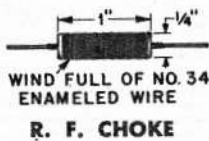


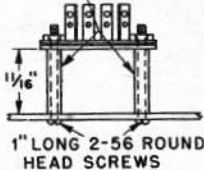
By HOWARD McENTEE

# Simple / Single Hard Tuber

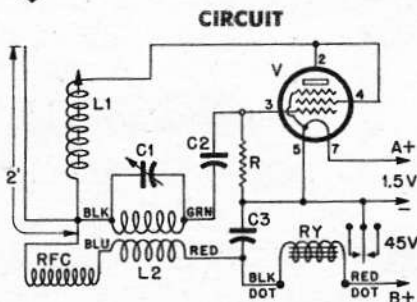
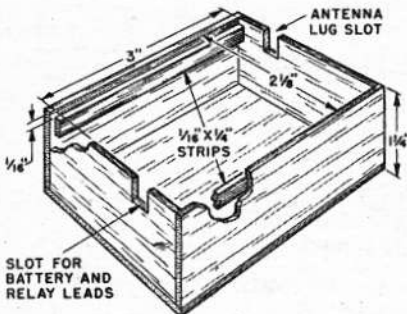
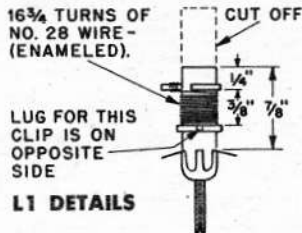
Heard hard-tube hard-luck stories? Not with this 'n!



BUSHINGS OF 5/32" O.D. ALUMINUM TUBING.



SOCKET MOUNTING



R/C flyers, especially those not too well versed in the mysteries of radio, are understandably hesitant in tackling any type of receiver other than the ultra-simple gas-tube style. Gas tubers are the simplest—any other sort of receiver requires added parts, new and unfamiliar components, possibly heavier current drain on both A and B batteries. An added liability is the trickiness of some types of non-gas tube receivers. Some of them have to be adjusted by trimming antenna length, others will only work with certain makes of tubes, and so on.

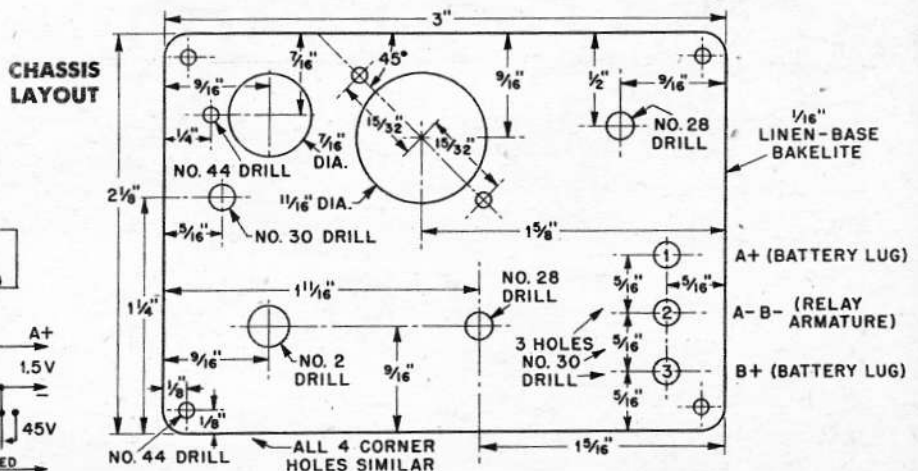
However, it seemed to us that the single hard tube receiver has real merit, if some of the known shortcomings could be licked, so we set about to try it.

The receiver here, as well as most others of this same general circuit layout, is based upon the English "Bolton" circuit, which itself is a simplification of the Good Brothers receiver, one that has been in active use since around 1937. We had a note and circuit on this sort of receiver in the R/C Column (October 1952

Air Trails); a lot of interest was shown in the arrangement, but some of the less experienced builders ran up against snags they couldn't handle—and with them, at least, single hard tubers got another black eye.

Through constant experiment and simplification we have come to the circuit shown herewith; by proper choice of components it was found possible to eliminate the coil tap, antenna and tuning condensers, and several other superfluous parts. Yet despite this simplification, the results are still fine. As with all single hard tube sets, a "quench transformer" is required. We chose the widely distributed National OSR for this (it may be had at most large "ham" supply stores), but trials with several other makes of quench coils show that all may be accommodated. This is in marked contrast to most other hard tube receivers, which require circuit component changes, if the exact quench coil used by the original builder is not to be had.

The versatility (Continued on page 74)



# Simple/Single

*(Continued from page 54)*

of the Simple/Single is due mainly to the use of C1, a so-called radio "padder" condenser. By adjustment of this element, which we call the Sensitivity Control, it is possible to compensate for different tubes, antenna lengths, changing battery voltages, and for circuit parts that are not exactly as specified in the parts list. Use of this Sensitivity Control has no effect on frequency; you can adjust tuning (by means of the core in L1) or sensitivity, independently and without interaction.

We won't attempt to go into theory of operation here; the beginner in R/C doesn't care—and the expert will quickly figure it out for himself. Construction starts with cutting and drilling the chassis of 1/16" Bakelite. Be sure you get linen-base material for this. The chassis layout is given full size and may be traced. All parts except the relay may be mounted before wiring starts, but the RF choke and L1 should be wound before you start wielding the soldering iron.

RFC may be wound on a Bakelite rod, a

commercial RF choke form with leads ready-attached, or you can use a carbon resistor of 1 meg. or higher. In any case the form should be at least 1" x 1/4" dia.; a little larger will not harm.

Any iron core form of good grade that is 3/8" dia. will do for L1, but be sure you get one that has a core designed for high-frequency work. The one used here was considerably longer than needed, and was cut down to the length specified. It mounts by spring action of the chassis, and the core screw has spring tension on it, to hold it firm under vibration. The shank of C1 was slotted and fitted with a music wire triangle spring, as illustrated, on page 10, Feb '53 A.T.

In order to aid the beginner, we will give a step-by-step description of connections in our next issue. Meanwhile, here is the listing of parts so the advanced R/Cer can complete his S/S.

#### Parts List:

L1—3/8" dia. iron core form (see dwg.): Control Research. L2—National O S R quench transformer: Control Research. RFC—Choke wound on 1" x 1/4" form: Control Research. C1—Padder condenser, Arco #308, 450-1390 mmf.: Hudson Radio & TV Corp. (NYC). C2—100 mmf. ceramic condenser, CRL D6-101. C3—Midget paper .05 mf. 150 V.: Control Research. R—220,000 ohm 1/3 W. carbon. Ry—E. D. polarized relay, 4000 ohms: Polk's. V—Raytheon 3S4 tube. 7 pin miniature socket for tube.

Linan Bakelite chassis, 3" x 2 1/8" x 1/16". Two 1" long 2-56 screws for socket. Two 11/16" long bushings for sockets. Four solder lugs.

It is understood that complete kits for this receiver will be available from Control Research and Electronic Specialty Supply Co. For those who wish to purchase their own parts, C1 may be any padder of higher value—plates may be removed to produce about the capacity range specified; this is not critical. Other makes of quench coils may not have the colored lug markings. In this case, connect the inside end of the larger coil to C2, and the outside of the smaller coil to relay. Shield can be removed from OSR transformer.