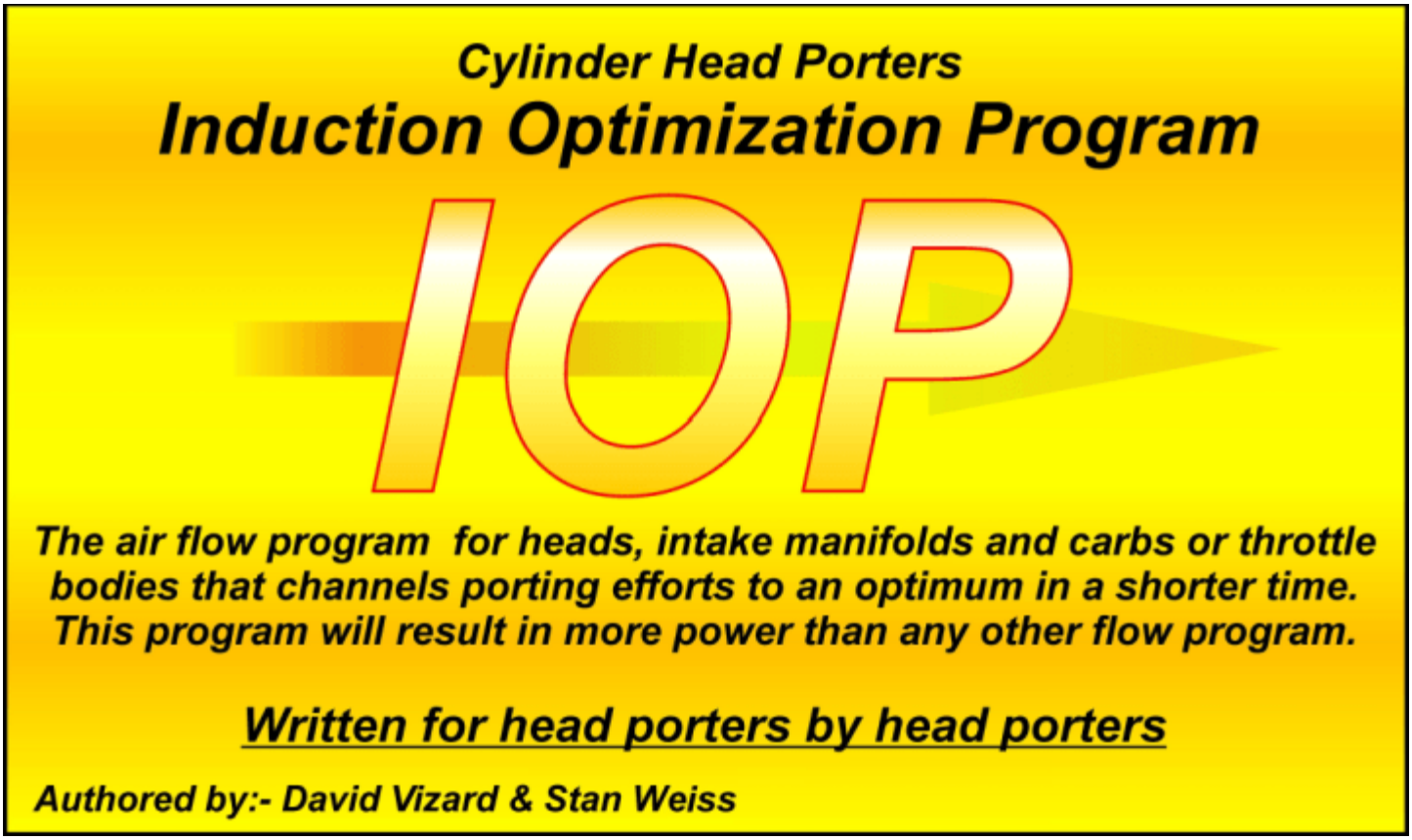


User's Manual

Version 4.5.1

E-mail: Stan Weiss <srweiss1@comcast.net>
E-mail: <davidvizardseminar@gmail.com>
Website: http://www.magneticlynx.com/DV/

General Information

This Computer Program that will help you to analyze and optimize your cylinder heads.

The most important thing to remember is that the more accurate your input to the program is, the more accurate the answer will be. So if unexpected results occur please double-check all your input data. If all checks out please email us. Because programs are not always perfect and there is always the possibility of a programming error. See **Reporting Problems** on next page. Although some examples may show only a few decimal places the program will accept however many you key in, but any more then seven will not hold accuracy. Cells with a **white background** are for user input only, and a **yellow background** is used by the program for it's calculated output. When you move the mouse over a command button a help window will show on the bottom of the form that gives you more information about which inputs are used by that command and what information will be calculated. When you move the mouse over a cell that has a **red bar** a help window will show on the bottom of the form giving more detailed information.

Computer Requirements:

A minimum screen resolution of 1200 by 700 is required. We Recommended a higher resolution to optimize displays for the Graphics Functions. The **Use Full Screen Resolution** Option.

Compatible with these versions of Microsoft Windows operating systems: 2000, XP, VISTA, Windows 7, Windows 8 / 8.1 and Windows 10 in both 32 and 64 bit versions.

You will also need 2 MB of free hard disk space for the program plus supplied files and another 2 MB for the documentation. Addition space will also be needed for reports, configuration and data files that you create.

A printer is optional - It is only needed if you want to create a Flow Sheet for your Customer, or make a hard copy of any of the forms, graphs, text reports, or other files the program creates.

While I personally have no experience with running the software with any other operating systems I do have users that are doing just that.

> Just letting you know that I've received it and that it runs fine under Linux using the Wine windows emulator.
>
> Cheers,

Getting Started

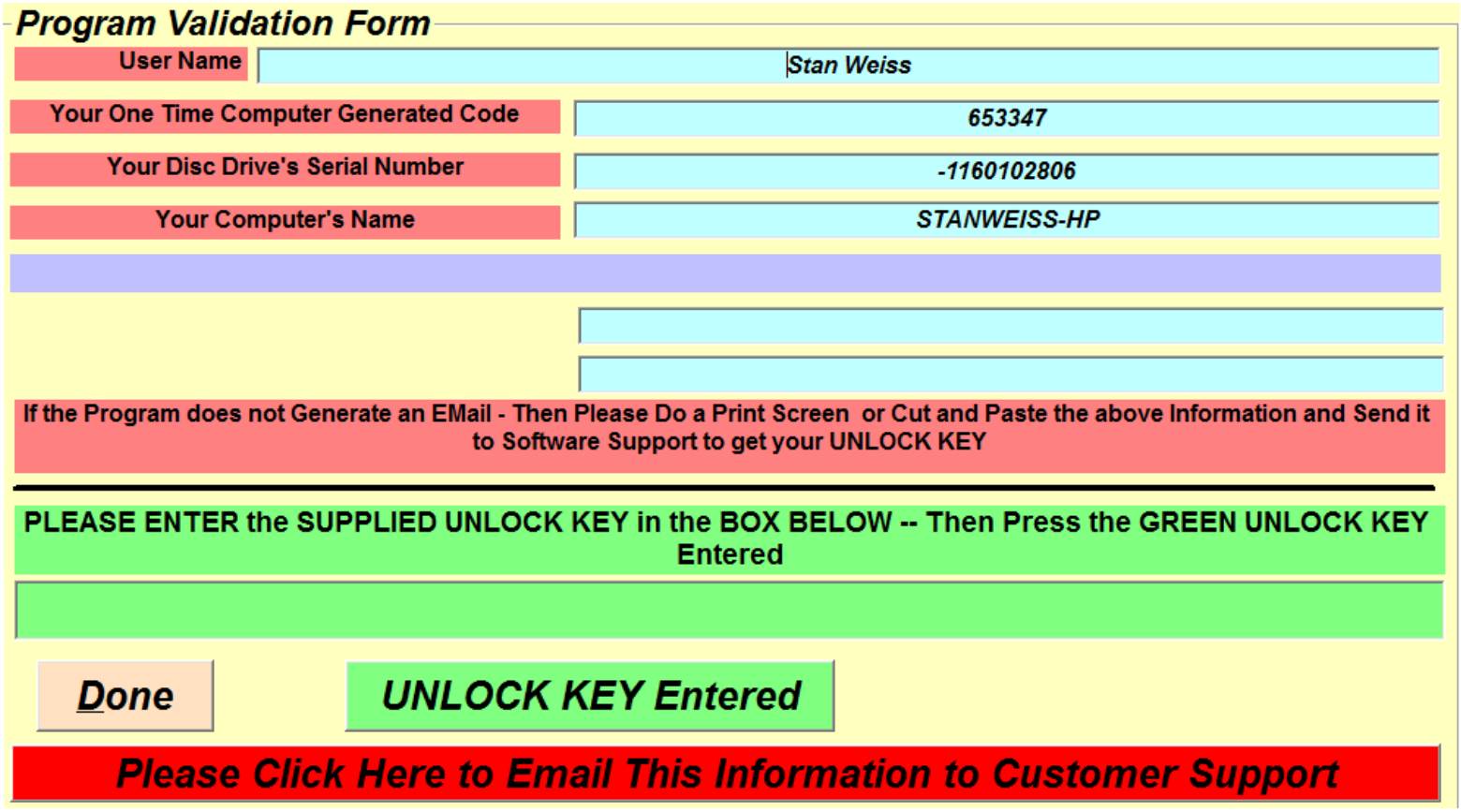
Installation:

Installation is quick and easy on any computer.

Just click on the link in the email that we send to you, which will download the IOP / Flow setup.exe. Then run the IOP / Flow setup.exe to install the program and all of the sample files.

Uninstalling The Software.

To uninstall the software just Go To Control Panel Add Remove Programs and uninstall / remove it.



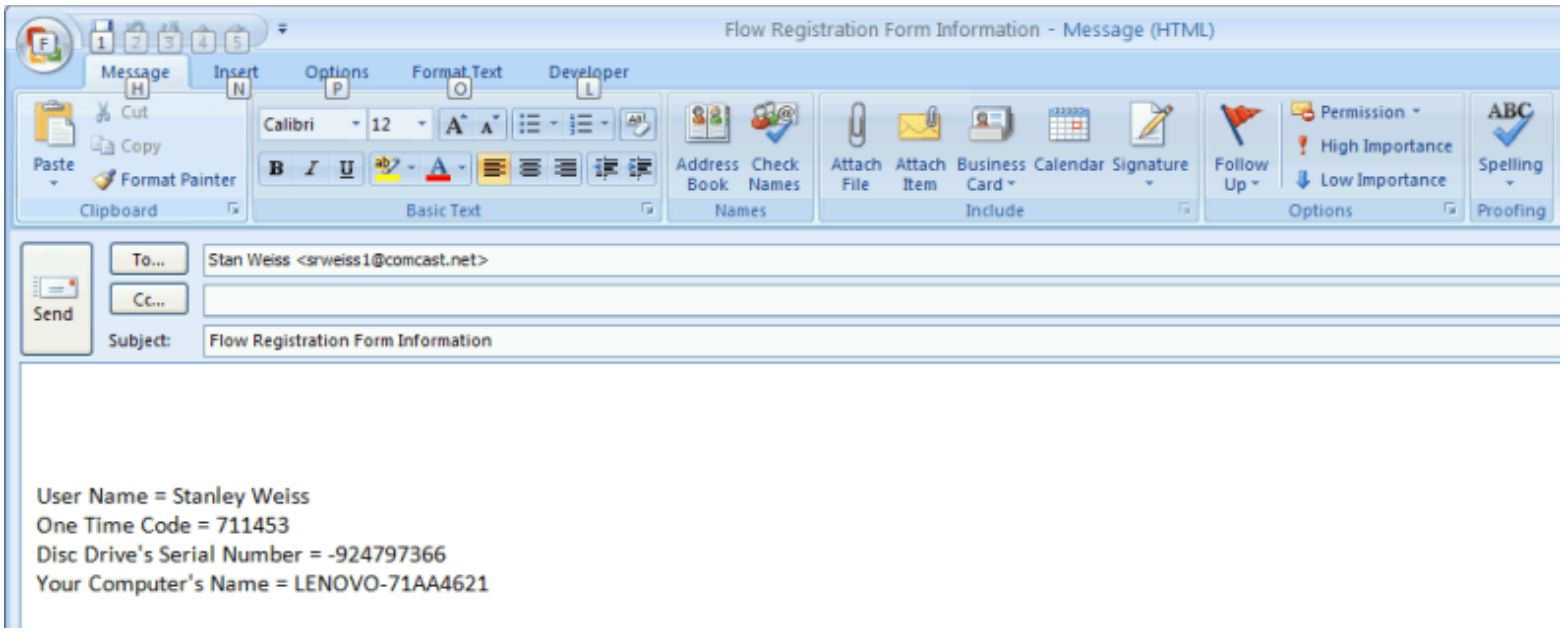
Validation of Your Software.

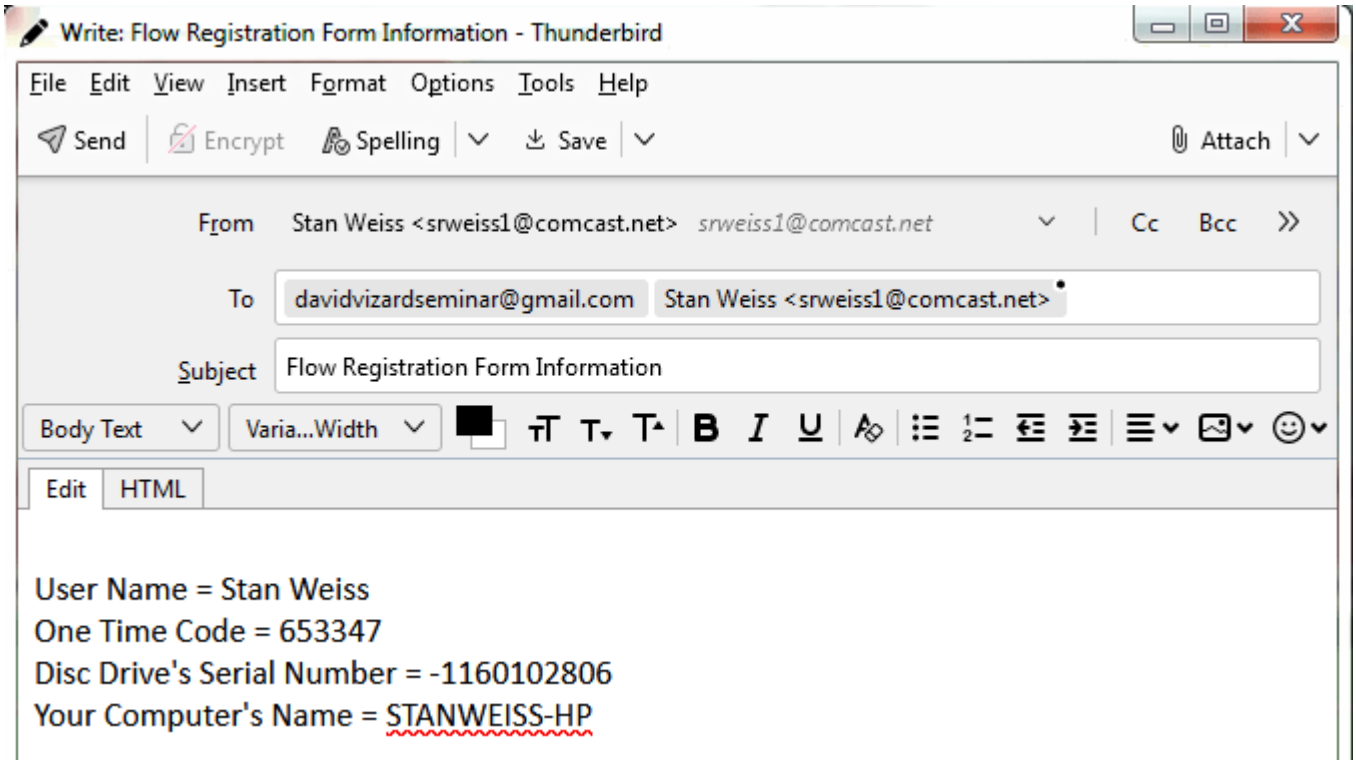
Starting with Version 2.1.0 the software will load and show a **Program Validation Form**. See above picture. This form will have 4 lines of information filled in. You will need to printout this form and email it to us. Our email address is on the first page of this document. Then hit **Done** and close the program down. Within 24 hours we will email you back a code. You need to load the program. It will show the same form with the same information filled in. Enter the code you received from us in the last line (Green Background) and then hit the **UNLOCK KEY Entered** Button. This window should close and the Splash screen should now show the **Enter** button. The next time the software is loaded it should go right to the splash screen with the **Ente**r button.

Please NOTE: that this process needs to be done for each computer that you want to use the software on, also once done on a computer future updates of the program will not require going through this process again.

Validation of Your Software.

Starting with Version 3.1.0 the software will on the first run only when displaying the **Program Validation Form** will also generate an Email with information filed in so all the User has to do is Email that information to Customer Service. If at some point later you open the **Program Validation Form** you can still generate an Email by clicking the **RED** button at the bottom of the form.





Reporting Problems / Getting Help.

Please let us know if you experience any problems at all. We will need to know how you try to run the program. Whether by using a Short Cut, Windows Explorer, Start | Run, or a DOS command line. We also need to know what error message you got and if possible a hardcopy / print screen of the error screen. What version of the operating system and service packs you are using. If the program is up and running when you have a problem than please write / save the information you have entered and calculated to a parameter file. Be sure to include an in-depth explanation of what the problem is and what you were doing when you got the error and saved the file you are sending. Go into the folder where the file is and attached that file to the e-mail reporting your problem. Please include as much information as possible about the problem.

Technical Support Policy: **Free e-mail support to all registered users.**

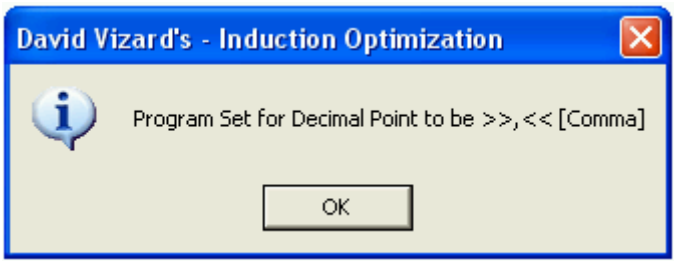
Software Update Policy: Updates are free, for the first year after purchase.

How does it work?

First you must load the program. This can be done many ways. You can use a short cut, windows explorer, the run option of Start, or a DOS command line. The easiest way to use the program is to create a short cut and drag it on to your Desktop; you can then click on the FLOW / IOP icon on your Desktop to start the program.

The **Metric Mode** can be toddled ON and OFF while the program is running.

Based on the Regional Settings in the Windows Control Panel, the program will display numbers with support for International settings, this will show the “,” for a decimal point as required



The **PrtSc as JPG** button will cause the program to save an image of that screen in JPG format to your disk. The file name will have the format of program name (Flow) _ day of the week _ month _ day of the month _ year _ time of day. The location of the file should be something like this. Where Stan Weiss will be your User Name.

C:\Users\Stan Weiss\AppData\Local\VirtualStore\Program Files (x86)\David Vizard’s – Induction Optimization

If you click on View button near the upper left hand corner there are some options to change how the program is displayed.

You can Use **Nonstandard Aspect Ratio for Graph** - This is a modifier to the **Use Full Screen Resolution** option and must be selected before selecting **"Use Full Screen Resolution"** option. The program in its basic / default mode will produce the graph as a square.

If you select **Use Full Screen Resolution** option without first selecting this option than the graph will stay square. On many computers selecting **Nonstandard Aspect Ratio for Graph** with the **Use Full Screen Resolution** option will cause the graph to be a rectangle.

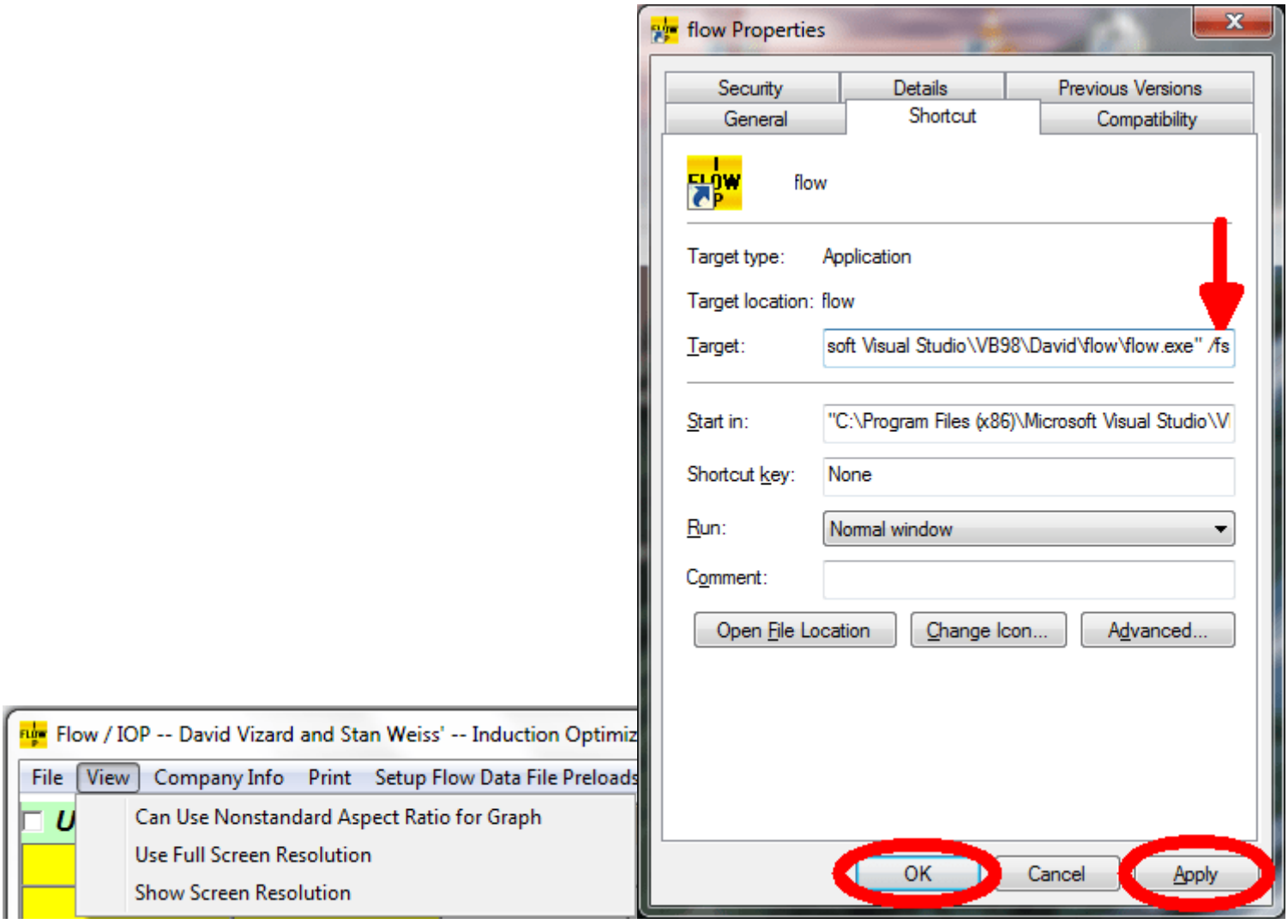
When the program is run on monitors that are set to a very higher resolutions the forms maybe small and only fill a small area on the screen and maybe hard to read. This function will examine the users system and makes better use of the available screen area by enlarging the forms as well as the fonts. The **Full Screen Resolution** option will cause the program to try and expand each screen to use most of the available screen size.

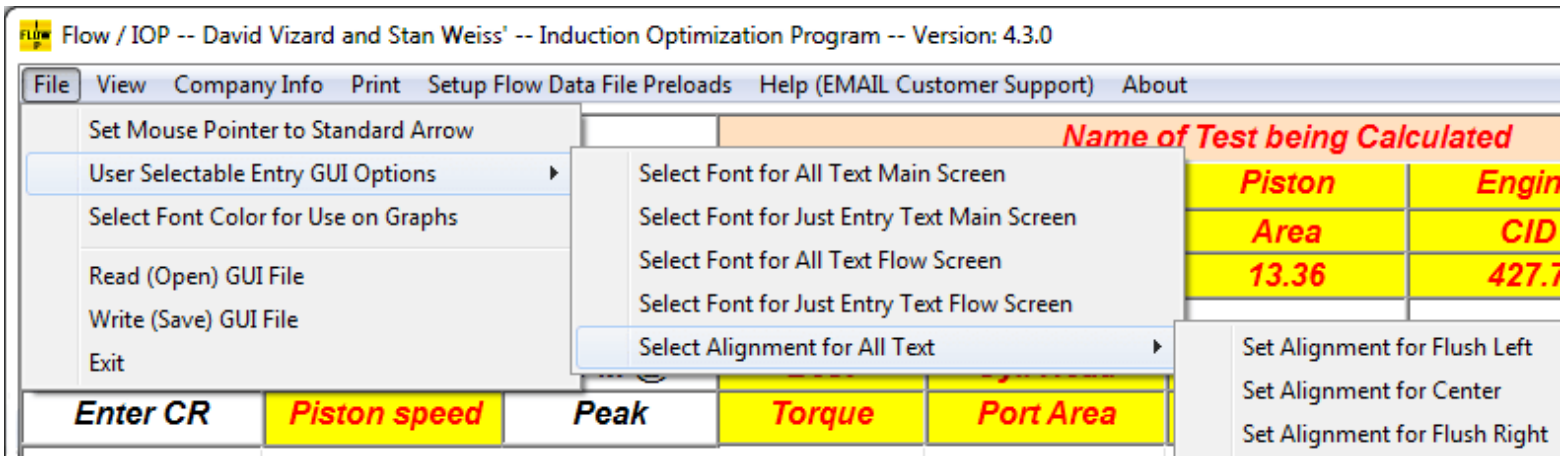
If after trying either or both of these option you like one or both and would like the program to automatically startup that way, you will need to add a switch to the Flow program shortcut. Right click the Flow shortcut and then click properties. The above print screen shows where to add the switch(s).

/fs = Full Screen Standard aspect Ratio
/fn = Full Screen Nonstandard aspect Ratio.

Since there different versions of Windows and people maybe running different screen resolutions it is possible that some problems may happen. If this does happen Please send me a printout of the screen that does not display correctly and also click the **Show Screen Resolution** menu option and send me that information as well.

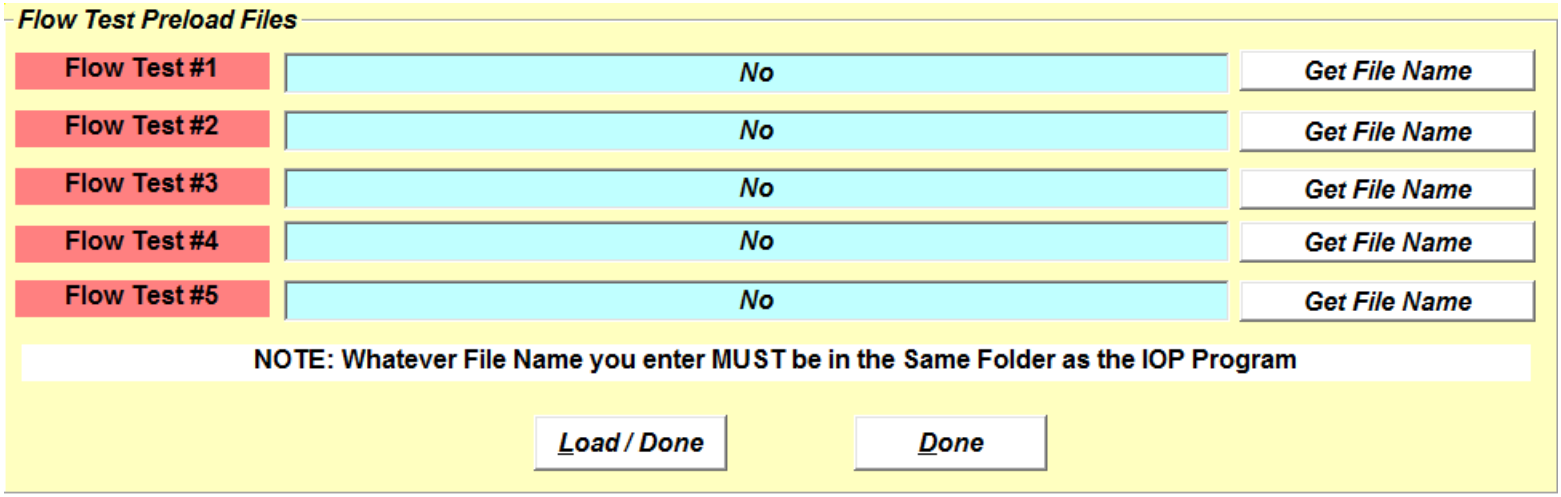
Show Screen Resolution menu option is just a quick way for you to see what resolution the monitor is set to and what dpi the fonts are set to.





Set Mouse Pointer to Standard Arrow menu option lets the User change the Mouse cursor back to the Standard Arrow. You can also add a /mp to the Flow program shortcut (see above) to have this happen automatically on program startup.

Setup any Flow Data File Preloads menu option Opens a screen which lets the User Enter the Flow File Names which he wants automatically loaded the next time the IOP program is loaded.



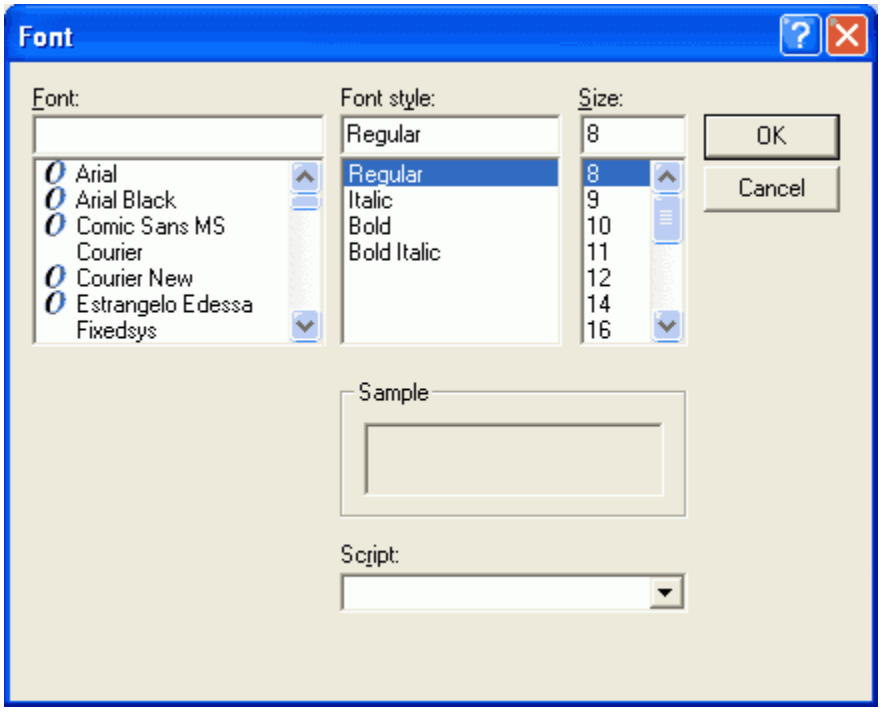
User Selectable Entry GUI Options – See above

Select Font for All Text "Main Screen" Lets the user change Font Information for All Text Fields

Select Font for Just Entry Text "Main Screen" Lets the user change Font Information for just Input Text Fields

Select Font for All Text "Flow Screen(s)" Lets the user change Font Information for All Text Fields

Select Font for Just Entry Text "Flow Screen(s)" Lets the user change Font Information for just Input Text Fields



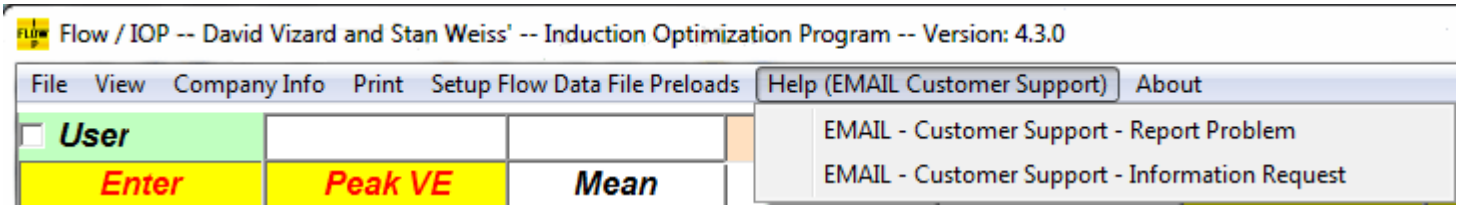
Select Alignment for All Text Lets the user change the text position of all Text on all screen
Set Alignment for Flush Left
Set Alignment for Center
Set Alignment for Flush Right

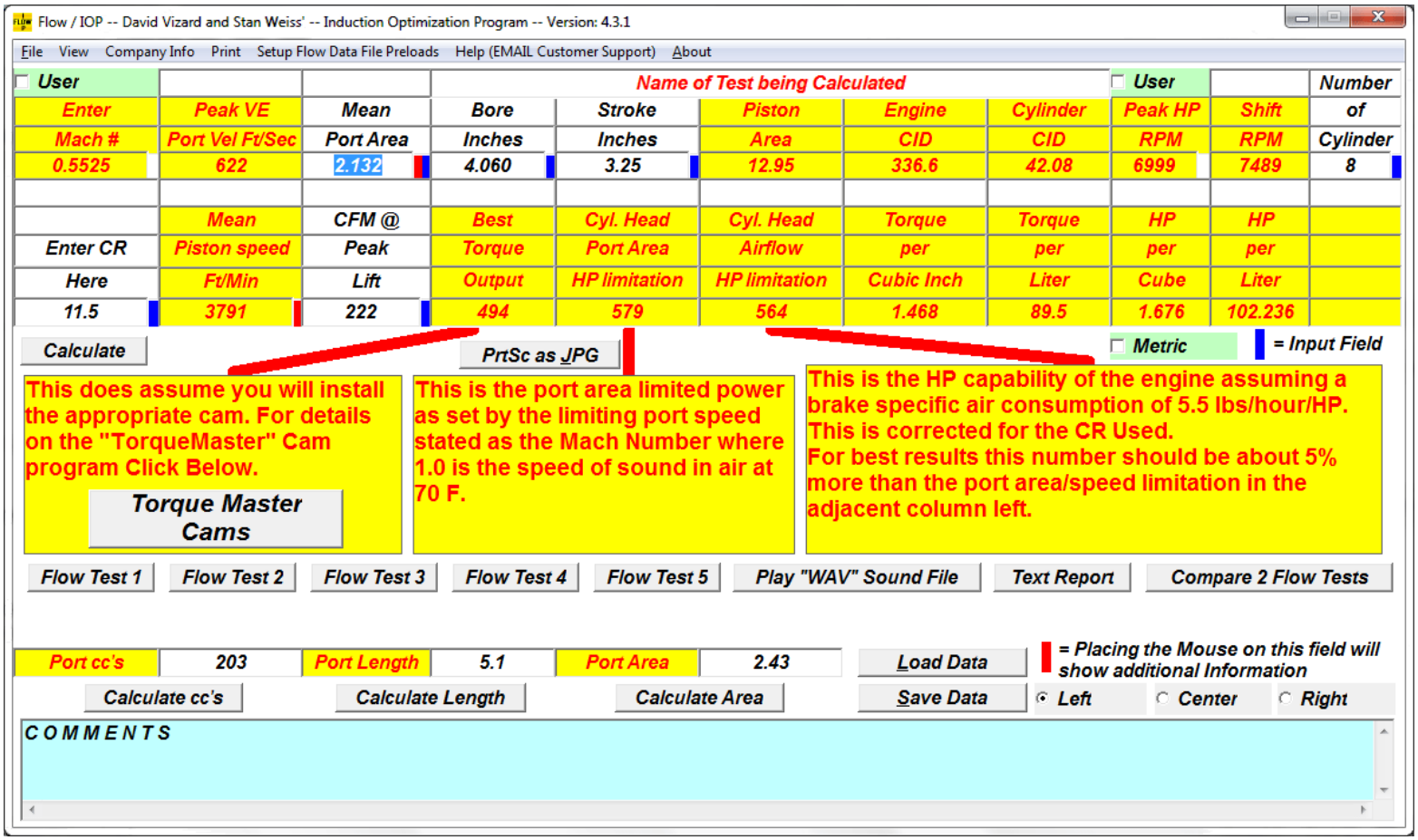
Note: The “All” option need to be used before the “Text”.

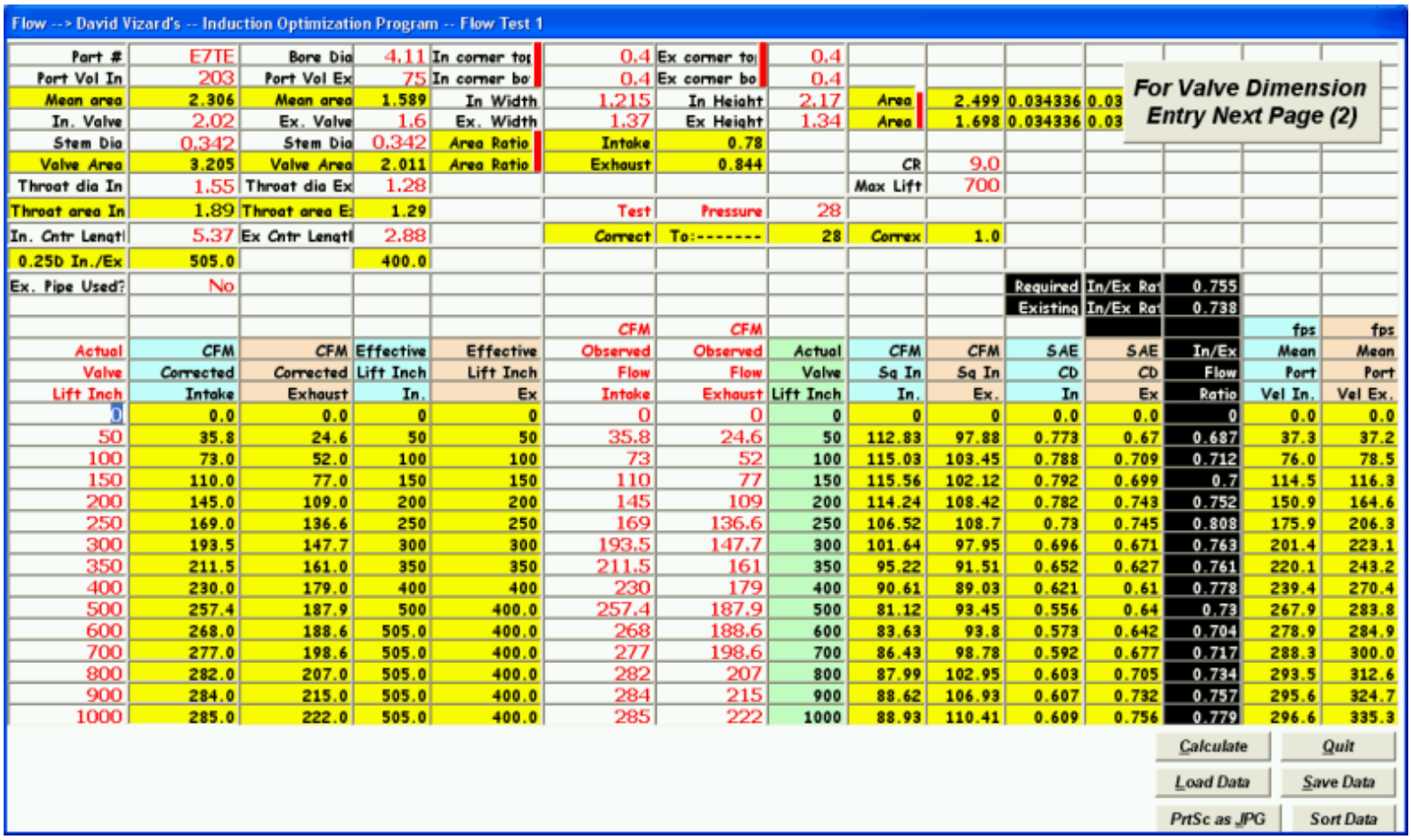
Read (Open) GUI File Read in the previously changed and saved GUI data from a file.

Write (Save) GUI File Save the changed GUI data to whatever file you want.

To Report a Problem or Request Information

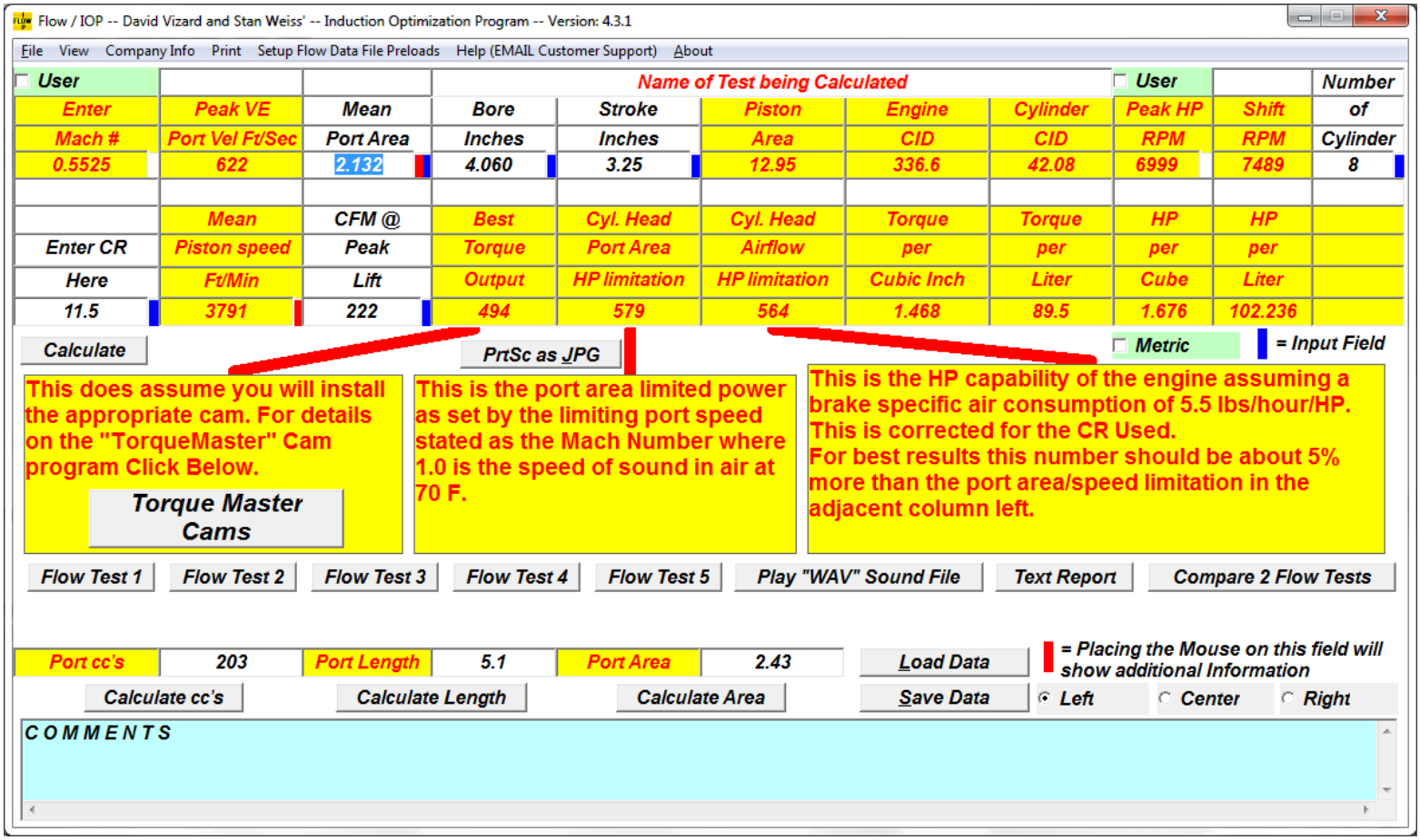






Above are examples of User modified Main and Flow Test Screen using the “User Selectable Entry GUI Options”

What you saw on the first page of this document is the opening page or the programs splash screen. When *you click ‘Enter’ and that leads us to the programs main screen.



This screen / form is different that the other screens / forms in the program in that it has a couple of cells which are user controlled. For that reason all the boxes that require an entry not only have a white background but also have a blue marker on the right hand side of the box.

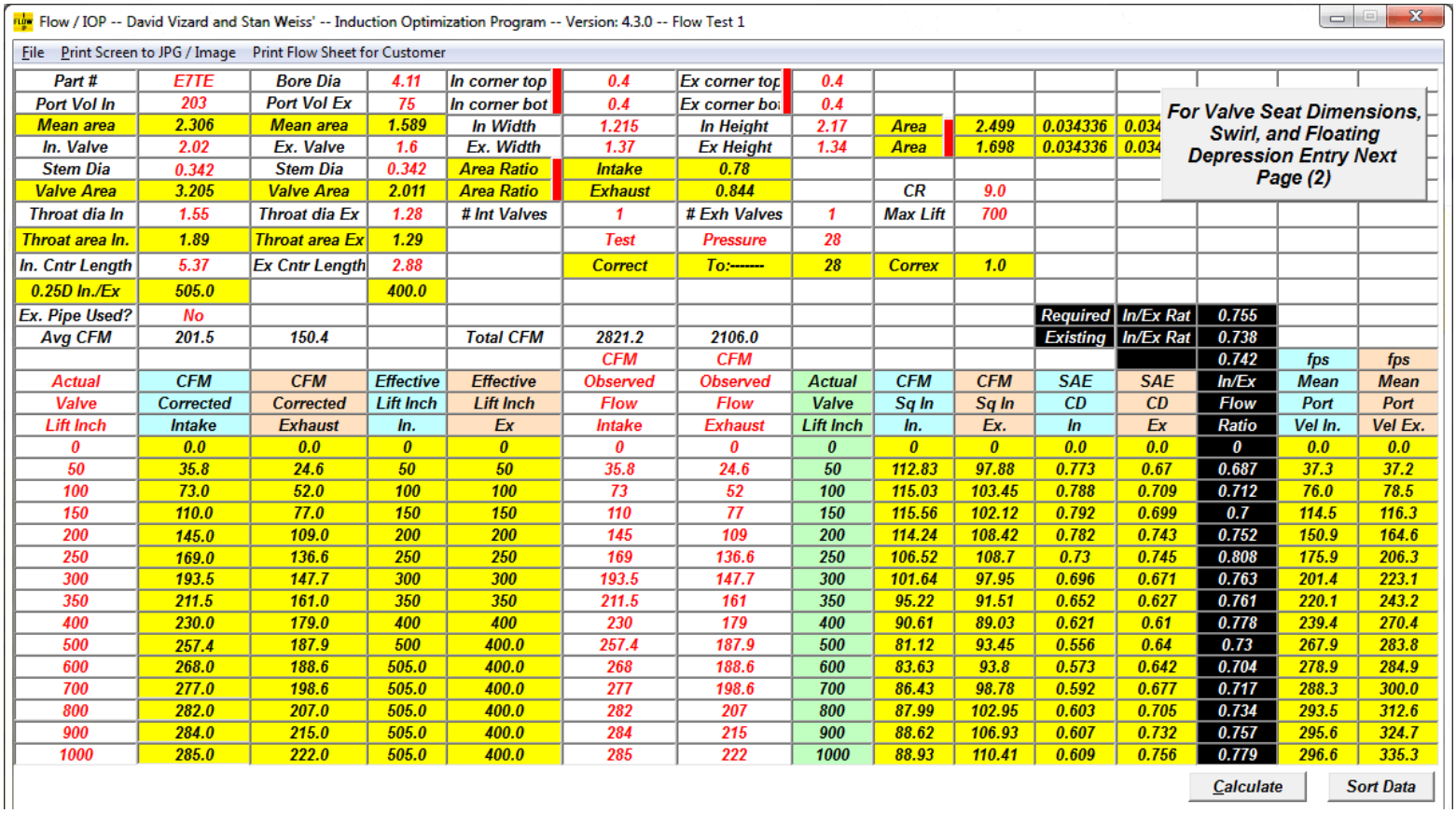
The default values for each cell are coded into the program. After each use (on exit) the program will save the data entered on this screen. The next time the program is loaded it will restore the cell values to those from the last time used. The program will create (Save) a file for you, when you tell it to **Save Data**. This means the default values that the program uses once changed can be stored and recalled at a later time. This option lets you call the file whatever name you want, so you can create more than one file. You can than **Load Data** for the combination you want to work on. The user can at any point while running the program **Load Data** or **Save Data** to whatever parameter file they want.

If the check box above **Enter Mach #** is checked then those cells will have their background change to white and the User can now enter the **Mach #**. For your typical head the box should remains unchecked as the program will calculate the appropriate Mach #. For a ProStock type head which has well developed, steeper ports with a form that can run as high as Mach 0.61.

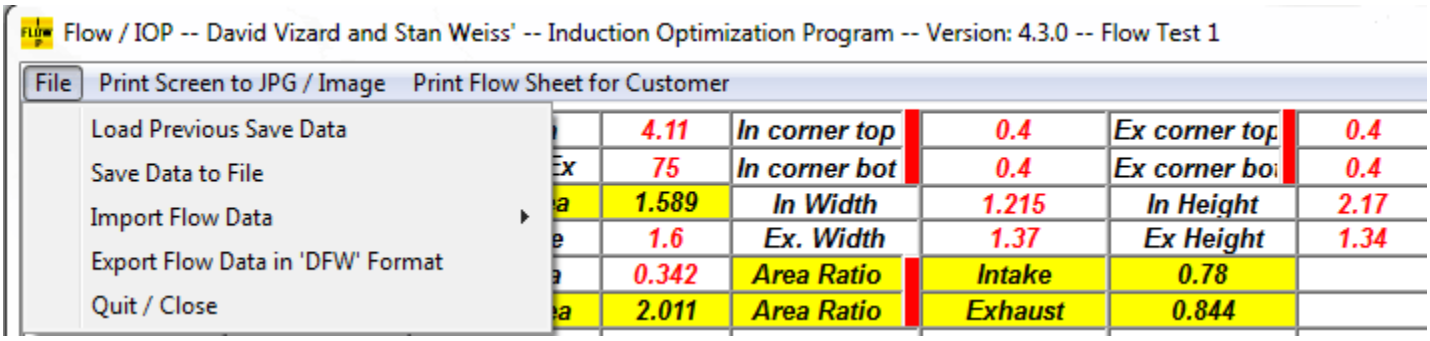
If the check box above **Peak HP RPM** is checked then those cells will have their background change to white and the User can enter the **Peak HP RPM** and the **Mean Port Area** box's background will change to yellow and this field will now be calculated.

How do the three fields and buttons at the bottom of the form work? You can enter any two of them and calculate the other one.

Calculate Port cc's / Volume from Port's Average CSA and Port Center Line Length.
Calculate Port Center Line Length from Port's Average CSA and Port Volume.
Calculate Port's Average CSA from Port Volume and Port Center Line Length.



Part #	E7TE	Bore Dia	4.11	In corner top	0.4	Ex corner top	0.4							
Port Vol In	203	Port Vol Ex	75	In corner bot	0.4	Ex corner bot	0.4							
Mean area	2.306	Mean area	1.589	In Width	1.215	In Height	2.17	Area	2.499	0.034336	0.034			
In. Valve	2.02	Ex. Valve	1.6	Ex. Width	1.37	Ex Height	1.34	Area	1.698	0.034336	0.034			
Stem Dia	0.342	Stem Dia	0.342	Area Ratio	Intake	0.78								
Valve Area	3.205	Valve Area	2.011	Area Ratio	Exhaust	0.844		CR	9.0					
Throat dia In	1.55	Throat dia Ex	1.28	# Int Valves	1	# Exh Valves	1	Max Lift	700					
Throat area In.	1.89	Throat area Ex	1.29		Test	Pressure	28							
In. Cntr Length	5.37	Ex Cntr Length	2.88		Correct	To:-------	28	Correx	1.0					
0.25D In./Ex	505.0		400.0											
Ex. Pipe Used?	No									Required	In/Ex Rat	0.755		
Avg CFM	201.5	150.4		Total CFM	2821.2	2106.0				Existing	In/Ex Rat	0.738		
					CFM	CFM						0.742	fps	fps
Actual	CFM	CFM	Effective	Effective	Observed	Observed	Actual	CFM	CFM	SAE	SAE	In/Ex	Mean	Mean
Valve	Corrected	Corrected	Lift Inch	Lift Inch	Flow	Flow	Valve	Sq In	Sq In	CD	CD	Flow	Port	Port
Lift Inch	Intake	Exhaust	In.	Ex	Intake	Exhaust	Lift Inch	In.	Ex.	In	Ex	Ratio	Vel In.	Vel Ex.
0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0.0	0.0
50	35.8	24.6	50	50	35.8	24.6	50	112.83	97.88	0.773	0.67	0.687	37.3	37.2
100	73.0	52.0	100	100	73	52	100	115.03	103.45	0.788	0.709	0.712	76.0	78.5
150	110.0	77.0	150	150	110	77	150	115.56	102.12	0.792	0.699	0.7	114.5	116.3
200	145.0	109.0	200	200	145	109	200	114.24	108.42	0.782	0.743	0.752	150.9	164.6
250	169.0	136.6	250	250	169	136.6	250	106.52	108.7	0.73	0.745	0.808	175.9	206.3
300	193.5	147.7	300	300	193.5	147.7	300	101.64	97.95	0.696	0.671	0.763	201.4	223.1
350	211.5	161.0	350	350	211.5	161	350	95.22	91.51	0.652	0.627	0.761	220.1	243.2
400	230.0	179.0	400	400	230	179	400	90.61	89.03	0.621	0.61	0.778	239.4	270.4
500	257.4	187.9	500	400.0	257.4	187.9	500	81.12	93.45	0.556	0.64	0.73	267.9	283.8
600	268.0	188.6	505.0	400.0	268	188.6	600	83.63	93.8	0.573	0.642	0.704	278.9	284.9
700	277.0	198.6	505.0	400.0	277	198.6	700	86.43	98.78	0.592	0.677	0.717	288.3	300.0
800	282.0	207.0	505.0	400.0	282	207	800	87.99	102.95	0.603	0.705	0.734	293.5	312.6
900	284.0	215.0	505.0	400.0	284	215	900	88.62	106.93	0.607	0.732	0.757	295.6	324.7
1000	285.0	222.0	505.0	400.0	285	222	1000	88.93	110.41	0.609	0.756	0.779	296.6	335.3



The default values for each cell are coded into the program. The program will create (Save) a file for you, when you tell it to **Save Data**. This means the default values that the program uses once changed can be stored and recalled at a later time. This option lets you call the file whatever name you want, so you can create more than one. You can than **Load Data** for the head you want to work on. The User can at any point while running the program **Load Data** or **Save Data** to whatever parameter file they want. Please **NOTE** that a parameter file is not locked into any Flow Test. So a parameter file saved from Flow Test 1 can be loaded into any of the 5 Flow Tests.

Import PTPFA Data – This will Import flow data and other information from a Performance Trends - Port Flow Analyzer file.

Import Flow Data – This will Import the flow data from a “FLW” or "DFW" file or from DeskTop Dyno / SIM, or Dynomation File.

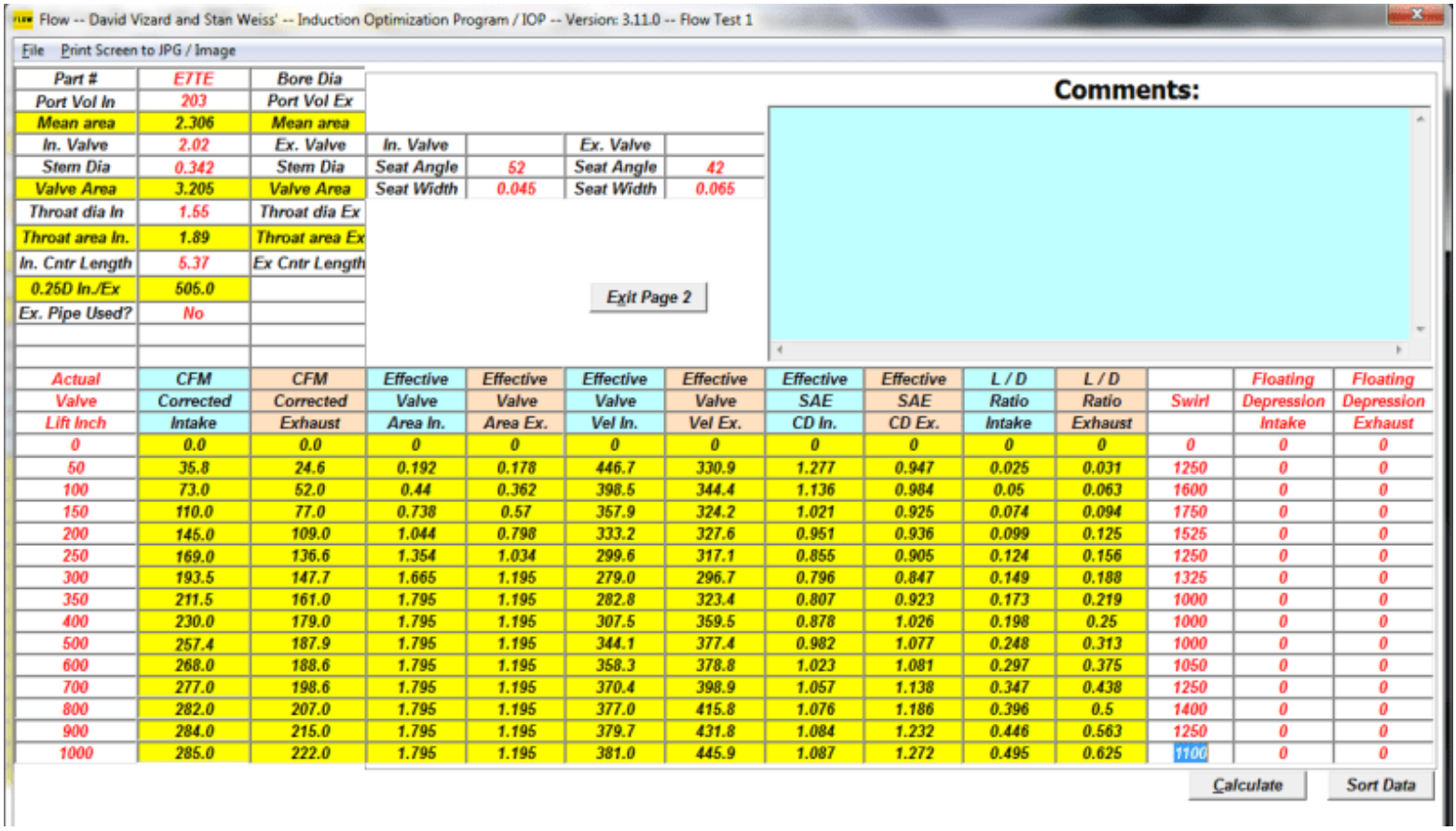
Export Flow Data – This will Export the flow data to a "DFW" file. A number of Engine Simulation Programs (ex. DeskTop Dyno, Dynomation and Performance Trends - Engine Analyzer) can then read this flow data in.

Note: Intake and Exhaust port cc's should be measured by pouring the port. Don't take the advertised cc's of the port as anything but a good approximation.

Note: You will need to enter the center line length of the port. It is important that is as accurate as possible. This can most easily be done by using some solder wire to gauge the long side length and the short side and averaging the two lengths.

Note: Before clicking the **Calculate Button** make sure to click on the **Valve Dimension** box in the top right hand corner and enter the Intake and Exhaust valve seat angles and seat widths.

Sort Data This will sort the flow data by the **"Actual Valve Lift"** values. What this does is let you insert or remove a row without have to retype the rest of the already entered data. If above the 1000 line is changed to 450, after clicking the **Sort Data Button** that line will be moved up after the 400 line and all other lines will have been moved down 1 row. Entering a zero in any line other than the first line will cause it to be moved to the bottom.



The effective area, velocity, and SAE CD columns differ from the first page in that low lift numbers will be calculated using the **User Entered Intake and exhaust valve seat angle and valve seat width**. The higher numbers differ from the first page as the max area will be throat area - valve stem area.

Print Flow Sheet for Customer – This option will print a flow sheet for your Customer and let you also print your company Information and Logo on it.

Flow / IOP -- David Vizard and Stan Weiss' -- Induction Optimization Program -- Version: 4.3.1

Stan Weiss' Performance Software
Philadelphia PA 19111-4922
Stan Weiss <srweiss1@comcast.net>
www.magneticlynx.com/carfor/carfor.htm

Customer Name: _____

Order / Invoice #: _____

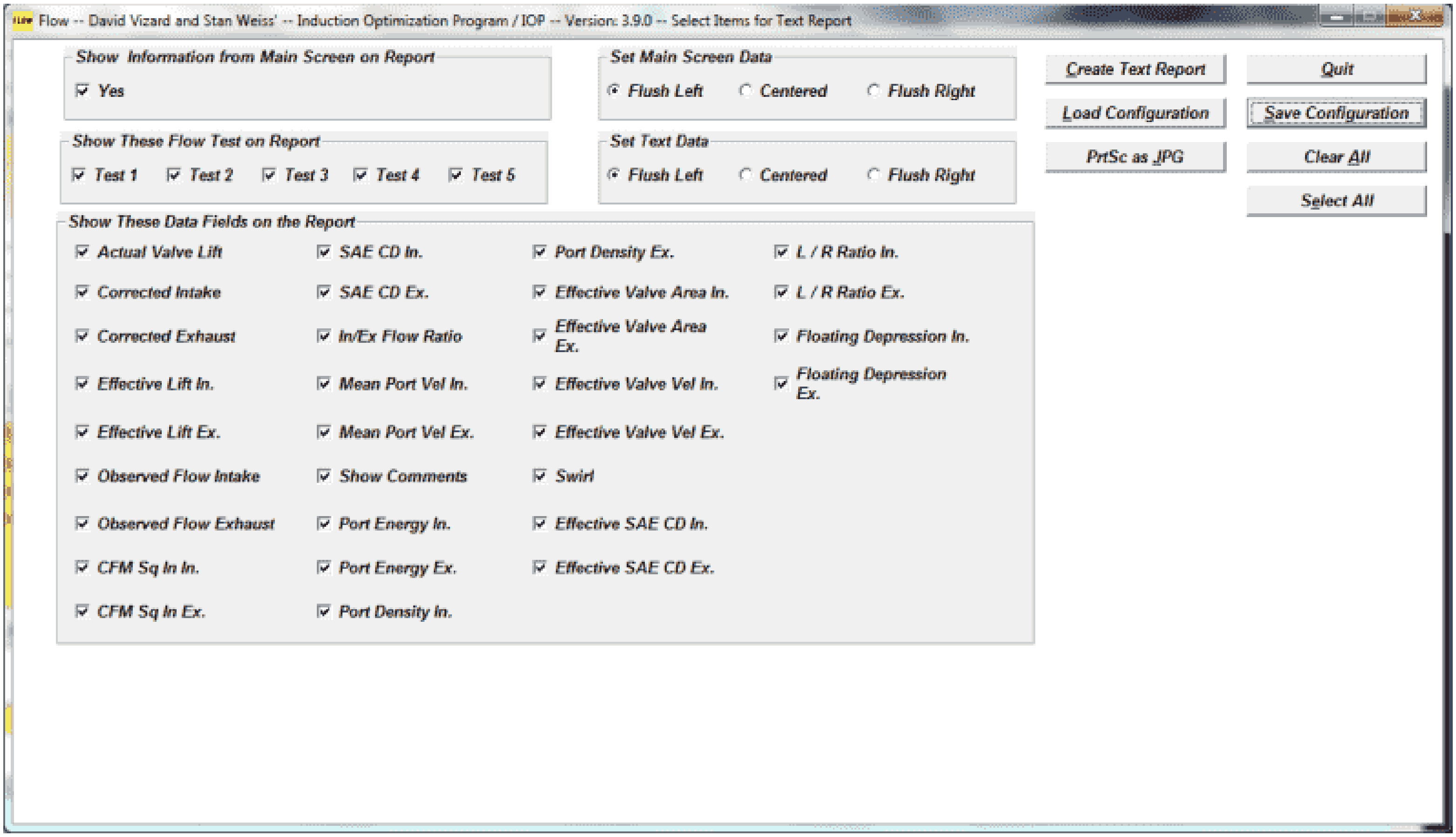
Printed: Monday May 15 2023 15:50:46

Test Bore Diameter		4.03	**Part #**	e7te ported charlie		**Exhaust Pipe Used?**	no
	Port Volume	**Port Area**	**Valve Dia**	**Stem Dia**	**Throat Dia**	**Throat Area**	**# Valves**	**Seat Angle**
Intake	127	1.55	1.74	0.342	1.54	1.86	1	52
Exhaust	42	0.89	1.46	0.342	1.26	1.25	1	42

NOTE: Mean Port Velocity should be in the 300-320 fps range around max valve lift

Actual Valve Lift Inch	**CFM Corrected Intake**	**In/Ex Flow Ratio**	**Mean Port Vel In.**	**L / D Ratio Intake**
50	35.6	0.719	55.1	0.029
100	73.7	0.757	114.1	0.057
150	115.0	0.71	178.1	0.086
200	150.7	0.707	233.3	0.115
250	180.8	0.675	279.9	0.144
300	205.0	0.644	317.4	0.172
350	218.0	0.651	337.5	0.201
400	226.0	0.659	349.9	0.23
500	231.0	0.688	357.7	0.287
600	233.0	0.7	360.8	0.345
700	234.0	0.709	362.3	0.402
Total CFM	1902.8			
Average	173.0	0.693		

Actual Valve Lift Inch	**CFM Corrected Exhaust**	**Mean Port Vel Ex.**	**L / D Ratio Exhaust**
50	25.6	69.0	0.034
100	55.8	150.5	0.068
150	81.7	220.3	0.103
200	106.5	287.2	0.137
250	122.0	329.0	0.171
300	132.0	356.0	0.205
350	142.0	382.9	0.24
400	149.0	401.8	0.274
500	159.0	428.8	0.342
600	163.0	439.6	0.411
700	166.0	447.6	0.479
Total CFM	1302.6		
Avg CFM	118.4		



The default setting is to show all Flow Tests and ever item from each Flow Test. The program will create (Save) a file for you, when you tell it to **Save Configuration**. This means the default values that the program uses once changed can be stored and recalled at a later time. This option lets you call the file whatever name you want, so you can create more than one. You can than **Load Configuration** for the report that you want to produce again. The produced report can be saved to a text file by pushing the period key **"."** while any other key will exit the produced report screen. The Text Report after being Saved can be viewed by using either Notepad or Wordpad.

The above selections produce these reports.

1) US units US Regional Setting
2) Metric units US Regional Setting
3) US units Sweden Regional Settings
4) Metric units Sweden Regional Setting

1

Name of Test being Calculated

Enter Mach #	Peak VE Port Vel Ft/Sec	Mean Port Area	Bore Inches	Stroke Inches	Piston Area	Engine CID	Cylinder CID	Peak HP RPM	Shift RPM	Number of Cylinder
0.5475	616	2.75	4.125	4	13.36	427.7	53.46	7037	7530	8

Enter CR Here	Mean Piston speed Ft/Min	CFM @ Peak Lift	Best Torque Output	Cyl. Head Port Area HP limitation	Cyl. Head Airflow HP limitation	Torque per Cubic Inch	Torque per Liter	HP per Cube	HP per Liter
10.5	4691	322	594	700	818	1.388	84.7	1.913	116.693

C O M M E N T S

Flow Test 1 Data

Part # E7TE	Bore Dia 4.11	In corner top 0.4	Ex corner top 0.4	
Port Vol In 203	Port Vol Ex 75	In corner bot 0.4	Ex corner bot 0.4	
Mean area 2.306	Mean area 1.589	In Width 1.215	In Height 2.17	Area 2.499
In. Valve 2.02	Ex. Valve 1.6	Ex. Width 1.37	Ex Height 1.34	Area 1.698

Stem Dia	0.342		Stem Dia	0.342		Area Ratio Intake		0.78							
Valve Area	3.205		Valve Area	2.011		Area Ratio Exhaust		0.844				CR	9.0		
Throat dia In	1.55		Throat dia Ex	1.28		# Int Valves	1	# Exh Valves	1			Max Lift	700		
Throat area In.	1.89		Throat area Ex	1.29				Test Pressure	28						
In. Cntr Length	5.37		Ex Cntr Length	2.88				Correct To:-------	28			Correx	1.0		
0.25D In./Ex	505.0			400.0								Required In/Ex Rat	0.755		
Ex. Pipe Used?	No											Existing In/Ex Rat	0.738		

In. Valve		Ex. Valve	
Seat Angle	52	Seat Angle	42
Seat Width	0.045	Seat Width	0.065

Actual Valve Lift Inch	CFM Corrected Intake	Effective Lift Inch In.	CFM Observed Flow Intake	CFM Sq In In.	SAE CD In	In/Ex Flow Ratio	fps Mean Port Vel In.	Port Energy In.	Port Density In.	Effective Valve Area In.	Effective Valve Vel In.	Swirl	Effective SAE CD In.	L / D Ratio Intake
0	0.0	0	0	0	0.0	0	0.0	0.0	0.0	0	0	0	0	0
50	35.8	50	35.8	112.83	0.773	0.687	37.3	0.379	0.367	0.192	446.7	1250	1.277	0.025
100	73.0	100	73	115.03	0.788	0.712	76.0	1.573	1.525	0.44	398.5	1600	1.136	0.05
150	110.0	150	110	115.56	0.792	0.7	114.5	3.571	3.46	0.738	357.9	1750	1.021	0.074
200	145.0	200	145	114.24	0.782	0.752	150.9	6.202	6.01	1.044	333.2	1525	0.951	0.099
250	169.0	250	169	106.52	0.73	0.808	175.9	8.427	8.167	1.354	299.6	1250	0.855	0.124
300	193.5	300	193.5	101.64	0.696	0.763	201.4	11.048	10.706	1.665	279.0	1325	0.796	0.149
350	211.5	350	211.5	95.22	0.652	0.761	220.1	13.195	12.786	1.798	282.3	1000	0.806	0.173
400	230.0	400	230	90.61	0.621	0.778	239.4	15.61	15.127	1.798	307.0	1000	0.876	0.198
500	257.4	500	257.4	81.12	0.556	0.73	267.9	19.548	18.943	1.798	343.6	1000	0.981	0.248
600	268.0	505.0	268	83.63	0.573	0.704	278.9	21.186	20.531	1.798	357.7	1050	1.021	0.297
700	277.0	505.0	277	86.43	0.592	0.717	288.3	22.638	21.938	1.798	369.7	1250	1.055	0.347
800	282.0	505.0	282	87.99	0.603	0.734	293.5	23.462	22.736	1.798	376.4	1400	1.074	0.396
900	284.0	505.0	284	88.62	0.607	0.757	295.6	23.799	23.063	1.798	379.1	1250	1.082	0.446
1000	285.0	505.0	285	88.93	0.609	0.779	296.6	23.961	23.219	1.798	380.4	1100	1.086	0.495

2

Name of Test being Calculated

Enter Mach #	Peak VE Port Vel M/Sec	Mean Port Area	Bore mm	Stroke mm	Piston Area	Engine LD	Cylinder LD	Peak HP RPM	Shift RPM	Number of Cylinder
0.5475	187.76	1774.19	104.78	101.6	8619.34	7.009	0.876	7037	7530	8

Enter CR Here	Mean Piston speed M/Min	M^3/Min @ Best Peak Lift	Torque NM Output	KW limitation Port Area HP limitation	KW limitation Airflow HP limitation	Torque NM per Cubic Inch	Torque NM per Liter	KW per Cube	KW per Liter
10.5	1429.82	9.11802	787.73	510.8	551.8	1.843	112.397	1.2	72.8

C O M M E N T S

Flow Test 1 Data

Part #	E7TE	Bore Dia	104.394	In corner top	10.16	Ex corner top	10.16		
Port Vol In	203	Port Vol Ex	75	In corner bot	10.16	Ex corner bot	10.16		
Mean area	1488.025	Mean area	1025.079	In Width	30.861	In Height	55.118	Area	1612.388
In. Valve	51.308	Ex. Valve	40.64	Ex. Width	34.798	Ex Height	34.036	Area	1095.776
Stem Dia	8.687	Stem Dia	8.687	Area Ratio Intake		0.78			
Valve Area	2067.574	Valve Area	1297.174	Area Ratio Exhaust		0.845		CR	9.0
Throat dia In	39.37	Throat dia Ex	32.512	# Int Valves	1	# Exh Valves	1	Max Lift	700
Throat area In.	1217.37	Throat area Ex	830.19			Test Pressure	28		
In. Cntr Length	136.398	Ex Cntr Length	73.152			Correct To:-------	28	Correx	1.0
0.25D In./Ex	12.827		10.16						
Ex. Pipe Used?	No								

In. Valve		Ex. Valve	
Seat Angle	52	Seat Angle	42
Seat Width	1.143	Seat Width	1.651

Actual Valve Lift mm	M^3 Min Corrected Intake	Effective Lift mm In.	M^3 Min Observed Flow Intake	M^3 Min Sq mm In.	SAE CD In	In/Ex Flow Ratio	M/Sec Mean Port Vel In.	Port Energy In.	Port Density In.	Effective Valve Area In.	Effective Valve Vel In.	Swirl	Effective SAE CD In.	L / D Ratio Intake
0.0	0.0	0.0	0.0	0	0.0	0	0.0	0.0	0.0	0	0	0	0	0
1.27	1.014	1.27	1.0137	2061.74	0.773	0.687	11.4	0.517	0.5	124.1	136.2	1250	1.275	0.025
2.54	2.067	2.54	2.0671	2101.39	0.788	0.713	23.2	2.139	2.073	283.6	121.5	1600	1.137	0.05
3.81	3.115	3.81	3.1149	2111.22	0.792	0.7	34.9	4.841	4.691	475.9	109.1	1750	1.021	0.074
5.08	4.106	5.08	4.1059	2087.16	0.783	0.752	46.0	8.411	8.149	673.8	101.6	1525	0.951	0.099
6.35	4.786	6.35	4.7855	1946.25	0.73	0.808	53.6	11.42	11.064	873.5	91.3	1250	0.855	0.124
7.62	5.479	7.62	5.4793	1856.72	0.696	0.763	61.4	14.985	14.519	1074.1	85.0	1325	0.796	0.149
8.89	5.989	8.89	5.989	1739.61	0.652	0.761	67.1	17.897	17.34	1160.1	86.0	1000	0.806	0.173
10.16	6.513	10.16	6.5129	1655.34	0.621	0.778	72.9	21.124	20.467	1160.1	93.6	1000	0.876	0.198
12.7	7.289	12.7	7.2888	1482.05	0.556	0.73	81.6	26.467	25.643	1160.1	104.7	1000	0.98	0.248
15.24	7.589	12.827	7.5889	1527.77	0.573	0.704	85.0	28.719	27.825	1160.1	109.0	1050	1.021	0.297
17.78	7.844	12.827	7.8438	1579.11	0.592	0.717	87.9	30.712	29.756	1160.1	112.7	1250	1.055	0.347
20.32	7.985	12.827	7.9854	1607.5	0.603	0.734	89.4	31.769	30.78	1160.1	114.7	1400	1.074	0.396
22.86	8.042	12.827	8.042	1618.97	0.607	0.757	90.1	32.268	31.264	1160.1	115.5	1250	1.082	0.446
25.4	8.07	12.827	8.0703	1624.61	0.609	0.779	90.4	32.484	31.472	1160.1	115.9	1100	1.086	0.495

3

Name of Test being Calculated

Number Enter Mach #	Peak VE Port Vel Ft/Sec	Mean Port Area	Bore Inches	Stroke Inches	Piston Area	Engine CID	Cylinder CID	Peak HP RPM	Shift RPM	of Cylinder
0,5475	616	2,75	4,125	4	13,36	427,7	53,46	7037	7530	8

Enter CR Here	Mean Piston speed Ft/Min	CFM @ Peak Lift	Best Torque Output	Cyl, Head Port Area HP limitation	Cyl, Head Airflow HP limitation	Torque per Cubic Inch	Torque per Liter	HP per Cube	HP per Liter
10,5	4691	322	581	685	740	1,359	82,9	1,6	97,6

C O M M E N T S

Flow Test 1 Data

Part # E7TE	Bore Dia 4,11	In corner top 0,4	Ex corner top 0,4		
Port Vol In 203	Port Vol Ex 75	In corner bot 0,4	Ex corner bot 0,4		
Mean area 2,306	Mean area 1,589	In Width 1,215	In Height 2,17	Area 2,499	
In, Valve 2,02	Ex, Valve 1,6	Ex, Width 1,37	Ex Height 1,34	Area 1,698	
Stem Dia 0,342	Stem Dia 0,342	Area Ratio Intake	0,78		
Valve Area 3,205	Valve Area 2,011	Area Ratio Exhaust	0,844	CR 9.0	
Throat dia In 1,55	Throat dia Ex 1,28	# Int Valves 1	# Exh Valves 1	Max Lift 700	
Throat area In, 1,89	Throat area Ex 1,29	Test	Pressure 28		
In, Cntr Length 5,37	Ex Cntr Length 2,88	Correct	To:------- 28	Correx 1,0	
0,25D In./Ex 505,0	400,0				

Ex, Pipe Used? No

In, Valve		Ex, Valve	
Seat Angle	52	Seat Angle	42
Seat Width	0,045	Seat Width	0,065

Actual Valve Lift Inch	CFM Corrected Intake	Effective Lift Inch In,	CFM Observed Flow Intake	CFM Sq In In,	SAE CD In	In/Ex Flow Ratio	fps Mean Port Vel In,	Port Energy In.	Port Density In.	Effective Valve Area In,	Effective Valve Vel In,	Swirl
0	0,0	0	0	0	0,0	0	0,0	0,0	0,0	0	0	0
50	35,8	50	35,8	112,83	0,789	0,687	37,3	0,379	0,367	0,192	446,7	1250
100	73,0	100	73	115,03	0,804	0,712	76,0	1,573	1,525	0,44	398,5	1600
150	110,0	150	110	115,56	0,808	0,7	114,5	3,571	3,46	0,738	357,9	1750
200	145,0	200	145	114,24	0,799	0,752	150,9	6,202	6,01	1,044	333,2	1525
250	169,0	250	169	106,52	0,745	0,808	175,9	8,427	8,167	1,354	299,6	1250
300	193,5	300	193,5	101,64	0,711	0,763	201,4	11,048	10,706	1,665	279,0	1325
350	211,5	350	211,5	95,22	0,666	0,761	220,1	13,195	12,786	1,798	282,3	1000
400	230,0	400	230	90,61	0,634	0,778	239,4	15,61	15,127	1,798	307,0	1000
500	257,4	500	257,4	81,12	0,567	0,73	267,9	19,548	18,943	1,798	343,6	1000
600	268,0	505,0	268	83,63	0,585	0,704	278,9	21,186	20,531	1,798	357,7	1050
700	277,0	505,0	277	86,43	0,604	0,717	288,3	22,638	21,938	1,798	369,7	1250
800	282,0	505,0	282	87,99	0,615	0,734	293,5	23,462	22,736	1,798	376,4	1400
900	284,0	505,0	284	88,62	0,62	0,757	295,6	23,799	23,063	1,798	379,1	1250
1000	285,0	505,0	285	88,93	0,622	0,779	296,6	23,961	23,219	1,798	380,4	1100

4

Name of Test being Calculated

Number Enter Mach #	Peak VE Port Vel M/Sec	Mean Port Area	Bore mm	Stroke mm	Piston Area	Engine LD	Cylinder LD	Peak HP RPM	Shift RPM	of Cylinder
0,5475	187,76	1774,19	104,78	101,6	8619,34	7,009	0,876	7037	7530	8

Enter CR Here	Mean Piston speed M/Min	M^3/Min @ Peak Lift	Best Torque NM Output	KW limitation Port Area HP limitation	KW limitation Airflow HP limitation	Torque NM per Cubic Inch	Torque NM per Liter	KW per Cube	KW per Liter
10,5	1429,82	9,11802	787,73	510,8	551,8	1,843	112,397	1,2	72,8

C O M M E N T S

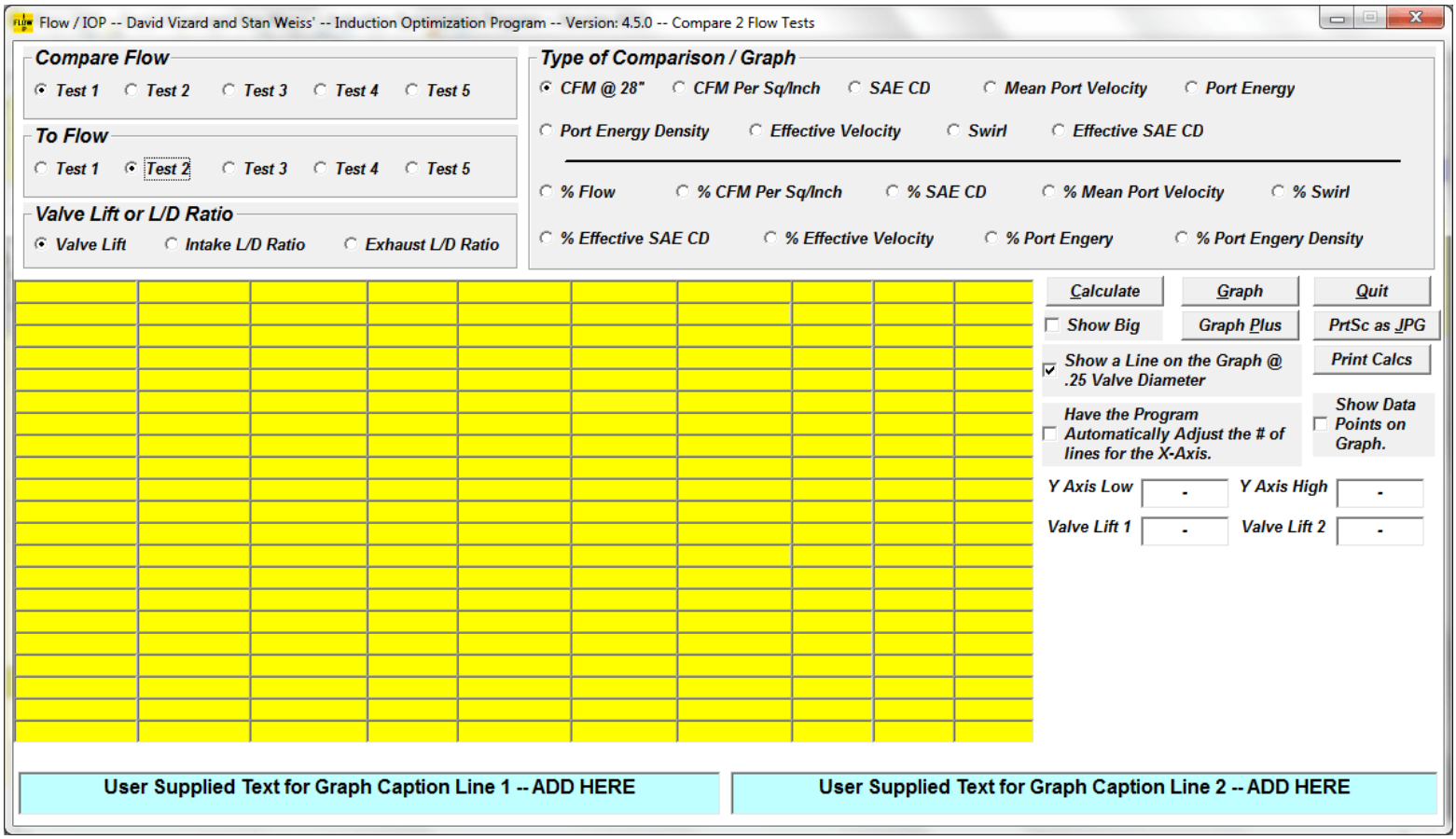
Flow Test 1 Data

Part # E7TE	Bore Dia 104,394	In corner top 10,16	Ex corner top 10,16		
Port Vol In 203	Port Vol Ex 75	In corner bot 10,16	Ex corner bot 10,16		
Mean area 1488,025	Mean area 1025,079	In Width 30,861	In Height 55,118	Area 1612,388	
In, Valve 51,308	Ex, Valve 40,64	Ex, Width 34,798	Ex Height 34,036	Area 1095,776	
Stem Dia 8,687	Stem Dia 8,687	Area Ratio Intake	0,78		
Valve Area 2067,574	Valve Area 1297,174	Area Ratio Exhaust	0,845	CR 9.0	
Throat dia In 39,37	Throat dia Ex 32,512	# Int Valves 1	# Exh Valves 1	Max Lift 700	
Throat area In, 1217,37	Throat area Ex 830,19	Test	Pressure 28		
In, Cntr Length 136,398	Ex Cntr Length 73,152	Correct	To:------- 28	Correx 1,0	
0,25D In./Ex 12,827	10,16				

Ex, Pipe Used? No

In, Valve		Ex, Valve	
Seat Angle	52	Seat Angle	42
Seat Width	1,143	Seat Width	1,651

Actual Valve Lift mm	M^3 Min Corrected Intake	Effective Lift mm In,	M^3 Min Observed Flow Intake	M^3 Min Sq mm In,	SAE CD In	In/Ex Flow Ratio	M/Sec Mean Port Vel In,	Port Energy In.	Port Density In.	Effective Valve Area In,	Effective Valve Vel In,	Swirl
0,0	0,0	0,0	0,0	0	0,0	0	0,0	0,0	0,0	0,0	0,0	0
1,27	1,014	1,27	1,0137	2061,74	0,789	0,687	11,4	0,517	0,5	124,1	136,2	1250
2,54	2,067	2,54	2,0671	2101,39	0,804	0,713	23,2	2,139	2,073	283,6	121,5	1600
3,81	3,115	3,81	3,1149	2111,22	0,808	0,7	34,9	4,841	4,691	475,9	109,1	1750
5,08	4,106	5,08	4,1059	2087,16	0,799	0,752	46,0	8,411	8,149	673,8	101,6	1525
6,35	4,786	6,35	4,7855	1946,25	0,745	0,808	53,6	11,42	11,064	873,5	91,3	1250
7,62	5,479	7,62	5,4793	1856,72	0,711	0,763	61,4	14,985	14,519	1074,1	85,0	1325
8,89	5,989	8,89	5,989	1739,61	0,666	0,761	67,1	17,897	17,34	1160,1	86,0	1000
10,16	6,513	10,16	6,5129	1655,34	0,634	0,778	72,9	21,124	20,467	1160,1	93,6	1000
12,7	7,289	12,7	7,2888	1482,05	0,567	0,73	81,6	26,467	25,643	1160,1	104,7	1000
15,24	7,589	12,827	7,5889	1527,77	0,585	0,704	85,0	28,719	27,825	1160,1	109,0	1050
17,78	7,844	12,827	7,8438	1579,11	0,604	0,717	87,9	30,712	29,756	1160,1	112,7	1250
20,32	7,985	12,827	7,9854	1607,5	0,615	0,734	89,4	31,769	30,78	1160,1	114,7	1400
22,86	8,042	12,827	8,042	1618,97	0,62	0,757	90,1	32,268	31,264	1160,1	115,5	1250
25,4	8,07	12,827	8,0703	1624,61	0,622	0,779	90,4	32,484	31,472	1160,1	115,9	1100



There only 6 cells which are inputs on this form.

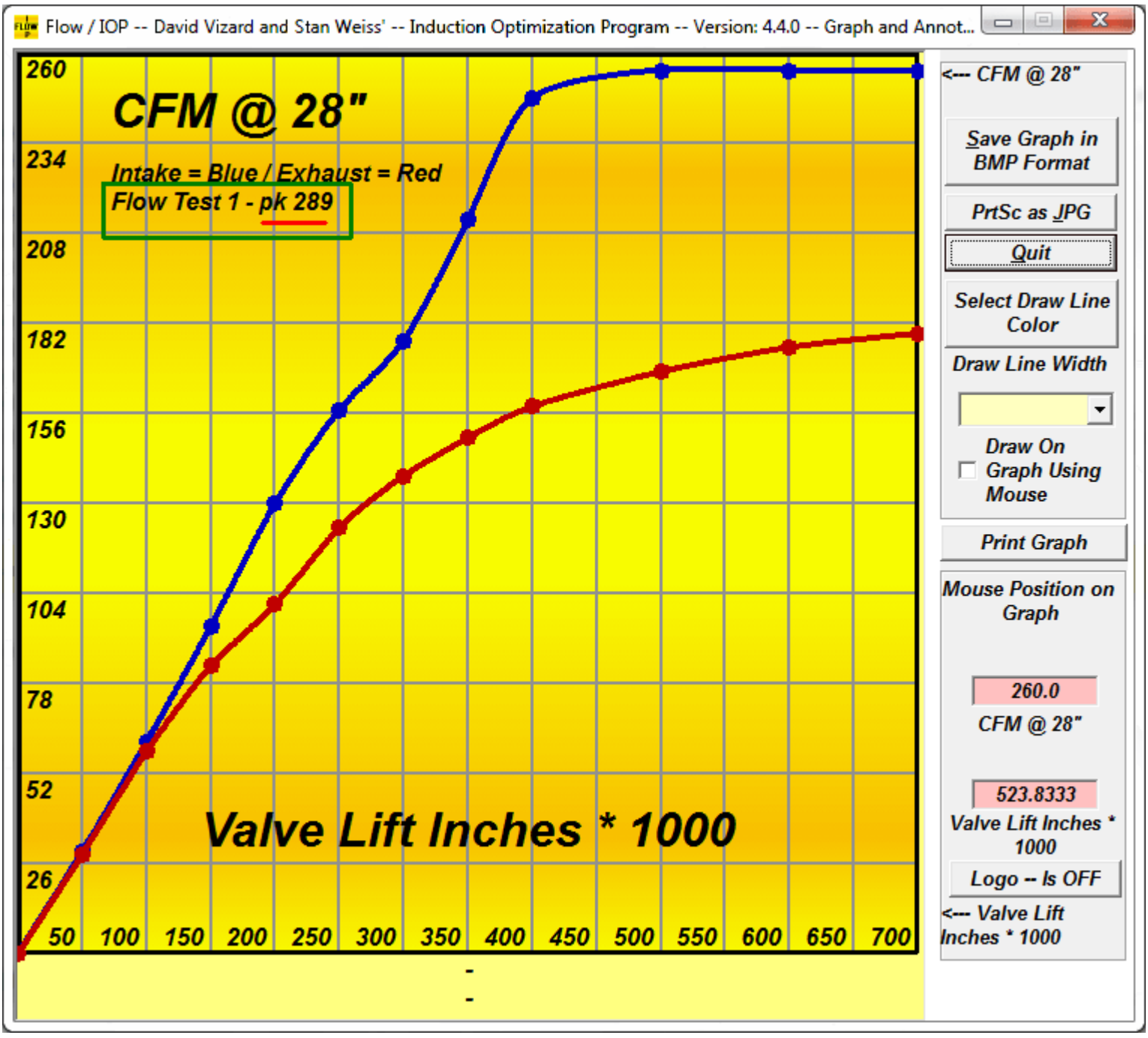
The two white boxes labeled Y Axis Low and Y Axis High. These let the USER override the program calculated values for the Y Axis when producing a Graph.

The two white boxes labeled Valve Lift 1 and Valve Lift 2. These let the USER have the program draw a Horizontal line on the Graph at the USER Entered Valve Lift.

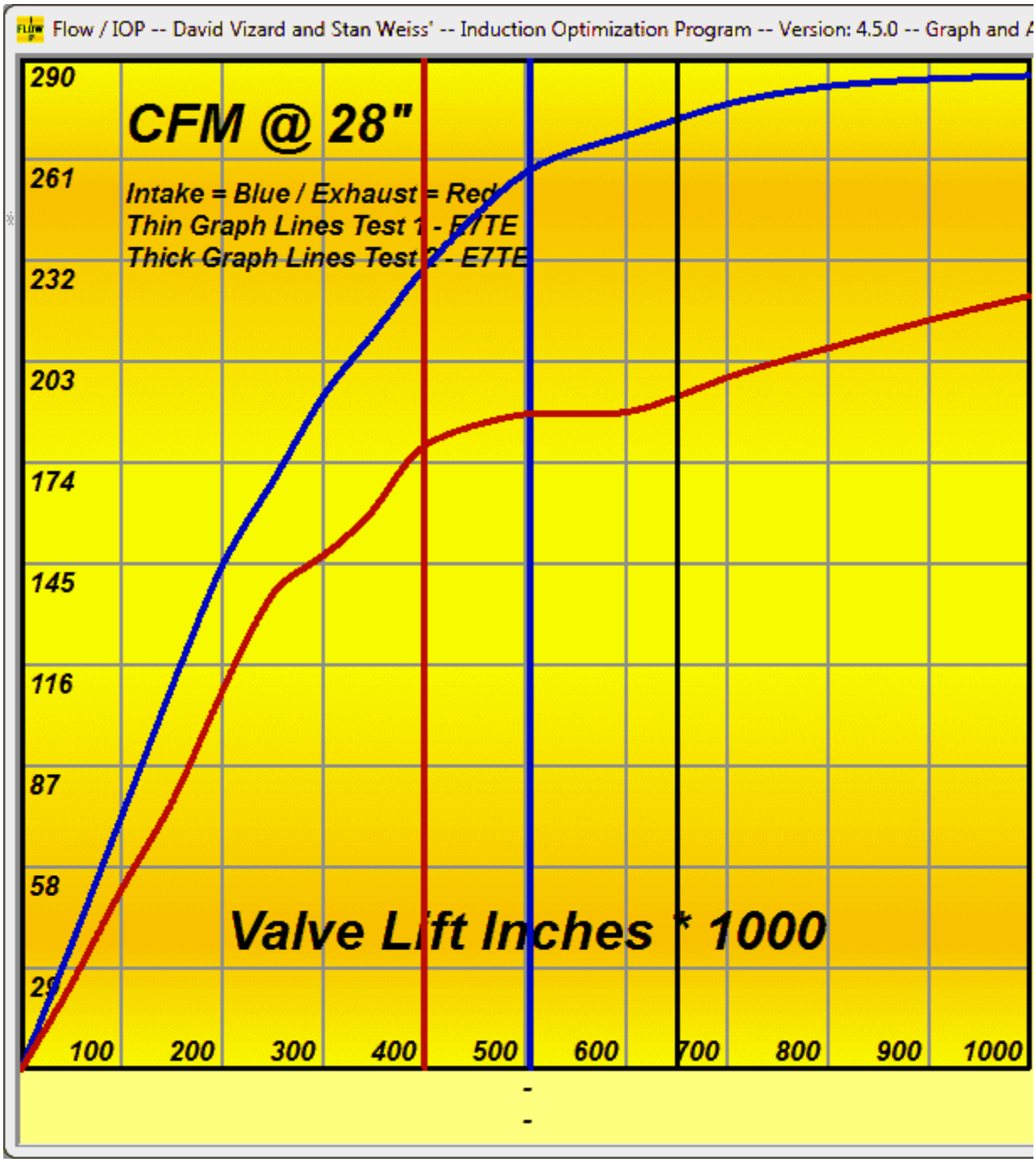
The two green boxes at the bottom of the form. These cells let the User enter two lines of text that will be used as the bottom Captions for the Graph. If no Captions are wanted, just blank out those two cells. Below are sample Graphs produced in order as shown above.

All other USER Options are controlled by the Radio buttons or Check Boxes.

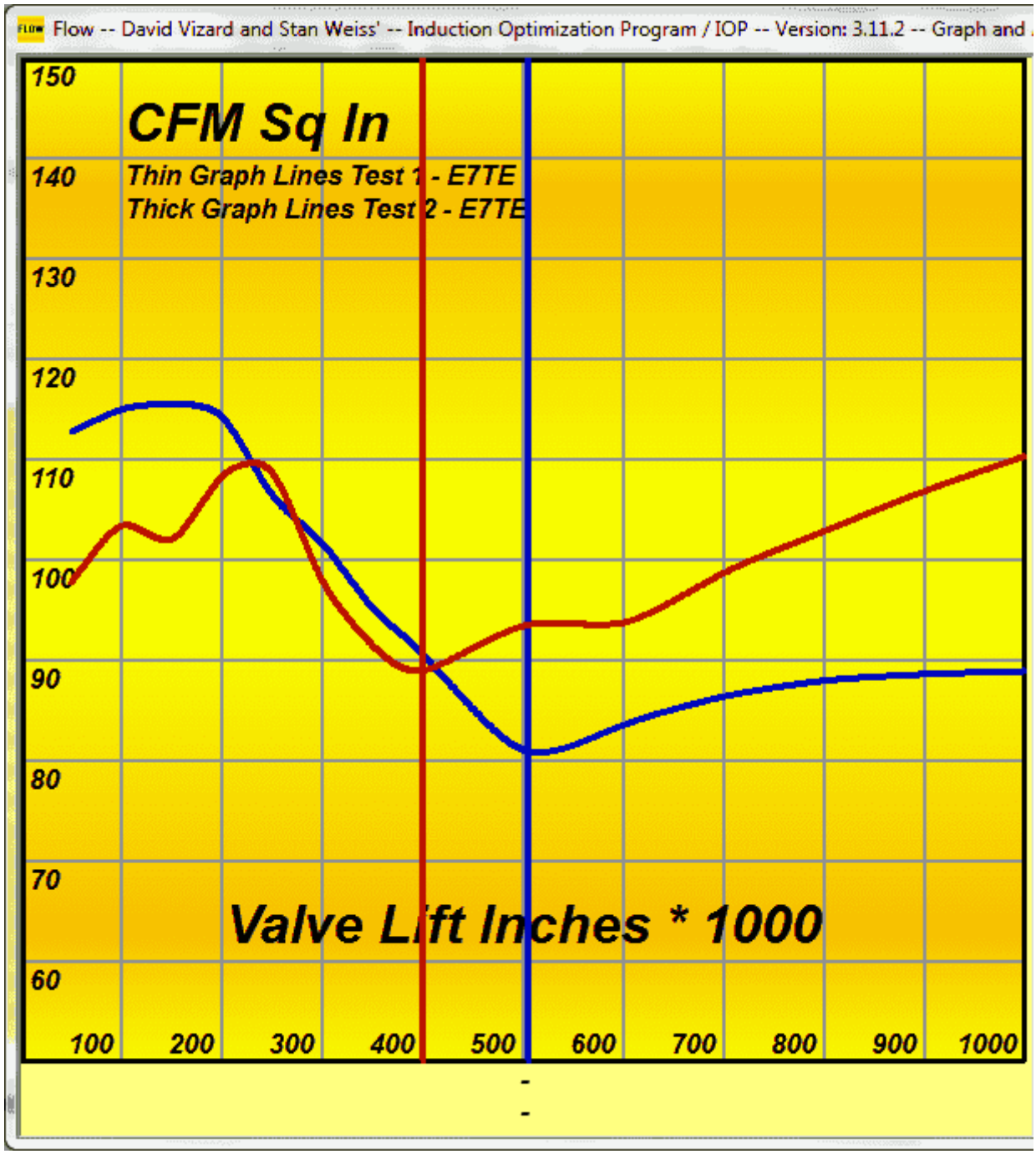
Save as BMP – Will save the graph to disc in BMP format.
PrtSc as JPG – Will save the graph to disc in JPG format.
Print Graph – Will Print the below image to you Printer.
Clicking the Logo Button – Will see in Your logo. Placing your mouse / cursor on the upper left hand corner click the left mouse button and you can drag the Logo around on the Graph to where you want it.

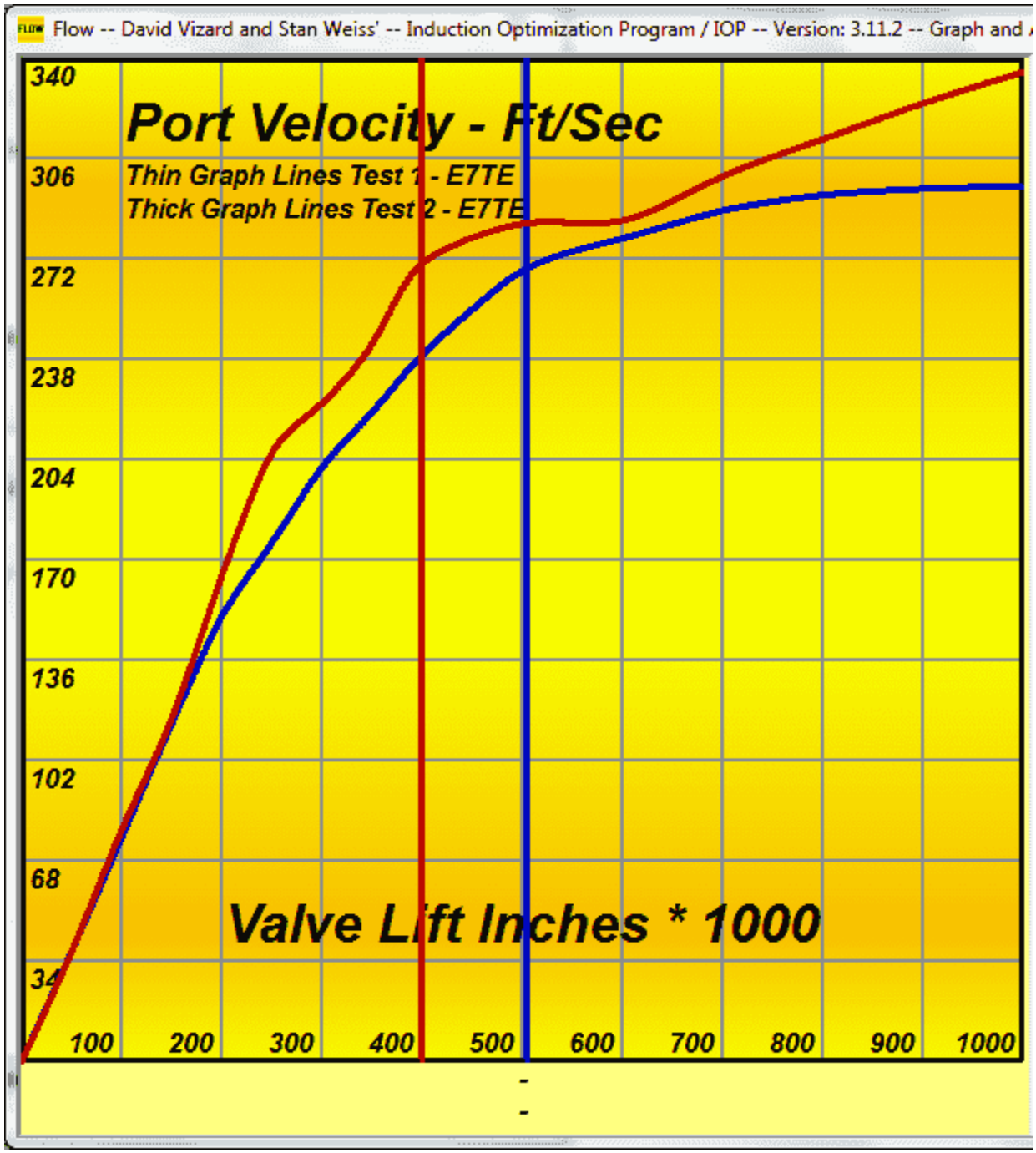


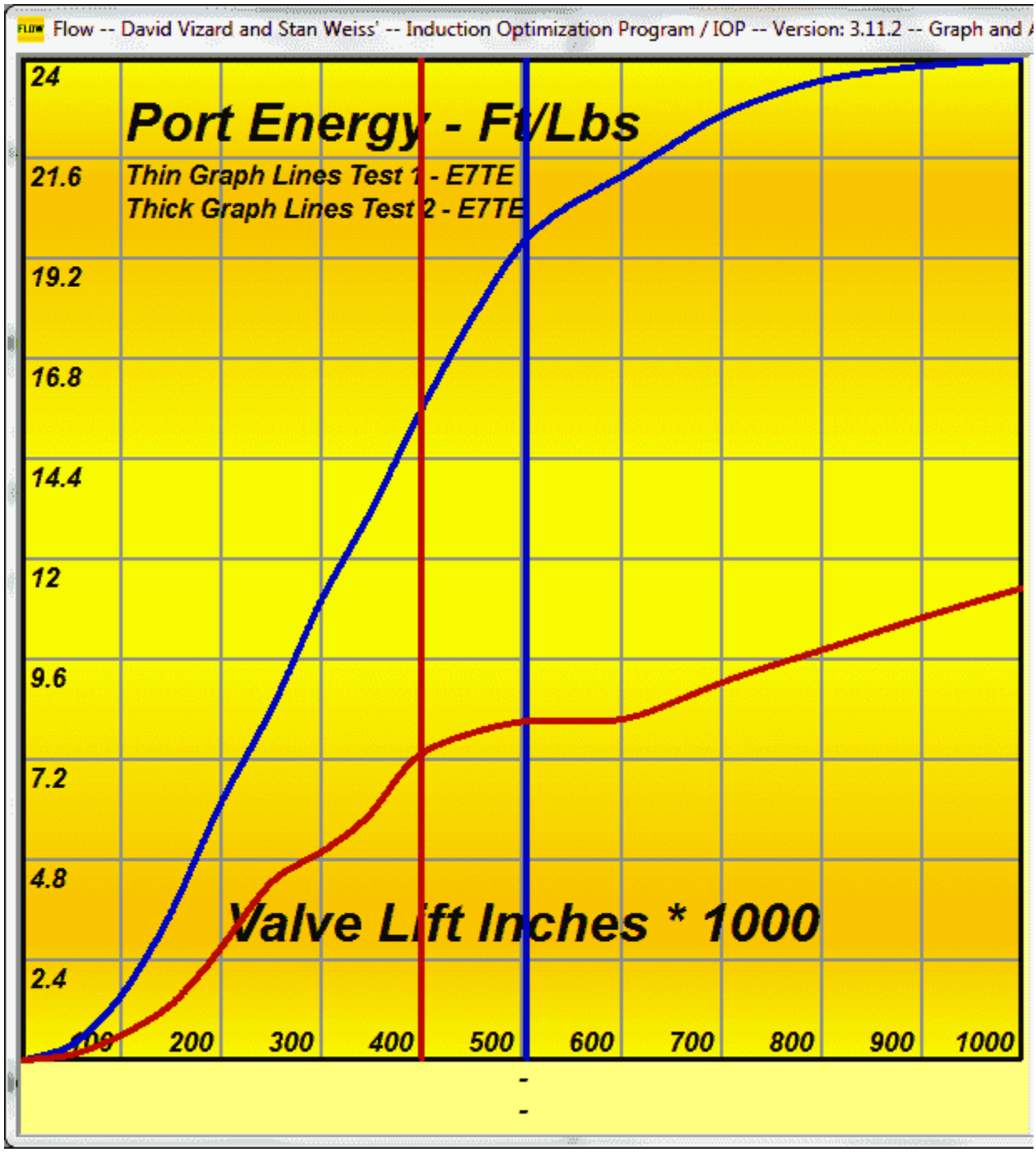
On the top row of the Flow Test Entry Screen the first row first column says Part #. The information entered in first row second column is picked up and displayed on the Graph which in this case was **pk 289.** This was produced comparing only 1 Flow Test to itself. It also has the "Show a Line on the Graph @ .25 Valve Diameter" UNCHECKED, it also has "Have the Program Automatically Adjust the # of lines for the X-Axis." Checked along with having “Show Data Points on Graph” checked.

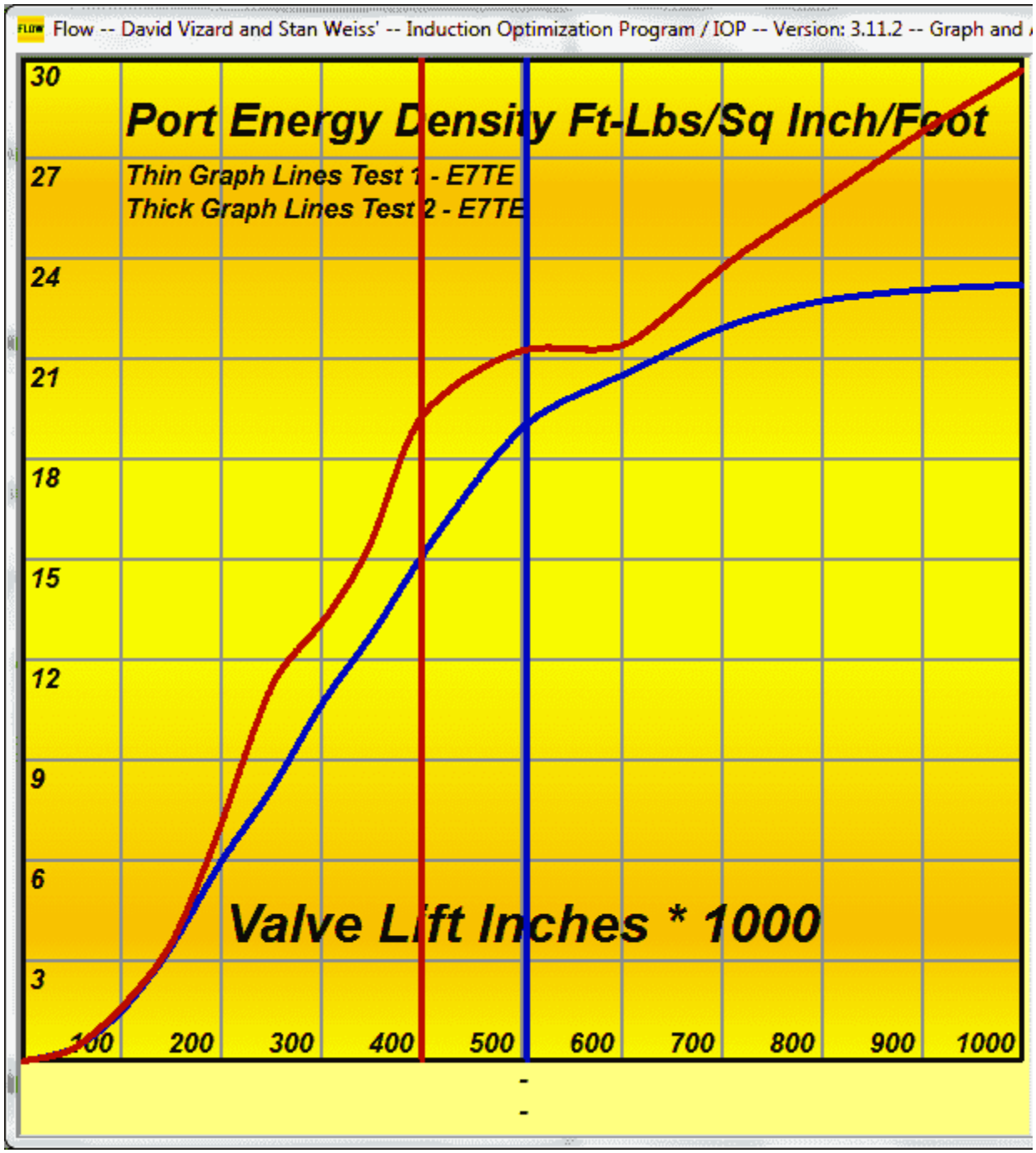


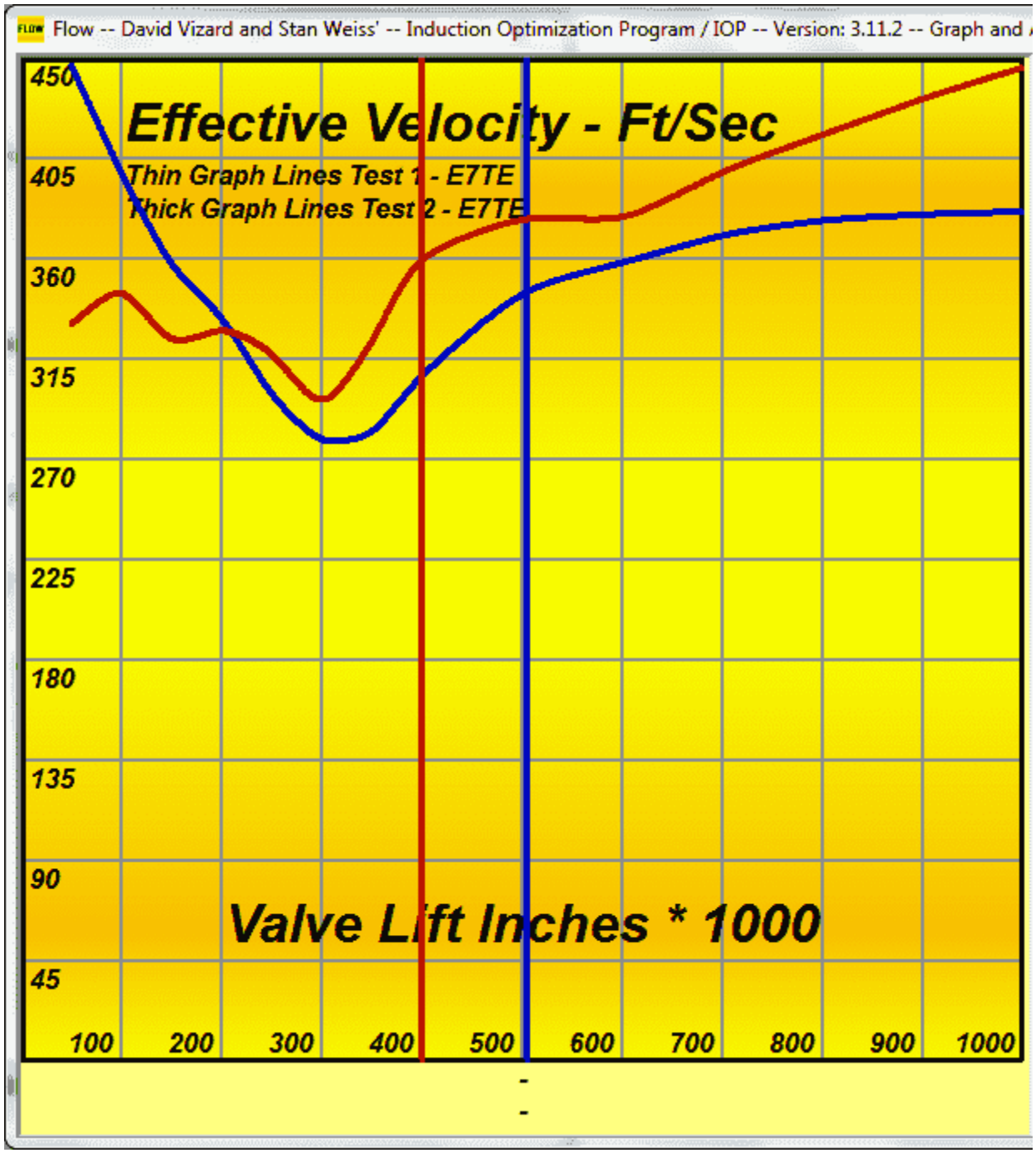
This Show a Line on the Graph @ .650 Valve Lift because the USER entered that Value.

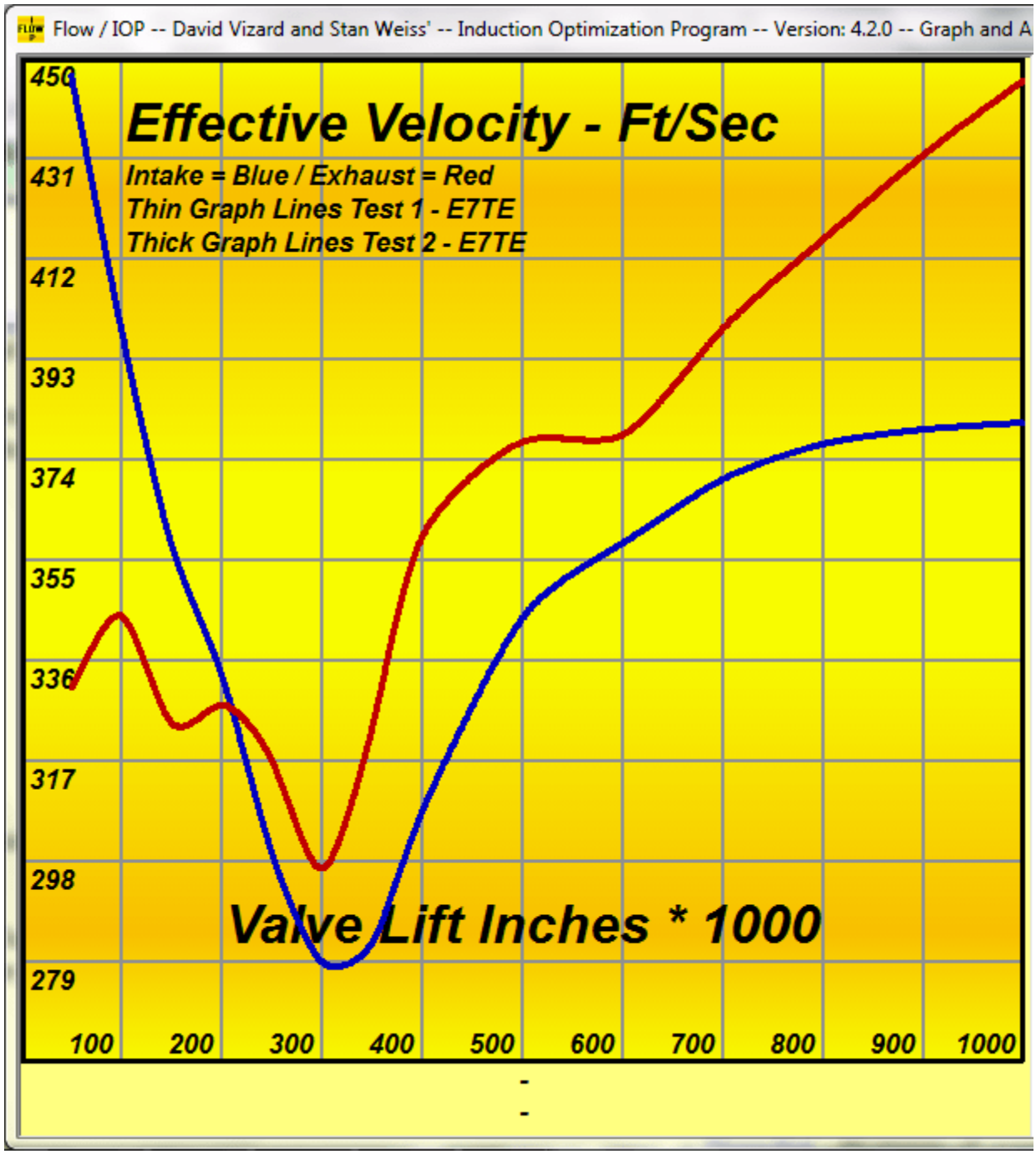

Flow -- David Vizard and Stan Weiss' -- Induction Optimization Program / IOP -- Version: 3.11.2 -- Graph and
CFM Sq In
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
150
140
130
120
110
100
90
80
70
60
Valve Lift Inches * 1000
100
200
300
400
500
600
700
800
900
1000

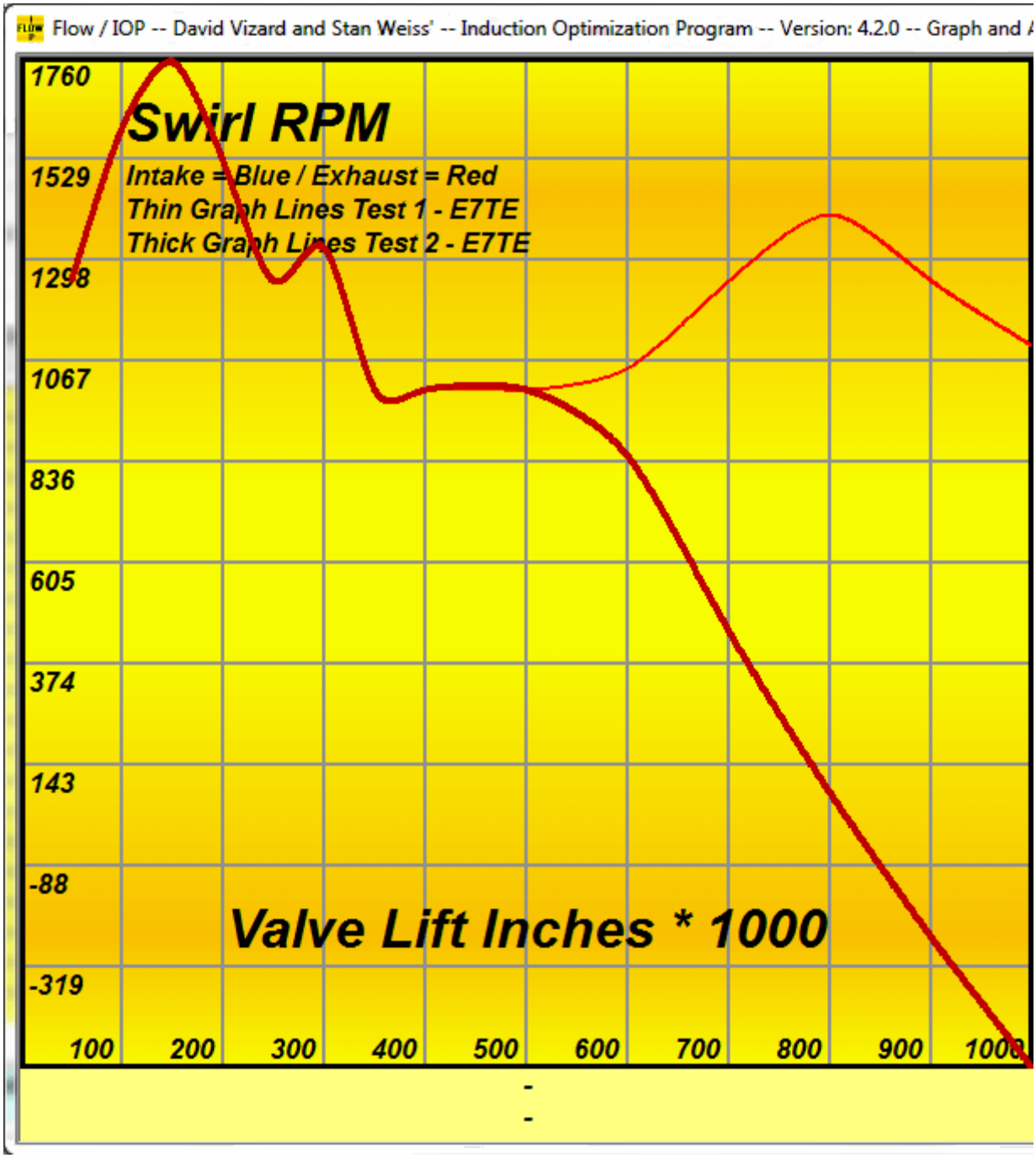

Flow -- David Vizard and Stan Weiss' -- Induction Optimization Program / IOP -- Version: 3.11.2 -- Graph and
Port Velocity - Ft/Sec
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
340
306
272
238
204
170
136
102
68
34
Valve Lift Inches * 1000
100
200
300
400
500
600
700
800
900
1000

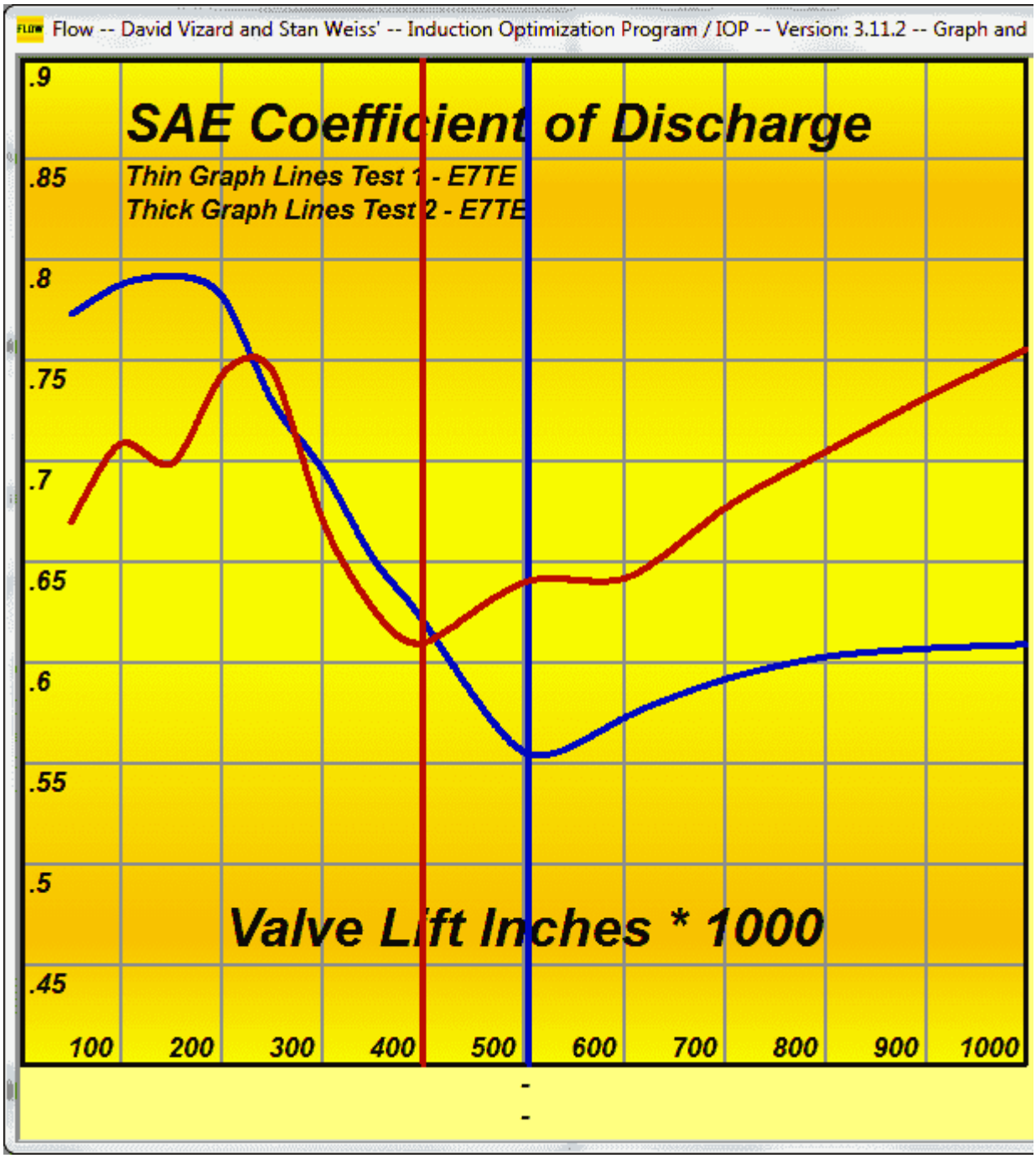

Flow -- David Vizard and Stan Weiss' -- Induction Optimization Program / IOP -- Version: 3.11.2 -- Graph and
Port Energy - Ft/Lbs
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
24
21.6
19.2
16.8
14.4
12
9.6
7.2
4.8
2.4
Valve Lift Inches * 1000
100
200
300
400
500
600
700
800
900
1000

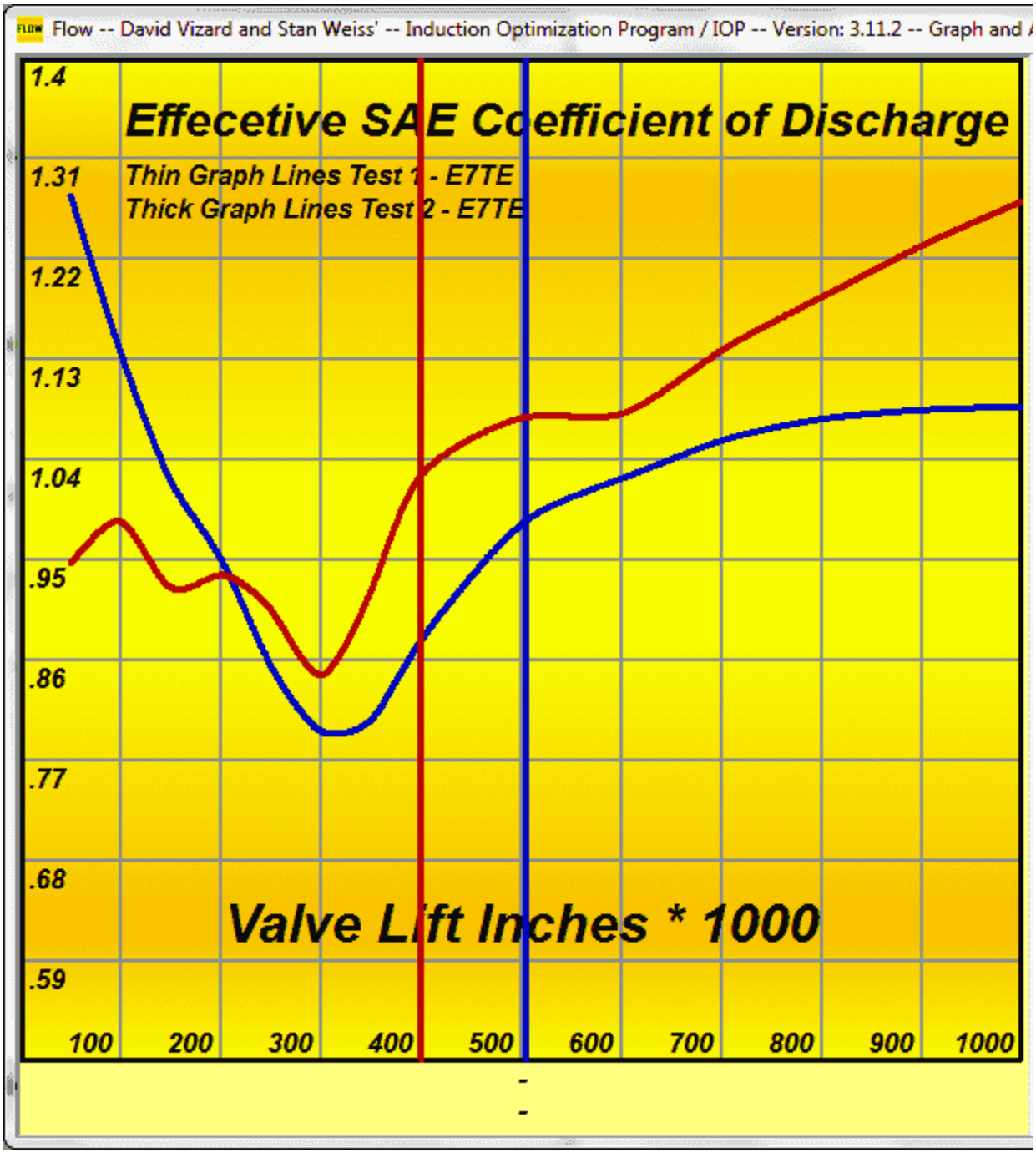

Flow -- David Vizard and Stan Weiss' -- Induction Optimization Program / IOP -- Version: 3.11.2 -- Graph and
Port Energy Density Ft-Lbs/Sq Inch/Foot
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
30
27
24
21
18
15
12
9
6
3
Valve Lift Inches * 1000
100
200
300
400
500
600
700
800
900
1000

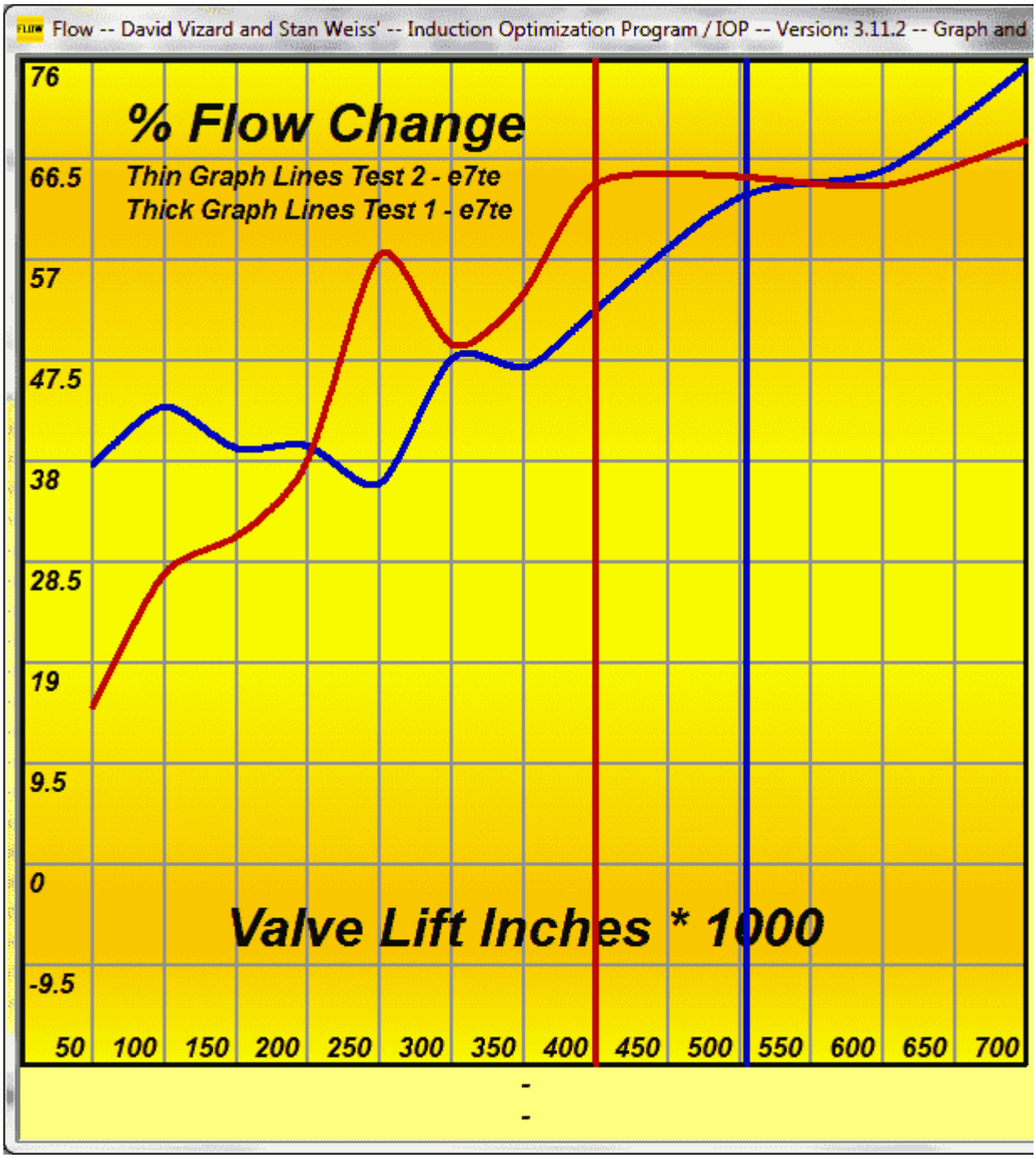

Flow -- David Vizard and Stan Weiss' -- Induction Optimization Program / IOP -- Version: 3.11.2 -- Graph and
Effective Velocity - Ft/Sec
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
450
405
360
315
270
225
180
135
90
45
Valve Lift Inches * 1000
100
200
300
400
500
600
700
800
900
1000

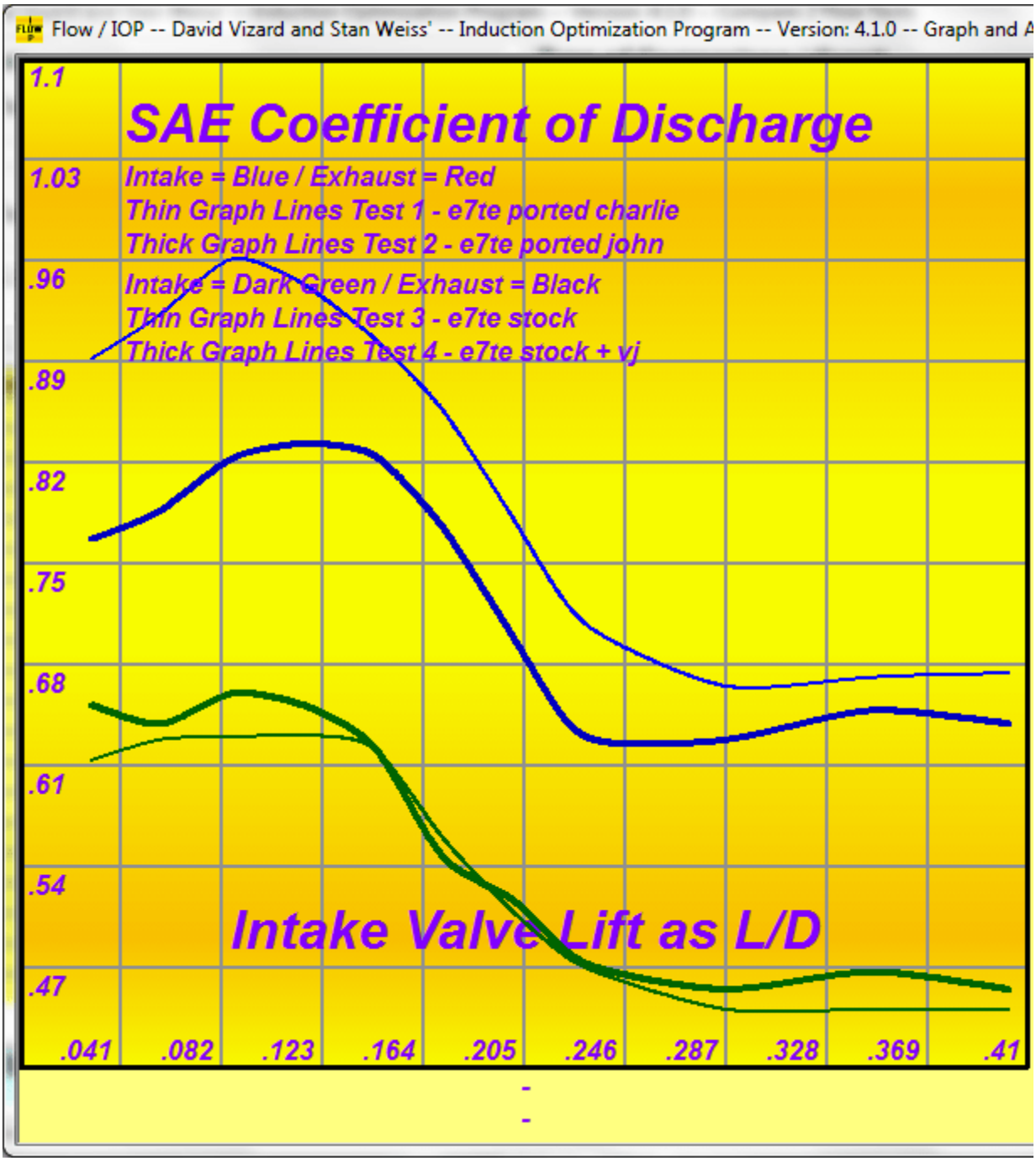

Flow / IOP -- David Vizard and Stan Weiss' -- Induction Optimization Program -- Version: 4.2.0 -- Graph and A
Effective Velocity - Ft/Sec
Intake = Blue / Exhaust = Red
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
450
431
412
393
374
355
336
317
298
279
Valve Lift Inches * 1000
100
200
300
400
500
600
700
800
900
1000


Flow / IOP -- David Vizard and Stan Weiss' -- Induction Optimization Program -- Version: 4.2.0 -- Graph and A
1760
Swirl RPM
1529
Intake = Blue / Exhaust = Red
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
1298
1067
836
605
374
143
-88
Valve Lift Inches * 1000
-319
100
200
300
400
500
600
700
800
900
1000


Flow -- David Vizard and Stan Weiss' -- Induction Optimization Program / IOP -- Version: 3.11.2 -- Graph and
SAE Coefficient of Discharge
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
.9
.85
.8
.75
.7
.65
.6
.55
.5
.45
Valve Lift Inches * 1000
100
200
300
400
500
600
700
800
900
1000


Flow -- David Vizard and Stan Weiss' -- Induction Optimization Program / IOP -- Version: 3.11.2 -- Graph and
Effecetive SAE Coefficient of Discharge
Thin Graph Lines Test 1 - E7TE
Thick Graph Lines Test 2 - E7TE
1.4
1.31
1.22
1.13
1.04
.95
.86
.77
.68
.59
Valve Lift Inches * 1000
100
200
300
400
500
600
700
800
900
1000


Flow -- David Vizard and Stan Weiss' -- Induction Optimization Program / IOP -- Version: 3.11.2 -- Graph and
% Flow Change
Thin Graph Lines Test 2 - e7te
Thick Graph Lines Test 1 - e7te
76
66.5
57
47.5
38
28.5
19
9.5
0
-9.5
Valve Lift Inches * 1000
50
100
150
200
250
300
350
400
450
500
550
600
650
700



This is an example of using the Graph Plus to show more than 2 Flow Tests on the same Graph.

First a Graph is produced Comparing Flow Test #1 and Flow test #2. Then it was changed to Compare Flow Test #3 and Flow Test #4. You then click the Graph Plus button to add that to the current Graph.

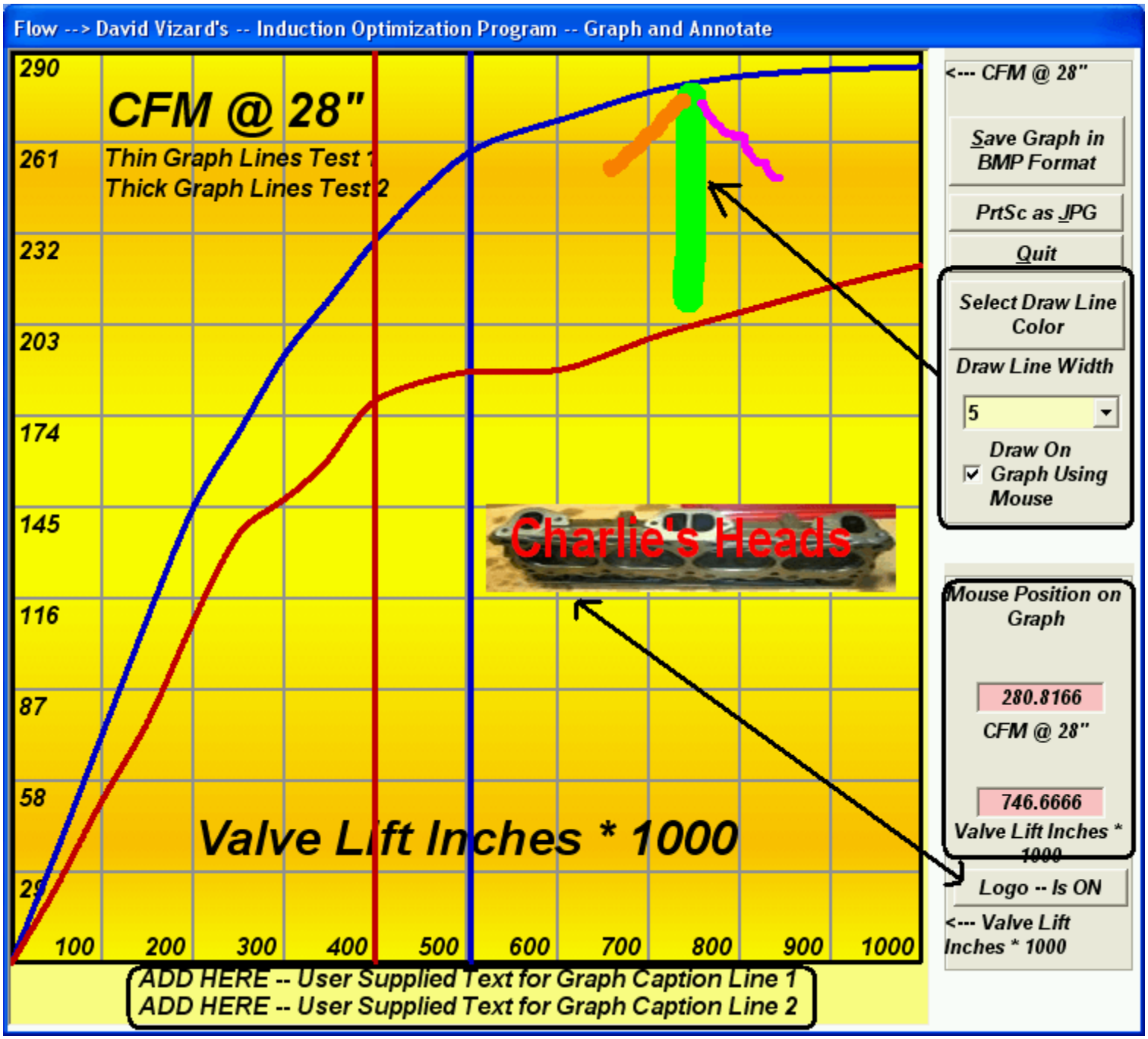
This is also an example to show the USER can change the color used to display the captions

Stan Weiss' Performance LLC
Philadelphia PA 19111-4922

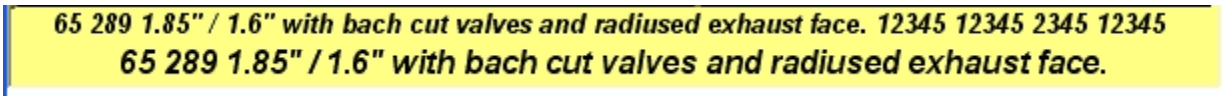
Customer Name: _____ **Printed: Sunday March 12 2023 10:58:52**

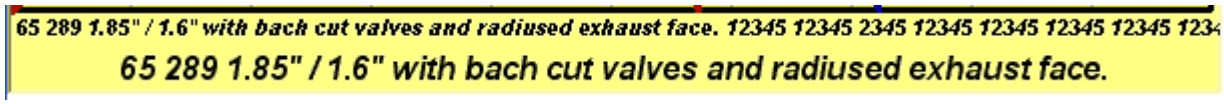
Order / Invoice #: _____

.25D In/Ex	Test 1 - e7te ported cha 435.0	365.0	Test 2 - e7te ported john 435.0	365.0		Intake Diff.	Exhaust Diff.
Actual Valve Lift Inch	CFM Corrected Intake	CFM Corrected Exhaust	CFM Corrected Intake	CFM Corrected Exhaust	Actual Valve Lift Inch		
0	0.0	0.0	0.0	0.0	0	0.0	0.0
50	35.6	25.6	30.6	22.0	50	-5.0	-3.6
100	73.7	55.8	62.8	55.0	100	-10.9	-0.8
150	115.0	81.7	98.5	85.0	150	-16.5	3.3
200	150.7	106.5	133.0	110.0	200	-17.7	3.5
250	180.8	122.0	164.6	130.0	250	-16.2	8.0
300	205.0	132.0	185.5	142.0	300	-19.5	10.0
350	218.0	142.0	195.0	148.0	350	-23.0	6.0
400	226.0	149.0	201.0	154.0	400	-25.0	5.0
500	231.0	159.0	218.0	154.0	500	-13.0	-5.0
600	233.0	163.0	225.0	150.0	600	-8.0	-13.0
700	234.0	166.0	222.0	147.0	700	-12.0	-19.0
0	0.0	0.0	0.0	0.0	0	0.0	0.0
0	0.0	0.0	0.0	0.0	0	0.0	0.0
0	0.0	0.0	0.0	0.0	0	0.0	0.0



The text entered by the User on the bottom of the compare flow test screen, will be displayed at the bottom of the Graph. The Program will adjust (reduce) the size of the text to fit as much of the text as possible.



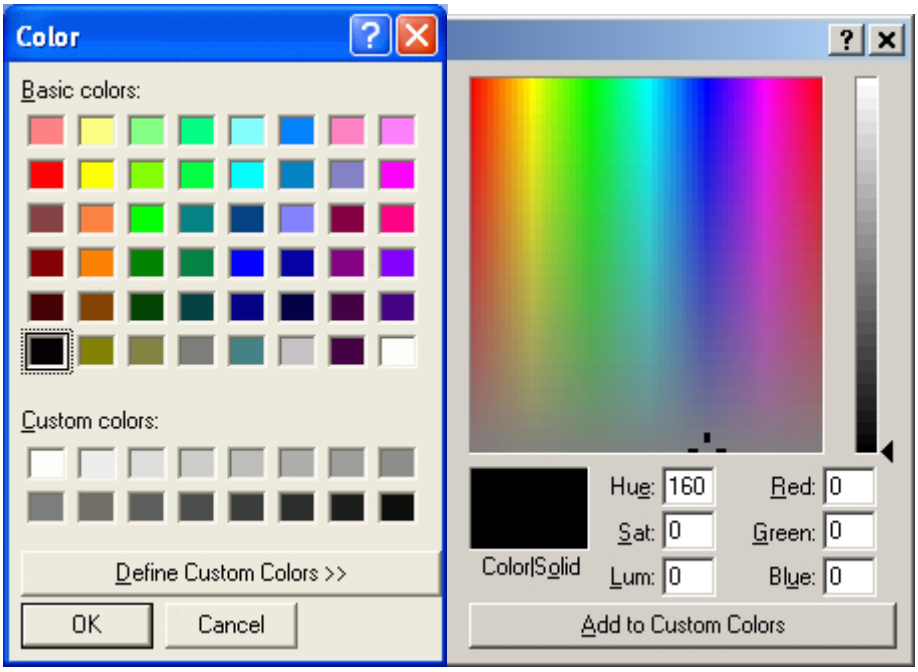


Save as BMP – Will save the graph to disc in BMP format.

If the **Draw Box is checked** you can use the mouse to draw on the Graph. Place the mouse pointer where on the graph you want to draw. Hold down the left mouse button and just move the mouse, when done

just release the button. You can use different size (**Draw Line Width**) and color (**Select Draw Line Color** – See below) lines to create shapes, like the multi colored arrow above.

The user can customize the color which is used to draw on the graph.



Placing the mouse on the graph the program will show the User the X and Y values for that position on the graph, these values will be updated as the User moves the mouse along the curve.

Logo Button - Lets the User load his own Logo for display on all of the Graphs that the program produces. The user can than drag the Logo to any position on each Graph where they want it to appear. The Logo can be in “BMP” “GIF” or “JPG” format. Please **NOTE** that the LOGO will not be scaled or resized by the program.


Cylinder Head Porters
Induction Optimization Program
IOP
Welcome to Your 30 Day FREE Trial
Enter
The air flow program for heads, intake manifolds and carbs or throttle bodies that channels porting efforts to an optimum in a shorter time. This program will result in more power than any other flow program.
Written for head porters by head porters
Authored by:- David Vizard & Stan Weiss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What's New – In This Version

— 4.5.1 —

Modified on the Compare 2 Flow Test Screen. The Print Calcs report has been change to try and stop a long from flow test description from oversetting.

— 4.5.0 —

Added the two white boxes labeled Valve Lift 1 and Valve lift 2. These let the USER enter a value so that the program will draw a Horizontal line at these points on the Graph
Modified the on the Main Screen how "Cyl. Head Airflow HP Limitation" works / calculated.

— 4.4.0 —

Added an Option on the Graph Form to PRINT the Form.

— 4.3.5 —

Fixed Bug when there was negative Swirl and Calculating / Graphing % Change it was ignore.

— 4.3.4 —

Modified the File Filter for importing Flow Data..
Modified some Input Field Validation.

— 4.3.3 —
Modified the Max Lift Value error message.

— 4.3.2 —
Fixed the program so that the sort option now also includes the swirl, Intake floating depression, and exhaust floating depression fields.

— 4.3.1 —
Modified the program so that if you have loaded your Company Information / Data or Logo. When you exit the program, that information will be saved, so that it can be loaded back automatically when the program is reloaded.

— 4.3.0 —
Modified the Graph Plus Option so that % Change Options will now work.
Added the two white boxes labeled Y Axis Low and Y Axis High. These let the USER override the program calculated values for the Y Axis when producing a Graph.
Adjust Caption Spacing on Graph to try and stop oversetting when using “Can Use Nonstandard Aspect Ratio for Graph” and “Use Full Screen Resolution”
Move the “Setup Flow Data File Preloads” from under the “Files” button to the Main screen.
Fixed Bug Where the Load / Done button would only Load 1 of the Selected Flow Data Files.
Remove any reference to Invoice Number on the Program Validation Form and Generated Email since purchasers no longer get an Invoice Number.

— 4.2.1 —
Modified the Preload menu option screen. The USER now has a Get Flow File Names button which lets the USER search the IOP / Flow Program Folder and Select a IOP / Flow Data File Name. There is also a new button which lets the USER load these Selection without closing and reopening the program.

— 4.2.0 —
Added a new menu option. The USER can enter IOP / Flow Data File Names, which the program will load as the program itself loads.
Made a change so that negative swirl numbers can be entered into a Flow Test.
Made a change so that negative swirl numbers will show on a Graph when Comparing 2 Flow Tests.
Added a “Show Big” button when Checked this will cause the Program to Calculate the Low Y_Axis Value for the Graph instead of Using Zero for Effective Velocity, and Swirl.

— 4.1.0 —
Added a new button on the Compare 2 Flow Test Screen. “Graph Plus”. After you have produced a Graph the Graph Plus button lets you Compare 2 more Flow Tests and add them to your present Graph. There is a limit of 4 Test that can be displayed.

— 4.0.0 —
Added an Option on the Main screen to Print the Company Information on Text Reports either Flush Left or Flush Right and Your Logo at the top of the page. You can still Print the Company Information Centered and Your Logo at the button of the page (Note: This is still the default).
Added an Option on the Compare 2 Flow Tests screen to Print a Text report of the Calculated Data.

Added Options on the Compare 2 Flow Tests screen to Graph % Change for all other Graph Options.

— 3.13.8 —

Added Showing Load Data File Name on Flow Sheet
Added Showing whether a Pipe was Used on Flow Sheet
Added Showing Average Exhaust / Intake Ratio on Flow Sheet

— 3.13.7 —

Maintenance

— 3.13.6 —

Fixed problem if the Hard Drive was Replaced / Changed / Cloned and the USER got a Drive Serial Number Error

— 3.13.5 —

Fixed problem on CD and Effective CD Graphs when the lowest CD was lower than the lower limit.

— 3.13.2 —

Added Throat Diameter and Throat Area to the Printed Flow Sheet.
On a couple of forms added some Mouse over Comments.

— 3.13.1 —

Maintenance

— 3.13.0 —

Added an option to "Show Data Points on Graph".

— 3.12.0 —

Added an option to Print a Flow Sheet.
Added Calculate Total and Average CFM for both Intake and Exhaust flow

— 3.11.11—

I added “I” and “P” to icon to form IOP.

— 3.11.10—

I redid the coding for the trail / xxx Day Free version(s).

— 3.11.x —

I have made a number of changes to the % Flow Change Graph.

— 3.11.1 —

If when doing a Graph.the User has not changed or remove the "User Supplied Text for Graph Caption Line 1 -- ADD HERE" or "User Supplied Text for Graph Caption Line 2 -- ADD HERE" they will be replaced by a ”-“ on the graph.

— 3.11.0 —
I have added a new Graph.% Flow Change verses Valve Lift or L/D Ratio.

— 3.10.1 —
"**Import PTPFA Data**" What I have done is check if the flow depression for a given lift point is different than the base flow depression, if so I have add those numbers on page 2 in the Floating Depression columns (these columns were added in Version 3.9.0).

— 3.10.0 —
I have made a change so that you can now import flow data from a Desktop Dyno or Dynomation file.

— 3.9.1 —
I have made a change to the Flow Test Captions Displayed on the Graphs. They will now pickup and show the "Part #" field along with the flow test number. I have also changed what shows on the graph if the from and to flow tests are the same. It will now show only a single line.

— 3.9.0 —
On All Screens added a button so that the screen / form can be minimized
Added option so that each Intake and Exhaust lift / flow point can have its own depression value.
Made Change so that Correx now has 4 decimal places

— 3.8.1 —
On the Main Screen added validation for Mach # and CR.

— 3.8.0 —
On the Compare 2 Flow Test screen. Modified the Graph option to correctly handle lift points where either the intake or exhaust is zero.
On the Compare 2 Flow Test screen. Fixed the option to “Have the Program Automatically Adjust the # of lines for the X-Axis.” To work correctly when Metric was selected.

— 3.7.6 —
Made changes so that the program correctly handles the CANCEL option when you get an error while reading one of the different input files.
Made change so that Correx now has 3 decimal places

— 3.7.5 —
Made changes so that the program correctly handles the zero lines and produces a correct Graph

— 3.7.4 —
Made a change where if the first and second lines had zero lift and the USER tried to graph that Flow Test the program would not cause and error and stop running. But the generated Graph was not correct.

— 3.7.3 —

Made a change for how the Effect Valve Area is calculated. I had used the already calculated Throat Area. Since this is a rounded value it did cause a small error. I now use the full calculated Throat Area.
Added some code to trap other errors and produce the error message, but let the program continue to run.
Changed so on the text report the Program will not show the unused / Zero lift value lines.
Changed the link to the web page about / purchase Torque Master Cams.

— 3.7.2 —

Added code which should trap an error, but will still produce the error message, then will let the program continue to run.

— 3.7.1 – 3.7.0 —

Added code for 90 Day trail and made adjustment for PRI.

— 3.6.1 —

Since we now have a web page about / purchase Torque Master Cams. I have added a button to the box on the main screen which can be clicked and take the person to that web page.

— 3.6.0 —

On the Compare 2 Flow Test screen. Added an option to “Have the Program Automatically Adjust the # of lines for the X-Axis.” This option only works if “Valve Lift” is also selected.

— 3.5.2 —

Changed so that User Selected Font Color for the Graphs will be saved to the GUI file and can then to read back in a later time.

— 3.5.1 —

Changed so that L/D Ratio for X-Axis is Rounded to the next higher second decimal place

— 3.5.0 —

Added 2 new Graphing Options - Intake against L/D Ratio - Exhaust against L/D Ratio
Added Menu Option so the User can Select what Color the Text on the Graph should be.
Modified the Graph code so that the 2 Flow tests being compared do not have to have the same number of lift points or max lift.

— 3.4.0 —

Added Logic to handle Multi Intake and Exhaust Valves

— 3.3.0 —

There are 2 new Buttons on the Flow Screens

"**Import PTPFA Data**" This will Import flow data and other information from a Performance Trends - Port Flow Analyzer file. It will also change the Bore, Stroke, Number of Cylinders and CR on the Main screen. Please let me know if you have any problems. I will need the "PTI" file that you are trying to use.

"**Export Flow Data**" This will Export the flow data to a "DFW" file. A number of Engine Simulation Programs (ex. Dynomation and Performance Trends - Engine Analyzer) can then read the flow data in without the User having to retype it.

— 3.2.0 —

Made a changes to the email and Registration Form to include Invoice Number and Purchaser Name.

— 3.1.0 —

Made a change so that on the first running of the program it will offer to email the information on the Registration Screen to Customer Service.

— 3.0.1 —

Made a change so when data Alignment is set to Flush Right, trail zeros are not removed
On Graph Screen - Rewrote routine to better reduce font size for User caption line.

— 3.0.0 —

Added User Selectable Entry GUI Options
Added Read / Open User GUI Options File
Added Write / Save User GUI Options to a File

— 2.2.6 —

On the main screen - some heading were no correctly change from Standard to Metric and back, also Mean port area lost a decimal place going back and forth.

Fixed problem where program would add an extra character to the comments when it loaded in the last saved file.

On Flow Test(s) Page 2 Fixed Problem where Comments / Text could not be entered.

— 2.2.5 —

I have added on the Flow Test, and Text Report – L/ D ratio for both the Intake and Exhaust
Fixed minor problem with the Sort Function

— 2.2.4 —

I have added on the Flow Test, Compare Flow Tests / Graphing, Text Report - Effective SAE CD

— 2.2.3 —

I have added graphing SAE CD and also some pop up text for some of the radio buttons.

— 2.2.2 —

There are two New Input Fields on the Flow Test CR and Max Lift. There are also two New Output fields "Required In/Ex Rat" and "Existing In/Ex Rat".

— 2.2.1 —

On the Main screen an option has been added to SAVE and also Load the Main screen data to a file.

A Comments / Notes box has also been added.

When the program is closed it will write the Main Screen data to a file and the next time the program is loaded it will automatically read that data back in so the Main Screen will have the same data as the last time you

used the program.

The Main Screen Comment / Notes field will also show on the Text Report.

— 2.2.0 —

A New Menu Item has been added which lets the User change the Mouse cursor back to the Standard Arrow. You can also add a /mp to the Programs Properties to have this happen automatically on program startup.

On the Flow test there is a new button called "Sort" This will sort the flow data by "Actual Valve Lift" What this does is let you insert or remove a row without have to retype the already entered data.

- Have changed the logic so that when you Tab to the next cell it is highlighted. If you just start to type it will delete the data that is in that cell. If you want to just change one number you just use the arrow keys to move to that number.
- Have changed the Tabbing order for the top of the screen. If you highlight the "28" Test Pressure you can Tab through this part of the screen

— 2.1.1 —

Fixed a problem on the Main screen where "Airflow HP limitation" used 8 cylinders for that calculation. It now uses the user entered Number of Cylinders.
The Effective Velocity Graph was changed so that it will not show zero lift / zero velocity.

— 2.1.0 —

This version has had a validation form added. The User then has to forward the displayed information to us and then will receive and Unlock Key.

— 2.0.0 —

There have been a number of Aesthetic changes made to the background color of both data and column headings and some verbiage changes which I believe made things somewhat clearer for the end User.

— 1.1.5 —

1) The Splash Screen has been moved to a separate form which lets it be displayed at its normal aspect ratio.
2) The comments text box has been removed from the Flow Test Screen and replace with a "Next Entry Page (2)" button. A larger comments box appears on this page.
3) A new set of area and velocity columns has been added. These differ from the first page in that low lift numbers will use the User entered valve seat angle and valve seat width to calculate area and velocity. The higher numbers differ from the first page as max area will be throat area - valve stem area.
4) A column has been added for swirl.

All of these changes should work in both US and Metric and on all reports and graphs.

1) I have made the changes to the calculations on the main page.
2) Changed the verbiage for the next page button and made the text larger
3) Changed the headings on page 2 from Actual to Effective.

I have add some calculations at the bottom of the main page. Since port cc's, port length and port volume are like 3 sides of a right triangle. If you have 2 you can calculate the third.

1) Changed the Flow Test screen so that the top and bottom corner radius can be entered separately.
2) Fixed a bug where the area was calculated incorrectly if in Metric mode. Therefor Area Ratio would also be incorrect.

3) Since there is no enough room for a detailed heading I have made it so when you move the mouse over the heading it will display a more detailed message down below.
4) On the Text Report I have added a "Clear All" and "Select All' Buttons.

1) On the main screen a red bar ahs been added to indicate if you moved the mouse over it would show additional information in the popup yellow box. I have added a red bar to indicate this.
2) An explanation has been added on screen for what the red bad means.
3) On the Compare 2 Flow Test screen. The per sq/inch Option now calculates the difference.

— 1.1.4 —

1) On the Main screen a check box has been added. If this box is Checked then the User can Enter 'Peak HP RPM' and the Program will use it to Calculate 'Mean Port Area'. If this box is not checked the program will calculate the 'Peak HP RPM' from User Entered 'Mean Port Area".
2) If you click on File in the upper left hand corner there are 2 new options.
a) Can Use Nonstandard Aspect Ratio for Graph - This is a modifier to "b" and must be selected before selecting "b". The program in basic mode will produce the graph as a square. If you select "b" without first selecting this than the graph will stay square. On many computers selecting this with "b" will cause the graph to be a rectangle.
b) Use Full Screen Resolution - The program will try and expand each screen to use most of the available screen size.
A number of small spacing adjustments have been made to different screen to try and not truncated any data or heads.
Added command line switches
/fs = Full Screen Standard aspect Ratio
/fn = Full Screen Nonstandard aspect Ratio.

— 1.1.3 —

Fixed a problem. Where the port CSA was calculated incorrectly from it's height, width, and correct radius.

— 1.1.2 —

The program has had a * "PrtSc as JPG" * button added to each screen.

— 1.1.1 —

A number of small changes has been made to it all on the flow test screens. The "Correct To" pressure of 28 is now block and can not be changed. The Correx number is now black and is the result of a calculation and cannot be changed. The left column "Actual Valve Lift" is now red to show that this column can be edited by the user. So of the blocks default values have been adjusted as I missed doing this when I added the 3 new rows. I do not know how others enter data. But I like to enter a valve lift and then the intake and exhaust flow for that valve lift. I have redone the tab indexing so that one can tab from 0 lift all of the way to the last row / exhaust value.

— 1.1.0 —

Added 3 additional rows of data.
Made adjustments so previously saved flow tests should load and run without any problems.

— 1.0.10 —

Added the new / larger mouse pointer.

— 1.0.9 —

Have doubled the amount of text that you can enter for the User displayed captions on the graphs.
It is clear that amount of text will not fit at that, size so I have also changed the logic to reduce the size of the text to try to fit the maximum amount on the graph before any gets truncated.

— 1.0.8 —

Have made a number of changes to the software to handle the difference between the "." and "," being used as the decimal point. (User in Sweden had this problem)

— 1.0.7 —

I have added a few new descriptions when the mouse is moved over some of the control buttons
The Compare Flow Tests, Graphs and Text reports have had changes made so they work correctly in metric Mode.

— 1.0.6 —

On the main screen I have added converting HP to KW.
The Metric check box on the Main screen now converts the flow tests to Metric and back
On the Flow Tests the Calculate Button should work in both US and Metric mode.
The Compare Flow Tests, Graphs and Text reports still need to have changes made to work correctly in metric Mode.

— 1.0.5 —

All changes are on the main screen.
Clicking (Checked) the Metric button will convert all data to Metric.
Clicking (Un-Checked) the Metric button will convert all data to US units.
The Calculate button will work and show results based on the status of the Metric button.

— 1.0.0 —

Changed the program so there are now 5 Flow Test.
Added the compare flow test page

All calculations on the opening page done.

Added to the program, able to play a standard "WAV" file.

Port energy graphing added and also has your background for the graphs.
Mach # and power calculations at the end
"Smoothed lines" for the graphs.

1) Increased the size of the caption's font on the graph.
2) Added showing the mouse’s position on the graph.
3) Change the "FROM" Line to be 2 pixels wide and the "TO" Line to be 4 pixels wide.
4) Fixed problem updating fields in the 4th column on the Flow Test screen.
5) Changed from calculating the Y-axis lower and upper limits on the CFM per sq in graph to a fixed values of 50 and 150
6) On the CFM per sq in graph fixed so the 0,0 point is not used in the "Smoothed" Line calculation

Added a Opening / Splash screen.
Changed the program so that when a previously saved flow test is "Loaded" back in the program will recalculate that flow test automatically.

Changed the grid lines on the graph so they are 2 wide instead of 1 and also to gray instead of black.
Added a 3 wide black border to the graph.
Increase the point size of the captions on the graph.

Added 2 text boxes at the bottom of the Compare 2 Flow Tests screen.
Changed the graph screen so that the 2 captions will be displayed under the graph

I have made a number of changes to the Graph Screen
1) You can now select what color to use when drawing on the graph
2) You can now select the line width that is drawn on the graph You are able to use different colors and line widths on a single Graph
3) You can Import a graphic (Logo) and drag it to where on the graph you want it
   Note the Logo will not be saved with the graph as it is not really part of the graph but an overlay.
4) You can save the Graph Screen as a JPG file.
   Note the Logo will be saved with the graph since this is a capture of what is on the screen.