CurveMaker HD v1.0
2Ki Programmable
Ignition programming software

Dynatek
164 S. Valencia St.
Glendora, CA 91741
phone (626)963-1669
fax (626)963-7399

Contents   page

WARNING: This product is intended for use by experienced tuners only. Improper ignition tuning may cause severe engine damage, resulting in personal injury.

1) Installation

 Insert the CurveMaker CD into your CD ROM drive. Open the CD in Windows Explorer. Double click on the Setup icon to begin installation.

 The Setup program first checks to see if the computer has the correct Java version already installed. If it does not, the correct version is installed. Allow the Java program to be installed into the default directory.

 Once this is done, there is a choice between a complete and custom installation. The custom installation allows installation of only the files needed for the ignitions you plan on programming. The complete installation installs the files for all of the ignitions.

 The program will be installed to the C:\Program Files\Dynatek folder by default. Do not change this setting.

 The installation program will create a Program group named "Dynatek". To find it, click the Windows Start button, then click "Programs" on the menu that appears. When you click on "Programs" another menu will appear, and "Dynatek" will be one of the choices. Click "Dynatek", and another menu will appear. This menu will contain an icon for each ignition that you specified during install. Click on the model that you want to program and the CurveMaker program will start.

 Some computers may not be able to complete the setup program. If the setup program fails before or during the installation of the Java Virtual Machine, there is a second method to try. On the CD in a folder labeled contents, is the file jre1_2_2-001-win.exe. Install this program first, then restart your machine, and run the setup program again.

2) Overview

 The Dyna programmable ignition is delivered with the switches enabled. With the CurveMaker software, a custom curve can be programmed, and the switches disabled. The rev limit, single or dual fire, rear cylinder offset and number of dead revs during cranking can also be programmed.

 Once the ignition curve is programmed into the ignition, it can not be dowloaded from the ignition. This allows tuners and race teams to make their curves, program customer's ignitions with them, and still keep them proprietary.

The information for the curve is displayed on the Timing page. Each page has a tab that is used to access it. There are three tabs:

About, which is the title screen for the software;
Timing, which shows the WOT and part throttle curves, as well as other settings, and
Diagnostics, which shows all the operating information that the ignition records.

The About page displays contact information for Dynatek. This is the screen that the software displays initially.

The Timing page displays the ignition Timing Map, which is the advance curve created from the Ignition Timing Break Points that can be adjusted by the user. This page also has a user editable Curve Description field. There are also settings fields for single fire/dual fire, the number of dead revs during cranking, rear cylinder offset, and Rev Limit. All of these fields can be modified by the user. Once all of the curves are set, the ignition is programmed by pressing the Send Curves button. This will also disable the switches. The switches can be re-enabled with the button on the Diagnostics page.
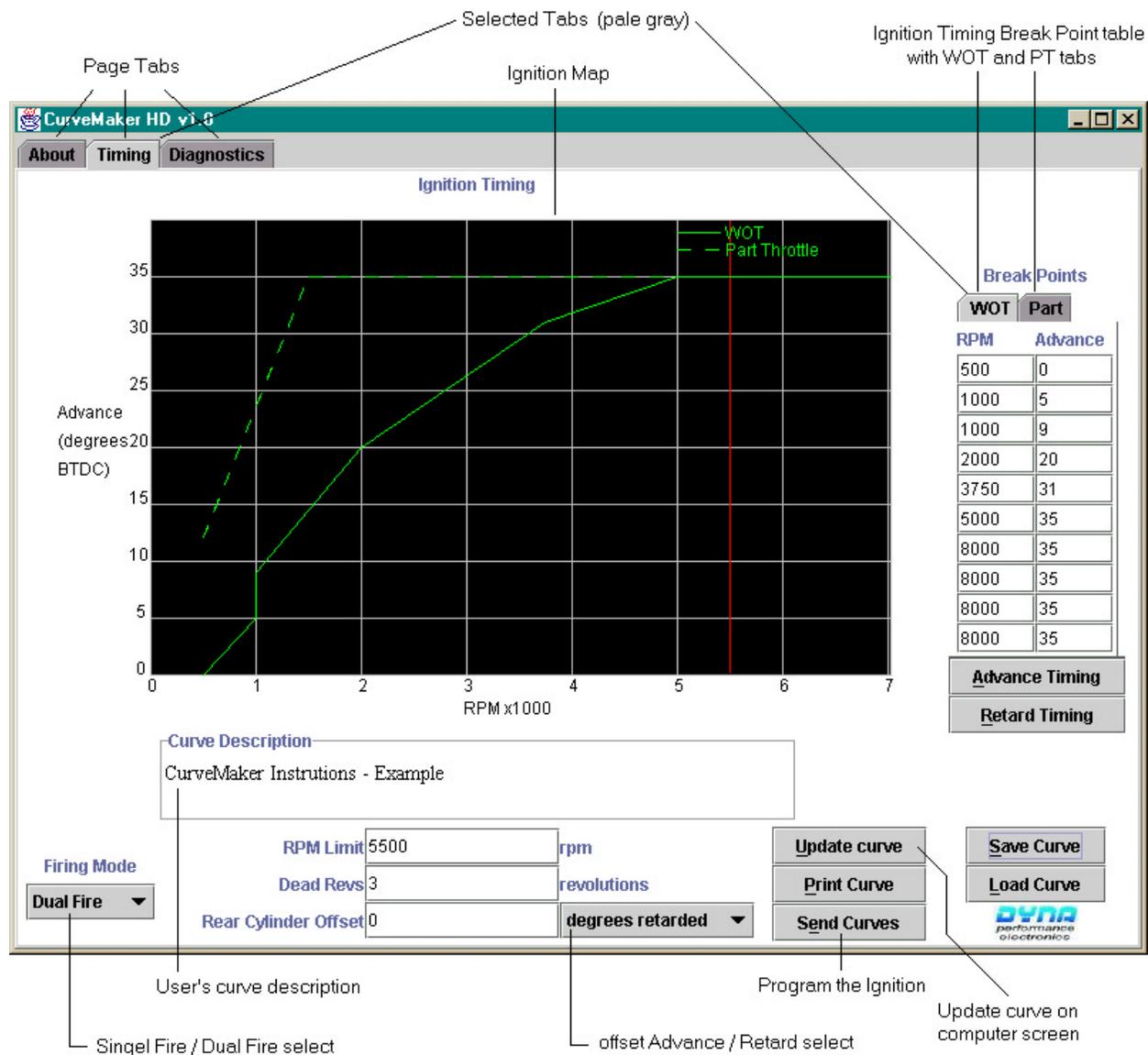
The Advance Timing and Retard Timing buttons will add or subtract one degree from all breakpoints in both WOT and Part tables. This is equivalent to rotating the pickup plate.

The Load and Save Curve buttons allow you to save and reload all of the information that you have programmed. It will save the curve, as well as the other settings.

3) Programming a Curve

When you reprogram the ignition, it programs all of the ignition settings with all of the information from the program. So before you program it, make sure both curves are set as you want them, and that all of the other settings are correct as well.

The timing curve is broken up into Wide Open Throttle (WOT) and Part throttle timing curves. To select which of these curves to adjust, click the tab on the right side of the screen corresponding to WOT or Part throttle. For bikes not equipped with a VOES sensor, the WOT timing map is the one used, so adjust the WOT throttle timing curve. Each timing curve is defined by the Break Points in the table on the right side of the screen. Both the RPM and advance values can be adjusted. To adjust these values, use the mouse to click on the value you would like to change, then enter the new values. Advance can be set in one degree increments, and RPM in increments of fifty. Once the values have been changed, click the Update Curve button to show the changes on the Timing Map.

The first RPM listed is the RPM at which the Dyna ignition transitions from crank mode to run mode. Below this RPM, the ignition fires at the trailing edge of the rotor window, normally set at Top Dead Center or slightly after.
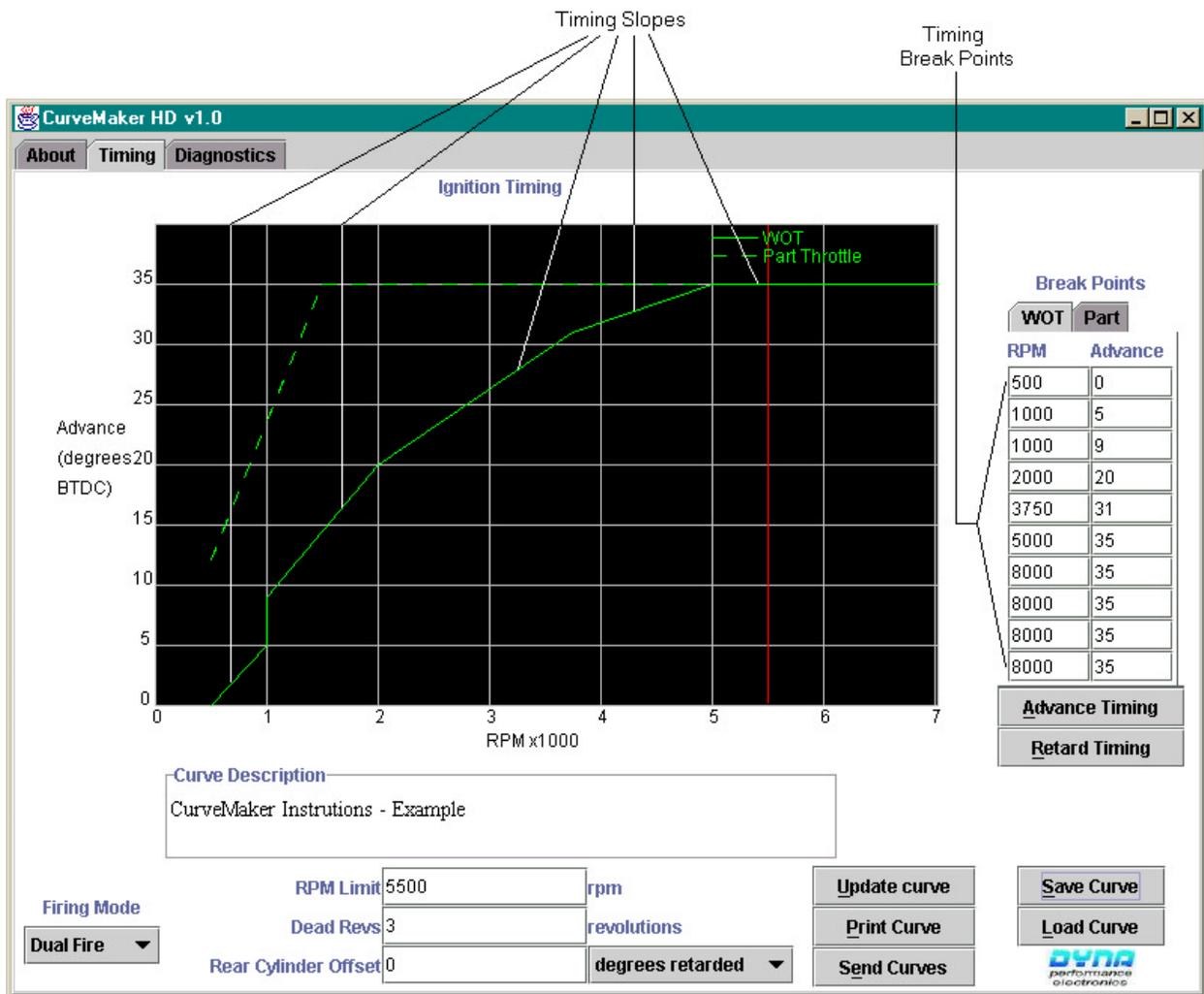
Each ignition curve is defined by timing slopes. A timing slope connects each Break Point with the next. There is not a timing slope between two points if the ignition timing is a vertical line. In the above example, the only line on the Timing map that is not a timing slope is the vertical line at 1000 rpm that goes from 5 to 9 degrees of advance. The ignition accepts a maximum of 8 timing slopes per timing curve.

The other parameters are shown at the bottom of the screen. The Rev Limit point is shown as a red vertical line on the display. If it is set above the range of the display, it will not be shown. But its value can still be read from the Settings area below the Timing Map.

4

An example of programming is shown in the following screen shots. The fourth point of the Wide Open Throttle curve will be modified by increasing the timing 1 degree and lowering the RPM by 50 rpm.
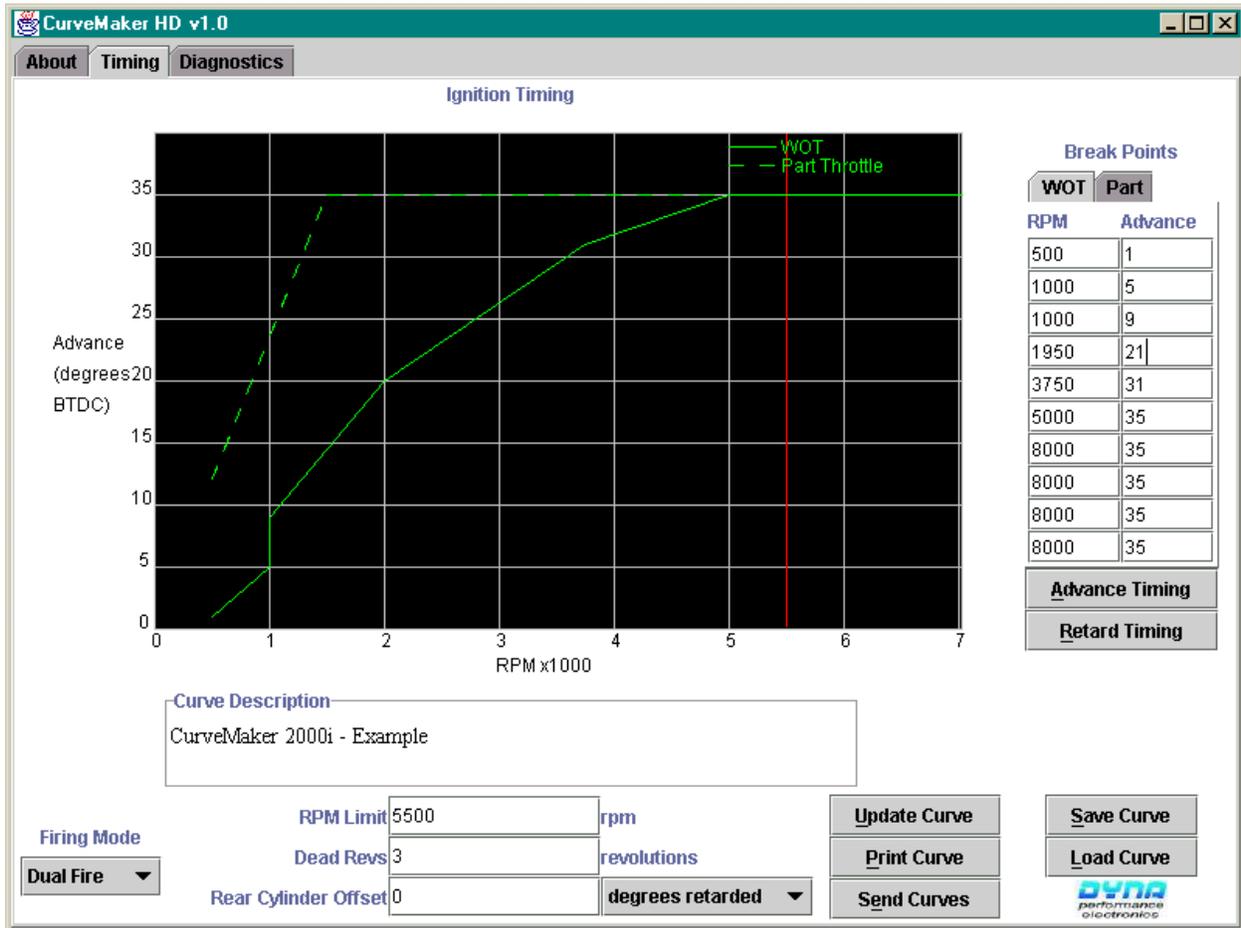
Select the "WOT" Tab to adjust the Wide Open Throttle curve. Move the mouse over the Advance value next to 2000 RPM, and click the mouse button to edit the value. Enter the new value for the Advance. Move the mouse over the rpm value, click and enter 1950 rpm.

Now the advance has been changed, but it does not show up on the Timing Map yet. To see this new change on the Timing Map, press the Update Curve button.
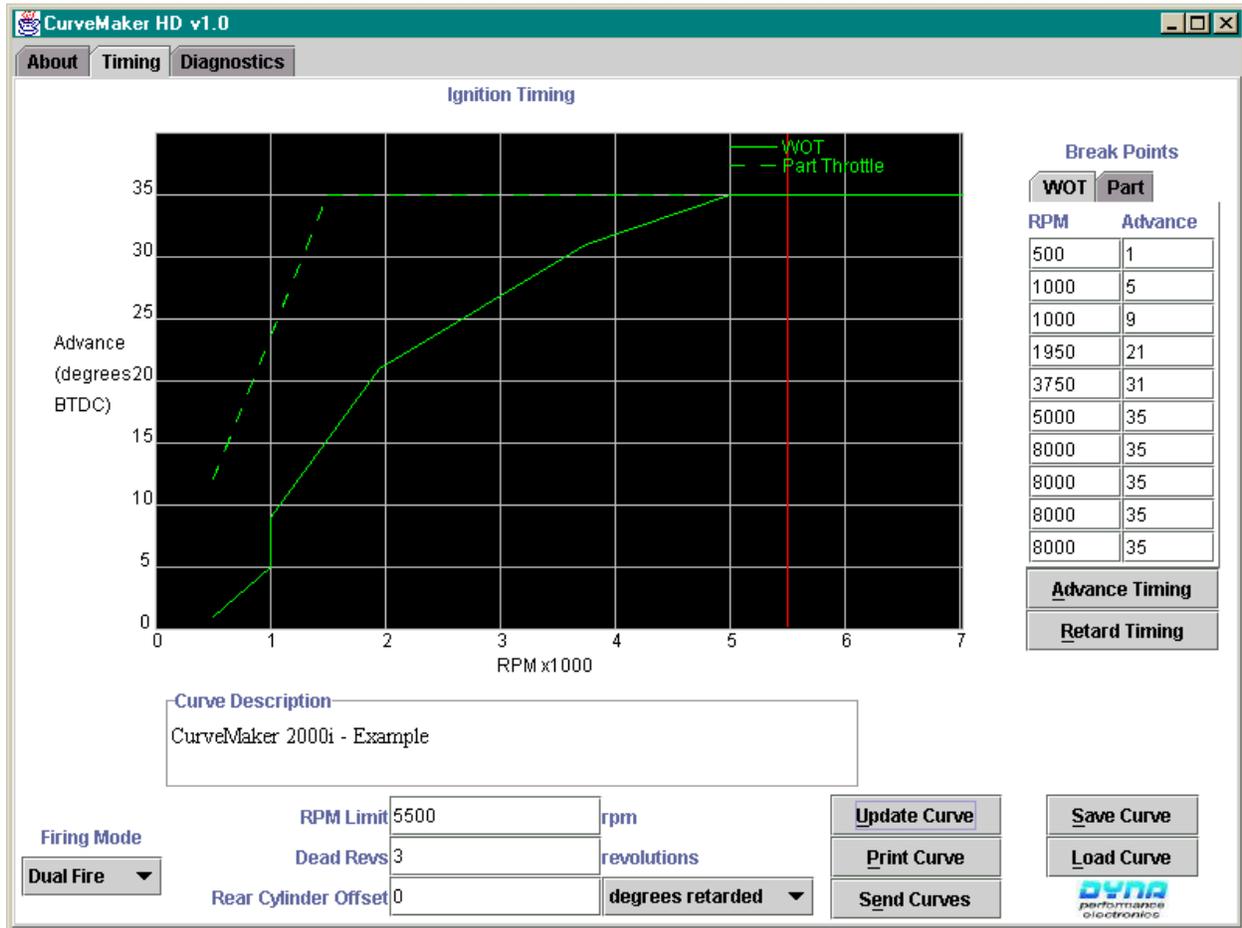
Now the updated curve is displayed. Programming the Part Throttle settings as well as the other parameters are done in the same manner. The firing mode and the direction of rear cylinder offset are selected by clicking on the button, and selecting from the list that will appear.

4) Loading/Saving Curves

Curves can be stored to disk for reference later. Each curve is stored individually. Curves are stored into subfolders under the Dynatek folder. Each model of bike has its own separate folder for storing curves. To save a curve, make sure that the curve to be saved is the one currently displayed. Press the Save Curves button. A window will pop up asking what to name it, and where to save it. By default, it will save curves into separate folders for each model of bike. All curve files must be labeled with a ".DTK" extension.

Loading a file is done in the same manner as saving a file. Click on the Load Curve button, then choose the curve to be loaded.

Hint: By default, CurveMaker will start with the standard curve, and the user then has to load whichever custom curve is desired. To have a custom curve that CurveMaker loads on startup, simply name the curve "Curve 1.dtk". (There is a space between "Curve" and the numeral "1".) CurveMaker will then load this file on startup. If the curve being edited gets hopelessly confused, you can always quit the program, then restart. It will then reload the default curves, or the curve placed in "Curve 1.dtk".

6

5) Printing Curves

   To print the currently displayed curve, simply hit the Print Curve Button. The software automatically prints to the default system printer. The Part and Wide Open Throttle timing curves will be displayed, as well as the timing curve break points for each, and the other ignition settings.

6) Programming the Ignition

   Make sure that all loaded curves and settings are satisfactory before beginning the programming process. The programming process programs both curves simultaneously. Connect the DB-9 end of the cable to the serial port on the back of the PC or laptop. Plug the other end of the cable into the Dyna 2000i programming adapter, and connect the programming adapter to the bike. The bike must not be running, and the ignition must be turned on after the programming cable has been connected properly. If the cable is properly connected, the red LED will not flash, and the green LED will light, when the ignition power is applied.

<u>Programming Adapter Wire Connections</u>

<u>Adapter</u>	<u>Bike</u>
White	12 volts
Black	Ground (engine case)
Green	Ignition tach wire (green)
Purple	Ignition VOES wire (purple)

        Note: The ignition VOES and Tach Wires usually may remain connected to the vacuum switch and the tach. Some tachs may indicate high RPM during programming. If tach damage from overrange indication is a concern, disconnect the tach during programming.

   In the CurveMaker software, go to the Ignition Curve pages. Press the Send Curve button. After several seconds, a window will pop up stating either that the programming was successful, or that it did not work. If the programming fails, it will give you an error message. Once programming is finished, disconnect the ignition from the programming cable.

   A "Curves Sent Successfully" message indicates that the curves were sent, verified, and programmed.

   A "Programming Failure" message means that the ignition received the data properly, but was not able to store the data. Make sure that the battery is good(at least 8V), and the programming cable is in good shape.

   A "Communication Failure" message means that the data received by the ignition was corrupted. Check the programming cable.

   A "Ignition not found" message means that the ignition was not found on any available comm port on the system. Make sure the ignition is plugged securely into the programming cable, and that the programming cable is plugged securely into the PCs serial port. If all of this is good, there may be another program that has control of the comm port, so that the CurveMaker software can not use it. Dynatek can not troubleshoot problems like this that are specific to your machine. If you do not know how to resolve these types of problems, you should take the computer to a person who can. To assist in determining what comm port the ignition is on, it has been set up to send text messages to standard terminal programs, like Hyperterminal which comes with Windows. The terminal program should be set up for 9600 baud 8-N-1 communications. When the ignition receives a "control-R" character, it will respond with the text message "2Ki". This will allow you to find which port the ignition is on.

7) Retreiving the Diagnostic Data

   To view the diagnostics page, click on the diagnostics tab. Click on the Download button to retrieve the data in the ignition. The screen shot below shows that, since the last reset (of all data), the engine was started once, full throttle was used for 372 seconds with the engine at 2400 rpm at the end of the 372 second period, the engine reached a maximum speed of 4350 RPM, and was run for 0.07 hours between 2500 and 3000 rpm, and .04 hours between 2000 and 2500 rpm. If a VOES switch is not used, all engine operation will be labeled as WOT operation.

Data listed as hours is sampled every 2 ¼ minutes, and data listed as seconds is sampled twice per second. The maximum engine speed is sampled every engine revolution. The engine must be run for 2 ¼ minutes to record an engine start. All of the data stored in the ignition, except total operating hours, can be reset. Check the boxes for the data functions to be reset, and click the reset button.

Also shown on the Diagnostics page is the button to re-enable the switches. Note that the Time Near Rev Limit data is within 100 RPM of the programmed rev limit, or the switch selected rev limit, whichever is enabled.
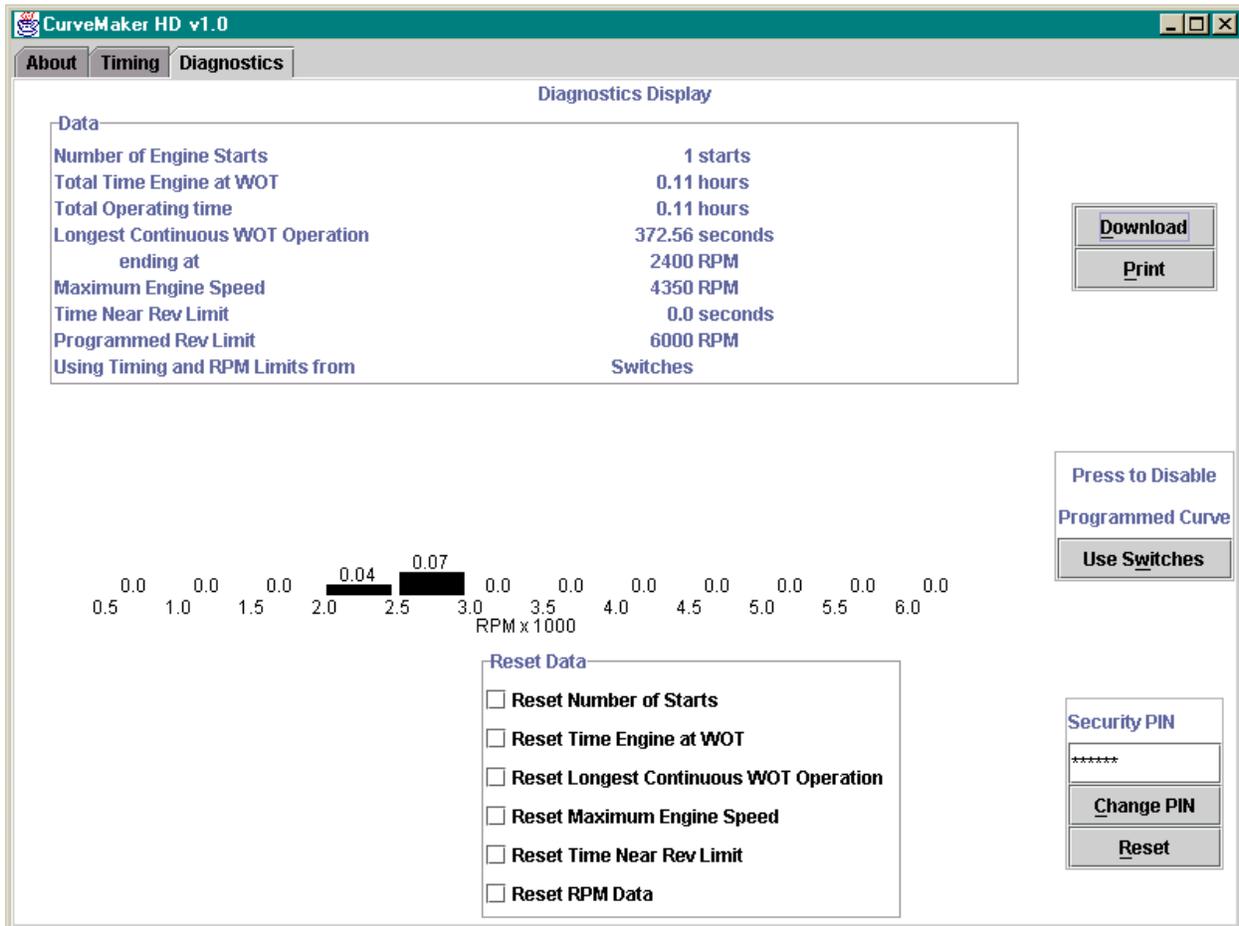
8) Setting a PIN Number

   The ignition and CurveMaker software are delivered with the default PIN number "PIN123". To change the PIN number, click the "Change PIN" button, and a window will pop up, asking you to enter the new PIN number twice. The maximum length for the PIN number is 6 characters. If you enter a new PIN number, DO NOT LOSE THE NUMBER. Note that the number is case sensitive (pin123 is not PIN123), and that all printable characters (./, ?, >, <, etc.) may be used. CurveMaker always opens with the default PIN123. Your new PIN number must be entered each time CurveMaker is opened, before the ignition can be programmed or data cleared.

9) Helpful Hints

Always make sure to use the description field to describe what the ignition curve is. This is saved in the curve file, so you can remember what the curve is for later.

Once the ignition is programmed, print out a copy of the curve that the ignition was programmed with for future reference.

Some tuners have chosen to permanently ground the VOES in order to use the Part Throttle curve at all times. This will not allow programming. To use a traditional Part Throttle curve at all times, copy the part throttle curve to the WOT, and leave the VOES wire disconnected (except when programming).

Rev. 10-6-04