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.

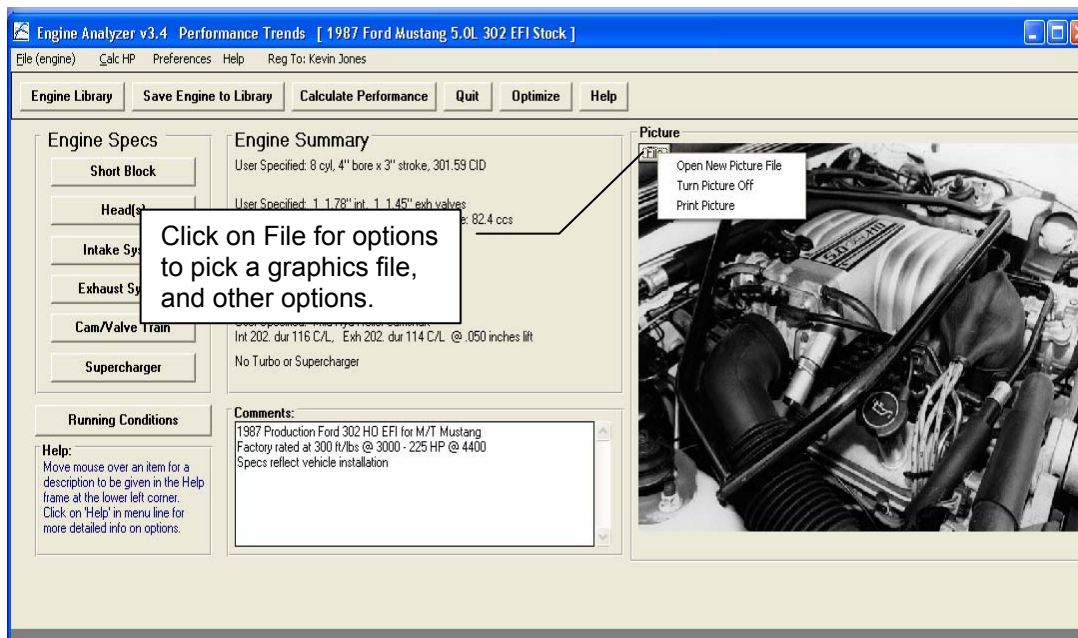Figure A 9 Main Screen Showing Engine Picture

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.

Open a Head Flow File

Look in: Weiss modular heads

4.6L 2V P.I. CNC M2 Race Systems Alum_1220_Stan_Weiss_World_Wide_Enterprises__K
4.6L 2V P.I. Ported Patriot Performance Stage I Alum_1221_Stan_Weiss_World_Wide_En
4.6L 4V '99-up PowerHeads SF600 Alum_1242_Stan_Weiss_World_Wide_Enterprises__Ke
4.6L P.I. 5.4L 2V Ported Patriot Performance Stage II Alum_1222_Stan_Weiss_World_Wi
4.6L P.I. 5.4L 2V Ported Patriot Performance Stage III Alum_1223_Stan_Weiss_World_W
4V '93-'98 B Sportman CNC Gamrace Alum_1238_Stan_Weiss_World_Wide_Enterprises__
4V '93-'98 B Stage 2 CNC Gamrace Alum_1239_Stan_Weiss_World_Wide_Enterprises__Ke
4V '93-'98 B Stock Gamrace Alum_1237_Stan_Weiss_World_Wide_Enterprises__Kevin Ger
4V Cobra CNC M2 Race Systems Alum_1241_Stan_Weiss_World_Wide_Enterprises
4V Cobra M2 Race Systems Alum_1240_Stan_Weiss_World_Wide_Enterprises__Ke
4V FR500 CNC M2 Race Systems Alum_1236_Stan_Weiss_World_Wide_Enterprises
5.4L 2V '99-04 LFP Stage II Alum_1224_Stan_Weiss_World_Wide_Enterprises__Ke
Motorsport 2V SVO Mild Porting_1225_Stan_Weiss_World_Wide_Enterprises__Kevi

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

Std Head File extensions to look for.

e name: 4V Cobra CNC M2 Race Systems Alum_1241_   **Open**

Files of type: Head Files (*.dfw;*.flw)   **Cancel**

☐ Open as read-only

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

n_1241_Stan_Weiss_World_Wide_Enterprises__Kevin Ger

	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

Use Current value ▼
Use Current value
Use my New entry

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.

Comments

Click here to import these specs.

VO Mild
Weiss_World_Wid
n Gertgen.dfw
0-Exhaust=No
VO Mild

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**

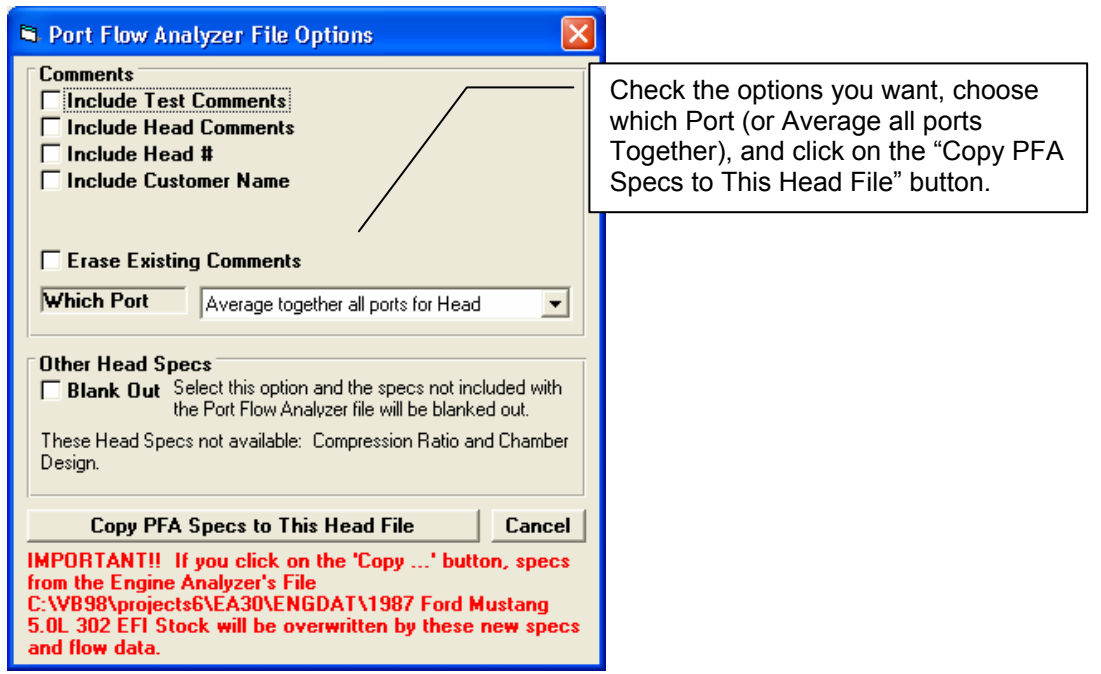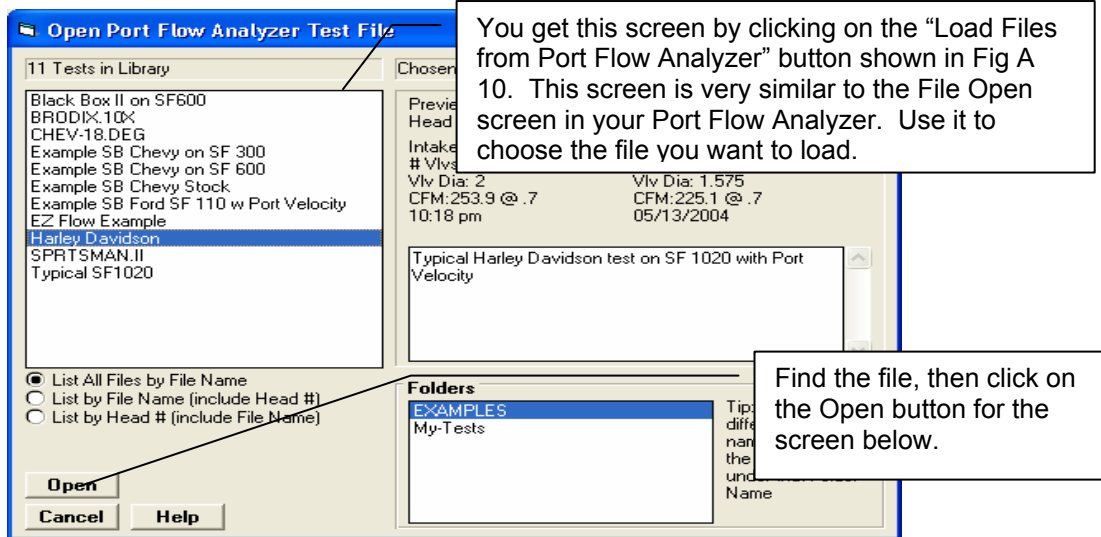Figure A 12 Importing Head Files from Performance Trends' Port Flow Analyzer (Plus Version Only)

Open Port Flow Analyzer Test File

11 Tests in Library

Black Box II on SF600
BRODIX.10X
CHEV-18.DEG
Example SB Chevy on SF 300
Example SB Chevy on SF 600
Example SB Chevy Stock
Example SB Ford SF 110 w Port Velocity
EZ Flow Example
Harley Davidson
SPRTSMAN.II
Typical SF1020

Chosen

Preview
Head
Intake
Vlvs
Vlv Dia: 2   Vlv Dia: 1.575
CFM:253.9 @ .7   CFM:225.1 @ .7
10:18 pm   05/13/2004

Typical Harley Davidson test on SF 1020 with Port
Velocity

○ List All Files by File Name
○ List by File Name (include Head #)
○ List by Head # (include File Name)

Folders

EXAMPLES
My-Tests

Open
Cancel   Help

> You get this screen by clicking on the "Load Files from Port Flow Analyzer" button shown in Fig A 10. This screen is very similar to the File Open screen in your Port Flow Analyzer. Use it to choose the file you want to load.

> Find the file, then click on the Open button for the screen below.

Port Flow Analyzer File Options

Comments
☐ Include Test Comments
☐ Include Head Comments
☐ Include Head #
☐ Include Customer Name

☐ Erase Existing Comments

Which Port   Average together all ports for Head ▼

Other Head Specs
☐ **Blank Out** Select this option and the specs not included with the Port Flow Analyzer file will be blanked out.

These Head Specs not available: Compression Ratio and Chamber Design.

Copy PFA Specs to This Head File   Cancel

IMPORTANT!! If you click on the 'Copy ...' button, specs from the Engine Analyzer's File C:\VB98\projects6\EA30\ENGDAT\1987 Ford Mustang 5.0L 302 EFI Stock will be overwritten by these new specs and flow data.

> Check the options you want, choose which Port (or Average all ports Together), and click on the "Copy PFA Specs to This Head File" button.

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

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.

Bigger VVT Cam

At 5000 RPM and higher, bigger VVT cam makes more power
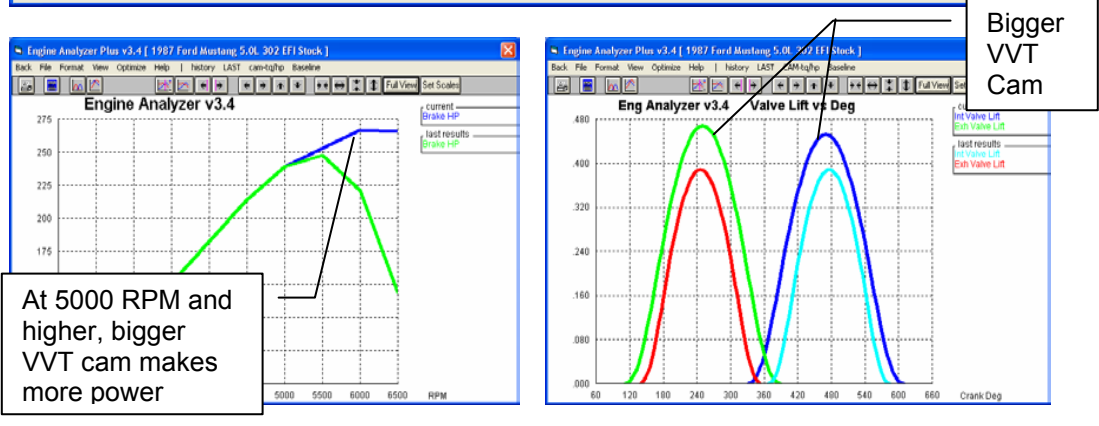
Figure A 14 New Features in Cam/Valve Train Screen

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

Cam/Valve Train

General Cam Specs

Notes: Base production cam / Very mild 270 duration at .050 / Mild lift also .260"

Retard

Lifter (profile) Type   Spec Solid Flat

Type   Use Specs in this Menu

Valve Train   Pushrod w RockrArm (race)

Lift for Rating Events   .050 inches

V.V.T.   ○ No   ● Yes   See Specs

	Intake		Exhaust
	116		114
Duration @ .050"	170		170
Open	-31		19
Close	21		-29
Max Lobe Lift, in	.26 Clc		.26 Clc
Lash at Valve, in	.028		.028
Rocker Arm Ratio	1.6		1.6
Ramp Rating, %	34 Clc		
Dwell Over Nose	6 Deg - Cheater		

Calculated Cam Specs

Lobe Separation   115.0   Clc

	Intake	Exhaust
Gross Valve Lift, in	.416	.416
Duration @ .200 "	84.8	73.0

Help

Click on the down a... use your own specs... Example set of spec... Specs, the Example... you change some of the Example specs. p 44

OK   Help   Get Example   Save Example   Print   Piston-Valve Clearance

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.

Calc Ramp Rating, %, Intake

Calc Ramp Rating, %	44.5
Dwell Over Nose, deg	8
Duration @ Seat Timing	188
Minimum Tappet Dia, in	.962

Cam Specs

Based On	Duration @ .050" & .200" ▾
Follower Type	Solid Flat ▾
Allow Dwell Over Nose	User Specifie ▾
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

Use Calc Value   Help   Cancel   Print

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

Type Use Specs in this Menu ▾

Lift for Rating Events .050 inches ▾

.050 inches
.040 inches (1 mm)
Seat Timing
.053 inches (Harley)

Intake

Centerline, deg ATDC	
Duration @ .050 "	
Open @ .050 ", BTDC	0
Close @ .050 ", ABDC	28
Max Lobe Lift, in	.297 Clc

Enter Lobe Separation   ✕

Enter new Lobe Separation, from 80 to 130 degrees.   OK

Cancel

108.

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.

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.

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
○ Max Peak Tq		245 @ 5000	251 @ 5000
○ Max Peak HP		277 @ 6500	275 @ 6000
○ Max Avg Tq		221	229
◉ 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

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.

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

Rena...
Dele...
See page 1
Use Cat...

Load Files from Other Company's Programs

Catagories of Cam Examples for Picking

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

Loading Desktop Dyno Cams

Find 'CamFiles (.CAM)' Folder

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

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"

Engine Family for Files

Buick

Create Examples in Standard Engine Analyzer Format

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

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.

Name to List
Catagory
Catagory
I for details.
Cancel

Cancel (don't import cams)

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.

Load Files from Other Company's Programs

Catagories of Cam Examples for Picking

Catagories (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

Catagories (groups) of
Examples Added by User

- dennis
- Kevin
- DynoSim ROVER
- DynoSim Buick

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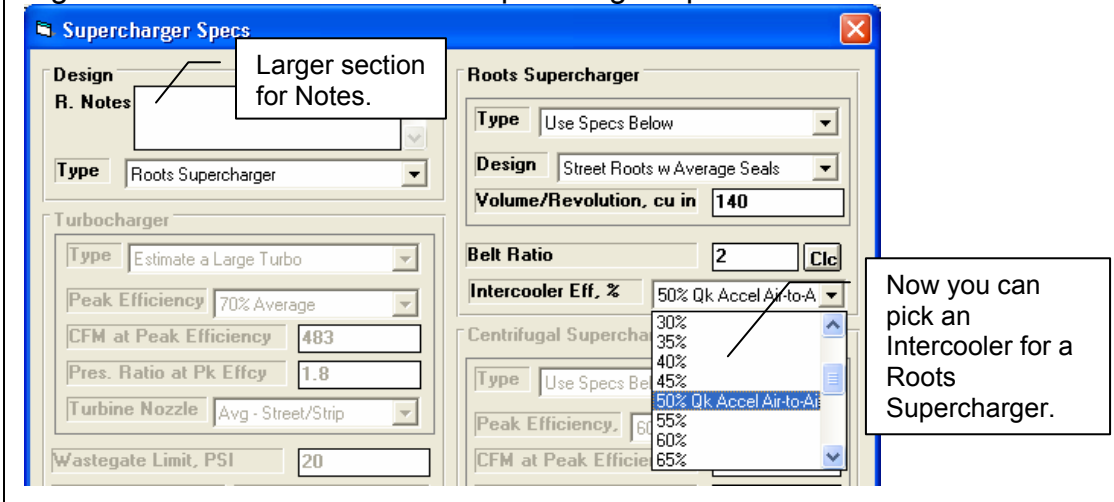Figure A 19 New Features for Supercharger Specs

Figure A 20 New Features in Calculate Performance Running Conditions
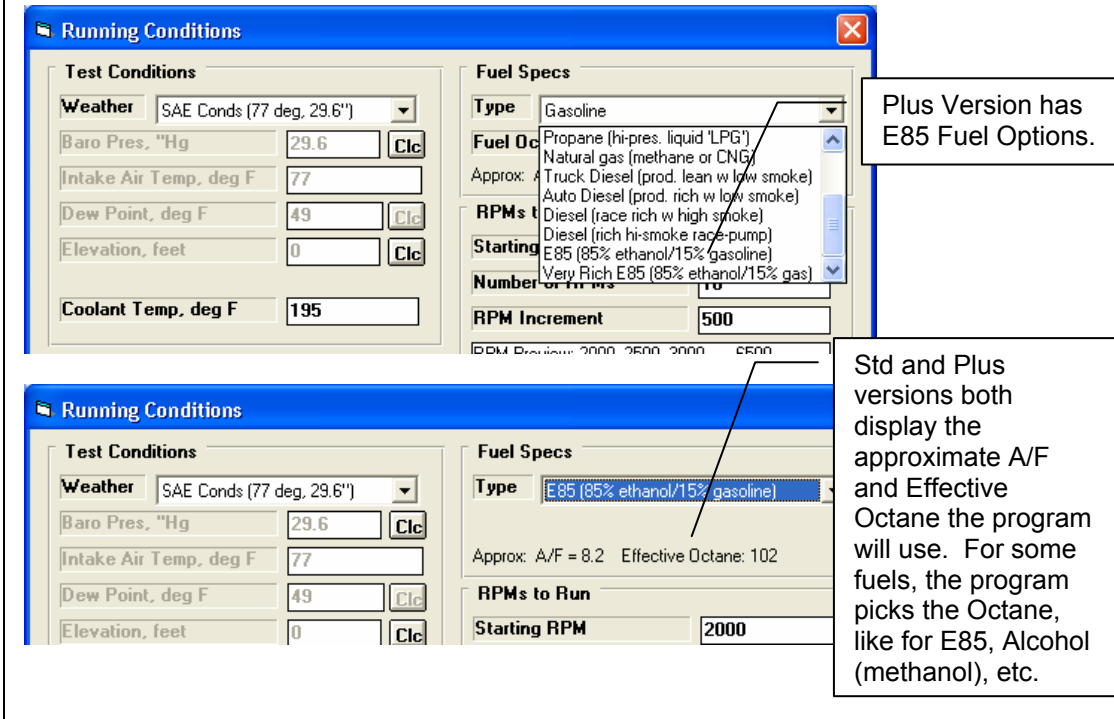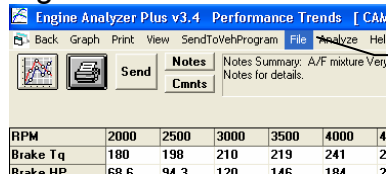
## Figure A 21 New Features for Writing ASCII Data Files

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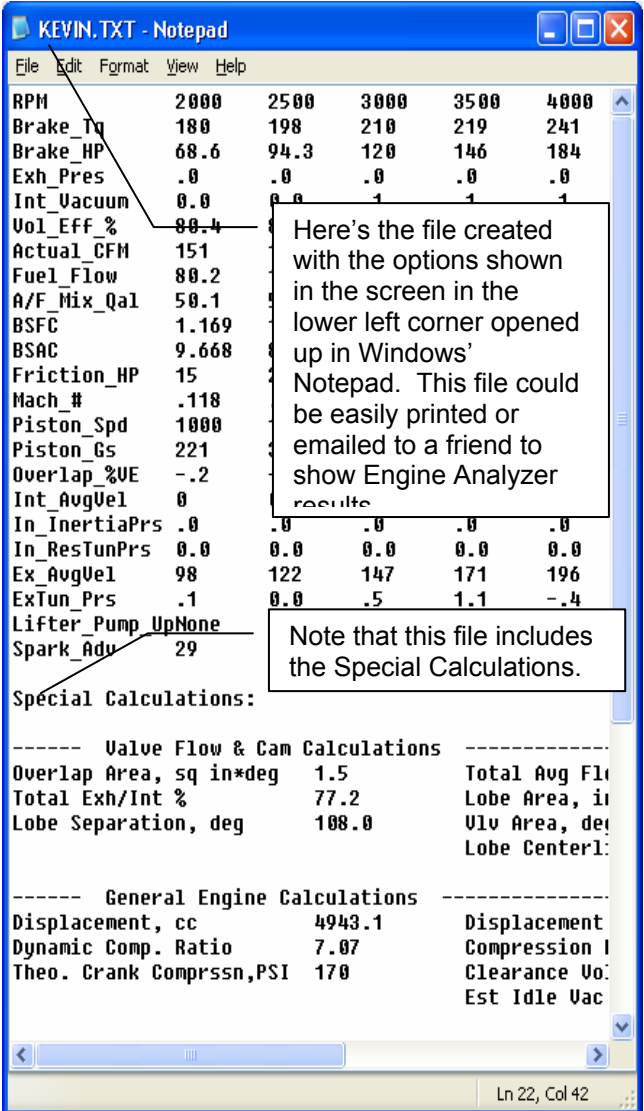
Here's the file created with the options shown in the screen in the lower left corner opened up in Windows' Notepad. This file could be easily printed or emailed to a friend to show Engine Analyzer results.

Note that this file includes the Special Calculations.
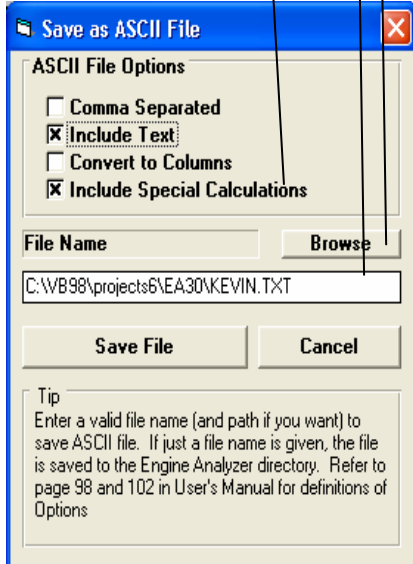
Figure A 22 New Features for Graphs Screen

You can now pick to show the legend (labels on right side) in 3 different sizes of Fonts.

Legend shown in Largest Size font.

Click on Edit Printed Comments for the screen of options shown below.

Choose option to display the different options available for each test being

Options and the Comment in this lower section apply to the whole graph. Figure A 23 shows a printout for the options picked here.
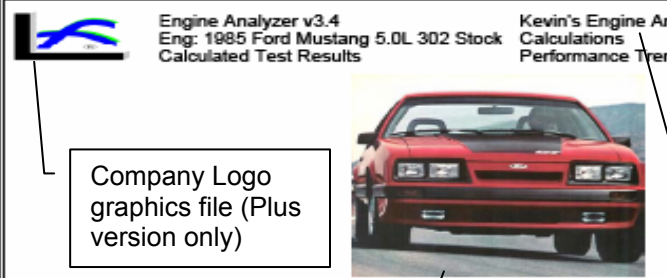
Figure A 23 Printed Graph with New Features

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

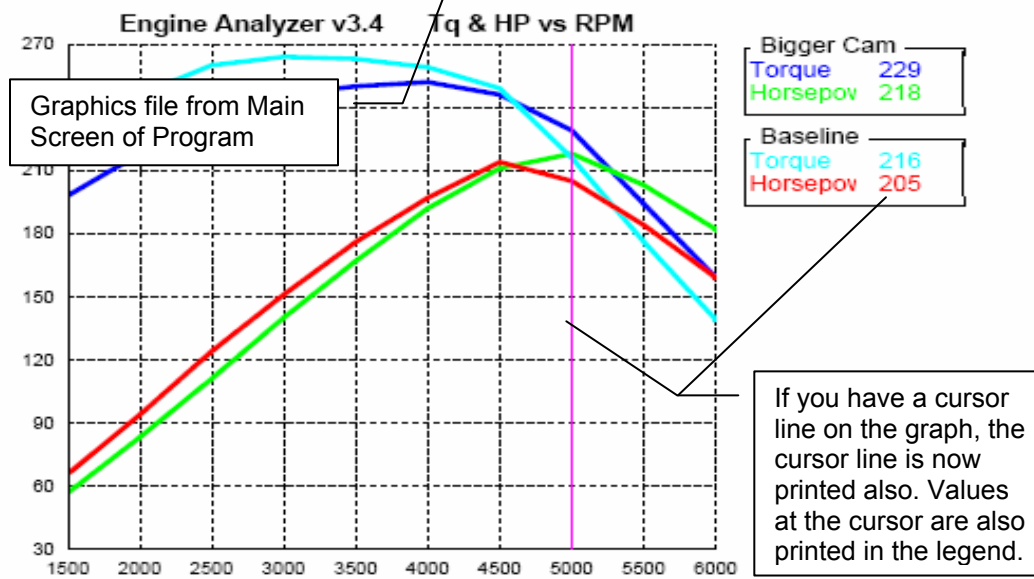Kevin's Engine Analyzer for   This Graph Printed:
Calculations   4:15 pm 04-08-10
Performance Trends (C) 2009 Page: 1

Company Logo graphics file (Plus version only)

2 lines of user entered text (Plus version only)

Engine Analyzer v3.4   Tq & HP vs RPM

Graphics file from Main Screen of Program

Bigger Cam
Torque   229
Horsepov   218

Baseline
Torque   216
Horsepov   205

If you have a cursor line on the graph, the cursor line is now printed also. Values at the cursor are also printed in the legend.

Additional text and data printed at bottom of page, under graph, as selected in screen shown in Figure A 22.

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	192	211	218	203	182

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

Kevin's Engine Analyz
Calculations
Performance Trends (

Comments and data may continue onto a 2nd page as shown

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	246	260	264	263	259	249	216	176	139
HP	65.7	93.8	124	151	176	197	214	205	184	159

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Figure A 24 New Preferences

This section "Program Title Comments" is available only in the Plus version, and lets you specify 2 lines of text and some graphics file (typically a company logo) to appear at the top of your printouts (reports and graphs).

New buttons to turn Off or turn On all intro help tips.