What Happen's Next!?

To Access this web page go to:

http://www.restarpwm.com/what-happens-next.htm

This is a temporary PDF document. It will be redone shortly.

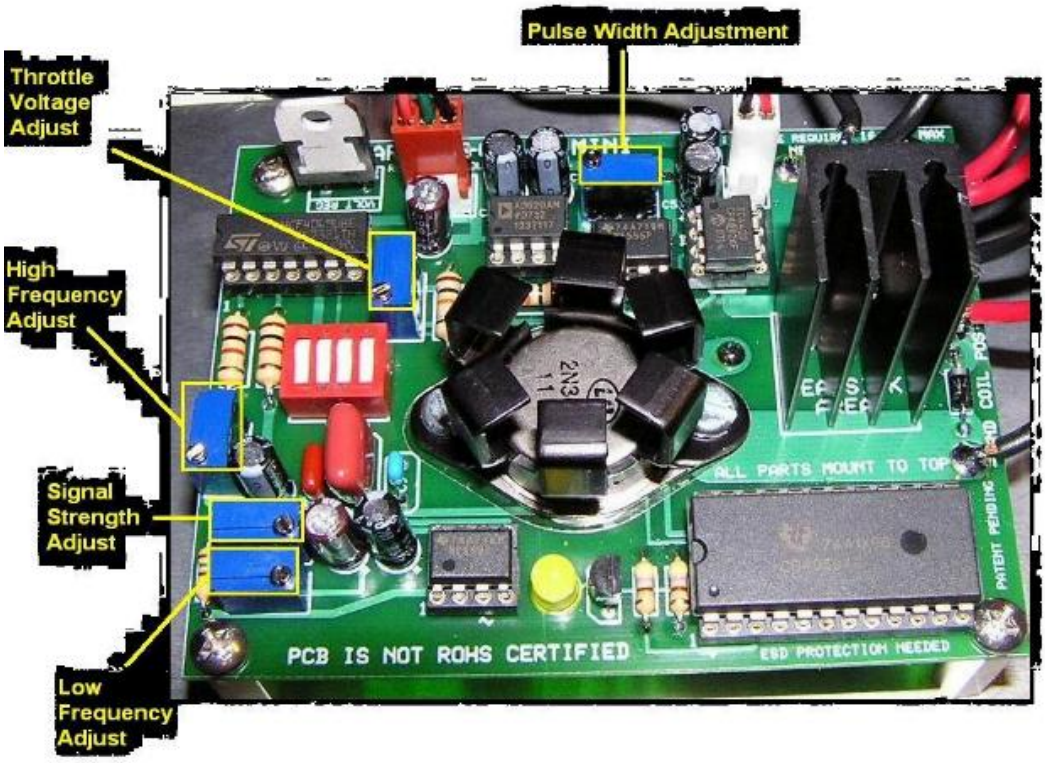
Once you've gotten a completely assembled board, "What happens next"? Well if you've followed the instructions (for the blank pcb) to the tee, installed the chips needed (for the partly assembled pcb), or have received a PnP unit, we're ready to tune the unit to your needs and specs.

These instructions are for the **REStar PWM Harmonics Module ONLY** and does not comply with the ~~Hytronics Module Tuning~~.

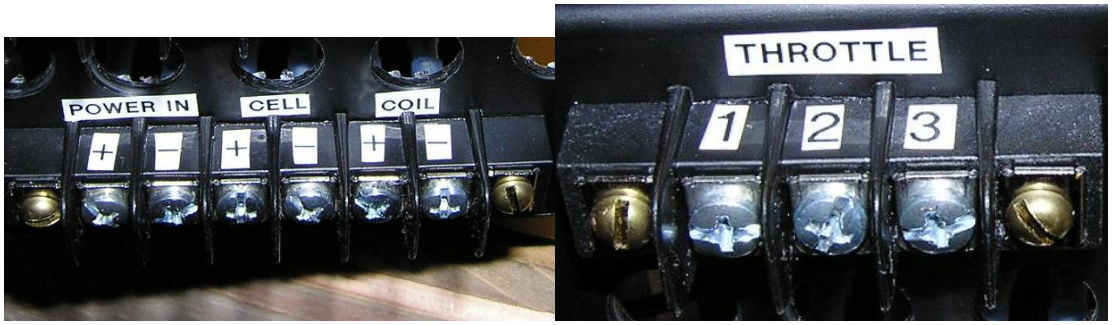
There are several factors that need to be in place before we tune the board.

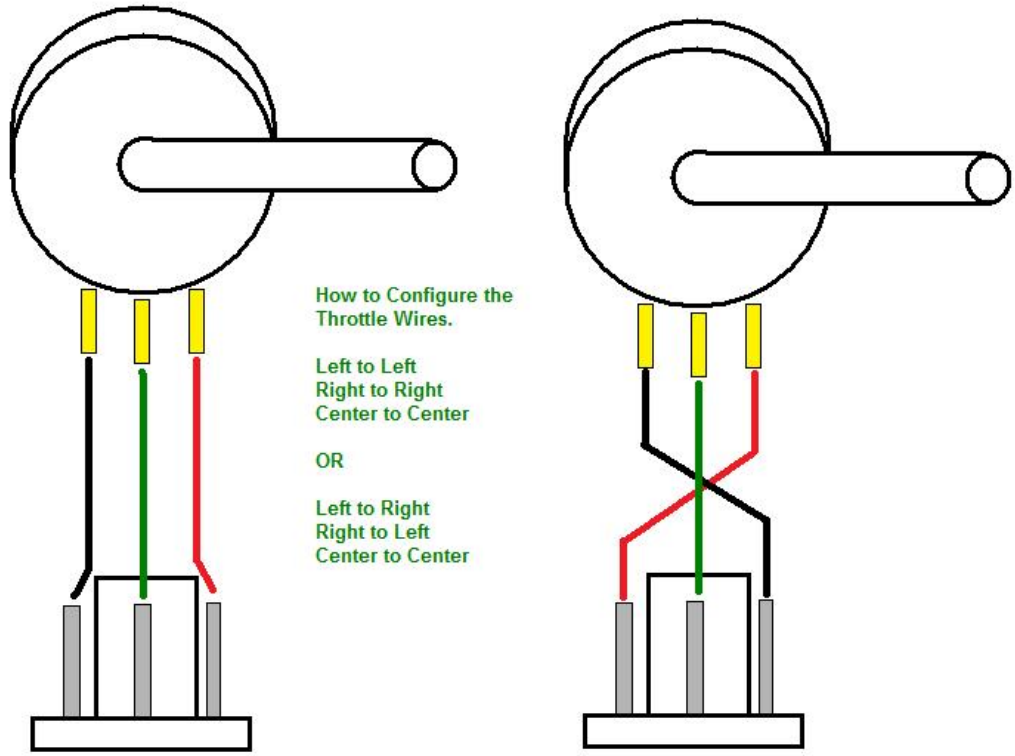
1 - You should have a small amount of knowledge of electronics before attempting to tune this unit
2 - You need to have minimum tuning equipment such as an O-scope and Voltmeter/multimeter
3 - You should know about ESD Protection and what it means to your board
4 - Throttle (3 pins) and power in must me connected to tune correctly! **Damage and/or improper tuning may result if you do not connect correctly**
5 - The size of Cell/Electrodes that you will be powering may throw your tuning out-a-wack

There are two areas where adjustment will need to be made. High frequency and low frequency adjustments. The high freq will be explained first and you cannot adjust the low without adjusting the high first. The high frequency is what controls the throttle. Low will be explained second and controls the coil functions.



This picture (above) represents the areas of tuning on your board. You will notice at the top that there is one (2k ohm) POT that tunes the Pulse width adjustment and one (2k ohm) POT at the side that adjusts the High Frequency signal, and just above that a (20k ohm) POT that adjusts Throttle voltage. I'm going to explain what each does, and what this should mean to you.





Before beginning you need to attach your power and throttle wires correctly. If your unit does not look exactly as the picture, it doesn't matter which way for testing, as long as it functions. But when you connect it to your throttle assembly, you will have to experiment which way is the right way. Just as the throttle has numbers on it, they each represent the pins on the board in the same respect. If you are looking at the board with the REStar at the top, the connection on the upper left with 3 pins in a row (or holes - M1) is the throttle. The left pin is Negative (1 or 3), the Middle is the POT SWEEP (2 ONLY), and the Right is Positive (1 or 3 however they are connected). The Middle SHOULD always be SWEEP. Colors of the outside wires (1 and 3) don't really matter.

HIGH FREQUENCY ADJUSTMENTS

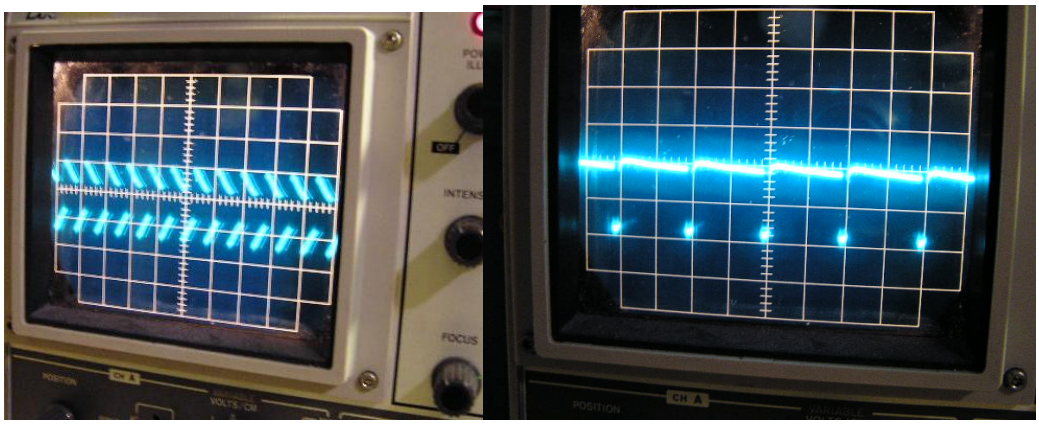
Making sure your Oscope is set to zero (fine sets), your voltage should be between 1 & 5, use one of the probes and attach it to pin 1 on the CD4059A chip where the " ~H" is printed. This is the high freq testing area. On the dip switches, at least one needs to be in the "ON" position. You should get a similar signal as seen in the above picture. If you do not, then you must adjust the signal output by:

1 - Adjusting the Pulse Width POT by turning its respective screw making sure you have a 1:1 ratio

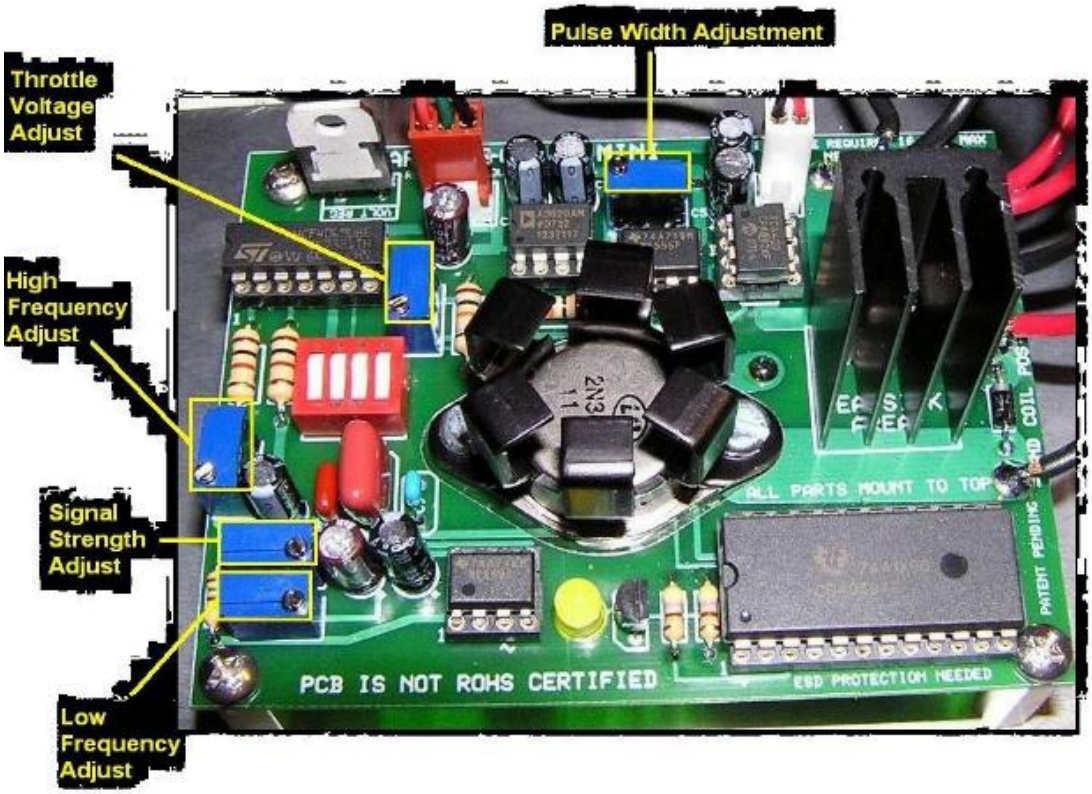
2 - Adjusting the High Freq POT by turning its respective screw and turning dip switches on and off, in turn this will adjust your frequency rate. If you set your Oscope variable to .5 mS and if you want 19khz adjustment, make sure there are 9.5 peaks on screen. Whatever you want it adjusted to, put half the amount of peaks on screen. 20khz, 10 peaks; 30khz, 15 peaks; and so on. I have found that 19khz gives me the best results, but results will vary by using different sized cells/electrodes. For a precise adjustment you will need a frequency meter.

3 - Adjusting the Throttle Voltage, this is tricky. Let say that you have you throttle pot attached to your engine already. You can adjust this POT to match your throttle position. Lets say that it is stuck in a 5:1 ratio, by adjusting this POT you can bring it back to a 1:1 ration or increase it to a 10:1 ratio.

When you move the throttle POT, you should see a change in Pulse Width, start out with 1:1 and move to a 10:1 as seen in the next picture (below). 1/4, one quarter, .25 of one turn will adjust the throttle POT fully from Idle (or Closed Throttle) to Wide Open Throttle (or WOT). If your POT is acting opposite of what you want, then reverse 1 & 3 wires. If it is acting like you want, then let them be.



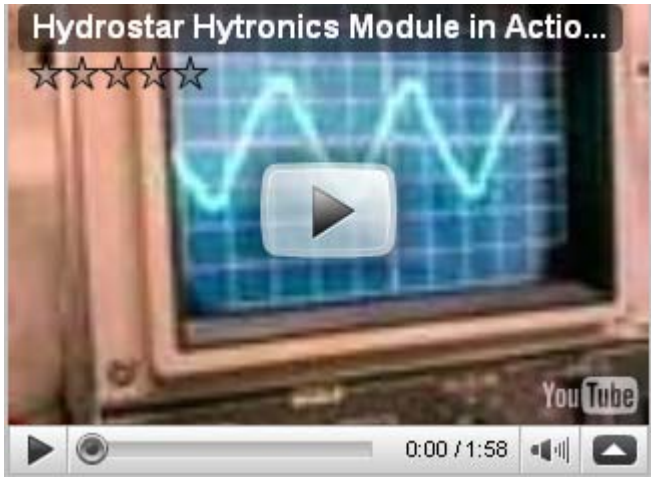
Once you have this adjusted then you are good to adjust the Low Frequency output OR Coil.



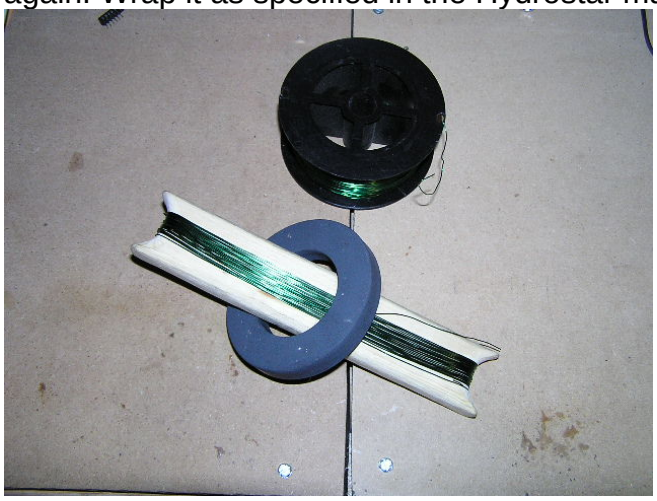
LOW FREQ ADJUSTMENT

Take a look at the lower two POT's on the board. They are perpendicular to each other (see above pic). At this moment I do not have pictures of the signal. But you can click the You Tube link below to see what you should be seeing. This adjustment is much easier than the first. Adjust both pots by zeroing them out (turning counter-clock-wise) until you hear a little clicking noise. Then make 9

complete turns clock-wise. You should be in the middle. The Low Freq Adj should be fine were it is at, unless you do not see a similar signal as below. If you do not you should adjust these two POTs until you do. This takes time and patience. (below is a picture only, to access videos online go to: http://www.restarpwm.com/what-happens-next.htm .



Below is a great little tool for wrapping your terroid easier. Made for a long thin block of wood, you can wrap 100 feet at a time, or a legnth to your desire. Once you are done wrapping your desired amount, solder one end to the next and start again. Wrap it as specified in the Hydrostar manual.



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