Heathkit Home Brew Project

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In the last article, I wrote about the building blocks that go into the design of the HW32A. In this issue I concentrated on taking the heterodyne oscillator from the solderless proto-board and assembling it on a perf board.

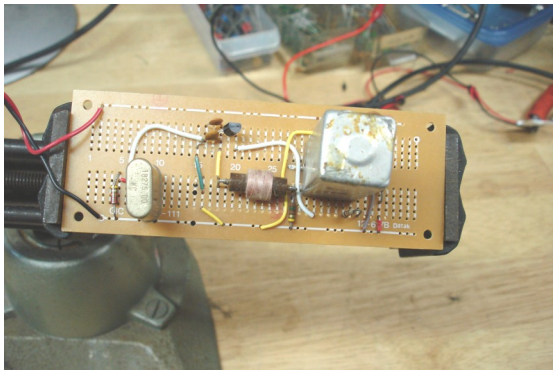

Figure 1
Heterodyne Oscillator Layout

Figure 1 is a photograph of the heterodyne oscillator assembled on to a solder type perforated board. These boards are excellent for developing a variety of circuits. I use these as a step between solderless proto boards and a PCB board.

This is the 18.275MHz heterodyne crystal controlled oscillator. The crystal, the output tuned circuit assembly and the RF choke were cannibalized from one of the two Junkers that I bought on E Bay

Figures 2 and 3 are the counter presentation and the oscilloscope presentation. The output of the oscillator is 80mv peak to peak. This may not be enough voltage to drive the next stage which is a mixer.

Figure 2
Counter Reading

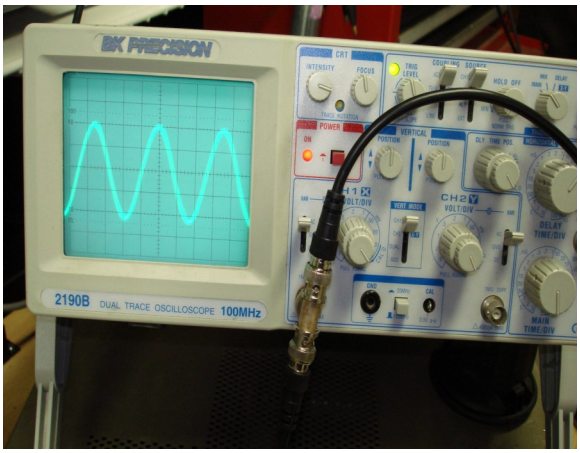

Figure 3
Oscilloscope Reading

There are two alternatives to investigate to boost the voltage if required. The tuned output assembly was factory set. This can be modified and adjusted for the maximum voltage or a follow-on stage using a class A amplifier to boost the signal voltage. I plan to leave room on the PCB to accommodate a buffer amplifier.

Figure 4
DC Current ~ Heterodyne Osc.

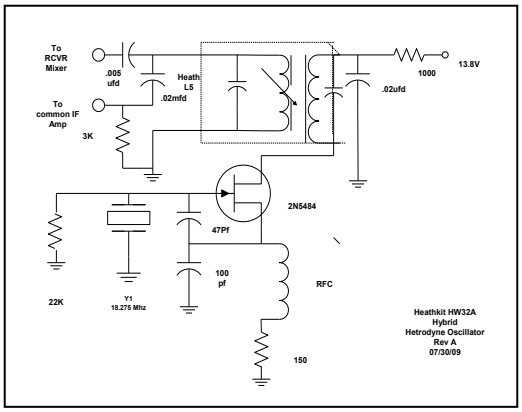

Figure 5
Schematic Diagram
Heterodyne Oscillator

The PCB design will allow access to the tuning slug in the in L5

Iwanted to see how much DC current the heterodyne oscillator drew so I took a picture of the milli-ammeter I am using. The current is about 2mA. See figure 4.

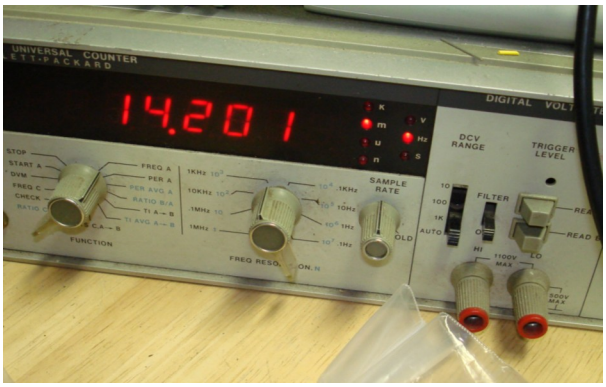

Figure 6
Output at Antenna Jack

There was also time this month to look at the chassis layout and I wanted to try out the T/R relay function. I took the signal generator and connected to what would eventually be the output of the transmitter tubes. I then connected the antenna jack to the counter and scope and then keyed the microphone.

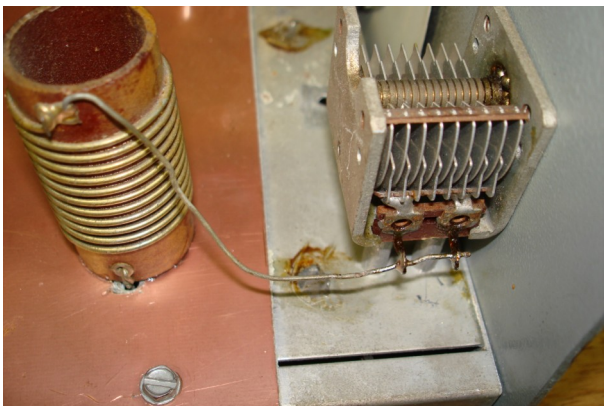

Figure 7
Output Tank Circuit

I also mounted the output tank inductor to the output tuning capacitor. The inductor is mounted via epoxy. The through holes have had the adjacent copper cleared away using a

counter bore. There are two solder lugs not shown that need to be connected to ground.

The output tubes will have to be epoxied in place as I could not find and chassis mount 12 pin tube sockets.

The T/R relay will have to be changed to a TP/DT relay with a 12V DC coil. The relay socket will be changed to a track mounted socket. I will provide pictures in the next edition.

The plan for the next edition is to have changed the T/R relay, constructed and mounted a PCB for the heterodyne oscillator, and to assemble the 12BY7 driver and 6GE5 output tubes.

If you have any questions, please contact me at WB6WXO@SOARA.org