

**Overview: CMD-Tuner:**

The CMD tuner was designed for factory forced induction vehicles that have the need for a fuel controller but are unfortunately not on our development list for our “plug and play” harness. We have four types of tuner harnesses that are covered in this manual:

CMD TUNER HARNESS A: Our tuner harness that offers pre-installed EVE1 injector connectors  
Pic of injector connector and harness

CMD TURNER HARNESS B: Our tuner harness that offers pre-installed EVE6 injector connectors  
Pic of injector connector and harness

CMD TUNER HARNESS C: Our tuner harness that offers pre-installed ----- injector connectors  
Pic of injector connector and harness

CMD TUNER HARNESS: Our cut and splice tuner harness. This is the most universal harness.  
Pic of harness

**Diagram#1**

The CMD comes standard with 4 high impedance injector inputs, 4 high impedance injector outputs, 3 analog inputs, 2 analog outputs, 2 clampable analog outputs, 1 frequency based input, 1 frequency based output, 1 boost control solenoid input and 1 boost control solenoid output. This is the wiring pin-out of the CMD tuner.

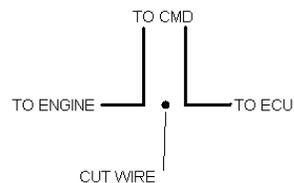
CMD Circuit Board Pin Out							
Pin #	Description	Typical Harness Wire Color	Notes	Pin #	Description	Typical Harness Wire Color	Notes
1	12V Power		12v Key on, non-interrupted	19	Not Used		
2	Not Used	Red		20	Crank Sensor Input (RPM)	Wht/Shielded	Tapped at Crank Signal Source
3	Boost Solenoid Output	Wht/Purp	To Boost Solenoid	21	Not Used		
4	Not Used			22	Not Used		
5	Freq MAF Output		Freq based sensor output	23	Not Used		
6	Not Used			24	Fuel Injector 4 Output	Blu	Injector Output
7	Fuel Injector4 Input	Wht/Blu	Injector Input	25	Fuel Injector 3 Output	Grn	Injector Output
8	Fuel Injector 3 Input	Wht/Grn	Injector Input	26	Fuel Injector 2 Output	Yel	Injector Output
9	Fuel Injector 2 Input	Wht/Yel	Injector Input	27	Fuel Injector 1 Output	Org	Injector Output
10	Fuel Injector 1 Input	Wht/Org	Injector Input	28	Digital Ground	Blk/Wht	
11	Chassis Ground	Blk	Injector/Solenoid Ground	29	Not Used		
12	Not Used			30	Not Used		
13	Not Used			31	Not Used		
14	Freq MAF Input		Freq based sensor input	32	Not Used		
15	Boost Solenoid Input	Purple	From ECU	33	Analog 4 - Analog Output	Wht/Brn	MAP - May be used for other analog based sensor
16	Analog 2 - Analog Input	Red/Wht	MAF - May be used for other analog based sensor	34	Analog 2 - Analog Output	Wht/Red	MAF - May be used for other analog based sensor
17	Analog 3 - Analog Input	Gray	TPS - May be used for other analog based sensor	35	Not Used		
18	Analog 4 - Analog Input	Brn	MAP -May be used for other analog based sensor	36	Not Used		



### Getting Started:

The first step in installing the Dynojet CMD is determining what sensors are needed. The Dynojet CMD comes standard with a universal harness which has a total of 23 non-terminated wires. You will use this harness to intercept fuel injectors, mass air meters, map sensors, crank sensors and throttle position sensors. Each one of these sensors is imperative to the CMD's control state. Before we begin, we will need some information about a couple of your vehicles sensors. But first let's show you how we intercept these important sensors. There is two ways we can intercept the signals. See Figure 1

#### Intercept:



#### Tap:

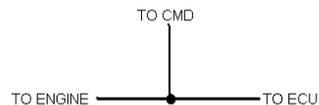


Figure1

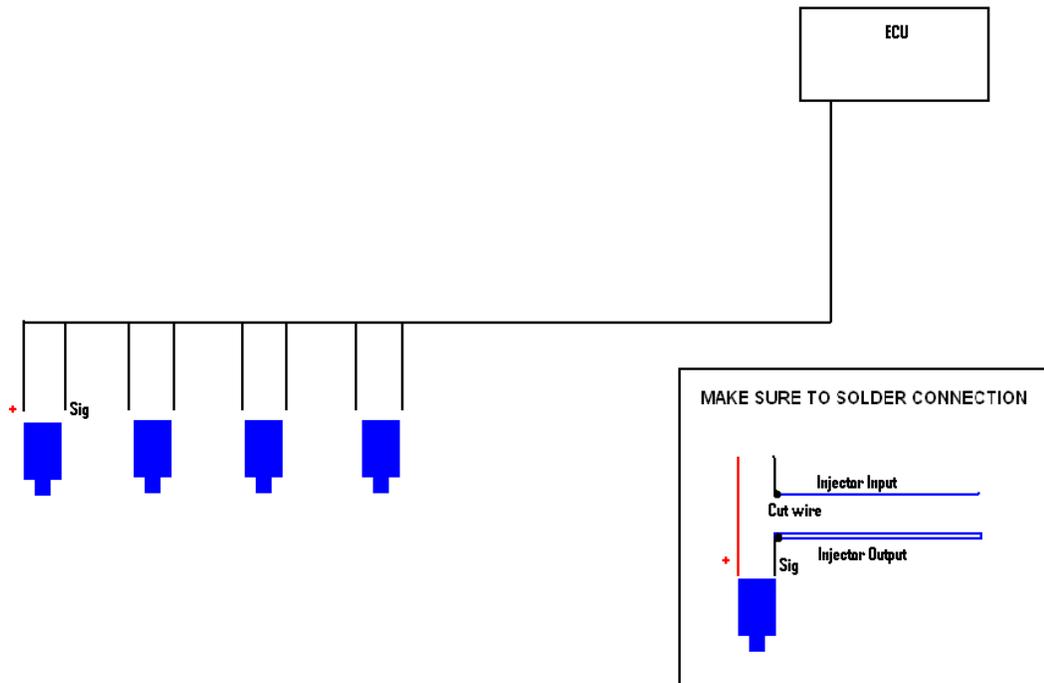
### Harness Installation:

1. Using the correct tool, loosen the negative battery post nut and remove the negative battery cable from the negative post of the battery.
2. Lay out the CMD-Tuner harness the way you will want it installed in the engine compartment. Make sure to keep the harness away from any moving or hot components or exhaust systems.
3. Use the wiring diagram to identify the wiring in the harness. Break out all the wires you will use for the installation.
4. Measure the distance in between the fuel injectors, MAF, MAP and TPS sensors and cut the harness to fit.

### Wiring Injectors:

The CMD uses 4 injector inputs, one of the three analog inputs, and the 4 injector outputs to control fuel changes. You will need to cut and splice the vehicles injector wiring if using CMD Tuner Harness -----. Wire the CMD's input and output wires in between the injector "signal wires". Wire the injectors in order, cylinders 1-4. 0=cylinder 1, 1=cylinder 2, 2= cylinder 3, 3= cylinder 4. Make sure to solder all wiring for a trouble free installation. If you are using CMD tuner Harness A, B, or C, you will be able to plug directly into the injector connectors.

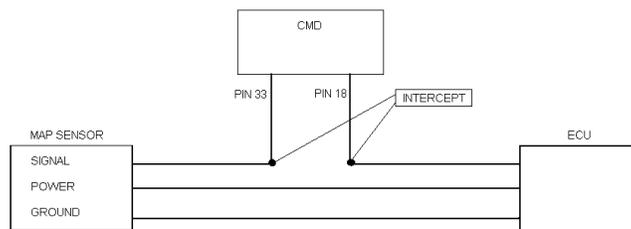
1. Use a volt meter to check the injector's resistance. **The CMD will only work on vehicles with high impedance injectors. From one post to the other should be 12 to 16 ohms.**
2. Use a volt meter to find the 12v power wire going to the fuel injector.
3. Cut the signal wire going to the injector. The signal wire is NOT the power wire, but a switch ground.
4. Solder the CMD's **injector input** wires into the cut portion of the signal wire coming from the vehicles ECU.
5. Solder the CMD's **injector output** wires into the cut portion of the signal wire going to the vehicles injector.



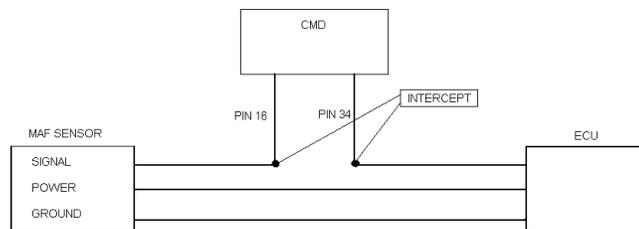
**Analog inputs:**

The CMD's 3 analog inputs and 2 analog outputs can be wired to any 5v sensor. Wire the input and output wires to the sensors' 5v signal wire. Most analog sensors will have one 5v signal wire. You may need to use a volt meter to identify the correct wire. Cut or tap the sensors signal wire at the sensors connector or PCM, make sure to leave at least 2" of wire to splice in the CMD tuner harness. We recommend using a soldering gun to attach the new wiring.

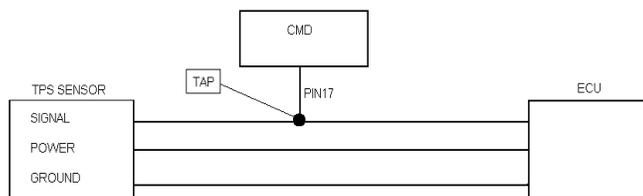
MAP sensor wiring



MAF sensor wiring



TPS sensor wiring



**Note:** In some cases, clamping is not required for all sensors. If clamping the sensor output is not required, TAP the signal wire rather than INTERCEPTING it to simplify installation.

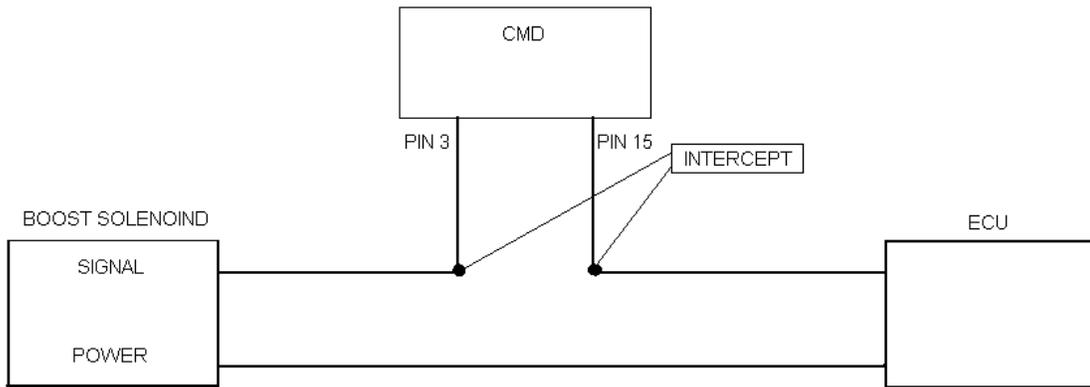
**Boost Solenoid:**

The Boost solenoid input can be wired into any factory wastegate control solenoid. The CMD will use the solenoid's input from the ECU to get a duty cycle percentage (%DC). The user can now use the CMD to drive the factory solenoid at a higher offset %DC or switch the control state to OPEN LOOP.

OPEN LOOP allows the CMD to ignore the input from the PCM allowing full "stand alone" boost control.

OFFSET allows the CMD to give the control solenoid +/- 100% DC from stock

1. Refer to diagram# 1, identify the boost solenoid wiring in the harness.  
Purple = CMD input  
Purple/white trace= CMD output
2. Cut the factory boost solenoid signal wire then splice in the CMD tuner harness wire.  
Solder and tape the connection for a trouble free installation.



**Crank sensor:**

The CMD measures RPM from MAG or HALL affect Crank position sensors. Tap the signal wire from the sensor to the ECU. Once the installation is completed you will need to configure "crank teeth" in the Master Control Center software. Use the supplied posi-tap to connect the CMD. See figure 6.

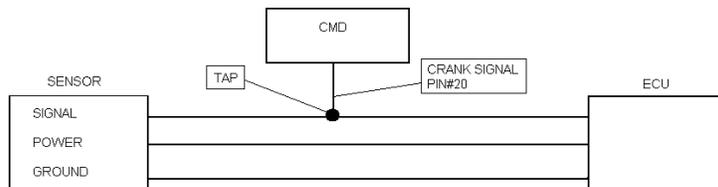


Figure 6.

### **Powering the CMD:**

The CMD will require one "key on" power, one Chassis ground and one digital ground.

Power= red wire

Black=chassis ground

Black/white tracer= digital ground.

1. Connect the Red power wire into a fused 12v key on/running circuit. Make sure the circuit is live during the crank cycle.
2. Connect the Black wire to chassis ground. A clean source on the frame of the vehicle is preferred.
3. Connect the black wire with white tracer to a sensor's digital ground. The digital ground is a "clean" source for the sensors to use for a ground. It is very important to connect this wire properly. You will need to use a volt meter to find this ground. The most common location for these grounds is on the PCM or directly at the sensor. Disconnect one sensor connector and use a volt meter to check each wire with the red probe. Connect the black probe to a clean chassis ground. The digital ground will show a short on the volt meter when you find it.
4. Re-connect Negative battery cable to the negative post on the battery and tighten.



Break point Step Size values can be changed by un-checking the “Custom” box located next to step size. You can change the breakpoint step size from 250rpm to any value you desire. We changed step size from 250rpm to 500rpm in this example.

Fig3

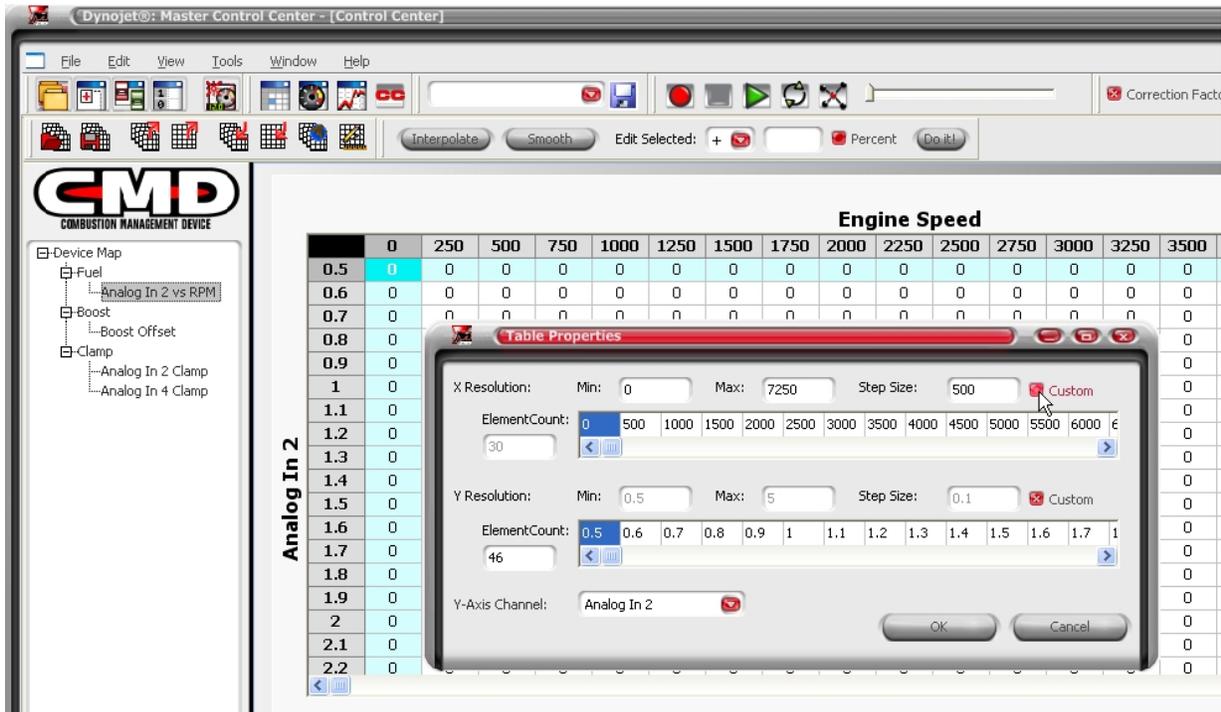
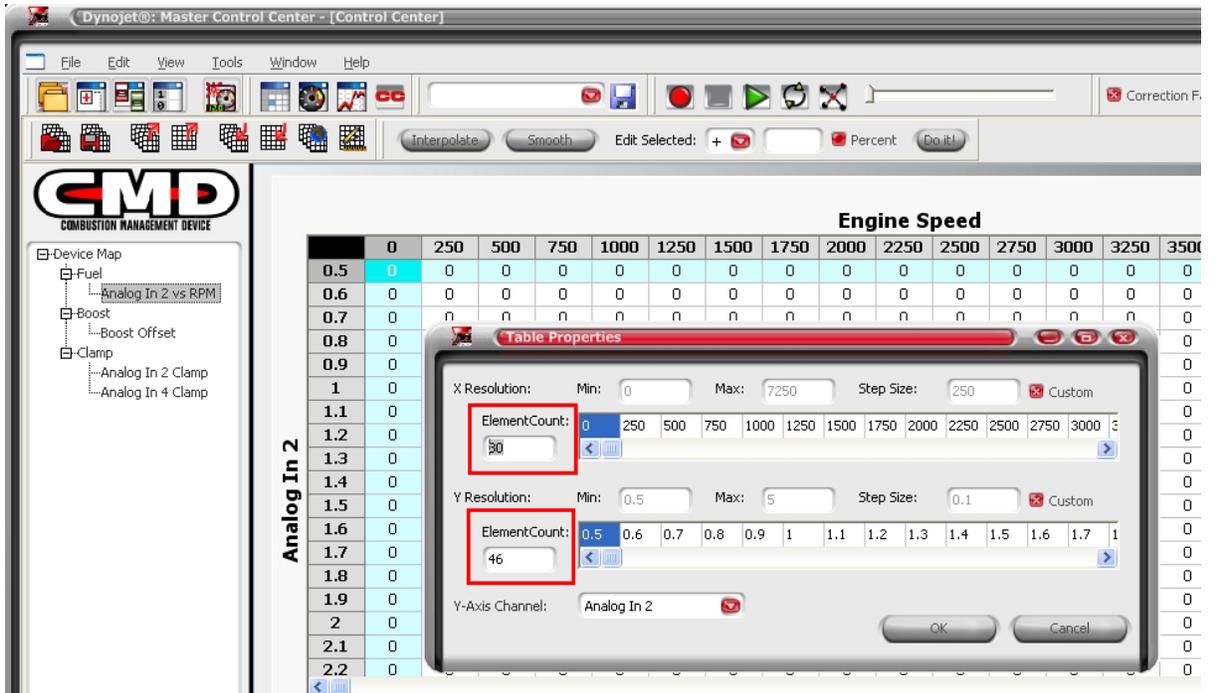


Table Properties modifies the breakpoints for the highlighted table only. To change the number of breakpoints, highlight “Element count” and change the value. Element Count changes the number of breakpoints you see.

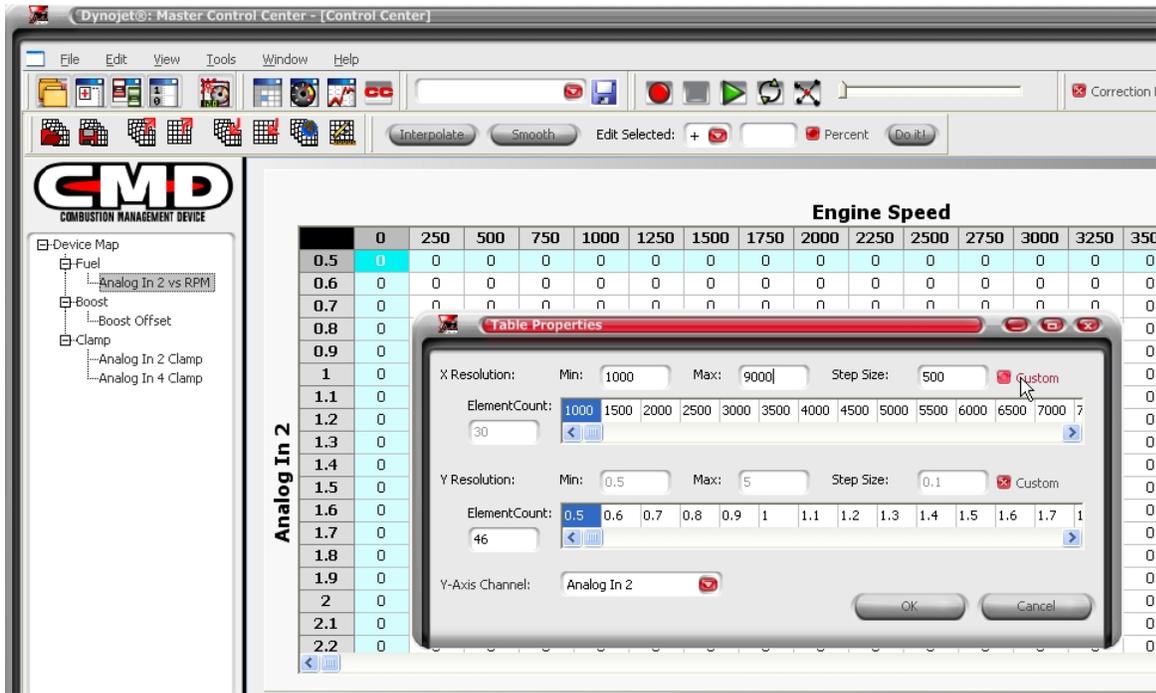
It uses the values in Min, Max, and step Size to determine the break point numbering. To input custom breakpoint values, select a desired cell then change the value. You can have up to 48 cells.

Fig4



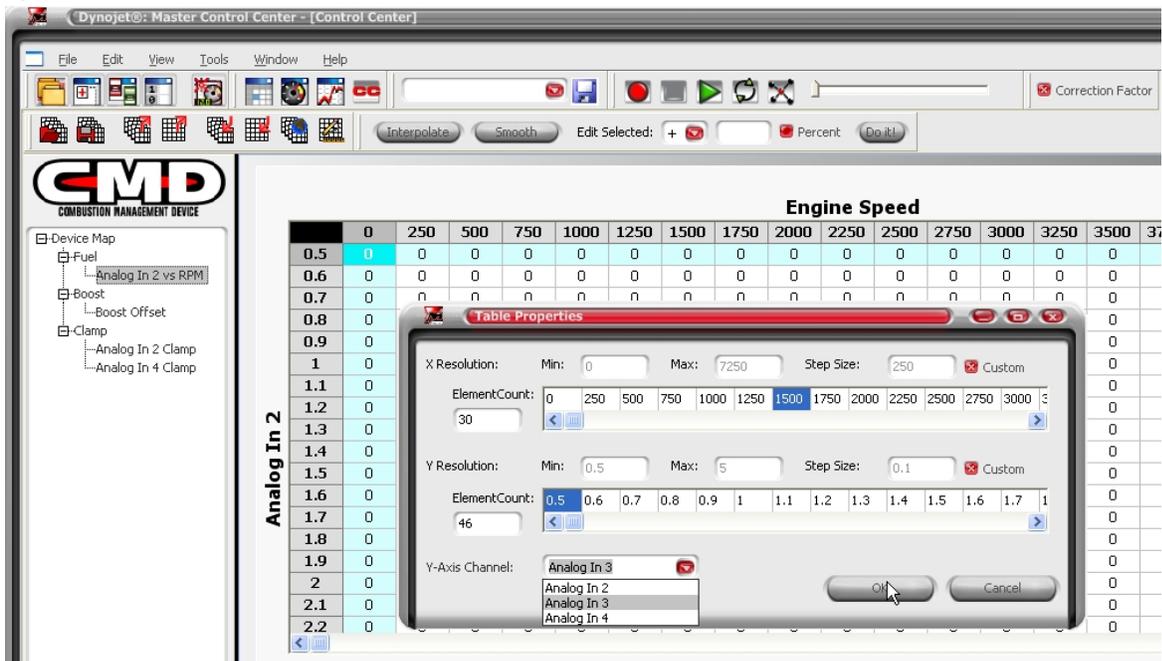
Min, Max values can be changed by un-checking the custom box. You can change the Min/Max values from 0 to any value. We changed 0rpm to 1000rpm and 7250rpm to 9000rpm.

Fig5



**Y-Axis Channel** is the highlighted table's reference channel. This is where you can change the fuel control state from one analog reference channel to another. You can use any of the three analog inputs as the primary fuel channel. We will change the fuel channel from Analog2 to Analog3

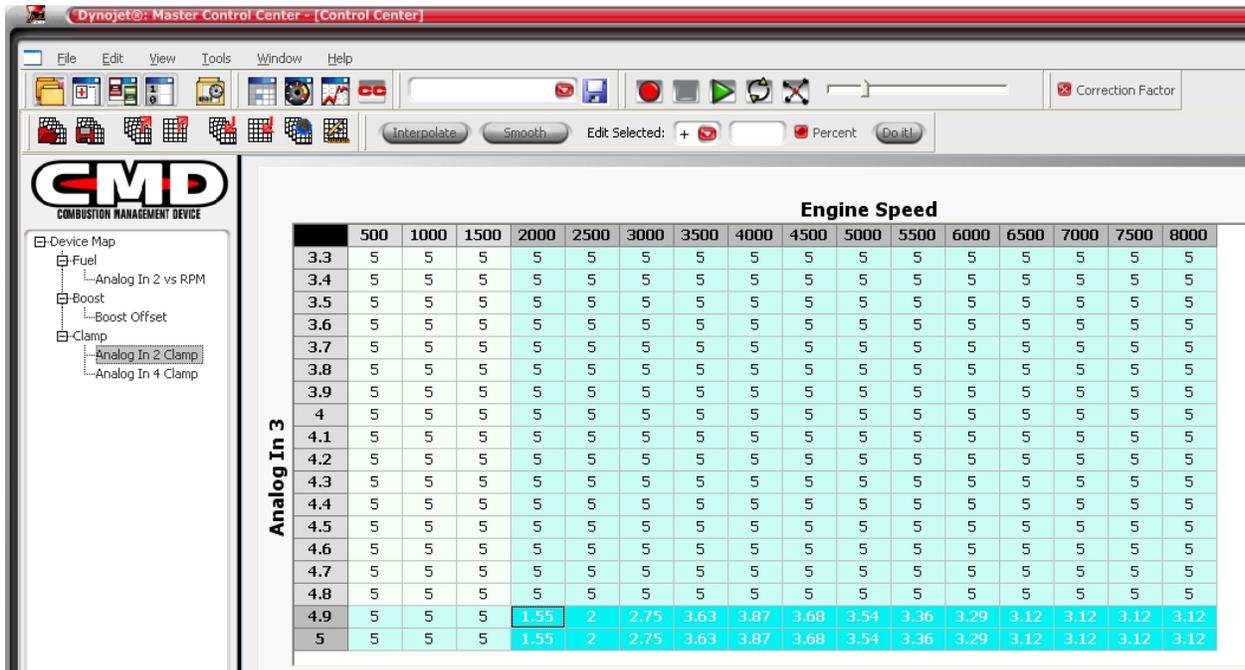
Fig6





Clamp tables allow you to clamp or limit specific sensors outputs at a desired voltage. If you increase power or boost you may need to clamp the MAF or MAP sensors to keep the PCM from going into a fuel / boost cut. We recommend using Maser Control Center's histogram to populate these values. These tables accept 0-5v values. See page --- for histogram.

Fig9



Here we have clamped the output of the Analog 2 (MAP) above 2000 RPM. Based on Analog channel 3's input. Analog 3 is Throttle %, so 4.9v + 5.0v represents 95%-100% throttle. At these throttle settings, MAP voltage returned to the PCM will be limited to the values in the cells of the table if they reach or exceed them. For example, if at 100% throttle (5.0v on Analog 3) and 2500RPM, the MAP sensor is sending out 2.2v, the CMD would only send 2.0v out to the PCM.

### Sending a map to CMD

You are able to open, get and send maps using Master Control Center.

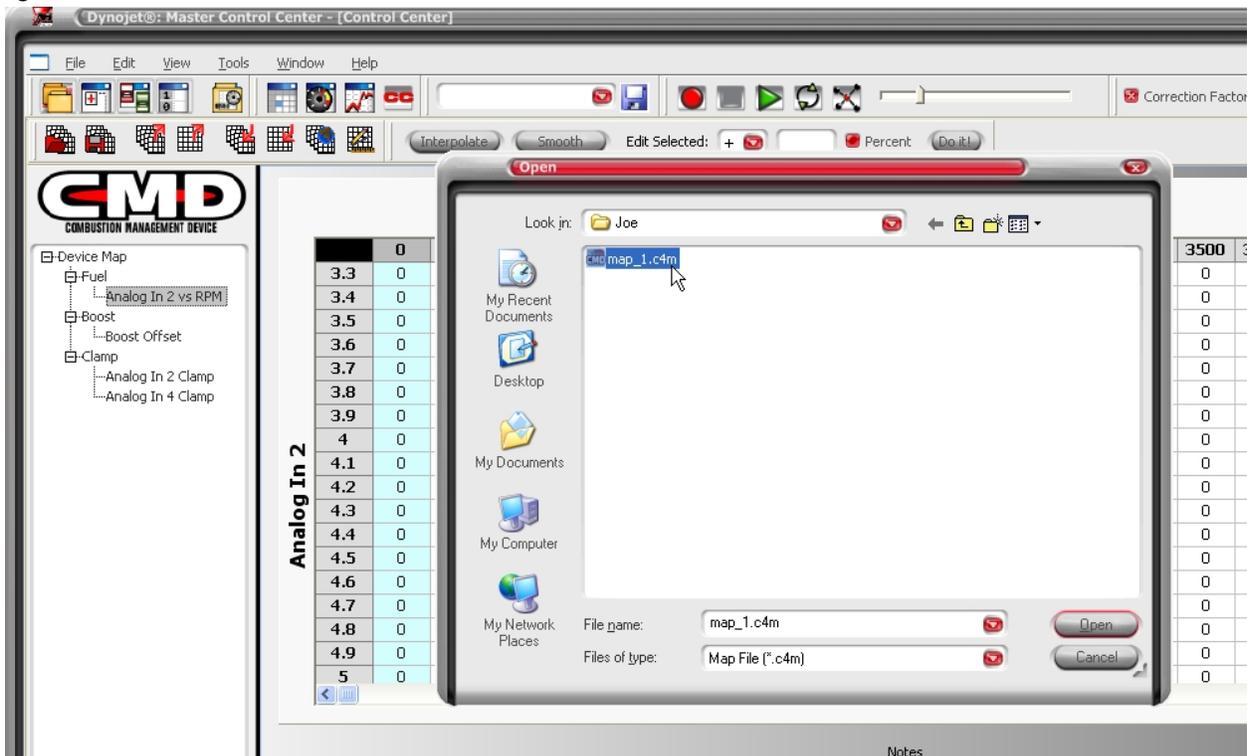
To open a new map file, select "open map".

Fig10



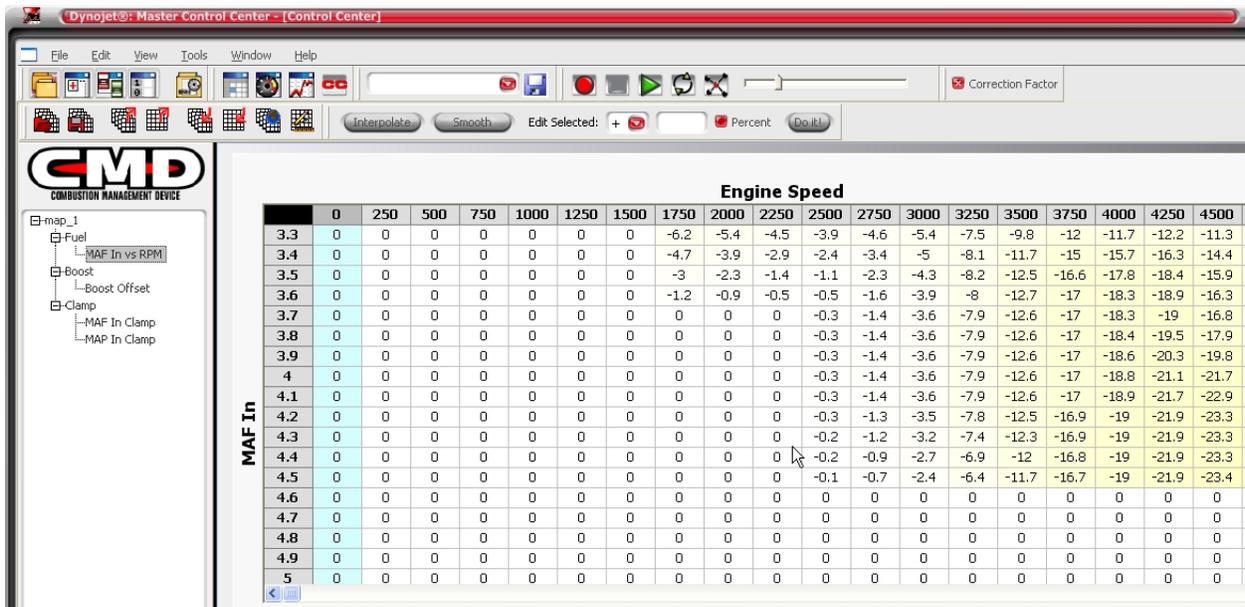
Select the map you wish to upload then click open.

Fig11



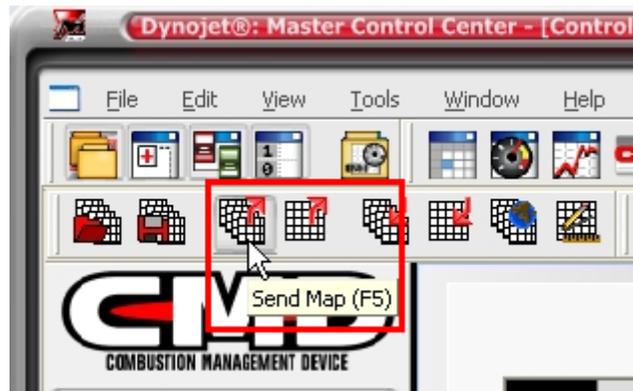
The new map is now open and ready to send to the CMD.

Fig12



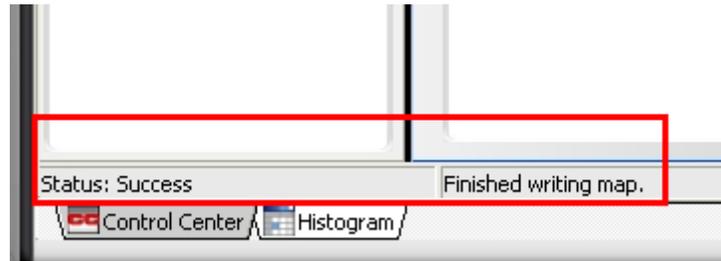
To send the opened map file to the CMD, select "send map".

Fig13



Do not disconnect the CMD from the PC until the map is finished being written. You will know the write process is complete when you see “finished writing map” in the bottom left hand corner of Master Control Center.

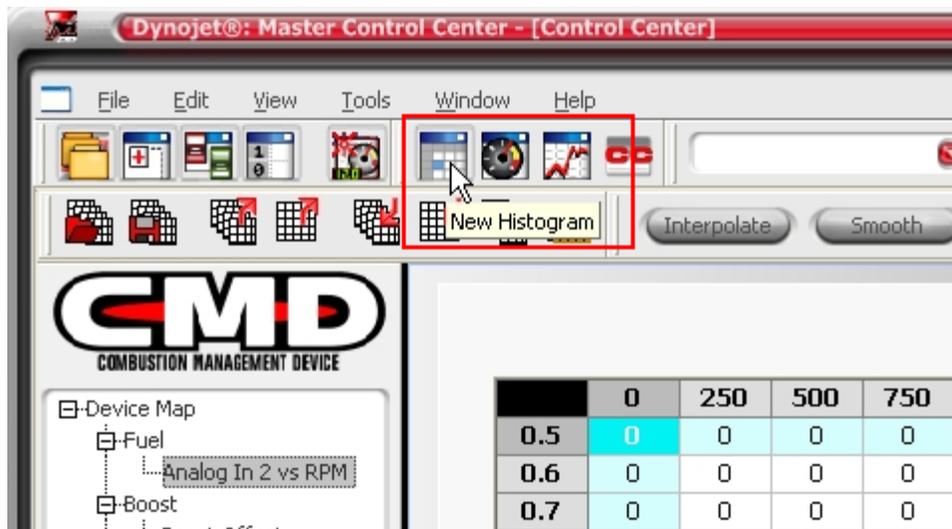
**Fig14**



**Using the histogram:**

The histogram feature allows you to playback data gathered during a datalogging session. In Master Control center you can copy and paste cells out of the histogram directly into the CMD’s map. To open the Histogram select “New Histogram”

**Fig15**



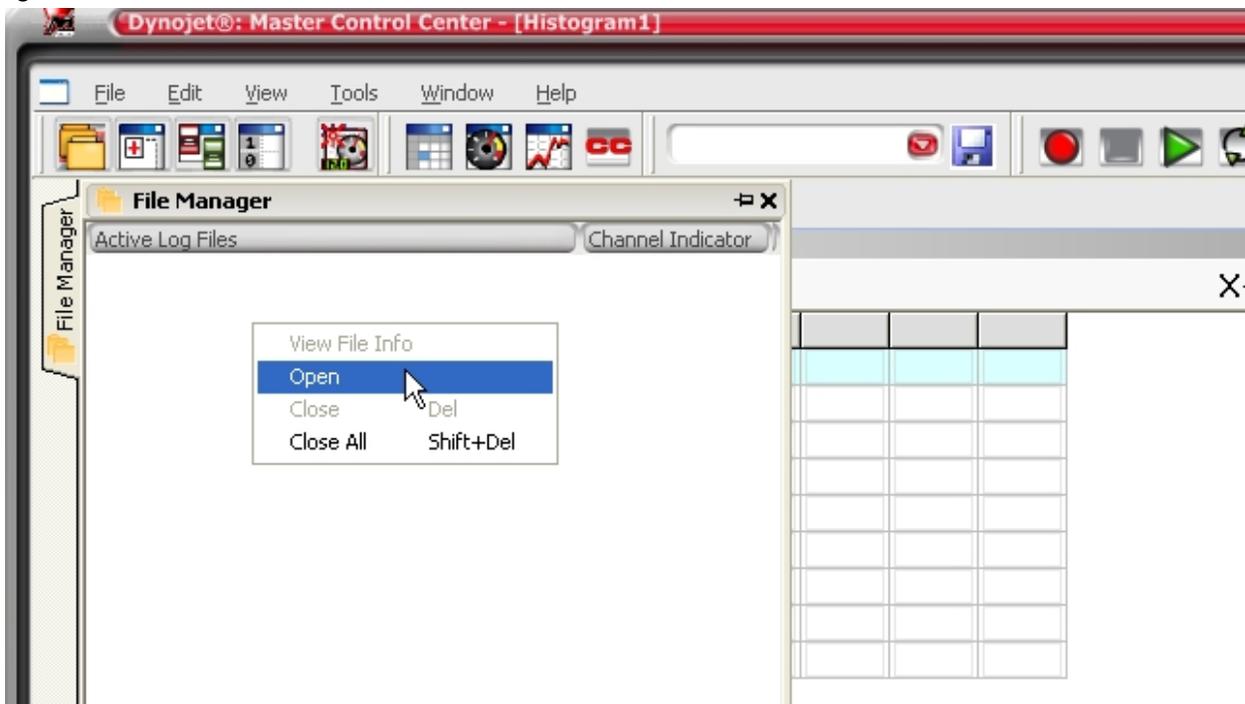
Open saved log files by selecting “File Manager”.

**Fig16**



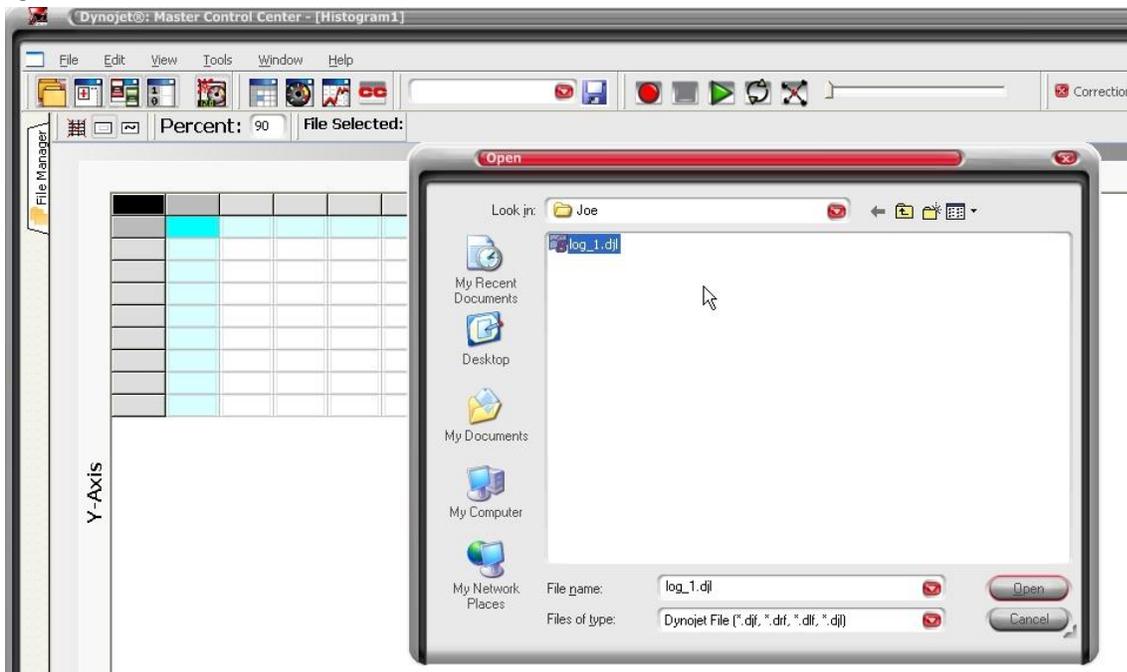
Right mouse click in the white area to open a saved log file.

Fig17



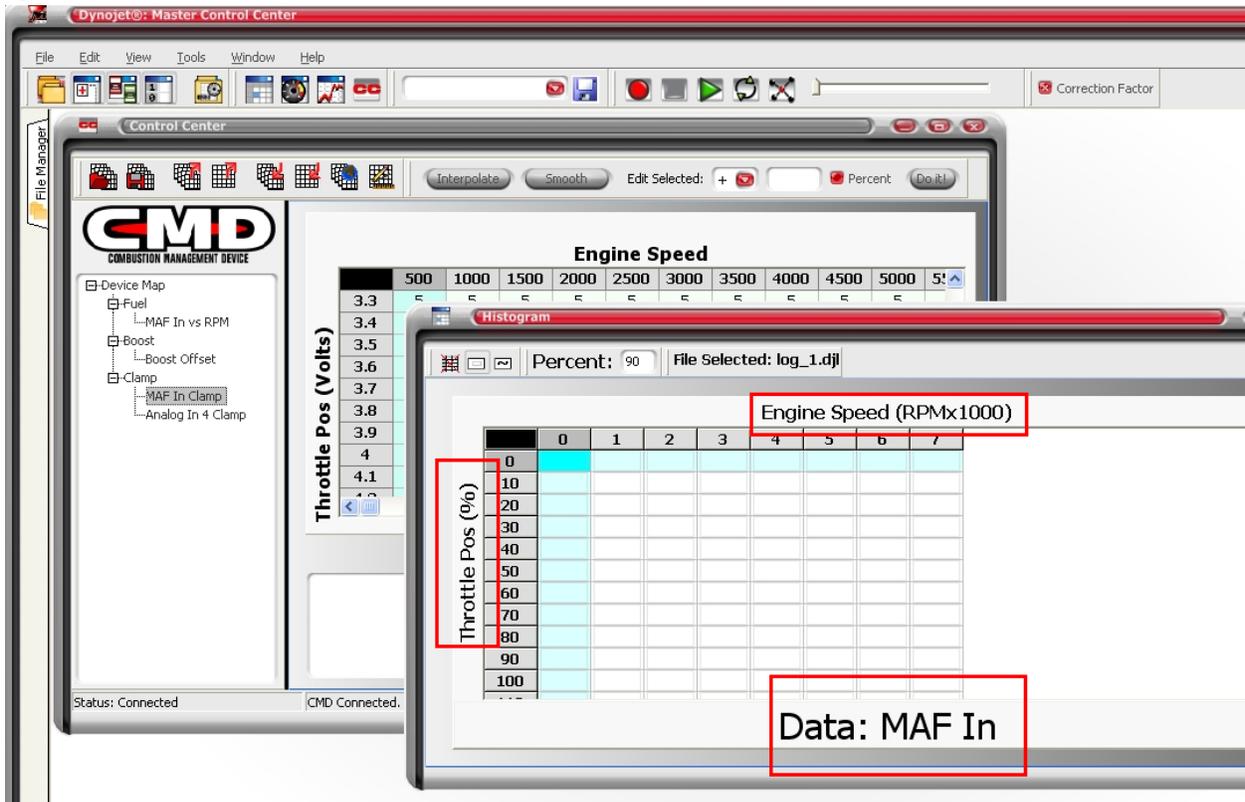
Select the log file you wish to use then click open.

Fig18



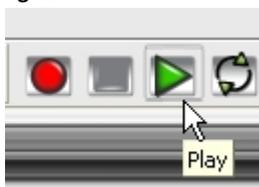
Change the histograms X, Y and data channel to match the CMD's. You will also need to change the histograms table properties. Refer to Fig1-5 for table properties set up.

Fig19



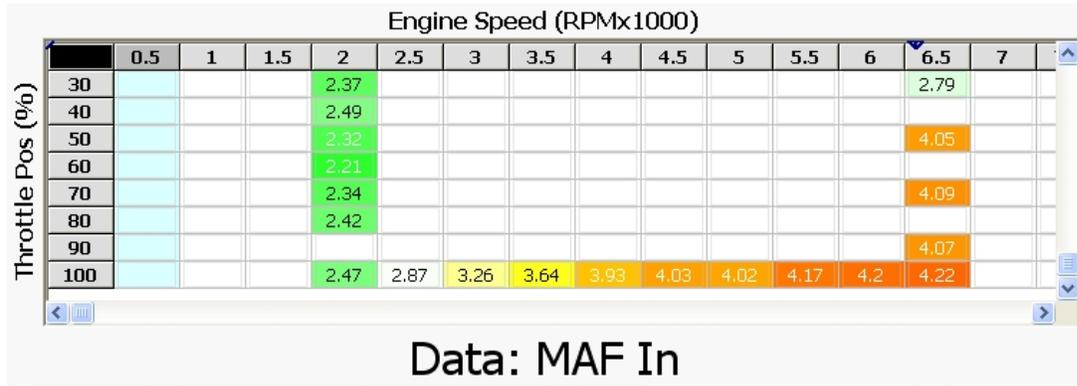
Select "play" to play back the log file.

Fig20



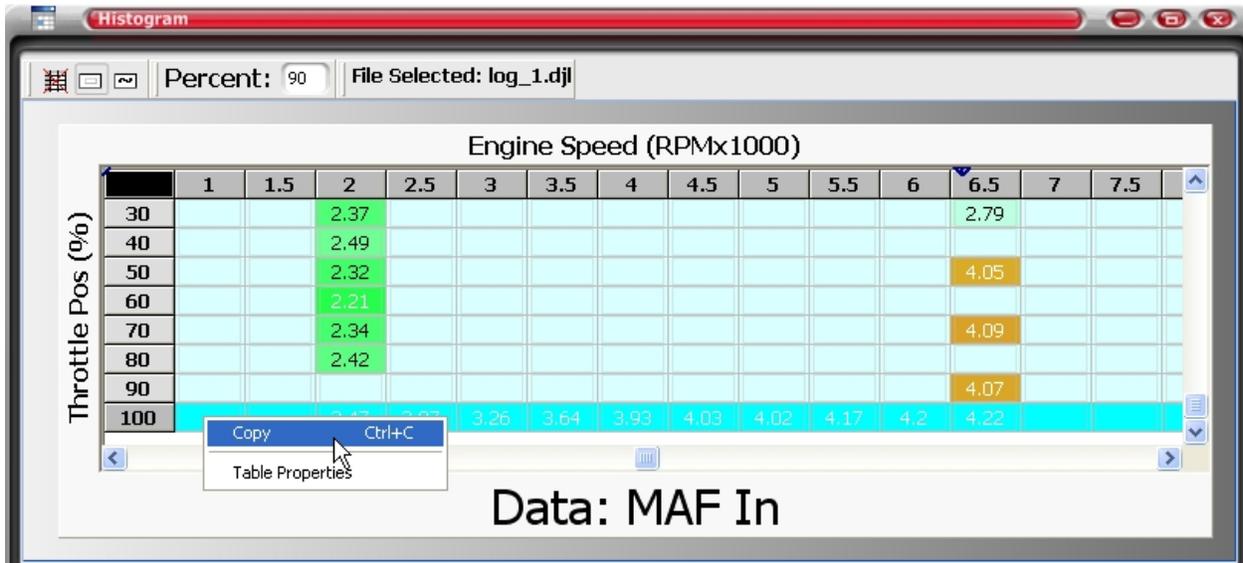
Allow the histogram to populate.

Fig21



Copy the values out of the histogram then paste them into your CMD's MAF clamp table. We like to paste the values into the last two columns.

Fig22-23



**Engine Speed**

	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0	0	0	0	0	0	0
90	0	0	0	2.47	2.87	3.26	3.64	3.93	4.03	4.02	4.17	4.2	4.22	0
100	0	0	0	2.87	3.26	3.64	3.93	4.03	4.02	4.17	4.2	4.22	0	0

A context menu is open over the table, showing "Paste" and "Ctrl+V" options. The text "Analog In 3" is visible on the left side of the table.

