enter the Speedometer Calibration screen you will see that the Return All Settings To Stock button is displayed. Selecting this button and proceeding to program the vehicle will restore the vehicle's computer to its state when you first connected SpeedPAC to it.

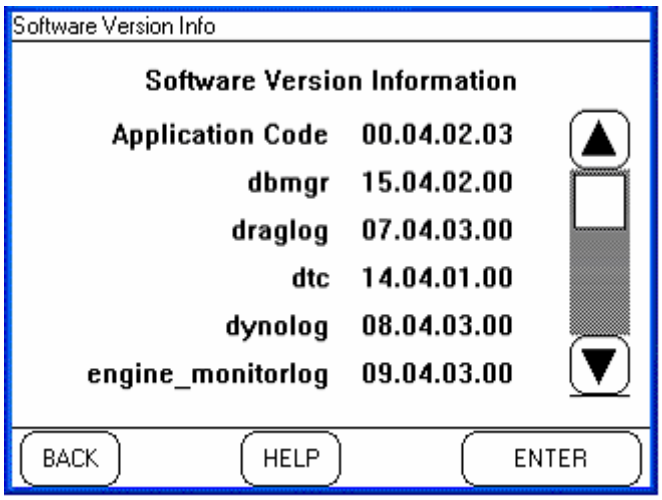
Note that only *the last vehicle connected* can be returned to stock. Once the SpeedPAC connects to a different vehicle the 'link' with the previous vehicle is lost and it cannot be returned to stock via this method.

Returning a vehicle to stock will return a single program load count back to the SpeedPAC.



Software Version Number

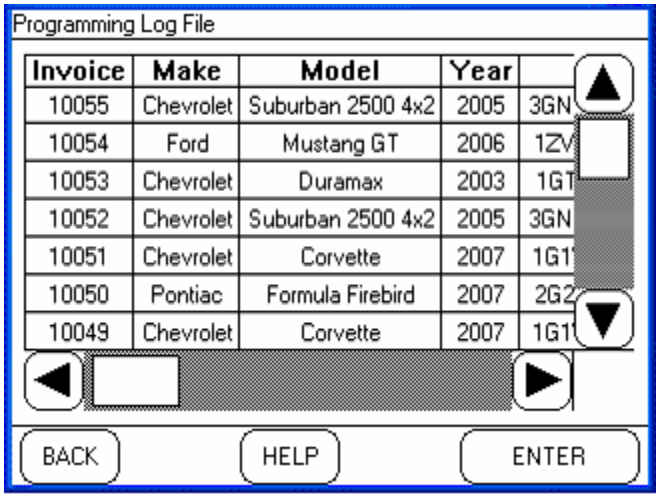
The versions of all of the software components that make up SpeedPAC can be viewed on this screen. Should it ever be necessary to call customer support for information or service on your unit this information may be helpful to the service technician to diagnose a problem. He may ask you to tell him one or more of the version numbers displayed on the screen.

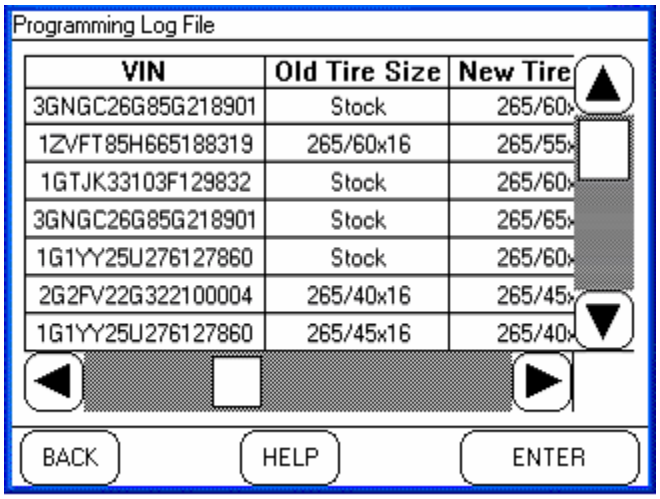


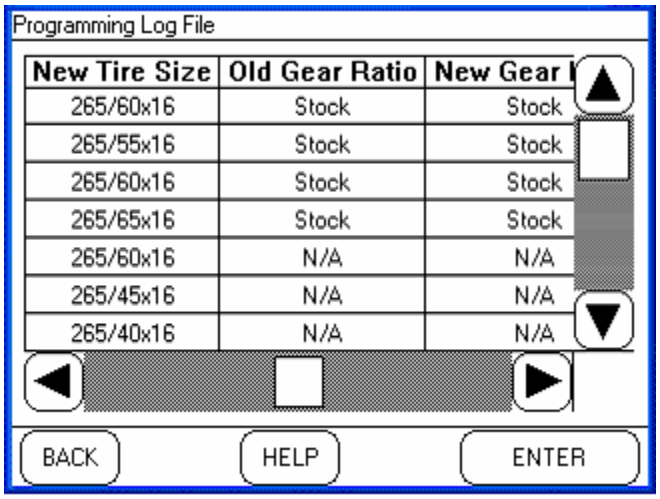
Review Log File

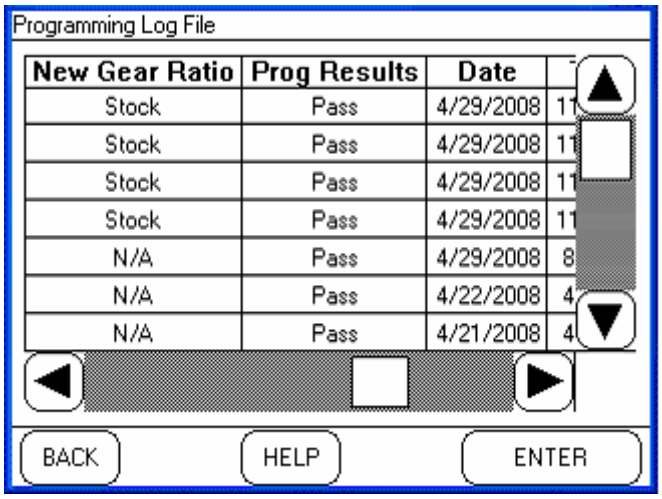
SpeedPAC maintains a log of all the programming sessions it has performed. This can be viewed at any time by selecting the Review Log File item. The unit maintains a history of each vehicle programmed, the selections made, the date and time of the programming session and the results. The unit also displays the user-entered fields for customer invoice number and operator comments which were entered after the programming session was completed. The most recent programming session will appear at the top with the earlier sessions below. Scroll through the screen to see all the available data.

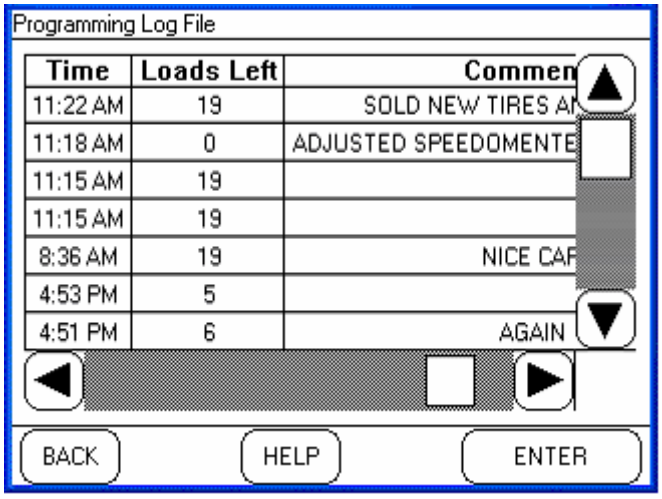
Note that if the unit encounters a problem when attempting to program a vehicle an entry is made in this table with a programming error code which might help customer service determine the cause of the problem. No program loads will be used unless the programming session was successful.

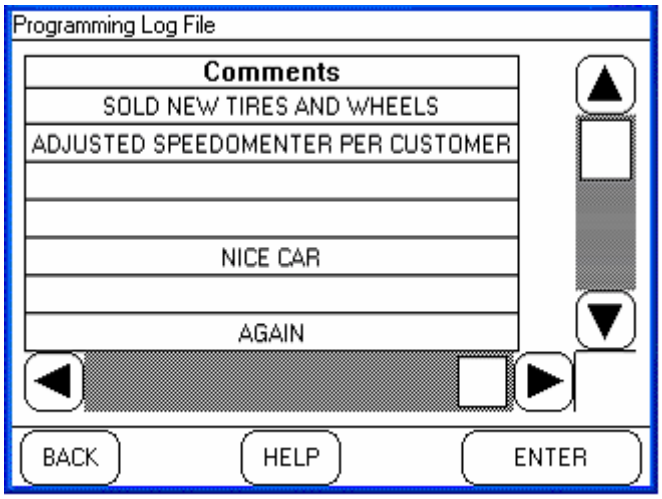





Programming Log File
New Tire Size
Old Gear Ratio
New Gear
265/60x16
Stock
Stock
265/55x16
Stock
Stock
265/60x16
Stock
Stock
265/65x16
Stock
Stock
265/60x16
N/A
N/A
265/45x16
N/A
N/A
265/40x16
N/A
N/A
BACK
HELP
ENTER


Programming Log File
New Gear Ratio
Prog Results
Date
Stock
Pass
4/29/2008
Stock
Pass
4/29/2008
Stock
Pass
4/29/2008
Stock
Pass
4/29/2008
N/A
Pass
4/29/2008
N/A
Pass
4/22/2008
N/A
Pass
4/21/2008
BACK
HELP
ENTER


Programming Log File
Time
Loads Left
Commen
11:22 AM
19
SOLD NEW TIRES A
11:18 AM
0
ADJUSTED SPEEDOMENTE
11:15 AM
19
11:15 AM
19
8:36 AM
19
NICE CAR
4:53 PM
5
4:51 PM
6
AGAIN
BACK
HELP
ENTER


Programming Log File
Comments
SOLD NEW TIRES AND WHEELS
ADJUSTED SPEEDOMENTER PER CUSTOMER
NICE CAR
AGAIN
BACK
HELP
ENTER

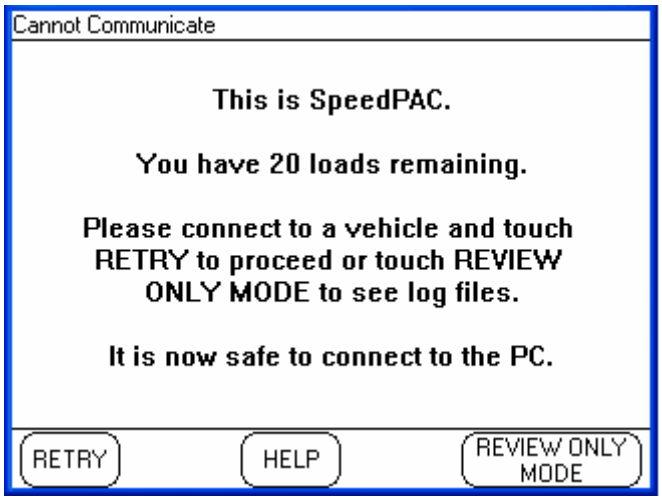
Obtaining New Program Loads

To purchase additional program loads for your SpeedPAC run the Dealer Application program on the CD sent with your unit. It will take you through the process of purchasing the loads either via account or through Paypal, and then guide you through the process of downloading the loads into your SpeedPAC. Note that you must have internet access on the PC and that the SpeedPAC unit must be connected to the PC via the USB cable provided.

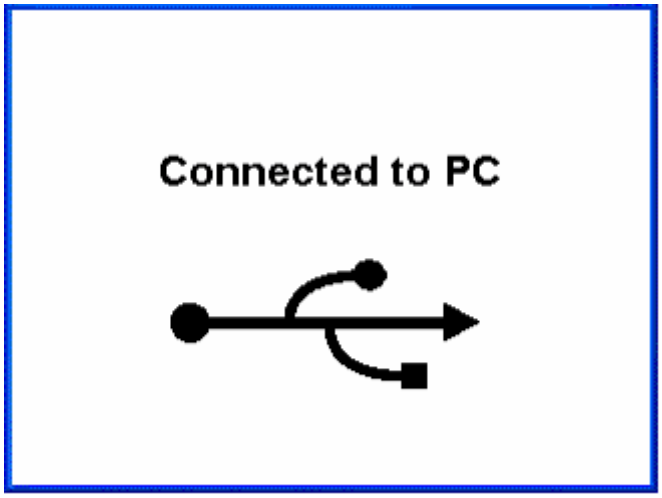
Downloading over the Internet

On your PC start the Dealer Application program. It will display the screen asking to connect the SpeedPAC.

Do not connect the SpeedPAC to the PC yet. Connect SpeedPAC to the power supply provided and power-up the unit. Wait for the unit to power up to the "Cannot Communicate" screen.



When the SpeedPAC displays the Cannot Communicate screen plug the USB cable into SpeedPAC. The PC software will then detect the SpeedPAC.

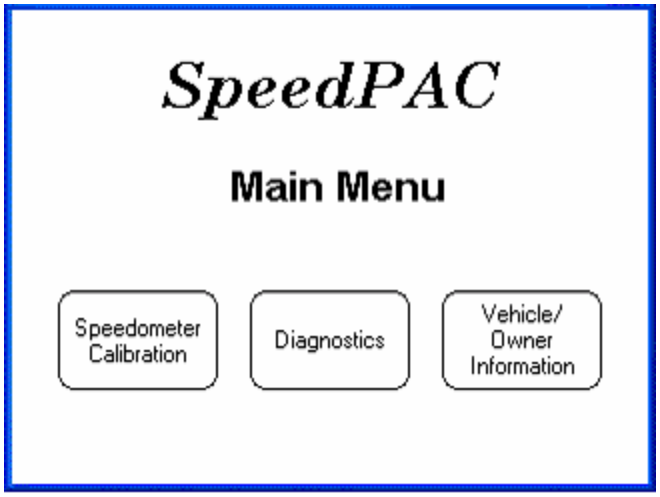


Follow the instructions shown on the PC to obtain the update. Once all the required files have been sent the unit will be automatically shut down. Once the unit is powered off it is required to power up again to complete the download process; however, you do not need to remain connected to the PC.

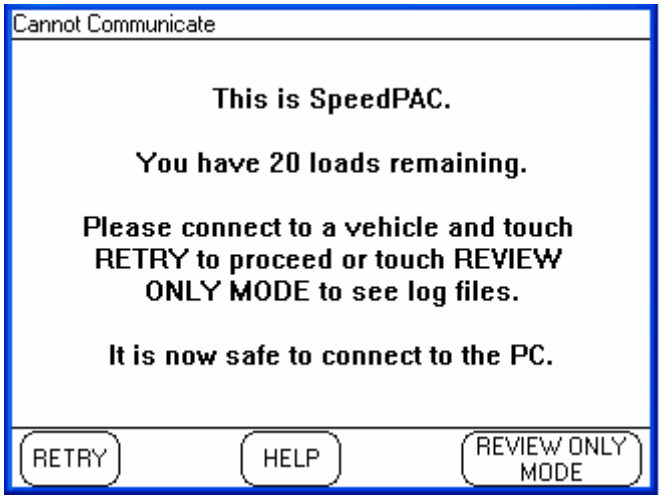
Update Using SD Card

After calling Performance Automotive Systems to purchase your additional loads you can choose to have them sent to you via an SD card. This will be shipped to you. To use this SD card simply power up your Speedometer Calibrator either in the vehicle or while connected to a wall-mount power supply. Once the unit comes to the main menu, shown below, insert the SD card into the slot at the bottom of the unit.

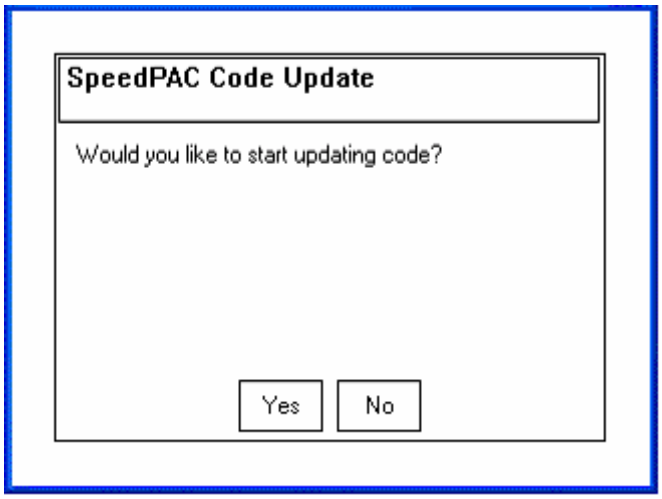
If connected to a vehicle wait for this screen to be displayed before inserting the SD card.



If powered by a wall-mount power supply wait for the Cannot Communicate screen before inserting the SD card.



A few moments after inserting the SD card the following screen will appear.

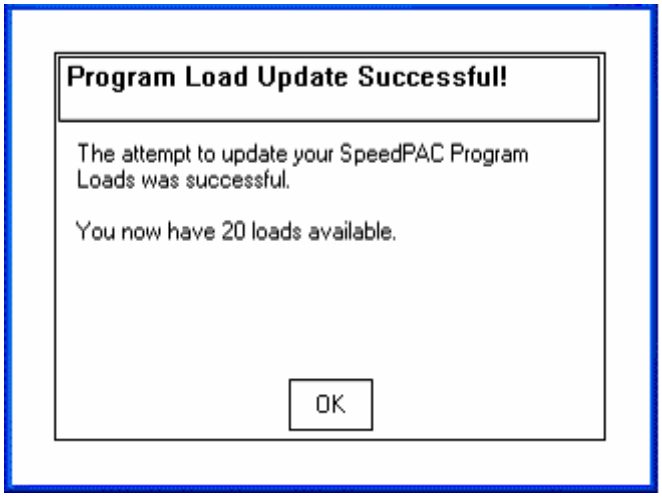


Touch "Yes" to begin the update process; "No" will return you to normal operation. After touching "Yes" the load update process will begin. Depending on the number and size of the files being updated this can take anywhere from a few seconds up to about ten minutes. DO NOT remove the SD card from the slot at any point during the update process or damage to the files may result.

The code update application will show you its progress as it goes. Wait until the screen shows "CODE UPDATE COMPLETE" before removing the card. Once this is displayed remove the card and power off the unit. When you power up the update process will complete.

Next Power Up

The next time you power up the Programming Load update process will complete. If the update is successful the following screen will be displayed and the load count will be updated. If a failure screen appears contact customer service.



After successfully loading the additional Program Loads you are now ready to program additional vehicles.

Calibration Not Found/Code Update

If you should connect to a vehicle and get the "Calibration Not Found" error you will need to obtain a new tuning calibration file from Performance Automotive Systems. Updating the tuning files can also be handled via the Internet or SD card – just as the Program Load update can.

Should you ever require an update to the executable code in SpeedPAC this too can be handled in the same way.

Please refer to the above section for instruction on how to obtain and download the new calibration or executable files.