

Appendix 6: New Features in Version 3.4

Here is a brief listing of some of the features new in Version 3.4:

General Operation:

- The program now requires you to 'Allow' it to run in Vista and Windows 7 (same as right click on desktop icon, then select 'Run As Administrator'). This should make the program more Vista and Windows 7 compatible.
- You can now save a graphics picture file with engine data, which could be a picture of your car or engine. This picture appears on the main screen, and can be printed out with graphs and reports, or just separately from the main screen. Fig A 9, A 23.
- We've added a global switch to turn Off or On the Intro Help Tips in Preferences. Fig A 24.

Short Block:

- We've added hundreds of combinations of bore, stroke and rod length examples.
- We've increased the size of the Comments box for all components, to allow you to better describe your changes. This is common to all Component Screens. Fig A 24.

Heads:

- We've added the ability to import flow files from Port Flow Analyzer. Plus version only.
- You can now import head files from some Desktop Dyno (tm) and Dyno Sim (tm) programs and those available from Stan Weiss, .flw and .dfw files. Fig A 14, A 19.

Intake/Exhaust:

- A picture explaining the definition of primary pipe length and collector length is available in the Exhaust System Specs screen.
- The program now shows pictures of intake manifold and exhaust manifold/header types, to more clearly explain the choices.

Cam/Valve Train:

- We've added a new screen to let you do Variable Cam Timing (VVT). Plus Version Only. Fig A 13.
- Dwell over Nose (Cheater profile) can now be more exactly defined, to the nearest 2 degree increment. Also, now this setting can be different on the intake vs the exhaust. Plus version only. Fig A 14.
- The program now allows for using a Ramp Rating for the cam profile for more exact cam profiles. There is also a 'Clc' screen to calculate the ramp rating to match certain duration specs at either .200 lift or seat timing. Plus version only. Fig A 14, A 15.
- We've added hundreds of new Example Cam Categories (especially Imports and Motorcycles) and cams themselves. Many are stock engine cam files from John Holm. Many thanks John.
- The screen for opening std Engine Analyzer Example components now let you select to only show components which match up to 3 criteria you have selected at the bottom of the screen. Fig A 16.

- We've added option to import Other Format Files for Cam files, like .cam and .scm files from Desktop Dyno (tm) and DynoSim (tm). Fig A 18.
- The screen for opening Example Cams now show the Gross Valve Lift and Lobe Separation for the cam you selected if you right click on the selected cam. Fig A 16.
- We've added an "Optimize Using These Cams" button in the Example Cams screen. The program will run each cam you've selected in the Example Cams screen and display the 4 cams which best meet your "Optimize" criteria. Fig A 16, A 17.
- When you change Lobe Separation in the Cam Specs screen, now the program adjusts the centerlines correctly.
- We've added a "Clc" button for Lobe Lift being calculated from Gross Valve Lift and Rocker Arm Ratio. We've also added a "Clc" button for Lobe Separation. Fig A 15.
- Cam Advance can now go from 30 Retard to 30 Advance
- We've made some refinements to the Cam Profiles created by the EA Pro to more precisely time them to the nearest 0.1 deg.
- We've added .053" lift for rating events (like Harley Davidson cams). Fig A 14.

Turbo/Supercharger:

- The Roots Supercharger type now allows for an Intercooler. Fig A 19.

Calculation Conditions:

- Program now has Fuel Option of E85. Plus Version Only. Fig A 20.
- Program now displays the Typical Octane for various fuel types. Fig A 20.

Calculations:

- We've increased the Piston Speed limit above which program says is Impossibly High because materials and technology have made huge strides over recent years.
- Idle vacuum now more precisely estimated for super/turbocharger type and size.
- The program now better checks for blank inputs before doing calculations.

ASCII Data Files:

- We've added a Browse button to screen for writing ASCII files of test results. Fig A 21.
- We've added an option to include the Special Calculations section for writing ASCII files of test results. Plus Version Only. Fig A 21.

Graphs:

- Program now has an "Edit Printed Graph" command under Format. It opens a screen where you have several options on how to print your graph, include various comments, etc. You can now select to include the torque and HP data in a table when you print out RPM data graphs as long as there are torque and/or HP data on the graph. Plus Version Only. Fig A 22, A 23.
- Program now has larger Legend Text sizes available (under Format) on graph screen. Fig A 23.
- Program now prints cursor and cursor values when you print a graph. Fig A 23.
- We've added additional graph scale multiplier for Special Graph types of x 1000.

Printouts:

- We've refined the printouts to look better and be more compatible with more types of printers. Fig A 23.
- The program now better remembers Printer Changes and Printer Type.
- You can now print a Company Logo graphics files on reports and graphs. This info is loaded in the Preferences screen. You can specify 2 lines of text which can appear at the top of printouts

of reports and graphs in the Preferences screen, under Printing/Graphing. Plus version only.
Fig A 23, A 24.

- The program is now better at finding more versions of Acrobat and Reader for a printer choice.

Figure A 9 Main Screen Showing Engine Picture

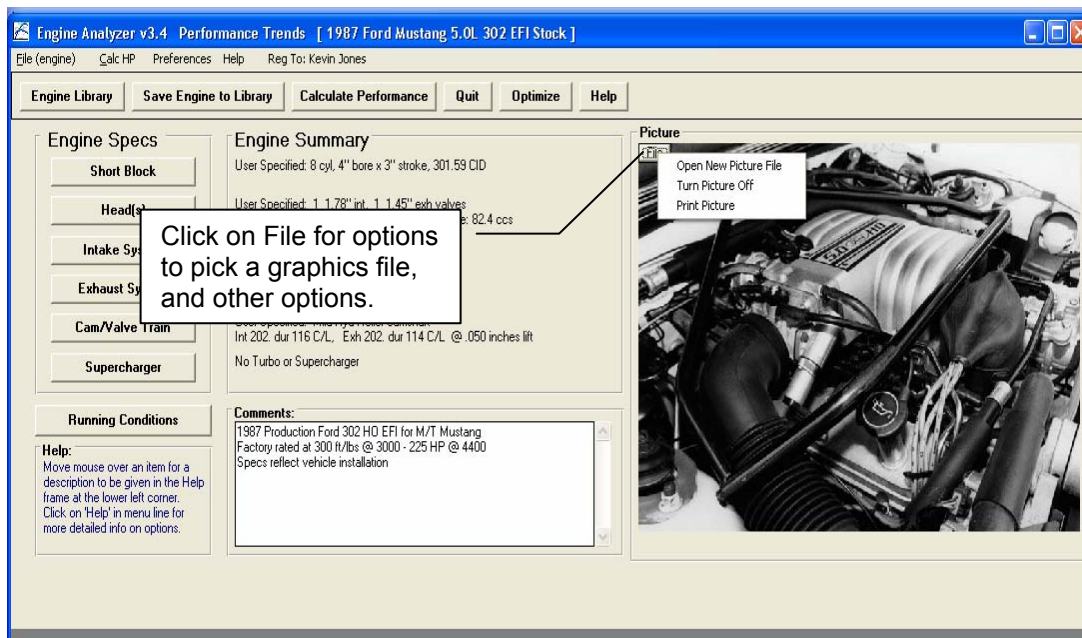
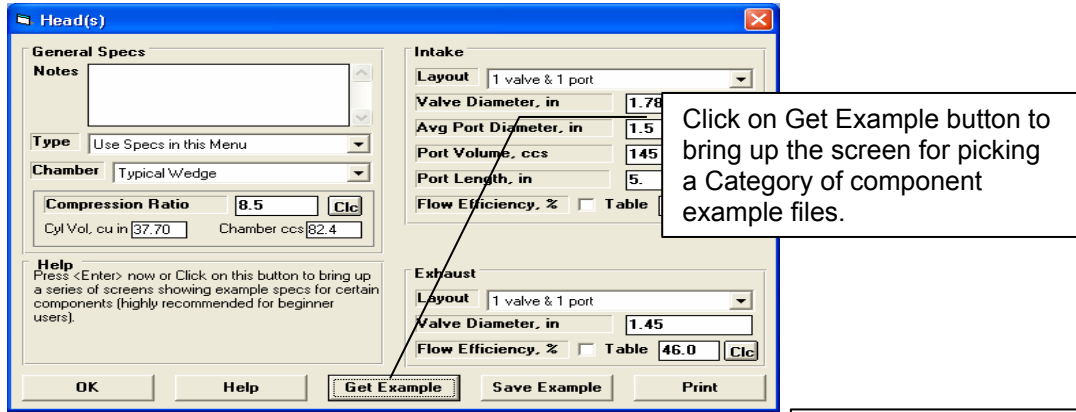
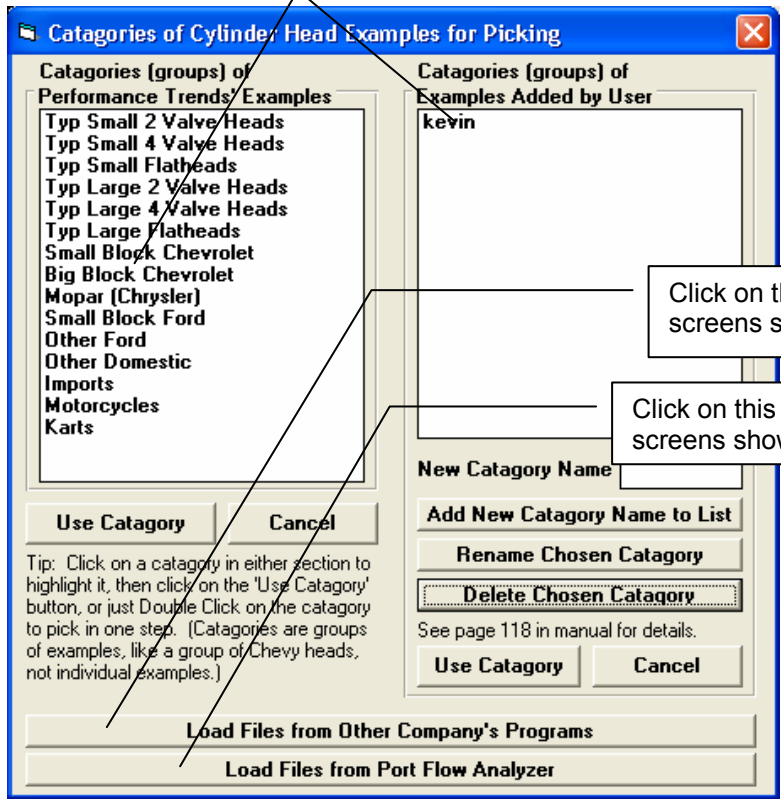


Figure A 10 New Feature for Picking Example Component Files



Click on Get Example button to bring up the screen for picking a Category of component example files.



Pick a Category from either group (side) and click on the Use Category to open the screen for picking a component. See Figure A 16.

Click on this button for the screens shown in Figure A 11.

Click on this button to bring up the screens shown in Figure A 12.

Figure A 11 Importing Head Files from Other Company's Programs.

Use this standard Browse screen to find the Head Files with ".dfw" or ".flw" extensions.

Click on Open to pick the file you've highlighted.

Std Head File extensions to look for.

This screen shows a comparison summary between new file selected and the existing head on your current engine (shown in left column).

	Current Setting	New Setting
Intake Summary		2 x 1.457 dia valves, 325.0 CFM/.700 lift @ 28.0"
Exhaust Summary		2 x 1.181 dia valves, 236.0 CFM/.700 lift @ 28.0"
Intake Port Volume, ccs	156	219.0
Intake Port Diameter, inches	1.56	1.84
Intake Port Length, inches	5	5

If the file included port volume (Weiss files only), you can choose to use the current Port Length for calculating Avg Port Dia, or choose to enter your own port length.

Click here to import these specs.

File: 4V Cobra CNC M2 Race Systems Alum_1241_Stan_Weiss_World_Wide_Enterprises_ Kevin Gertgen.dfw
Note: Bore Size=3.575-4V Cobra CNC M2 Race Systems: Alum-Stan Weiss

This file does NOT have all the Engine Analyzer specifications. If you choose to import these limited specifications, be sure to adjust those missing specs in your current file to better match these heads.

Import Cancel Look Again for a Head File Help

Figure A 12 Importing Head Files from Performance Trends' Port Flow Analyzer (Plus Version Only)

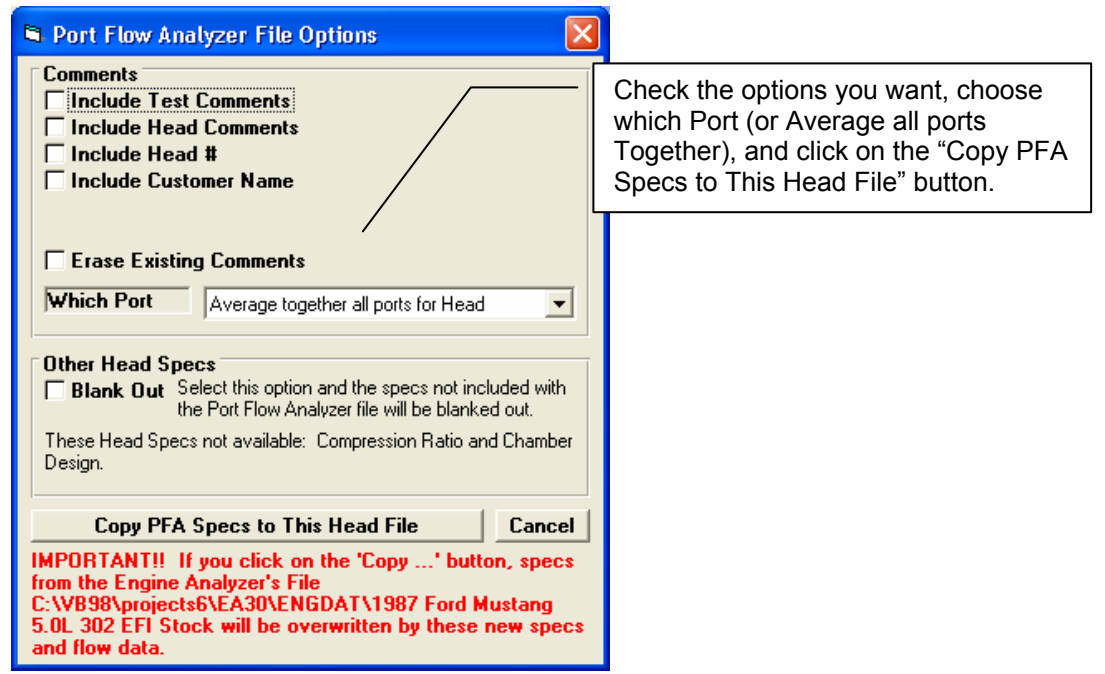
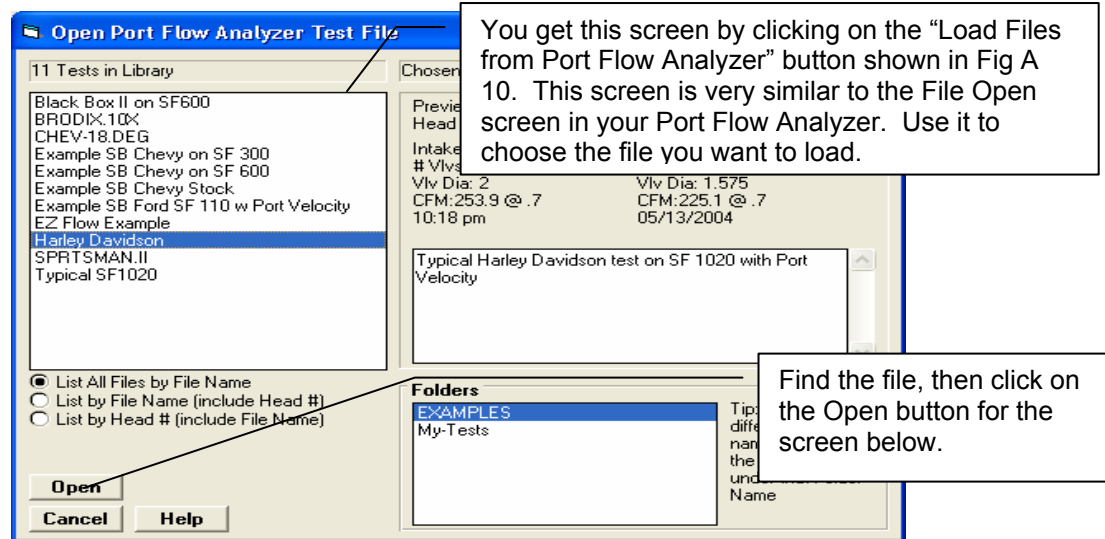


Figure A 13 Variable Valve Timing (V V T) Specs (Plus Version Only)

Cam/Valve Train

General Cam Specs

Notes: []

Type: Use Specs in this Menu

Lift for Rating Events: .050 inches

Intake Centerline, deg ATDC: 116

Total Cam Advance: 1.0 Retard

Lifter (profile) Type: Mild Hyd Roller

Valve Train: Pushrod w RockArm (product)

V.V.T.: No Yes See Specs

Variable Valve Timing (VVT) Specs for: C

Final Intake Cam Profile	Final Value	Starting Value	Change	Final Exhaust C
Centerline, deg ATDC	116.0	116	0.	Centerline, deg
Duration @ .050 "	240.0	202.	38.	Duration @ .050 "
Open @ .050 ", BTDC	4.0	-15	19.	Open @ .050 "
Close @ .050 ", ABDC	56.0	37	19.	Close @ .050 "
Max Lobe Lift, in	.32	.28	.040	Max Lobe Li

Gross Valve Lift, in: 512 | 448

General VVT Specs

Type: Use All Specs Above

RPM to Change to Final Values: 5000

Total Cam Advance, deg: 1.0 Retard

Lobe Separation, cam deg

Buttons: OK, Help, Print, Copy Int to Exh, Copy Exh to Int, Copy Starting to Final

Callouts:

- Choose Yes, and then you can click on the "See Specs" button to see screen below.
- Enter the values you want to use at and above the "RPM to Change to Final Values" input in lower left
- These are the settings from the original Cam Specs screen, shown for
- This column shows the "Change" (difference) between the Starting Value and the Final Value.
- Your choice here determines which specs are enables on this screen.
- Enter the RPM at which the program should switch from the specs on the original Cam Specs screen to these VVT
- Click here for more details on how this screen works.

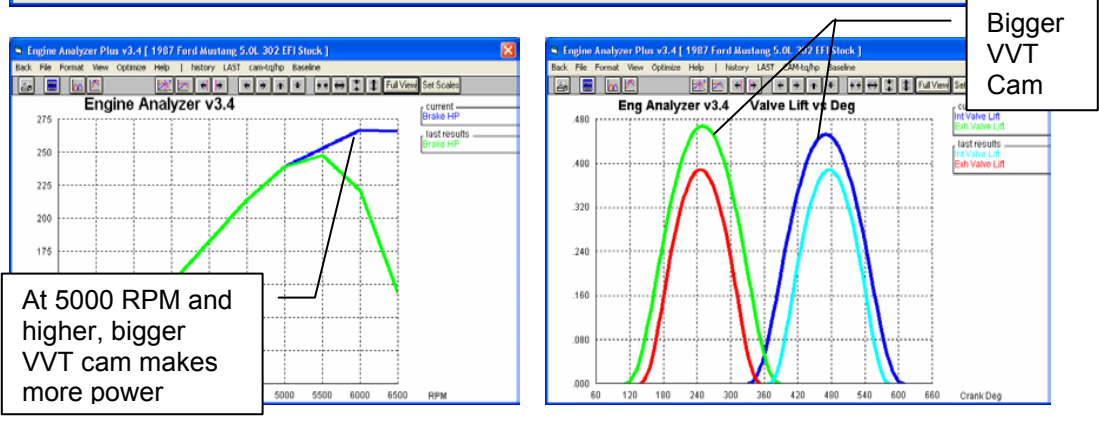


Figure A 14 New Features in Cam/Valve Train Screen

The screenshot shows the 'Cam/Valve Train' software interface. It features several sections: 'General Cam Specs' with a 'Notes' box, 'Lifter (profile) Type' set to 'Spec Solid Flat', 'Valve Train' set to 'Pushrod w RockrArm (race)', and 'V.V.T.' set to 'Yes'. The 'Duration @ .050"' section includes fields for 'Open' (116), 'Close' (170), 'Max Lobe Lift, in' (.26), 'Lash at Valve, in' (.028), and 'Rocker Arm Ratio' (1.6). The 'Dwell Over Nose' is set to '6 Deg - Cheater'. The 'Calculated Cam Specs' section shows 'Lobe Separation' (115.0), 'Gross Valve Lift, in' (.416), and 'Duration @ .200"' (84.8 Intake, 73.0 Exhaust). Callouts highlight: a larger 'Notes' box; the replacement of 'Cheater' profiles by 'Int' and 'Exh' 'Dwell Over Nose'; the new 'Spec' profile option with a 'Ramp Rating' input; new 'Clc' buttons for 'Max Lobe Lift', 'Ramp Rating, %', and 'Lobe Separation'; and the 'Std Version' option for 'Dwell Over Nose'.

Larger Notes box to allow for more comments (same in other screens).

"Cheater" profiles are gone, replaced by Int and Exh "Dwell Over Nose" shown below.

New "Spec" (specified) profile option displays Ramp Rating input below for you to "fine tune" the ramp. Plus Version only.

Ramp Rating is displayed if you choose "Spec" (user specified) profile type in upper right corner. Click on the "Clc" button to calculate from 2 duration specifications (Figure A 15).

New VVT specs as shown in Figure A 13.

New "Clc" option for Max Lobe Lift.

Std Version lets you pick std (no dwell) or Typical Cheater (lots of dwell). Plus Version lets you fine tune this in 2 degree

New "Clc" option for Lobe Separation. See Figure A 15.

Figure A 15 More Cam/Valve Train Specs Screen Features

You can calculate an exact Ramp Rating for a "General Description" or to match 2 specific duration inputs by your choice of "Follower Type". Four (4) calculated outputs describing the resulting profile are shown at the top of this screen.

You can now choose the Harley Davidson lift spec for rating events of .053" tappet lift.

Field	Value
Calc Ramp Rating, %	44.5
Dwell Over Nose, deg	8
Duration @ Seat Timing	188
Minimum Tappet Dia, in	.962
Based On	Duration @ .050" & .200"
Follower Type	Solid Flat
Allow Dwell Over Nose	User Specific
Dwell Over Nose, deg	8
Max Tappet Lift, in	.26
Designed Valve Lash, in	.028
Rocker Ratio	1.6
Duration @ Seat Timing	
Duration @ .050"	170
Duration @ .200"	90

Notes: Isky CORVAIR PN: 115126 HYDRAULIC 2000-5500 RPM Seat Dur: Int=262. Exh=262. (Grind/Type: [dropdown])

Type: Use Specs in this Menu [dropdown]

Lift for Rating Events: .050 inches [dropdown]

Intake

Centerline, deg ATDC: 200

Duration @ .050 " : .050 inches [dropdown]

Open @ .050 ", BTDC: 0

Close @ .050 ", ABDC: 28

Max Lobe Lift, in: .297 [Clc]

Buttons: Use Calc Value, Help, Cancel, Print

Simple "Clc" screen to let you change lobe separation. Program will change both centerlines the same amount to keep the Total Cam Advance or Retard the same.

Enter new Lobe Separation, from 80 to 130 degrees.

108

Buttons: OK, Cancel

Figure A 16 New Features for Picking Example Components, Many Especially for Cams

Several Examples are NOT shown because they do not meet the criteria you set in the "Show Only Examples Fitting These Limits" section described below.

Plus Version shows Ramp Ratings for Cams, if available.

If you right click on a Cam you have picked (which will be highlighted in blue as shown here), several calculated parameters for that cam are shown.

Other Gen III LS V-8 Chevy Cams	Rated Lift	Lifter Profile	Valve Train	Center Line	Dur	Lobe Lift	Valve Lash	Rocker Ratio	Ramp Rating	Source/Comments
CompC				108.	220	.353	na	1.5	32.9	PN: 54-416-11 160
(exh)				116.	224	.356	na	1.5	33.7	
Chev TR 220-112 LSx	.050	SpHydRol	P+RA imp	108.	220	0.327	na	1.7	38.3	Thunder Racing TF
(exh)				116.	220	0.327				
Chev TR 220-114 LSx	.050	SpHydRol	P+RA imp	110.	220	0.327				Racing TF
(exh)				118.	220	0.327				
Chev MTI STEALTH 1 LSx	.050	SpHydRol	P+RA imp	117.	220	0.342				rt Technol
(exh)				113.	220	0.342	na	1.7	37.8	
Chev CCXR273HR-12 54-416-11 LSx	.050	SpHydRol	P+RA imp	110.	220	0.313	na	1.7	34.8	Comp Cams 54-416
(exh)				114.	224	0.315	na	1.7	35.8	
Chev LPE GT8 LSx	.050	SpHydRol	P+RA imp	114.	220	0.332	na	1.7	33.5	Lingenfelter Perform
(exh)				114.	226	0.335	na	1.7	35.0	

Abreviations: BIR=Blue Racer CC=Comp Cams Lun=Lunati Ms=Motorsports Comp Cams Grinds: DEH=Duel-Energy XR/XE=Extreme-Energy NX=Nitrous-HP

Tips: Click on Example to highlight it, then click on 'Pick' or 'Delete' button. Double click to pick Example in 1 step. Right click to show Valve Lift.

Buttons: Pick, Delete, Print, Cancel, Optimize Using These Cams

Show Only Examples Fitting These Limits

Show... Only these Lifter Profile Contains Hyd Int Dur Is between 220 230 Other Gen III LS V-8 Chevy Cams [1st]

Gross Valve Lift for Highlighted Cam
Intake: .327 x 1.7 = .5559
Exhaust: .327 x 1.7 = .5559
Lobe Separation: 112.0

Click on this button (only available for example Cams) and the program will optimize trying each example cam shown. See Figure A

In this section, you can choose to Show... 'All Examples' or 'Only These' as shown. Then you can use the 3 groups of conditions to determine what examples are shown. For example, in this screen, we have picked to only show cams with the phrase "Hyd" in the Lifter Profile description and an Intake Lobe Duration from 220 to 230 degrees. Now this screen will only show you Hydraulic cams with an intake duration at .050" from 220 to 230 degrees. This feature is available for all components.

Figure A 17 Optimizing Example Cams, as Described in Figure A 16

Optimizing Specs

Check Example Cams

- Set the specs in the 'To Obtain This' section to the left. Then click on the 'Start Optimizing' button to test all the Example Cams you chose.
- The 4 cams which best meet your criteria will be displayed in this section. Choose the one you want to keep by clicking on the option 'circle' to the left of that cam's results. Then click on the 'Keep New Settings' button to load in that cam's specs.

To Obtain This

- Max Peak Tq
- Max Peak HP
- Max Avg Tq
- Max Avg HP

Idle Vacuum: [] []

While Maintaining Idle Vacuum: No (any vacuum is OK)

Start Optimizing Cancel Help

If you click on the "Optimize Using These Cams" button as shown in Figure A 16, instructions for using this screen are displayed here. Basically you pick what you want to optimize (Max Peak Tq, etc), pick an Idle Vacuum level, and then click on the Start Optimizing button.

The program will show the 4 best cams which meet your criteria. Pick one of these 4 using the round option button, then click on the "Keep New Settings" button to load in this Example Cam.

Optimizing Specs

Check Example Cams

- 188.38 Max Avg HP (example cam # 1 Idle Vac = 20.9
Hi-Tech (tm) Catalog for Stock OEM replacement cams-PN 106101
Stock CHEVROLET 68-69 6 164 cid Corvair-Exc. hi/perf.
- 185.05 Max Avg HP (example cam # 2 Idle Vac = 21.4
PN: 1151-M HYDRAULIC 1000-3800 RPM Seat Dur: Int=248.
Exh=248. (Grind/Type: Mile-A-Mor assumed 4 deg adv) 2009
www.iskycams.com
Isky CORVAIR
- 183.69 Max Avg HP (example cam # 4 Idle Vac = 17.2
PN: 115126 HYDRAULIC 2000-5500 RPM Seat Dur: Int=262.
Exh=262. (Grind/Type: 262-SUPERCAM assumed 4 deg adv) 2009
www.iskycams.com
Isky CORVAIR
- 182.45 Max Avg HP (example cam # 5 Idle Vac = 11.2
PN: 115128 HYDRAULIC 2500-6500 RPM Seat Dur: Int=280.
Exh=280. (Grind/Type: 280 assumed 4 deg adv) 2009
www.iskycams.com
Isky CORVAIR

To Obtain This

	Original	Optimized
<input type="radio"/> Max Peak Tq	245 @ 5000	251 @ 5000
<input type="radio"/> Max Peak HP	277 @ 6500	275 @ 6000
<input type="radio"/> Max Avg Tq	221	229
<input checked="" type="radio"/> Max Avg HP	184	188
Idle Vacuum	17.2	20.9

While Maintaining Idle Vacuum: No (any vacuum is OK)

Done

Start Optimizing Cancel Help Keep New Settings

Figure A 18 Loading Cam Files from Other Company's Programs

Tip: Click on a category in either section to highlight it, then click on the 'Use Category' button, or just Double Click on the category to pick in one step. (Categories are groups of examples, like a group of Chevy heads, not individual examples.)

Buttons: Rename, Delete, See page 1, Use Cat

Load Files from Other Company's Programs

Categories of Cam Examples for Picking

Category: Loading Desktop Dyno Cams

Find 'CamFiles (.CAM)' Folder

- C:\
- DYNOSIM5
- CAM FILES
- CAMFILES (.CAM)
- Buick

Engine Family for Files

Buick

Create Examples in Standard Engine Analyzer Format

1) Find the 'CamFiles (.CAM)' folder containing the Cam Info you want to import.
2) Choose the Engine Family for the Cams.
3) Click on the 'Create...' button. The program will import the data and create a new 'Std Engine Analyzer Example' containing this info.

Buttons: Use Cat, Cancel (don't import cams)

Load files from Other Company's Programs

Tip: Click on highlight it, the button, or just to pick in one of examples, I not individual

Categories of Cam Examples for Picking

Categories (groups) of Performance Trends' Examples

- Typical Cams
- American Motors 6 Cyl
- American Motors V-8
- Buick V-6
- Buick V-8
- Buick - Other Engines
- Cadillac

Categories (groups) of Examples Added by User

- dennis
- Kevin
- DynoSim ROVER
- DynoSim Buick

Buttons: Name to List, Category, Category, for details, Cancel

Callout 1: If you are picking a Category of Example Cam File (screen shown in Figure A 10), you have this Option button. If you click on it, you get the screen shown below.

Callout 2: Use this section to Browse to the folder containing the Cam Files you want to import.

Callout 3: Choose the Engine Family for the Cam Files you want to import. Note, many times this may be the same exact name as for the folder. However, if you chose the folder Chevy, you may want to only import for the Engine Family "Small Block Chevy"

Callout 4: Click on this button to start importing All these cams. This process may take several minutes.

Callout 5: When finished, you will have a new Category in the "Examples Added by User" section. Now you can open up this Category to see all the Cams and use all the features as described in Figure A 16.

Figure A 19 New Features for Supercharger Specs

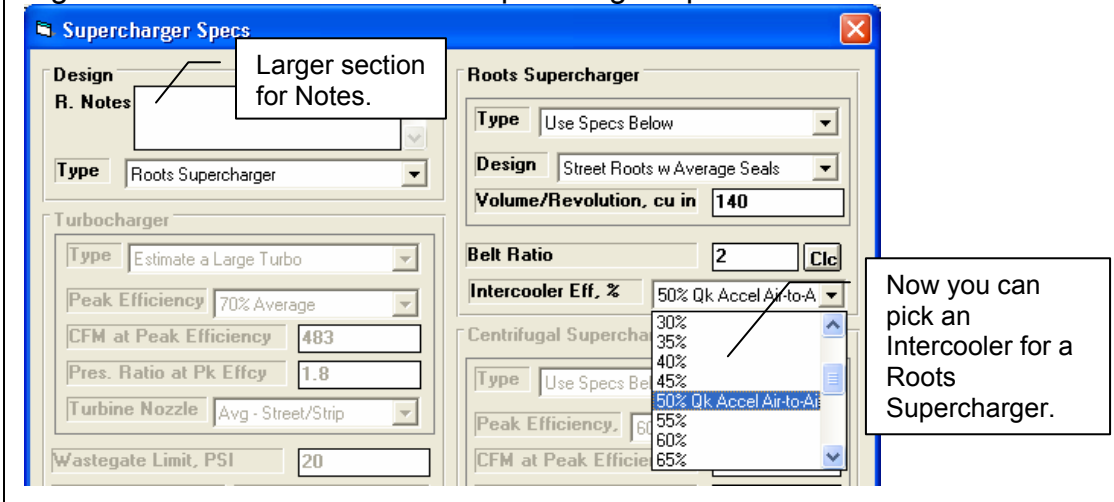


Figure A 20 New Features in Calculate Performance Running Conditions

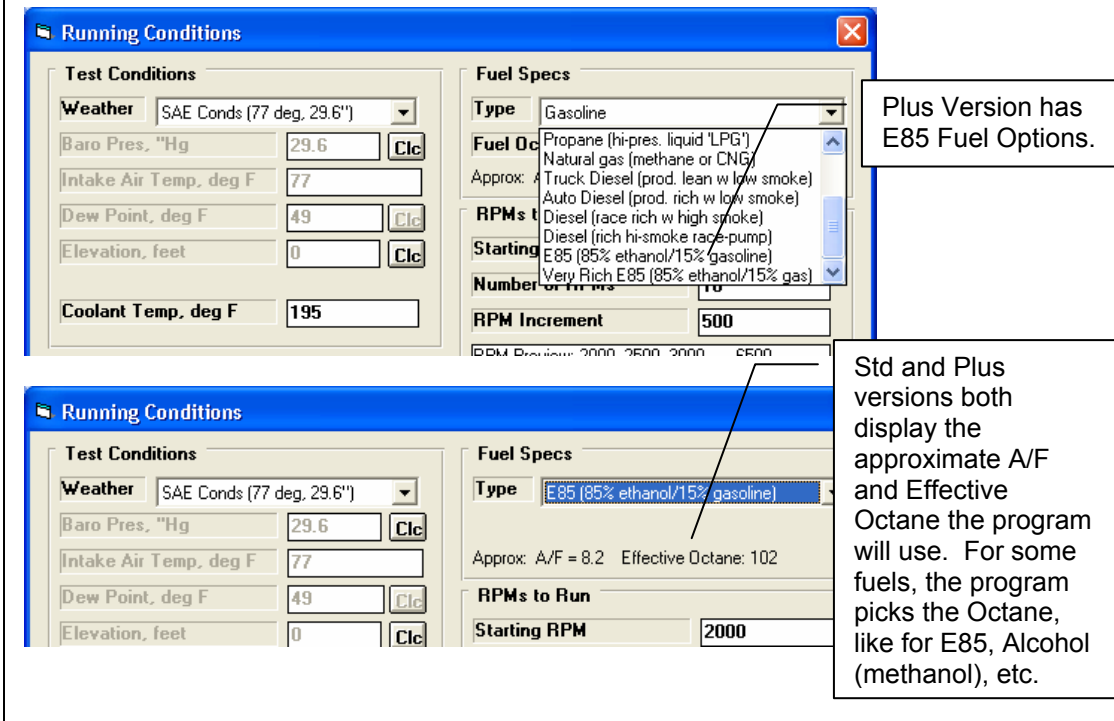
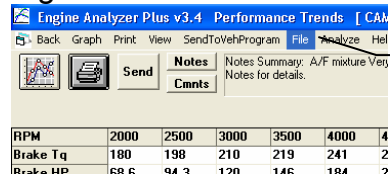


Figure A 21 New Features for Writing ASCII Data Files

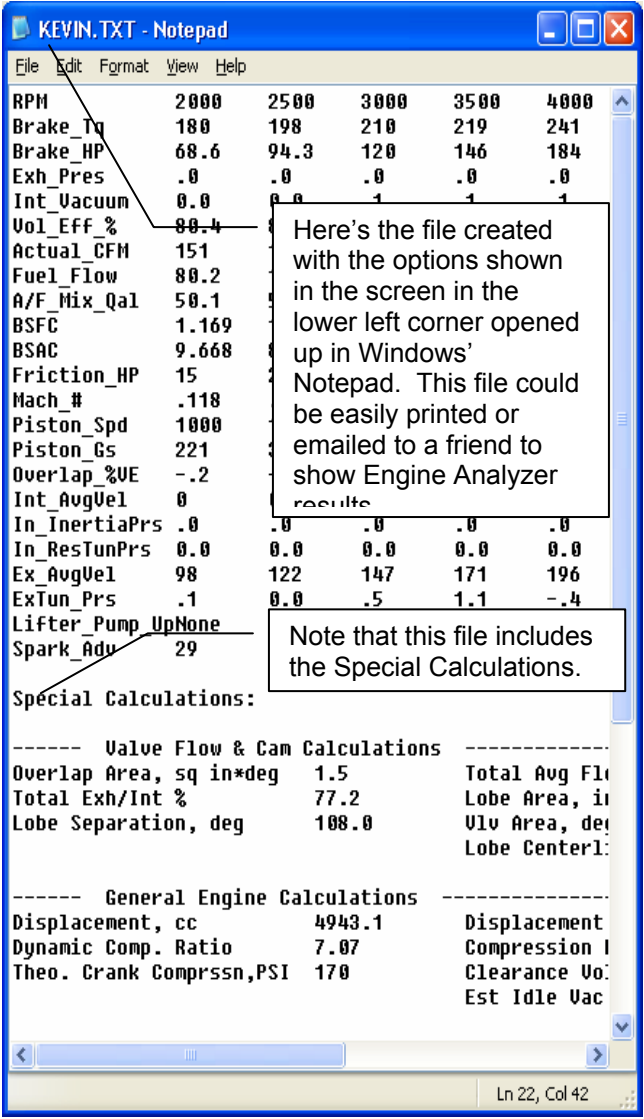


At the top of the Calculated Results, click on File for the screen shown in the lower left.

New Browse button lets you more conveniently pick a file name and folder for your ASCII file. The program will also remember this information for the next time you write a file.

Larger box for file name.

Plus Version has "Include Special Calculations" option.



Here's the file created with the options shown in the screen in the lower left corner opened up in Windows' Notepad. This file could be easily printed or emailed to a friend to show Engine Analyzer results.

Note that this file includes the Special Calculations.

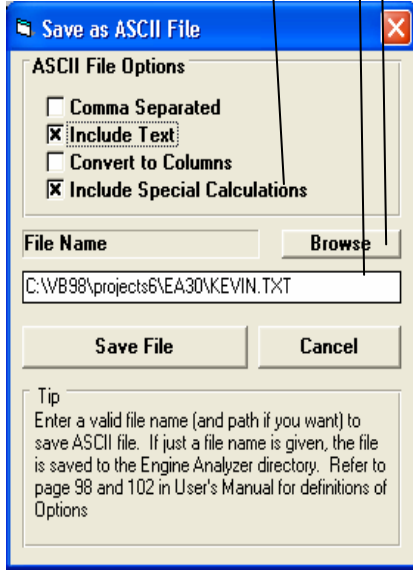



Figure A 22 New Features for Graphs Screen

The screenshot shows the 'Engine Analyzer Plus v3.4' interface. The main window displays a graph titled 'Tq & HP vs RPM' for a '1985 Ford Mustang 5.0L 302 Stock'. The graph plots Torque (red line) and Horsepower (green line) against RPM (1500 to 6000). A legend on the right side shows two data sets: 'Bigger Cam' (Torque 229, Horsepower 218) and 'Baseline' (Torque 216, Horsepower 205). A callout box points to the legend, stating: 'You can now pick to show the legend (labels on right side) in 3 different sizes of Fonts.' Another callout points to the legend text, stating: 'Legend shown in Largest Size font.' A third callout points to the 'Edit Printed Comments' menu item, stating: 'Click on Edit Printed Comments for the screen of options shown below.' Below the main window, the 'Printed Graph Comments' dialog is shown. It has two data sets, with '1' selected. The 'Graph Title' is 'Bigger Cam'. The 'Test Comment' field contains '220 deg @ .050" Intake' and '228 deg @ .050" Exhaust'. The 'Engine Comment' field contains 'Bigger Cam on this 302'. The 'Graph Comment' field contains '302 V-8 Cam Comparison'. There are checkboxes for 'Include on Graph' (Test Comments, Engine Comments, Graph Comment, Tq / HP Data, Engine Picture) and 'Titles to Use' (Std Titles, Alt. Titles). A 'See Titles' button is also present. A callout box points to the 'Engine Comment' field, stating: 'Options and the Comment in this lower section apply to the whole graph. Figure A 23 shows a printout for the options picked here.'


Figure A 23 Printed Graph with New Features



Engine Analyzer v3.4
Eng: 1985 Ford Mustang 5.0L 302 Stock
Calculated Test Results

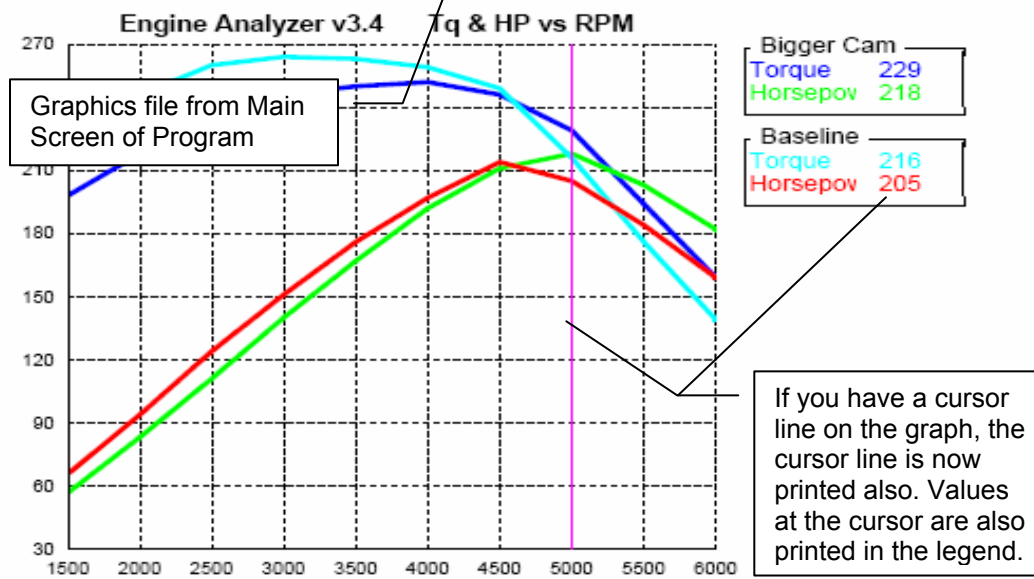
Kevin's Engine Analyzer for
Calculations
Performance Trends (C) 2009

This Graph Printed:
4:15 pm 04-08-10
Page: 1



Company Logo graphics file (Plus version only)

2 lines of user entered text (Plus version only)



302 V-8 Cam Comparison

Test and Engine Comments for: Bigger Cam
220 deg @ .050" Intake 228 deg

Bigger Cam on this 302										
RPM	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
Tq	198	218	233	246	250	252	246	229	194	159
HP	56.7	83.1	111	140	167	182	211	218	203	182

302 Baseline

Test and Engine Comments for: Baseline
302 with V V T

302 Baseline										
RPM	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
Tq	230	248	260	264	263	259	249	216	176	139
HP	65.7	93.8	124	151	176	197	214	205	184	159

Figure A 24 New Preferences

