

MILITARY TRAINING

ANTIJAMMING RECORD SET

Record Set AN/GNQ-11 is used for radio anti-jamming training and contains the following 12-inch, 78 r. p. m. (standard size, standard speed) phonograph records:

1. Instructional records.
2. Jamming sounds (three records).
3. Code and jamming (three records).
4. Test of ability to listen in noise (two records).
5. Test of ability to listen in bagpipes jamming (two records).

Instructional record.—A phonograph record of two sides playing for approximately 10 minutes and illustrating sounds described in TB Sig 5, including several types of jamming, and sounds of anti-jamming techniques. Illustrated are: spark jamming, sweepthrough jamming, bagpipes jamming, noise jamming, howl jamming, c-w jamming, random keyed c-w jamming, the sound of the techniques of telling whether interference is jamming or not (disconnecting the antenna and checking the tuning of the interference signal), use of crystal filter, use of beat frequency oscillator, use of tuning control, use of gain control and the effect of changing from voice operation to c-w operation.

Jamming sounds records.—Three records of two sides each, consisting of a single type of jamming for approximately 5 minutes on each side. Six types of jamming are thus illustrated: noise, bagpipes, spark, random keying, howl and sweepthrough. These records are useful for furnishing jamming sounds for listening through jamming training in connection with code training or separately for voice radio operators. They can be used in connection with special playback equipment to modulate radio transmitters for jamming for training.

Code and jamming records.—Three records of two sides each with international Morse code and two types of jamming at three different levels. All code is 10-words-per-minute and taken from tape No. 9, appendix II, TM 11-432, Code Practice Equipment, 2 February 1942. There are the following six sides of approximately 5 minutes each:

1. One record with one side code with low-level noise, and the other side code with low-level bagpipes.
2. One record with one side code with medium-level bagpipes, the other side code with high-level bagpipes.
3. One record, code with medium-level noise, the other side code with high-level noise.

Test of ability to listen in noise.—Two records of two sides each with instruction sheet, sample test blanks and list of answers constituting a test for ability to understand sentences spoken in noise.

Test of ability to listen in bagpipes jamming.—Two records of two sides each with instruction sheet, sample test blanks and list of answers constituting a test for ability to understand sentences spoken in bagpipes jamming.

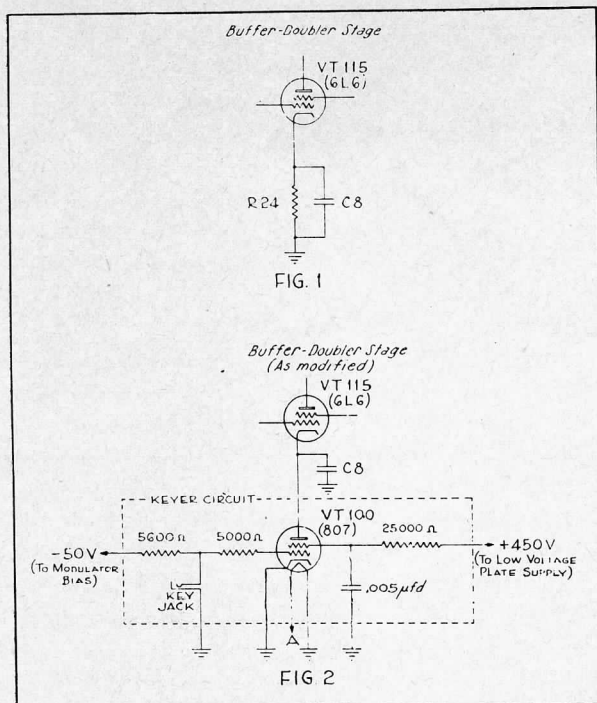
BC-610 CONVERSION FOR HIGH SPEED KEYING

When the fixed station radio course of the Officers' School, ESCTC, was implemented by the addition of a simulated administrative net in which field operating conditions were to be duplicated as nearly as possible, one problem of considerable interest arose. A transmitter was required for use in Boehme and keyed carrier radio teletype circuits with the following characteristics:

1. It had to be small and capable of operation from mobile power units in order to reduce the installation time and effort to a minimum.
2. It had to have sufficient power output and frequency stability to provide good operation of Boehme and radio teletype circuits over limited distances.
3. It had to be capable of providing a good wave shape at high keying speeds (up to 150 words per minute).

The transmitter finally selected as most nearly meeting the requirements was the BC-610, principal component of Radio Set SCR-299/399/499. However, to satisfy the high keying speed requirement, it was necessary to modify the keying arrangements normally used in the BC-610.

Keying in the BG-610 takes place in the cathode circuit of the oscillator stage, either directly by means of a key, as in the older models, or indirectly by means of a relay, as is used in the newer models. Neither of these arrangements is suitable for operation at high speeds. It was therefore decided to



install an electronic keyer in the cathode circuit of the buffer doubler tube and to permanently close the cathode circuit of the oscillator stage, thus making the oscillator continuously active.

The electronic keyer used for this purpose is one which was employed by the radio division of the Sixth Army Group, and is described in a publication entitled, *Mobile Wire and Radio Installations—Sixth Army Group*. Figure 1 shows the cathode circuit of the buffer doubler stage before modification. Figure 2 shows how this circuit was modified by inclusion of the electronic keyer. The keyer components, those within the area bordered by the dashed lines in figure 2, were all mounted on a bakelite base (see fig. 3) and installed within the BC-610 in the space adjacent to the final amplifier tube.

To facilitate installation and removal of the keying circuit, flexible leads terminating in alligator clips were provided for the necessary circuit connections. Since the keyer tube is identical to those used in the intermediate amplifier section of the BC-610, filament voltage was obtained by merely tapping onto the filament circuit of the intermediate amplifier tubes. Screen voltage was obtained by tapping onto the low voltage plate supply, and grid bias by connection to the

modulator bias rheostat on the front panel. The cathode circuit of the oscillator tube was closed by shorting the keyer terminals in the rear of the transmitter. Thus the only physical change necessary in the circuit of the BC-610 was made by opening the cathode circuit of the buffer doubler tube on the cathode side of Resistor R-24, and clipping on the keyer plate lead at this point.

In actual use the BC-610 thus modified works satisfactorily at speeds up to 150 words per minute. The system is capable of operation at speeds in excess of 150 words per minute but may produce undesirable interference, since no effort has been made to shape the keying pulses. Both Boehme and keyed carrier radio teletype transmissions have been made using this equipment, with entirely satisfactory results. Particularly good results were noted when the transmitter was used as part of the keyed carrier radio teletype circuit in which a maximum keying speed of no more than 60 words per minute was required. Use of the BC-610 for this purpose is not new. It has already found fairly wide application in the field, particularly in the CBI Theater.

(A similar method of keying Radio Transmitter BC-610 is utilized in Radio Set AN/MRC-1. Radio Set AN/MRC-1 is a mobile high-speed high-power radio set which is based on Radio Set SCR-399 and includes in addition a 2-kw. amplifier and high-speed Boehme equipment.)

