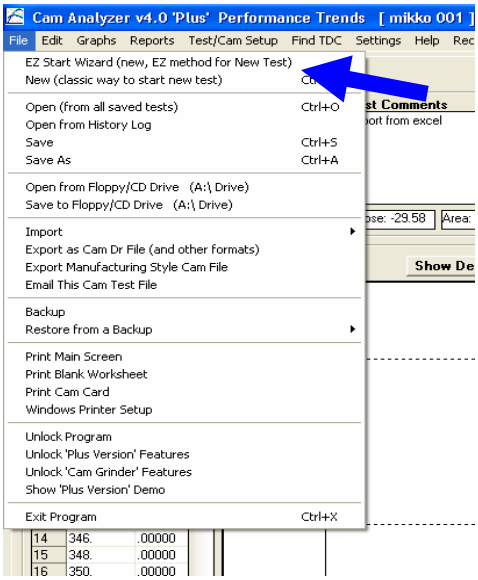
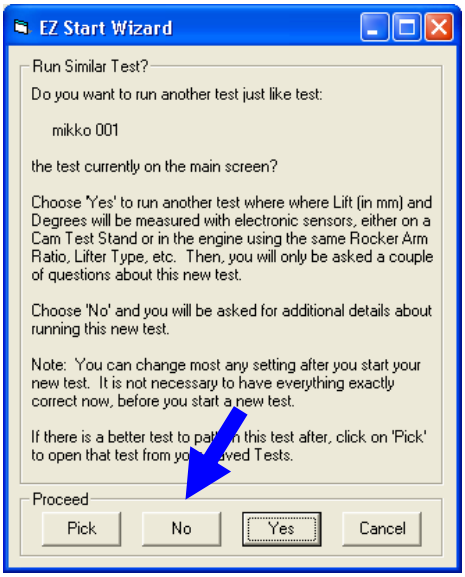
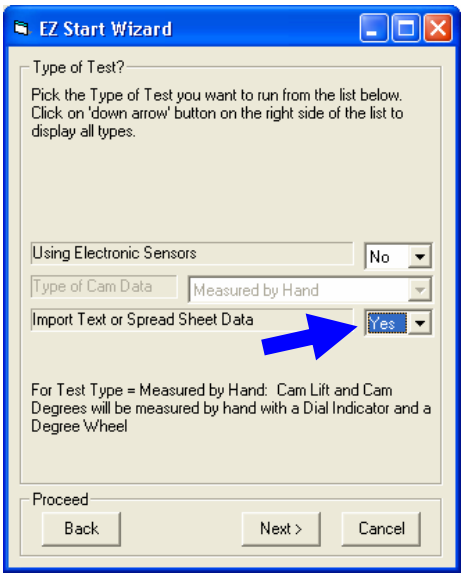
Converting Profile to Cam Grinding Wheel Path (using mm lift, using inches is very similar)

We will describe converting a profile measured with a smaller diameter roller to a larger diameter Cam Grinding wheel path for a cam grinder. First you will start a new test by clicking on File, then EZ Start Wizard. As always, save the existing file (if any) as any recent changes will be lost when starting a new test.

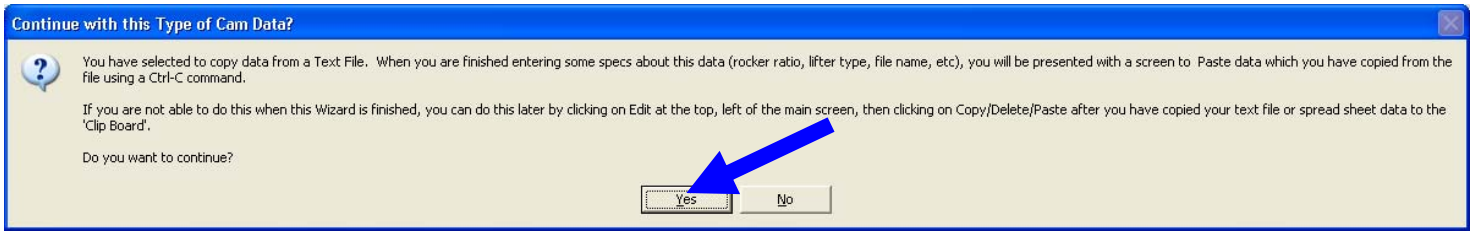
Click on No for the first screen in the EZ Start Wizard. The next screen is critical, you want to choose "No" for Using E Electronics and "Yes" for Import Text or Spread Sheet Data. For the next screens, your inputs are not critical.



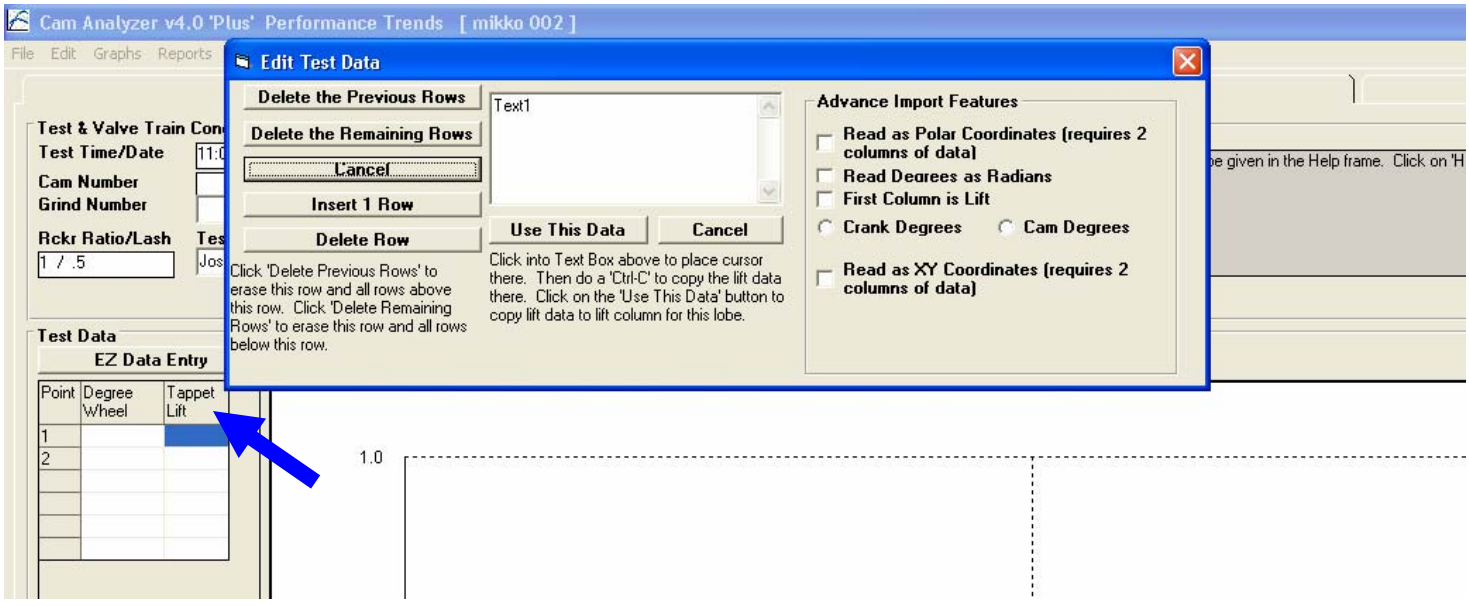




When done with EZ Start Wizard, the program will present this explanation, and present you with the "Edit Test Data" screen shown below, and click Yes.



If the "Edit Test Data" screen does not appear, click on the top, gray cell in the "Tappet Lift" column to bring it up.

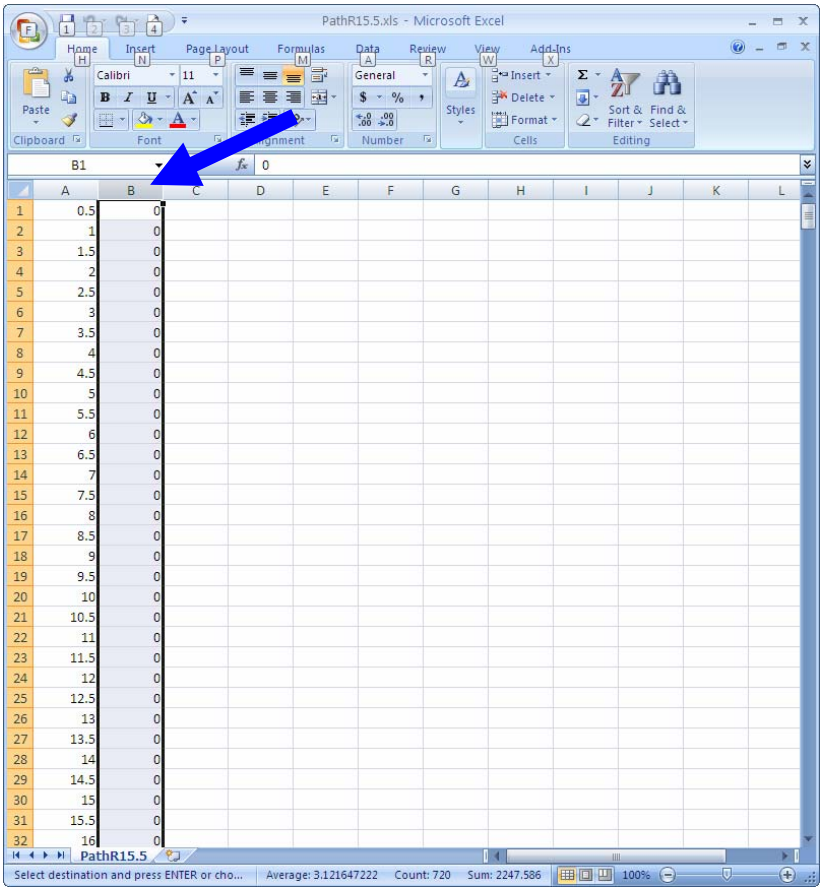


Process for importing just 1 column of Lift Data

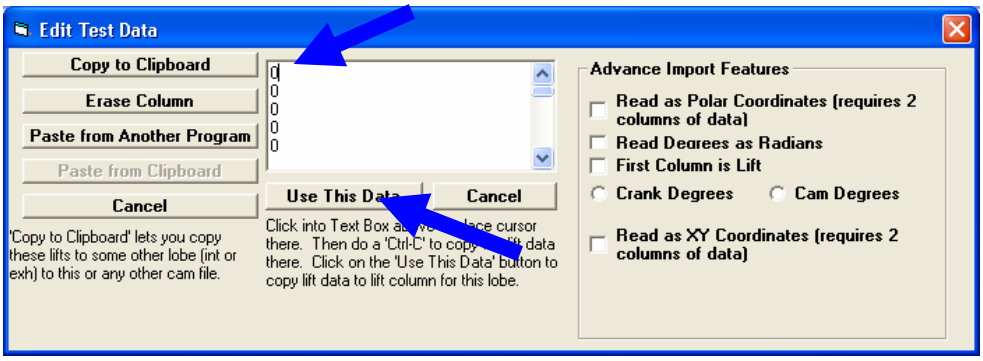
(If you want to import both degrees and lift, jump to page 4.)

Now, open you Excel spreadsheet as shown to the right, or whatever type of file you may have. Click on the "B" at the top of the Lift column to highlight that column. Then do a Ctrl-C command to copy that column's contents.

You will notice that the first data point is at 0.5 degrees and not zero.

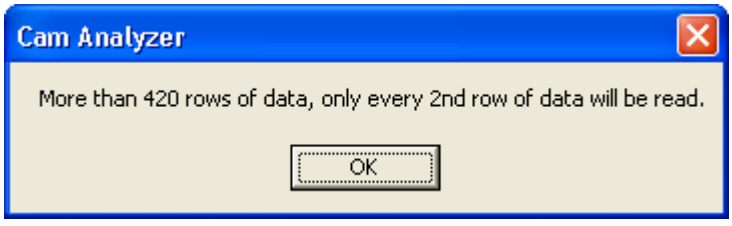


Open the Edit Test Data screen as shown on page 1, click in the big white area with the mouse and do a Ctrl-V command to paste the contents into that text box. Because the first data point was not at zero degrees, move up in the text box to the top row and insert a 0 to move all rows down one. It is not critical that the data starts at zero, but that it starts at an even cam degree increment. We could have deleted the first zero row and the data would then have started at 1 cam deg.

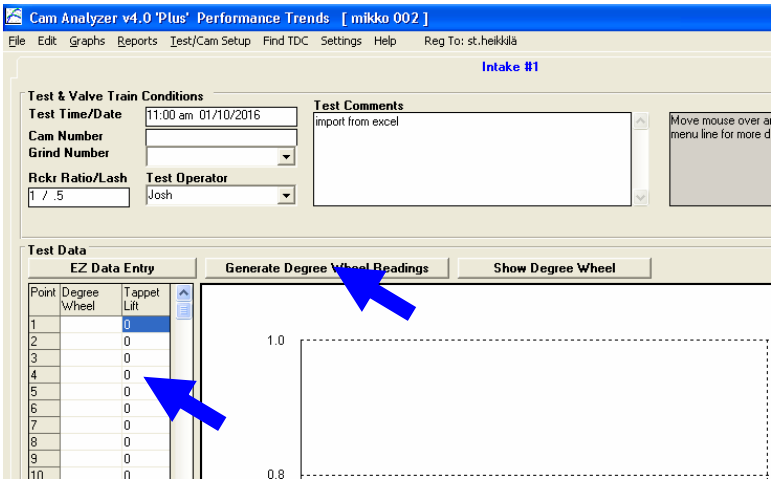


Now click the Use This Data button and the lifts will be placed in the Tappet Lift column.

Note: The program uses data in 1 cam degree increments for all math, so the program shows the following message. Because every 2nd point is dropped, we want those to be the 0.5, 1.5, etc degree points.



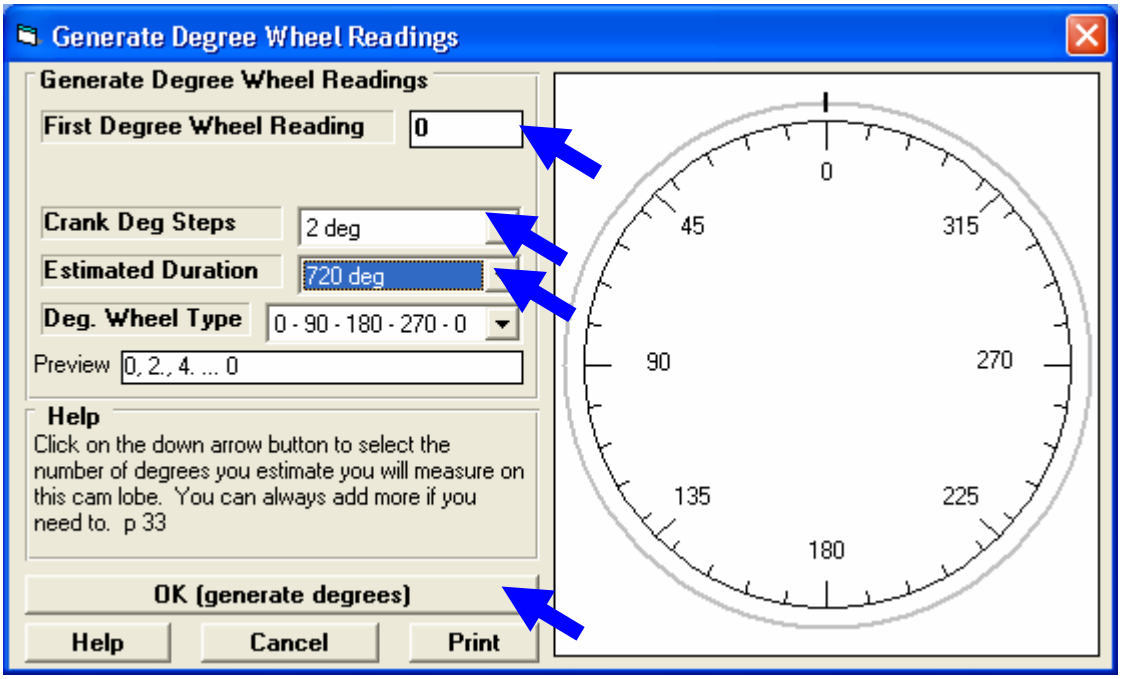
You now have the lift points imported. Now you can generate the degree points for these lifts.



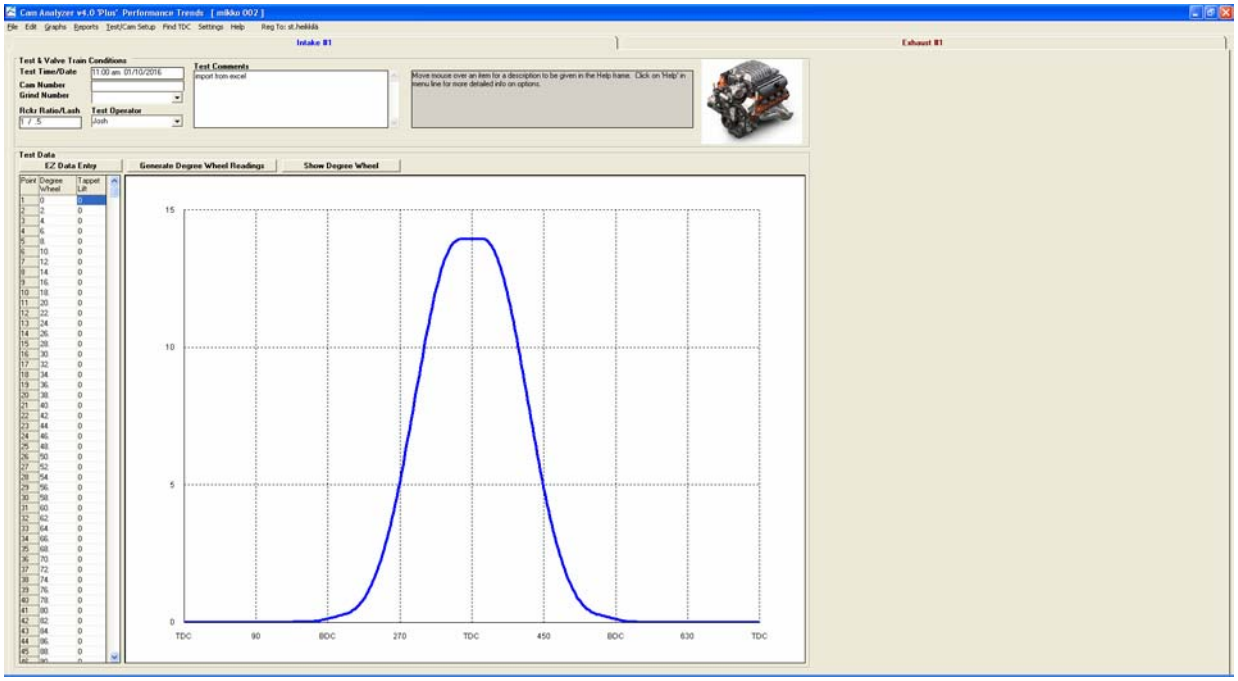
In the Generate Degree Wheel Readings screen, enter the First Degree Wheel Reading, in this case 0. The program is going to work with Crank Degrees, so if the first degree point in what we imported was at 1 cam degree, we would have to enter 2 for this reading in Crank Degrees.

Select 2 for Crank Deg Steps (1 cam degree).

And choose the largest setting of “720 deg” for the Estimated Duration. Then click on the OK (generate degrees) button.



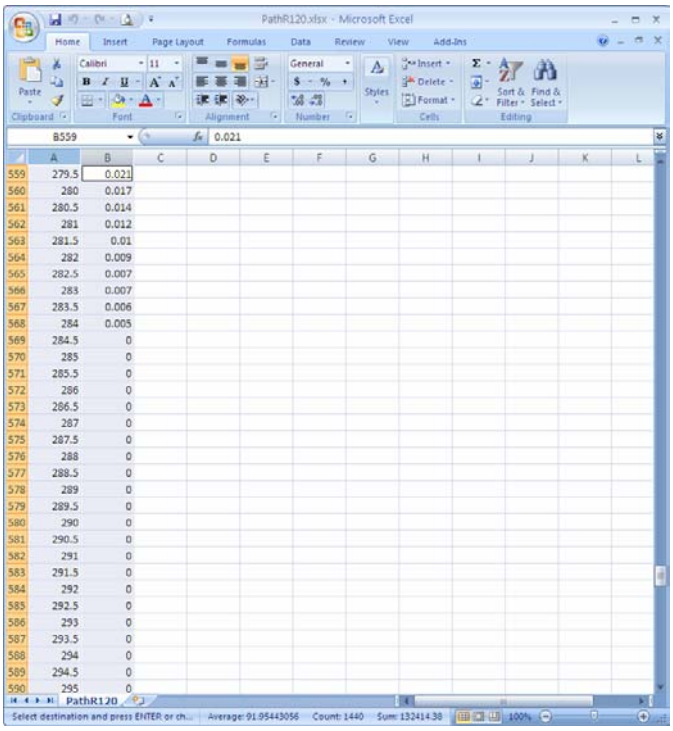
Now that you have both degrees and lift points, the program will present the profile as it was measured.



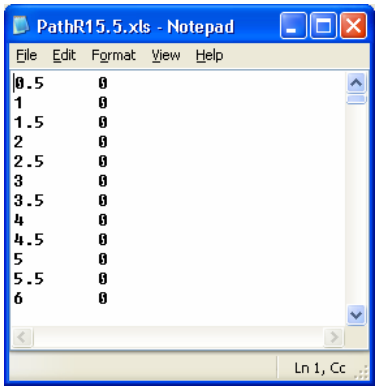
Process for importing both Degrees and Lift Data

(If you want to import just Lift Data, go to page 2.)

Hold down the Ctrl kkey and click on both the A and B column headings (or whatever they say in your data in Excel), and it will highlight both columns. Then do Crtrl-C to copy both columns.

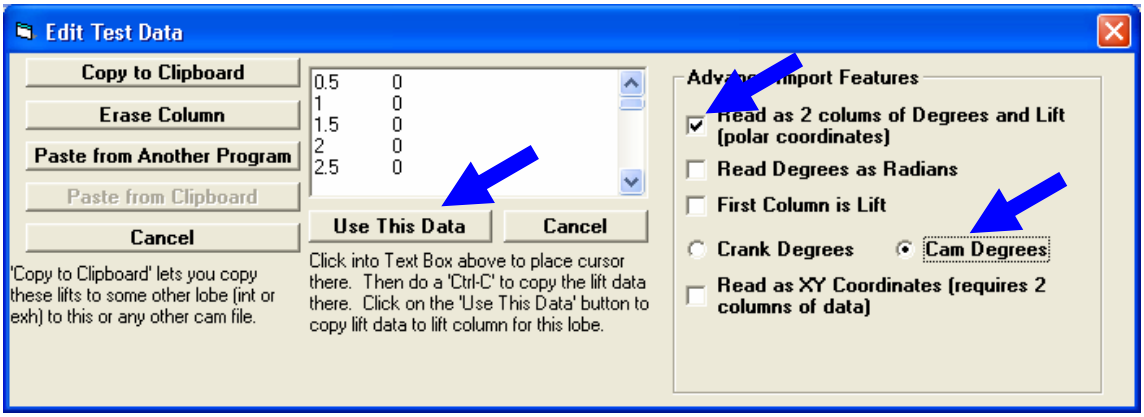


You can also do something similar with possibly a .csv or .xls file for Excel, or some other format data file. The Cam Analyzer works best if there is a tab or comma separating the 2 columns of data. Shown below is a .xls file opened with Notepad. You could do Ctrl-A to select all Notepad contents, then Ctrl-C to copy the contents.

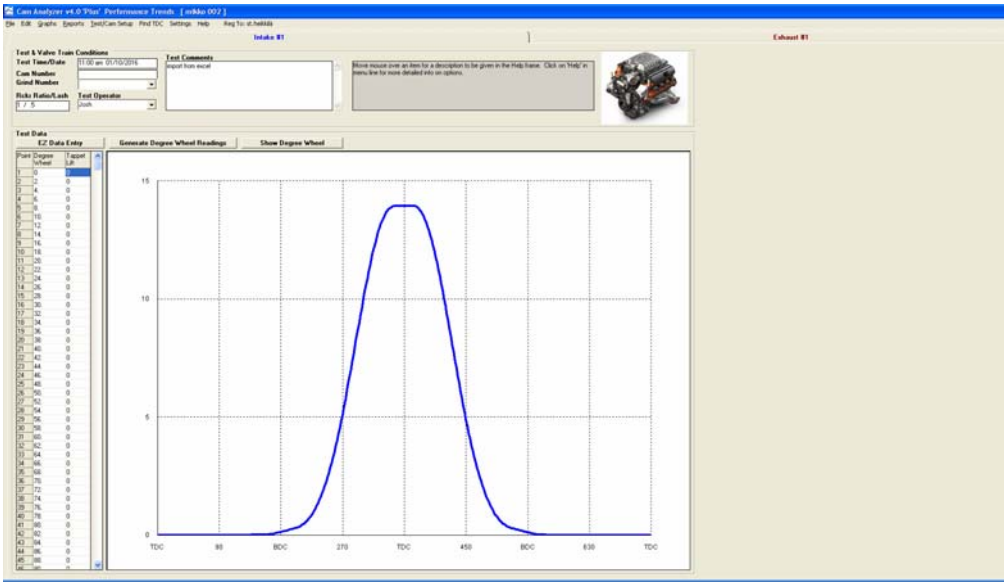


Place your mouse cursor in the text box in the Edit Test Data screen shown below, also shown on page 2. Do a Ctrl-V to paste the contents of the 2 columns of data.

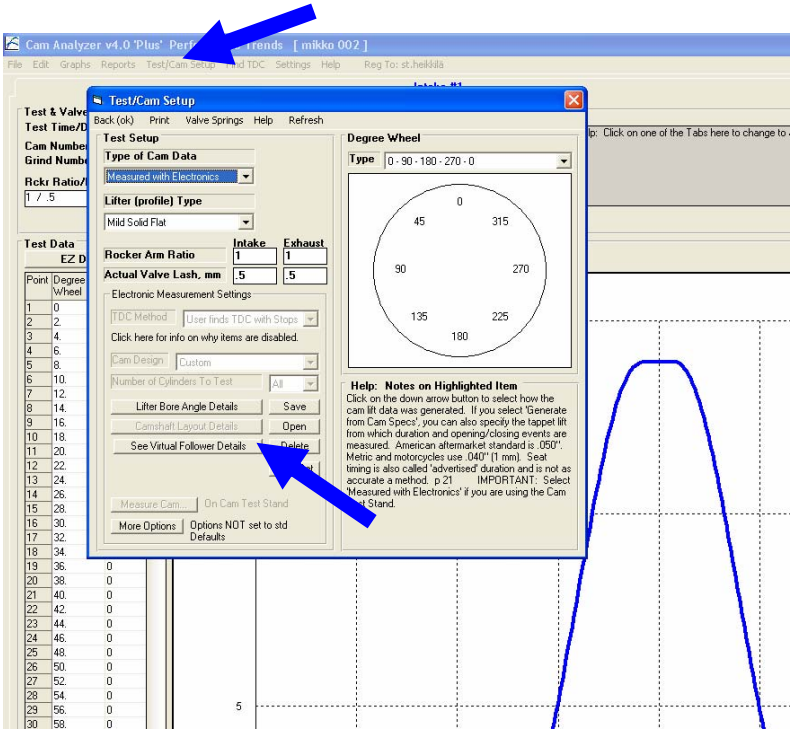
For the Advanced Import Features, bt sure to select "Read as 2 columns of Degrees and Lift" and "Cam Degrees" if the degree increments are in Cam Degrees. Then click Use This Data button to have the data imported.



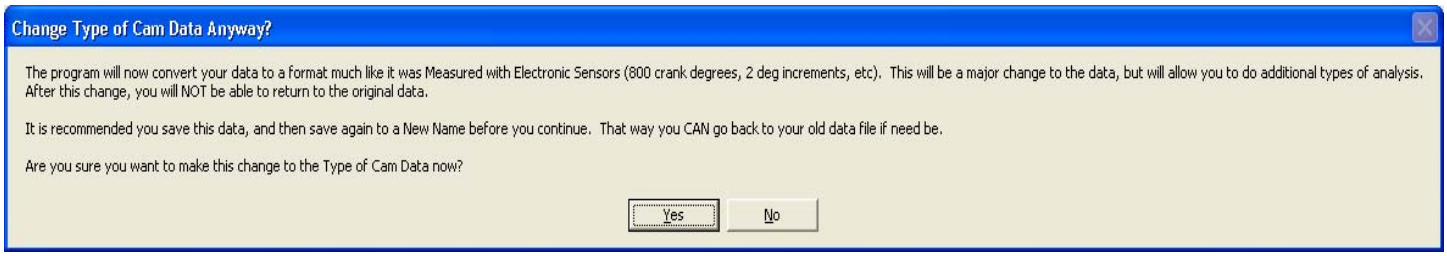
This will produce a main screen with a cam profile as shown below, which is the same main screen as shown on page 3. However, the process shown here of importing both Degrees and Lift together requires several fewer steps. (Note: These screens are from v4.0 A.033. Earlier versions may not work exactly as shown here.)



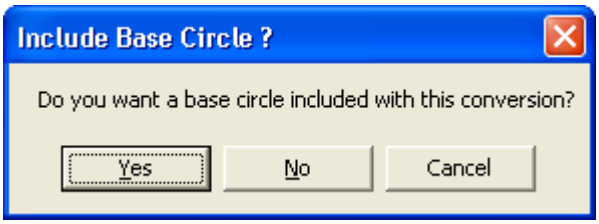
Click on Test/Cam Setup to bring up that screen. Now we need to convert this imported data to the file format of ‘Measured with Electronics”. Change the “Type of Cam Data” at the top from ‘Measured by Hand” to ‘Measured with Electronics”.

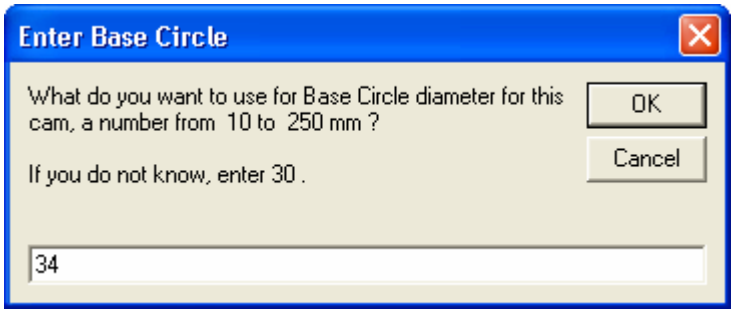


The program will warn you that this is a major change, but you need to answer Yes.



The program will then ask if you want to include Base Circle into the measurements. Answer Yes, and then enter the the base circle measurement. This is needed for doing some of the math conversions.





Once the conversion is made, click on the “See Virtual Follower Details” as pointed out on the screen at the top of this page. It brings up the screen shown on the next page.

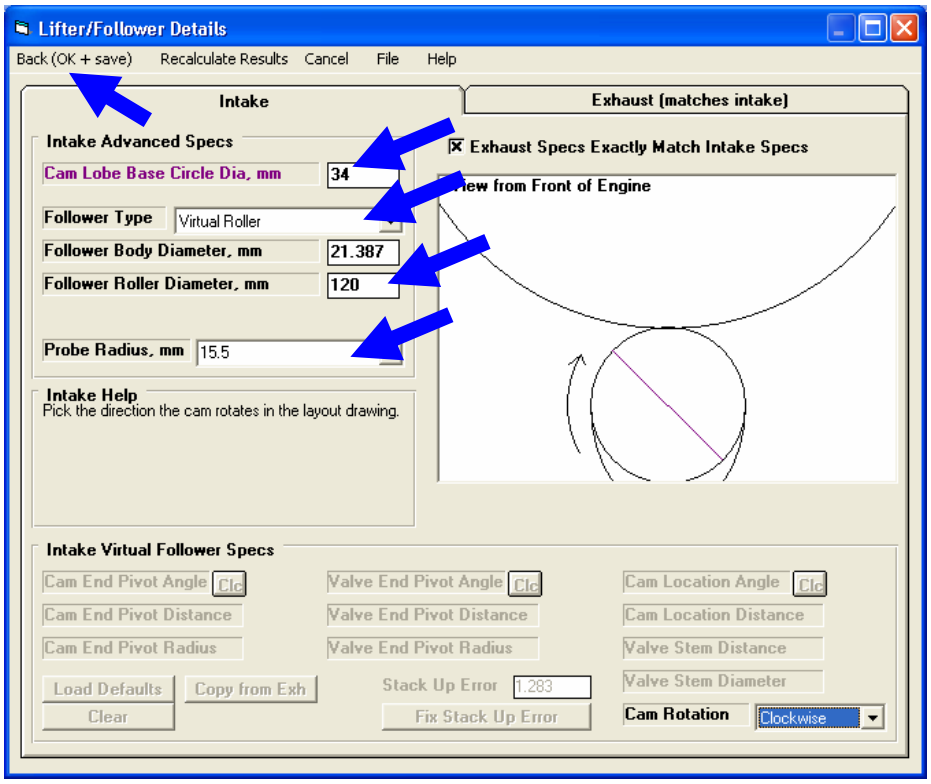
In the “Lifter/Follower Details” you will tell the program the diameter of the follower with which you measured the profile, then also the diameter of the “Virtual Roller” which will ride on the cam (which is the grinding wheel.

In the case shown to the right, you will see the Base Circle of 34 mm. Change the Follower Type to Virtual Roller. Follower Body Diameter is not critical.

Set Follower Roller Diameter to the **DIAMETER** of the grinding wheel.

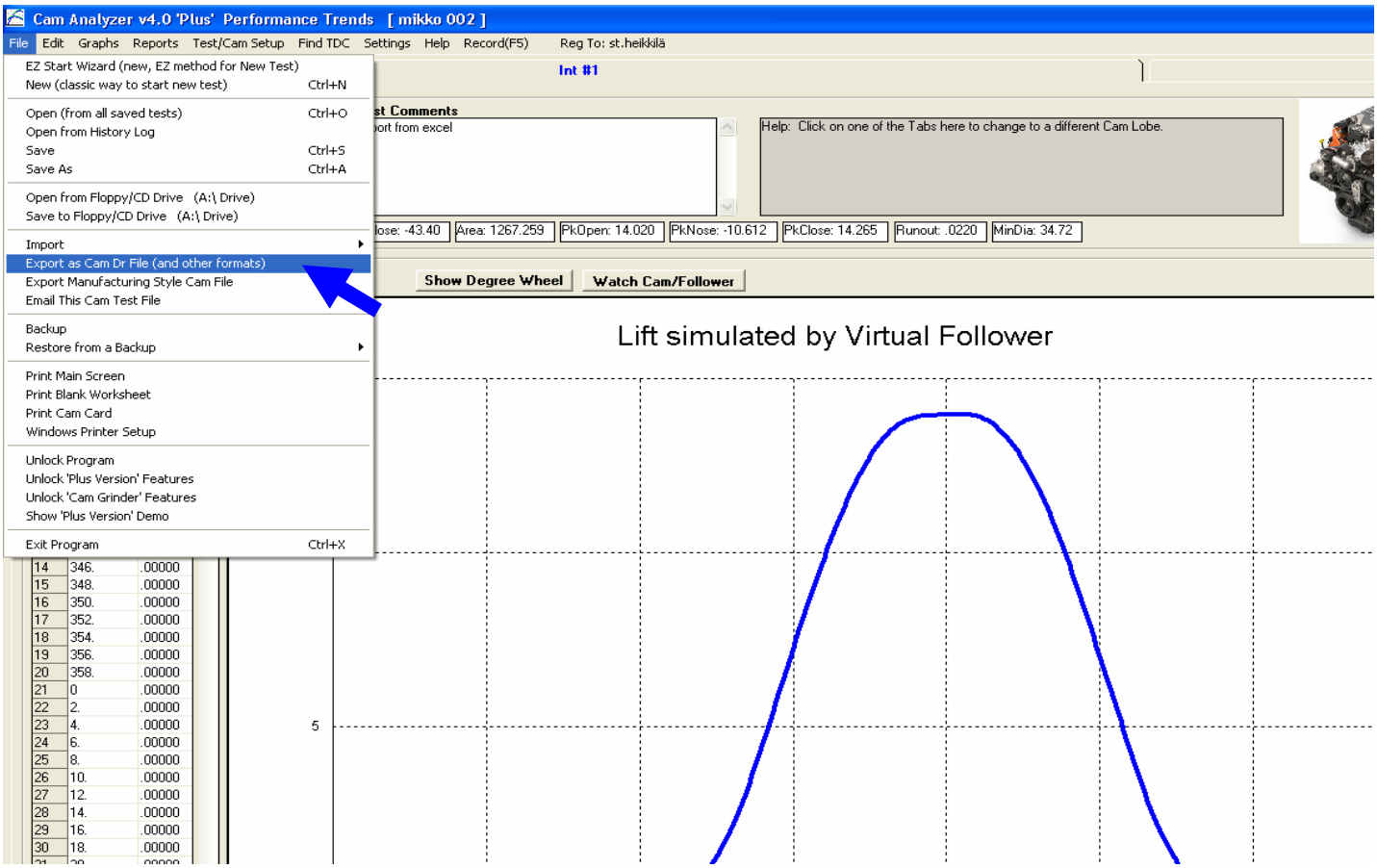
Set the Probe Radius to the **RADIUS** of the probe or roller follower you used to measure the original cam.

Then click on Back (OK + save) at upper left and the conversion will be made. Then click on Back/OK at upper left of Test/Cam Setup screen to return to the main screen.



If the Follower Diameter is larger than 2x the Probe Radius, which is typical, you will see the cam profile curve on the main screen being “fatter” than what you originally had.

Now we need to export this profile data for use in your CNC cam grinder. Click on File at upper left, then “Export as Cam Dr (and other formats)” to bring up the screen on the next page.



In the Export File Options screen, select “Raw Converted Data.csv” as the file format.. The .csv option creates a comma separated file with a .csv extension. This format can be easily imported into Excel.

Set the file name and path as needed.

Set “Create data for every” to either 1.0 or 0.5 cam degree steps, which ever you need. If you want only 360 degrees of data, set “Limit to One Cam Rev” to Yes. Otherwise you would likely get 400 degrees of output, but you can edit the file once in Excel or whatever program you will use to read it.

Set “Include” to what you will need, typically “Deg and Lift”, then click on Make File. The program will likely respond that the file has been created.

Now you can open this file with a simple editor program like Notepad, shown at upper right, or Excel as shown at lower right.

In Excel you can add it Base Circle RADIUS if you cam grinder needs that, and then export that.