

"Blue Ribbon" Radio Control Equipment

Babcock On 465-mc With 2-Channel Xmtr and Two 1-Channel Tone Rcvrs

■ Second manufacturer to market 465 megacycle apparatus since this frequency was opened to R/C users by the F.C.C., Babcock Radio Engineering Co., Inc. offers a transmitter, a dual channel receiver (the BCR-7) and two single channel receivers, BCR-8A and BCR-8B. Latter are identical except for the audio frequencies to which they respond. Only one transmitter, the BCT-7 two channel unit, is made. For operation on this frequency a transmitter must have F.C.C. approval (not easy to obtain!). Only such approved factory-made transmitters are permitted; homebuilt jobs cannot be employed.

To the manufacturer 465 mc presents some technical problems—to the user some tubes and other parts that work fine on 27¼ mc and higher are useless. An advantage is that antennas are very short compared to the lower frequencies, making it possible to obtain a very great gain in radiated transmitter power from a "beam antenna." This latter fact has enabled Babcock to come up with a revolutionary receiver described below.

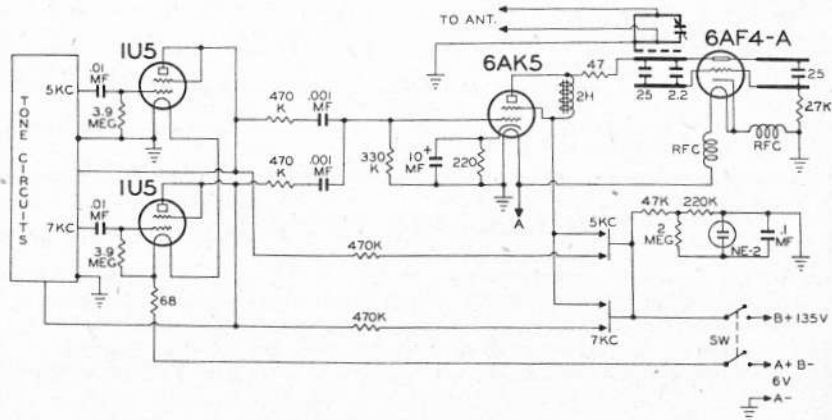
Let's cover the transmitter first.

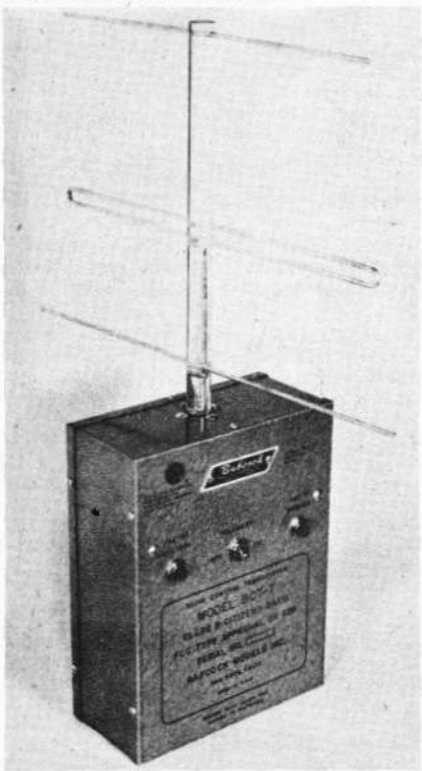
The BCT-7 is housed in a gray-finished steel case from which the back may be removed for replacement of batteries. On the top is a plastic socket into which the beam antenna plugs. In use, this antenna must be aimed toward the model carrying the receiver, except when the latter is within 5' or less. Closeup checks, and bench or shop trials are made by removing the antenna; a reliable operating range of 20' or more may be had in this manner.

By F.C.C. rules, the high frequency oscillator tube in the transmitter—which is easily identified—may not be replaced, in fact legally you can't even take the shield off it. Any of the other tubes can be taken out for test or replacement, however. None of these tubes should require change, except in case of damage. A flashing indicator on the front panel tells when the filament switch is on, also warns when battery replacement is required; batteries should be checked when this lamp does not flash.

As indicated, receivers are most unusual—they do not contain any vacuum tubes whatever. Thus there is no filament power supply to consider. All amplification is by transistors, while the high frequency chores are handled by crystal diodes. These receivers respond only to an audio tone of the correct frequency; it is therefore possible to operate a BCR-8A and BCR-8B at the same time, with two transmitters, with no interference whatever. All the receivers are "factory-tuned" and have absolutely no adjustments, nor does the transmitter.

Receiver "tuning," in fact, is accomplished by use of the right size and type of antenna, and these are furnished with the equipment. For boat use, a single "J" antenna is sufficient, and it has a vertical length of about 12". To get the additional range needed for R/C plane operation, two antennas are required, the "J" mentioned, plus a "folded dipole." The J should be mounted atop the fuselage behind the wing, while the dipole can be mounted right in the wing, with the two ends projecting toward the





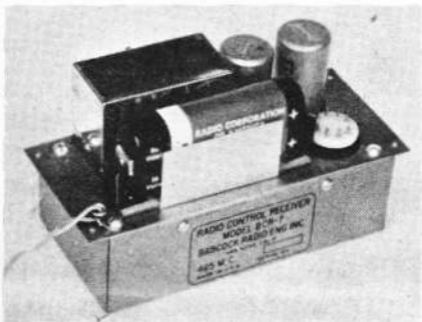
tips. The two units are very light, thin bakelite plates carrying the antennas, a diode, condenser and pair of RF chokes.

Receiver chassis is enclosed by a light metal box and carries the transistors plus other small circuit parts inside, with the filters on top. Also on top is a holder for the single battery required, and the connection socket. Sealed plug-in relays project through holes in case top. These relays are of same appearance and construction as in other Babcock receivers, but are not interchangeable with the latter.

The cable from the receiver carries leads to a SPST switch for the receiver power and the relay connections. Both contacts of the relays are brought out, so that proportional and other control systems requiring this may be accommodated.

The equipment is ideal for proportional control, since both transmitter and receivers can be pulsed at very high rates. Note also that this is "simultaneous" equipment, in that the two tones can be applied singly or both together, and in the latter case, both relays will operate (on the BCR-7).

A complete instruction booklet is included with this apparatus; in its 32 pages are nine circuit drawings, control systems for both planes and boats, a "charger" for pepping up the transmitter A battery, etc. The booklet also includes a chapter on model plane prepara-



tion and flying; this should aid the beginner in this field.

Each receiver is sold with the two different antenna assemblies, instructions, and an installation kit of plugs, sockets, wire and power switch.

As to range with model planes, the manufacturer gives the following figures: plane on ground and transmitter at waist height—200-400'. Both plane and transmitter held at shoulder height—500-700'. With plane in the air, latter distance is multiplied from three to six times. Range with the single J antenna on a model boat should be 400-500'. If these ranges seem on the short side to you, just measure them out and you'll get a surprise!

SPECIFICATIONS

Babcock BCT-7 Transmitter. 465 mc. dual-simul aneous tone unit with 3-element beam transmitter attached. Case measures $8\frac{1}{4}$ x $6\frac{1}{4}$ x 3" deep; antenna projects another $9\frac{1}{2}$ " high, widest element is $12\frac{1}{2}$ " long. Weight with batteries and antenna— $6\frac{3}{4}$ lb. Gray ham-mertone finished case has panel buttons for 5 kc and 7 kc audio tones, toggle switch for filaments. Flashing neon lamp indicator visible through window. There are no adjustments whatever. Battery requirements: A—one 6 V. battery (Eveready 744 or equiv.); A current about 400 ma. B—two $67\frac{1}{2}$ V batteries (Eveready 467 or equiv.); $\frac{1}{2}$ ma drain with keys up; 32 ma with either key depressed.

Babcock BCR-8A or BCR-8B Receivers. Single channel receiver using crystal diode detectors, and four transistors. Single plug-in 5K relay used; relay set to operate at 2 ma, release at 1 ma. Clips on case to hold the single battery (a 30 V Eveready #413 or equiv.); idling current: 2-3 ma; signal-on current: 5-8 ma. Overall size of encased chassis: $3\frac{3}{4}$ x $1\frac{7}{8}$ x $2\frac{5}{8}$ " high. Chassis weight with battery: $7\frac{1}{2}$ oz. Folded dipole antenna measures 11 x 1 x $\frac{1}{4}$ " thick; J antenna is 5 x 1 x $\frac{1}{4}$ " thick; antenna projects 12" vertically. Both antennas together weigh $\frac{3}{4}$ oz. "A" receiver is for 5 kc tone, "B" for 7 kc. Receivers have no adjustments.

Babcock BCR-7 Receiver. As above, but uses two 5K relays, measures $4\frac{1}{2}$ x 2 x $2\frac{5}{8}$ " high, chassis weighs $9\frac{1}{2}$ oz. Utilizes six transistors. Current drain slightly higher. Same antenna as for BCR-8.