A Review of the Heathkit SB-110A

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Want a really great transceiver for six meter SSB? Then this is the one! Assembly takes about thirty to thirty-five hours, and the most difficult step is stringing the dial cord for the final loading. This took me about fifteen minutes of trial and error, mostly error.

A look at the instruction manual will show that all printed circuit boards (six in all) are assembled first. All parts for these are packed in a separate box, so one box is all that should be opened at the start. Assembly of the PC boards, which appear to be of high quality, takes about five or six hours for all of them, including counting and sorting parts prior to starting.

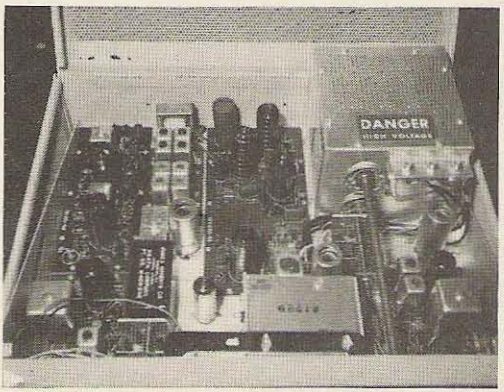
All instructions are very specific, and easy to follow. The boards are also marked on the component side with parts values, so it is very difficult to make any errors, except by carelessness. When all boards are completed (one resistor is left off the receiver RF board for later installation) they are set aside for later use.

Next comes the installation of parts onto the chassis. For this, the chassis is divided into twelve sections, six on the top and six more on the bottom. After a good portion of the parts are installed, including the PC boards, the final stage wiring is begun. Next comes the wiring harness, which is made by Heath, thankfully. A few wires must be trimmed to provide hook-up wire for later use, but all others are precut to the correct length and stripped. After the wiring harness is in, and partially wired, the coax harness is installed (also precut and stripped). Wires are soldered to the foil side of the PC boards, and the remaining parts are installed. All of this is very easy, due to the excellent drawings and detailed insets in the book.

When construction is complete, before alignment, you will have two resistors left over. *Don't worry about it.* The 47 ohm half watt is used for alignment only, and the 33k two watt is installed in the receiver *rf* stage, after neutralization.

Next comes the alignment. The only test equipment required is an eleven megohm VTVM (or solid state voltmeter, I used the IM-17), a fifty ohm dummy load (light bulbs are no good), and a receiver capable of receiving WWV or a broadcast station on a multiple of 100 kHz.

Some nice features of the SB-110A are its ability to use crystal control for transmit or transceive, with front panel selection, the crystal socket is inside and it takes a crystal in the 4.975-5.525 MHz; the built in



A Peek Inside The SB-110A

100 kHZ calibrator; two antenna connectors on the rear apron, one for the transmitter and one for the receiver, or use the internal relay; phone patch input; ALC input; a spare phono jack for whatever you want (*if* out for a monitor scope, etc.); and a spare hole which will take a phone jack, this is used for a brass bushing when used with the mobile mount. There is also a set of relay contacts which close on transmit, brought out to the power plug. A CW sidetone generator is included which provides about an 800 Hz. tone and has its own level control (internal). In the CW mode, the receiver is in the USB mode, and the transmitter uses an offset crystal for carrier generation, which bypasses the balanced modulator, so when you tune a CW signal for an 800 Hz. note, you will be close to zero beat with him. The SB-110A also has an excellent noise limiter which is turned on by pulling out the audio gain control. The AGC is normally fast, but pulling out the *rf* gain control adds .2 mfd, which slows it down considerably.

Unfortunately, Heath included no provision for AM operation. However, if AM is really desired, the carrier null adjust pot inside could be adjusted for about 50-75 watts carrier input, and the microphone level cut down to prevent "overmodulation". This will give you carrier and one sideband, but there is no way to turn off the receiver BFO.

The crystal control feature is quite nice, as it allows split frequency operation for DX chasing, or crystal controlled tranceive for net operation. There is an internal trimmer to "rubber" the crystal slightly and get exactly on the desired frequency. It appears that minor rewiring is all that would be required to use the SB-640 external LMO which was designed for use with the SB-101, but Heath has no comment in their ads. However, page 99 of the instruction book shows an external VFO connected to the spare phono jack.

When the SB-110A is completed, all that is needed to get on the air is a power supply, a speaker or phones, an antenna, and a key or microphone (Amphenol 80MC2M connector furnished with kit). The recommended power supplies are the HP-13 for mobile (12 VDC) and the HP-23 (117 VAC) which fits quite nicely into the back of the matching SB-600 speaker.

As far as performance goes, the SB-110A far exceedes the Heath spec sheet. I measured 10 db S+N/N at .05 microvolts using an AN/URM-26G and a Simpson 260, and the CW output is slightly over 100 watts measured with a Bird thru-line wattmeter into a fifty ohm load.

In summing up, although I found the SB-110A easy to build, I don't recommend it for anyone who has never built a kit before. Start off with something a little easier, like a Twoer or the power supply you plan to use. Or try the IM-17 solid state multimeter if you don't have a VTVM; for twenty bucks, you can't go wrong. All in all an outstanding rig for the serious six meter SSB man, who wants an easy to operate, well performing rig with a very pleasing appearance, and a reasonable price tag. See you on six.

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