

The Heath HW-101 SSB Transceiver

THOUGH SOMEWHAT similar in appearance to the earlier HW-100 ssb/cw transceiver, the Heath HW-101 has been subjected to a face lifting. The interior has been modified to some extent to provide greater flexibility for the cw/phone operator. The HW-100 had just one i-f filter.¹ Thus, the operator found himself equipped with a receiver section whose i-f bandwidth was set only for ssb work. If he wanted to use the transceiver for cw operation he was limited to phone selectivity. Alternatively, a cw filter could be purchased from the manufacturer and installed in place of the phone filter. That arrangement was rather a grievous one for the person who liked to work both ssb and reduced-QRM cw because the cw filter was unsuitable for ssb reception. Now, with the HW-101, chassis hardware is included with the kit to enable selection of a 2.1-kHz filter for ssb use, or a 400-Hz filter when using the cw mode. The 400-Hz filter does not come with the kit; it must be purchased separately.

A unique style of drive assembly was employed in the HW-100, but it was subject to backlash after several months of use. A more reliable dial-drive mechanism has now replaced the plastic-gear type used in the earlier model. The HW-101 uses a backlash-free ball drive which tunes smoothly and resets to a chosen dial position with accuracy. The tunable oscillator is generally the same as far as the circuit is concerned, but a different-style variable capacitor is used because of the change in mechanical layout of the drive control. The new parts can be purchased from Heath and installed in the HW-100 if one is willing to remove the VFO assembly and replace the variable capacitor. The new dial drive will fit into older units, according to the manufacturer.²

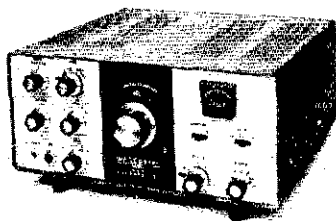
The remainder of the circuit and mechanical characteristics pretty much reflect the makeup of the HW-100. However, some subtle changes have been made in the receiver front end to provide better uniformity of overall gain from 3.5 to 30 MHz. (Some owners of the HW-100 reported reduced gain on the 15- and 10-meter bands, though the noise figure was satisfactory.) The unit built by this writer does, indeed, seem to have plenty of "whomp" on both 10 and 15 meters.

Construction

Approximately 50 hours were devoted to the assembly job when building the HW-101 with an additional 10 hours to test and align the equipment. The builder has had very little experience in constructing amateur gear, homemade or other-

¹ The HW-100 transceiver was reviewed in QST for January, 1969, p. 51.

² If the reader contemplates modifying an HW-100 for use with the HW-101 dial mechanism, it is suggested that he purchase the HW-101 assembly manual first. Then, study the dial assembly instructions, write down the parts needed for the modification, and order accordingly.



wise. The HW-101 seemed like a formidable undertaking for a Novice on the brink of becoming a General. Happily, things went smoothly, and the end result was well worth the time spent in getting the piece together. The testing process was complicated by the writer's lack of test gear.

There were a few problems. Two of the slug-tuned coils on one of the exciter pc boards were defective, having shorted B-plus leads. The fault caused two decoupling resistors to go up in smoke when the power was first turned on. Upon locating the short circuits, the offending coil wires were pried away from the coil-form lugs against which they were shorting. The burned-out resistors were replaced; then all worked as the book had outlined. The PA plate rf choke went up in smoke later on during the checkout process. The cause of the failure was traced to the writer's carelessness when snipping off the pigtailed of one of the parts in the PA compartment. The sharp end of a pigtail had been pressing into the choke winding, finally causing it to short out.

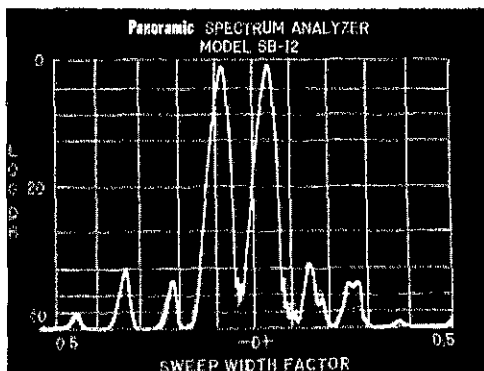
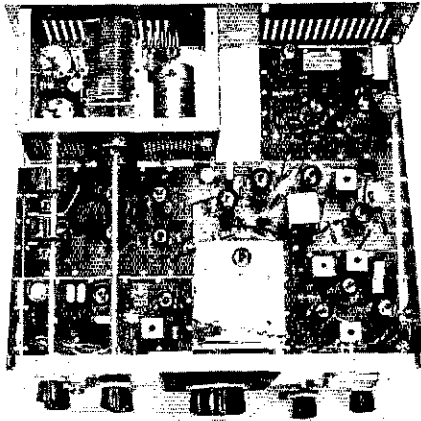


Fig. 1 — Spectral display of the HW-101 output signal during two-tone testing. The third- and fifth-order distortion products are down better than 30 dB below PEP output. (The scale is calibrated in dB below a single-tone test, which may be converted to Heath's system by subtracting 6 dB.)



Interior view of the HW-101 top side. The VFO is at the lower center. The cover has been removed from the PA compartment to show that plenty of room for air flow has been allowed — an aid to tube life.

Performance

Generally speaking, the HW-101 showed performance traits which were similar to those of the OM's HW-100. However, the 400-Hz selectivity enables the HW-101 to run circles around the HW-100 when operating cw. The dial mechanism has a more positive feel, and no backlash could be detected even when using the 400-Hz filter. Frequency stability is excellent, as is characteristic of the HW-100. On-the-air cw tests were performed at the ARRL lab, and reports of RST 599 were frequent. On phone, reports of good audio quality were obtained from all of the stations contacted.

Tests were made with the ARRL's spectrum analyzer to determine whether the carrier suppres-

sion, harmonic output, and distortion (IMD) were within bounds. All tests showed the results to be well within the manufacturer's specifications. A spectral display is shown in Fig. 1.

In closing, the writer would like to say that the less experienced amateur should not be afraid to purchase and build the HW-101. If you can follow instructions carefully (the assembly manual is worded in clear language and is profusely illustrated), and if you can use a soldering iron properly, no problems should result. The rig will get its workout once that General Class license is in hand! — *Ex-WN1LZQ*

Heath HW-101 Transceiver

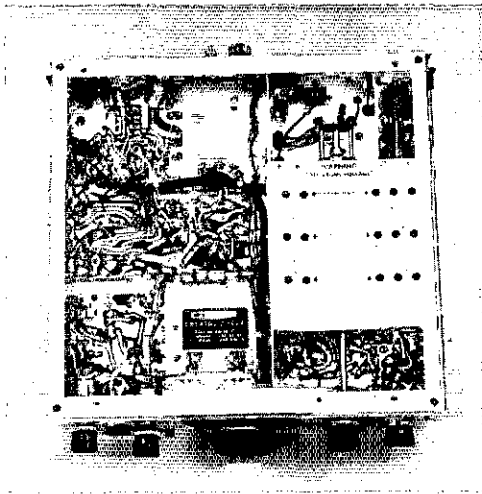
Dimensions (HWD) and Weight:

6 5/16 × 14 13/16 × 13 3/8 inches,
17 pounds.

Power requirements: 700 to 850 volts dc at 250 mA, 300 volts dc at 150 mA, -115 volts dc at 10 mA, and 12 volts ac or dc at 4.76 A. (The Heath HP-23 ac supply can be used for fixed-station use. The HP-13 dc supply is available for mobile operation.)

Price Class: \$250.

Manufacturer: Heath Company, Benton Harbor, MI 49022.



The 400-Hz and 2.1-kHz i-f filters are located on a mounting plate near the filter-selector switch (lower foreground). The selector switch is mounted concentrically with the rf gain control on the front panel. The cable harness is factory made. The various cable breakouts connect to the bottom sides of the five pc-board modules.

Strays

Because of an FCC rule violation, the multioperator score of WA6IQM in the 1971 ARRL DX Competition (p. 61, Sept. QST) has been disqualified.

Stolen Equipment

During the past summer the entire club station at the Colorado State University, Fort Collins, was stolen. The club is particularly interested in recovering the following Collins equipment: 75S-3B receiver, serial 15640; 32S-3 transmitter, serial 12000; and 516F2 power supply, serial 1649. Contact W. H. Solfermoser, KØDVI, Administration Building, Colorado State University, Fort Collins, CO 80521.

A G.E. Port-O-Unit, Model HN-36263, serial 4410629, R.R. No. 95 — MRO 12121, property of the Penn Central Transportation Company, was recently stolen. Contact Patrolman Donald J. Parker, Metropolitan Region, Office of Superintendent of Police, Penn Central Transportation Company, Grand Central Terminal, New York, NY 10017.