

Appendix 9: New Features in v4.3

Cam Analyzer has had many updates since this user manual was written for the original v2.0 for Windows. These include 3.2A (Appendix 3), 3.2B (Appendix 4), v3.8 (Appendix 5), v4.0 (Appendix 6) and now v4.3. Here is a listing of some of the new features for Version 4.3:

Cam Analyzer v4.3 actually has 5 different versions, which include:

- Cam Analyzer Basic (for analyzing cam data from either manual data entry or computer cam files)
- Cam Analyzer Plus (for more detailed analyzing of cam data from either manual data entry or computer cam files)
- Cam Analyzer Basic for use with the electronic Cam Test Stand (CTS) sensors
- Cam Analyzer Plus for use with the electronic Cam Test Stand sensors
- Cam Analyzer Plus for use with the electronic Cam Test Stand sensors, with advanced “Cam Grinder” features

Note that some of these new features apply only to the Plus Version and/or “Cam Grinder” version of the software. Also note that the “Cam Grinder” version contains all Plus Version features.

New Features for the “Cam Grinder” Version Only:

We’ve added a feature to allow for a Test Piece picture to be included with your test files and printouts. Program now does not print pictures if either the Logo or Test Piece picture file does not exist. Fig 9.1 and 9.2A.

Cam Grinder Version has new options where you can create a Cam Card from separate intake and exhaust files in the special Cam Grinder Timing format. Cam Grinder Timing files were added in v4.0 and do not force the centerlines to line up from different cylinders. They do not account for lifter bore angles or firing order effects. Instead the profiles look much as they would when looking at the end of the cam.

New Graph and Report option for Cam Grinder, allow for Crank Degrees or Cam Degrees. If doing Cam Degrees, the program turns Off the Labels of TDC and BDC and always numbers the degrees in reports as numbers, not as a deg wheel. Fig 9.2.

In Cam Grinder version, added a new Rezero Rotary Sensor Option in the Record screen. Fig 9.3.

In Cam Grinder version, added a new Rezero Lift Sensor Option in the Record screen to allow you to specify a certain lift value to be for the lift sensor at it’s current position. Fig 9.3.

Added a new profile type for “Measure with Electronics” of "Measure Anything", for cams which are not typical automotive cams. Fig 9.4.

Added a new Graph Type for the Cam Grinder called Overlap Area. It can be done for either Valve Lift or Tappet Lift. You must also include both Intake and Exhaust Valve or Tappet Lift graphs for this graph to be produced. Fig 9.5.

Program now allows for .csv types of output formats and Blair file formats for Exporting. Fig 9.6.

Crank Degrees can now be shown on the Electronics Recording screen in addition to Cam Degrees. Fig 9.3.

Program has several new features for Exporting Manufacturing Files, including:

- Added special feature for exporting a Master Cam file. Fig 9.7.
- Added option to export Manufacturing Type file in IGES or IGS format. Then you can also specify the base circle to .igs files. Fig 9.9 – Fig 9.11
- Added feature to allow user to zero out runout on measured profile. If you set this to Yes, the program will find what the program believes to be the start of the opening ramp and end of the closing ramp. Then whichever lift is higher will be assigned the lift of the base circle of the master cam to be created. This will eliminate any runout of the measured profile being passed on to the master cam. The 'downside' of doing this is that if there is a significant difference between lifts at these 2 points (bad runout on measured cam), there could be a discontinuity at start or end of one of the ramps. Fig 9.9

Added feature to increase or reduce the lobe durations (stretch or compress duration) by a percentage. Fig 9.12

Cam Grinder version lets you manually generate degrees up to 720 degrees. This can be handy for converting cam files "Measured with Electronics" to "Measured by Hand" so you can do modifications on them.

The program now allows much larger Roller Follower diameters, to simulate grinding stones on cam grinders.

If this is set, duration and events are done in Cam Degrees, the Degree Wheel data on main screen is now labeled "Cam Degrees" if doing Cam Grinder timing.

Added the ability to read .P files. Click on File, then Open from All Saved Tests and click on a .P file to open it.

New Features for the Plus Version Only:

There is now a Preference setting to let you keep the Graph on the main screen always at the same graph scales. This can cause problems if you open files for cams with different lifts and durations than you normally run, or the cams you test produce quite different lifts and durations. However, if your cams are always about the lift and duration, this new Preference makes it easier to spot changes with the graph on the main screen. Fig 9.13

Program now states events on the Cam Card are at valve lift if you are using virtual follower rocker arm "Cam on Rocker".

If you are creating a Cam Card from a file which contains only intake or only exhaust data, but you have already picked a file to be associated with this file for the other lobes data, the program now reminds you of the associated file when you create a cam card. You can also choose to change or cancel the file associated with this file.

A new Overlap option has been added to the Custom Duration Report. Fig 9.14

Two major new Options screen have been added for the Cam Card, including when clicking on the Options button at the lower right: More Options and Modify Labels. Fig 9.15.

The program now displays a graph title on the main screen, stating if the profile is measured with the actual follower, or simulated by Virtual Follower and what type of Virtual Follower. Fig 9.4.

The program now saves the current file as a temporary file before making a Cam Card, so that any changes made during creation of the Cam Card can be restored when program returns to the main screen.

The program now allows a roller follower to be one tenth (0.1) the normal lower limit, which is nearly a "knife edge" for the Virtual Follower simulation. This way the Cam Lift numbers can be very close to those measured by the actual pointer, or even smaller.

The powerful "Filter" feature lets you search for files containing particular measurements, or comments, etc. (See Appendix 8 for more info on this feature.) Now the list of files fitting a particular "Filter" criteria are displayed in Notepad with better spacing to allow for very long file and folder names when you click "Print list of all files fitting these conditions". This list now also includes the Cam Number. Fig 9.16

New Features for All Versions:

You can now request what to use for "Lift for Rating Events", either .050" .040" (1 mm) or .053" (for Harley Davidson). Added Rated Lift to History Log, and better arranged spacing of History Log columns for information they must contain. Fig 9.17.

The new Mini USB is a possible logger type. Right now this is just a direct replacement of the current Black Box II. In the future we may add more features.

Now if you import a cam profile, and the profile has 0.5 deg increments and more than 400 rows of data, the program checks to see if the first row has a whole degree increment like 0.0, 1.0, 2.0, etc or half degree 0.5, 1.5, etc. The program will use the rows where there are whole degree increments.

Replaced "Copy" with "Copy (or Merge)" to list of Folder Options possible in 'Save As' screen. Fig 9.18.

Program now explains why changes in 'Starting a New Test' screen are not saved if you don't start a new test.

Added features so program can check after writing the config file if it is corrupt and whether a backup should be made.

A backup file of the config file is now made and used if the main config file has been corrupted.

Form for Starting a New Test now has larger fields for File, Folder, etc names to better display the names completely. Fig 9.19.

Program now saves tests to My-Tests folder if it's original folder was the Examples folder. Overwriting a file from the Examples folder is not allowed.

If you change the printer within the program to something other than the computer's default printer, the program now restores the default printer and printer orientation when it shuts down.

Program now adjust length of folder and file name in History Log to better fit in available space in the 1st column.

You can now import files from the Performance Trends Quick Cam Checker. You need v1.1 A.015 or later of the Cam Checker, which should be a free download on the PerformanceTrends.com website under Downloads. NOTE: The precision of these files are not as good as those measured with the Cam Analyzer on our Cam Test Stand. Fig 9.20 to Fig 9.22.

Added several new features to the "Save As" screen so you can see other files in folders and select these file names as the name to use or edit to use as a new file name. It also has simplified the method of creating a new folder, and listing these file names by date or name. Fig 9.23

Now the browser should be the default on your computer. Previously it only looked for Internet Explorer.

When you resize the main screen, it is more reliable at refreshing all controls and pictures.

Program can now better display PDFs in some versions of Windows 10.

Did lots of refinements to the buttons on the Graph screen which let you enlarge or shrink the graph, or shift the graphs left, right, up and down. Prior to this, the action could get "stuck" or not do the action exactly as expected.

Program has several refinements for reading CPP files more accurately and reliably.

Added new Cam Layout types of "Hemi 99" for race only Mopar, the modern Mopar Hemi 5.7/6.1/6.4L, the GM Gen V LT-4 2015, and fixed a bug in Pontiac cam design layout. Cam Layout types are used for data file types of "Measuring with Electronics". Fig 9.24.

Program now reports significant figures for lift to 5 decimal places. The measurement resolution of lift sensor is .00004 inches, so going to more than 5 decimal places does not produce any more accurate results.

Program can now read SVL files (from 4stHEAD program).

Program now just displays "Hydraulic" or "Solid" for the Lifter Type for cams that are Measured with Electronics. Previously you could specify various roller or flat Lifter Types, but that did not make sense for cams that are Measured with Electronics.

Replaced linear interpolation with curve fitting for exporting cam files for all versions.

Files and folders you delete now are actually sent to the Recycle Bin so they can be recovered later if you want. Fig 9.25.

Program is now better at adding numbers to the end of file names by default.

Now when you open a file which has a Graph Name specified in the History Log, that Graph Name stays with the file. Previously it was restored to the default File Name as being the Graph Name.

Program now tells you your specs "MATCH" the master specs. Before it said "DO MATCH" and many people mistakenly read this as "DO NOT MATCH".

Fixed minor bug where if you changed the Graph Name for the first file in the History Log, it would not stay permanently.

Fixed bug where if cam file has only exhaust lobes, you could not open it from the History Log on the main screen.

Refined the program to be better at reading Black Box II when you have selected the Preference of 'Assume Asian Operating System'.

When converting files between Inches and MM lift, now the program uses more decimal places for all files types for more precise conversions.

Figure 9.1 New Options on Main Screen

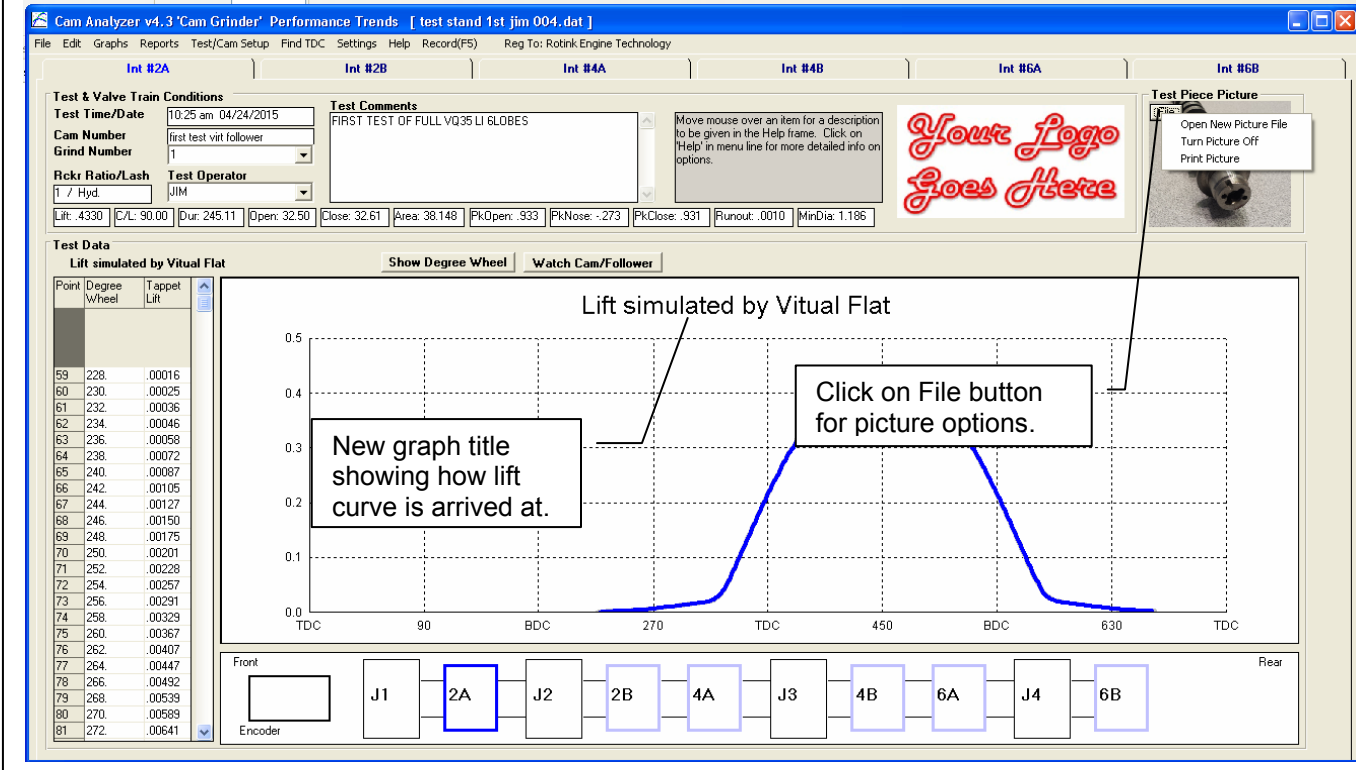


Figure 9.2 Graphing vs Cam or Crank Degrees.

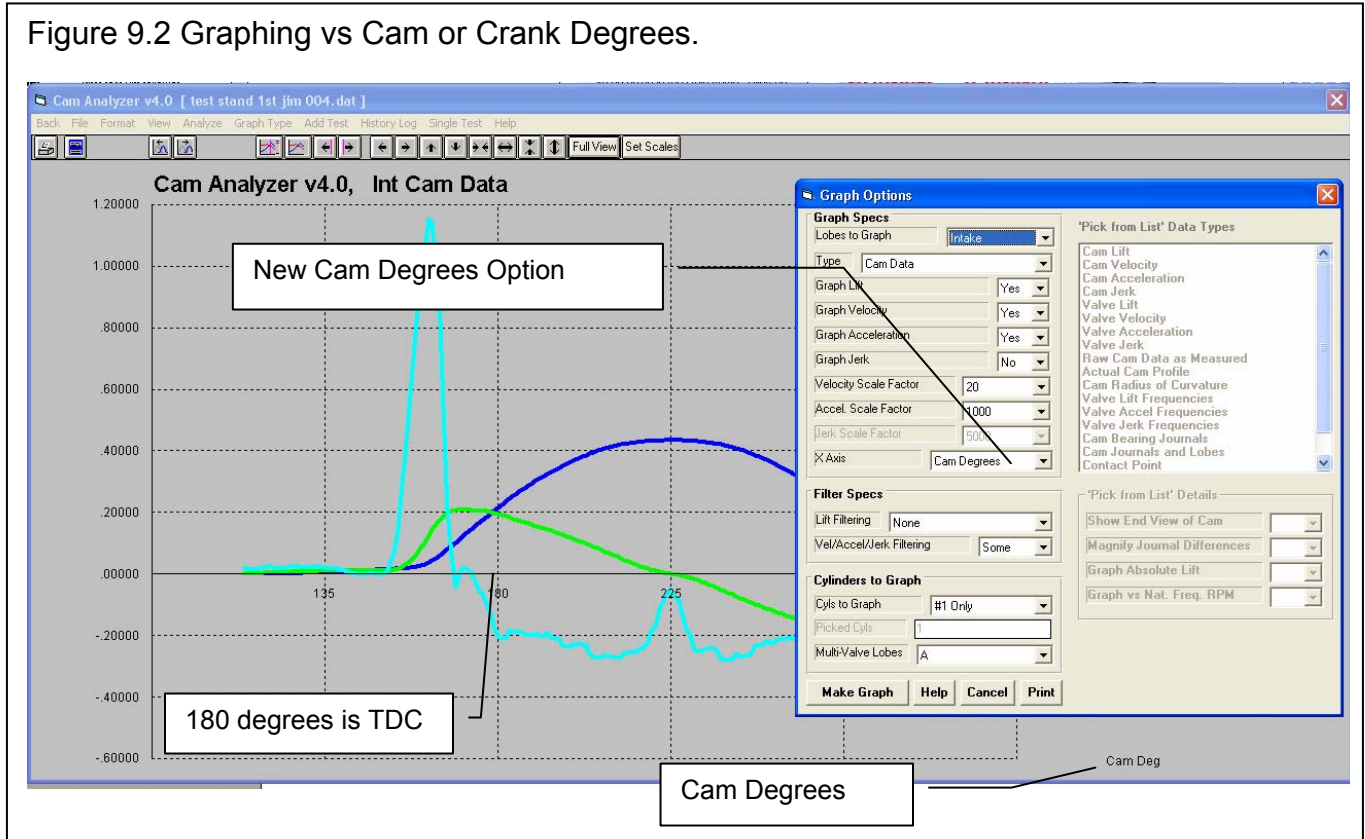
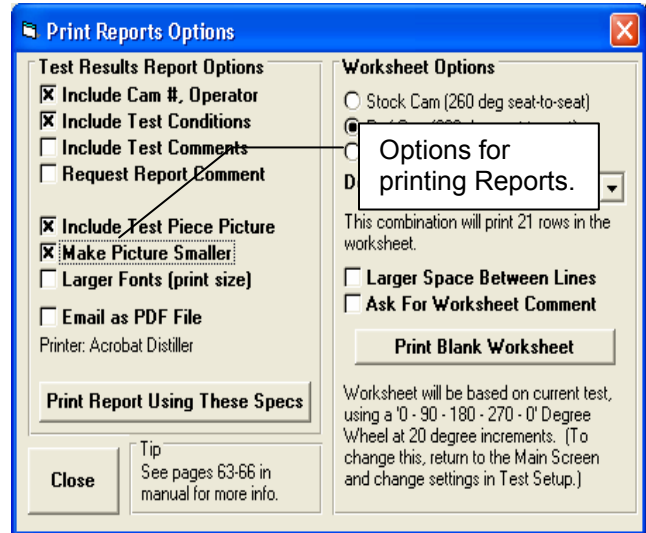
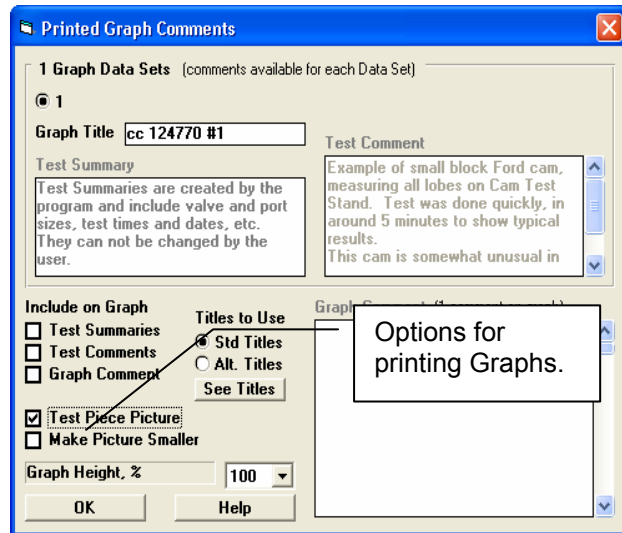
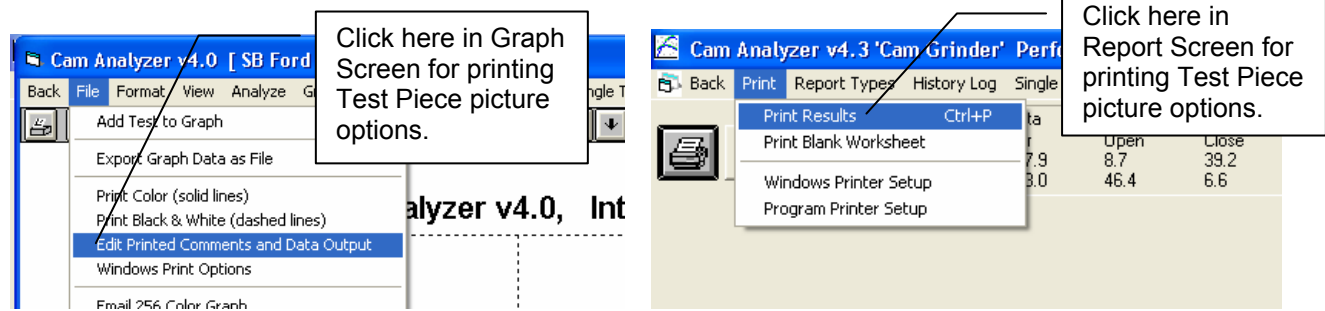


Figure 9.2A Print Options for the Test Piece Picture



Graph printout with Test Piece Picture with Make Picture Smaller checked. If in Landscape view, this will work differently.

Report of:	Cyl 1, Cam Data	Test #:	050 - 00000005 - Ford, 1964, 1951	Int Lift										
CLine	Dur	Open		pp/Adv										
Int: 105.0	227.9	8.7		4										
Exh: 109.7	233.0	46.4		Advance										
				-0.18										
Lobe	Lobe Lift	Center Line	Lobe Sep.	Asymmetry	Runout	Min Flat Dia								
I 1	.3177	105.00	107.35	2.35	227.85	8.70	39.15	25.179	.370	-.221	.321	0.22	.0010	.782
E 1	.3215	109.70	107.35	2.35	232.96	46.36	6.60	25.895	.329	-.225	.321	-0.18	.0012	.766

Figure 9.3 Resetting Lift and Degrees in Recording Screen

Perf Trends Readings: Intake #2A F9>

Close Record (F1) Options Help

Lift .00000

Time .000

8 atdc

Options menu items:
Troubleshooting
Rezero Lift Sensor
Rezero Rotary Sensor Reading
✓ Display Crank Degrees
Reset the Black Box
Linear Sensor Readings
Rotary Encoder Mounting

Option checked to display Crank Degrees.

Desired Lift Reading

Enter the reading you want to see on the Lift sensor right now. If you want to Rezero it, enter 0.

OK Cancel

.025

Updating Display Only (not recording). Press <F1> with lifter on base circle to start a test.

Rezero Rotary Sensor?

Do you want to rezero the rotary sensor?

If you say Yes, the existing rotary sensor index is lost, and you must refind TDC and remeasure any lobes you have already measured.

If you are not sure, it is STRONGLY recommended you answer 'No'.

Yes No Cancel

Perf Trends Readings: Intake #2A F9>

Close Record (F1) Options Help

Lift .025000

Rotation .00

Time .000

#1cyl 360.00 bt/dc

Options menu items:
Troubleshooting
Rezero Lift Sensor
Rezero Rotary Sensor Reading
✓ Display Crank Degrees
Reset the Black Box
Linear Sensor Readings
Rotary Encoder Mounting

Intake #2A

Crank Degrees being Displayed.

Readings now read as you directed by screens above. This feature is typically only useful for manually finding different things on the stand, like, how much lift on the intake ramp is produced by exactly 10 degrees of rotation. A cam profile measured with these changes will be exactly the same without these changes. However the timing will be changed by the amount you changed the rotary encoder.

Updating Display Only (not recording). Press <F1> with lifter on base circle to start a test.

Figure 9.4 Measure Anything Option To Measure Unusual Cams



Cam with unusual profile being measured with special "Precision Tip"

Preferences

General Operation | File Handling | OK

Emailing

Calculations | Calculations, cont.

Graphing / Printing | Electronics

Electronics

Auto Advance to Next Lobe: Yes

Next Lobe Is: Cam Lobe Position

Warn if Turning Cam Too Fast: Yes

Warn if High Accels Found: Yes

% Dif. from #1 Cyl to Flag Out: 10%

Show More Options in Setup: Yes

Do v3 8 One Sokki Virtual Follower

Help Tips

Stop Showing Help Tips

Turn this Preference On for "Measure Anything" option.

Test/Cam Setup

Back (ok) Print Valve Springs Help Refresh

Test Setup

Type of Cam Data: Measured with Electronics

Lifter (profile) Type: Solid

Rocker Arm Ratio: Intake 1.5 Exhaust 1.5

Actual Valve Lash, mm: Intake .660 Exhaust .711

Electronic Measurement Settings

TDC Method: Intake Centerline

Cam Timing Value: 110

Cam Design: Custom

Number of Cylinders To Test: 1

Number of Cylinders to: .050 inch (1.25 mm)

Degree Wheel

Type: 0 - 90 - 180 - 270 - 0

Help: Notes on Highlighted Item

Click on the down arrow button to select how the cam lift data was generated. If you select 'Generate from Cam Specs', you can also specify the tappet lift from which duration and opening/closing events are measured. American aftermarket standard is .050". Metric and motorcycles use .040" (1 mm). Seat timing is also called 'advertised' duration and is not as accurate a method. p 21 IMPORTANT: Select 'Measured with Electronics' if you are using the Cam Test Stand.

Help: Click on one of the Tabs here to change to a different Cam Lobe.

Your Log Goes Here

Int #1

pkOpen: -13.457 PkClose: 14.467 Runout: .0009

Simulated by Virtual Roller

Cam Grinder and Plus versions show if lift is simulated by Virtual Follower.

Choose this type of Lobe

Because there may not be a normal "base circle" for unusual cams, it is typically best to also set this option for Zero Lift.

Measure Cam... On Cam Test Stand

More Options

- Set These Options to Defaults
- Typical Cam Lobe (opens and closes once) - default
- Cam Lobe may have 2 "bumps" (may open and close twice)
- Measure Anything (for non-valve-train type Cams)
- Just show data for Actual Lobe - default
- Show All data measured (all 400 deg)
- Zero Lift is Average Lift Measured on Base Circle - default
- Zero Lift is Lowest Lift Measured on Base Circle
- Do 'Typical' Timing (centerlines line up)
- Do 'Cam Grinder' Timing
- Measure Relative Lift of Lobes Only
- Measure Base Circle and Journals
- Measure Absolute Lift without Journals

J1 1 J2 Encoder

Figure 9.5 Overlap Area Graph

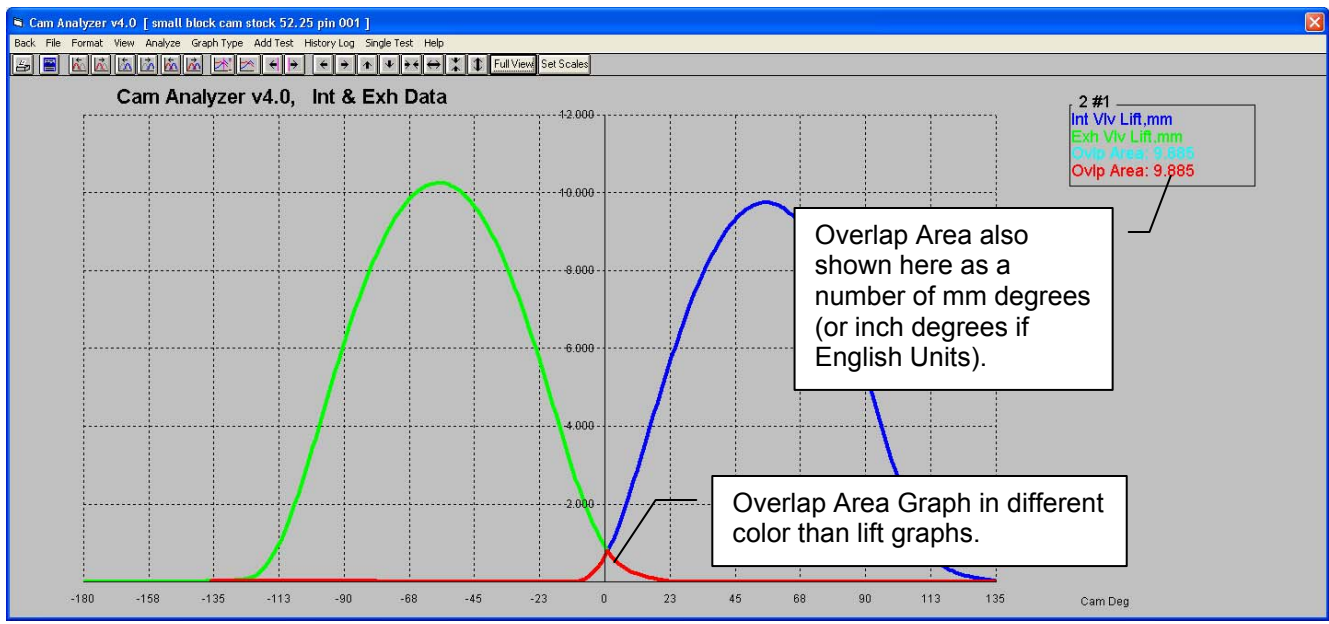
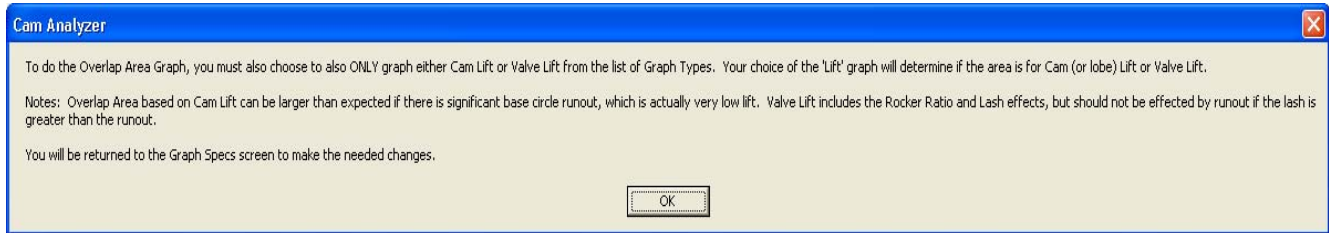
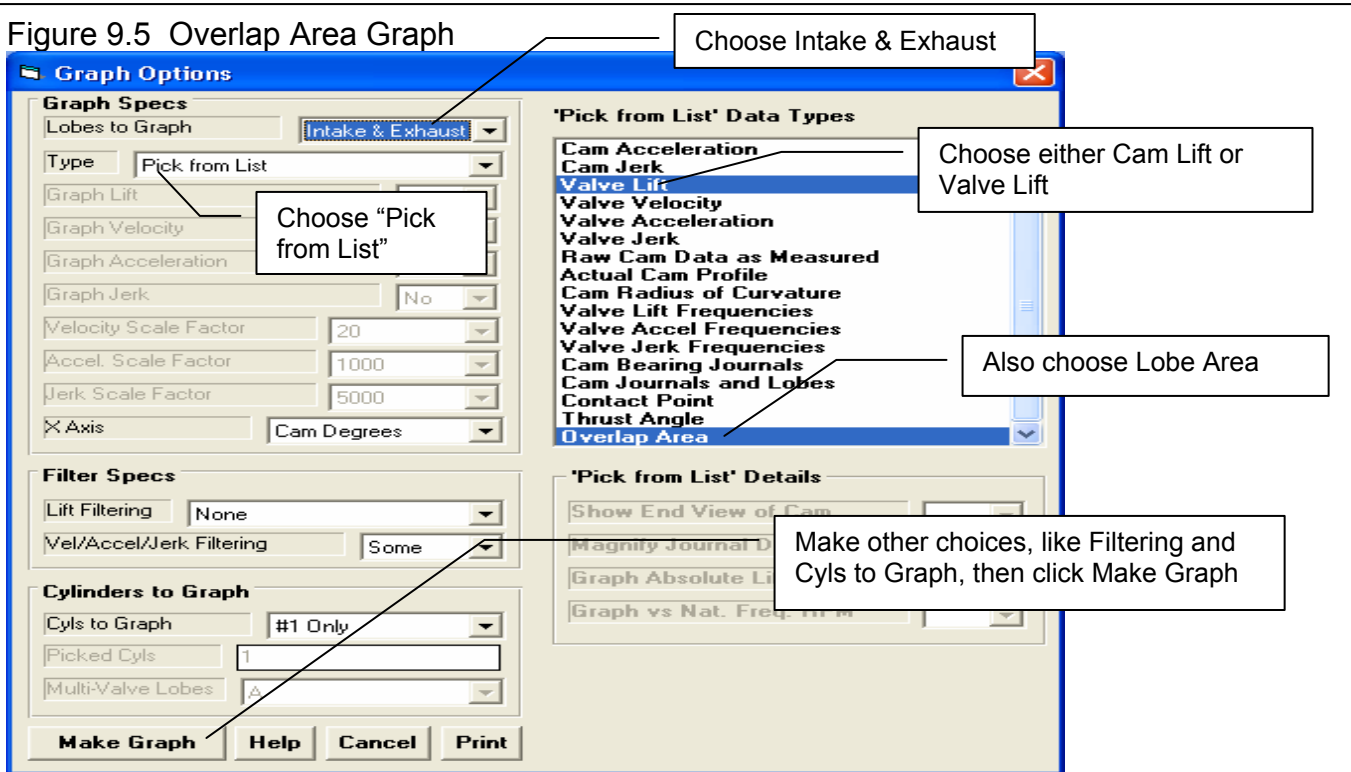


Figure 9.6 Export File Options for Cam Grinder Only

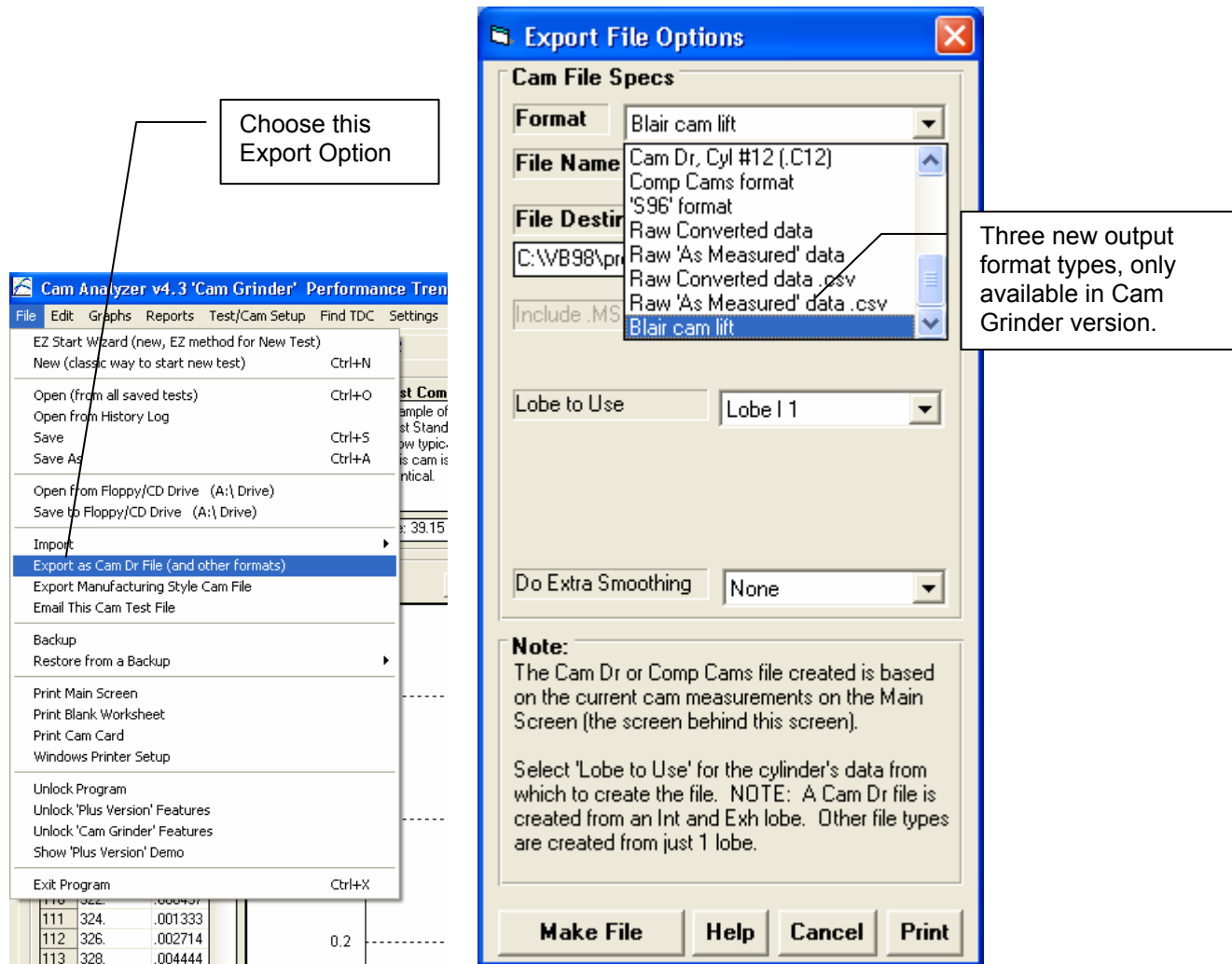
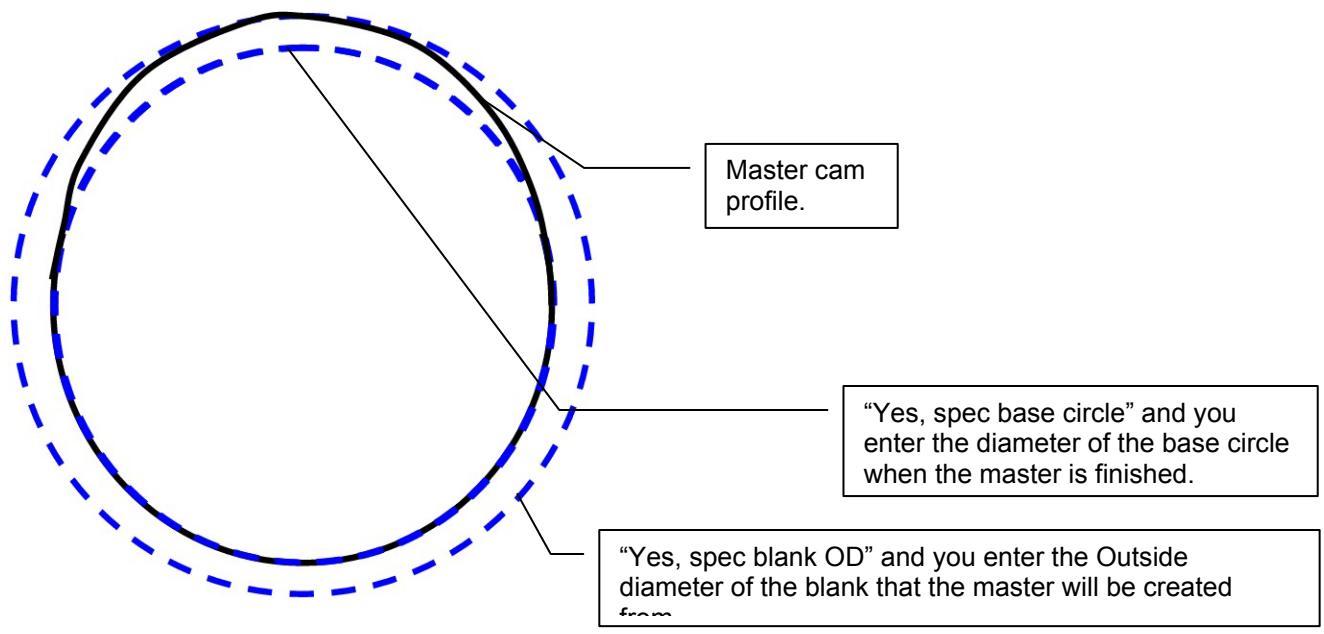
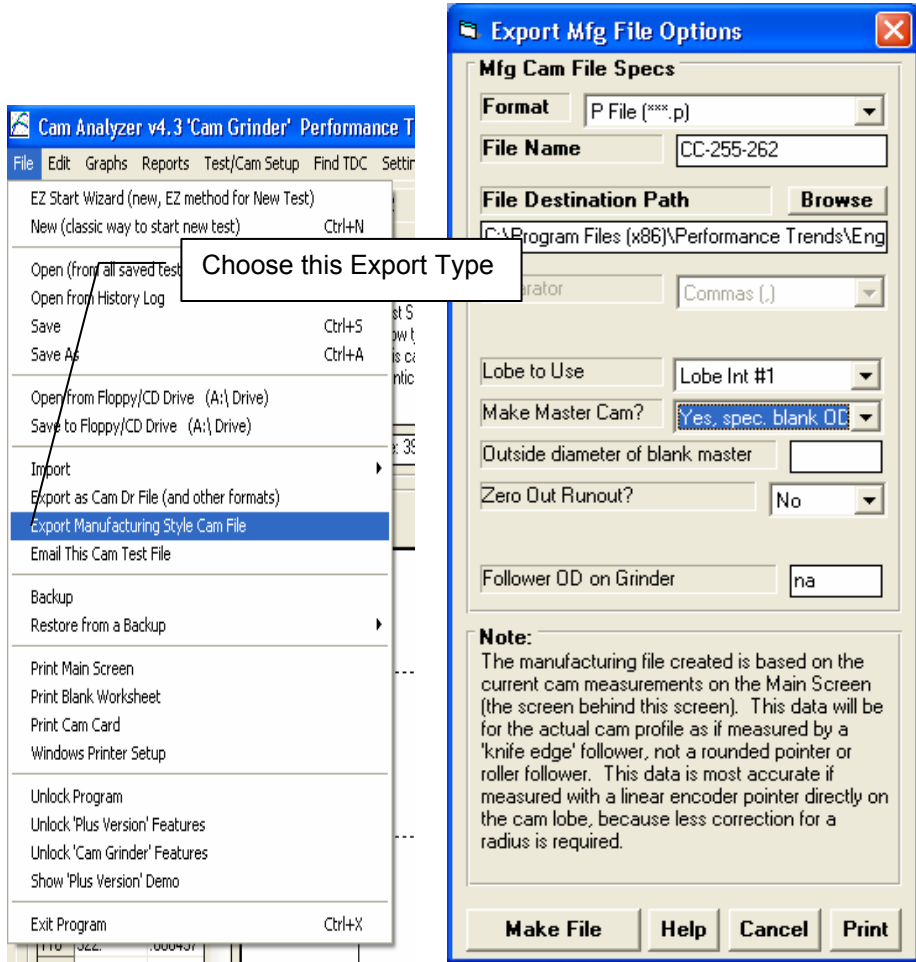


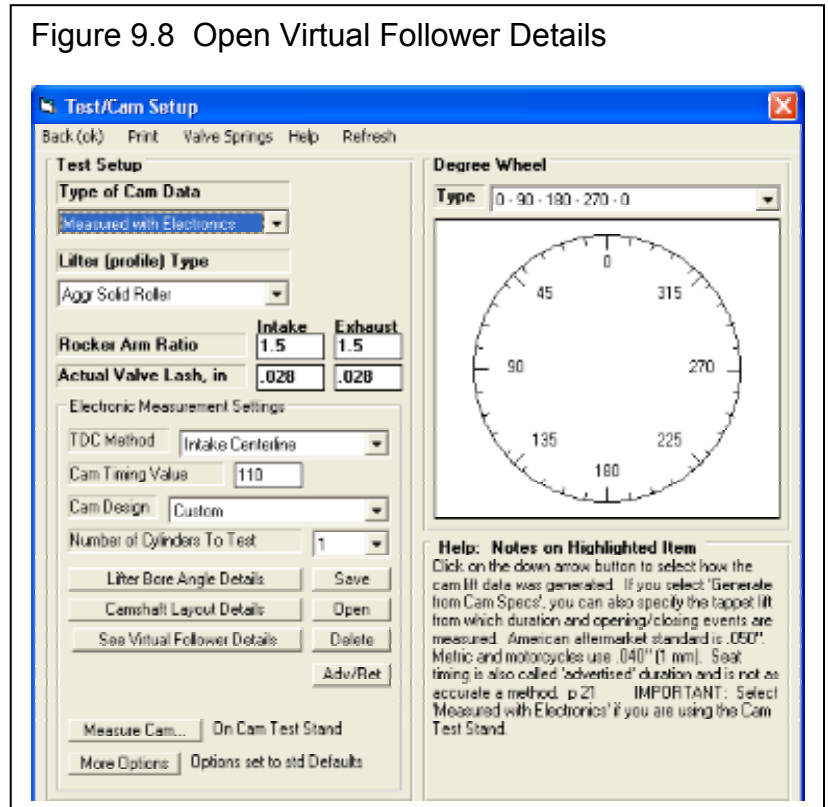
Figure 9.7 Advanced Export Manufacturing File Options



FAQ From Website: How do I create a manufacturing file to exactly copy of a cam lobe I just measured?

You need the Cam Grinder version of the Cam Analyzer to do this. First you must measure the cam using the Virtual Follower option, available via the "See Virtual Follower Details" button in the Test/Cam Layout screen, as shown in the screen below.

Figure 9.8 Open Virtual Follower Details



You can use either the .750" diameter Universal Roller or the linear encoder's standard tip directly on the cam lobe. The critical specs to set are the Base Circle you will measure from the cam you are measuring, specifying one of the Virtual Follower "Follower Types" (recommend Virtual Roller), and the Probe Radius you are using.

Figure 9.9 Virtual Follower Details Screen

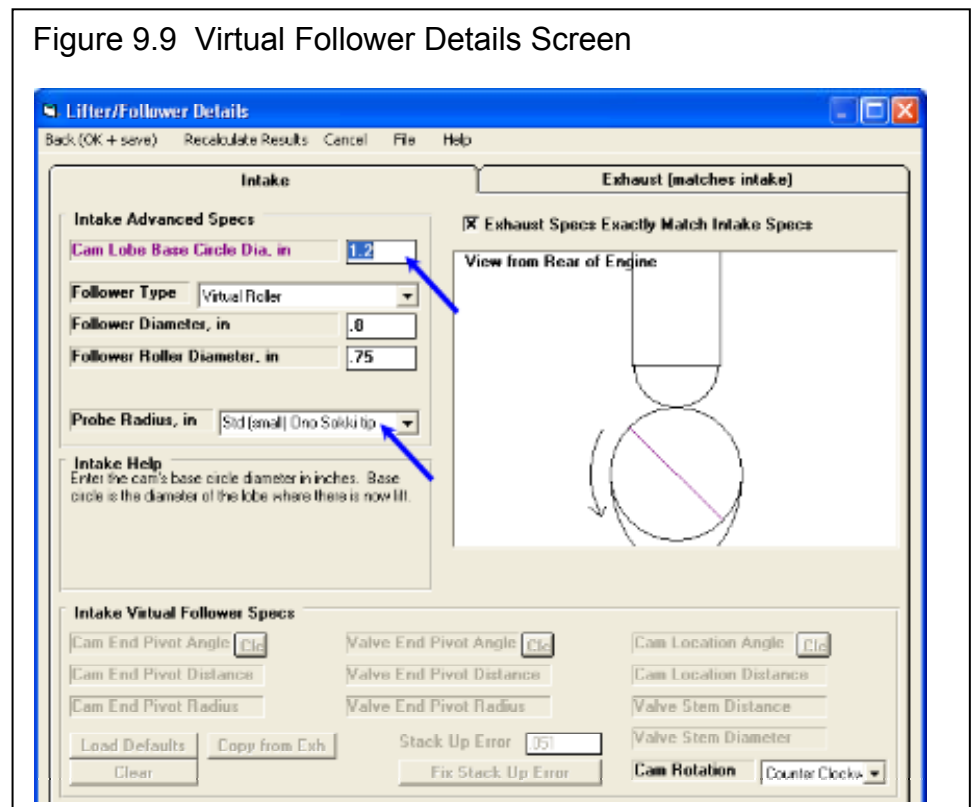
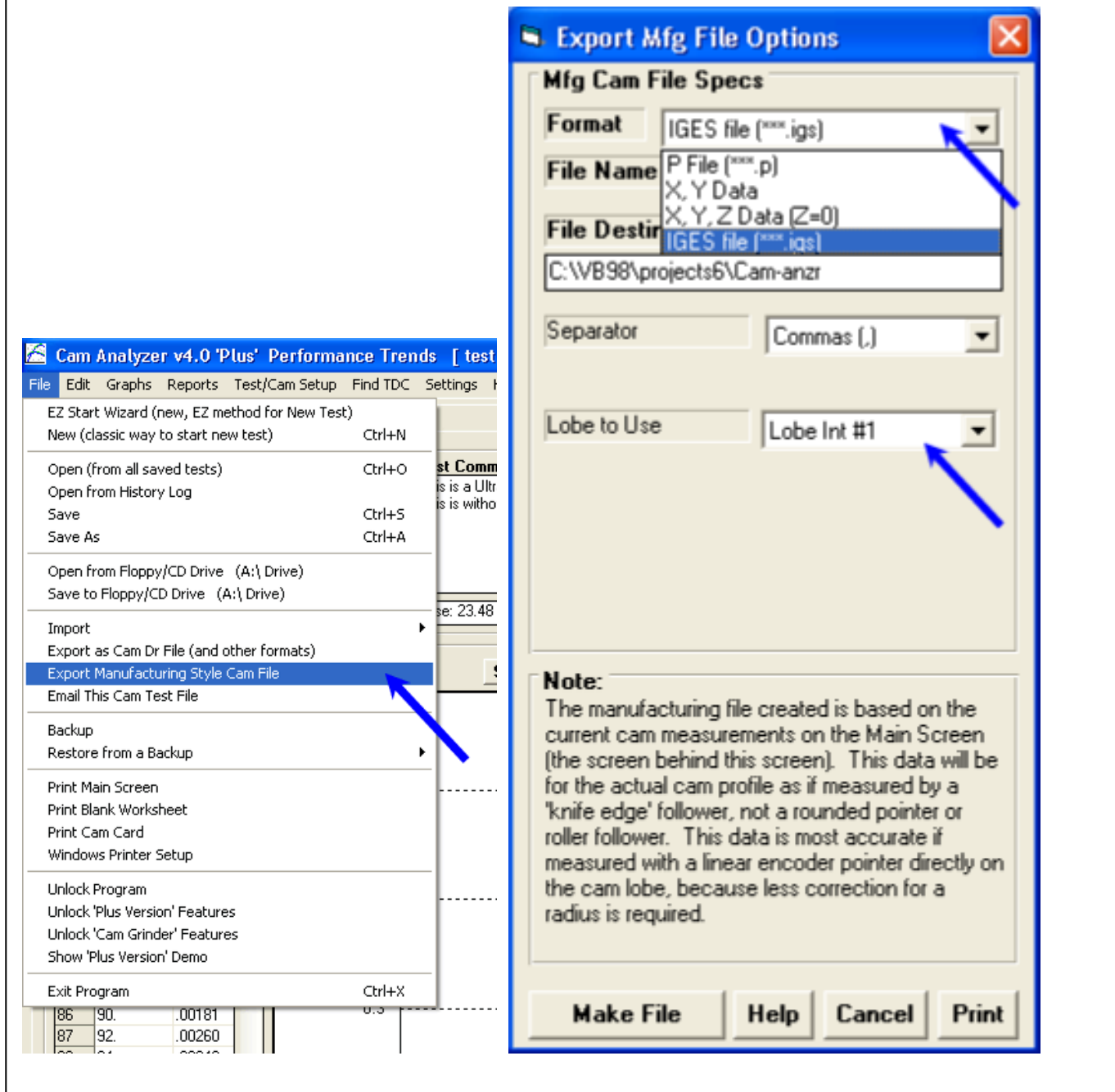


Figure 9.10 Export Manufacturing Style Cam File



Then measure the lobe you want to duplicate with the Cam Test Stand. When you have the lobe measured, click on File at upper left of main screen, the Export Manufacturing Style File from the list.

In the Export screen which comes up, choose IGS as the file type at top (or one of the others if you are sure you can use that type), the file name, file destination and which Lobe to Use (the one you measured). Then click on the Make File button. IGS is the Format recommended because many CAD/CAM programs like SolidWorks and Mastercam will import it directly.

A portion of the resulting IGS file is shown below in Notepad below.

Figure 9.11 Example of Export Manufacturing Style IGES File

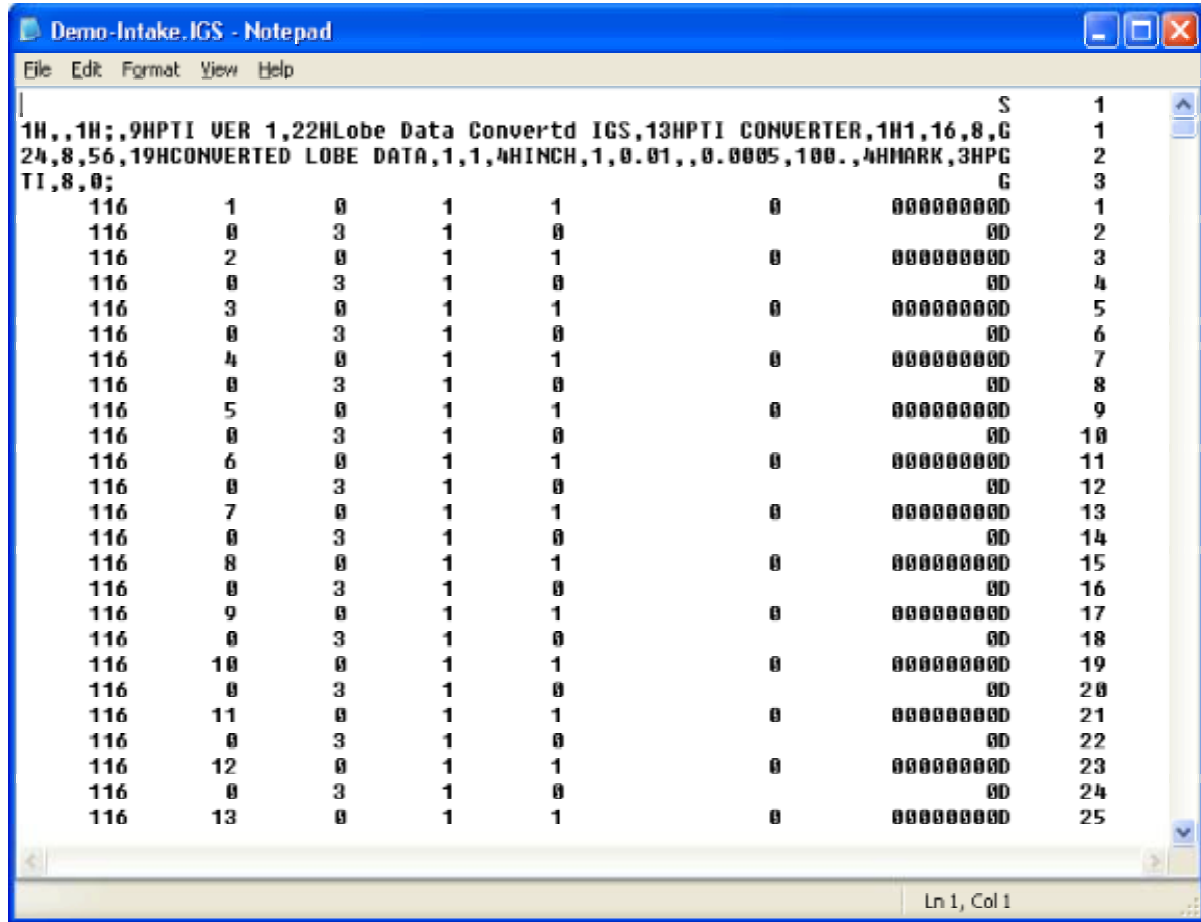
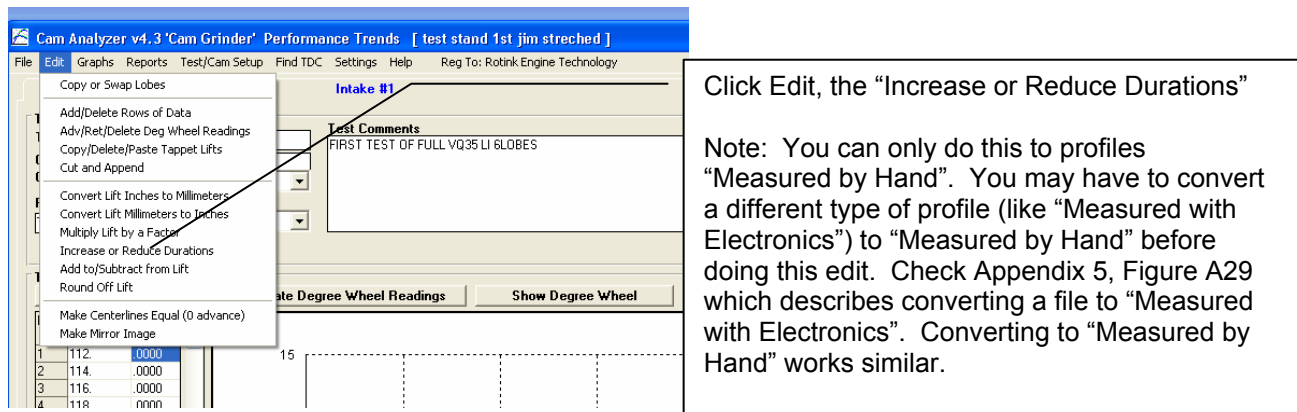
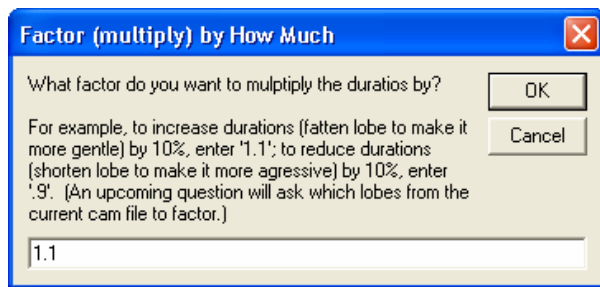


Figure 9.12 Edit Feature to Increase or Reduce Duration of a File



Click Edit, the "Increase or Reduce Durations"

Note: You can only do this to profiles "Measured by Hand". You may have to convert a different type of profile (like "Measured with Electronics") to "Measured by Hand" before doing this edit. Check Appendix 5, Figure A29 which describes converting a file to "Measured with Electronics". Converting to "Measured by Hand" works similar.

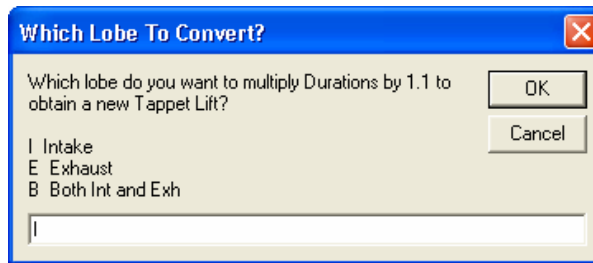


Factor (multiply) by How Much

What factor do you want to multiply the durations by?

For example, to increase durations (fatten lobe to make it more gentle) by 10%, enter '1.1'; to reduce durations (shorten lobe to make it more aggressive) by 10%, enter '.9'. (An upcoming question will ask which lobes from the current cam file to factor.)

1.1



Which Lobe To Convert?

Which lobe do you want to multiply Durations by 1.1 to obtain a new Tappet Lift?

I Intake
E Exhaust
B Both Int and Exh

I

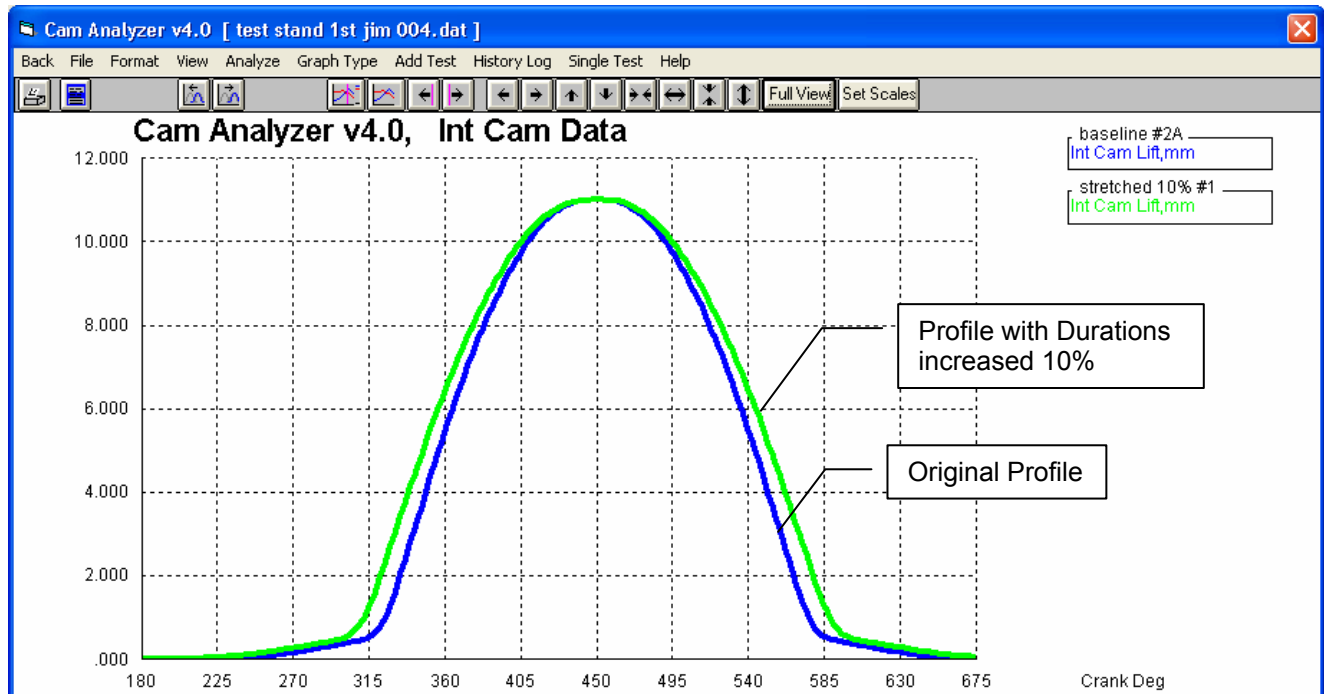
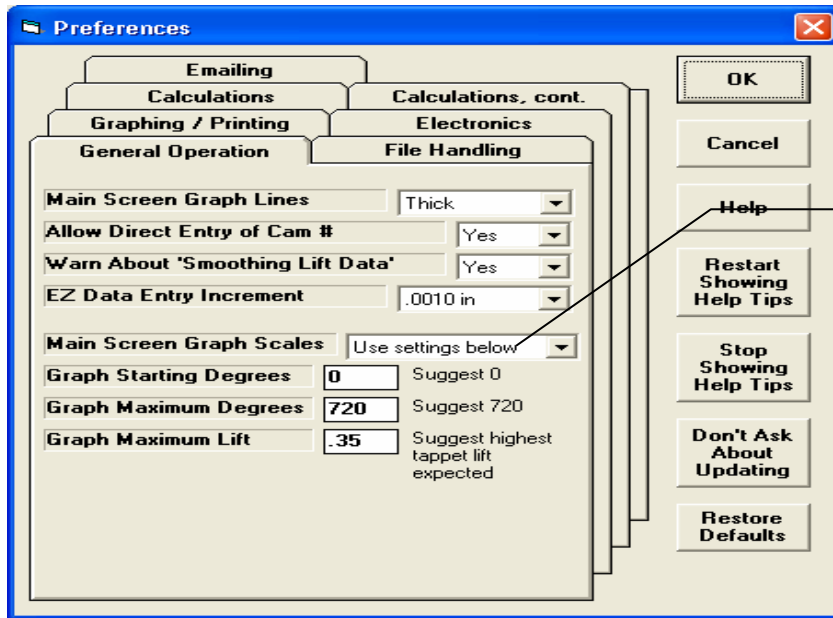
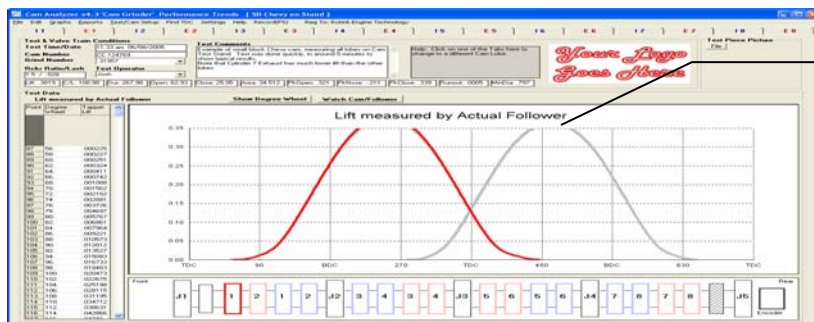
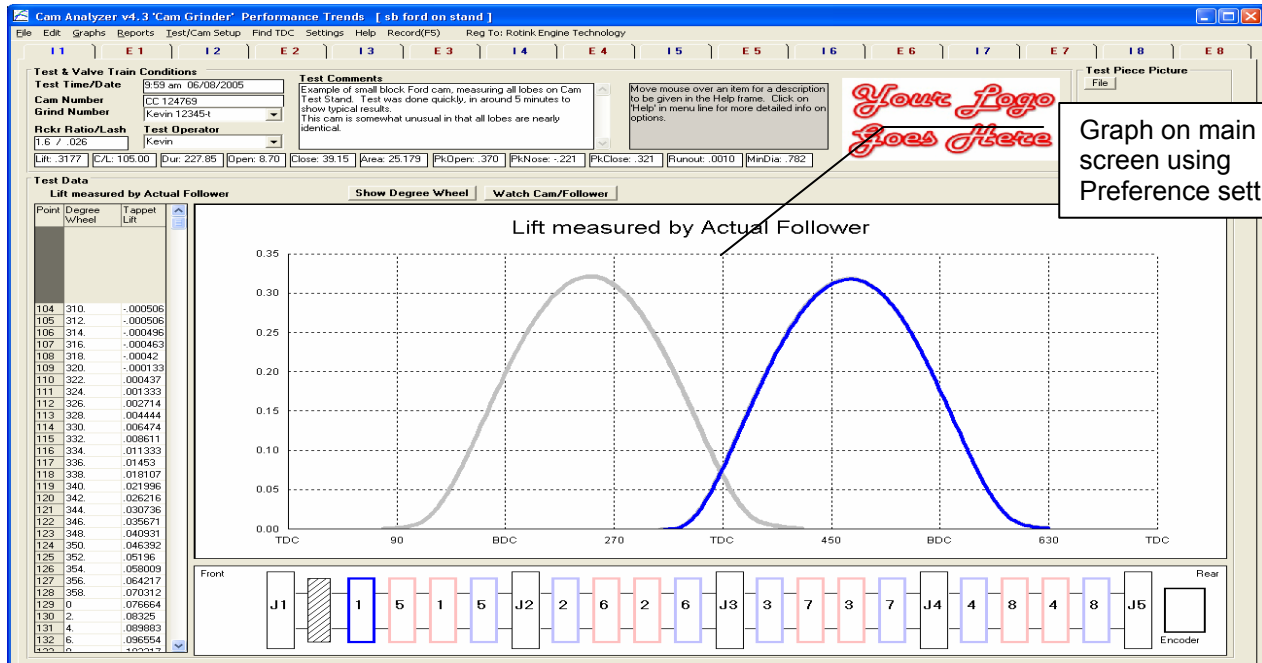


Figure 9.13 Preference to Always Use Same Graph Scale on Main Screen

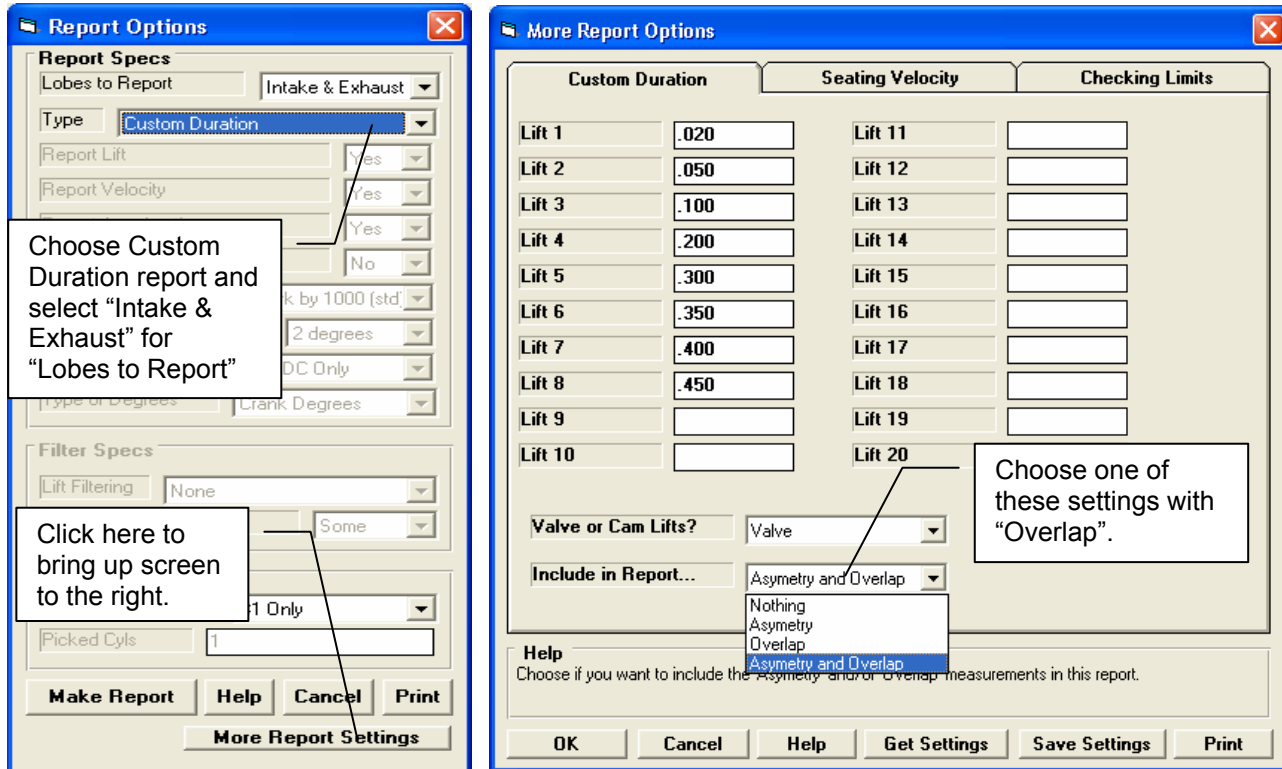


Turn this Preference to "Use Settings Below" to enable Graph settings.



If a cam profile does not fit in these settings, it may be cut off the display or be shown very small.

Figure 9.14 New Overlap Output for Custom Duration Reports



Cam Analyzer v4.3 'Cam Grinder' Performance Trends [sb ford on stand]

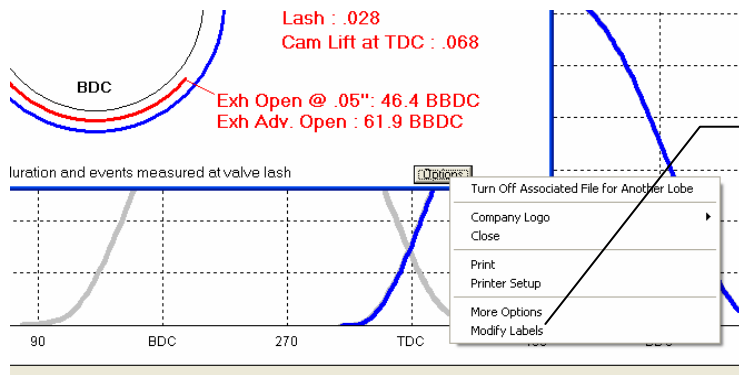
Report of: Cyl1, Cam Data Test Time: 9:59 am 06/08/2005 Events Rated at .05" Tappet Lift

CLine	Dur	Open	Close	Lb Area	Lb Lift	Vlv Lift	RAR	Lash	LbSep/Adv	Overlap	ASym	
Int:	105.0	227.9	8.7	39.2	25.18	.318	508	1.6	.026	107.4	15.3	0.22
Exh:	109.7	233.0	46.4	6.6	25.90	.322	514	1.6	.028	2.3 Advance		-0.18

Overlap shown for the different lifts.

Valve Lift	Int Open BTDC	Int Close ABDC	Int Dur	Int Asym	Exh Open BBDC	Exh Close ATDC	Exh Dur	Exh Asym	Overlap
Cyl 1									
.020	16.9	48.4	245.3	.8	54.8	15.3	250.1	-.1	32.2
.050	9.6	40.1	229.7	.3	46.8	7.1	233.9	-.2	16.7
.100	-0.6	29.3	208.7	-.1	35.9	-3.8	212.0	-.2	-4.4
.200	-19.0	10.3	171.3	-.4	16.8	-22.7	174.1	-.1	-41.7
.300	-37.7	-8.6	133.7	-.5	-2.3	-41.7	136.1	.0	-79.4
.350	-48.3	-18.9	112.8	-.3	-12.8	-52.2	115.0	.0	-100.5
.400	-60.8	-30.9	88.3	-.1	-25.0	-64.5	90.5	-.1	-125.3
.450	-77.7	-47.2	55.1	.3	-41.3	-80.5	58.2	.1	-158.2

Figure 9.15 New Options for Cam Cards



Click Options button, then one of these 2 new options at the bottom of the menu displayed.

Cam Card Options

Specify Centerlines: Yes

Intake Centerline: 110

Exhaust Centerline: 110

Specify Adv. Lift: Yes, at Tappet

Int Lift for Adv. Events: .02

Exh Lift for Adv. Events: .022

Explain Lift on Card: Yes

Note:
Cam Card Options

Buttons: Use Options, Help, Cancel, Print

Cam Card Labels

Modify Labels: Yes

1st Label: Grind

1st Text: CC-244-248H

2nd Label: Intensity

2nd Text: 35%

Note:
Choose 'Yes' for 'Modify Labels' and you can change the 2 lines of text at top, center of Cam Card to what you enter here.

Buttons: Use Labels, Help, Cancel, Print

Centerlines are now both 110 deg as set in Cam Card Options.

1st Label and 2nd label are shown here on these first 2 lines, as set in Cam Card Labels.

Advertised Duration and Events now for lifts set in Cam Card Options.

Lash still shown as what you set in Test/Cam Setup, which can be different than lift for Advertised Duration and Events.

Explain Lift on Cam Card

Cam Analyzer v4.0 - Cam Card

Your name / company name can go here. See Preferences.

Intake

Centerline: 110.0
Tappet Lift: .318
Rocker Arm Ratio: 1.6
Valve Lift: .508

Int Open @ .05": 3.7 BTDC
Int Adv. Open : 16.0 BTDC

Duration .05": 227.9
Adv. Duration : 254.3
Duration @ .200": 136.0
Lobe Area : 25.18
Lash : .026
Cam Lift at TDC : .0611

Int Close @ .05": 44.2 ABDC
Int Adv. Close : 58.3 ABDC

Exhaust

Centerline: 110.0
Tappet Lift: .322
Rocker Arm Ratio: 1.6
Valve Lift: .514

Exh Close @ .05": 6.3 ATDC
Exh Adv. Close : 19.5 ATDC

Duration .05": 233.0
Adv. Duration : 258.9
Duration @ .200": 139.3
Lobe Area : 25.90
Lash : .028
Cam Lift at TDC : .0676

Exh Open @ .05": 46.7 BBDC
Exh Adv. Open : 59.4 BBDC

Adv. Duration and Events measured at .020 Int and .022 Exh Tappet Lift

Buttons: Options

Figure 9.16 New Features for Filtering (Finding) Files

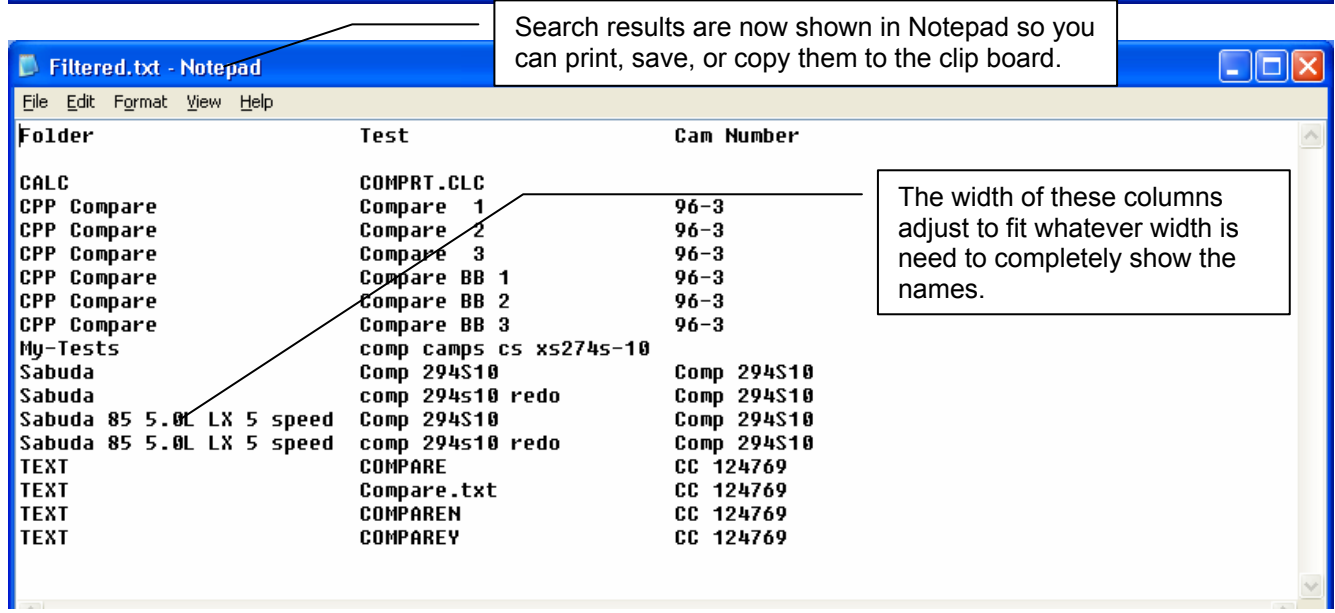
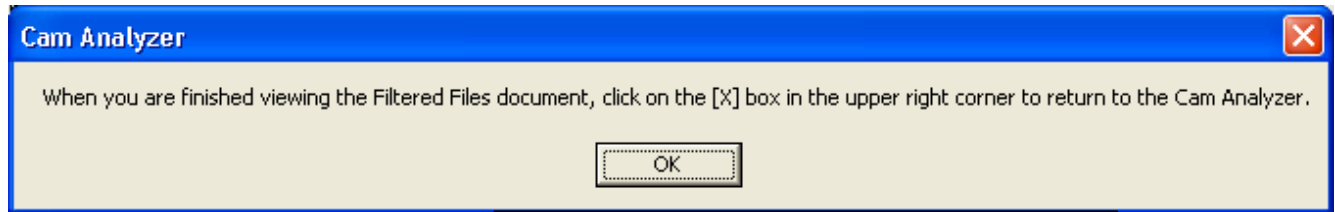
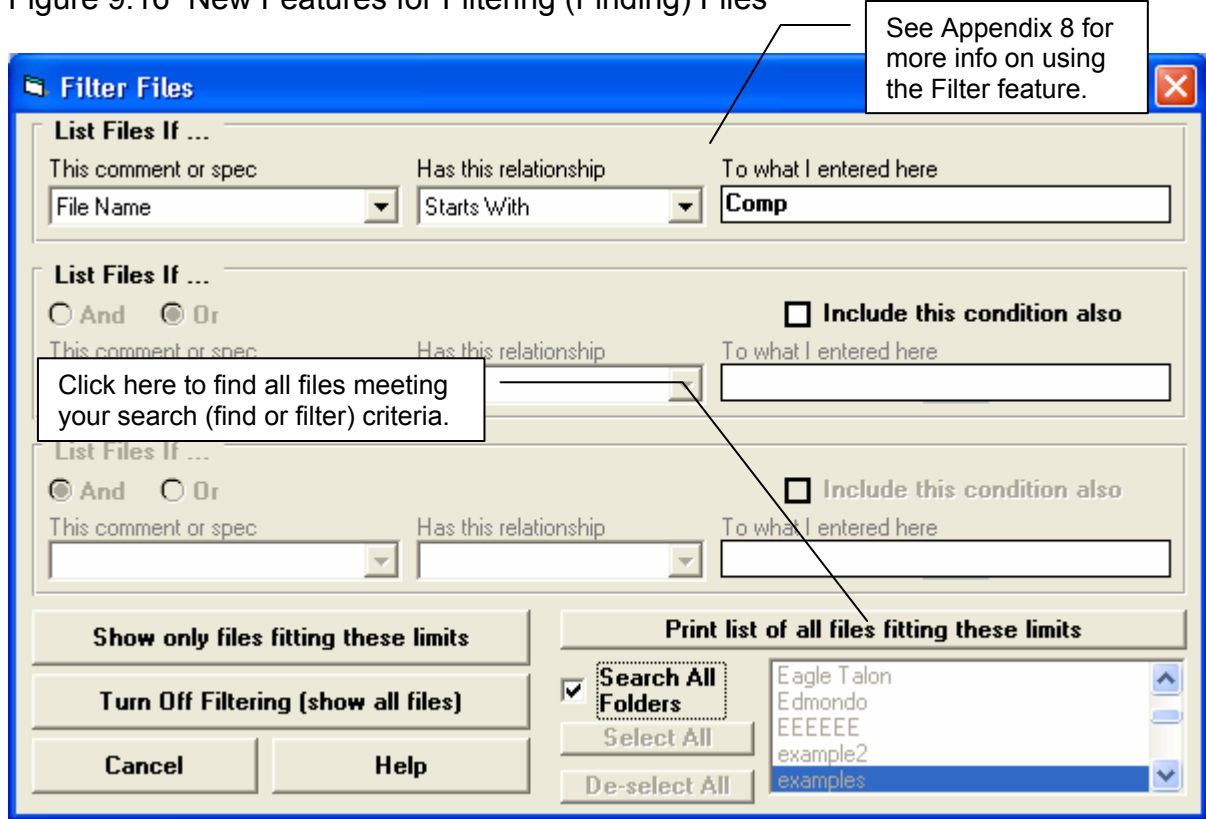


Figure 9.17 Lift for Rating Events

In Test/Cam Setup screen you can now specify what lift should be used for determining events and durations.

Report of:	Cyl 1, Cam Data	Test Time:	9:59 am 06/08/2005	Events Rated at:	.040" Tappet Lift
Int:	105.0 235.5 12.4 43.2 25.18 .318 .508 1.6 .026 107.4				
Exh:	109.7 241.0 50.3 10.7 25.90 .322 .514 1.6 .028 2.3 Advance				

Test File and Path	Graph?	Std Graph Title	Save?	Cam #	# Cyl	Cyl to Graph	Int Lift	Dur	Test Date	Exh Lift	Dur	Rated Lift
\\examples\SB Ford on Stand	Yes	CC 124770		CC 124770	8	1	.322	235.7	06/08/200	.322	241.1	.040"
\\examples\SB Chevy on Stand		1st row		CC 124769	8	1	.382	258.8	06/08/200	.382	268.9	.05"
\\wolf\test stand 1st jim 004.dat		baseline		first test virt follower	3	1	11.023	250.3	04/24/201	.000		1 mm
\\wolf\test stand 1st jim stretched	Yes	stretched 10%		first test virt follower	1	1	10.999	276.0	04/24/201	.000		1 mm
...ay Brown\Kevin Debug SOHC Left.dat		Custom		Custom	4	1	15.215	280.6	10/03/200	15.215	279.6	1 mm
...est stand 1st jim 004 1 2 3 numbering		first test virt follower		first test virt follower	3	1	11.023	250.3	04/24/201	.000		1 mm
...small block cam stock 52.25 pin 001		2		2	1	1	6.502	203.9	02/26/201	6.836	216.9	1 mm
...r20 stock ex only after 040 fix 001.dat		1		1	1	1	.000		05/10/201	9.702	351.4	1 mm
...a\Dorma Cam measure w journal 001		CC 124769		CC 124769	1	1	11.513	207.2	06/08/200	.000		1 mm

Figure 9.18 New Folder Options in Save As

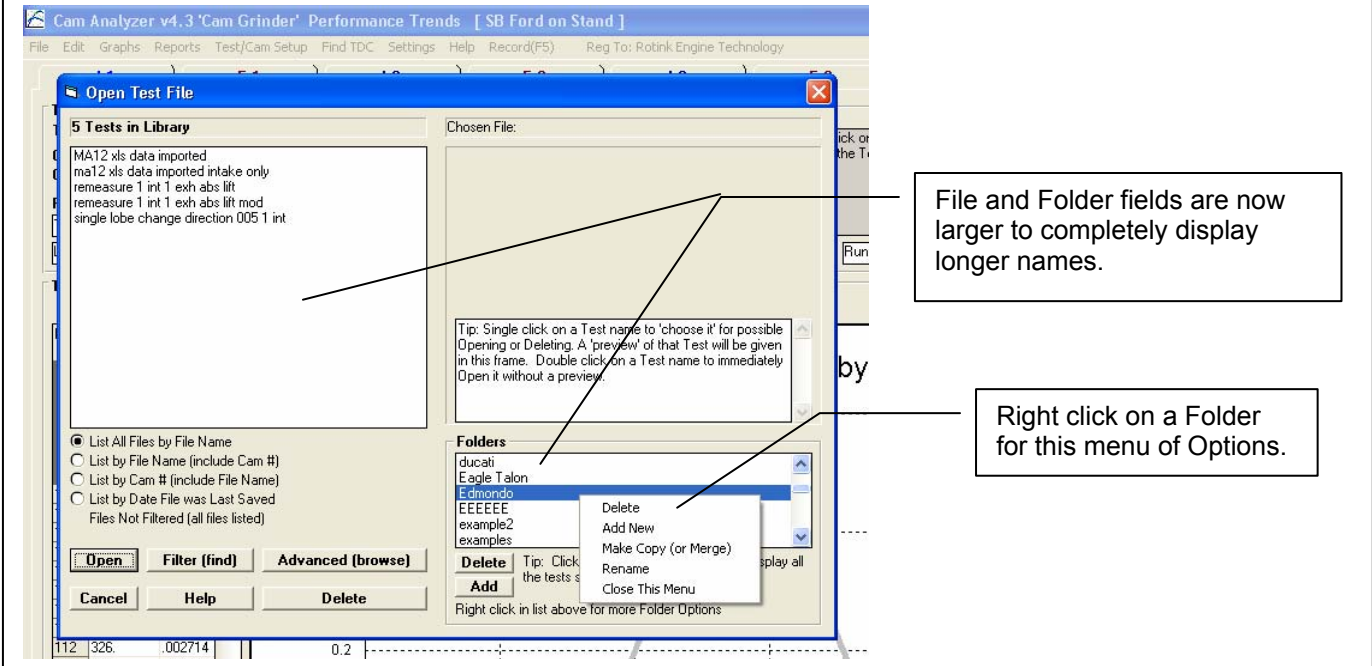


Figure 9.19 Larger Fields for Longer File and Folder Names when Starting a New Test

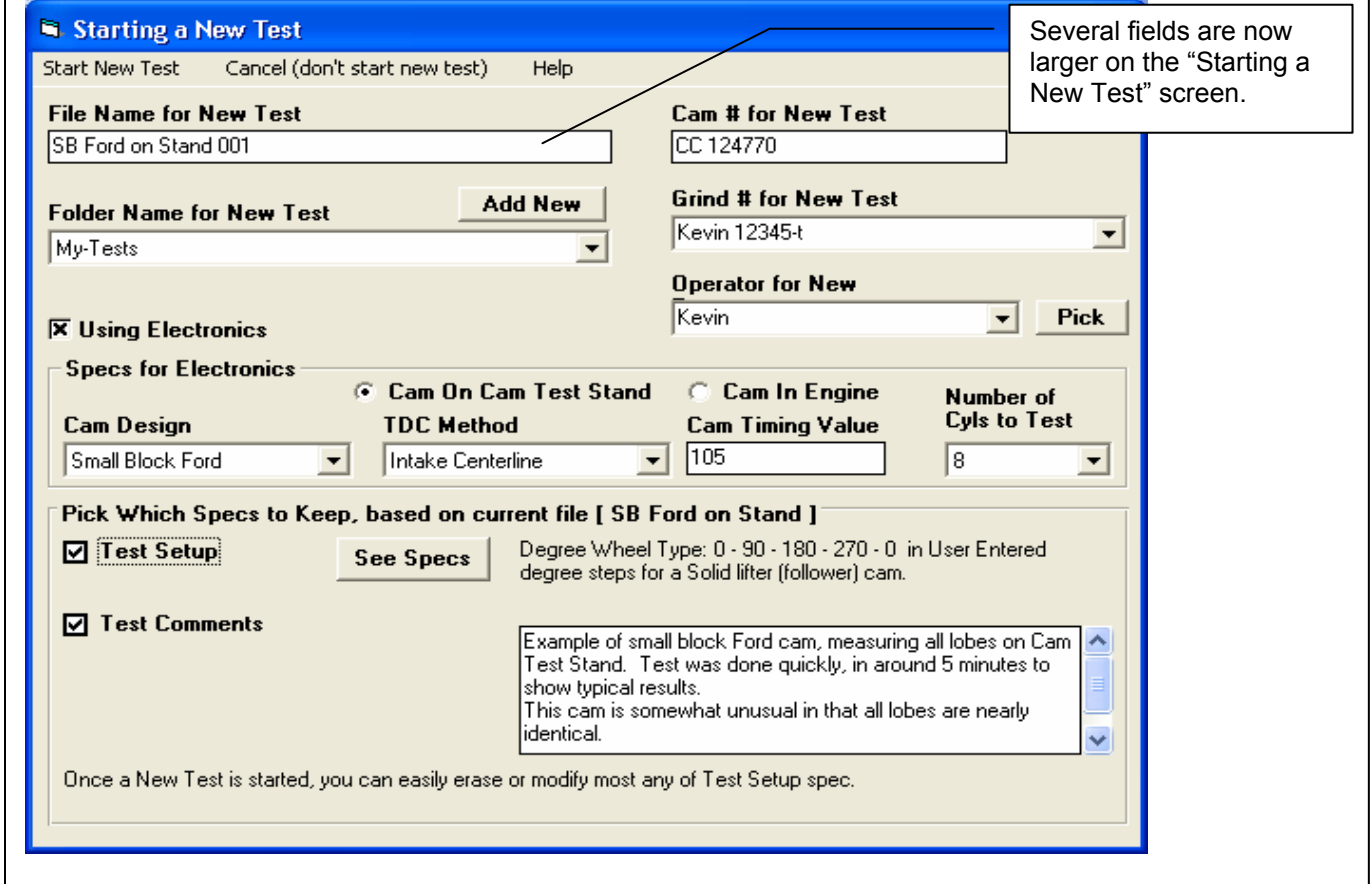


Figure 9.20 Importing from Cam Checker

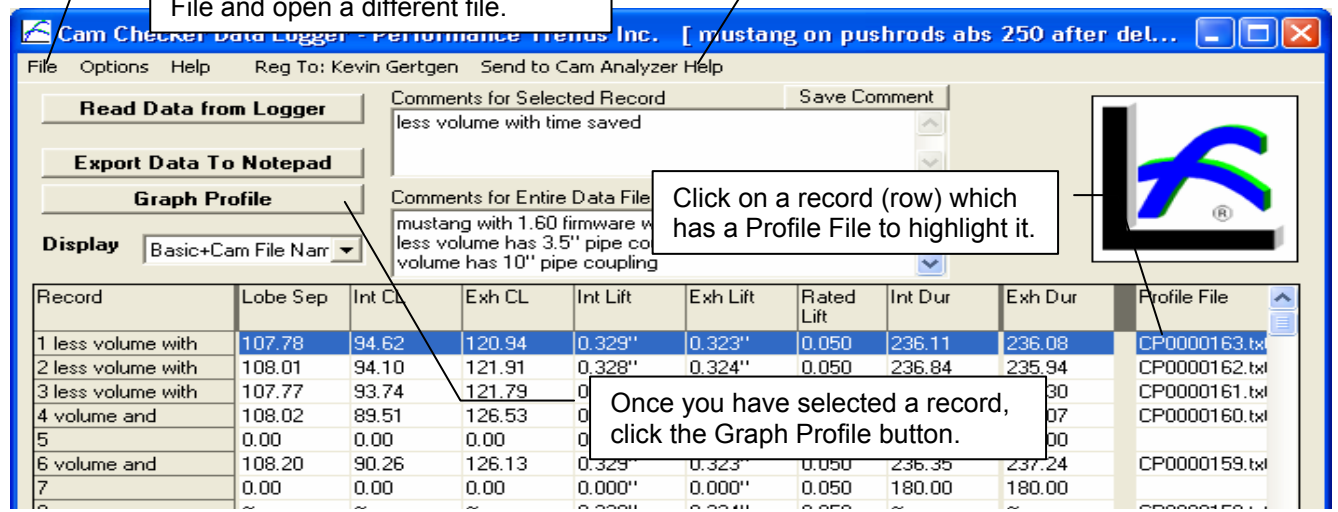
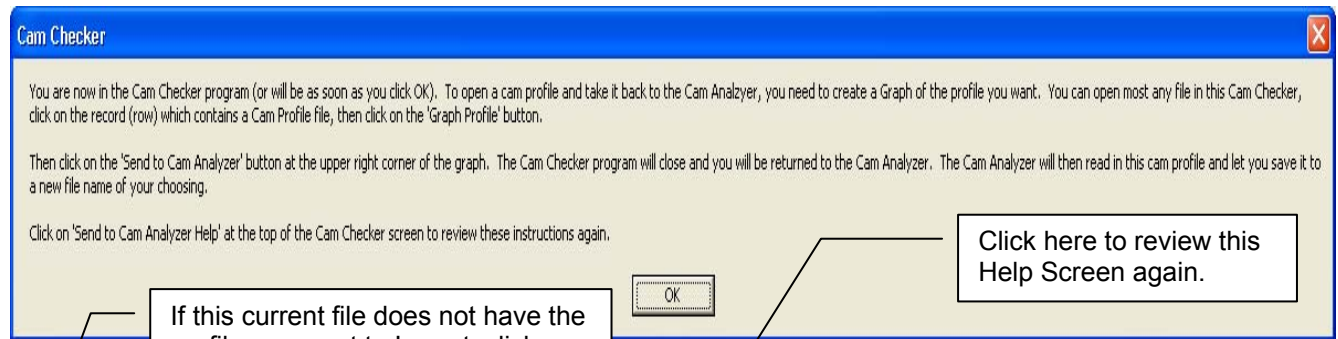
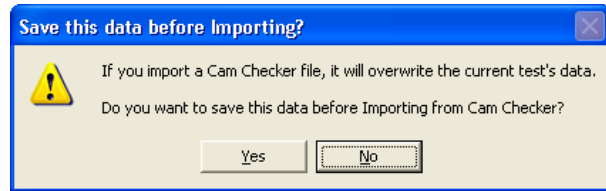
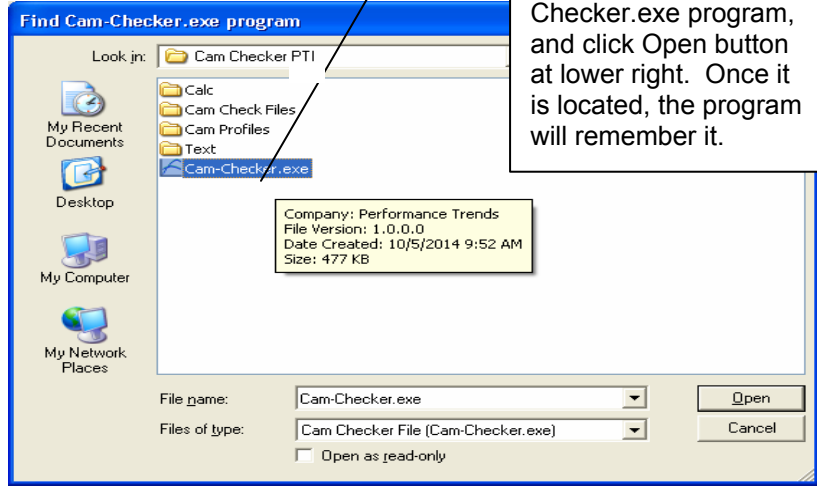
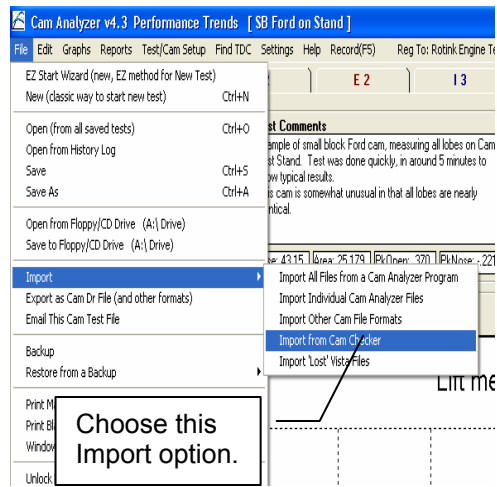


Figure 9.21 Importing from Cam Checker, cont

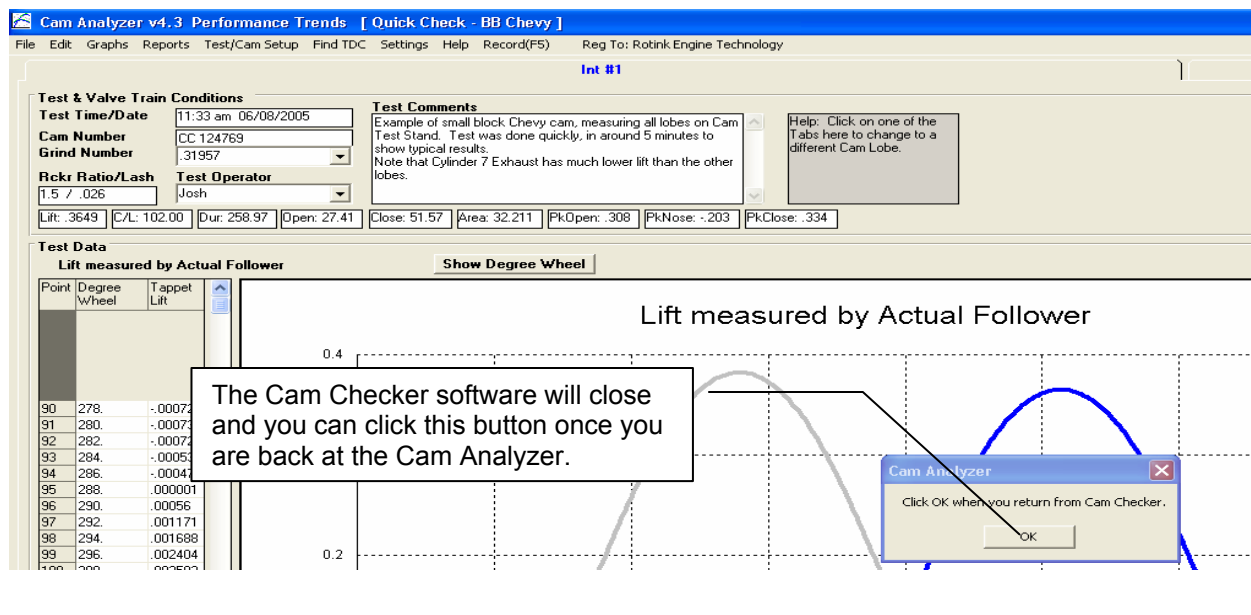
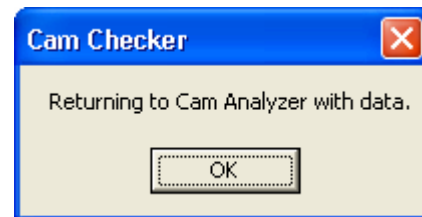
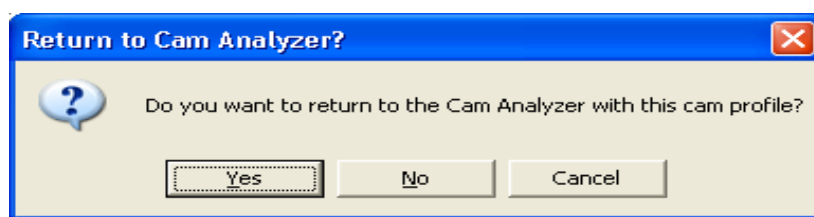
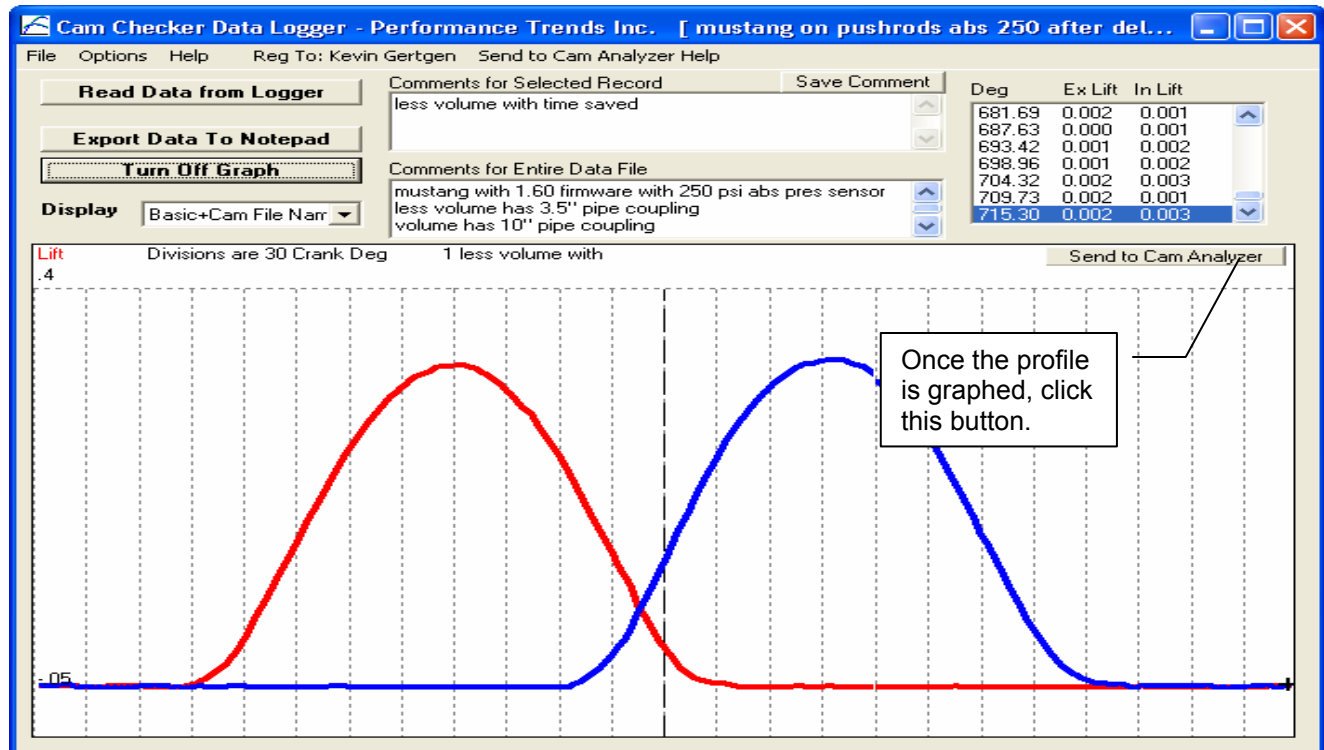
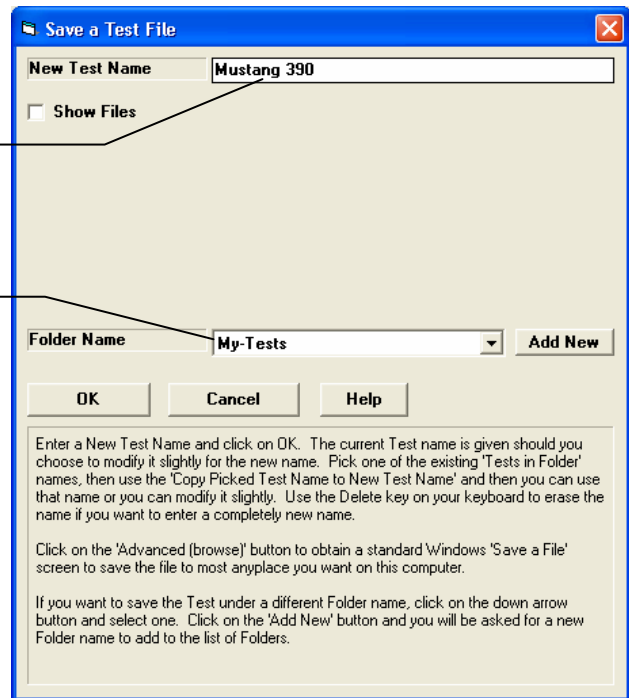


Figure 9.22 Importing from Cam Checker, cont

After clicking on OK on the Cam Analyzer messages, enter a name for saving the data Imported from the Cam Checker.

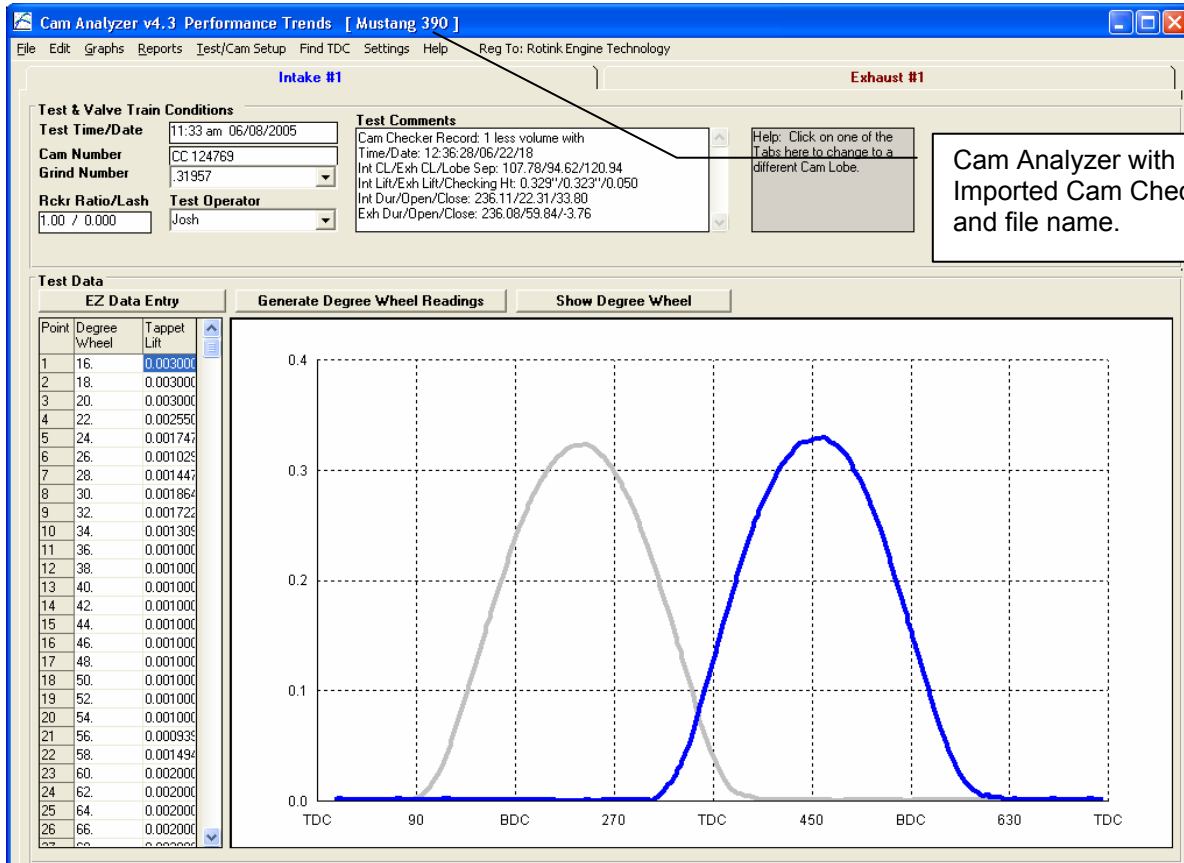
You can also choose a folder or choose to add a New Folder.



The 'Save a Test File' dialog box features a text input field for 'New Test Name' containing 'Mustang 390'. Below it is a checkbox for 'Show Files'. A 'Folder Name' dropdown menu is set to 'My-Tests', with an 'Add New' button to its right. At the bottom are 'OK', 'Cancel', and 'Help' buttons. A text area at the bottom provides instructions: 'Enter a New Test Name and click on OK. The current Test name is given should you choose to modify it slightly for the new name. Pick one of the existing 'Tests in Folder' names, then use the 'Copy Picked Test Name to New Test Name' and then you can use that name or you can modify it slightly. Use the Delete key on your keyboard to erase the name if you want to enter a completely new name. Click on the 'Advanced (browse)' button to obtain a standard Windows 'Save a File' screen to save the file to most anyplace you want on this computer. If you want to save the Test under a different Folder name, click on the down arrow button and select one. Click on the 'Add New' button and you will be asked for a new Folder name to add to the list of Folders.'



The 'Cam Analyzer' message box has a blue title bar and a close button. The text inside reads: 'After clicking on OK, you will now be asked for a new file name for saving this Cam Checker data.' Below the text is an 'OK' button.



The main application window shows 'Cam Analyzer v4.3 Performance Trends [Mustang 390]'. The 'Test & Valve Train Conditions' section includes: 'Test Time/Date: 11:33 am 06/08/2005', 'Cam Number: CC 124769', 'Grind Number: .31957', 'Rckr Ratio/Lash: 1.00 / 0.000', and 'Test Operator: Josh'. The 'Test Comments' section contains: 'Cam Checker Record: 1 less volume with Time/Date: 12:36:28/06/22/18', 'Int CL/Exh CL/Lobe Sep: 107.78/94.62/120.94', 'Int Lift/Exh Lift/Checking Ht: 0.329"/0.323"/0.050', and 'Int Dur/Open/Close: 236.11/22.31/33.80', 'Exh Dur/Open/Close: 236.08/59.84/3.76'. A 'Help' tooltip is visible: 'Click on one of the Tabs here to change to a different Cam Lobe.' The 'Test Data' section shows a table of 'EZ Data Entry' and a graph of 'Generate Degree Wheel Readings' and 'Show Degree Wheel'. The graph plots tappet lift (0.0 to 0.4) against crank angle (TDC, 90, BDC, 270, TDC, 450, BDC, 630, TDC). A blue curve shows the intake valve lift, and a grey curve shows the exhaust valve lift.

Point	Degree Wheel	Tappet Lift
1	16.	0.003000
2	18.	0.003000
3	20.	0.003000
4	22.	0.002550
5	24.	0.001747
6	26.	0.001025
7	28.	0.001447
8	30.	0.001864
9	32.	0.001722
10	34.	0.001309
11	36.	0.001000
12	38.	0.001000
13	40.	0.001000
14	42.	0.001000
15	44.	0.001000
16	46.	0.001000
17	48.	0.001000
18	50.	0.001000
19	52.	0.001000
20	54.	0.001000
21	56.	0.000939
22	58.	0.001494
23	60.	0.002000
24	62.	0.002000
25	64.	0.002000
26	66.	0.002000
27	68.	0.002000

Cam Analyzer with new Imported Cam Checker data and file name.

Figure 9.23 New "Save As" Features

Click on File, then Save As

Click this Check Box for new info and options. Many times you may want to see what other files are in this same folder, or use one of these file names as the New Test Name, or possibly modify that name slightly.

Here we are listing Test Files alphabetically by name.

Using the Picked name and then modifying it slightly.

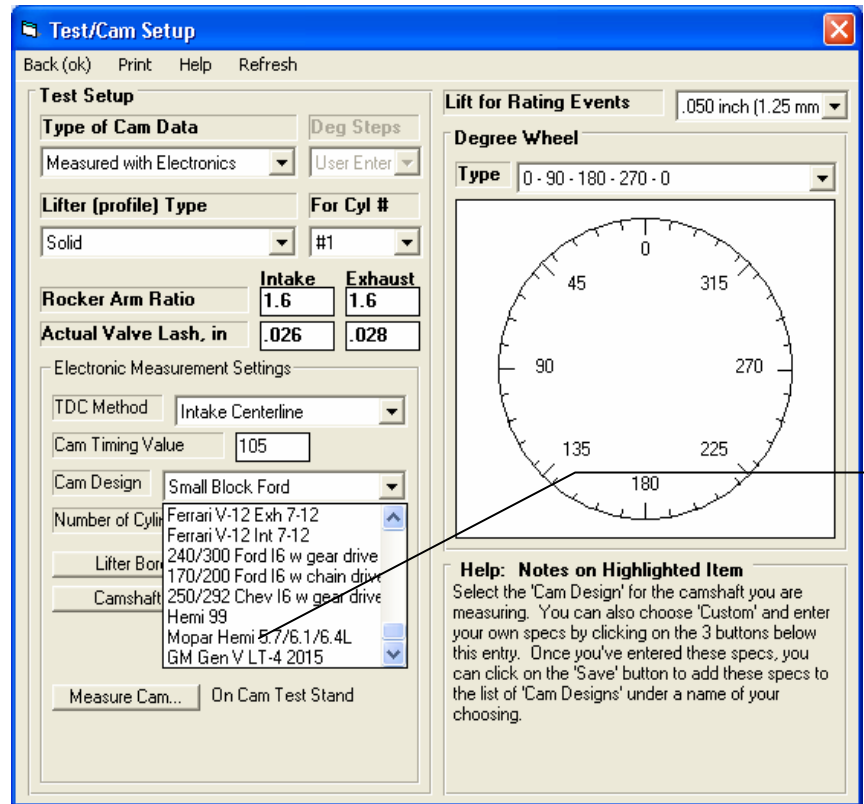
Listing by Date

Enter a New Test Name and click on OK. The current Test name is given should you choose to modify it slightly for the new name. Pick one of the existing 'Tests in Folder' names, then use the 'Copy Picked Test Name to New Test Name' and then you can use that name or you can modify it slightly. Use the Delete key on your keyboard to erase the name if you want to enter a completely new name.

Click on the 'Advanced (browse)' button to obtain a standard Windows 'Save a File' screen to save the file to most anyplace you want on this computer.

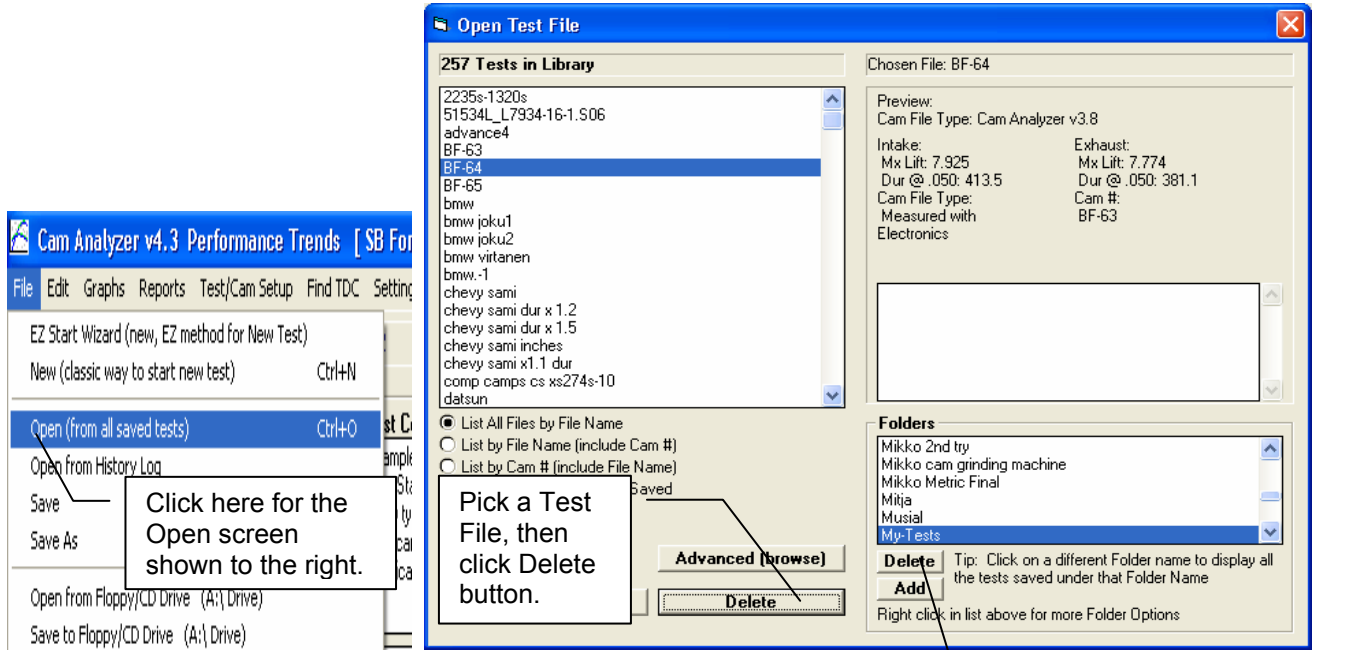
If you want to save the Test under a different Folder name, click on the down arrow button and select one. Click on the 'Add New' button and you will be asked for a new Folder name to add to the list of Folders.

Figure 9.24 New Cam Layouts

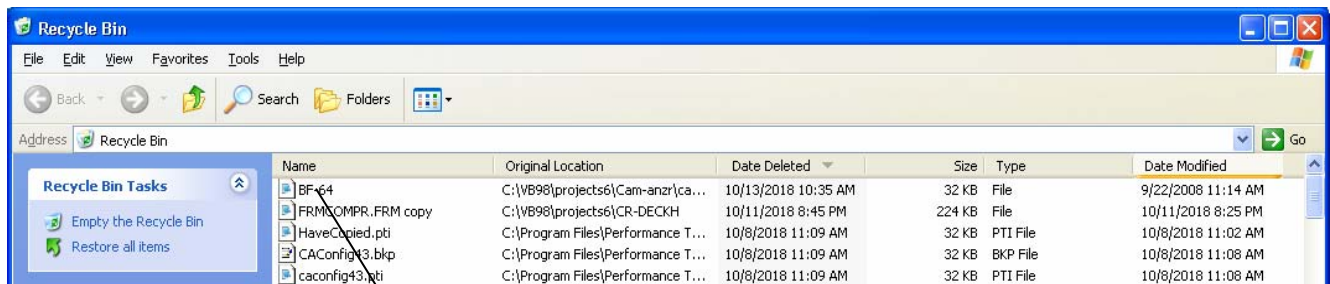
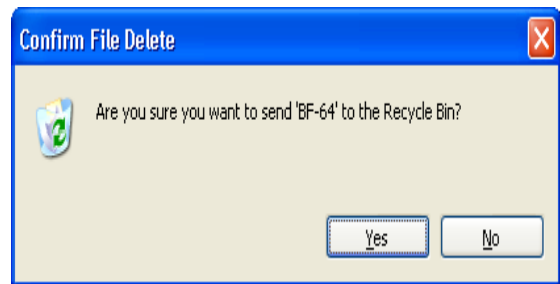
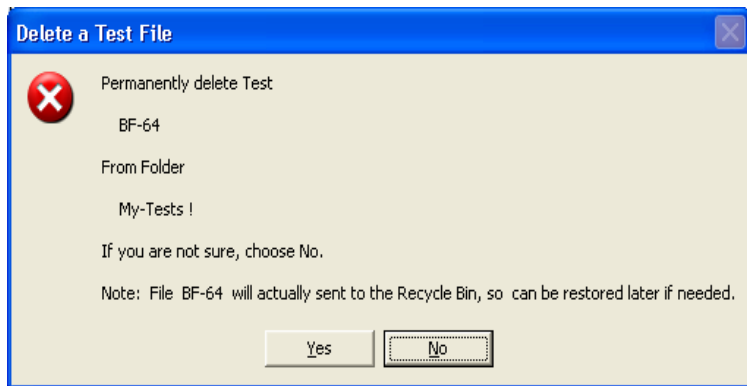


Three new Cam Layouts. Other layouts can have some minor bugs fixed.

Figure 9.25 Saving Deleted Files and Folders to Recycle Bin



Deleted Folders are also sent to the Recycle Bin.



Deleted test file now shows up in the Recycle Bin, so you can restore it later if you have made a mistake deleting it.

