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## The Heath Ham Scan

There you are, sitting up late at night, idly eavesdropping on a local QSO on a very dead 20 meters, interested in a good local contact but not particularly wanting to break in on the one you're hearing. Suddenly you see a station come on the air 30kc higher on the band. You tune up to the spot and catch his call, give him a blast, and there you are. You see a station come on the air? Yep. You do with the new Heath HO-13 'Ham-Scan' Panoramatic Adapter. Using this nifty little box of Benton Harbor tricks is like turning on the light in a dark room. It adds a whole new dimension to ham operating—you can now see what's happening on the band instead of fumbling around with the dial hoping to find something.

What the HO-13 does is take up to 100kc of the band and show it to you on the face of an oscilloscope tube. It gives a visible report of everything that's happening within that 100kc reading from the high segment on the left of the scope to the low on the right. The frequency you're turned to is always at the center of the scope, with the signal you're hearing popping up and down as a pip in the middle. Other signals on the band—50kc up and 50kc down—show themselves as little

jumping pips above or below the center, or rather to the left or right. You can even tell whether they're CW, SSB, AM or RTTY.

Basically, the HO-13 is a second *if* system branching off from the mixer of your receiver. The signals from the mixer plate (which are amplified and eventually converted into sound by the *if* inside the receiver) are taken by the HO-13 and amplified, and then scanned by the frequency sweep of an internal oscillator. Starting 50kc down from the point the receiver is tuned to, the sweep goes along looking at everything in the *if* up to a point 50kc above center, and does this from 10 to 50 times per second, depending on where you set the Sweep Frequency control. About the best analogy at hand is a comparison to ordinary receiver tuning: you could do pretty much the same job as the HO-13 if you swung your receiver back and forth across a range of 100kc, and listened and remembered everything you heard. But you'd have to do it at least ten times a second—and the HO-13 takes the remembering out of it by displaying the information on the face of the cathode ray tube, with the signal pips showing you exactly how far away—higher or lower—all the signals are from the center point.

The kit is a simple one to build, representing 12 to 15 hours of work, all very straightforward and made easy by Heath's usual careful instructions and clear pictorials. In only one spot is there some small opportunity for confusion, and this is on pages 16 and 17 of the manual, where you are told to attach wires to control terminals and then route them through clamps for later connection. Heath supplies only one color of hook-up wire, and it would be worthwhile for you to use some of your own wire of different colors for these two or three connections. Either that or make your own code of knots, or stick on pieces of tape. Otherwise you may end up like me, with the horizontal and vertical controls reversed at first, because it isn't easy to follow those same-colored wires through when the time comes later for hooking up the far ends to the proper terminals on the back of the CRT.

Heath has very wisely designed the HO-13 to operate with a wide range of receiver *if*'s. Parts and alternate instructions are supplied for using the Scan with ten different *if*'s ranging from 455 to 3395kc. Again, the instructions are clear, but there is a small possibility of confusion here if you try to keep everything in your head. The instructions will say, for example, to install Resistor R203, but R203 can be any one of several different values depending on the *if* of your receiver. You have to go to a separate table to find out which, and it is a good idea to write down right in the instruction steps what value R203 (and the others) should be.

Once the kit is done, you have to get some signal for it from your receiver but, as a 73 reader, you are certainly not one of those who screams with fear at the thought of going inside the box with a soldering iron. The signal you want is taken from the mixer plate of your receiver. This requires fastening a capacitor (supplied) to the plate and running a small coax (supplied) from there to the back of the Ham-Scan. If you have a "Spare" jack or terminal on the back apron, you run the coax to that, and then make up a cable to go from there to the HO-13. If you have no such connection, then you'll have to make a tiny hole in the back apron of the receiver and run the cable straight from the mixer pin to the Scan. However, the RG-62U supplied is so small that the hole can be very, very tiny, and shouldn't harm the value of the receiver as a trade-in, particularly if you pull out the connection and coax before you take the machine down to your friendly ham dealer. Also, just in case you're not sure which pin of which tube is the mixer plate, Heath even goes so

far as to supply a full-page table listing the proper tube and pin for 7 makes and 19 models of receivers, thus covering most of the receivers around.

If you're one of the many in the fraternity who have found the Ham-Scan's predecessor, the HO-10 Monitoroscope, a valuable operating aid, you will be interested to know that the Scan provides a special mu-metal shield for the cone of the 3RP1 tube which completely eliminates any possibility of AC ripple in the CRT trace. This special shield, incidentally, is for \$2.35, if you want to get another one to put on your HO-10. As soon as I built the HO-13 I wrote to Heath for another and was happy to find that it cut out 99% of the tiny HO-10 ripple that had been bugging me.

Turn on the receiver and the Ham-Scan, and as soon as the audio hits the speaker, there is the whole spectrum of the band in front of you. The sweep range of the HO-13 can be varied from about 30kc to 100kc. Thus you can monitor a wide part of the band, or you can cut down the range to widen the pip of a particular signal and take a closer look at it. It gives you an instant picture of the quality of whatever you're hearing, because it shows you exactly what's happening at every point in the spectrum—overmodulation, splatter and such. Also, if enough of your transmitter signal gets through to your receiver *if*, you can take a critical and continued look at your own signal.

You will at first be stunned by the amount of stuff that's going on in the *if* of your receiver—all the noises, pulses, garbage, and a few signals. Pretty soon you won't be able to believe that you ever operated without it. Looking for a signal on a quiet band? Just park your receiver at the middle of it—say at 14.3 on 20—and everything that moves will show up on the scope. Got a good contact who's being clobbered by QRM? No longer do you have to tune away—and with a transceiver, maybe forget where you were and never get back—to find a clear spot. Just let your eye wander along the trace and you'll immediately see by the lack of pips where you should QSY. And what with the calibration marks along the base line plus a little experience, you will be able to impress the bejabbers out of your contact by telling him instanter that you see a clear spot exactly 23 kc down.

The HO-13 costs \$79 from Heath, which takes panoramic fun right out of the rich man's class and brings it down to all of us. It's well worth every cent of it.

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