

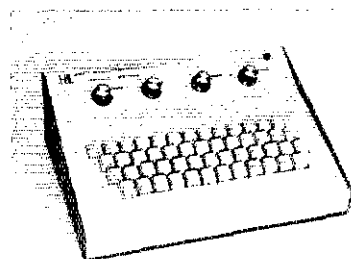
Bottom view showing the transmitter board. The output band-pass filter is along the bottom, directly above the UHF connector. The 70-cm amplifiers are in the shielded areas to the right.

### Summary

The manual notwithstanding, the SB-450 is a fine package. It's very compact and multifeature laden. When the gang wakes up to uhf fm, SBEs SB-450 will be there waiting. It's tomorrow's rig today, in the truest sense. *WIGRE*

QST ——— QST ——— QST

## Hal MKB-1 Morse Keyboard



A RECENT addition to the growing list of equipment offered to the amateur by HAL Communications Corp. is their MKB-1 self-contained Morse-code keyboard keyer. In appearance it is similar to the HAL RKB-1 TTY keyboard,<sup>1</sup> but in function it is entirely different. The TTY keyboard sends Baudot code and the Morse keyboard sends Morse code; other than the fact that both are operated by depressing keyboard keys, there is little other similarity in their operation. (To be technically correct, the MKB-1 keyboard sends International Morse, or Continental code.)

Keyboard-operated keyers have been around for a number of years, long before the days of modern solid-state electronics. A few early versions were constructed by using rather complicated arrangements of relays and interconnecting wiring. One of the first all-electronic solid-state keyboard keyers to be published appeared in *QST* for May,

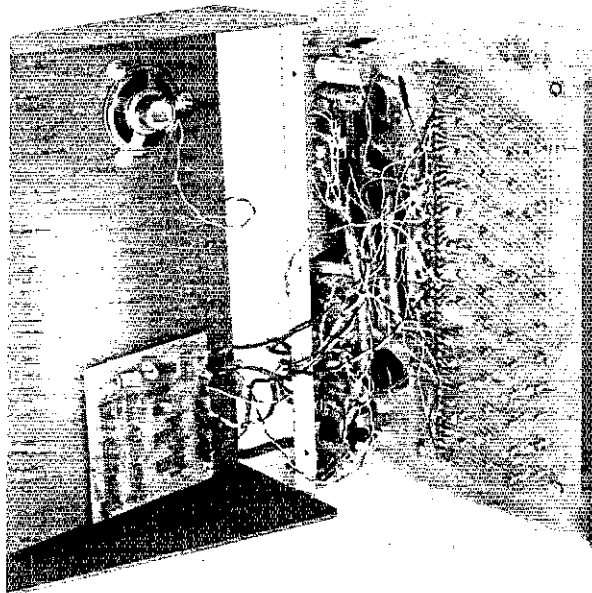
1961.<sup>2</sup> Since that time, several articles on keyboard keyers for home construction have appeared in the various amateur magazines, and a number of models have become available commercially.

In general, all of the recently designed keyers work in the same fashion. The operator pokes the keyboard key corresponding to the code character he wishes to send, and out comes the proper code. Punch another key, and out comes the code for that character. Of course there's a speed control to vary the rate at which the code is sent. In most keyers, depressing and holding one key will initiate a string of identical code characters, separated by the proper spacing interval. (In a few keyboard keyers, depending on the circuit design, it is necessary to release the key and depress it again in order to repeat a character.) In operation, the various keyboard keys are depressed in the desired sequence, one after the other. Because the code characters vary in their duration, it is necessary for the operator's fingers to linger on some keys, such as the J, Ø Y, and Q, and to move quickly off of other keys, such as E and I. To the touch typist and "hunt and peck" artist alike, typing various

<sup>1</sup> See Recent Equipment, "The HAL Communications RVD-1002 RTTY Video Display Unit and the RKB-1 TTY Keyboard," *QST*, April, 1973.

<sup>2</sup> Johnson, "Codamite," *QST* for May, 1961.

The key switches of the MKB-1 keyboard keyer are affixed to the large circuit board mounted on the top (sloping) panel, shown at the right in this view. Components on the logic-section circuit board can be seen to the left of the key-switch circuit board, shown on the upper portion of the rear panel here. The circuit board at the left is mounted on the base or bottom of the enclosure, containing the automatic identification circuitry.



characters at different rates requires a bit of practice. (Some deluxe keyers contain a memory for a few characters, to avoid the necessity of this variable-speed typing. Characters typed at a uniform rate are stored in a memory and "clocked out" at the correct time.) Proper spacing between words or groups is usually an operator function on most keyers, and therefore there is no space bar, as there is on a typewriter or teleprinter keyboard. (The only time there is a real need for a space bar is when the keyer contains a character memory.)

In these respects, the HAL keyboard keyer is like most others. It is not the type which has a character memory such as that described in the above paragraph, and therefore the operator must use the variable-speed typing procedure and provide the proper word-spacing interval between codegroups, as mentioned, for the smoothest sounding code. This is just a matter of practice, though, and in a relatively short time it isn't difficult to find one's self sending flawless code, as if it were being machine sent.

The method of generating the Morse code in the HAL keyboard keyer is the same as that used in the popular Touchcoder II which appeared in *QST* a few years ago.<sup>3</sup> Seven tiny toroidal coil forms are used as the basis for seven transformers, the "primary winding" for each being a single wire passing through the center hole. Several primaries for each transformer are obtained by passing a number of wires through each, a single-wire conductor from a particular keyboard key being threaded through the appropriate toroids, according to the code for that keyed character. The reader is urged to review the original *QST* article for further information on character generation.

Using modern TTL ICs, op amps, and transistors, the logic section of the keyer occupies relatively little space on the rear panel. It, the sidetone generator, and the power supply rectifiers and regulator are contained on a circuit board which measures only 3 x 5-3/4 inches. Most of the rest of the rear panel contains controls and jacks for external connections to other station equipment. Provision is included for solid-state keying of either a cathode- or grid-block-keyed transmitter.

Available as an optional feature for the MKB-1 is an automatic identifier. The keyer we tested was programmed to send **DE K1PLP** - all at the push of a single keyboard key, labeled **HERE IS**. No information was provided by the manufacturer on this circuit, but its electronics, 9 transistors and 11 7400-series ICs, are contained on a separate circuit board measuring 3-1/2 x 4 inches. With this feature comes the additional use of two other keyboard keying functions. One key initiates the Morse code for **DX**, and another initiates **CQ**. Punching just three keys in the proper sequence sends **CQ DX DE K1PLP**. And as with most of the other keyboard keyers, holding a single key down continuously causes the code for that key to be repeated, so that sending **CQ CQ CQ DE K1PLP K1PLP K1PLP K** requires the pushing (and holding for an appropriate period of time) only three keys. (The **DE** portion of the **HERE IS** message is not repeated when the key is held closed continuously.) Without resorting to a fully pre-programmed device, a keyboard keyer such as the MKB-1 makes it about as effortless as possible to send good code. - *K1PLP*

#### HAL MKB-1 Morse Keyboard

Dimensions (HWD) and Weight:

4-1/2 x 12-3/4 x 9-1/2 inches, 5-1/2 pounds.

Power requirements: 117 V ac, 60 Hz.

Price class: Kit, \$175; assembled, \$275; wired and tested with automatic identification feature, \$325.

Manufacturer: HAL Comm. Corp., Box 365A, Urbana, IL 61801.

<sup>3</sup> Bryant, "Touchcoder II," *QST* for July, 1969.