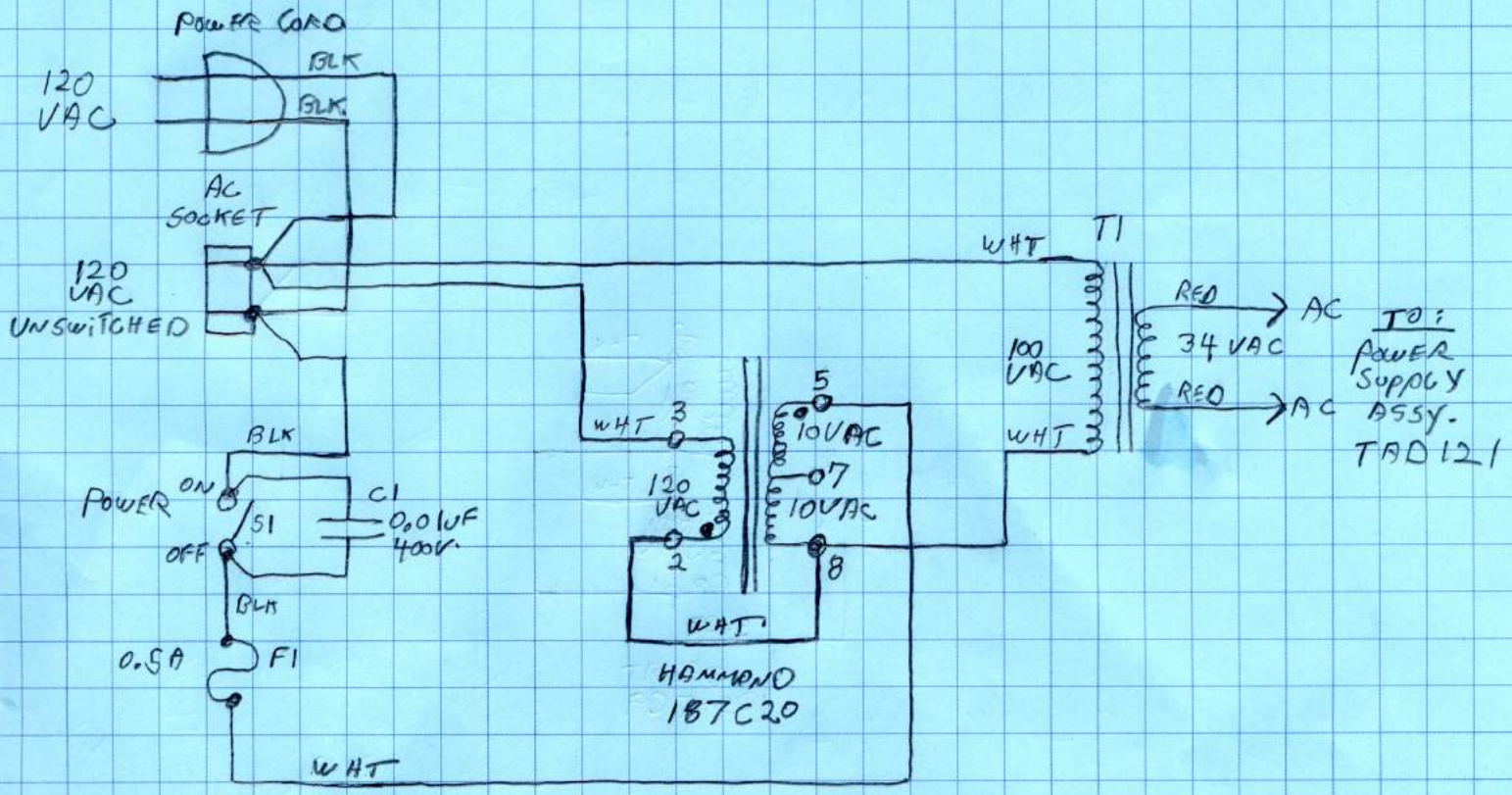
CD4-10S

100VAC INPUT TO 120VAC INPUT MOD.



20V "BOOTING" TRANSFORMER

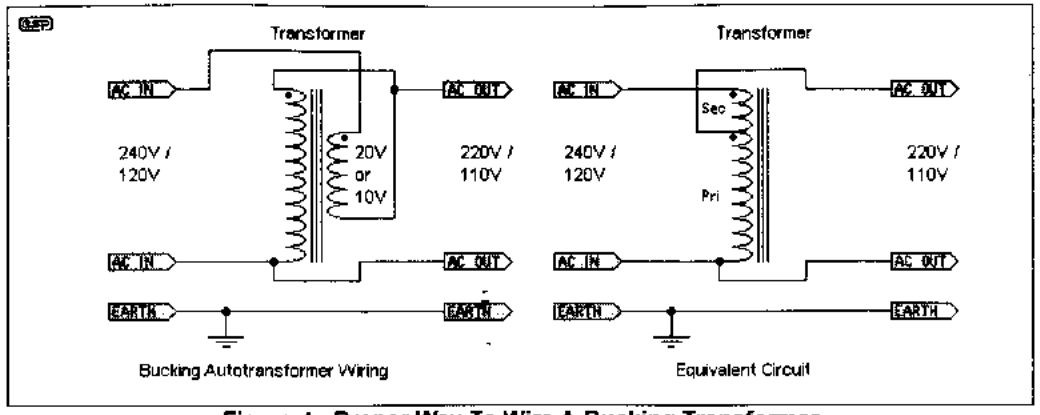


Figure 4 - Proper Way To Wire A Bucking Transformer

You won't see this arrangement described very often (if at all), but it is a far better solution. In Figure 4, I have simply rewired the circuit as an autotransformer, and the equivalent circuit shows that this is indeed the case. The transformer is exactly the same as used in previous examples. The incoming mains connects across the entire winding ... the primary in series with the secondary, wired in phase. The output voltage is taken from the tap - this is identical in every way to a normal autotransformer connection. The output voltage is fractionally higher than with the bucking configuration - the 240V version gives 221.5V RMS output (110.75V RMS for the 120V version). Again, double check all winding polarities before connecting to any equipment.

You can also push this version a little harder than a traditional bucking transformer. The normal output current (based on our initial criteria) is 10A at 220V, but with the arrangement shown in Figure 4 you can have an output current of about 10.8A (a total of 2,400VA) without exceeding the transformer's secondary current rating. That's because the currents are subtracted *within the winding itself*, because of the transformer action. The main primary runs at a current of about 835mA at the maximum output of 2.4kVA.

A simple reconfiguration of an old technique therefore provides better efficiency and lower losses than the traditional bucking transformer. It is important to understand that we are not getting something for nothing, we are simply minimising losses

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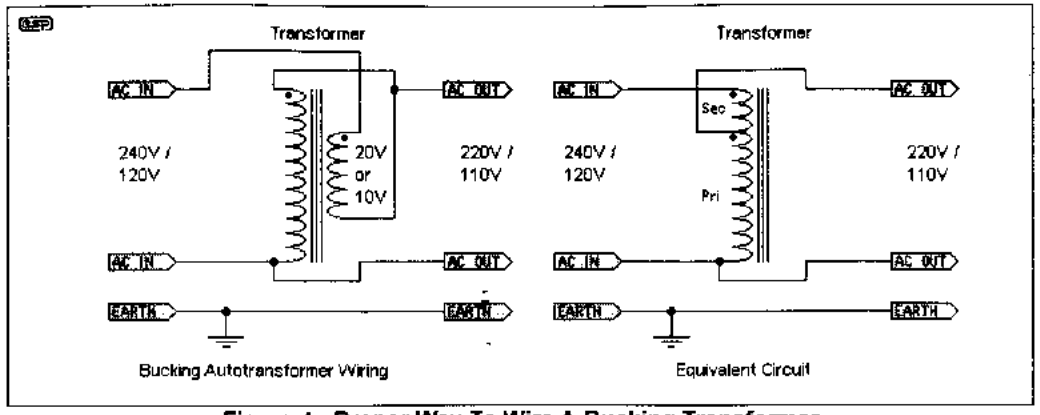
4 - Boosting Transformer

There may also be occasions where the voltage you get is *consistently* too low. The same technique can be used to give your supply a lift so that it's closer to where it should be. Be very, very careful with this setup though. It should only be used where the mains voltage actually *needs* to be boosted because it is *always* too low. You cannot use this trick to get a bit more voltage from a transformer or to get more power from an amp, because you will be operating everything at a voltage that causes additional stress. This could easily prove fatal for your equipment! Transformers can easily be pushed into saturation even with a fairly modest voltage increase.



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