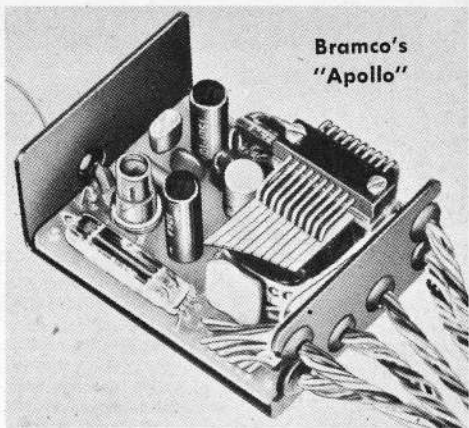


Bramco's  
"Apollo"



## APOLLO and TRANSMITE married without benefit of relay

■ For relayless multi channel operation the Bramco Apollo 10-channel 27-mc reed receiver is actuated by a simultaneous transmitter. To make the story complete, we include data on a relayless servo, the Bonner Transmite.

The receiver, a rugged unit, is not much larger than many single channel jobs. Main frame of case is "U" shaped of heavy aluminum; to this is attached a glass epoxy printed circuit plate. A sturdy aluminum cover slides over main frame. All wires from case pass through rubber grommets—five servo connections, one for the batteries. The single antenna wire emerges from opposite end.

Bramco has installed all wiring necessary for servo connections, thus the user does no soldering inside receiver. All servo battery leads go through the receiver so it is not necessary to make individual battery connections or arrange a common tie-in external to the receiver. Wires in the 5 cables are color-coded as on the Transmite servos . . . you just match colors. Normally a connector would be placed in each of the cables so that the receiver (or any of servos) could be removed from the model without unsoldering connections. Bramco cautions against bunching all leads into a single cable at the receiver; such arrangement would be stiff enough to pass engine vibration regardless of how much foam rubber is around the set. Run individually—no problem. The cables are over 10" so no piecing should be required.

Receiver circuit is much like that in Bramco relay-type receivers, simplified and for lower voltage. Apollo works with any Bramco 10-channel transmitter or other make that tunes to proper reed tones in the same manner as relay-type jobs. You save the weight of 10 relays plus some associated components; case is smaller with lower B voltage and current. Being lighter in a rugged case, it should be almost crashproof.

Connect the reeds for control functions as per the specifications, even though this may differ from your past practice. Sequence selection is to avoid damage should adjacent reeds vibrate at the same time. Connected as recommended, a new routine is advisable when tuning transmitter tones to receiver. You should NOT tune by watching the servos operate (standard way of tuning relay-type outfits). Rather keep servo power off and watch reeds to see which vibrates. Then, if you inadvertently hit both reeds of a given servo at once, no damage can be done to the output transistors of that servo.

When we de-relay a receiver, we must have something in their place to operate

the servos we command. That "something" is a compact transistor amplifier housed in each servo. The Transmite carries this amplifier on L-shaped P.C. board across one end of the case and along one side. Howard Bonner once told us that with his Duramite servo he had eliminated all waste space inside the case. Yet his later Transmite is the same servo fitted with a 6-transistor amplifier!

Duramite owners can convert their servos for relayless operation by obtaining from Bonner Specialties the transistor amplifier,

which comes with instruction for the simple conversion.

For the Transmite you need a 1½ volt cell in addition to two 3-volt batteries to drive the servo motor. If your receiver uses a tube detector (as does Bramco's Apollo) the tube filament cell will serve. If not you add a cell . . . current drain is very low so it may be the smallest size.

Since all relayless receivers do not have the extra servo cabling furnished on the Apollo, the Transmite circuit is shown with necessary batteries connected and switches

needed to open circuits. When the Transmite is employed with the Apollo, connect orange, yellow, red, white, black and green servo leads to correspondingly colored servo cables from the receiver, and omit all switches and batteries shown on the Transmite circuit. Power and switching is taken care of as shown on the Apollo circuit.

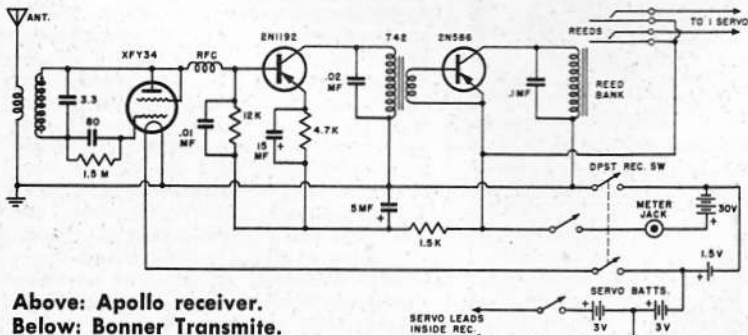
#### BRAMCO APOLLO 27 MC 10 CHANNEL RELAYLESS RECEIVER.

Specifications: One tube and two transistors, Bramco 10 channel reed bank. Tuning control takes hex-ended tool (supplied with receiver). Antenna length, not critical. Case 2¼ x 2-1/16 x 1-3/16". Weight including all cables as supplied, but no connectors, 4.6-oz. Reed frequencies, 290 to 510 cycles. Temperature range for solid operation, 10 to 130-deg F. Reeds connect as follows: #1 (lowest frequency), right rudder; #2, right aileron; #3, left rudder; #4, left aileron; #5, high engine speed; #6, up elevator; #1, low speed; #8, down elevator; #9 and #10, elevator trim.

Battery Requirements: "A" supply, 1½ volts at 30-ma; "B" supply, 30 volts. B current—no signal, around 4 ma and unsteady; with carrier but no tone, around 1 ma and steady; with single tone, around 4½-ma. A cell should be replaced when it drops below 1.2 volts under load, B battery when it is below 24 volts under load.

#### BONNER TRANSMITE RELAYLESS SERVO.

Specifications: Self-contained 6 transistor amplifier. Usable for either trim or self-neutralizing action. Size, less operating arm but including mounting flanges, 3¼ x 1½ x 1-1/16". Weight, 2.85-oz. Servos tested to 140 degrees F. Maximum travel of operating arm, 5/8". Operating voltage, 2½ to 3. Will operate on 1.5 ma input signal. Drive motor by Bonner Specialties has turned commutator, 93% silver brushes, 3-ohm winding, oilite bearings, nylon case. Servo will center to plus or minus .007".



Above: Apollo receiver.  
Below: Bonner Transmite.

