

## KIT BUILDING

BY JOE EISENBERG,\* K0NEB

### *A Chip Off the Old Block*

#### **Building the "Woodchip" CW Transmitter Kit**

Last issue, I looked at the "Sawdust" 40-meter CW receiver kit from Breadboard Radio. This month, I am going to look at the companion "Woodchip" 40-meter CW transmitter kit. Following the simple design of the matching receiver, the Woodchip is very simple and has no toroids to wind. This makes it an easier kit for the newcomer to kit building. This kit can be used with a variety of receivers, not just the Sawdust.

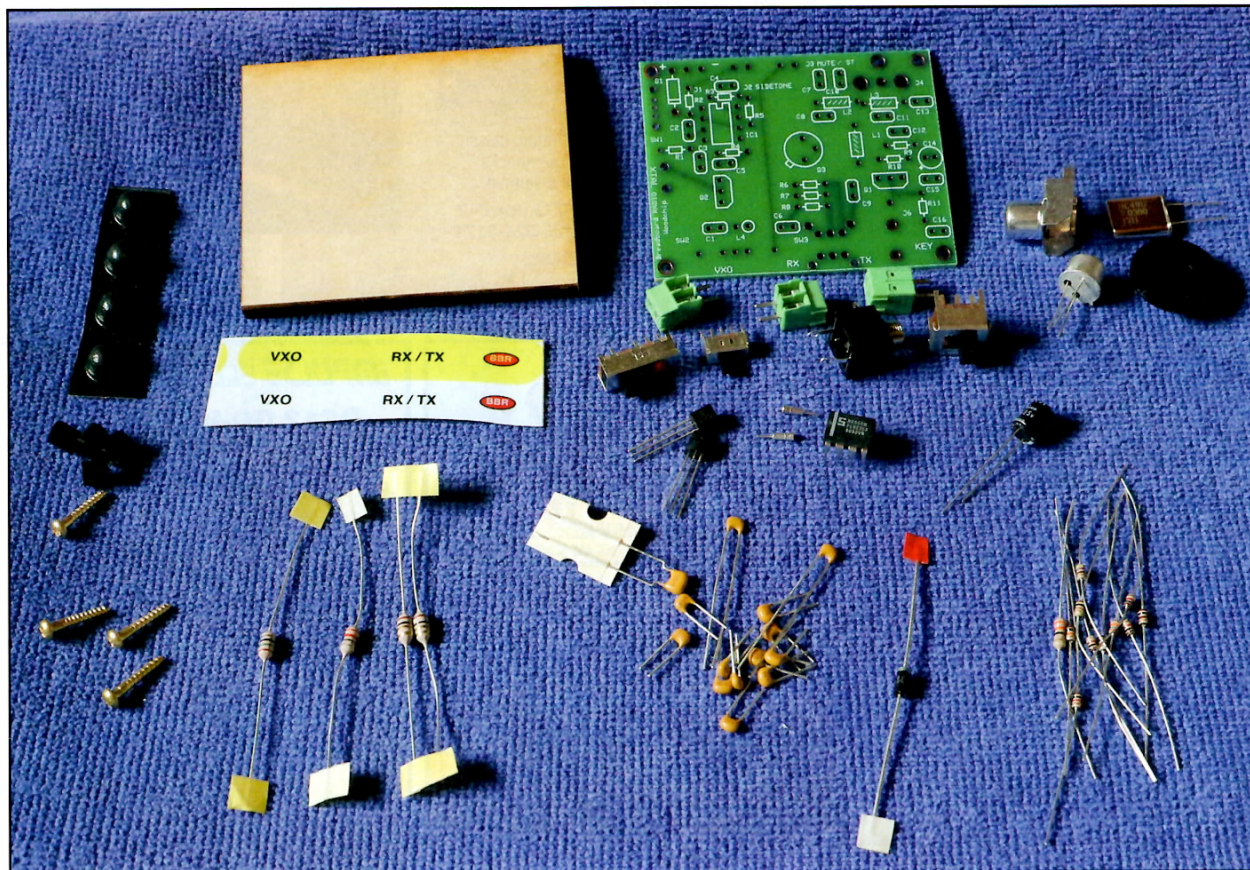
The manual has the kit being assembled starting with all the resistors first, followed by the capacitors, and so forth. With 1/8-watt resistors in use, I highly recommend using both a lighted magnifier and a component tester or DVM to be doubly sure you are placing the correct resistors in their proper locations. The capacitors include at least one of those tiny

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blue ones that are difficult to read, even with many magnifiers. I tested mine with a component tester to ensure it is correct. Keep in mind when testing resistors and capacitors that some capacitors have a 20% tolerance and the resistors most often have a 5% or 10% tolerance. A 1K resistor might actually read 991 ohms, and an 82 picofarad (pF) capacitor might show as 87 pF, etc.

Instead of toroids, there are four RF chokes that look like resistors. So be very careful and check the color codes to be sure what you are installing. Small RF chokes like these are a bit fragile, so be careful when bending the leads for installation on the board. It is OK if the chokes don't lay perfectly

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*The Breadboard Radio Woodchip kit parts ready to assemble. A low parts count makes for a good beginner's kit.*



flat. One RF choke is mounted vertically. Once again, be extra careful when bending the leads to mount it on the board.

There is one 8-pin IC with this kit, and if you happen to have an 8-pin socket, you can optionally add that to your kit. I found the RX/TX switch to be a little fussy being mounted. Bending a couple of the outside pins inward a bit made

this go in a lot easier. All the other parts went in easily and soldered nicely to the double-sided and tinned board.

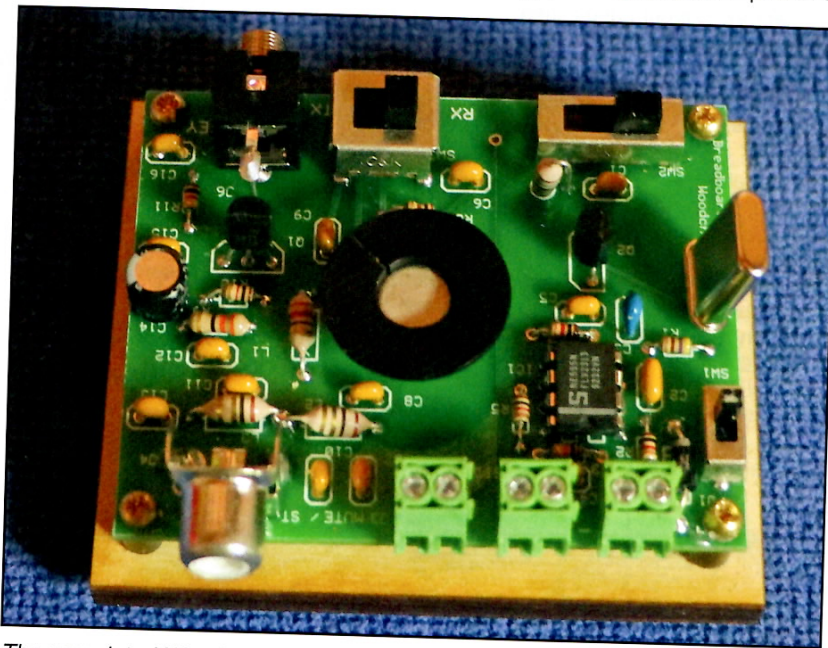
There are two single pin sockets that are used to be able to change crystals. The VXO in this kit is a bit different from the varicap and pot style VXO I most often see. In this kit, there is a three-position slide switch that chooses between no change, an inductor, or a capacitor to

either pull the crystal frequency lower or higher. There are connections for sidetone, power, and muting as well as the antenna and jack jacks.

### “Timber!!”

Because there is no antenna switching on this board, a separate T/R switch kit, the “Timber,” is available to perform that task. If you’re using separate antennas, you can operate this kit without a T/R switch and utilize the muting wiring to avoid the signal overload caused by the two antennas being close together.

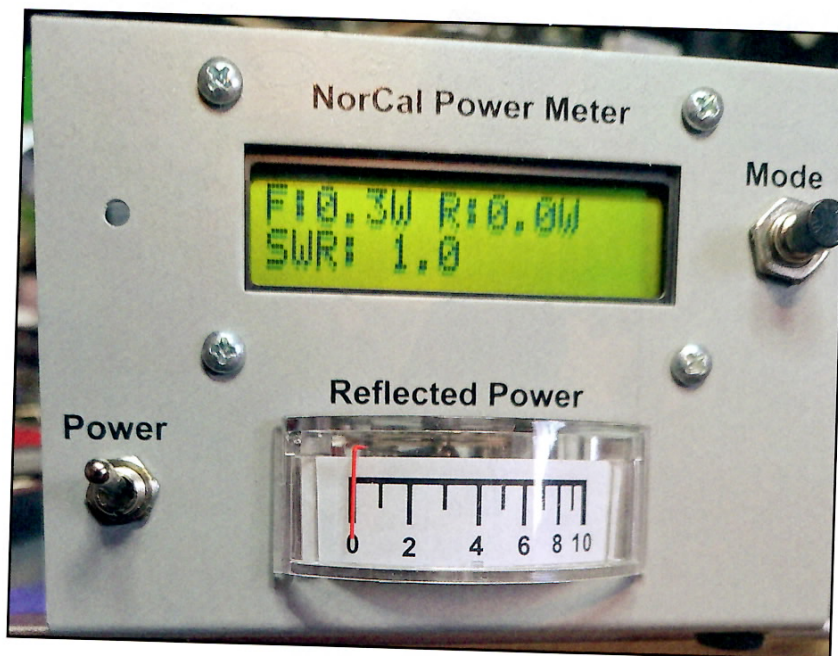
As with the receiver kit, you have the option of sanding and staining the top and bottom of the wooden base. The edges already come stained. I connected my Woodchip to a 13.8-volt DC supply, and measured 0.3-watts output, plenty for QRPp operation. The CW note sounded good and the VXO shifted the carrier about 2.5 to 3 kHz either way from the center frequency. Once I finish the T/R kit, I’ll mount all three kits together to make up a nice QRP transceiver. The Breadboard Radio kits are available online from <https://breadboardradio.com>.



The completed Woodchip mounted on the wooden base.

### Multimeter-Scope Combo

Part of the fun of building this kit was using a new multimeter that also includes a built-in oscilloscope. The



The Woodchip showing 0.3 watts testing into a dummy load. Always be sure to have a 50-ohm dummy load capable of handling the output of your kits to prevent damage to the output stage during testing and alignment.



Mustool MDS8207 scope / meter displaying an audio waveform.

