

Heathkit of the Month:
by Bob Eckweiler, AF6C



The Heath CR-1
Crystal Broadcast Radio

Introduction:

I remember building a crystal set as a youngster. It had to have been before I was ten. The kit required you provide your own board and screw a mess of Fahnestock clips into it using a given layout. The board I was given for the project was hard and no drill was available so I had to start the holes with an awl and turn the screws into the hard wood. I found this easier to do without the Fahnestock clip in place which necessitated removing and then re-installing the screw. The detector was a galena rock in a holder with a "cats-whisker" that you had to move around for the "sweet-spot where it would act as a diode.



A Fahnestock Clip

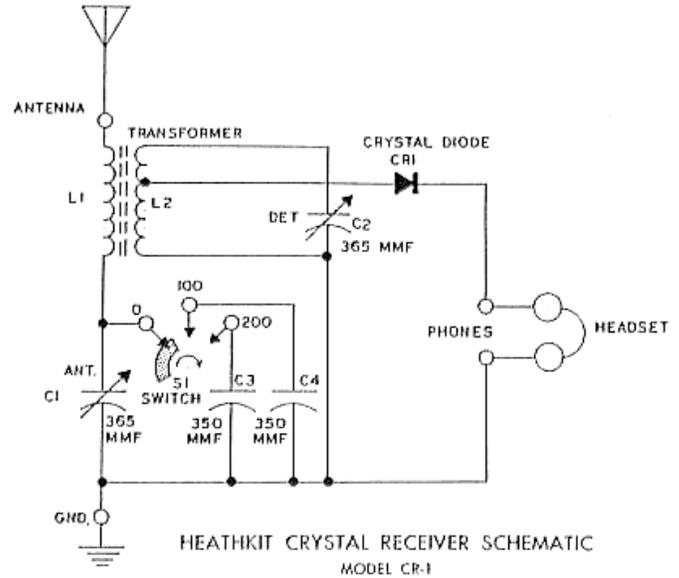
The Heathkit CR-1



Over a period of about five years (1957 - 1962) Heathkit also sold a crystal radio set kit, the CR-1. This radio, like most, tuned the AM broadcast band from 540 KHz to 1600 KHz (kc

Heathkit of the Month #22 - CR-1 Crystal Radio

in those days). The CR-1 is a simple kit that uses a sealed crystal diode instead of a "cats-whisker". It is double tuned and drives high impedance headphones. It is a cherished Heathkit among collectors. However you can build your own for a lot less than the kit seems to be going for on eBay.



The Heath CR-1 measures 6" x 3" x 2" wide. The case is bakelite with a gray-metal top plate that is the front panel. Similar cases are available today at a lot of stores including Radio Shack. The circuit, shown in Figure 1, is a double tuned circuit followed by the crystal detector circuit that feeds the headphones.

The CR-1 has two sets of binding posts and three controls. The left set of binding posts are for the **ANTenna** and **GROUND** (ground); and the right set are for the **PHONES**. The three controls, left to right, are **ANTenna** tuning, **ANTenna** switch and **DETector** tuning. The two tuning controls are 365 pF (μmf in those days) variable capacitors and the ANT switch (middle control) switches in additional 350 pF capacitors across the ANT tuning variable capacitor. The detector circuit is just a crystal diode (type currently unknown) and relies on the built-in capacitance of the headset to augment detection.

Operation:

After hooking up an antenna and ground and a high impedance (2000Ω ?) headset to the respective binding posts, one would set the antenna switch to the area of the station they wanted to tune in (high, medium or low frequency) and tune for a signal with the DET tuning, adjusting the ANT tuning for the maximum signal and switching the ANT switch if the tuning control ran out of effectiveness. There is no ON/OFF switch nor power source required as this radio uses only the broadcast energy as its power source.

Conclusion:

To my knowledge, Heathkit used no Fahnestock clips in the CR-1! Even so, I never owned one, but I always thought it would be fun to play with one for a few weeks. You can find more about building a replica of this kit in the November 2005 issue of CQ Magazine (page 80).

73, from AF6C



Remember if you come across any old Heathkit Manuals or Catalogs that you do not need, please pass them along to me.

Thanks - AF6C

*This article originally appeared in the **month year** issue of RF, the newsletter of the Orange County Amateur Radio Club - W6ZE.*