

# Miniaturized Transistor Transmitters

Though size-wise they appear to contain less, actually you're getting a lot more in your "commercial" radio control transmitters these days. Thank your lucky stars for those nice little, low-drain transistors. Here's round-up on all styles.

## PART ONE

Nowadays most radio control adherents are familiar with the all-transistor transmitters and many modelers use them. But when the very first production unit of this type reached the market in mid 1961 lots of folks were skeptical and continued with the old familiar tube jobs, with their heavy, demanding A and B batteries. But it didn't take long for many of us to learn that the smaller transistor jobs packed a surprising wallop, often as much or more than standard tube outfits, and that they required only one or two relatively low cost, low voltage batteries. In properly designed circuits, transistor transmitters are surprisingly efficient, more so than tube jobs. Now we can get as much output from a 9 volt battery as we once obtained via 135 volts on the tubes (plus that 1.5 volt filament supply).

Wen-Mac scored a first in the R/C field with their little Model WMT-5; it sported many features you find in the latest crop—center-loaded antenna, built-in meter, single 9 volt battery. It had no on-off switch because no power was drawn until you

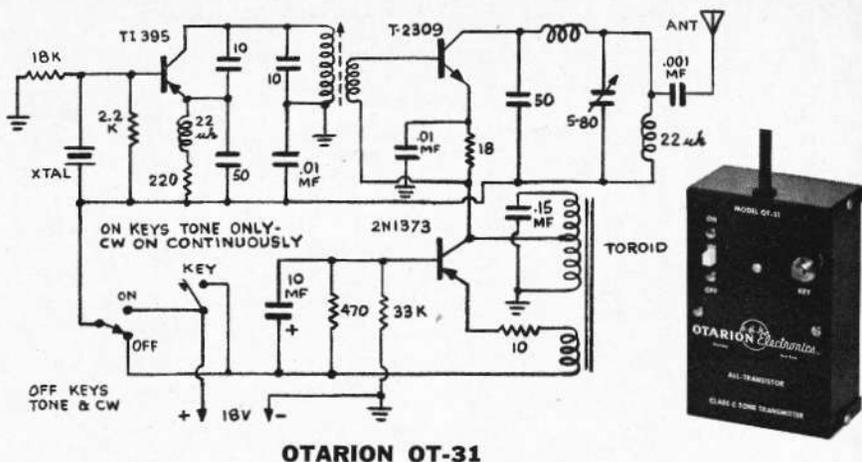
punched the button. A report on this pioneer and its companion all-transistor superhet receiver (also new then to the field) appeared in Nov. 1961 A.M.

We bring you here the first of a 2-part round-up of circuits and info on current all-transistor transmitters, most of which have been marketed within the last year. Our Spec Chart, the circuits and pix will familiarize you with these and the next batch of units. Transistorized jobs are bound to obsolete tube transmitters one of these days. Most of the more general info is on the Chart, so we'll cover special features of each unit in alphabetical order.

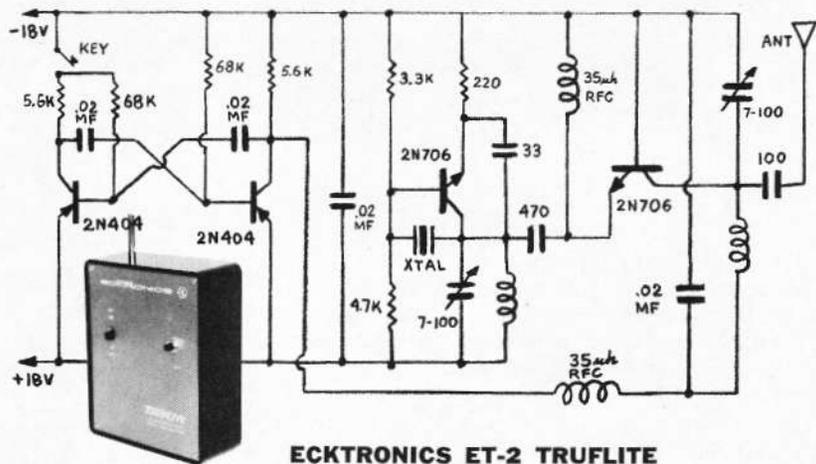
**Babcock BCT-16.** Another early comer which appeared with no external on-off switch (it was in case) was later modified to present form, presently contains a larger battery than original version. Mounted in rugged steel case. Notable feature is that Babcock offers several detachable "coders" which plug into case with no extra connections needed. Nine-pin socket on right case side

allows various modes of operation in conjunction with Mode switch on panel. With red plug in socket—mode 1 is off (key sends tone when depressed), mode 2 allows on-off CW output. With green plug—mode 1 as before, mode 2 permits tone to be keyed, with steady CW output. Same RF chassis will probably be used in multi-channel Babcock transmitter.

**Controlaire Mule.** So named to proclaim husky RF output. Early Mules utilized 18 volt battery; advancements in transistor field enabled redesign, this model has original output, uses but 9 volts. Case will hold much larger battery (Eveready #276 or equiv.) than makers recommend for much longer battery life. Same snap fasteners fit this one. Unusual P.A. output circuit has no tuned coil—center loaded antenna takes its place. Thus only tuning adjustment in entire transmitter is for oscillator. Note that "up" position of panel slide switch is actually "off", rather than more usual "down". This was only all-transistor transmitter at press-



OTARION OT-31

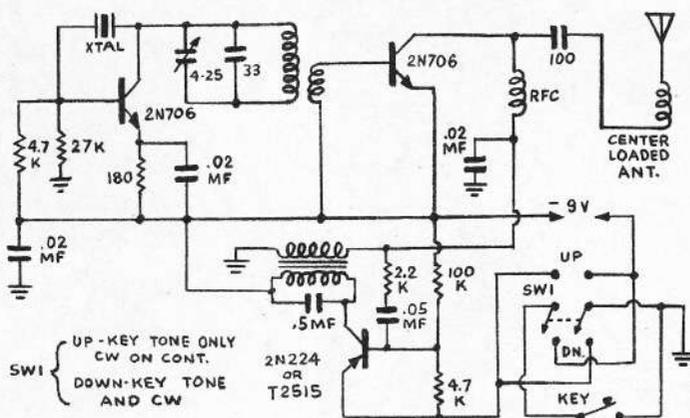


ECKTRONICS ET-2 TRUFLITE

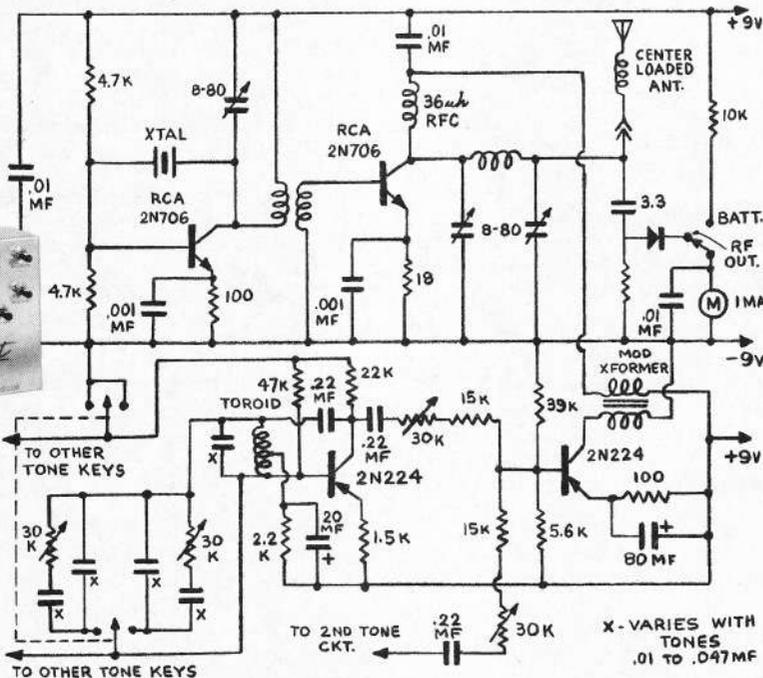




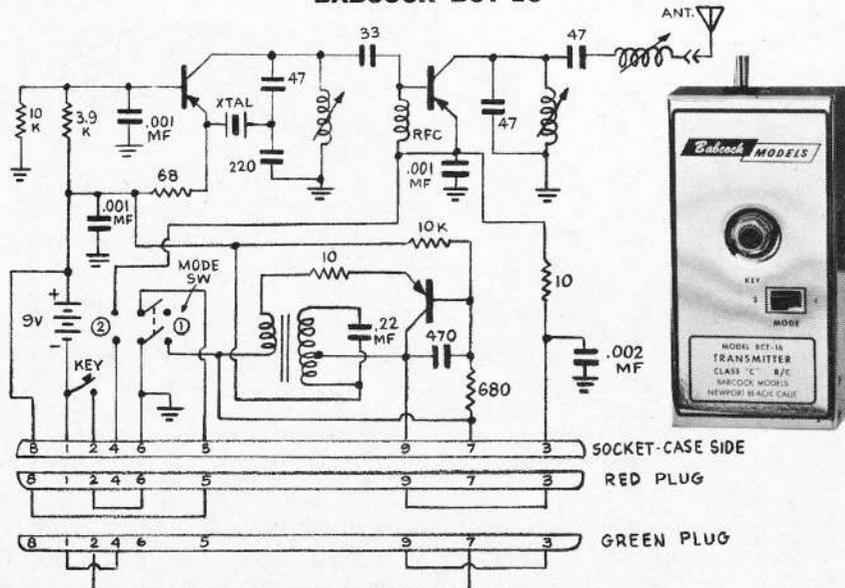
### CONTROLAIRE MULE



### KRAFT 10/12 CHANNEL



### BABCOCK BCT-16



### TRANSISTORIZED XMTRS

to grid modulation utilized in most tube transmitters). Maximum pulse rate range is 2 to 28 PPM.

**Orbit 10 channel.** Complex circuitry is intended to provide good output and stability with only 6 volt power supply. Panel meter which always indicates RF output can be employed in tune up. Designed to utilize a built-in nickel-cad battery pack sold by Orbit. Circuit diagram shows only one of two identical tone oscillators and only one of ten DPDT key switches—variable resistors and capacitors in key switch circuits vary according to tone required from each. Made for both 27 and 50 mc.

**Otarion OT-31.** One of smallest, it has an unusual modulator circuit for a single channel transmitter. Circuit utilizes a toroid transformer which provides good tone stability and sine wave AF output. Emitter modulation is employed. When slide switch is "off", key will send out a modulated RF signal. This feature is handy when your receiver "swamps" at close range. Tone output is 650 cycles; data is supplied to change from 400 to 1,000 cycles.

**Kraft 10 (or 12) channel.** Like Orbit, this one has screw fitting atop case for holding center-loaded antenna. Panel meter which normally indicates RF output can be switched to check battery voltage. Second tone oscillator and all but one key switch also omitted from our circuit drawing for simplicity. Compact, yet calls for relatively large 9 volt battery. Available in 27 or 50 mc versions; 10 channel unit can be converted at factory to 12 at a price which also includes conversion of Kraft 10 channel superhet receiver.

All but one of the transmitters described utilize epoxy P.C. board for mounting parts. Babcock is built upon steel chassis. Kraft, Orbit, Otation employ toroids for the tone oscillators. Tones of single channel outfits vary from about 500 to 800 cycles—not a disadvantage, since the receivers they are used with are not fussy to exact tone. Manufacturers claim about 85 to 100% modulation.

Author's note: Our thanks to Hi-Way Hobby (Ramsey, N.J.) for its cooperation in making available data on Kraft, Orbit and Glass City transmitters.