

Provisions for Varying Output

It is frequently desirable to operate a transmitter at various output powers. In certain broadcast installations a transmitter is required to operate at a power of 500 or 750 watts during daytime and 250 watts at night. In high frequency work, it is frequently possible to reduce the power of the transmitter when transmission conditions are favorable. A reduction of power is a fairly simple matter in a radio telegraph transmitter but in a radiophone transmitter it is often difficult to maintain the proper load relations between the various circuits when the output is varied unless special consideration is given to this problem. This difficulty is particularly true in transmitters employing low level modulation. The 20B Transmitter is normally supplied for operation at a single output power, namely, 600 watts. However, auxiliary equipment can be supplied on special order making it possible to vary its power between any values from 250 to 750 watts by means of a single control. This is accomplished by the use of a special auto-transformer in the primary circuit in the high voltage power supply. A rotary contactor adjusts the plate voltage to give the required power output. The plate voltage to the modulators and the modulated amplifier is varied simultaneously with the grid bias to the modulators. This makes the simplest possible means of varying the power output and exactly the correct load resistance is placed on the modulators at all outputs. When only two definite power outputs are required, provision can be made for shifting from one power to another by means of a single set of pushbuttons which may be located remotely. The change is accomplished instantaneously and the carrier is not taken off the air.

Constructional Features

The 20B unit is built on a steel frame which is assembled by welding in a special jig giving unusual strength and accuracy to the mechanical construction and avoiding the use of unsightly gussets. The front panels are of heavy aluminum and bakelite and the sides and rear are enclosed with perforated grilles. Maple spars are used to carry Isolantite insulators used in the high voltage circuits. The power tubes and the rectifiers are visible from the front of the transmitter through plate glass windows. All direct current and low frequency wiring is accomplished by a single cable. Radio frequency circuits are connected by copper piping with lug fittings. The interior of the transmitter is very neat and attractive in appearance.

Safety Devices

In order to protect fully the various parts of the transmitter and to afford complete safety to the operators, a number of safety devices have been incorporated in the construction. Safety switches are used on the rear door of the transmitter so that it is impossible to gain access to any of the high voltage circuits with power on. The front panel of the transmitter is entirely "dead front" and all dials and other metal parts on the front panel are grounded. The meters are protected by means of grounded shields (not shown in the photograph).

IMPORTANT!

New Collins Developments

The next issue of this Bulletin will describe in detail two NEW Collins Transmitters. In cost and size they are a marked contrast to the 20B described in this issue, yet many amateurs will obtain as much enjoyment from these new outfits as they would from more elaborate and more expensive transmitters. The new jobs are the 32A and the 32B, each having an output of 20 to 25 watts. The 32A is a CW transmitter, priced at \$85.00, and the 32B is its Radiophone companion, priced at \$125.00. Both models are 3-stage crystal controlled. Full class B modulation is employed in the 32B. Full details will be given.



Our Factory and Laboratory Now Located in New Modern Quarters

The offices, laboratory and plant of the Collins Radio Company are now located on the ground floor of the Metropolitan Building, 2920 First Avenue, N. E., Cedar Rapids, Iowa. The Metropolitan Building is directly on the U. S. Highway No. 161 and can easily be found by out-of-town visitors. The telephone number is 2-0016. Anyone having difficulty finding his way around town can call that number for directions. A considerable number of amateurs and radiomen have stopped in Cedar Rapids to see us in the past, and we are always delighted to have our friends, new and old, drop in for a chat.

It is felt that our improved facilities will be helpful in our constant efforts to better the quality of our products. Inventory of all standard items has been increased so that immediate shipment can be made to customers who want to get their new equipment in operation without a minute's delay.

Isolating condensers are provided in the transmission line connections, and static charges are drained off the antenna through bleeder resistances. Possibly the most important features from the standpoint of proper operation of the transmitter and tube life is a delicately adjusted overload switch which removes the plate voltage whenever the transmitter is seriously over-modulated or the radio frequency tubes draw an unusual amount of current due to damage to the antenna or for some other reason. An additional safety relay is provided which removes the audio frequency excitation to the modulators whenever the plate current to the modulated stage falls below normal, thus preventing the modulators from operating without their proper load. All parts of the circuit are designed with a wide margin of safety so that the failure of any part during continuous operation is a remote possibility.

Control Devices

All power conduits to the 20B and the 150A excitation unit, as well as any auxiliary apparatus which may be used, are brought to a single junction box. This box contains line switches, primary fuses and also a full set of relays for control of the circuits. The time delay relay insures the closing of the various circuits in the proper

sequence. Provision is made for turning the transmitter on and off from any position. A neat pushbutton box is furnished with the transmitter which has master control as well as buttons for turning on the various parts of the transmitter individually.

Audio Frequency Fidelity

Every effort has been made to achieve the greatest possible audio fidelity in the 20B Transmitter. It is not possible in this brief description to describe the various methods used to this end but it is significant to point out that the overall frequency response of the 20B Transmitter is flat within 2db from 40 to 12,000 cycles. The wave shape distortion is extremely low. Very careful measurements of the audio performance of this transmitter have been made. One important feature from the operator's standpoint is the ease with which it can be adjusted for proper modulation. It is much simpler to obtain excellent quality with a high level class B modulated transmitter of this type than it is to properly adjust a low level modulated transmitter.

(Note: Unlike other Collins Transmitters which are carried in stock for immediate delivery, the 20B is custom built for each user. Delivery can ordinarily be made within thirty days upon receipt of order. Prices on request.)