

vForest Tuner Instructions

OrangeVirus Tuning

|

Outline of Instructions

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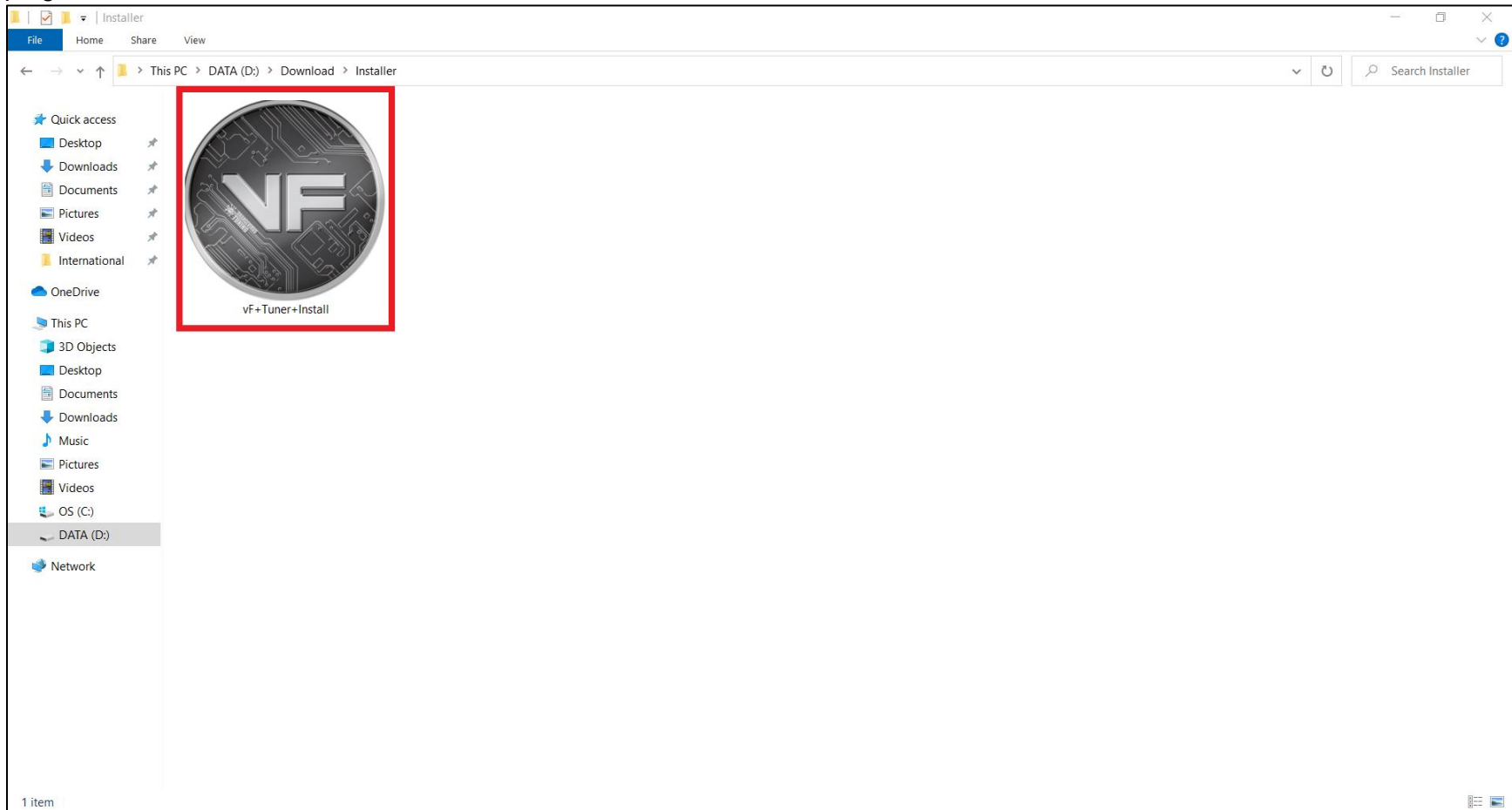
[Under Development Functions](#)

[Functions Coming at the Next Updates](#)

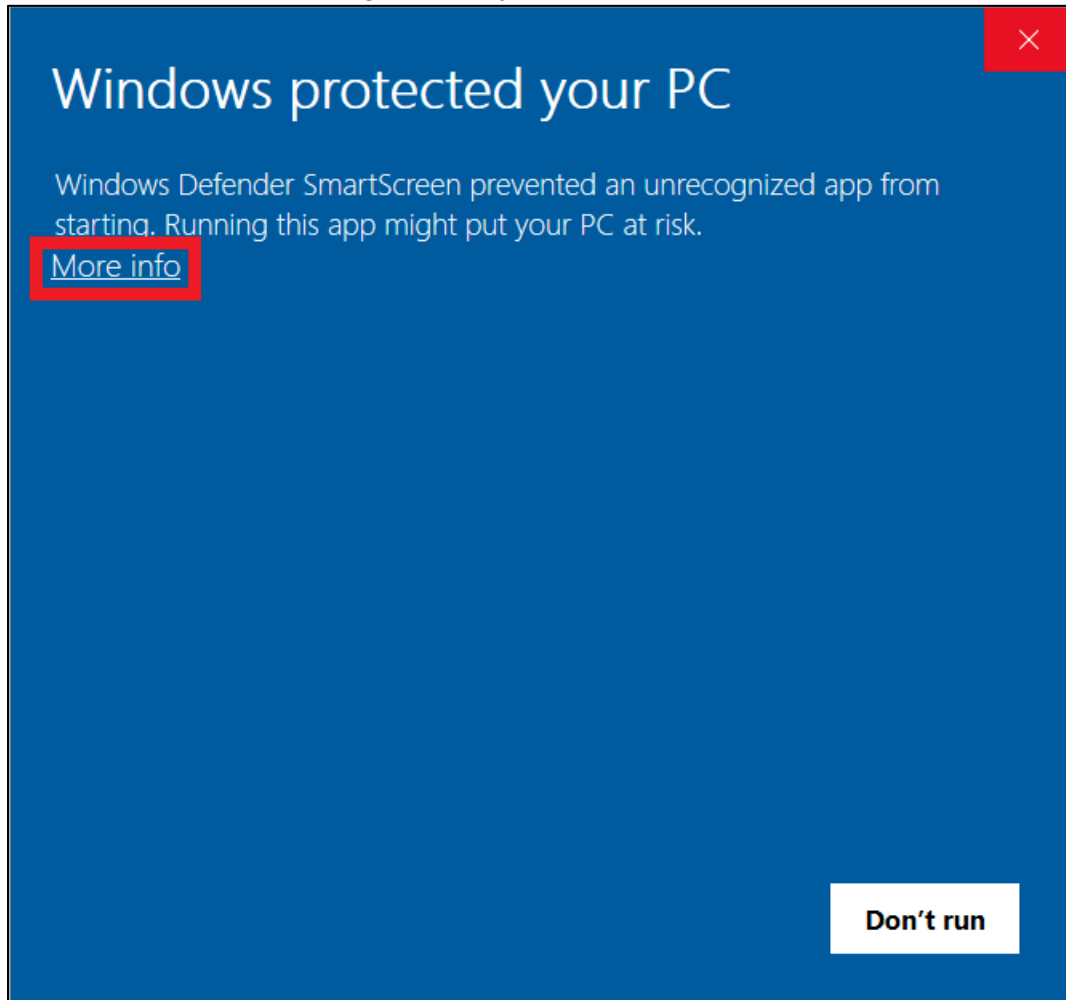
I) INSTALLING THE PROGRAM AND REGISTERING THE PROGRAM

1) Installing the Program

After your download has finished, you will find the file in the folder you downloaded it to. Double left-click on it to start the installation program.



Your Windows Defender might hinder you. Click on the "More Info".



A Windows Defender notification window with a blue background. The title bar is dark blue with a white 'X' icon in the top right corner. The main text reads "Windows protected your PC" in large white font. Below it, in smaller white font, is the message: "Windows Defender SmartScreen prevented an unrecognized app from starting. Running this app might put your PC at risk." A blue link labeled "More info" is highlighted with a red rectangular box. At the bottom right, there is a white button with the text "Don't run" in black.

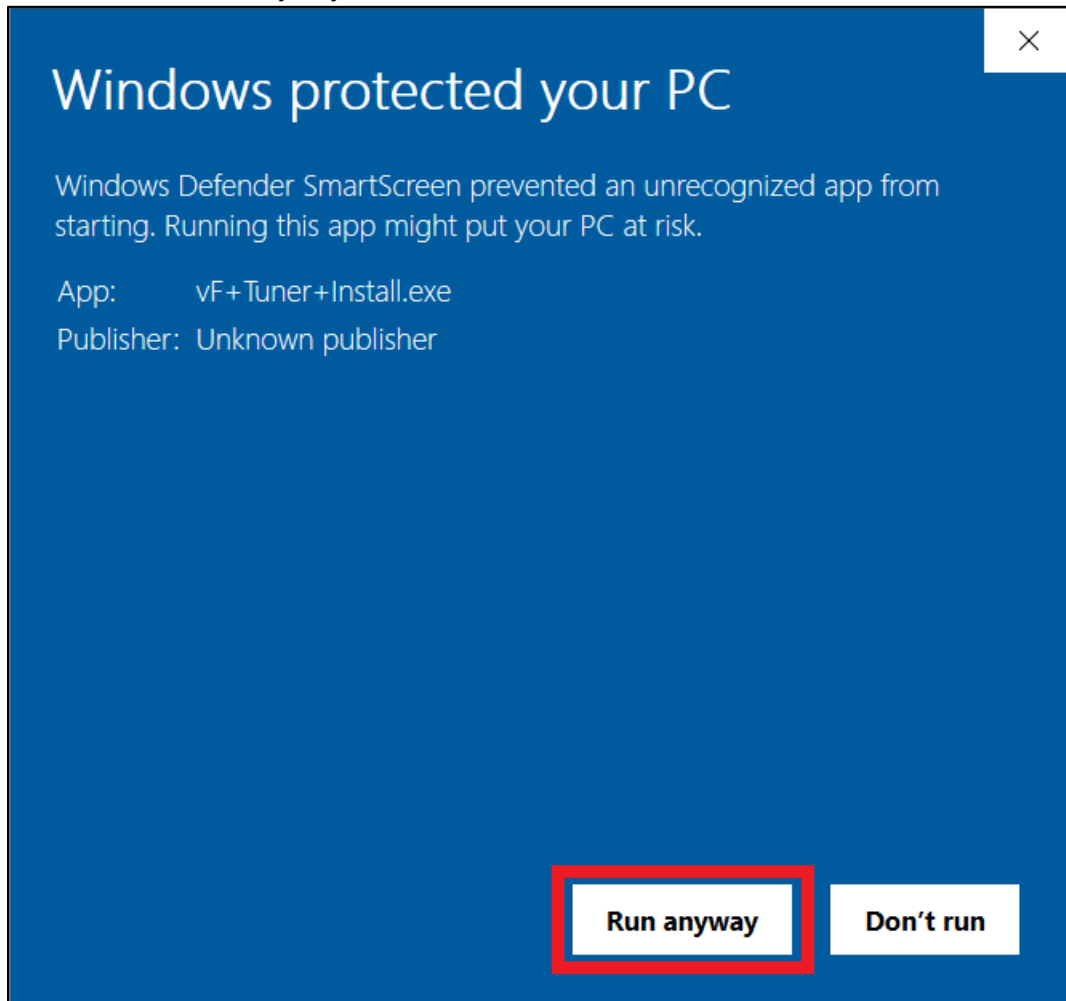
Windows protected your PC

Windows Defender SmartScreen prevented an unrecognized app from starting. Running this app might put your PC at risk.

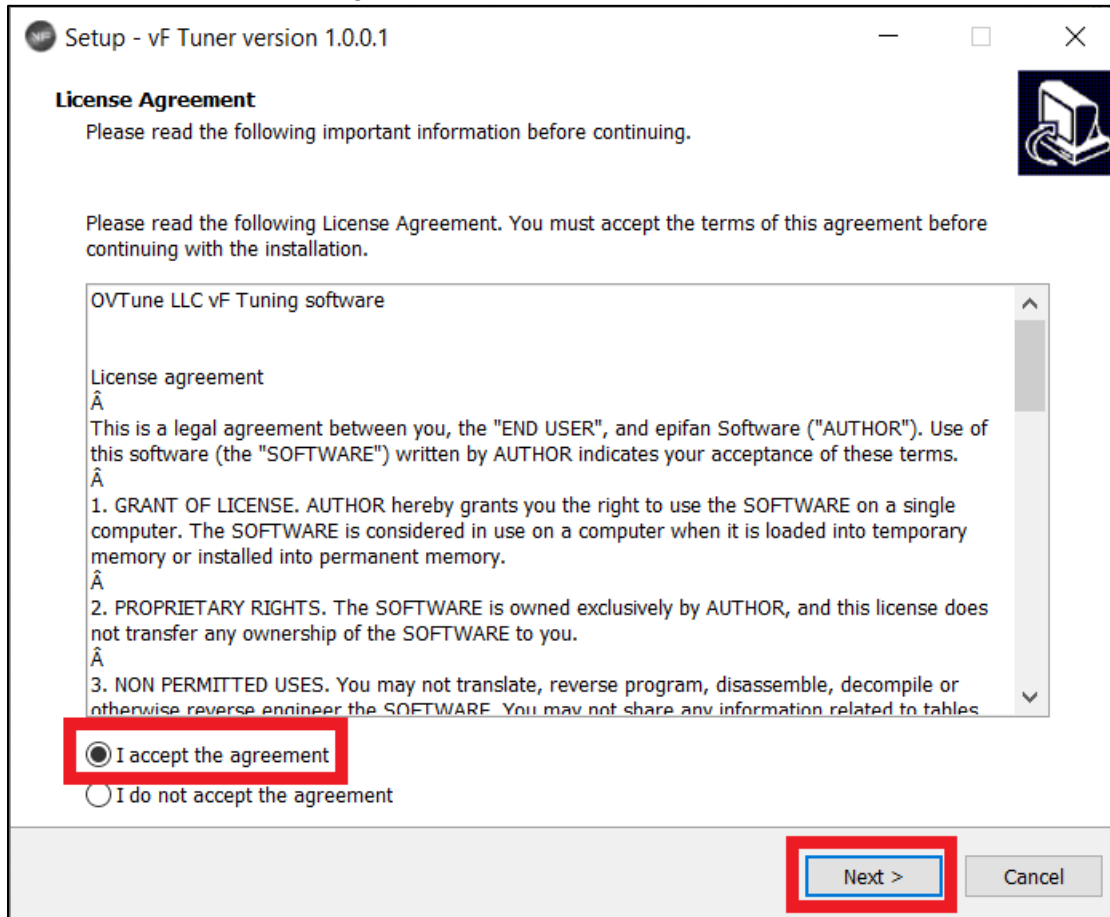
[More info](#)

Don't run

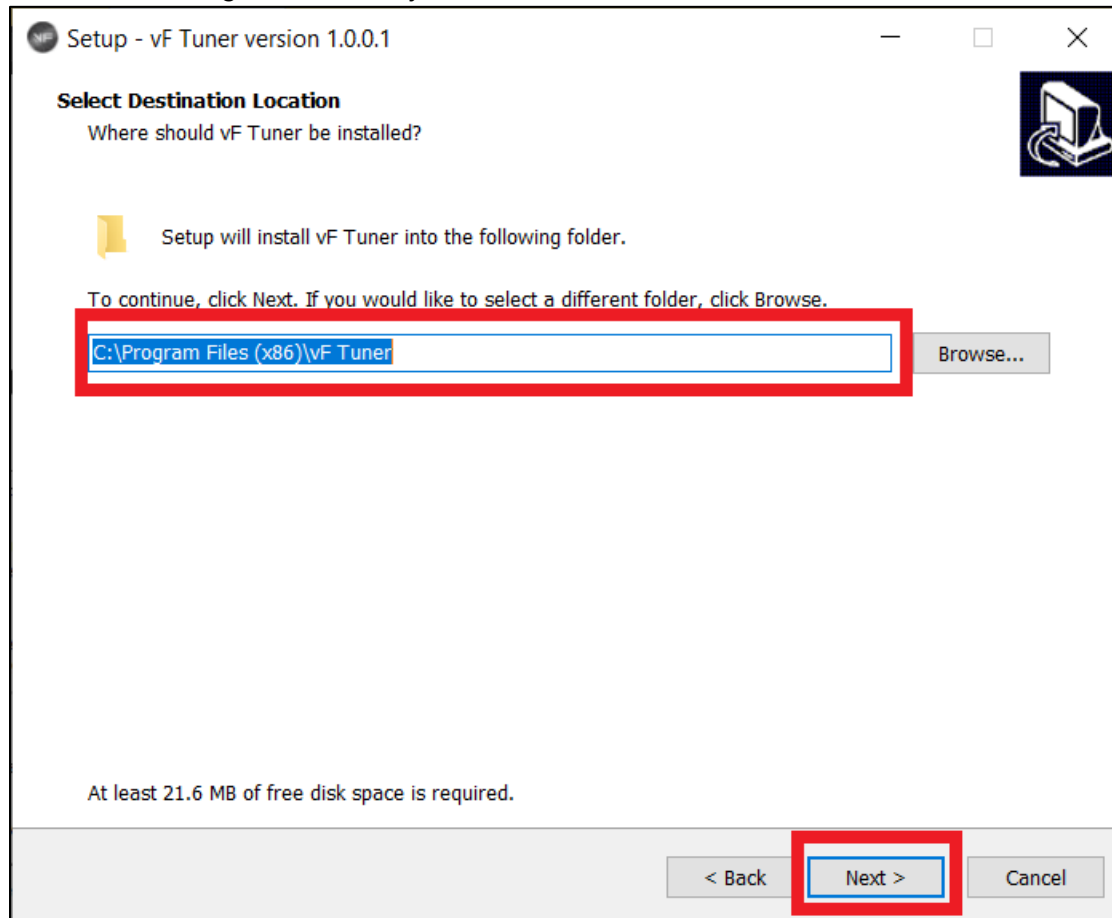
And click on “Run Anyway”



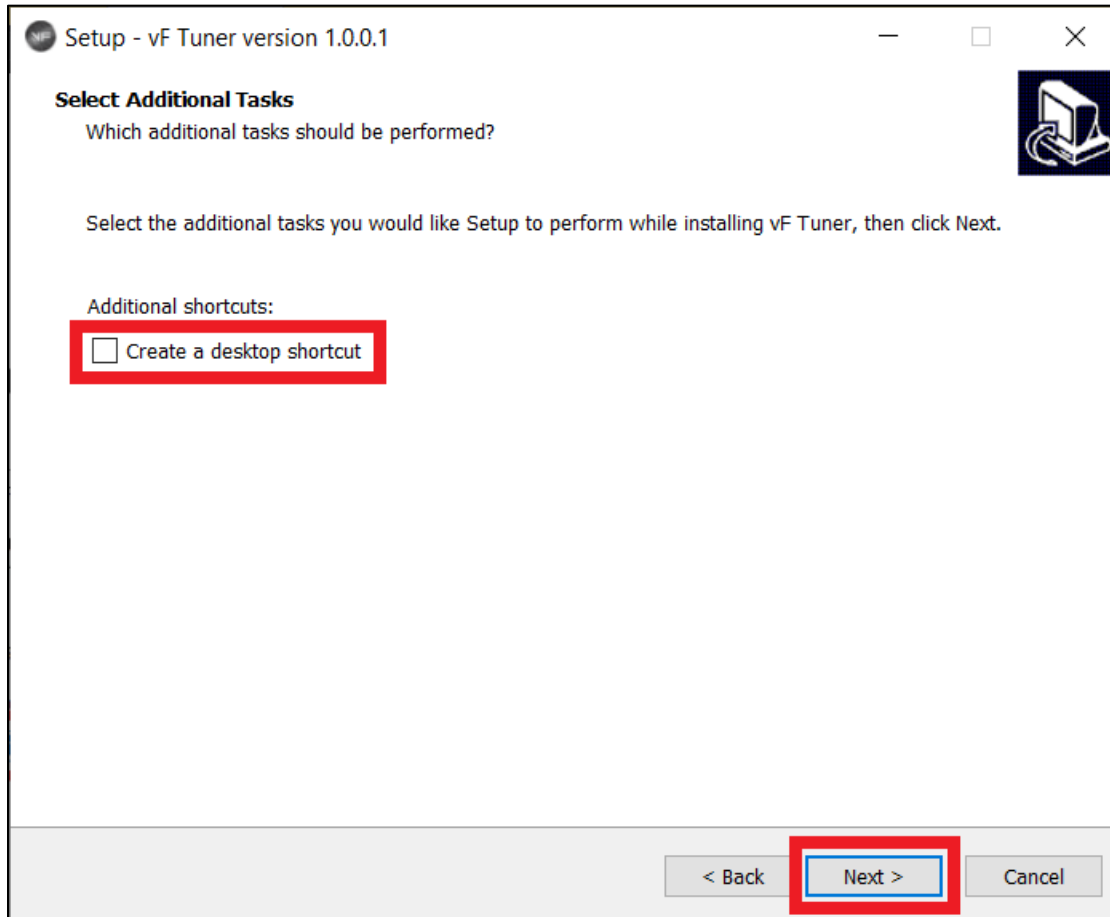
Click on the "I accept the agreement" and then the "Next" button



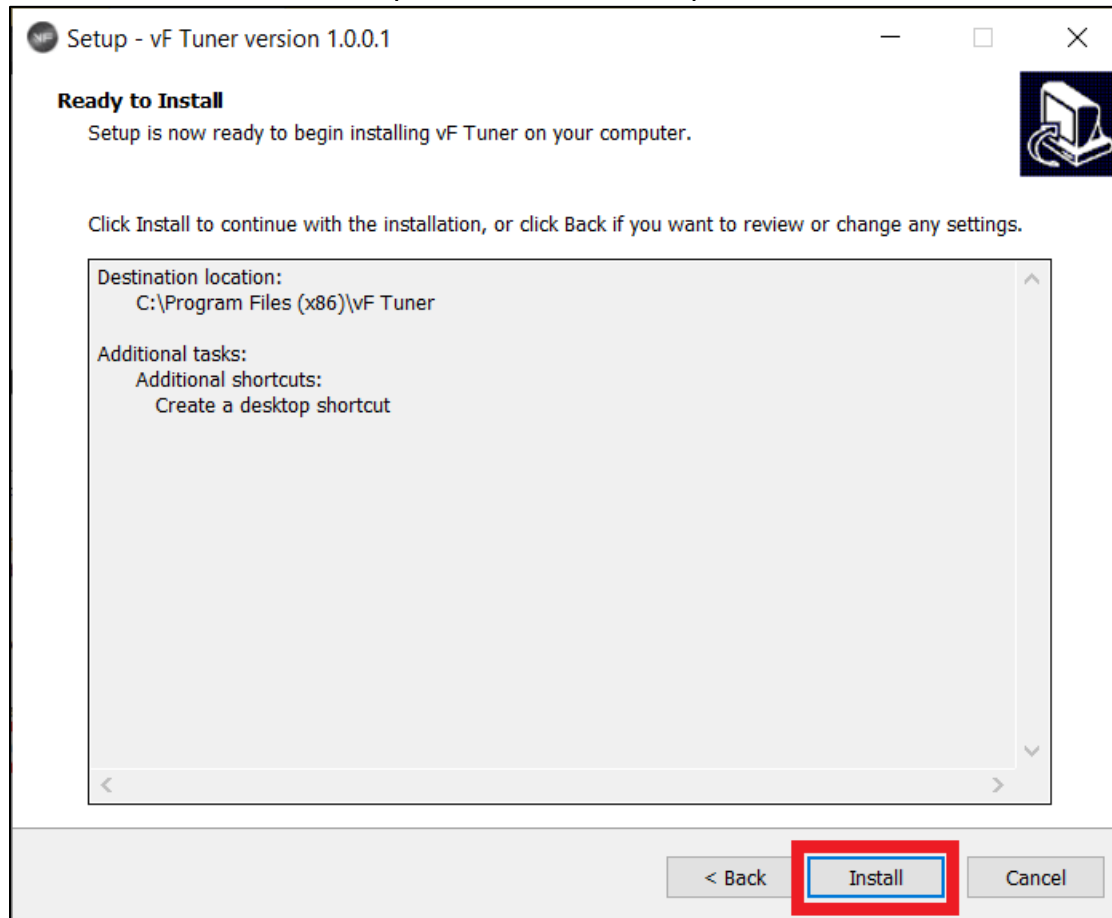
No need to change the directory folder where it will be installed. Click on the “Next” button.



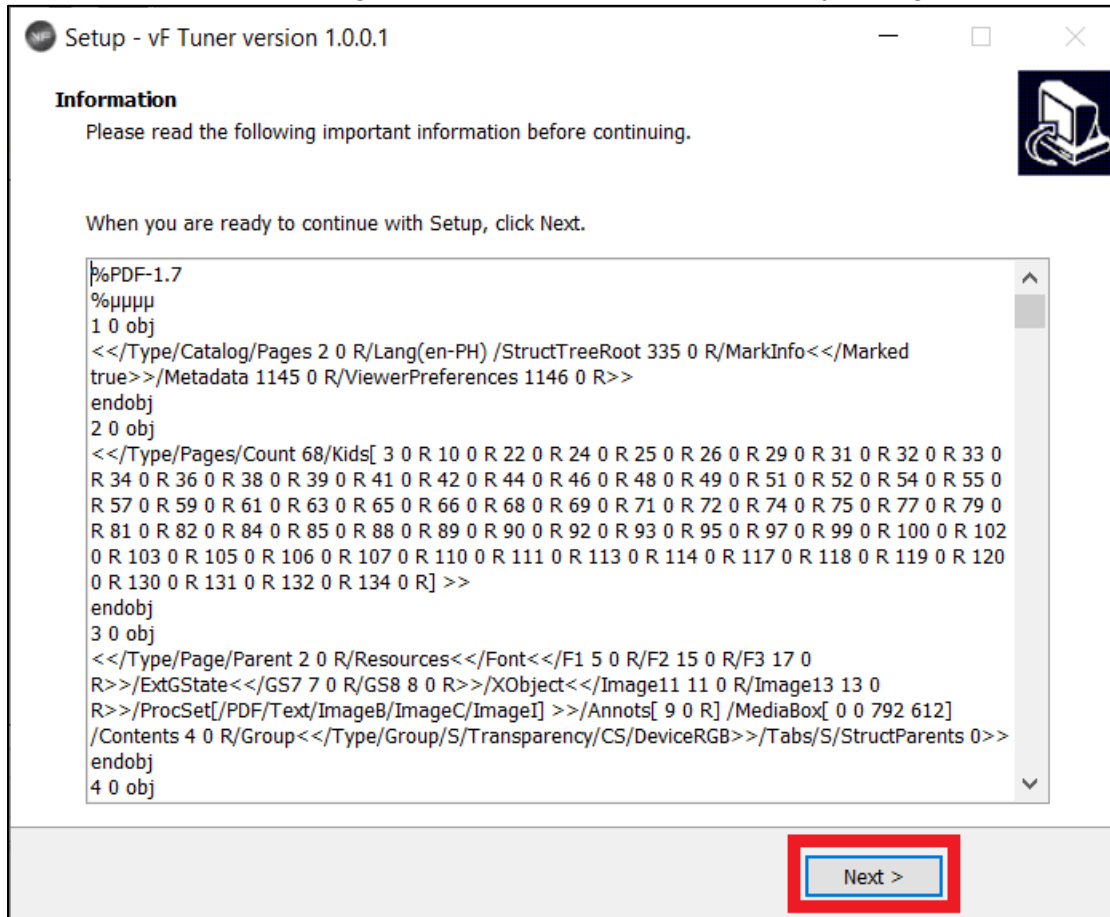
You can check the “Create a desktop shortcut” box if you want a shortcut on your desktop. You can also leave it blank, if not. Click on the “Next” button to proceed



Click on the "Install" button to proceed to the next step



Click on "Next" and the program will be installed, as indicated by a progress bar.



Setup - vF Tuner version 1.0.0.1

Information

Please read the following important information before continuing.

When you are ready to continue with Setup, click Next.

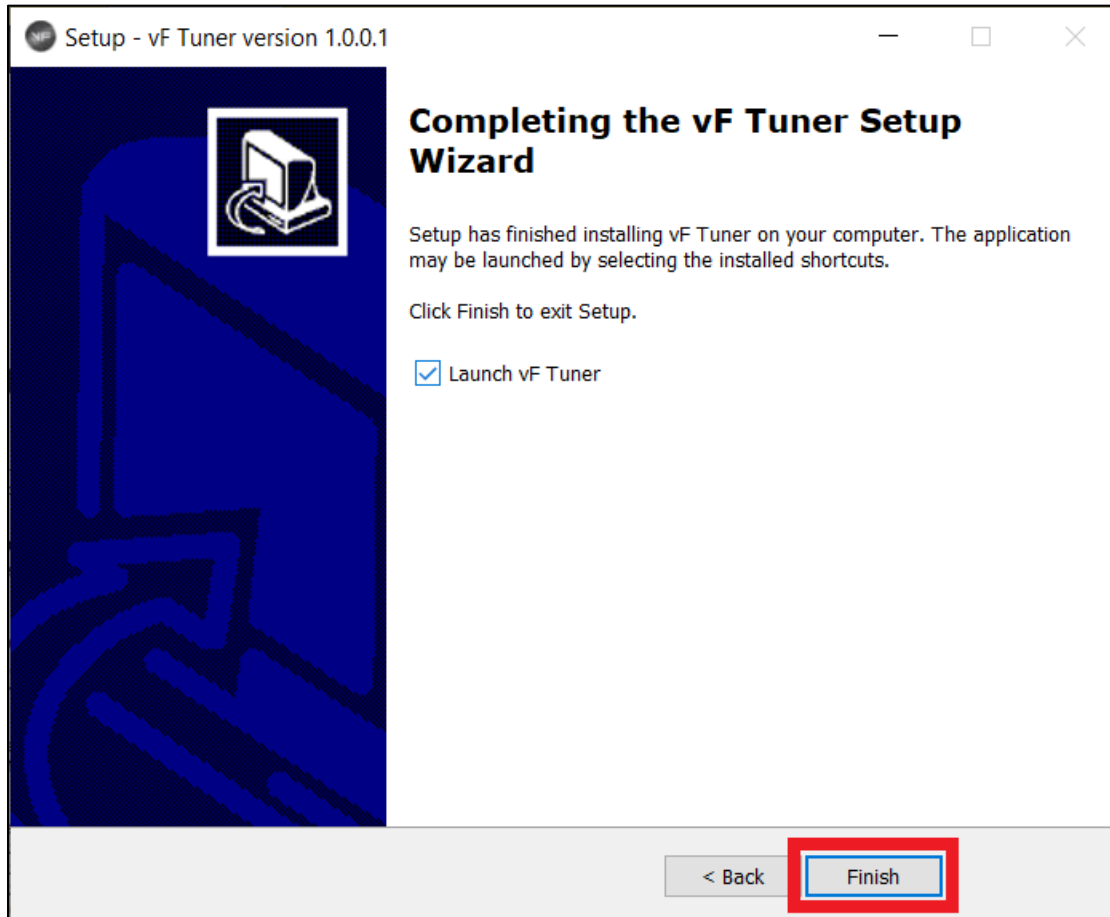
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R 34 0 R 36 0 R 38 0 R 39 0 R 41 0 R 42 0 R 44 0 R 46 0 R 48 0 R 49 0 R 51 0 R 52 0 R 54 0 R 55 0
R 57 0 R 59 0 R 61 0 R 63 0 R 65 0 R 66 0 R 68 0 R 69 0 R 71 0 R 72 0 R 74 0 R 75 0 R 77 0 R 79 0
R 81 0 R 82 0 R 84 0 R 85 0 R 88 0 R 89 0 R 90 0 R 92 0 R 93 0 R 95 0 R 97 0 R 99 0 R 100 0 R 102
0 R 103 0 R 105 0 R 106 0 R 107 0 R 110 0 R 111 0 R 113 0 R 114 0 R 117 0 R 118 0 R 119 0 R 120
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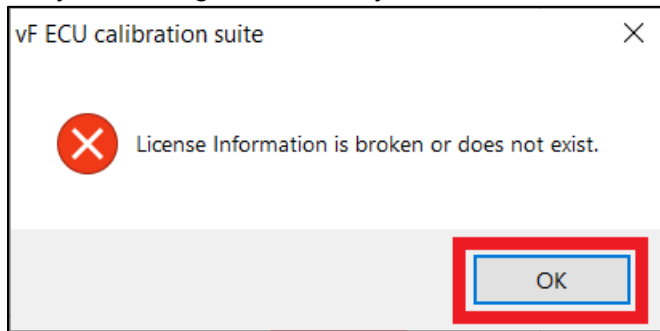
Next >

After the progress bar screen, it'll take you automatically to this window. You can click on "Finish" to launch and complete the installation process



2) Registering Your Program

After you launch/open the program for the first time, it will detect if the program is registered or not. Since it's the first time, it will most likely not be registered. And you'll see this window. Click the "Ok" button to proceed to the registration.



A new window will pop-up. Please make sure you're online/connected to the internet during this part. A Master Key (Serial Key) will be provided for you via e-mail. The email you own where we send the master key will be the email you must input in the "Email" box. You will have to supply your own password, and username (no spaces in the username). The "Register" button will light up when you have filled out all the boxes completely.

vF ECU calibration suite on-line registration

If this is your first time installation a new account will be automatically created for you based on the provided User Name and Password. Please remember the Password as it will be needed later to work with Credit Server (to request more credits, unlock BIN IDs, etc).

Master key (Serial key)
PROVIDED FOR YOU VIA EMAIL

Email
EMAIL SENT WITH MASTER KEY

Password
MAKE YOUR OWN

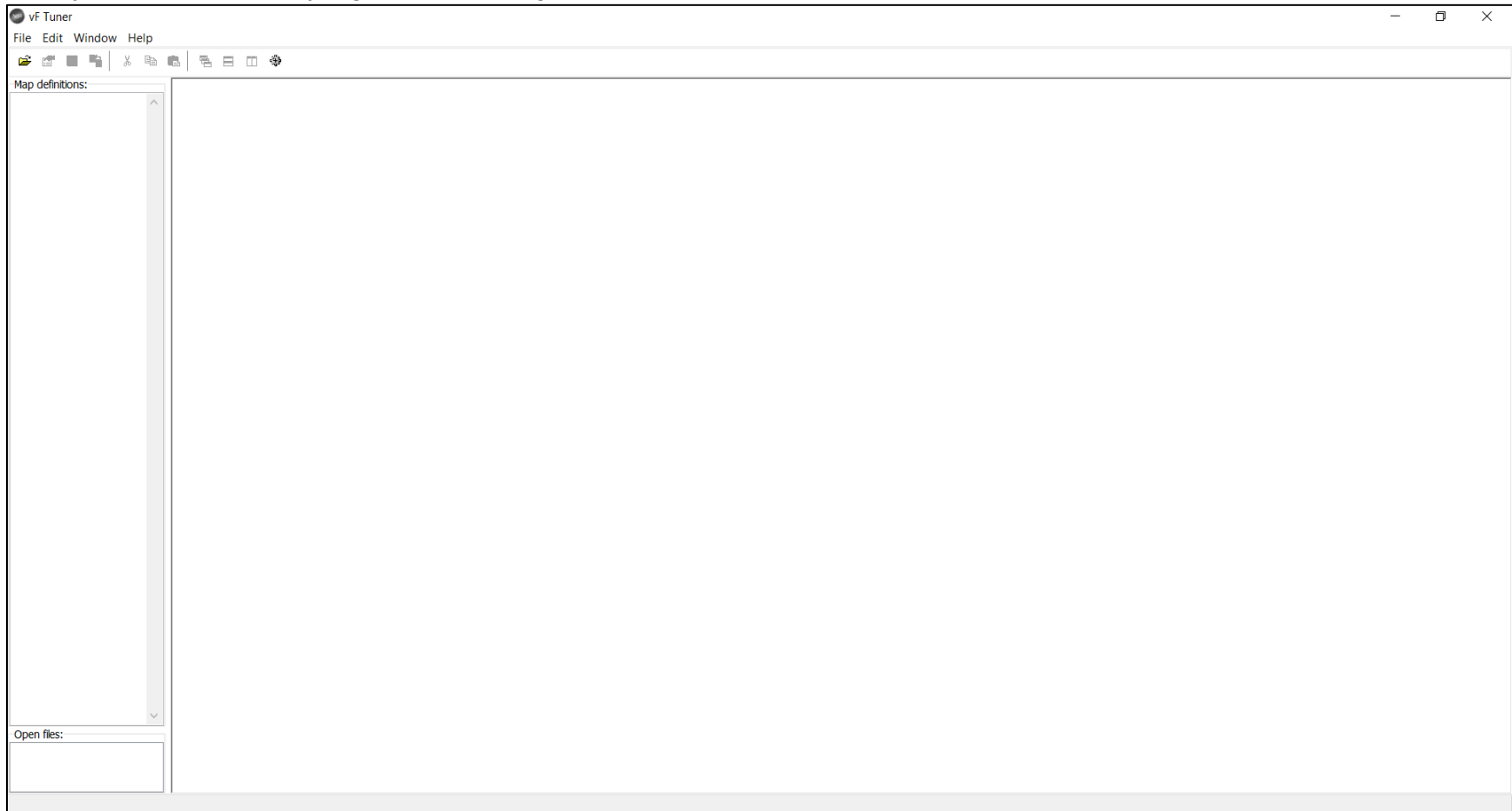
User Name
NAME WITHOUT SPACES

Register Cancel

If you have mistyped the master key/serial key, you'll get this error. Retype the correct Master/Serial key again to proceed.

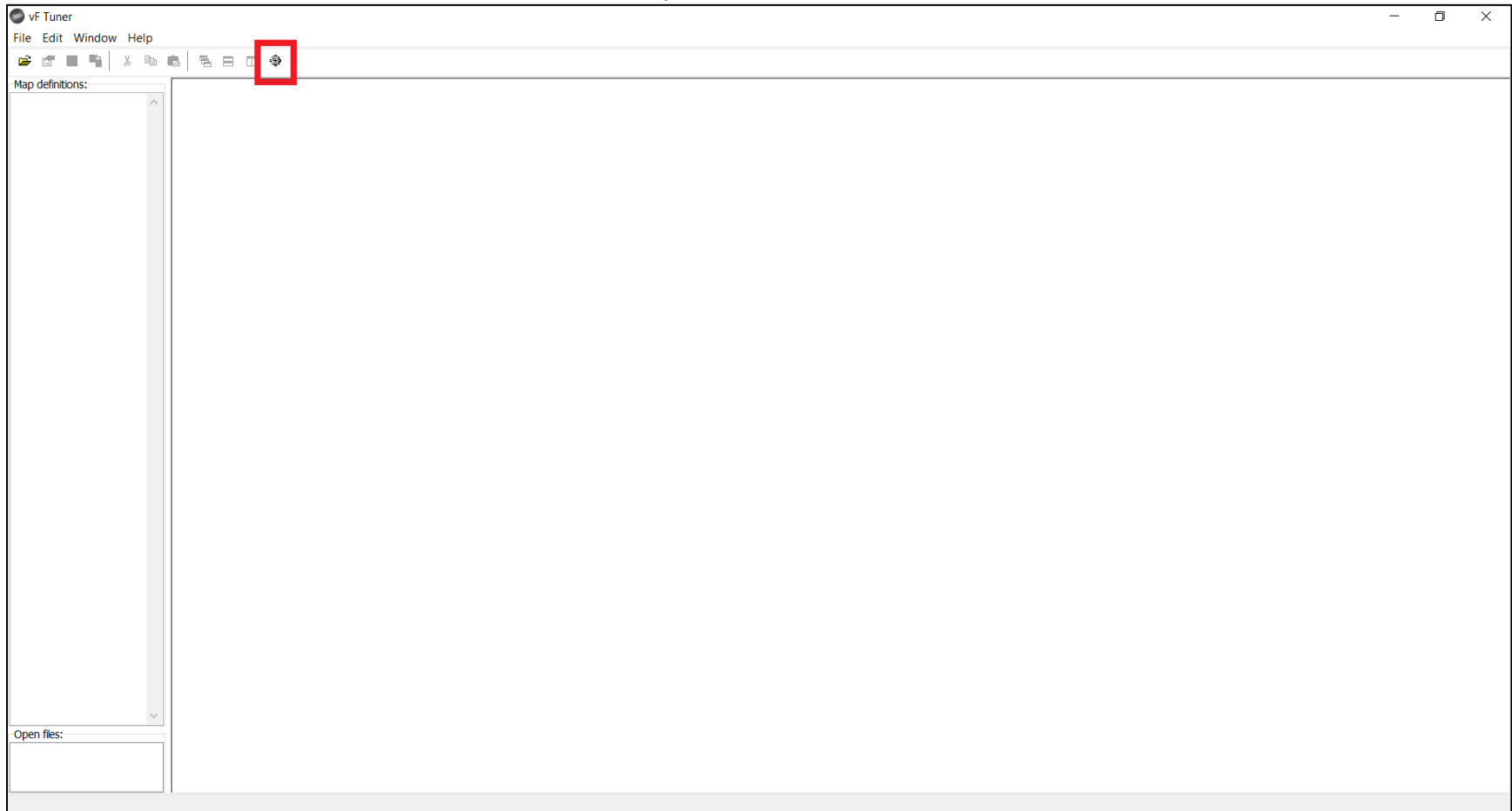


Once you have successfully registered, the program will open

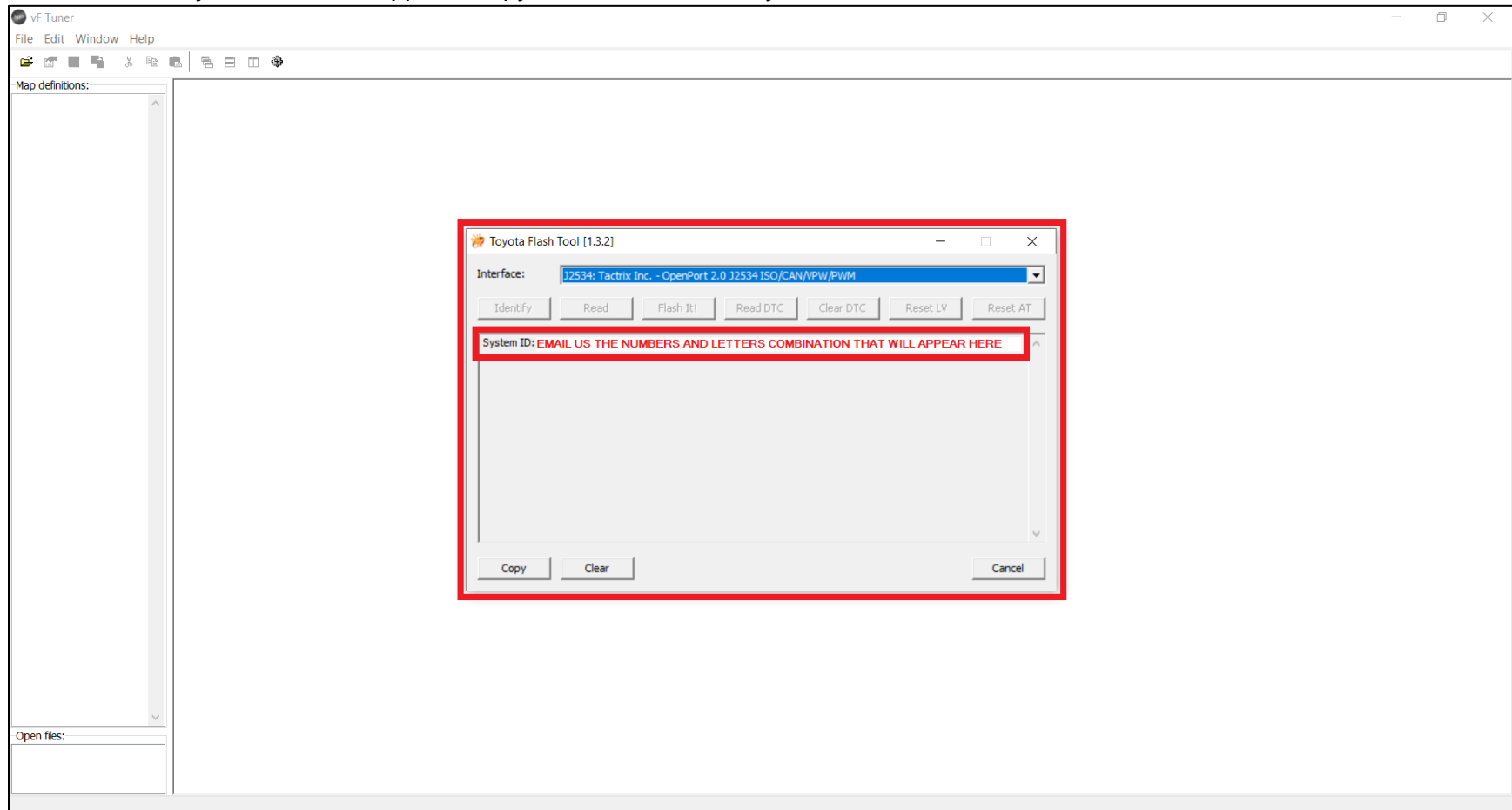


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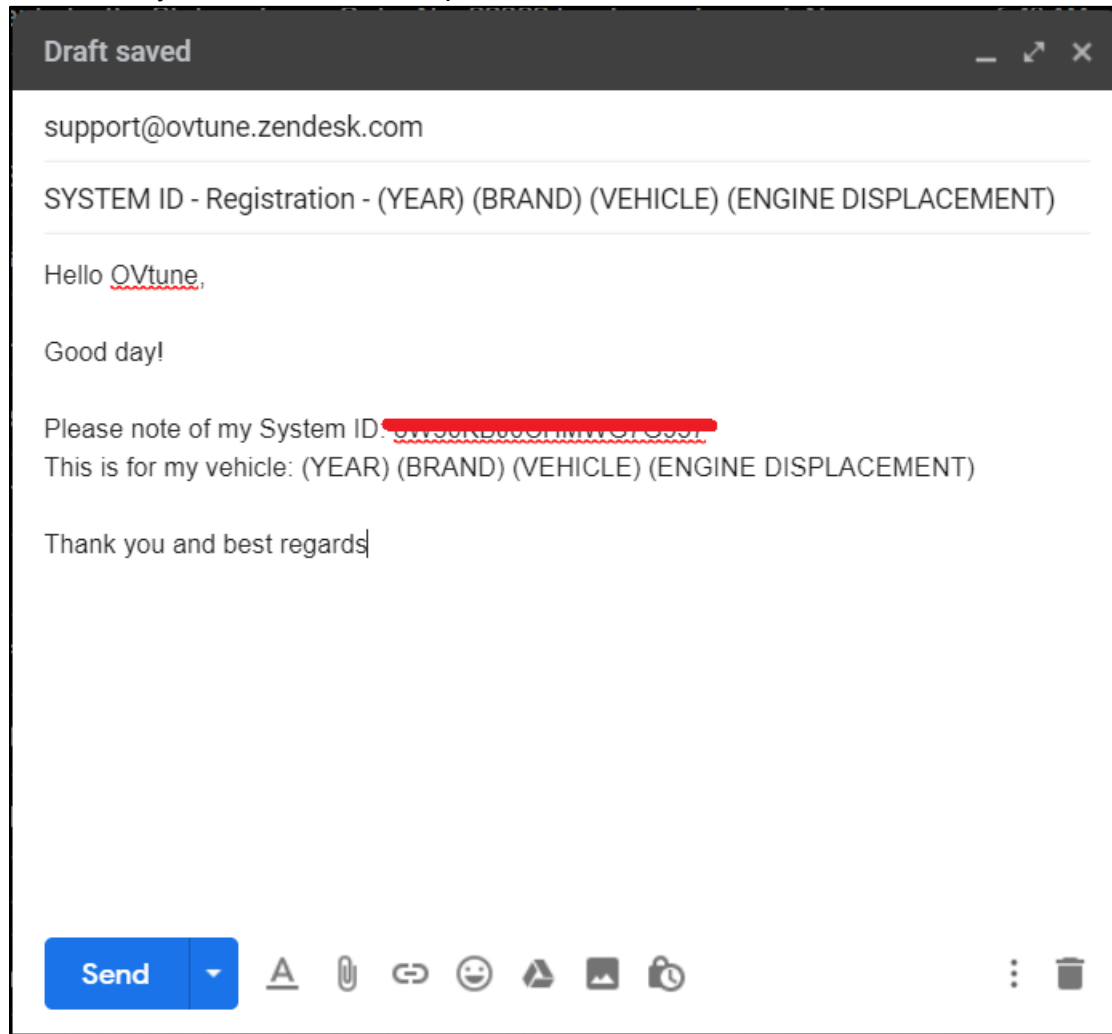
Click the “TOYOTA FLASH TOOL” button to launch the Toyota Flash Tool window.



You'll see the Toyota Flash Tool appear. Copy or take note of the System ID.



Email the System ID to us as sampled here



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We'll reply with your Registration File. Download and install it.

##- Please type your reply above this line -##

Your request (14267) has been updated. To add additional comments, reply to this email.



Mathew Wilson (OVTune)

Mar 31, 10:46 EDT

Key attached

-

OVTune – Lead Developer/ECU Assembly Development/Toyota Calibration Lead
www.ovtuned.com

CUSTOMER SUPPORT / BUSINESS HOURS

9:00 AM – 4:00 PM EST (MON – FRI)

Office closed on weekend/holidays

Please allow 1–3 business days for response to all inquiries.

Attachment(s)

[01GAVW3RP493CFDJW5.reg](#)

Registry Editor



Adding information can unintentionally change or delete values and cause components to stop working correctly. If you do not trust the source of this information in C:\Users\OVTUNE\Downloads\LICENSE.reg, do not add it to the registry.

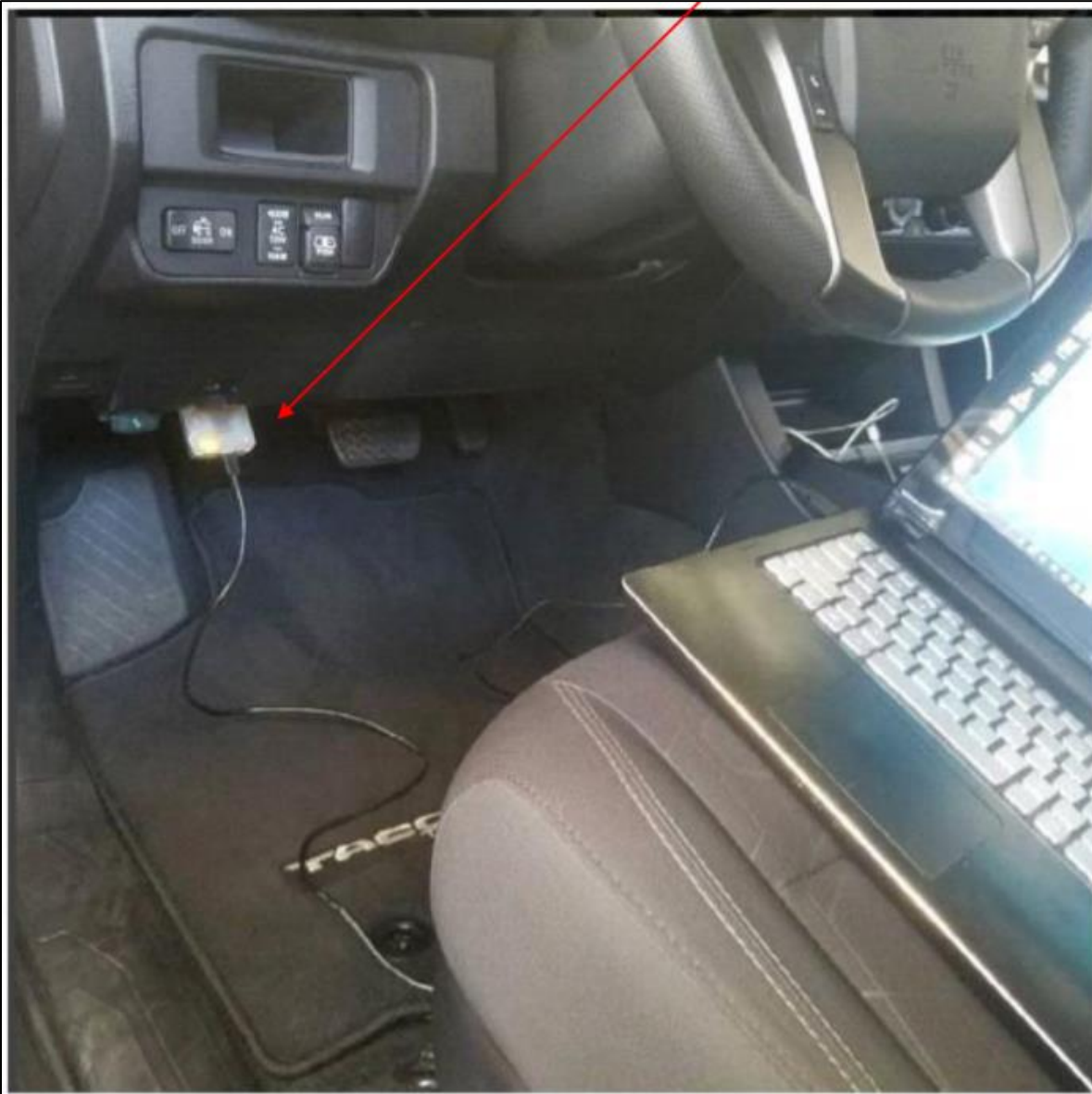
Are you sure you want to continue?

Yes

No

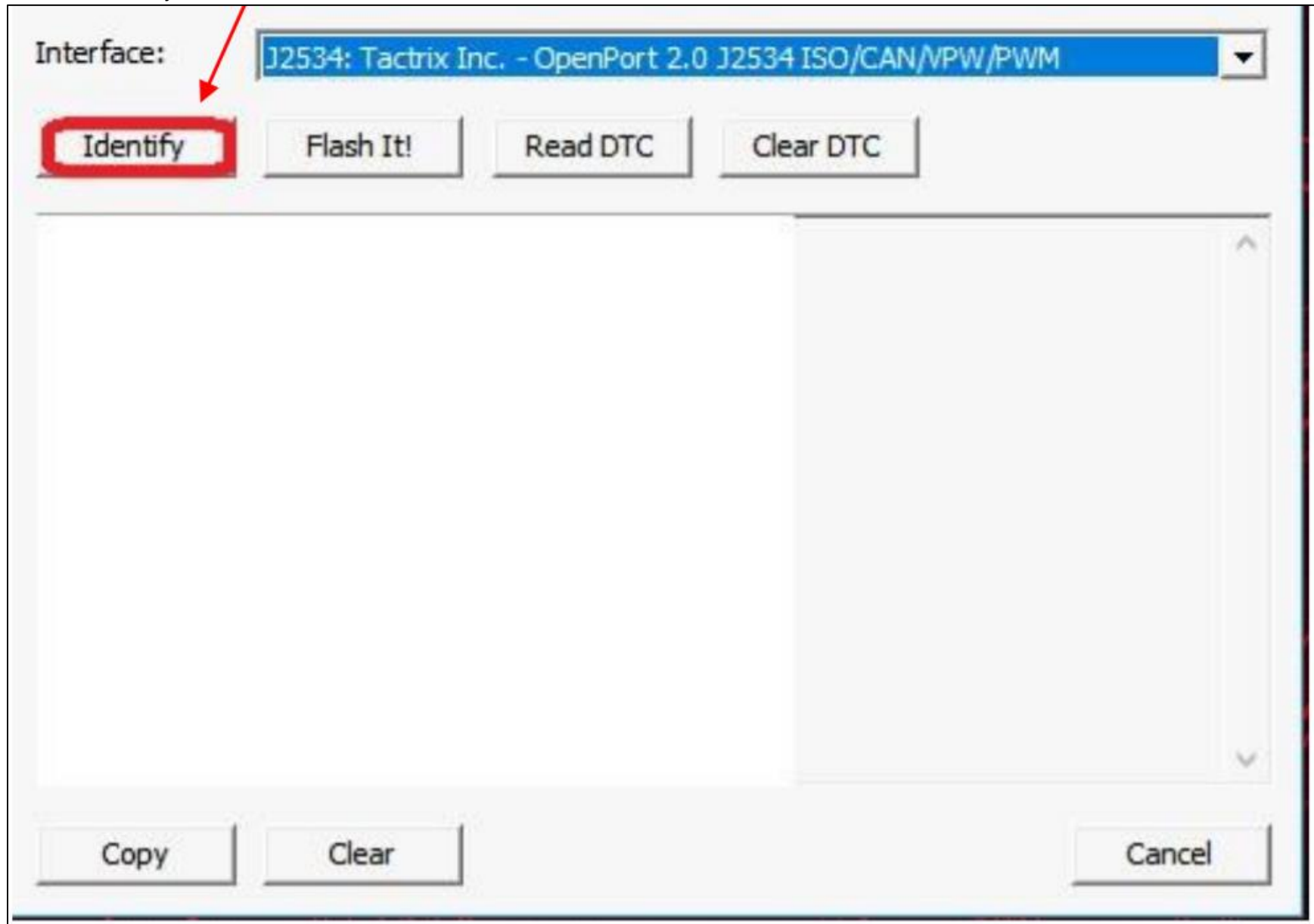
Select **YES**

After installing the Registry File, you'll need to identify the ECU ID of your vehicle. To do this, bring your laptop and Tactrix (and its cable) to your vehicle. Ensure your vehicle is ON (but the engine is off A.K.A. not idling. If you have the Push to Start button, press it 2 times. Make sure your electrical loads (radio on low, lights off, A/C off, etc) are minimized as much as possible. Make sure you're in Park as well. Then, connect your laptop and OBD2 port using the Tactrix and its cable. Run the Toyota Flash Tool from the vF tuner program.

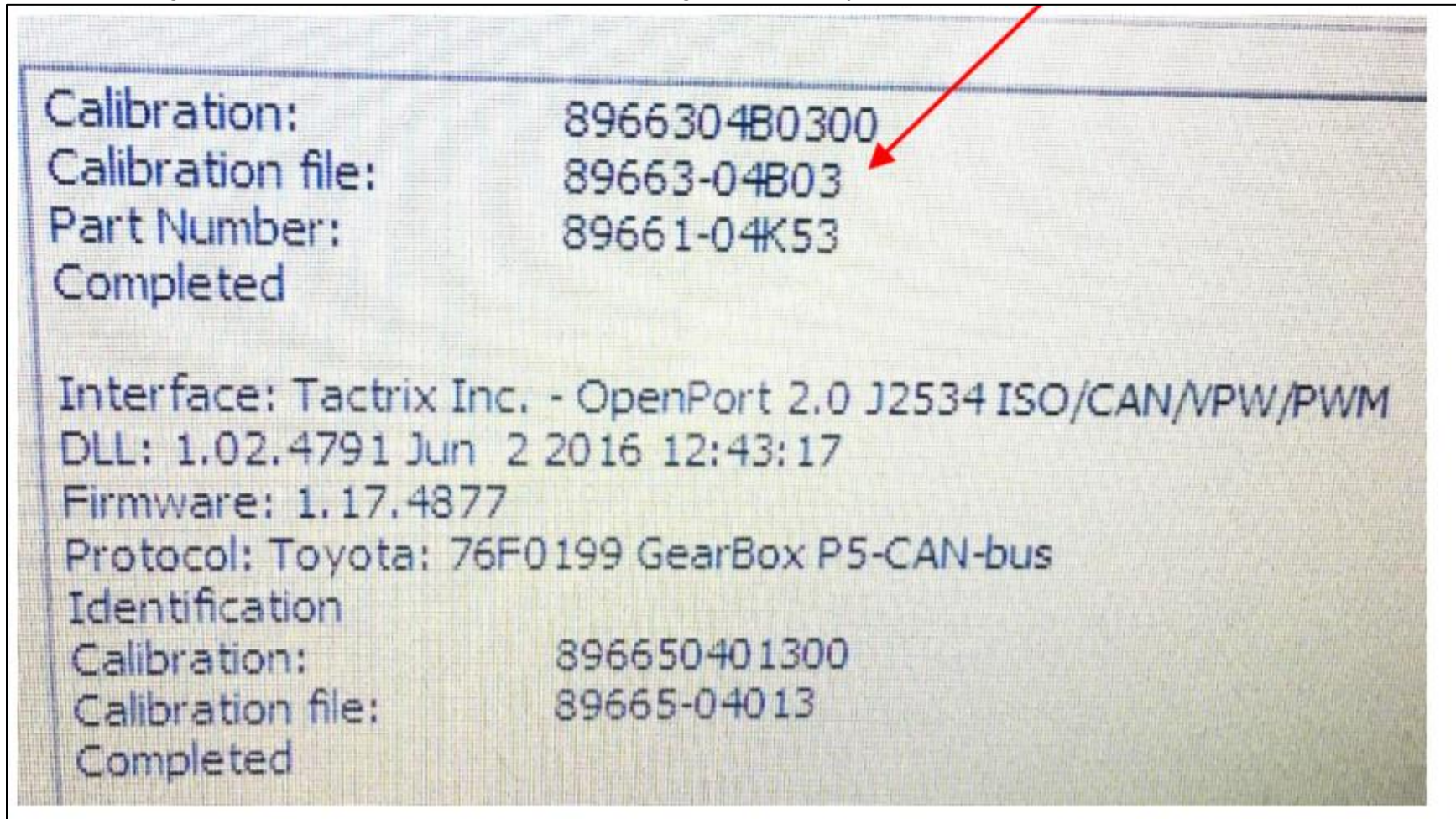


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Click the "Identify" button



Then something like the picture below will appear after the program identifies your vehicle:



Send us via email (support@ovtune.zendesk.com) your info in this format:

Email registered in vF tuner:

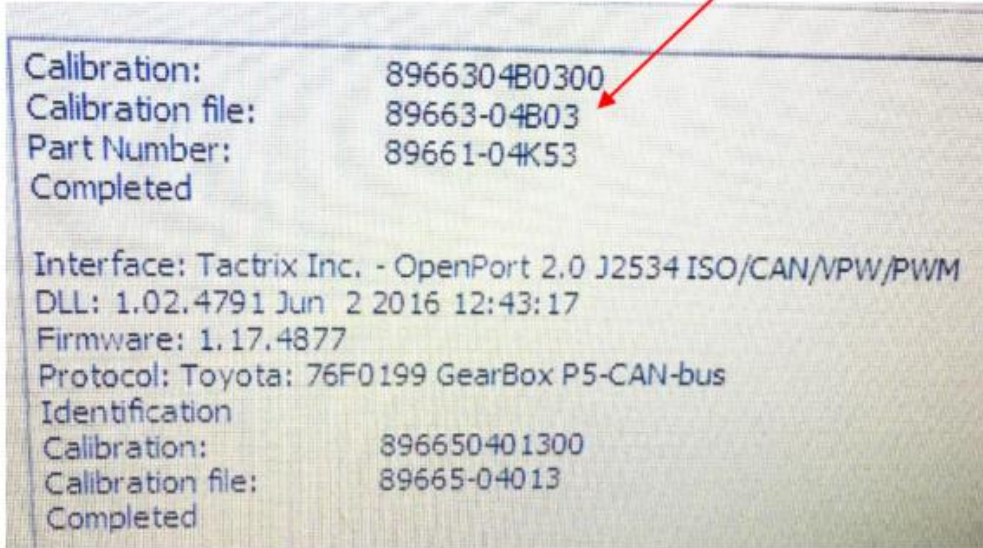
vF Tuner Order Number:

Calibration:

Calibration file:

Part Number:

Example:



← OVTune (support+id14267@ovtune.zendesk.com)

Calibration: 8966304B0300
Calibration file: 89663-04B03
Part Number: 89661-04K53
Completed

Interface: Tactrix Inc. - OpenPort 2.0 J2534 ISO/CAN/VPW/PWM
DLL: 1.02.4791 Jun 2 2016 12:43:17
Firmware: 1.17.4877
Protocol: Toyota: 76F0199 GearBox P5-CAN-bus
Identification
Calibration: 896650401300
Calibration file: 89665-04013
Completed

Email registered in vF tuner: notreallyanemail@notreallyanemailprovider.com

vF Tuner Order Number: 9999

Calibration: [8966304B0300](#)

Calibration file: [89663-04B03](#)

Part Number: [89661-04K53](#)

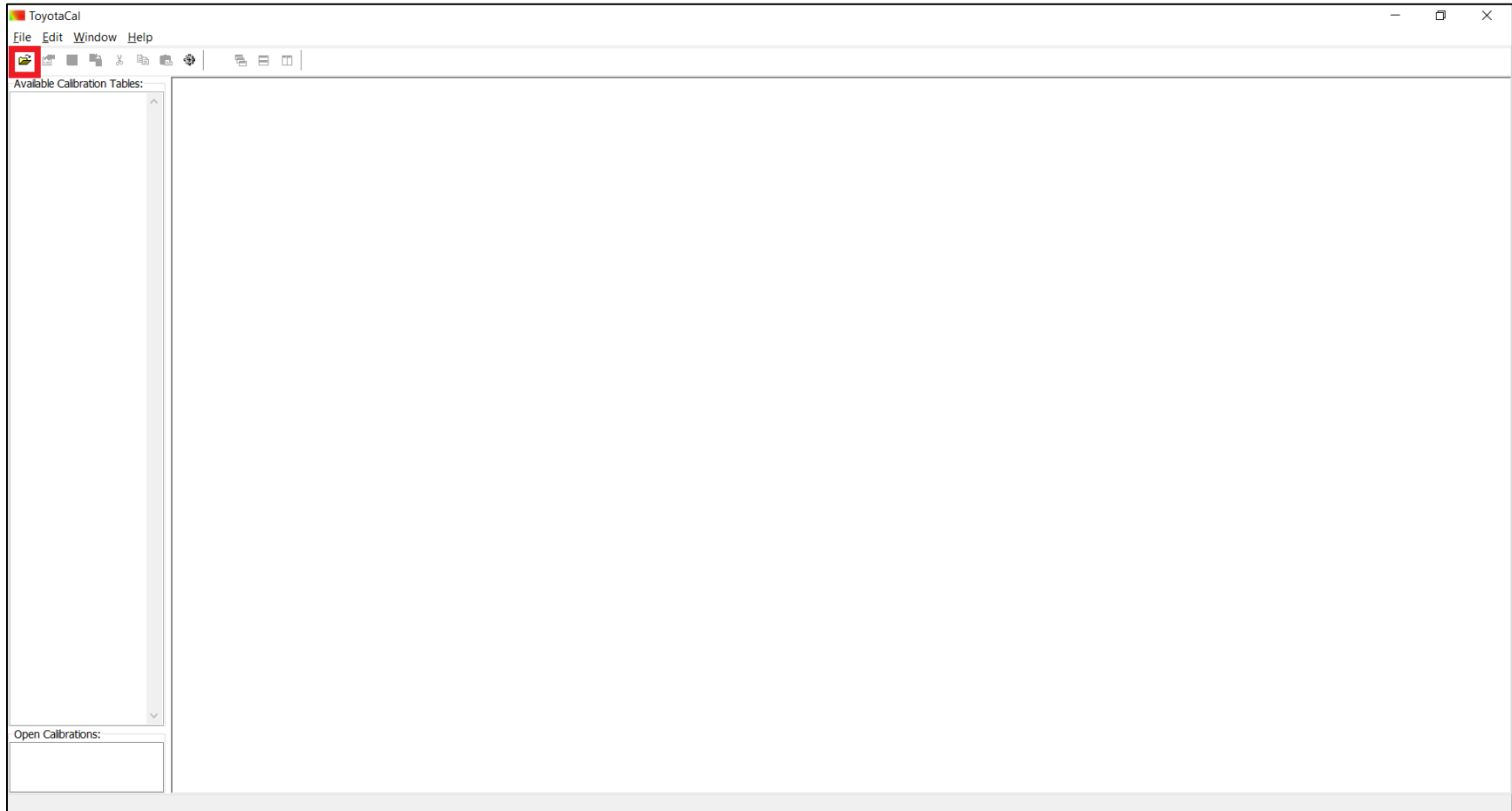
We'll reply with your stock tune file, or we'll tell you it's already in your download folder, or it will be downloaded via the server. You are now ready to tune your vehicle and/or flash a tune to your vehicle.

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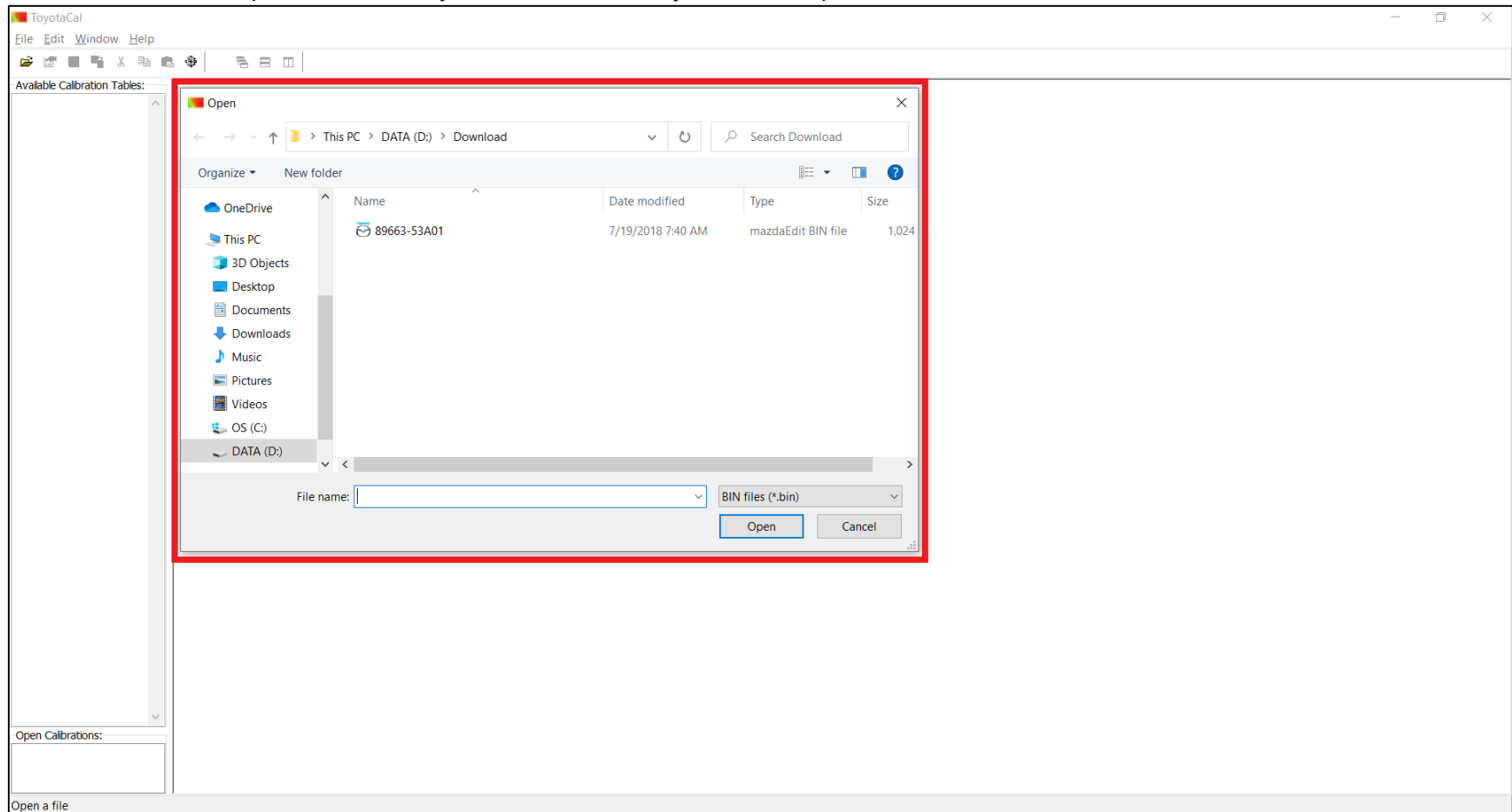
II) Basic Functions

1) Opening your ECU file

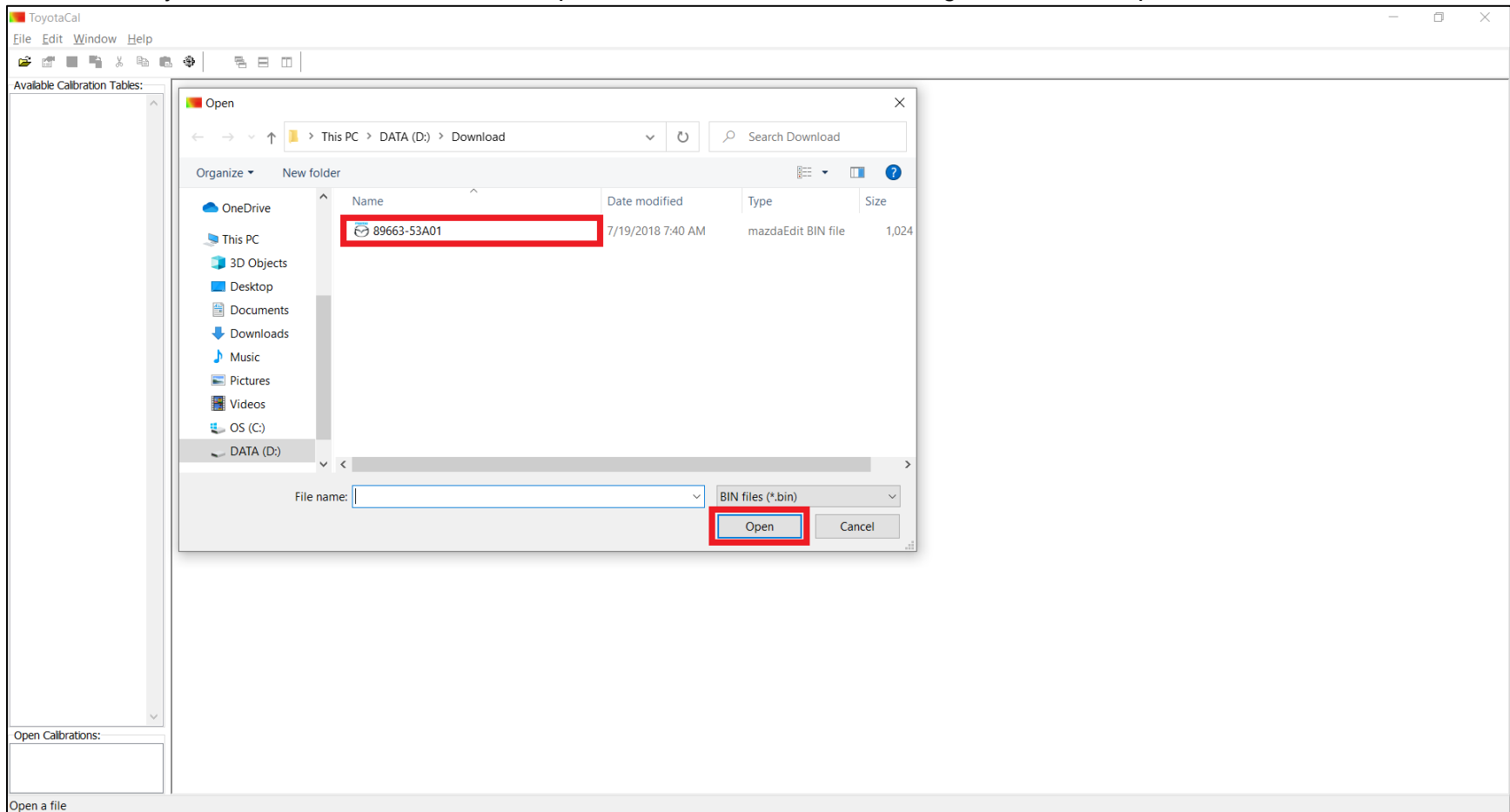
To open your file, click on the “Open” icon to the upper left of the program



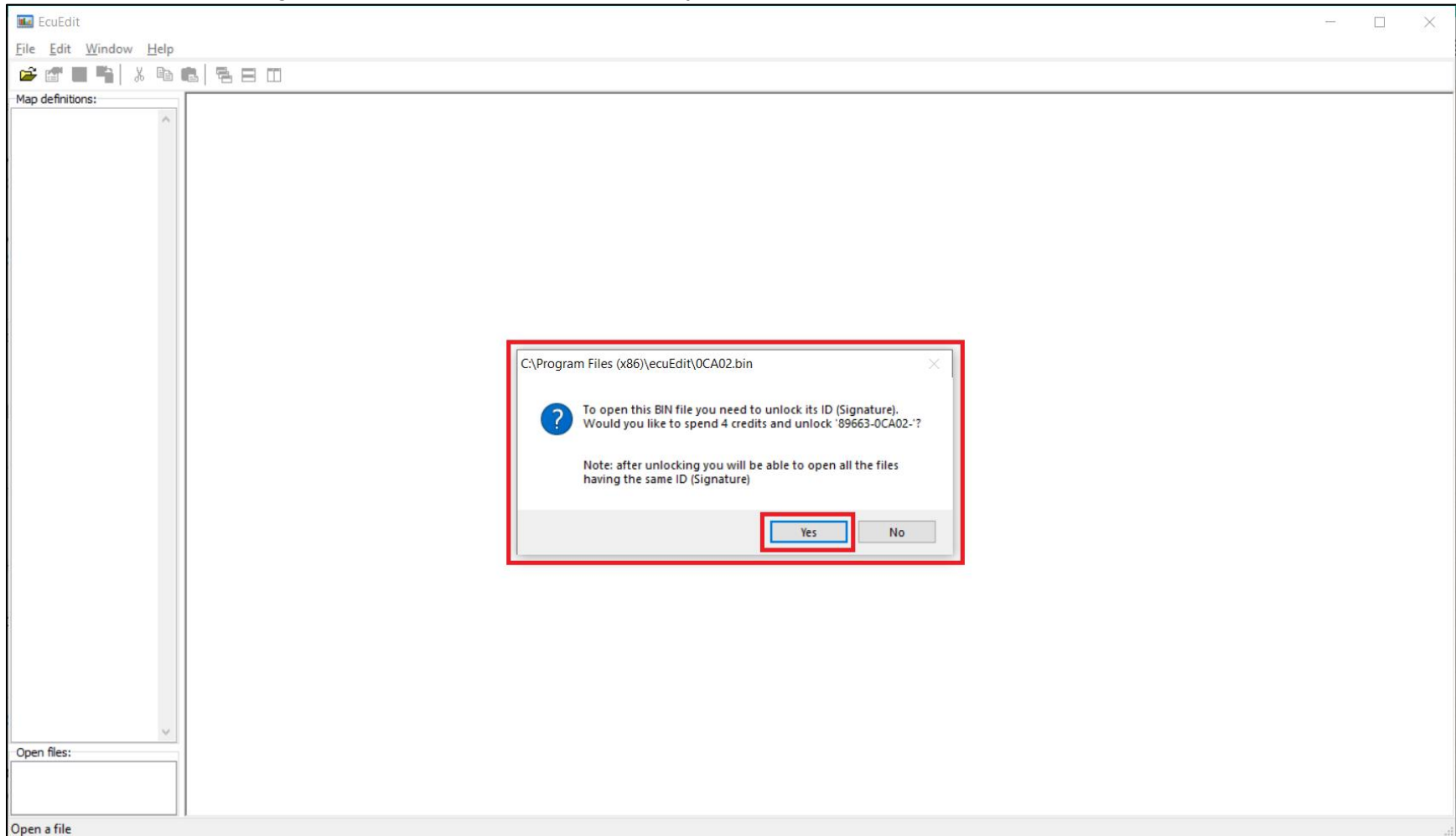
Another window will open that will ask you to locate the file you wish to open.



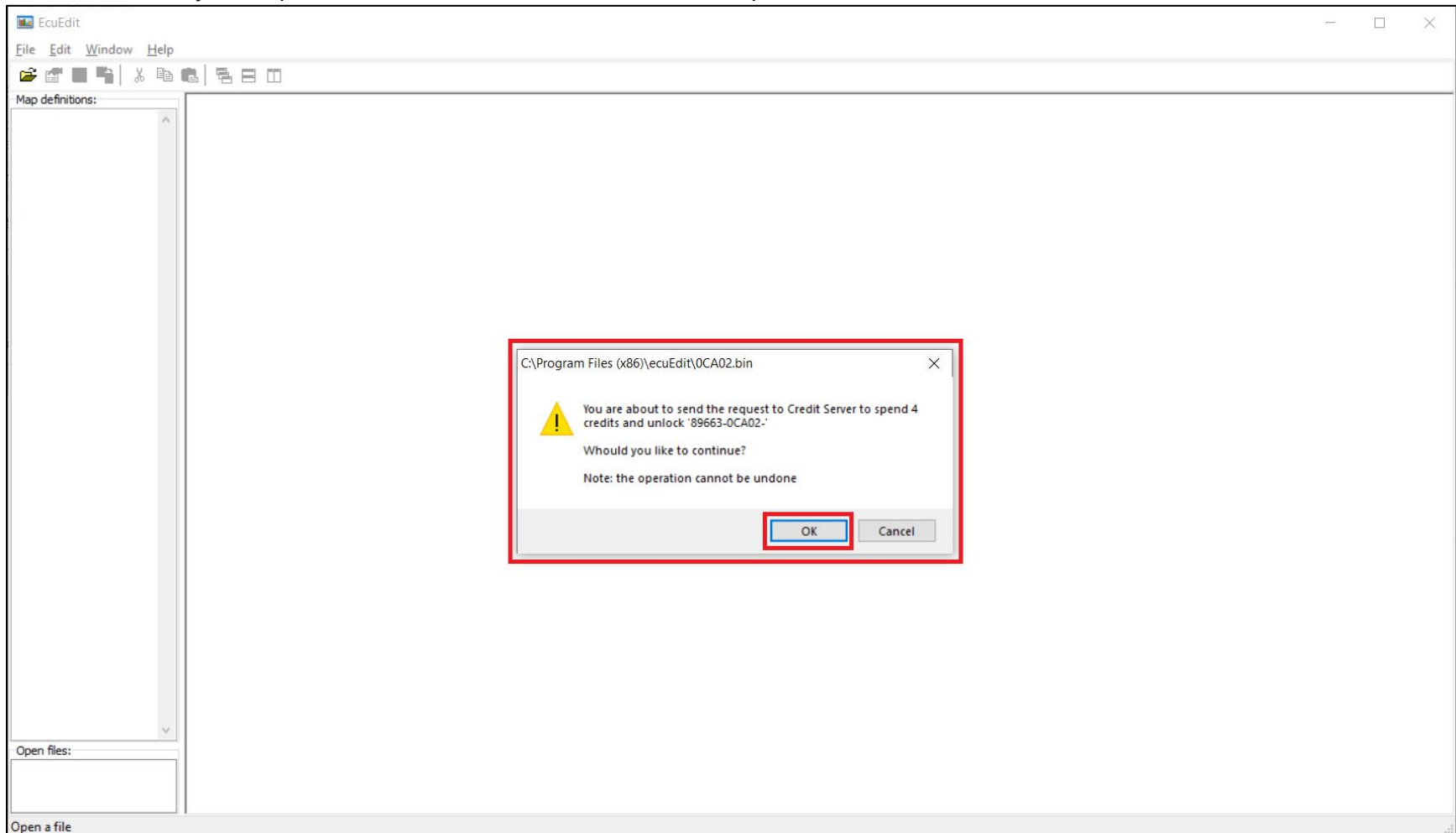
Select the file you wish to edit and click on the “Open” button located on the lower right side of the “Open” window.



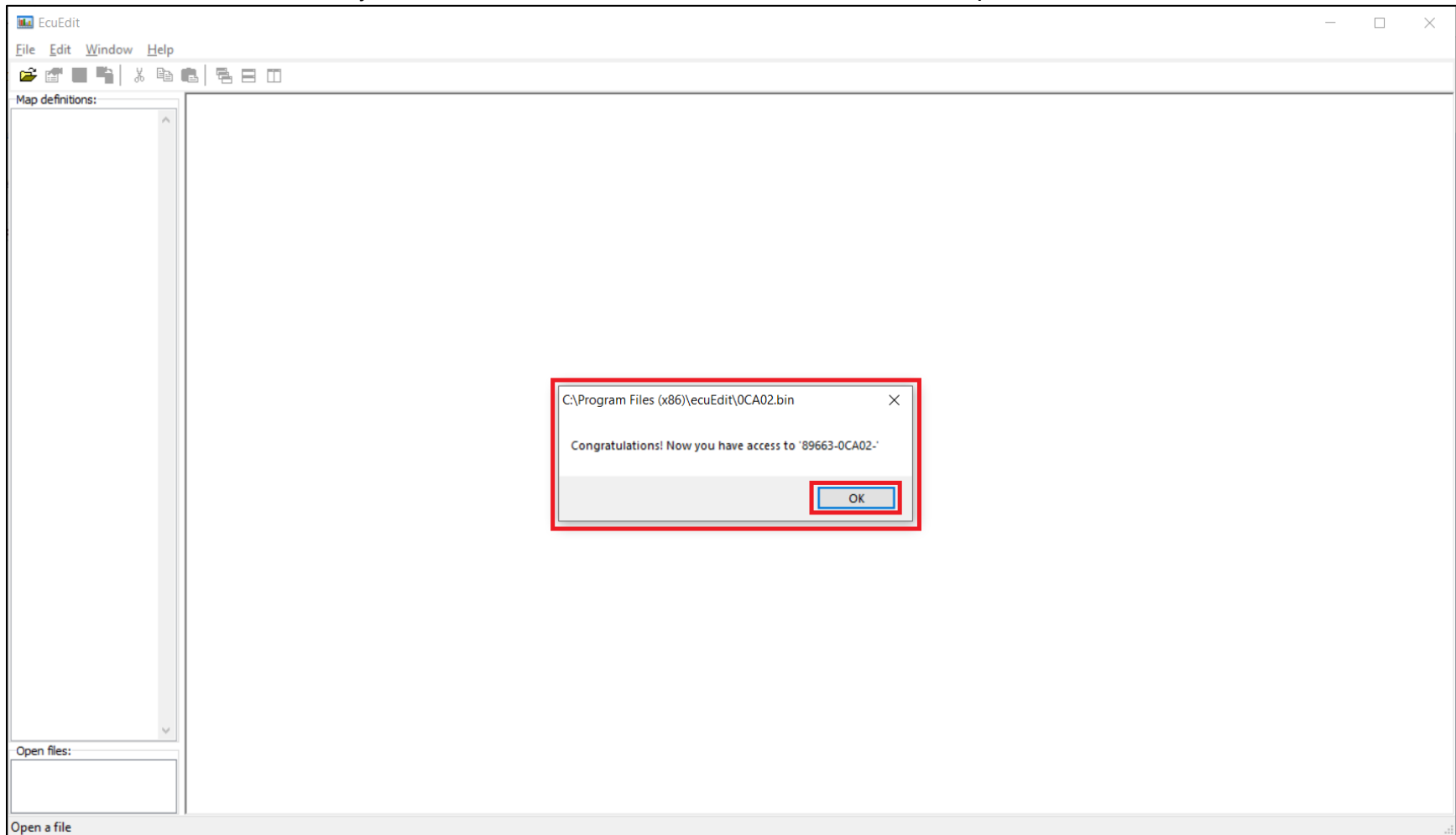
When you have selected and opened your file, you will be notified that doing so will consume some of your credits. Click the “Yes” button to proceed opening that file and deduct the credits from your account with us.



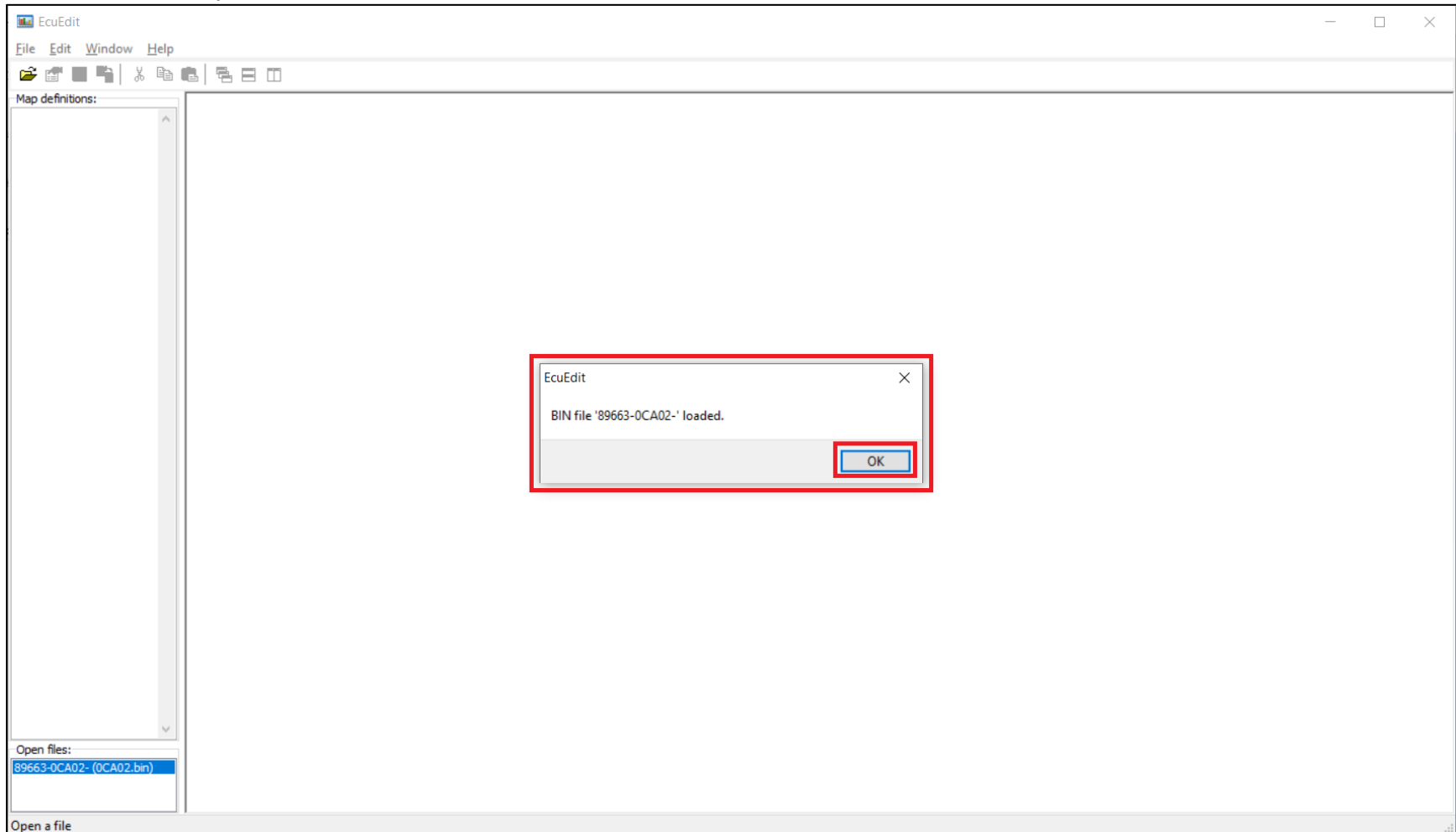
A confirmation of your request will be stated. Click the “Ok” button to proceed.



There will be a confirmation that you now have access to that file. Click the “Ok” button to proceed

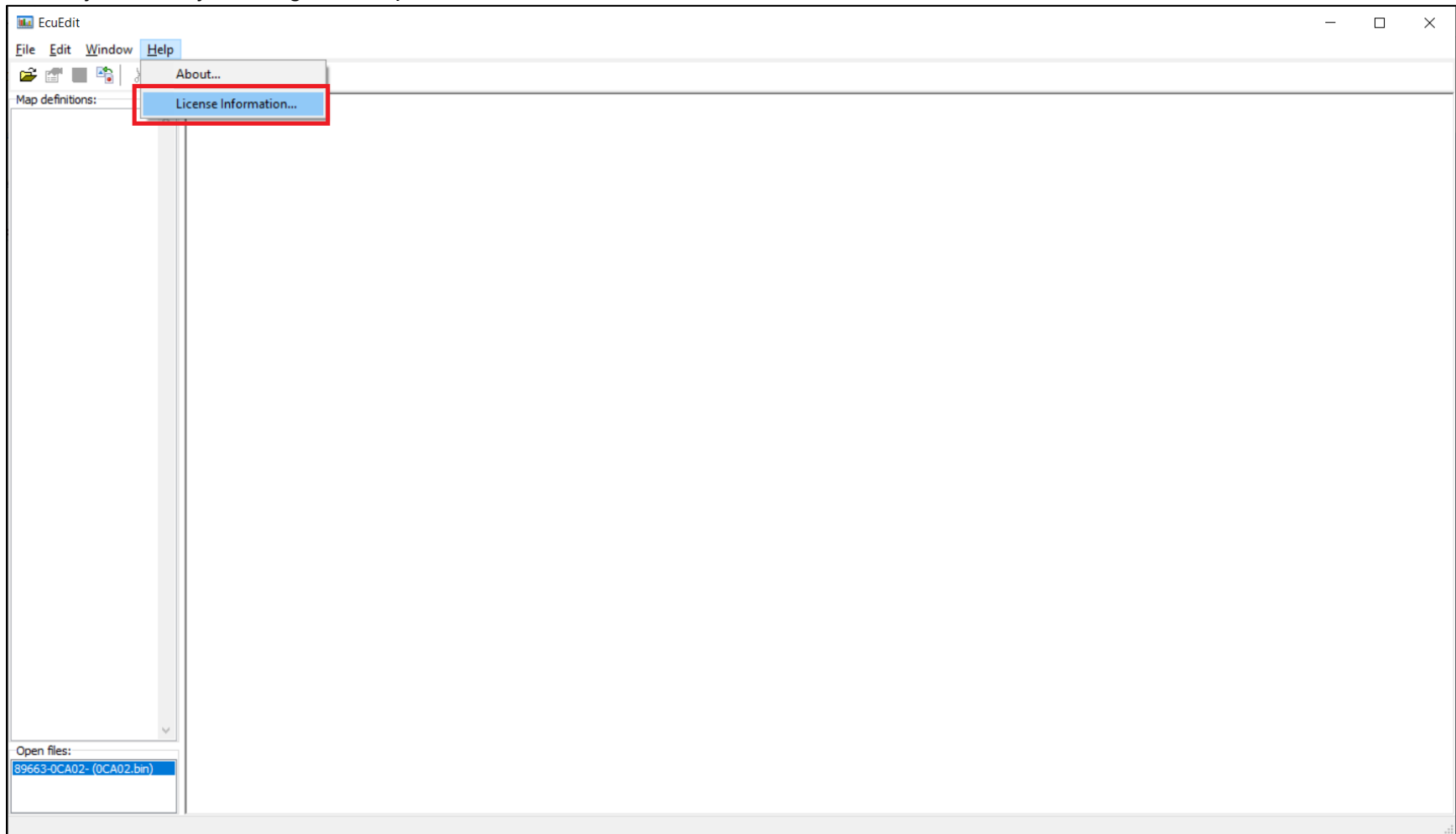


A confirmation that your file has been loaded will appear. Click the “Ok” button to proceed.

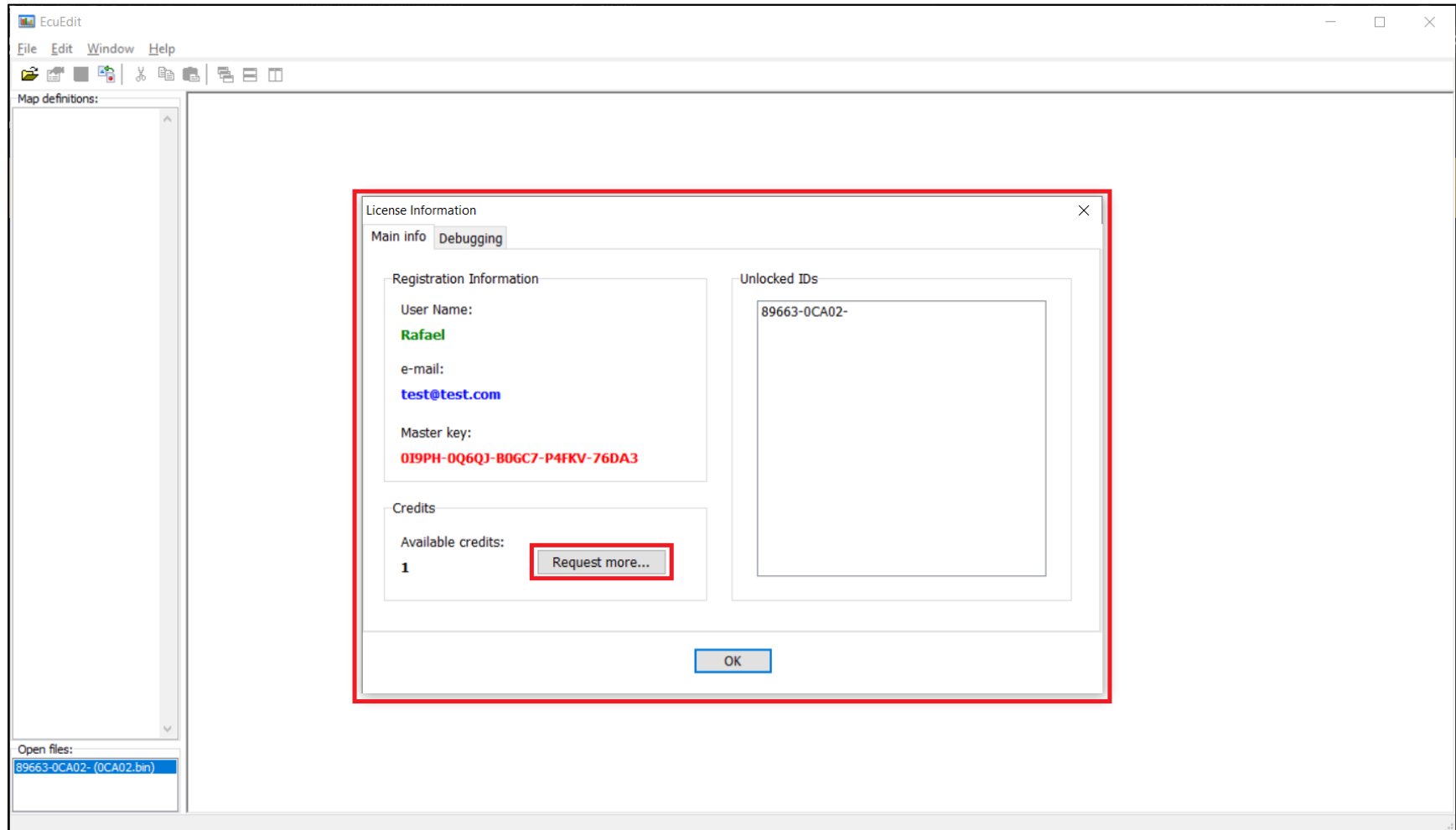


2) Requesting for more Credits to Open another ECU

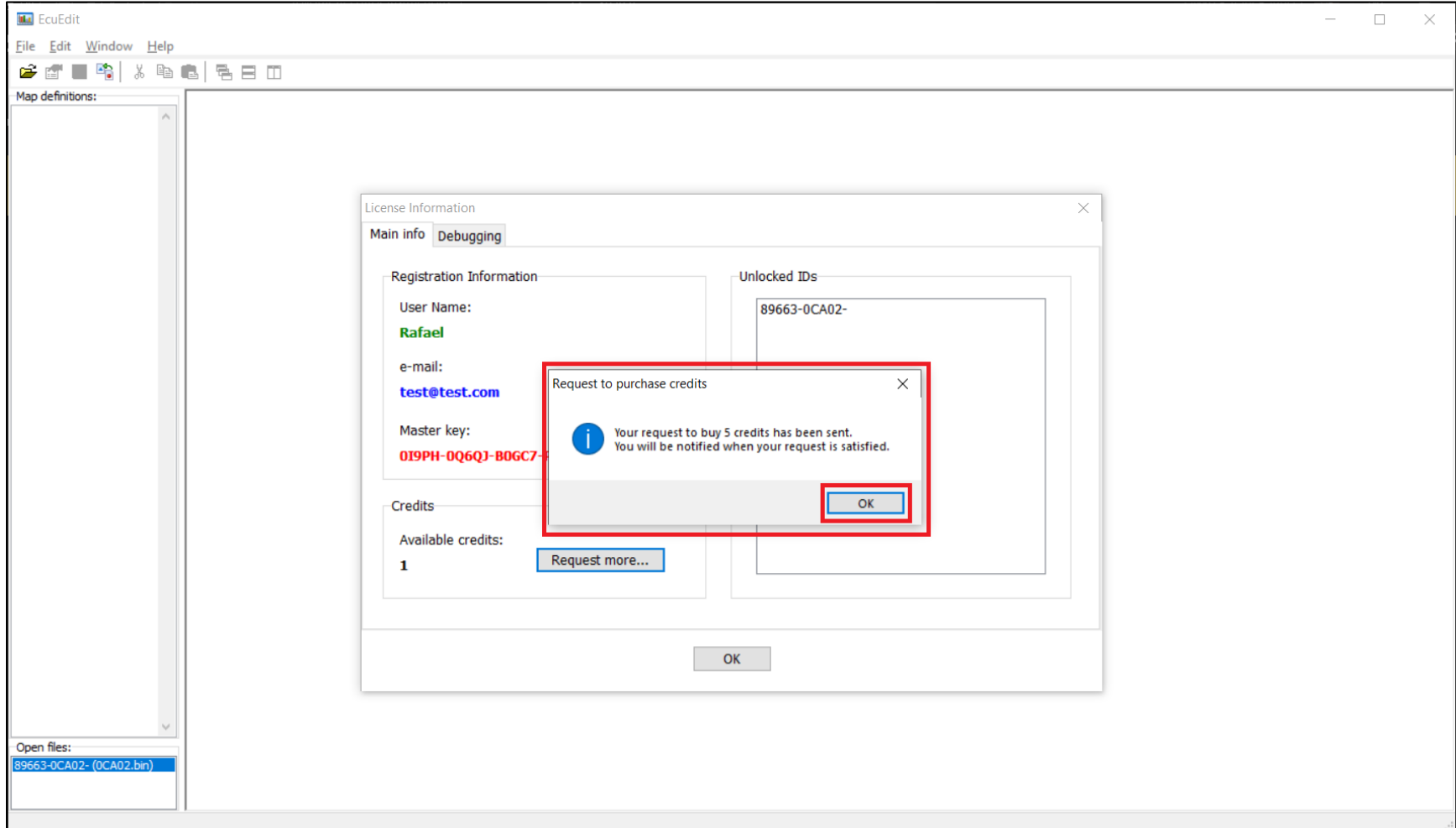
If you want access to more ECUs, or you'd like to know which ECU types you have access to, or would want to know how many more credits you have, you can go to "Help" menu and click on the "License Information...".



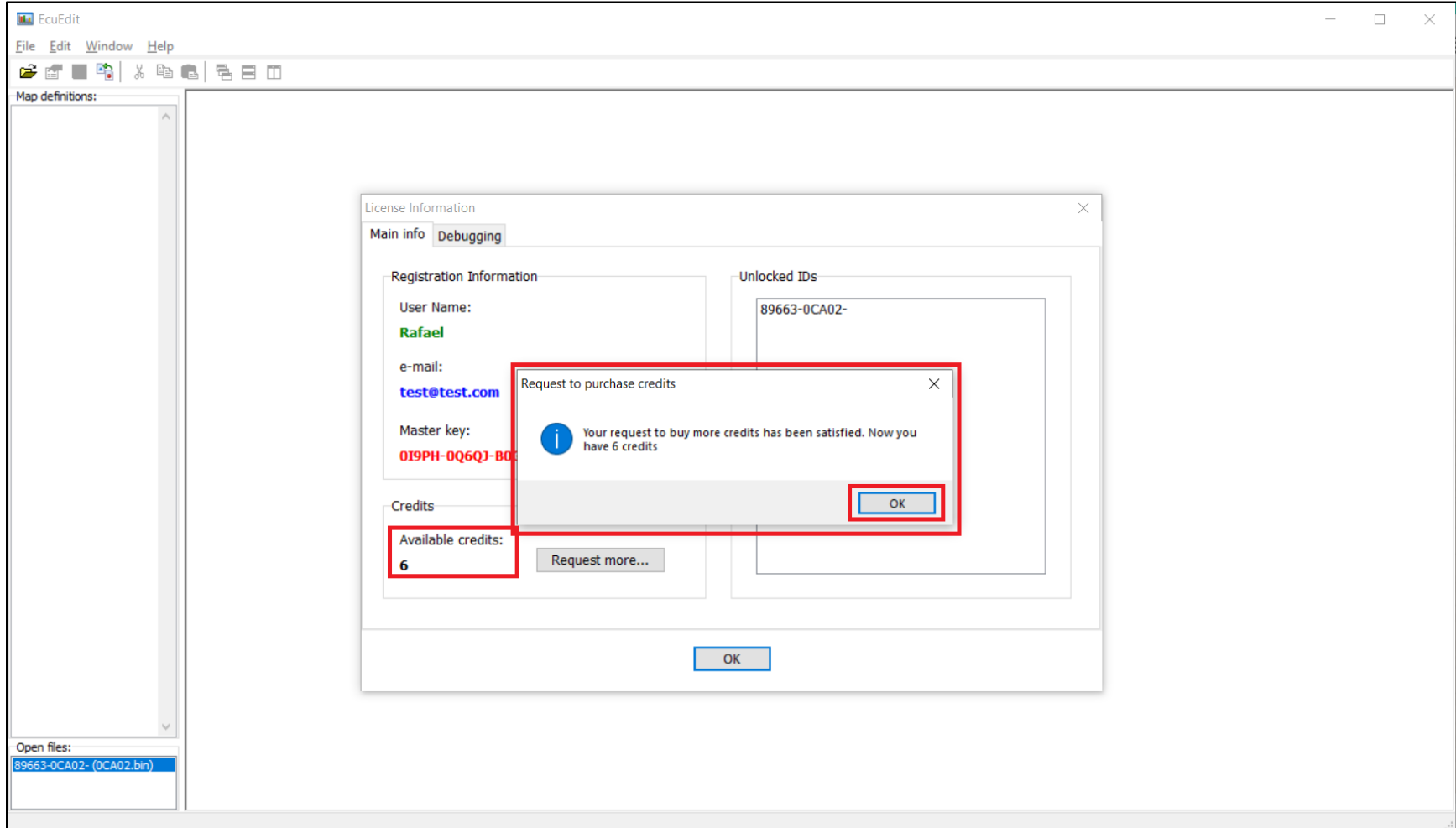
You can view the unlocked IDs for your account, and how many credits you have. You can also request for more credits by clicking on the “Request more...” button to have access to another ECU.



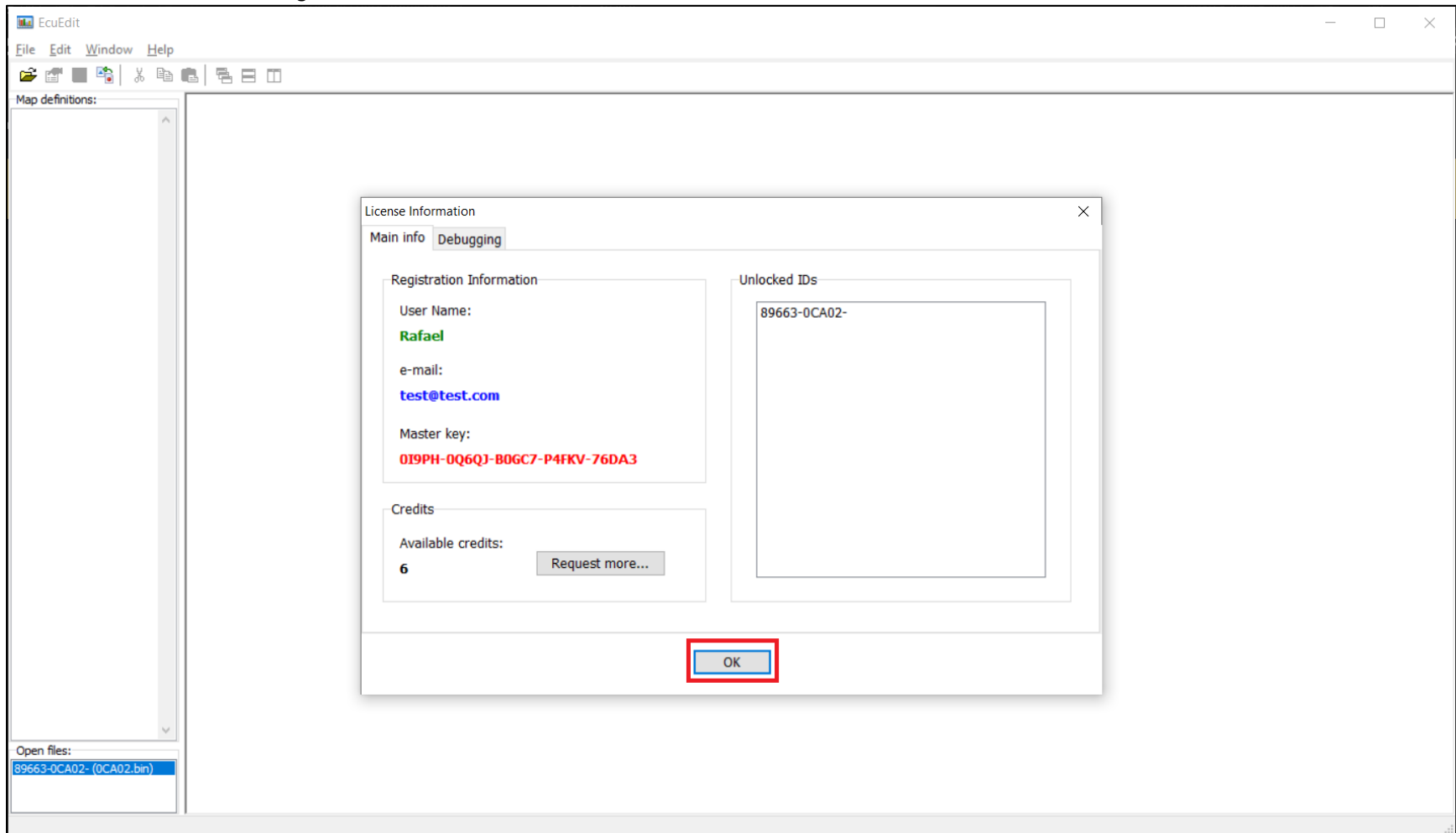
You can enter how much more credits you want. However, you'll need to purchase the credits in our website (www.ovtuned.com) in order to proceed. Once your purchase and request for more credits is sent, you'll get a confirmation as pictured below. Click the "OK" button to proceed.



Once we have added more credits to your account with us, you'll get a notification like the one pictured below. You'll also notice your available credits increase. Click the "Ok" button to proceed. You can now open a new ECU ID again (check the above instructions on opening an ECU).



Click on the "Ok" button to go back to the main window.



3) Navigating the User Interface

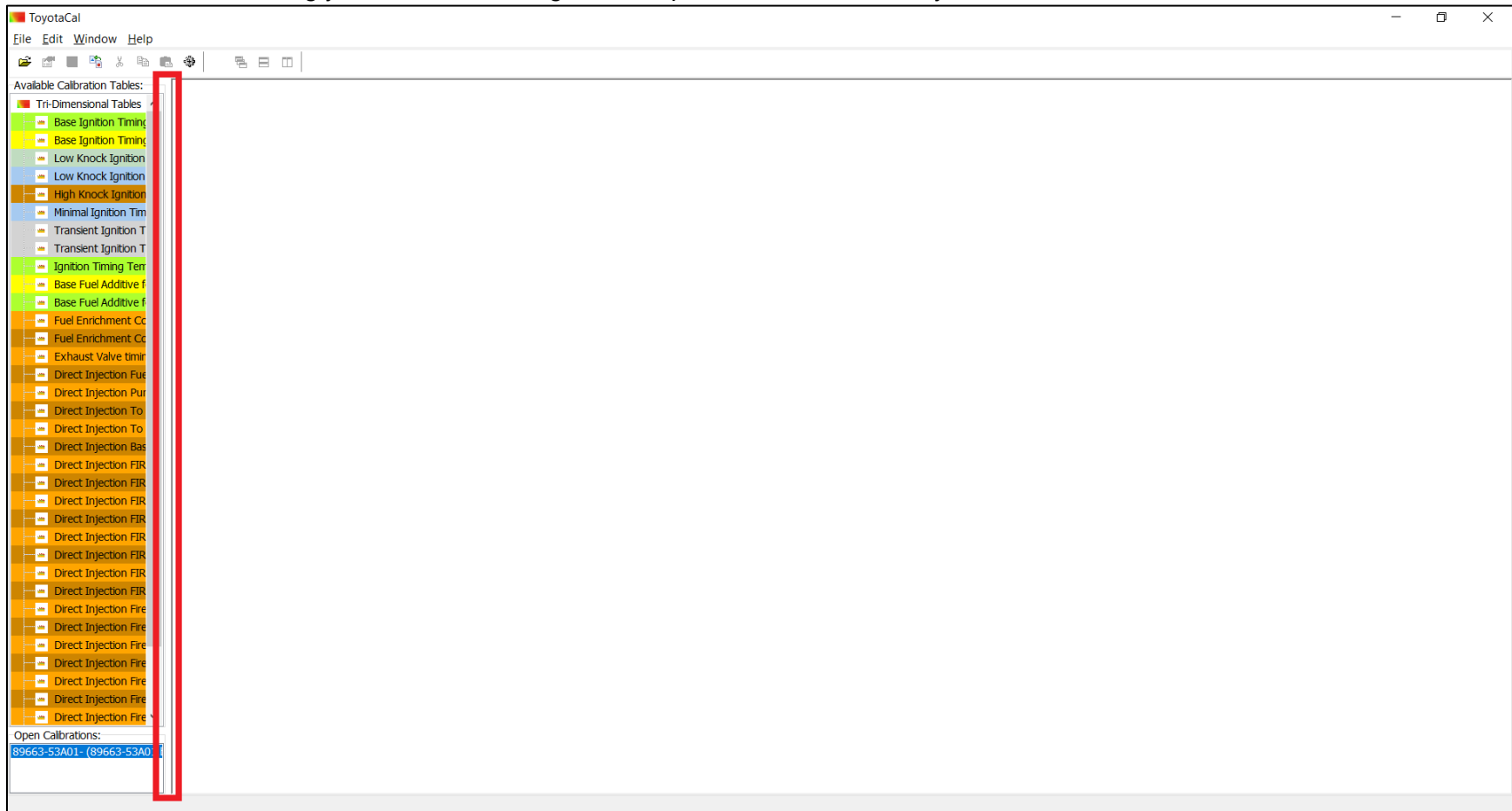
We have four (4) basic parts:

- > The Editing window
- > The Map Definition window
- > The Menu items
- > The Shortcut items
- > The Open File window

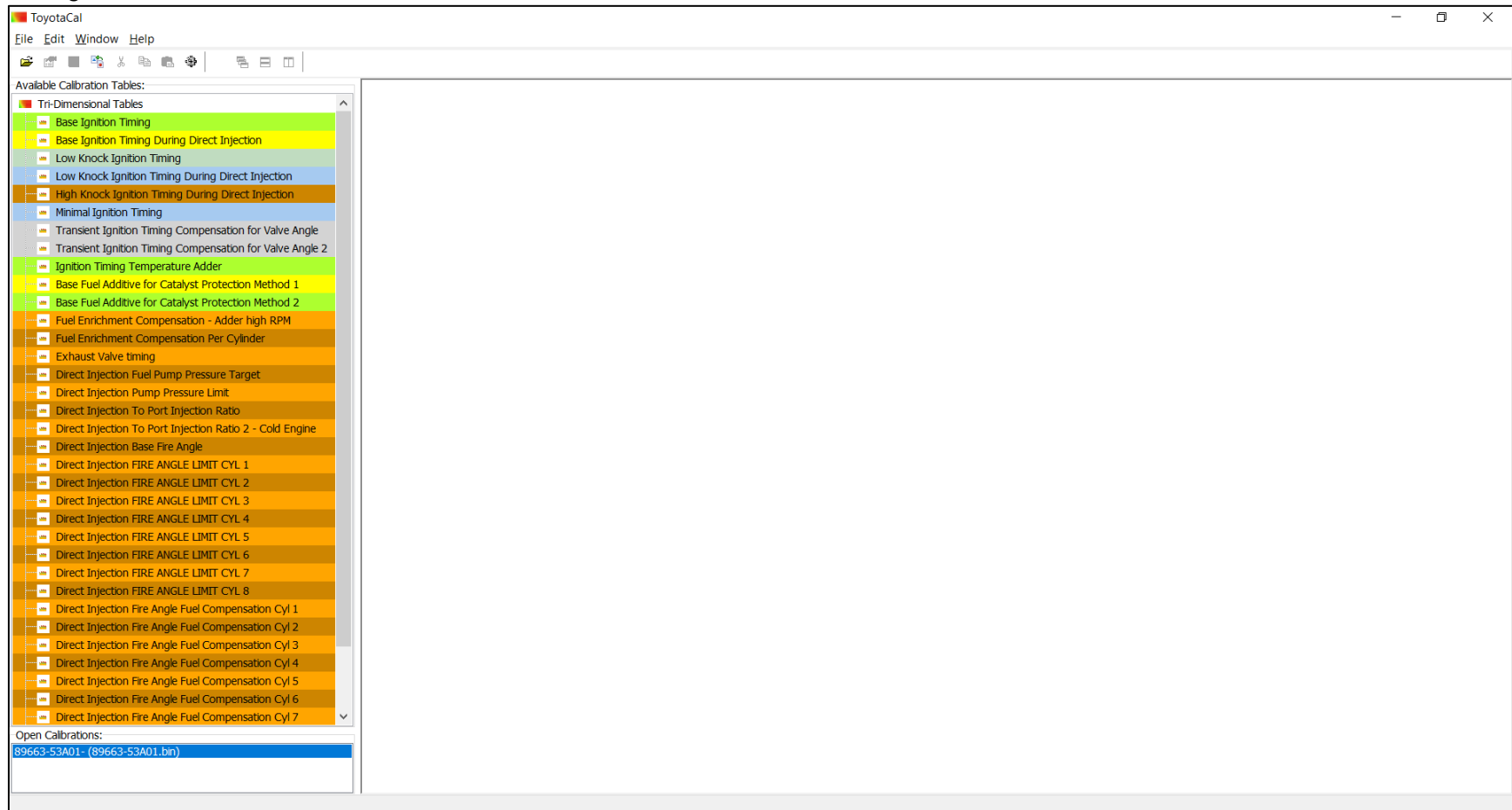


A) Adjusting the Map Definition Window Size

You can hover your cursor in between the “Map Definition” window and the “Editing” windows until your cursor changes appearance. You can then click and drag your mouse to change the “Map Definition” window to your desired size.



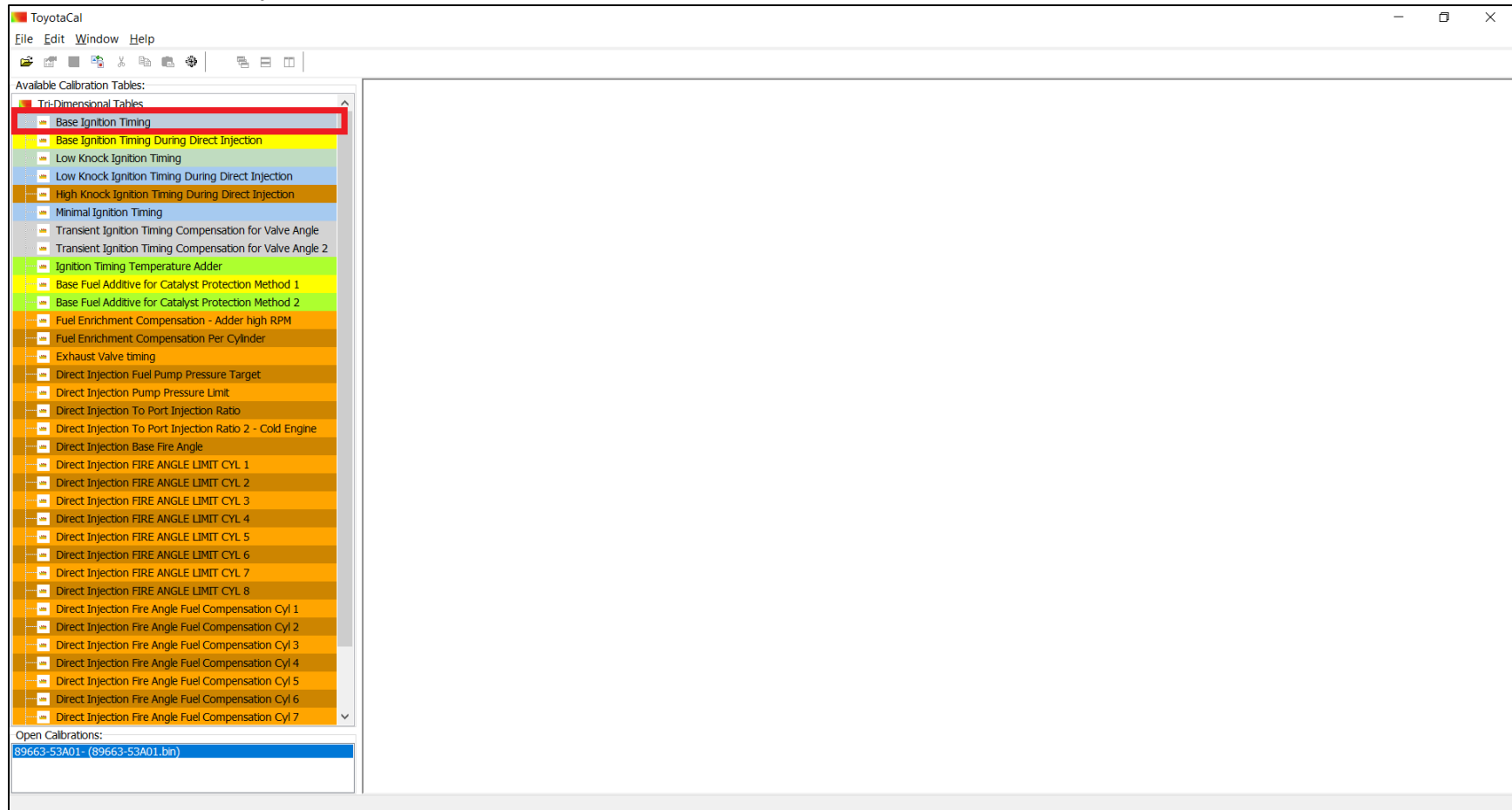
Changed window size:



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4) Opening a Map/Table

Select on a map/table you want to edit



Double click that map and it will open the map/table in the "Editing" window

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection**
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
	2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
	2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
	2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
	3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
	3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
	3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
	4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
	4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
	4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
	5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
	5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.5	25	22.25	19.5	17.75	16.75	16	15.5	14.25	

Spark Degree Advance

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5) Navigating the Map Window

A) Minimizing the Map Window

Action:

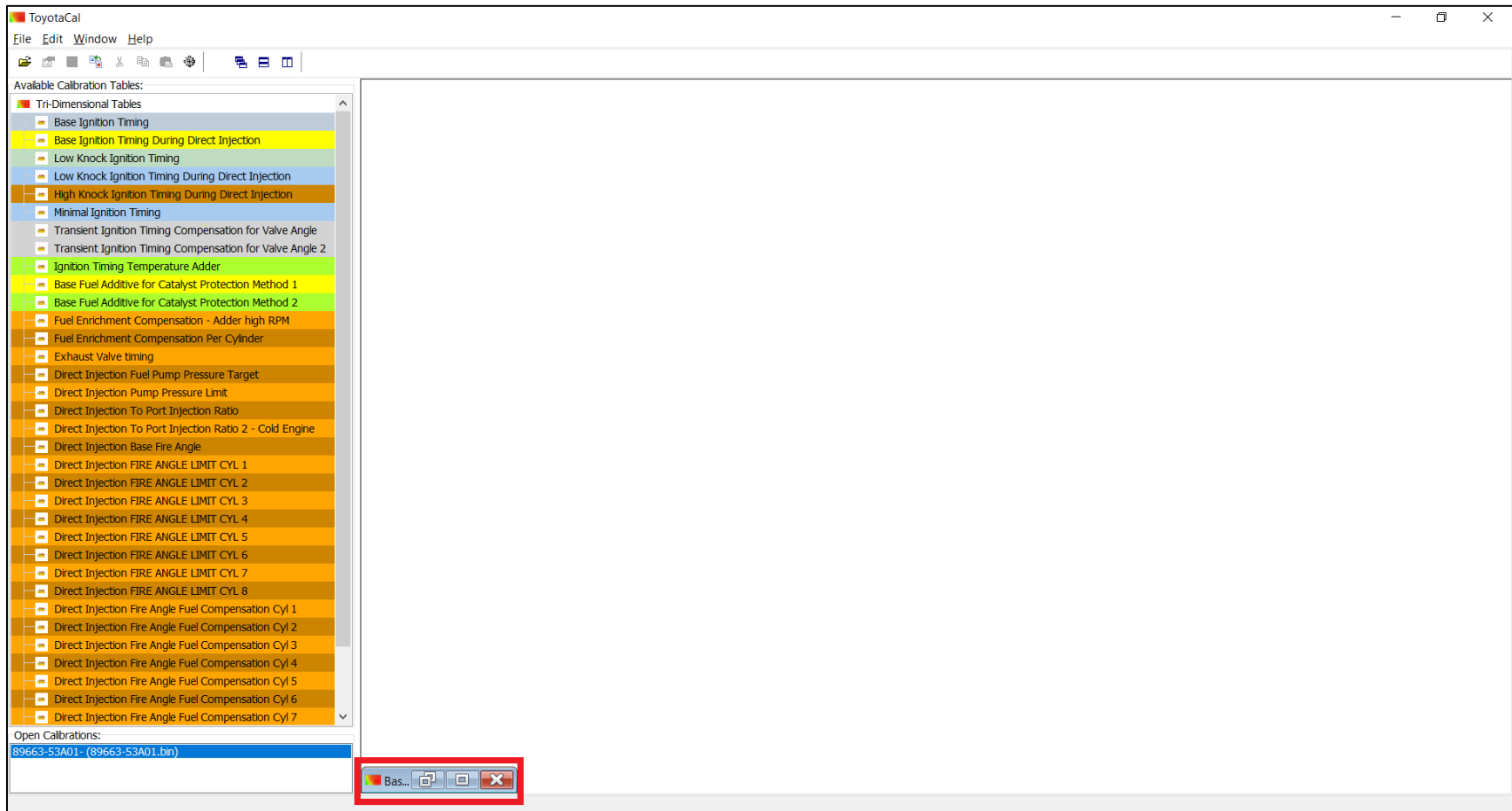
The screenshot displays the ToyotaCal software interface. On the left, a list of calibration tables is shown, with 'Base Ignition Timing' selected. The main window is titled 'Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)'. It features a 3D surface plot of Spark Degree Advance versus Engine Speed and Engine Load. The plot shows a surface that generally decreases in spark degree as engine speed and load increase. A red box highlights the minimize button in the window's title bar. Below the plot is a data table with the following structure:

	10	20	30	35	40	50	60	70	80	90	100
400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5

At the bottom of the table, it says 'Grid version 8.5.0.2 Jan, 2020'. The x-axis of the plot is labeled 'Engine Load' (7000 to 100), the y-axis is 'Engine Speed' (1000 to 6000), and the z-axis is 'Spark Degree A' (5 to 40).

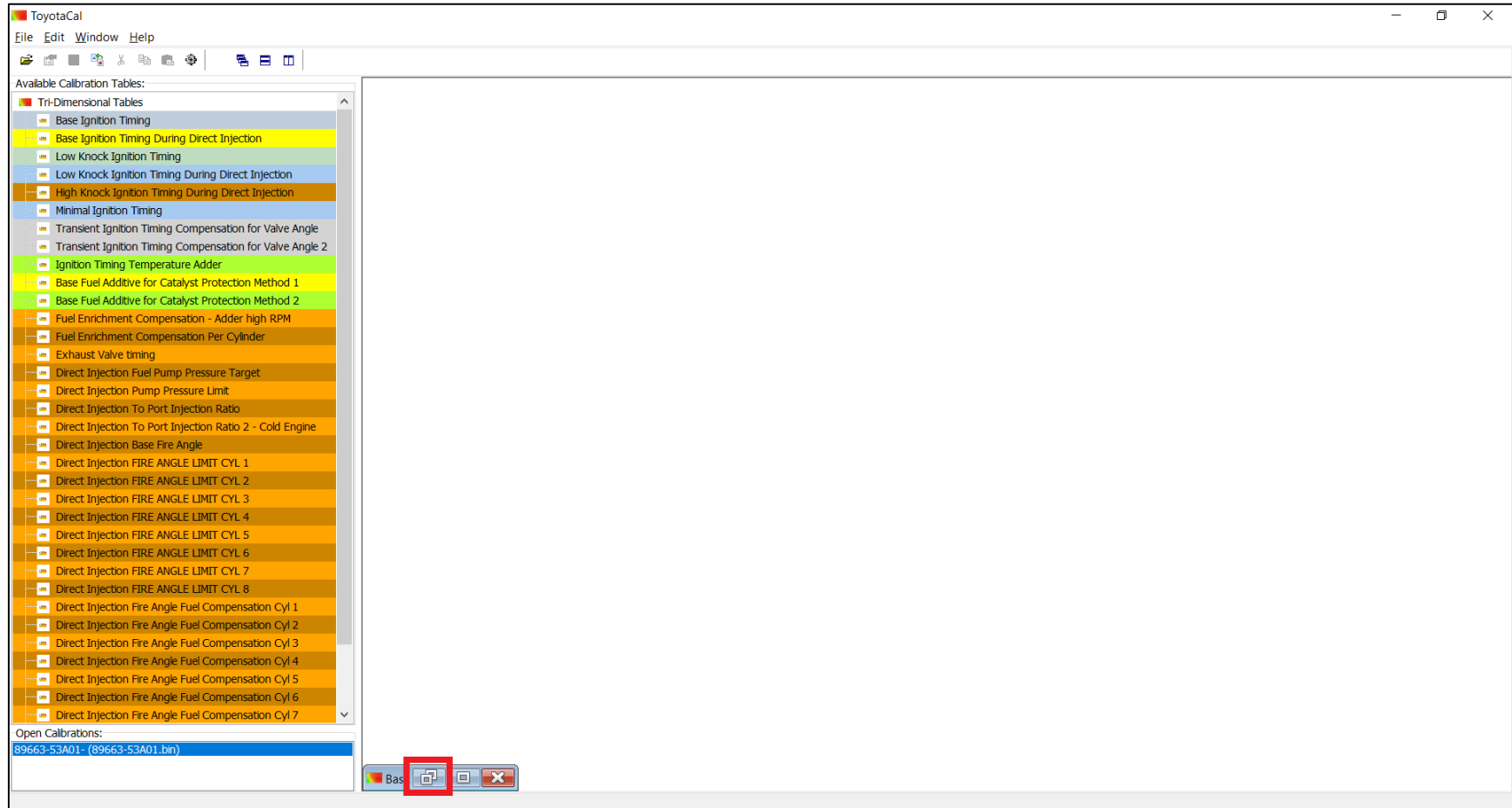
[Back to Outline](#)

Result:



B) Restoring a Minimized Map Window

Action:



[Back to Outline](#)

Result:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
	2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
	2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
	2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
	3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
	3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
	3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
	4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
	4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
	4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
	5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
	5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.5	25	22.25	19.5	17.75	16.75	16	15.5	14.25	

Spark Degree Advance

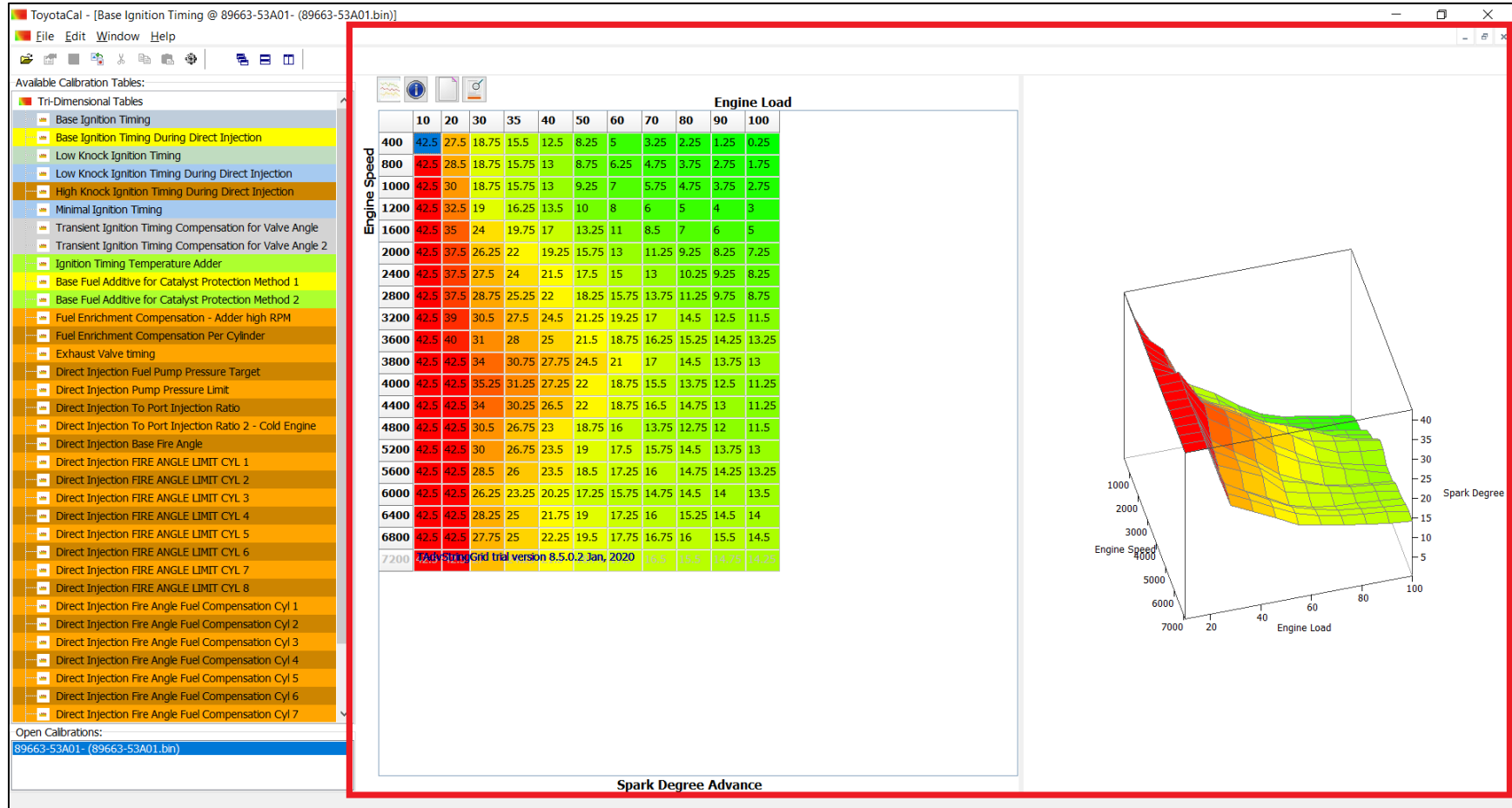
C) Maximizing the Map Window

Action:

The screenshot shows the ToyotaCal software interface. On the left is a tree view of calibration tables. The main window displays a 3D surface plot titled "Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)". The plot shows Spark Degree Advance (Z-axis, 0 to 40) as a function of Engine Speed (Y-axis, 400 to 7200) and Engine Load (X-axis, 10 to 100). A red box highlights the maximize button in the window's title bar.

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
	2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
	2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
	2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
	3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
	3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
	3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
	4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
	4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5	
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13	
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25	
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	

Result:



D) Restoring a Maximized Map Window

Action:

ToyotaCal - [Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)]

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Engine Speed	Engine Load										
	10	20	30	35	40	50	60	70	80	90	100
400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5

Spark Degree Advance

[Back to Outline](#)

Result:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection**
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
	2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
	2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
	2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
	3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
	3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
	3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
	4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
	4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
	4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
	5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
	5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.5	25	22.25	19.5	17.75	16.75	16	15.5	14.25	

Spark Degree Advance

E) Adjusting the Size of the Map Window

When you hover your cursor along an edge or corner of the map window, the cursor icon will change, and you click and drag your mouse to adjust the size accordingly.

The screenshot shows the ToyotaCal software interface. On the left is a list of available calibration tables. The main window displays a table titled "Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)" and a 3D surface plot of the same data. The table has columns for Engine Load (10, 20, 30, 40, 50, 60, 70, 80, 90, 100) and rows for Engine Speed (400, 800, 1000, 1200, 1600, 2000, 2400, 2800, 3200, 3600, 3800, 4000, 4400, 4800, 5200, 5600, 6000, 6400, 6800, 7200). The 3D plot shows Spark Degree Advance on the vertical axis, ranging from 0 to 40. Red boxes highlight the table and plot windows, and blue boxes highlight the window handles.

	10	20	30	40	50	60	70	80	90	100	
400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5

F) Moving the Map Window

When you hover your cursor along the Title/Name of the map window, you can click and drag your mouse to move the window accordingly.

The screenshot shows the ToyotaCal software interface. On the left is a tree view of calibration tables. The main area displays a 3D surface plot of Spark Degree Advance (Y-axis, 0 to 40) versus Engine Load (X-axis, 0 to 100) and Engine Speed (Z-axis, 0 to 7200). A red box highlights the title bar of the map window, which reads "Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)". Below the plot is a data table.

	10	20	30	35	40	50	60	70	80	90	100
400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5

G) Panning 3D Maps (not possible with 1D and 2D maps)

When you hover your cursor over the 3D Map, your cursor will change its icon, you can then click and drag your mouse to pan the map accordingly.

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.bn)

Base Ignition Timing @ 89663-53A01- (89663-53A01.bn)

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
	2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
	2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
	2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
	3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
	3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13	
4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25	
4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25	
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5	
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13	
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25	
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	

Spark Degree Advance

H) Opening Multiple Windows

You can open multiple windows by selecting other maps that are not yet open and follow the instructions on how to open a map above.

The screenshot shows the ToyotaCal software interface with the following components:

- Main Window:** Displays a 3D surface plot of Exhaust Valve timing. The Z-axis is Valve Angle (0 to 22), the X-axis is Engine Load (20 to 100), and the Y-axis is Engine Speed (600 to 6700). A data table is overlaid on the plot.
- Available Calibration Tables:** A list of calibration tables on the left side. 'Exhaust Valve timing' and 'Fuel Commanded For Power Enrichment' are highlighted with red boxes.
- Open Calibrations:** A list of currently open calibration files, including '89663-53A01- (89663-53A01.bn)'.
- Secondary Window:** Titled 'Fuel Commanded For Power Enrichment...', it shows a bar chart of Enrichment PE values. The X-axis represents Engine Speed (1200, 2000, 2800, 3600, 4400, 5200, 6000, 6800) and the Y-axis represents Valve. The chart shows consistent enrichment values of 13.824 across all engine speeds.

Engine Speed	Engine Load										
	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8.5	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	8	12	12
6400	8	8	8	8	8	8	8	8	8	12	12
6600	8	8	8	8	8	8	8	8	8	11	11
6700	8	8	8	8	8	8	8	8	8	8	8

I) Cascading Multiple Windows

Action:

ToyotaCal
File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7
- Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:
89663-53A01- (89663-53A01.bin)

Exhaust Valve timing @ 89663-53A01- (89663-53A01.bin)

Engine Speed	Engine Load										
	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8.5	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	8	12	12
6400	8	8	8	8	8	8	8	8	8	12	12
6600	8	8	8	8	8	8	8	8	8	11	11
6700	8	8	8	8	8	8	8	8	8	11	11

Valve Angle

Fuel Commanded For Power Enrichment ...

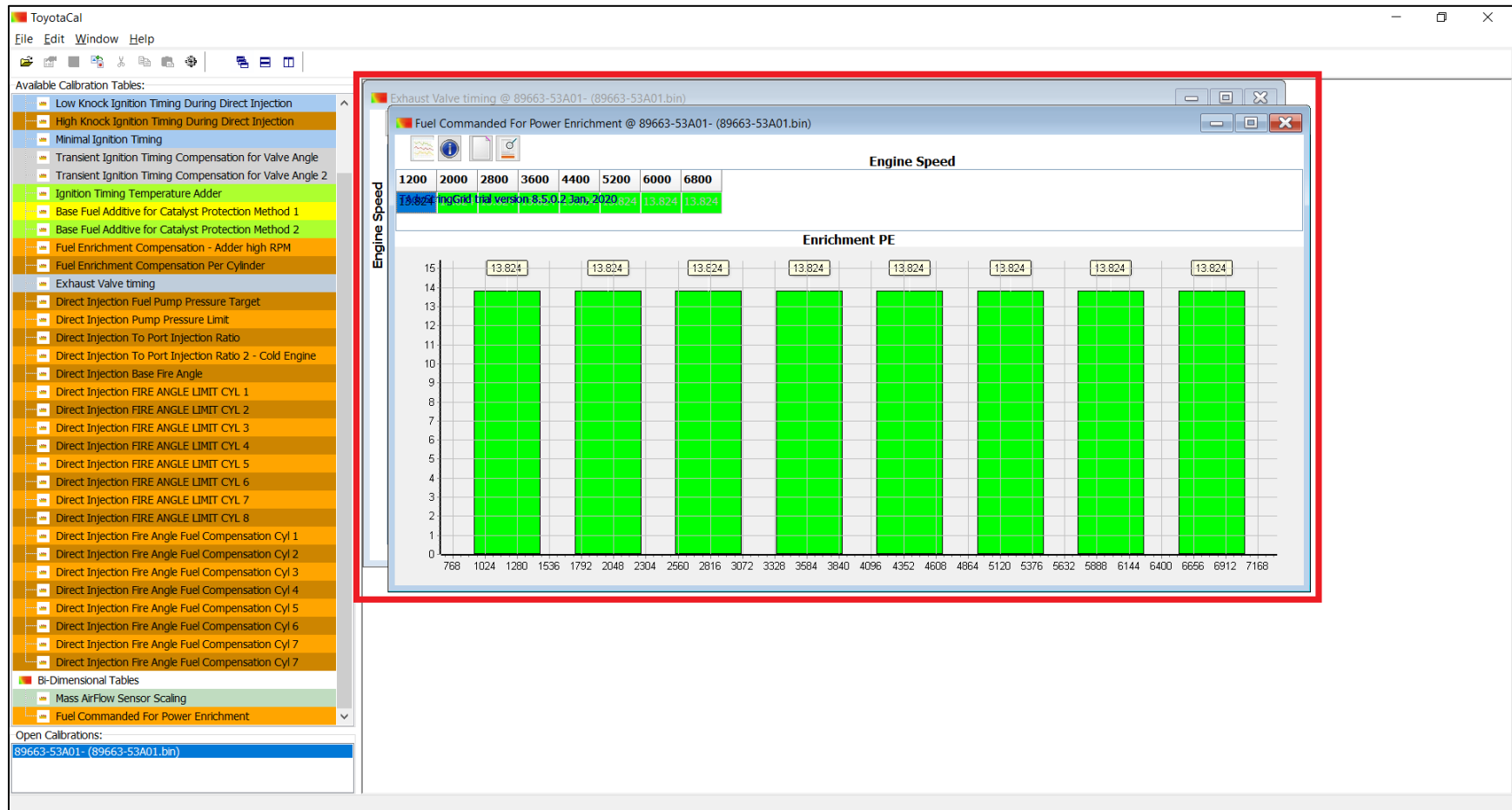
Engine Speed							
1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE

13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824
--------	--------	--------	--------	--------	--------	--------	--------

1024 1536 2048 2560 3072 3584 4096 4608 5120 5632 6144 6656 7168

Result:



J) Horizontal Tiling Multiple Windows

Action:

The screenshot shows the ToyotaCal software interface with multiple windows tiled horizontally. The main window displays the following data:

Exhaust Valve timing @ 89663-53A01- (89663-53A01.bin)

Engine Speed	Engine Load										
	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8.5	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	8	12	12
6400	8	8	8	8	8	8	8	8	8	12	12
6600	8	8	8	8	8	8	8	8	8	11	11
6700	8	8	8	8	8	8	8	8	8	11	11

3D Surface Plot: Shows Valve Angle (Z-axis, 0-22) vs Engine Speed (Y-axis, 1000-6000) and Engine Load (X-axis, 20-100). The surface is mostly flat at a Valve Angle of approximately 10-12 degrees, with a slight increase at higher engine speeds and loads.

Fuel Commanded For Power Enrichment ...

Engine Speed							
1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE Bar Chart: Shows Enrichment PE (Y-axis, 0-15) vs Engine Speed (X-axis, 1024-7168). All bars are at a value of 13.824.

Result:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7
- Bi-Dimensional Tables
- Mass AirFlow Sensor Scaling
- Fuel Commanded For Power Enrichment

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Fuel Commanded For Power Enrichment @ 89663-53A01- (89663-53A01.bin)

Engine Speed

1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE

Exhaust Valve timing @ 89663-53A01- (89663-53A01.bin)

Engine Load

	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	8.5	8.5	8	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22

Valve Angle

K) Vertical Tiling Multiple Windows

Action:

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7
- Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

- 89663-53A01- (89663-53A01.bin)

Exhaust Valve timing @ 89663-53A01- (89663-53A01.bin)

Engine Speed	Engine Load										
	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8.5	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	8	12	12
6400	8	8	8	8	8	8	8	8	8	12	12
6600	8	8	8	8	8	8	8	8	8	11	11
6700	8	8	8	8	8	8	8	8	8	11	11

Fuel Commanded For Power Enrichment ...

Engine Speed							
1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE

Engine Speed	Enrichment PE
1024	13.824
1536	13.824
2048	13.824
2560	13.824
3072	13.824
3584	13.824
4096	13.824
4608	13.824
5120	13.824
5632	13.824
6144	13.824
6656	13.824
7168	13.824

Result:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7
- Bi-Dimensional Tables
- Mass AirFlow Sensor Scaling
- Fuel Commanded For Power Enrichment

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Fuel Commanded For Power Enrichment @ 89663-53A01- (89663-53A01.bin)

Engine Speed							
1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE

Exhaust Valve timing @ 89663-53A01- (89663-53A01.bin)

Engine Speed	Valve Angle
600	8
800	8
1000	8
1200	8
1600	8
2000	8
2400	8
2800	8
3200	8
3600	8
4000	8
4400	8
4800	8
5200	8
5600	8
6000	8
6400	8
6600	8
6700	7

L) Closing the Map Window

Action:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

- 89663-53A01- (89663-53A01.bin)

Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)

	10	20	30	35	40	50	60	70	80	90	100
Engine Speed											
400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5

Spark Degree Advance

Grid trial version 8.5.0.2 Jan, 2020

[Back to Outline](#)

Result:



6) Editing the Values on a Map/Table

A) 3D Map

Select and double-click on a value/cell in the map you want to edit, and type in your desired value. Click the “Enter” key on your keyboard when you’re finished.

The screenshot displays the ToyotaCal software interface. On the left, a list of calibration tables is shown, with 'Base Ignition Timing' selected. The main window displays a 3D surface plot of ignition timing values based on Engine Speed (Y-axis, 400 to 7200 RPM) and Engine Load (X-axis, 10 to 100%). The Z-axis represents Spark Degree Advance (0 to 40 degrees). A data table is overlaid on the plot, showing the numerical values for each combination of engine speed and load. The value 15 is highlighted in a red box at 2400 RPM and 60% load.

	10	20	30	35	40	50	60	70	80	90	100
400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5
7200	42.5	42.5	27.5	25	22.25	19.5	17.75	16.75	16	15.5	14.5

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Modified - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01 - (89663-53A01.bin)

Modified - Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
	2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
	2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
	2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
	3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
	3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
	3800	42.5	42.5	34	30.75	27.75	24.5	21	17	14.5	13.75	13
	4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	13.75	12.5	11.25
	4400	42.5	42.5	34	30.25	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5	
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13	
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25	
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.25	24.75	22	19.25	17.25	16.25	15.25	14.75	14.25	

Spark Degree Advance

B) 2D Map

Select and double-click on a value/cell in the map you want to edit, and type in your desired value. Click the “Enter” key on your keyboard when you’re finished.

The screenshot shows the ToyotaCal software interface. On the left is a list of available calibration tables, with 'Fuel Commanded For Power Enrichment' selected. On the right is a 2D map window titled 'Fuel Commanded For Power Enrichment ...'. The map has 'Engine Speed' on the x-axis (1200, 2000, 2800, 3600, 4400, 5200, 6000, 6800) and 'Enrichment PE' on the y-axis (0 to 15). A table above the map shows the values for each engine speed, with the value 13.824 highlighted in a red box for 6800 RPM. Below the map is a bar chart showing the enrichment PE values for each engine speed, all of which are 13.824.

Engine Speed	Enrichment PE
1200	13.824
2000	13.824
2800	13.824
3600	13.824
4400	13.824
5200	13.824
6000	13.824
6800	13.824

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7
- Direct Injection Fire Angle Fuel Compensation Cyl 7

Bi-Dimensional Tables

- Mass AirFlow Sensor Scaling
- Fuel Commanded For Power Enrichment

Open Calibrations:

89663-53A01 - (89663-53A01.bn)

Fuel Commanded For Power Enrichment ...

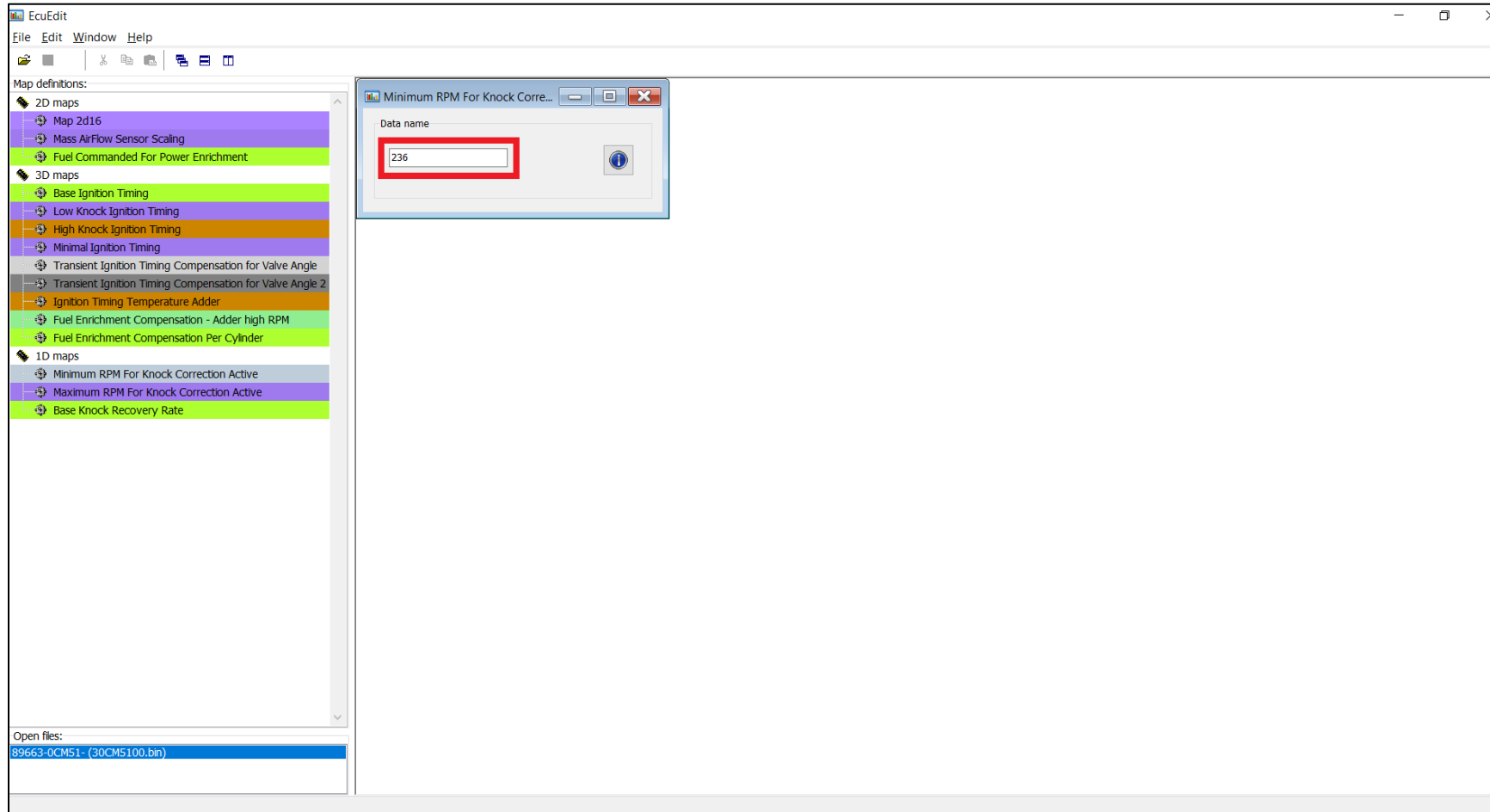
		Engine Speed							
		1200	2000	2800	3600	4400	5200	6000	6800
Adjusting Gain	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	30

Enrichment PE

Engine Speed	Enrichment PE
1024	13.824
1536	13.824
2048	13.824
2560	13.824
3072	13.824
3584	13.824
4096	13.824
4608	13.824
5120	13.824
5632	13.824
6144	13.824
6656	13.824
7168	13.824

C) 1D Map

Click on the Text Box and type in your desired value.



The screenshot displays the EcuEdit software interface. On the left, a tree view under 'Map definitions:' lists various map types. Under '1D maps', the following items are visible: 'Minimum RPM For Knock Correction Active', 'Maximum RPM For Knock Correction Active', and 'Base Knock Recovery Rate'. The 'Minimum RPM For Knock Correction Active' item is highlighted in purple. A dialog box titled 'Minimum RPM For Knock Corre...' is open in the foreground. It contains a 'Data name' field with the value '236' entered, which is highlighted by a red rectangular box. An information icon (i) is located to the right of the text box. At the bottom left of the EcuEdit window, the 'Open files:' section shows the file '89663-0CM51- (30CM5100.bin)'.

7) Editing the Selected/Multiple Values on a Map/Table

A) 3D Map

Select the values you want to change/edit

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

- 89663-53A01 - (89663-53A01.bin)

Base Ignition Timing @ 89663-53A01 - (89663-53A01.bin)

	10	20	30	35	40	50	60	70	80	90	100
400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
1600	42.5	35	24	19.7	17	13.25	11	8.5	7	5	5
2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	7.25	7.25
2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	8.25	8.25
2800	42.5	37.5	28.75	25.2	22	18.25	15.75	13.75	11.25	9.75	8.75
3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	12.5	11.5
3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	13.25	13.25
3800	42.5	42.5	34	30.7	27.75	24.5	21	17	14.5	13	13
4000	42.5	42.5	35.25	31.2	27.25	22	18.75	15.5	13.75	12.5	11.25
4400	42.5	42.5	34	30.2	26.5	22	18.75	16.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5

Spark Degree Advance

Warranty Grid Trial version 8.5.0.2 Jan, 2020

Press CTRL + F on your keyboard. Enter your desired value

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.br)

Base Ignition Timing @ 89663-53A01- (89663-53A01.br)

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
	2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	9.25	8.25	7.25
	2400	42.5	37.5	27.5	24	21.5	17.5	15	13	10.25	9.25	8.25
	2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	11.25	9.75	8.75
	3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	14.5	13.5	11.5
	3600	42.5	40	31	28	25	21.5	18	15.75	13.75	12.75	11.75
	3800	42.5	42.5	34	30.75	27.75	24.5	21	18.75	16.75	15.75	14.75
	4000	42.5	42.5	35.25	31.25	27.25	22	18	15.75	13.75	12.75	11.75
	4400	42.5	42.5	34	30.25	26.5	22	18	15.75	13.75	12.75	11.75
	4800	42.5	42.5	30.5	26.75	23	18.75	16	14.75	13.75	12.75	11.75
	5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
	5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	

Spark Degree Advance

Map set

Set: 30

OK Cancel

[Back to Outline](#)

Press "Ok"

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Modified - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
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 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.br)

Modified - Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.7	30	30	30	30	30		5
	2000	42.5	37.5	26.25	22	30	30	30	30	30	25	7.25
	2400	42.5	37.5	27.5	24	30	30	30	30	30	25	8.25
	2800	42.5	37.5	28.75	25.2	30	30	30	30	30	25	8.75
	3200	42.5	39	30.5	27.5	30	30	30	30	30	2.5	11.5
	3600	42.5	40	31	28	30	30	30	30	30	4.25	13.25
	3800	42.5	42.5	34	30.7	30	30	30	30	30	3.75	13
	4000	42.5	42.5	35.25	31.2	30	30	30	30	30	2.5	11.25
	4400	42.5	42.5	34	30.2	30	30	30	30	30	3	11.25
	4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
	5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
	5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.25	

Spark Degree Advance

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B) 2D Map

Select the values you want to change/edit

The screenshot displays the ToyotaCal software interface. On the left, a list of available calibration tables is shown, including 'Low Knock Ignition Timing During Direct Injection', 'High Knock Ignition Timing During Direct Injection', 'Minimal Ignition Timing', 'Transient Ignition Timing Compensation for Valve Angle', 'Ignition Timing Temperature Adder', 'Base Fuel Additive for Catalyst Protection Method 1', 'Base Fuel Additive for Catalyst Protection Method 2', 'Fuel Enrichment Compensation - Adder high RPM', 'Fuel Enrichment Compensation Per Cylinder', 'Exhaust Valve timing', 'Direct Injection Fuel Pump Pressure Target', 'Direct Injection Pump Pressure Limit', 'Direct Injection To Port Injection Ratio', 'Direct Injection To Port Injection Ratio 2 - Cold Engine', 'Direct Injection Base Fire Angle', 'Direct Injection FIRE ANGLE LIMIT CYL 1' through 'CYL 8', 'Direct Injection Fire Angle Fuel Compensation Cyl 1' through 'CYL 7', 'Bi-Dimensional Tables', 'Mass AirFlow Sensor Scaling', and 'Fuel Commanded For Power Enrichment'. The 'Fuel Commanded For Power Enrichment' table is currently selected and open in a separate window.

The 'Fuel Commanded For Power Enrichment' window shows a table with 'Engine Speed' on the x-axis (1200, 2000, 2800, 3600, 4400, 5200, 6000, 6800) and 'Enrichment PE' on the y-axis (0 to 15). The table contains values for '12V51mg/Gid' and '14V51mg/Gid' at various engine speeds. A red box highlights the values for 13.824 at 5200, 6000, and 6800 RPM for both fuel systems.

Engine Speed	12V51mg/Gid	14V51mg/Gid
1200	13.824	13.824
2000	13.824	13.824
2800	13.824	13.824
3600	13.824	13.824
4400	13.824	13.824
5200	13.824	13.824
6000	13.824	13.824
6800	13.824	13.824

Below the table is a 2D bar chart showing the 'Enrichment PE' values for each engine speed. The x-axis labels are 1024, 1536, 2048, 2560, 3072, 3584, 4096, 4608, 5120, 5632, 6144, 6656, 7168. The y-axis ranges from 0 to 15. All bars are green and have a value of 13.824.

Open Calibrations:
89663-53A01- (89663-53A01.bin)

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Press CTRL + F on your keyboard. Enter your desired value.

The screenshot shows the ToyotaCal software interface. On the left, a list of calibration tables is visible, including 'Fuel Commanded For Power Enrichment'. The main window displays a graph titled 'Fuel Commanded For Power Enrichment' with a table above it. The table shows engine speed values (1200, 2000, 2800, 3600, 4400, 5200, 6000, 6800) and corresponding enrichment PE values (13.824). A 'Map set' dialog box is open, showing a 'Set' field with the value '30'.

Engine Speed							
1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE

1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144	6656	7168
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Map set

Set: 30

OK Cancel

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Press "Ok"

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7

Bi-Dimensional Tables

- Mass AirFlow Sensor Scaling
- Modified - Fuel Commanded For Power Enrichment

Open Calibrations:

89663-53A01- (89663-53A01.br)

Modified - Fuel Commanded For Power E...

Engine Speed

1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	30	30	30

Enrichment PE

Engine Speed	Enrichment PE
1024	13.824
1536	13.824
2048	13.824
2560	13.824
3072	13.824
3584	13.824
4096	13.824
4608	30
5120	30
5632	30
6144	30
6656	30
7168	30

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8) Navigating the 2D and 3D Map Functions

A) Show/Hide Plot

Action:

The screenshot displays the ToyotaCal software interface. On the left, a list of calibration tables is shown, with 'Exhaust Valve timing' selected. The main window is divided into three sections:

- Table 1: Exhaust Valve timing** (Engine Load vs. Engine Speed)
- Table 2: Fuel Commanded For Power Enrichment** (Engine Speed vs. Enrichment PE)
- 3D Plot:** A 3D surface plot showing the relationship between Engine Load, Engine Speed, and a third variable (likely Valve Angle).

Table 1: Exhaust Valve timing

Engine Speed	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8.5	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	8	12	12
6400	8	8	8	8	8	8	8	8	8	12	12
6600	8	8	8	8	8	8	8	8	8	11	11
6700	8	8	8	8	8	8	8	8	8	11	11

Table 2: Fuel Commanded For Power Enrichment

Engine Speed	1200	2000	2800	3600	4400	5200	6000	6800
Enrichment PE	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

3D Plot: The 3D surface plot shows the relationship between Engine Load (X-axis, 0-100), Engine Speed (Y-axis, 0-5000), and a third variable (Z-axis, 0-22). The surface is mostly flat at a low value, with a sharp increase in the Z-axis value as Engine Load increases beyond 60% at higher Engine Speeds.

Result:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.br)

Exhaust Valve timing @ 89663-53...

		Engine Load										
		10	15	20	30	40	50	60	70	80	90	100
Engine Speed	600	8	8	8	8	8	8	8	8	8	8	8
	800	8	8	4	4	4	8.5	8.5	8	8	8	8
	900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
	1000	8	8	8.5	10	10	8.5	8.5	8.5	8	8	8
	1200	8	8	10	10	10	10	8.5	8.5	12	14	14
	1600	8	8	10	10	10	10	8.5	8.5	16	18	18
	2000	8	8	8	10	10	10	8.5	8.5	16	16	16
	2400	8	8	8	10	10	10	8.5	8.5	16	18	18
	2800	8	8	8	10	10	10	8.5	8.5	16	20	20
	3200	8	8	8	10	10	10	8.5	10	18	20	20
	3600	8	8	8	10	10	10	8.5	12	20	22	22
	4000	8	8	8	10	10	10	8.5	8.5	12	20	20
	4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18	
5200	8	8	8	8	8	8	8	8	12	16	16	
5600	8	8	8	8	8	8	8	8	12	12	12	
6000	8	8	8	8	8	8	8	8	8	12	12	
6400	8	8	8	8	8	8	8	8	8	12	12	
6600	8	8	8	8	8	8	8	8	8	11	11	
6700	Advertising trial version 8.5.0.2 Jan, 2020											

Valve Angle

Fuel Commanded For Power Enrichment ...

		Engine Speed							
		1200	2000	2800	3600	4400	5200	6000	6800
Enrichment PE	1200	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824
	2000	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

B) Show Map Information

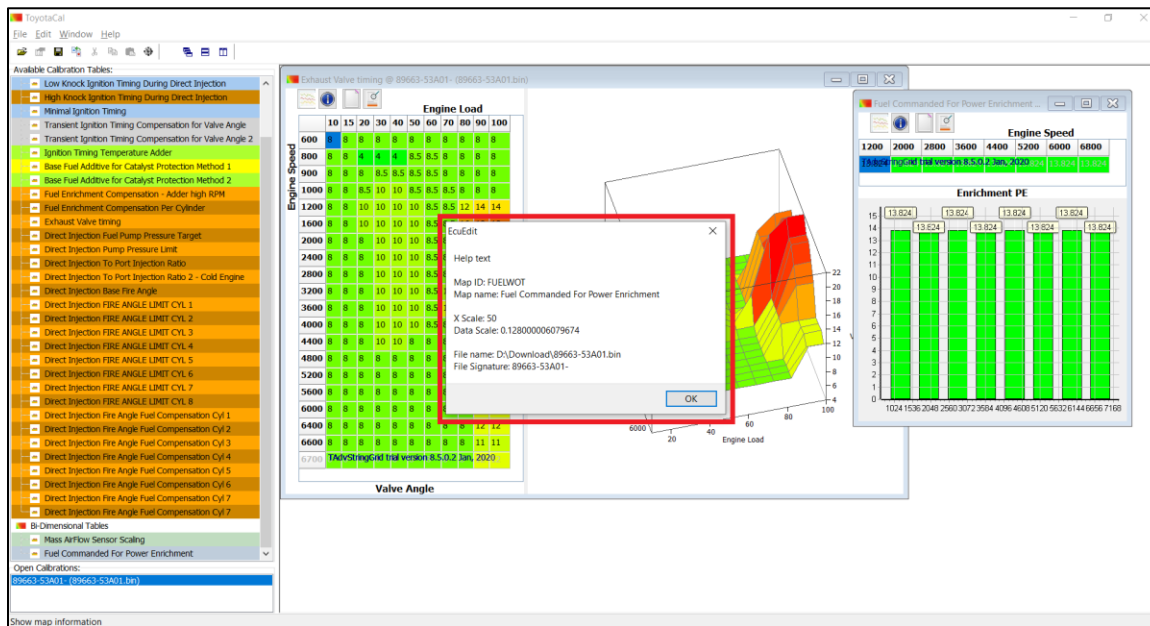
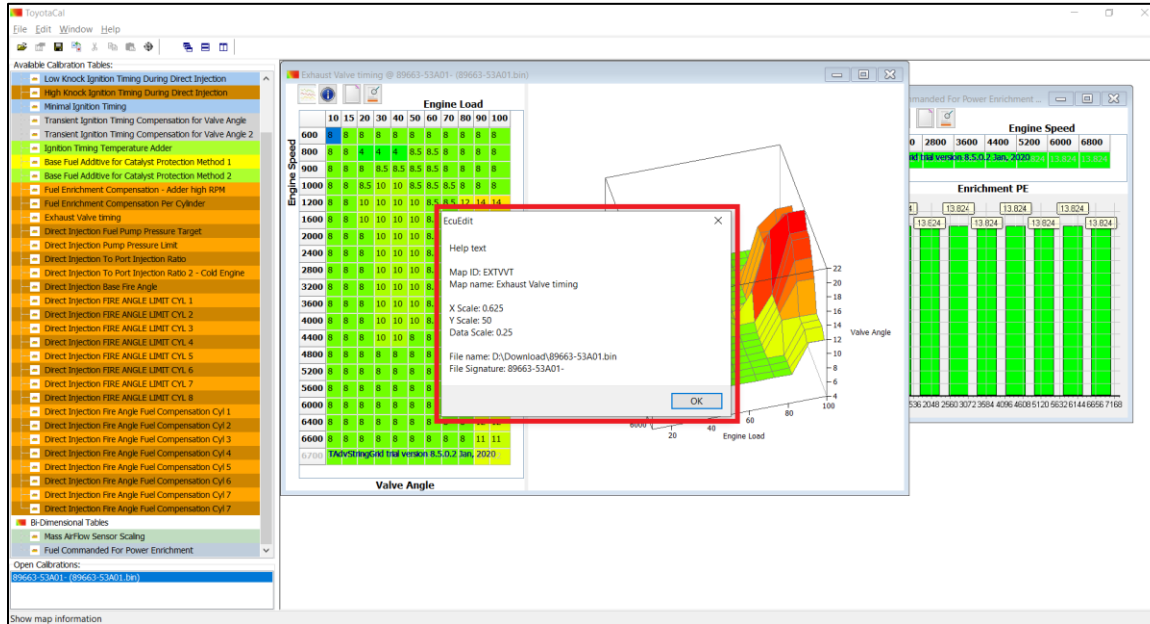
Action:

The screenshot displays the ToyotaCal software interface. On the left, a list of available calibration tables is shown, with 'Exhaust Valve timing' selected. The main window contains three data visualizations:

- Exhaust Valve timing table:** A 2D table showing Valve Angle (Y-axis, 600-6700 RPM) versus Engine Load (X-axis, 10-100%). The table shows values ranging from 8 to 22 degrees. A red box highlights the information icon in the top-left corner of the table.
- 3D Surface Plot:** A 3D plot of Valve Angle versus Engine Speed (Z-axis, 1000-5000 RPM) and Engine Load (X-axis, 20-100%). The surface shows a transition from green to red as engine load and speed increase.
- Fuel Commanded For Power Enrichment table:** A table showing Enrichment PE (Y-axis, 0-15) versus Engine Speed (X-axis, 1200-6800 RPM). The table shows a constant value of 13.824 across all engine speeds. A red box highlights the information icon in the top-left corner of the table.

Below the 3D plot, the text 'Valve Angle' is displayed. At the bottom of the Fuel Commanded table, the text 'Fuel Commanded For Power Enrichment ...' is visible.

Result:



C) Change Table Color Mode

Action:

The screenshot shows the ToyotaCal software interface. On the left, a list of available calibration tables is shown, including 'Exhaust Valve timing'. The main window displays the 'Exhaust Valve timing' table for engine speed (600-6700 RPM) and engine load (10-100%). A 3D surface plot visualizes the valve angle data. A secondary window, 'Fuel Commanded For Power Enrichment', shows a bar chart of enrichment PE values across various engine speeds and loads. A red box in the top-left corner of the 'Exhaust Valve timing' window highlights the 'Change Table Color Mode' icon.

Engine Speed	Engine Load										
	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	8	12	12
6400	8	8	8	8	8	8	8	8	8	12	12
6600	8	8	8	8	8	8	8	8	8	11	11
6700	8	8	8	8	8	8	8	8	8	11	11

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Result:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7
- Bi-Dimensional Tables
- Mass AirFlow Sensor Scaling
- Fuel Commanded For Power Enrichment

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Exhaust Valve timing @ 89663-53A01- (89663-53A01.bin)

Engine Speed	Engine Load										
	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	8	12	12
6400	8	8	8	8	8	8	8	8	8	12	12
6600	8	8	8	8	8	8	8	8	8	11	11
6700											

Valve Angle

Fuel Commanded For Power Enrichment ...

Engine Speed							
1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE

1024 1536 2048 2560 3072 3584 4096 4608 5120 5632 6144 6656 7168

D) Highlight Changed Values

Action:

ToyotaCal
File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
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- Direct Injection Pump Pressure Limit
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- Direct Injection To Port Injection Ratio 2 - Cold Engine
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- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7
- Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

- 89663-53A01- (89663-53A01.bin)

Exhaust Valve timing © 89663-53A01- (89663-53A01.bin)

Engine Speed	Engine Load										
	10	15	20	30	40	50	60	70	80	90	100
600	8	8	8	8	8	8	8	8	8	8	8
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8	8	8	8
1200	8	8	10	10	10	8.5	8.5	12	14	14	14
1600	8	8	10	10	10	8.5	8.5	16	18	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	8	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	8	12	12
6400	8	8	8	8	8	8	8	8	8	12	12
6600	8	8	8	8	8	8	8	8	8	11	11
6700	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Valve Angle

Fuel Commanded For Power Enrichment ...

Engine Speed							
1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE

1024 1536 2048 2560 3072 3584 4096 4608 5120 5632 6144 6656 7168

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Result:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Low Knock Ignition Timing During Direct Injection
- High Knock Ignition Timing During Direct Injection
- Minimal Ignition Timing
- Transient Ignition Timing Compensation for Valve Angle
- Transient Ignition Timing Compensation for Valve Angle 2
- Ignition Timing Temperature Adder
- Base Fuel Additive for Catalyst Protection Method 1
- Base Fuel Additive for Catalyst Protection Method 2
- Fuel Enrichment Compensation - Adder high RPM
- Fuel Enrichment Compensation Per Cylinder
- Modified - Exhaust Valve timing
- Direct Injection Fuel Pump Pressure Target
- Direct Injection Pump Pressure Limit
- Direct Injection To Port Injection Ratio
- Direct Injection To Port Injection Ratio 2 - Cold Engine
- Direct Injection Base Fire Angle
- Direct Injection FIRE ANGLE LIMIT CYL 1
- Direct Injection FIRE ANGLE LIMIT CYL 2
- Direct Injection FIRE ANGLE LIMIT CYL 3
- Direct Injection FIRE ANGLE LIMIT CYL 4
- Direct Injection FIRE ANGLE LIMIT CYL 5
- Direct Injection FIRE ANGLE LIMIT CYL 6
- Direct Injection FIRE ANGLE LIMIT CYL 7
- Direct Injection FIRE ANGLE LIMIT CYL 8
- Direct Injection Fire Angle Fuel Compensation Cyl 1
- Direct Injection Fire Angle Fuel Compensation Cyl 2
- Direct Injection Fire Angle Fuel Compensation Cyl 3
- Direct Injection Fire Angle Fuel Compensation Cyl 4
- Direct Injection Fire Angle Fuel Compensation Cyl 5
- Direct Injection Fire Angle Fuel Compensation Cyl 6
- Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Modified - Exhaust Valve timing @ 89663-53A01- (89663-53A01.bin)

Engine Speed	Engine Load										
	10	15	20	30	40	50	60	70	80	90	100
600	20	8	8	8	8	8	8	8	8	8	20
800	8	8	4	4	4	8.5	8.5	8	8	8	8
900	8	8	8	8.5	8.5	8.5	8.5	8	8	8	8
1000	8	8	8.5	10	10	8.5	8.5	8.5	8	8	8
1200	8	8	10	10	10	10	8.5	8.5	12	14	14
1600	8	8	10	10	10	10	8.5	8.5	16	18	18
2000	8	8	8	10	10	10	8.5	8.5	16	16	16
2400	8	8	8	10	10	10	8.5	8.5	16	18	18
2800	8	8	8	10	10	10	8.5	8.5	16	20	20
3200	8	8	8	10	10	10	8.5	10	18	20	20
3600	8	8	8	10	10	10	8.5	12	20	22	22
4000	8	8	8	10	10	10	8.5	8.5	12	20	20
4400	8	8	8	10	10	10	8	8	12	20	20
4800	8	8	8	8	8	8	8	8	12	18	18
5200	8	8	8	8	8	8	8	8	12	16	16
5600	8	8	8	8	8	8	8	8	12	12	12
6000	8	8	8	8	8	8	8	8	12	12	12
6400	8	8	8	8	8	8	8	8	12	12	12
6600	8	8	8	8	8	8	8	8	11	11	11
6700	14										30

Valve Angle

Modified - Fuel Commanded For Power E...

Engine Speed							
1200	2000	2800	3600	4400	5200	6000	6800
13.824	13.824	13.824	13.824	13.824	13.824	13.824	20

Enrichment PE

9) Value Interpolation

A) 3D Map

Select the values you want to interpolate

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

- 89663-53A01- (89663-53A01.bn)

Base Ignition Timing @ 89663-53A01- (89663-53A01.bn)

	10	20	30	35	40	50	60	70	80	90	100
400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
2000	42.5	37.5	26.25	22	19.25	15.75	13	11.25	10.25	8.25	7.25
2400	42.5	37.5	27.5	24	21.5	17.5	15	13	12.25	9.25	8.25
2800	42.5	37.5	28.75	25.25	22	18.25	15.75	13.75	12.5	9.75	8.75
3200	42.5	39	30.5	27.5	24.5	21.25	19.25	17	15.5	12.5	11.5
3600	42.5	40	31	28	25	21.5	18.75	16.25	15.25	14.25	13.25
3800	42.5	42.5	34	30.75	27.75	24.5	21	17	16.5	13.75	13
4000	42.5	42.5	35.25	31.25	27.25	22	18.75	15.5	14.75	12.5	11.25
4400	42.5	42.5	34	30.25	26.5	22	18.75	15.5	14.75	13	11.25
4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5
7200	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5

Spark Degree Advance

Press CTRL + I on your keyboard. Result:

ToyotaCal

File Edit Window Help

Available Calibration Tables:

- Tri-Dimensional Tables
 - Modified - Base Ignition Timing
 - Base Ignition Timing During Direct Injection
 - Low Knock Ignition Timing
 - Low Knock Ignition Timing During Direct Injection
 - High Knock Ignition Timing During Direct Injection
 - Minimal Ignition Timing
 - Transient Ignition Timing Compensation for Valve Angle
 - Transient Ignition Timing Compensation for Valve Angle 2
 - Ignition Timing Temperature Adder
 - Base Fuel Additive for Catalyst Protection Method 1
 - Base Fuel Additive for Catalyst Protection Method 2
 - Fuel Enrichment Compensation - Adder high RPM
 - Fuel Enrichment Compensation Per Cylinder
 - Exhaust Valve timing
 - Direct Injection Fuel Pump Pressure Target
 - Direct Injection Pump Pressure Limit
 - Direct Injection To Port Injection Ratio
 - Direct Injection To Port Injection Ratio 2 - Cold Engine
 - Direct Injection Base Fire Angle
 - Direct Injection FIRE ANGLE LIMIT CYL 1
 - Direct Injection FIRE ANGLE LIMIT CYL 2
 - Direct Injection FIRE ANGLE LIMIT CYL 3
 - Direct Injection FIRE ANGLE LIMIT CYL 4
 - Direct Injection FIRE ANGLE LIMIT CYL 5
 - Direct Injection FIRE ANGLE LIMIT CYL 6
 - Direct Injection FIRE ANGLE LIMIT CYL 7
 - Direct Injection FIRE ANGLE LIMIT CYL 8
 - Direct Injection Fire Angle Fuel Compensation Cyl 1
 - Direct Injection Fire Angle Fuel Compensation Cyl 2
 - Direct Injection Fire Angle Fuel Compensation Cyl 3
 - Direct Injection Fire Angle Fuel Compensation Cyl 4
 - Direct Injection Fire Angle Fuel Compensation Cyl 5
 - Direct Injection Fire Angle Fuel Compensation Cyl 6
 - Direct Injection Fire Angle Fuel Compensation Cyl 7

Open Calibrations:

89663-53A01- (89663-53A01.bin)

Modified - Base Ignition Timing @ 89663-53A01- (89663-53A01.bin)

		Engine Load										
		10	20	30	35	40	50	60	70	80	90	100
Engine Speed	400	42.5	27.5	18.75	15.5	12.5	8.25	5	3.25	2.25	1.25	0.25
	800	42.5	28.5	18.75	15.75	13	8.75	6.25	4.75	3.75	2.75	1.75
	1000	42.5	30	18.75	15.75	13	9.25	7	5.75	4.75	3.75	2.75
	1200	42.5	32.5	19	16.25	13.5	10	8	6	5	4	3
	1600	42.5	35	24	19.75	17	13.25	11	8.5	7	6	5
	2000	42.5	37.5	26.2	22	19.31	16.62	13.93	11.25	2.5	8.25	7.25
	2400	42.5	37.5	27.5	23.54	20.64	17.75	14.85	11.95	0.25	9.25	8.25
	2800	42.5	37.5	28.7	25.08	21.97	18.87	15.77	12.66	1.25	9.75	8.75
	3200	42.5	39	30.5	26.62	23.31	20	16.68	13.37	4.5	12.5	11.5
	3600	42.5	40	31	28.16	24.64	21.12	17.60	14.08	5.25	14.25	13.25
	3800	42.5	42.5	34	29.70	25.97	22.25	18.52	14.79	4.5	13.75	13
	4000	42.5	42.5	35.2	31.25	27.31	23.37	19.43	15.5	3.75	12.5	11.25
	4400	42.5	42.5	34	30.25	26.5	22	18.75	14.5	14.75	13	11.25
	4800	42.5	42.5	30.5	26.75	23	18.75	16	13.75	12.75	12	11.5
	5200	42.5	42.5	30	26.75	23.5	19	17.5	15.75	14.5	13.75	13
	5600	42.5	42.5	28.5	26	23.5	18.5	17.25	16	14.75	14.25	13.25
6000	42.5	42.5	26.25	23.25	20.25	17.25	15.75	14.75	14.5	14	13.5	
6400	42.5	42.5	28.25	25	21.75	19	17.25	16	15.25	14.5	14	
6800	42.5	42.5	27.75	25	22.25	19.5	17.75	16.75	16	15.5	14.5	
7200	42.5	42.5	27.5	25	22.25	19.5	17.75	16.5	15.5	14.75	14.25	

Spark Degree Advance

3D Surface Plot: Spark Degree Advance vs Engine Speed and Engine Load. The plot shows a surface that generally decreases in spark degree advance as engine speed and load increase, with a notable dip at high RPM and low load.

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B) 2D Map

Select the values you want to interpolate

The screenshot displays the ToyotaCal software interface. On the left, a list of available calibration tables is shown, with 'Fuel Commanded For Power Enrichment' selected. Below this list, the 'Open Calibrations' section shows '89663-53A01 - (89663-53A01.bin)'. On the right, a window titled 'Fuel Commanded For Power Enrichment ...' is open, showing a 2D map. The map's x-axis is 'Engine Speed' (RPM) with values 1200, 2000, 2800, 3600, 4400, 5200, 6000, and 6800. The y-axis is 'Enrichment PE' with values from 0 to 15. The map shows a grid of green bars representing data points. A red box highlights the values 13.824 for the 2800, 3600, 4400, 5200, and 6000 RPM points. The 1200 RPM point is 13.824, and the 6800 RPM point is 3.824.

Engine Speed (RPM)	Enrichment PE
1200	13.824
2000	13.824
2800	13.824
3600	13.824
4400	13.824
5200	13.824
6000	13.824
6800	3.824

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Press CTRL + I on your keyboard. Result:

The screenshot shows the ToyotaCal software interface. On the left is a tree view of 'Available Calibration Tables' with 'Modified - Fuel Commanded For Power Enrichment' selected. The main window displays a table for 'Engine Speed' and a bar chart for 'Enrichment PE'.

Engine Speed	1200	2000	2800	3600	4400	5200	6000	6800
AdvStingGK	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

Enrichment PE	1024	1536	2048	2560	3072	3584	4096	4608	5120	5632	6144	6656	7168
Value	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824	13.824

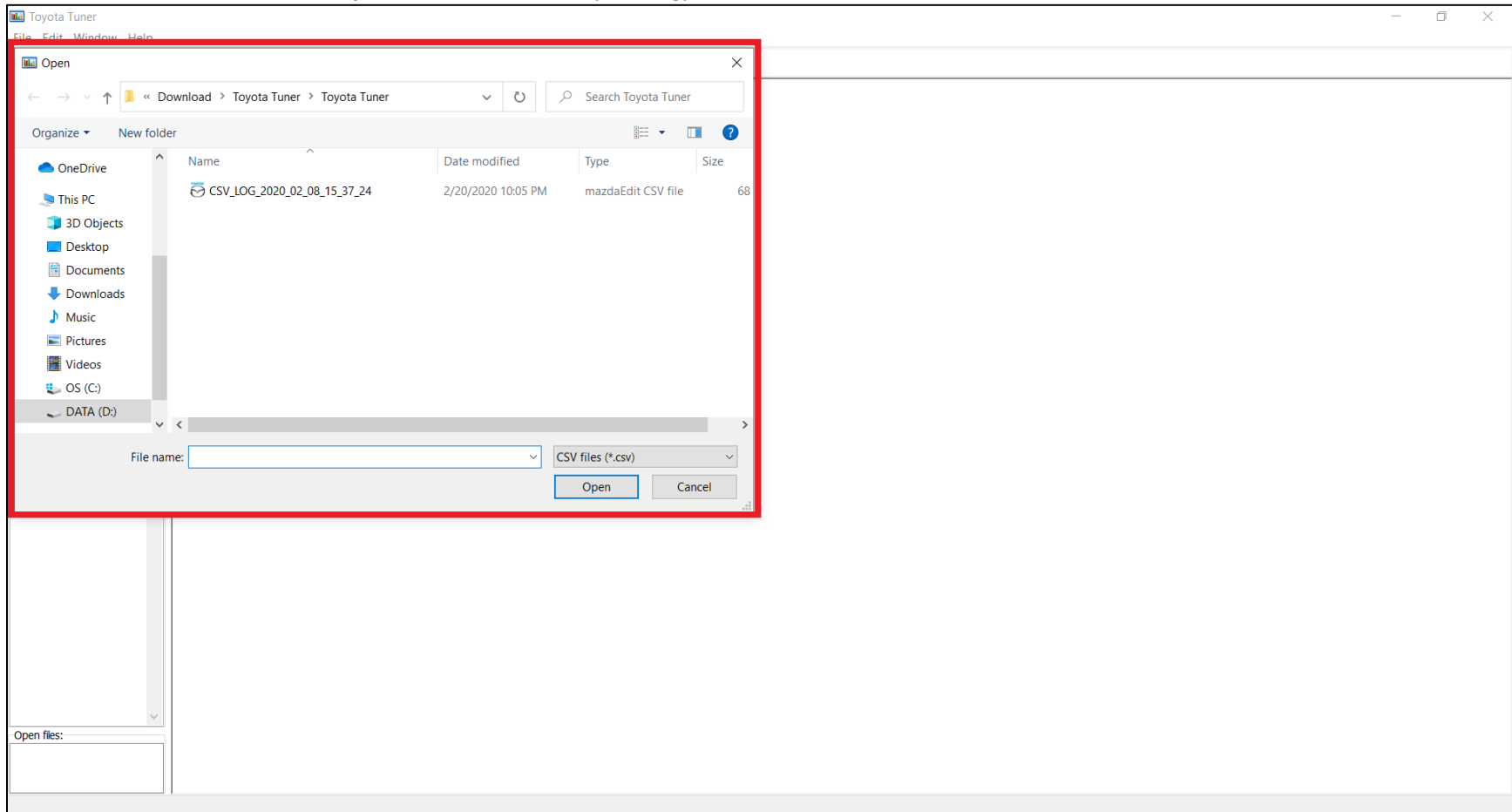
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10) Opening a CSV (Datalog) File

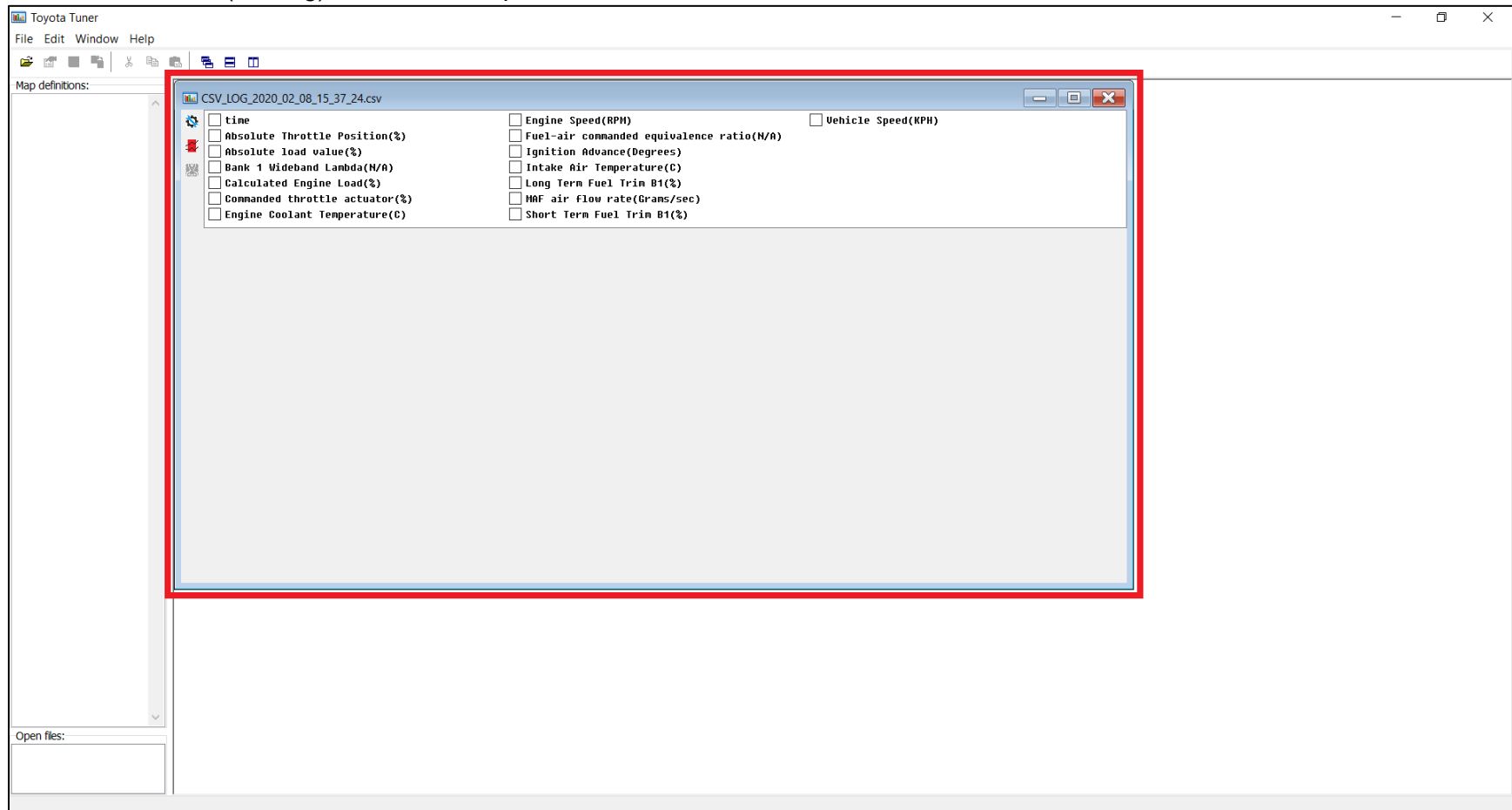
Click on “File” menu, and select “Open CSV...”



A window will open that will let you find the CSV file (datalog) from the folder where it's saved



Select the CSV file (datalog) and click on "Open"



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You can select the “parameters” by clicking on the small box in front of the parameters you want to view.

The screenshot shows the Toyota Tuner application window. The main area displays a list of parameters for a CSV log file named "CSV_LOG_2020_02_08_15_37_24.csv". The parameters are organized into two columns. The first column contains parameters such as "time", "Absolute Throttle Position(%)", "Absolute Load Value(%)", "Bank 1 Wideband Lambda(N/A)", "Calculated Engine Load(%)", "Commanded throttle actuator(%)", and "Engine Coolant Temperature(C)". The second column contains parameters such as "Engine Speed(RPM)", "Fuel-air Commanded equivalence ratio(N/A)", "Ignition Advance(Degrees)", "Intake Air Temperature(C)", "Long Term Fuel Trim B1(%)", "MAF air flow rate(Grans/sec)", and "Short Term Fuel Trim B1(%)". The "Engine Speed(RPM)" and "Absolute Throttle Position(%)" checkboxes are highlighted with red boxes. Below the parameter list, there are two line graphs. The top graph is titled "Engine Speed(RPM)" and shows a blue line representing engine speed over time, with the y-axis ranging from 0 to 3,000 RPM and the x-axis from 0 to 400,000. The bottom graph is titled "Absolute Throttle Position(%)" and shows a blue line representing throttle position over time, with the y-axis ranging from 40 to 45% and the x-axis from 0 to 400,000. The graphs are also highlighted with red boxes. The application window includes a menu bar (File, Edit, Window, Help), a toolbar, and a "Map definitions:" section on the left. At the bottom left, there is an "Open files:" section.

A) Configuring the Colors Datalog to Highlight Values

Click on the “Configure Chart”

The screenshot displays the Toyota Tuner interface with a datalog configuration window open. The window title is "CSV_LOG_2020_02_08_15_37_24.csv". A red box highlights the gear icon in the top-left corner of the datalog window, which is used to access the "Configure Chart" options. The configuration panel lists various parameters with checkboxes:

- time
- Absolute Throttle Position(%)
- Absolute load value(%)
- Bank 1 Wideband Lambda(N/A)
- Calculated Engine Load(%)
- Commanded throttle actuator(%)
- Engine Coolant Temperature(C)
- Engine Speed(RPM)
- Fuel-air commanded equivalence ratio(N/A)
- Ignition Advance(Degrees)
- Intake Air Temperature(C)
- Long Term Fuel Trim B1(%)
- MAF air flow rate(Grams/sec)
- Short Term Fuel Trim B1(%)
- Vehicle Speed(KPH)

The "Set Rule" dialog box is open over the "Engine Speed(RPM)" chart. The rule is configured as follows:

- Operator: ==
- Value: 30
- Color: Red
- Action: + (Add)

The chart shows engine speed fluctuating between approximately 1000 and 3000 RPM over 400,000 cycles. Below the chart is a bar chart for "Absolute Throttle Position(%)" with values between 40 and 45.

Select which parameters you want to change the color

The screenshot shows the Toyota Tuner application interface. On the left, there is a 'Map definitions:' panel. The main window displays a data log titled 'CSV_LOG_2020_02_08_15_37_24.csv'. A list of parameters is shown with checkboxes, including 'Engine Speed(RPM)' which is checked. A 'Set Rule' dialog box is open over the graph, allowing the user to select a parameter from a dropdown menu. The dropdown menu is currently set to 'Engine Speed(RPM)'. The dialog also shows a comparison operator '==', a value '30', a color selection button (red), and a '+' button. The graph below shows a blue line representing engine speed over time, with a red box highlighting the 'Engine Speed(RPM)' label above the plot area.

Set the conditions of the color

The screenshot shows the Toyota Tuner software interface. On the left, there is a 'Map definitions:' panel. The main area displays a graph titled 'Engine Speed(RPM)' with a blue line representing the data. The y-axis ranges from 1,000 to 3,000 RPM, and the x-axis ranges from 0 to 400,000. A 'Set Rule' dialog box is open, allowing the user to define a condition for the graph. The dialog box has a dropdown menu for the variable, currently set to 'Engine Speed(RPM)'. The condition is set to '<= 3000'. A red box highlights the dropdown menu, which lists the following options: '<=', '<', '>', '>=', '=', '< &=', '> &=', and '< & >'. The value '3000' is entered in the input field, and a red box highlights the input field. The dialog box also has a '+' button and a close button (X).

Map definitions:

- time
- Absolute Throttle Position(%)
- Absolute load value(%)
- Bank 1 Wideband Lambda(N/A)
- Calculated Engine Load(%)
- Commanded throttle actuator(%)
- Engine Coolant Temperature(C)
- Engine Speed(RPM)
- Fuel-air commanded equivalence ratio(N/A)
- Ignition Advance(Degrees)
- Intake Air Temperature(C)
- Long Term Fuel Trim B1(%)
- MAF air flow rate(Grams/sec)
- Short Term Fuel Trim B1(%)
- Vehicle Speed(RPH)

Engine Speed(RPM)

Set Rule

Enter the value

Engine Speed(RPM) <= 3000 +

Equal to
Everything not equal to
More than
Less than
More than and equal to
Less than and equal to

Open files:

Set the color

The screenshot shows the Toyota Tuner application window. The main area displays a data plot for 'Absolute Throttle Position(%)' over time, with a secondary plot below it. A 'Color' dialog box is open, allowing the user to select a color for the data series. The dialog includes a grid of 'Basic colors' and a 'Custom colors' section. A 'Set Rule' dialog is also visible, partially overlapping the main plot.

Map definitions:

- time
- Absolute Throttle Position(%)
- Absolute load value(%)
- Bank 1 Wideband Lambda(N/A)
- Calculated Engine Load(%)
- Commanded throttle actuator(%)
- Engine Coolant Temperature(C)
- Engine
- Fuel-a
- Igniti
- Intake
- Long T
- MAF ai
- Short

Color Dialog:

- Basic colors: A grid of 24 color swatches.
- Custom colors: A grid of 12 black swatches.
- Buttons: OK, Cancel, Define Custom Colors >>

Set Rule Dialog:

- Buttons: Set Rule, +, X

Plot Data:

- Y-axis: 0, 1,000, 1,500, 2,000, 2,500, 3,000
- X-axis: 0, 50,000, 100,000, 150,000, 200,000, 250,000, 300,000, 360,000, 400,000
- Label: Absolute Throttle Position(%)

Open files:

Open files:

Click the “+” (plus) button to add more highlighting of values. Click on the “-” (minus) sign to remove a condition.

The screenshot shows the Toyota Tuner application window. On the left, there is a 'Map definitions:' panel. The main area displays a CSV log viewer for 'CSV_LOG_2020_02_08_15_37_24.csv'. A list of parameters is shown with checkboxes, including 'time', 'Absolute Throttle Position(%)', 'Engine Speed(RPM)', and 'Vehicle Speed(KPH)'. Below the list are two line graphs: 'Engine Speed(RPM)' and 'Absolute Throttle Position(%)'. A 'Set Rule' dialog box is open over the 'Engine Speed(RPM)' graph, showing two conditions: '== 30' and '== 30'. The dialog includes a red '+' button to add a condition and a red '-' button to remove one.

B) Cutting Part of the Datalog

Click on the “Select range to cut”. The highlighted (in pink) are the data that can be cut.

The screenshot shows the Toyota Tuner software interface. A window titled "CSV_LOG_2020_02_08_15_37_24.csv" is open, displaying a list of data parameters and a corresponding graph. The graph shows "Engine Speed(RPM)" on the y-axis (ranging from 1,000 to 3,000) and "Absolute Throttle Position(%)" on the x-axis (ranging from 0 to 400,000). A red rectangular selection box highlights a portion of the data, from approximately 100,000 to 250,000 on the x-axis. The background of the graph area is highlighted in pink. The parameter list includes:

- time
- Absolute Throttle Position(%)
- Absolute load value(%)
- Bank 1 Wideband Lambda(N/A)
- Calculated Engine Load(%)
- Commanded throttle actuator(%)
- Engine Coolant Temperature(C)
- Engine Speed(RPM)
- Fuel-air commanded equivalence ratio(N/A)
- Ignition Advance(Degrees)
- Intake Air Temperature(C)
- Long Term Fuel Trim B1(%)
- MAF air flow rate(Grams/sec)
- Short Term Fuel Trim B1(%)
- Vehicle Speed(KPH)

The "Select range to cut" button is highlighted in pink in the parameter list.

You can use your mouse to select (click and drag from left to right) a specific area you want to cut (it will zoom in on that area).

The screenshot shows the Toyota Tuner software interface. A window titled "CSV_LOG_2020_02_08_15_37_24.csv" is open, displaying a list of data parameters and a corresponding graph. The graph shows "Engine Speed(RPM)" on the y-axis (ranging from 2,200 to 3,400) and "Absolute Throttle Position(%)" on the x-axis (ranging from 120,000 to 150,000). A red rectangular box highlights a specific section of the graph, indicating a zoomed-in view of that data.

Parameter	Checked
time	<input type="checkbox"/>
Absolute Throttle Position(%)	<input checked="" type="checkbox"/>
Absolute load value(%)	<input type="checkbox"/>
Bank 1 Wideband Lambda(N/A)	<input type="checkbox"/>
Calculated Engine Load(%)	<input type="checkbox"/>
Commanded throttle actuator(%)	<input type="checkbox"/>
Engine Coolant Temperature(C)	<input type="checkbox"/>
Engine Speed(RPM)	<input checked="" type="checkbox"/>
Fuel-air commanded equivalence ratio(N/A)	<input type="checkbox"/>
Ignition Advance(Degrees)	<input type="checkbox"/>
Intake Air Temperature(C)	<input type="checkbox"/>
Long Term Fuel Trim B1(%)	<input type="checkbox"/>
MAF air flow rate(Grans/sec)	<input type="checkbox"/>
Short Term Fuel Trim B1(%)	<input type="checkbox"/>
Vehicle Speed(KPH)	<input type="checkbox"/>

You can zoom out by clicking and dragging your mouse from right to left.

Toyota Tuner

File Edit Window Help

Map definitions:

CSV_LOG_2020_02_08_15_37_24.csv

- time
- Absolute Throttle Position(%)
- Absolute load value(%)
- Bank 1 Wideband Lambda(N/A)
- Calculated Engine Load(%)
- Commanded throttle actuator(%)
- Engine Coolant Temperature(C)
- Engine Speed(RPM)
- Fuel-air commanded equivalence ratio(N/A)
- Ignition Advance(Degrees)
- Intake Air Temperature(C)
- Long Term Fuel Trim B1(%)
- MAF air flow rate(Grans/sec)
- Short Term Fuel Trim B1(%)
- Vehicle Speed(KPH)

Click on the “Cut selection” to cut the selected range.

The screenshot shows the Toyota Tuner application window. On the left, there is a 'Map definitions:' panel. The main area displays a data log window titled 'CSV_LOG_2020_02_08_15_37_24.csv'. This window has a list of parameters with checkboxes: 'time', 'Absolute Throttle Position(%)', 'Absolute load value(%)', 'Bank 1 Wideband Lambda(N/A)', 'Calculated Engine Load(%)', 'Commanded throttle actuator(%)', 'Engine Coolant Temperature(C)', 'Engine Speed(RPM)', 'Fuel-air commanded equivalence ratio(N/A)', 'Ignition Advance(Degrees)', 'Intake Air Temperature(C)', 'Long Term Fuel Trim B1(%)', 'MAF air flow rate(Grans/sec)', 'Short Term Fuel Trim B1(%)', and 'Vehicle Speed(KPH)'. The 'Engine Speed(RPM)' checkbox is checked. Below the list is a graph area. The top graph is titled 'Engine Speed(RPM)' and has a y-axis from 2,15 to 2,55. A red rectangular selection box is drawn around a portion of this graph. The bottom graph is titled 'Absolute Throttle Position(%)' and has a y-axis with a '40' mark. A red rectangular selection box is also drawn around a portion of this graph. In the bottom-left corner of the main window, there is an 'Open files:' field.

III) Saving Your Work

1) Save Map

Saves the changes in the current active map

2) Save File

Saves the changes in the current active file

3) Save All

Saves the changes in all the opened files

The screenshot displays the ToyotaCal software interface. On the left, the 'File' menu is open, highlighting 'Save Map', 'Save File', and 'Save All'. The main window shows a data table for 'Minimal Ignition Timing' and a 3D surface plot of Spark Degree Advance.

		Engine Load										
		10	20	30	40	50	60	70	80	90	100	110
Engine Speed	400	50	43	31.75	24.5	20	17.5	14	13	12	11	10
	800	50	46	34	26	21.5	18.5	16	15	14	13	12
	1000	50	47	35	29	25	20	17.5	16.5	15.5	14.5	13.5
	1200	50	50	37.5	30	26.75	23	19.5	17	16	15	14
	1600	50	50	39	32.5	29	26	22.5	18.5	17.5	16.5	15.5
	2000	50	50	41	34.5	30	29	24.5	22	19.5	18.5	17.5
	2400	50	50	47	35.5	31	30	27	23	22	21	20
	2800	50	50	49	37	32.5	31	29	23.75	22.5	21.5	20.5
	3200	50	50	50	37.5	33.5	33.75	33.75	33.75	33.75	33.75	33.75
	3600	50	50	50	40	33.5	33.75	33.75	33.75	33.75	33.75	33.75
3800	50	50	50	40	32.5	33.75	33.75	33.75	33.75	33.75	33.75	
4000	50	50	50	40	32	33.75	33.75	33.75	33.75	33.75	33.75	
4400	50	50	50	40	32	33.75	33.75	33.75	33.75	33.75	33.75	
4800	50	50	50	37.5	31	33.75	33.75	33.75	33.75	33.75	33.75	
5200	50	50	49.5	37.5	32	33.75	33.75	33.75	33.75	33.75	33.75	
5600	50	50	48	36	29.5	33.75	33.75	33.75	33.75	33.75	33.75	
6000	50	50	45.5	35	28.5	33.75	33.75	33.75	33.75	33.75	33.75	
6400	50	50	44.5	33	28.75	33.75	33.75	33.75	33.75	33.75	33.75	
6600	50	50	43.75	32.5	28.5	33.75	33.75	33.75	33.75	33.75	33.75	
6800	50	50	43	32	28.5	33.75	33.75	33.75	33.75	33.75	33.75	

4) Export...

Saves the file as your chosen file name

Click on "Menu" and choose "Export"

The screenshot displays the ToyotaCal software interface. The 'File' menu is open, and the 'Export...' option is highlighted with a red box. The main window shows a data table for 'Engine Load' and a 3D surface plot of 'Spark Degree Advance'.

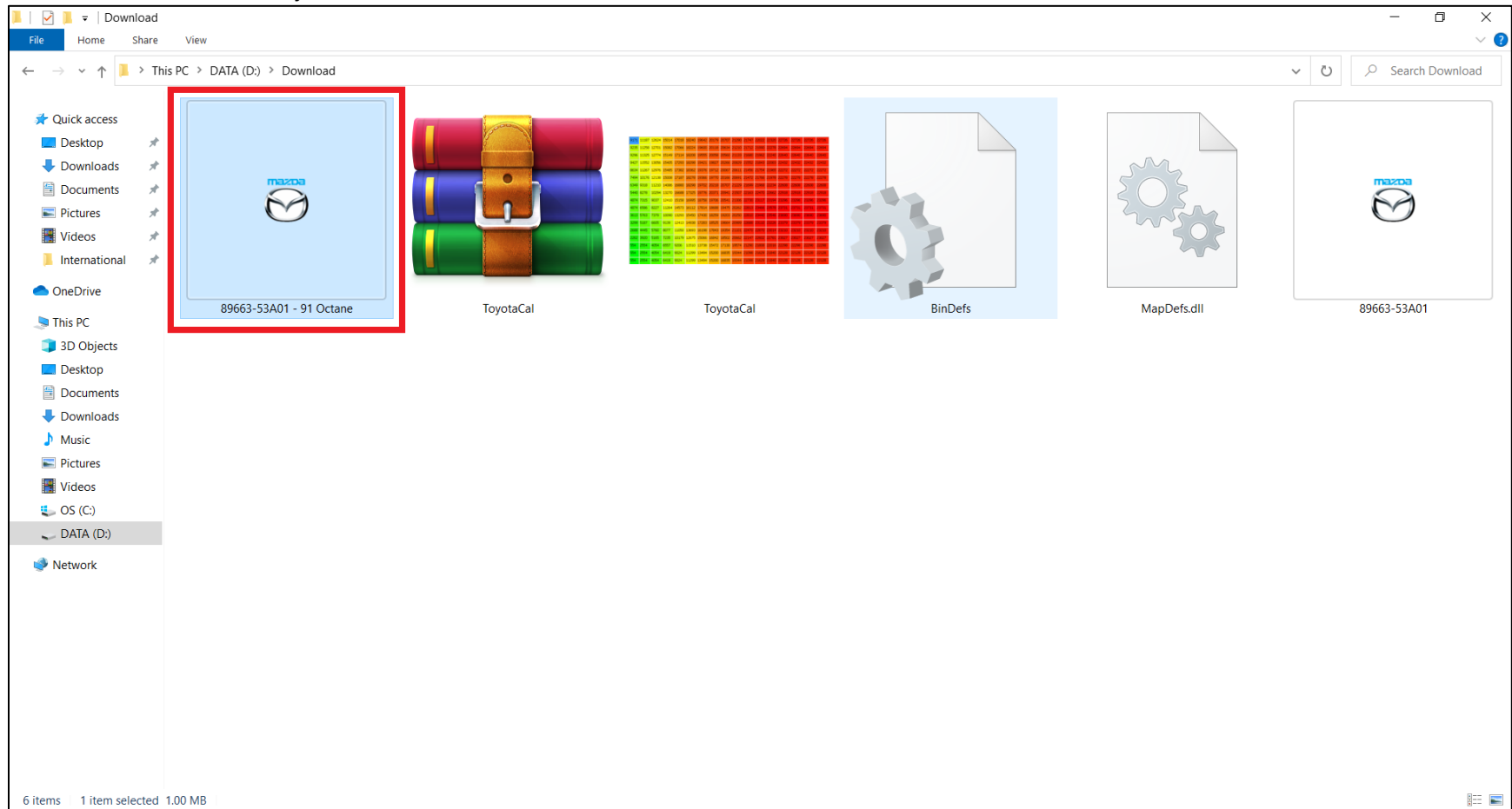
	10	20	30	40	50	60	70	80	90	100	110
400	50	43	31.75	24.5	20	17.5	14	13	12	11	10
800	50	46	34	26	21.5	18.5	16	15	14	13	12
1000	50	47	35	29	25	20	17.5	16.5	15.5	14.5	13.5
1200	50	50	37.5	30	26.75	23	19.5	17	16	15	14
1600	50	50	39	32.5	29	26	22.5	18.5	17.5	16.5	15.5
2000	50	50	41	34.5	30	29	24.5	22	19.5	18.5	17.5
2400	50	50	47	35.5	31	30	27	23	22	21	20
2800	50	50	49	37	32.5	31	29	23.75	22.5	21.5	20.5
3200	50	50	50	37.5	33.5	33.75	33.75	33.75	33.75	33.75	33.75
3600	50	50	50	40	33.5	33.75	33.75	33.75	33.75	33.75	33.75
3800	50	50	50	40	32.5	33.75	33.75	33.75	33.75	33.75	33.75
4000	50	50	50	40	32	33.75	33.75	33.75	33.75	33.75	33.75
4400	50	50	50	40	32	33.75	33.75	33.75	33.75	33.75	33.75
4800	50	50	50	37.5	31	33.75	33.75	33.75	33.75	33.75	33.75
5200	50	50	49.5	37.5	32	33.75	33.75	33.75	33.75	33.75	33.75
5600	50	50	48	36	29.5	33.75	33.75	33.75	33.75	33.75	33.75
6000	50	50	45.5	35	28.5	33.75	33.75	33.75	33.75	33.75	33.75
6400	50	50	44.5	33	28.75	33.75	33.75	33.75	33.75	33.75	33.75
6600	50	50	43.75	32.5	28.5	33.75	33.75	33.75	33.75	33.75	33.75
6800	50	50	43.75	32.5	28.5	33.75	33.75	33.75	33.75	33.75	33.75

Select the folder you want to save it in, type in a file name that you like, and press on "Save"

The screenshot shows the ToyotaCal software interface. On the left, a list of calibration tables is visible, with 'Direct Injection Fire Angle Fuel Compensation Cyl 3' through 'Cyl 7' selected. A file export dialog box is open, titled 'Export 89663-53A01- (89663-53A01.bin) into...'. The dialog shows the file is being saved to the 'Downloads' folder in 'DATA (D:)'. The file name is '89663-53A01 - 91 Octane' and the save type is 'BIN files (*.bin)'. The 'Save' button is highlighted. In the background, a 3D surface plot shows 'Spark Degree Advance' on the vertical axis (ranging from 10 to 60) and 'Engine Load' on the horizontal axis (ranging from 0 to 100). The plot shows a complex surface with red and orange colors. Below the plot, a table of data is visible:

6600	50	43.75	32.5	28.5	63.75	63.75	63.75	63.75	63.75	63.75
6800	50	43.75	32.5	28.5	63.75	63.75	63.75	63.75	63.75	63.75

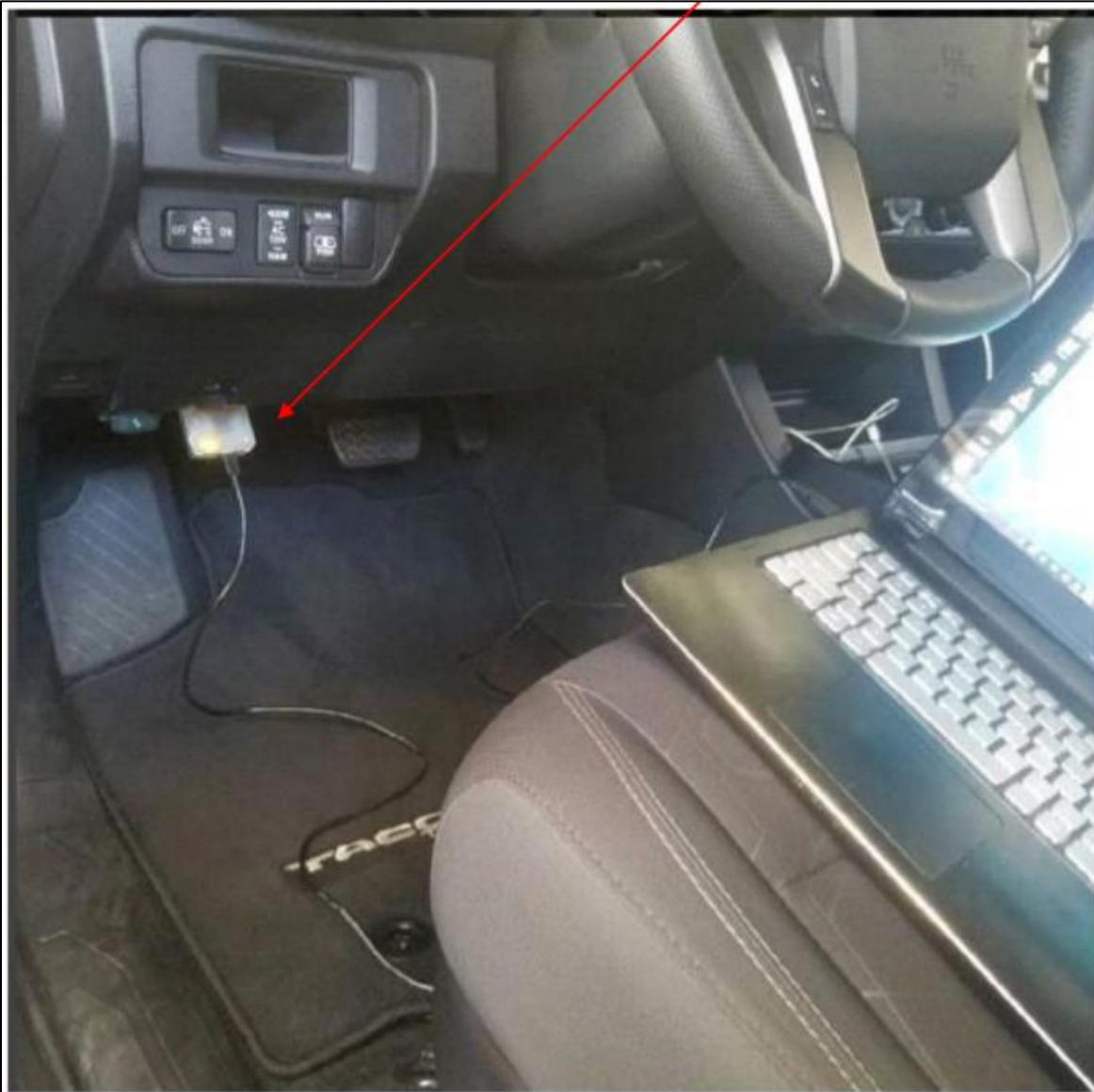
Your file will be saved on your chosen folder



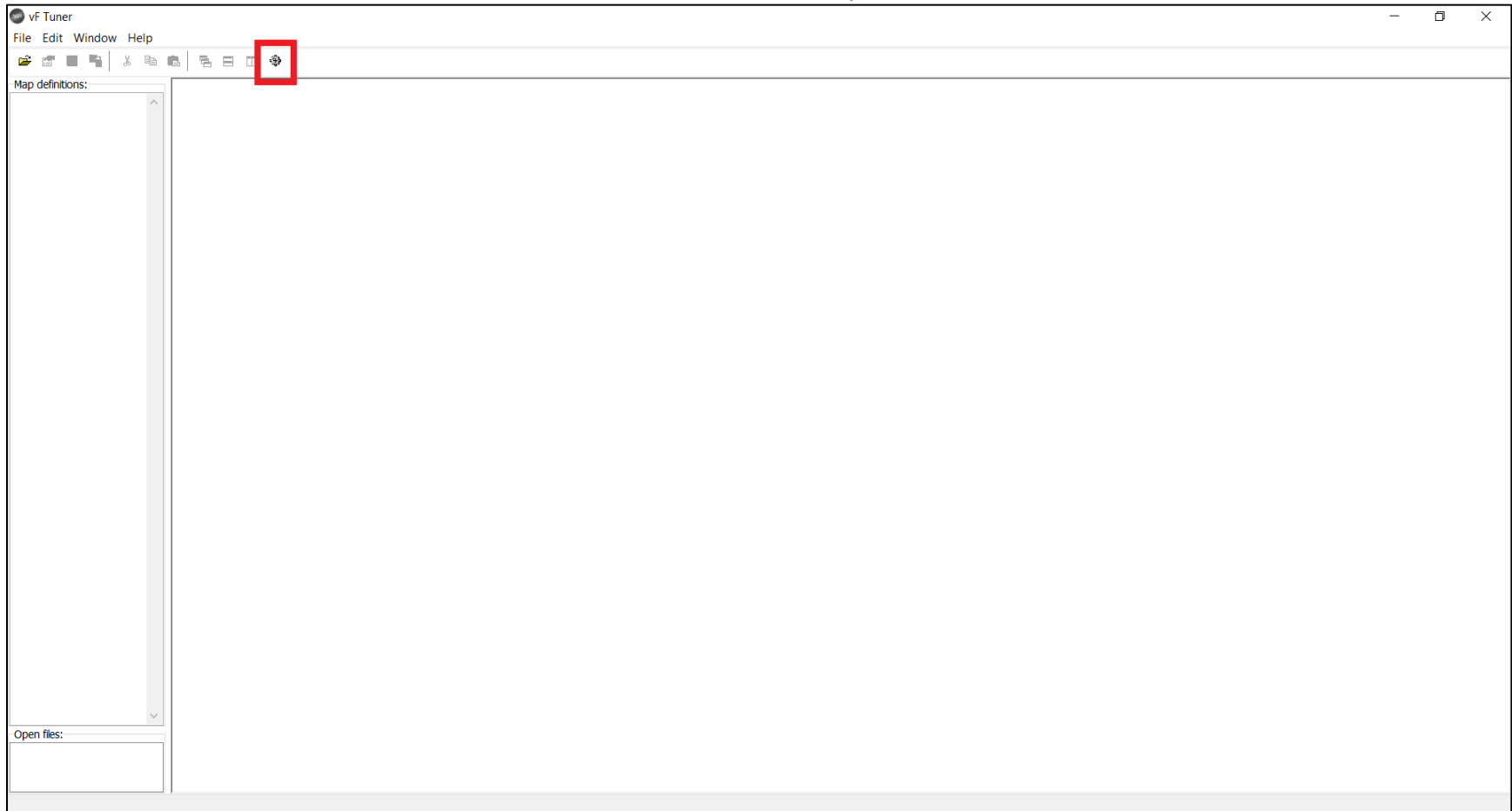
[Back to Outline](#)

IV) Flashing/Uploading a File

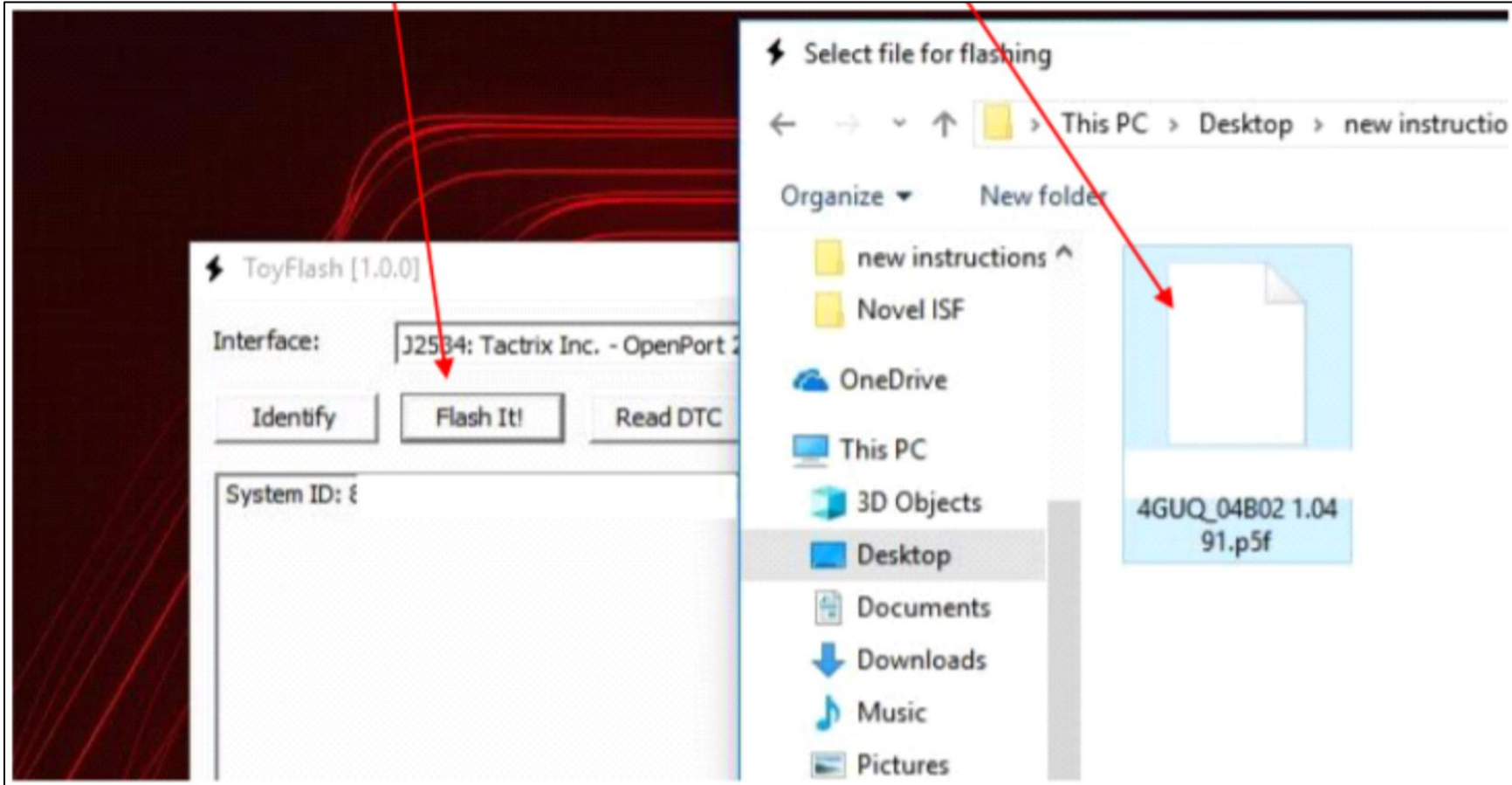
To do this, bring your laptop and Tactrix (and its cable) to your vehicle. Ensure your vehicle is ON (but the engine is off A.K.A. not idling. If you have the Push to Start button, press it 2 times. Make sure your electrical loads (radio on low, lights off, A/C off, etc) are minimized as much as possible. Make sure you're in Park as well. Then, connect your laptop and OBD2 port using the Tactrix and its cable.



Open vF Tuner. Click the “TOYOTA FLASH TOOL” button to launch the Toyota Flash Tool window.



The “Toyota Flash Tool” window will open. Click on the “Flash It!” button. Then, another window will open. Find the folder where the tune you want to flash/upload is saved in.



The process of flashing will not start. No need to do anything. This could take about 5 minutes to complete.

Once the flashing has completed successfully, you can now start the vehicle before removing any of the cables. Once the vehicle/engine is running/idling, you can remove the cables attached to the car and your laptop. Allow the vehicle to idle for 1-2 minutes.

For the next 10-30 miles, the car might behave differently. This is due to the complex trim learning methods and calibration that the ecu has for the engine and transmission. Just drive as you normally do to let the ECU settle in and adjust its learning trims.

V) Troubleshooting

Under Development Functions

1) “Cut”, “Copy”, and “Paste” functions from the Shortcuts or the “Edit” menu.

There are some functions that are still under development and will be updated as soon as we are done testing the program. Thank you for your patience and understanding.

Functions Coming at the Next Updates

1) “Undo”