

THE COMMUNICATION RECEIVER

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AN EARLY REL AMATEUR RECEIVER: THE 1929 "OLD STANDBY" NO. 192

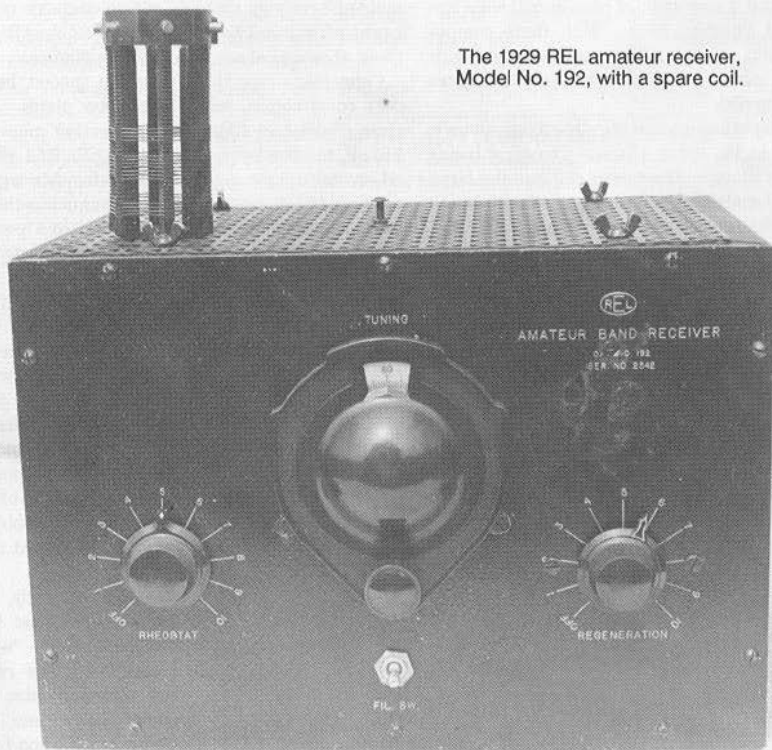
A manufacturer which started in the early days of radio was the Radio Engineering Laboratories of Long Island City, New York. Their first catalog to be directed at the radio-amateur fraternity was issued in November, 1926, consisting of 44 pages of components and kits, including three two-tube regenerative receiver kits. Of these, the Model No. 130, probably the first REL receiver, was the predecessor of the one featured in this column, the Model No. 192.

While the original circuit, the well-known regenerative detector with one stage of audio, was essentially similar to that of the No. 192, it used a three-section basket-weave plug-in coil mounted

on a jack bar, with four coils providing continuous coverage from 12 to 212 meters (1.4-25 MHz). With the new and narrowed amateur bands which became effective in 1929*, REL seized the opportunity to provide an updated receiver by redesigning the No. 130.

* Under the International Radiotelegraph Conference of 1927 (the WARC of its day), total spectrum allocated to amateur use in the U. S. was reduced appreciably, although greatly widened in most other countries. The bands that emerged were 1.715-2.0, 3.5-4.0, 7.0-7.3, 14.0-14.4, 28.0-30.0, and 56.0-60.0 MHz. The previous U. S. allocations as of 1924 had been 3.5-4.0, ~7.0-7.5, ~13.6-15.0, and 60.0-75.0 MHz. Source: 200 Meters and Down (ARRL, 1936).

The 1929 REL amateur receiver, Model No. 192, with a spare coil.

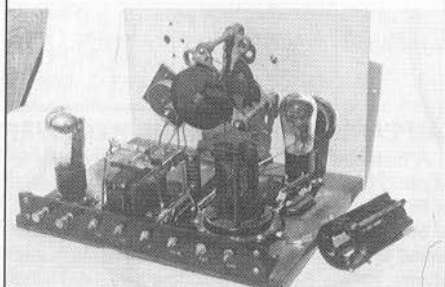


The REL two-sec-
capacitor and
coils ("For High
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Power Trans-

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plug-in
Frequen-
and Low
mitters").



The receiver out of the cabinet. The bakelite
band-setting disk and the detent spring on the
tuning capacitor are readily visible.



An inspection of the two receivers indicates that REL made substantial and unique changes in the physical layout and key components. The new receiver was totally shielded, enclosed in a steel cabinet with an aluminum front panel. The can-metal top which provided ventilation (as well as a convenient entrance for dirt) was held in place with four wing nuts, giving a relatively easy access for changing bands. A special two-section tuning capacitor and a new style of plug-in coil were announced in October, 1928. With these components the 80-, 40-, and 20-meter amateur bands were each spread across most of the 180 degrees of the tuning dial.

The tuning capacitor and the ribbed plug-in coils are shown in the group photo. Changing bands consisted of plugging the proper coil into the large ring-shaped molded mount and resetting the rear section of the tuning capacitor to the proper spot, as determined by a notch in the bakelite disk mounted on the rear. This position was held firmly by a spring indented into the notch. As was common with REL parts of the day, both the capacitor

and the coils were of unique design and were marked with the REL logo.

Specifications for the new components were:

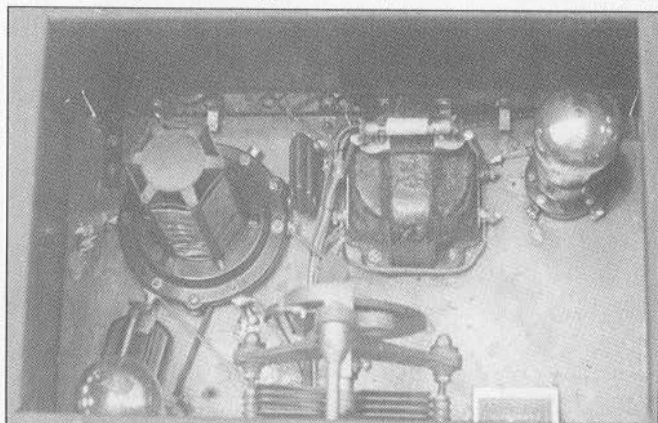
Coils: The three coils for 80-40-20 meters comprised the No. 182 Amateur Band Coil Kit, selling for \$10 (1929 dollars.) Forms were of molded bakelite, ribbed and threaded to hold the windings firmly in place. They were fairly large in comparison to contemporary forms, 2" D by 4-1/8" H. The molded base with six large spring contacts, reminiscent of the coil base in the GE-RCA AR-1300 tuner of years before, was 3-3/4" in diameter.

Capacitor: No. 187G. Of wide spaced, heavy-duty construction, with thick brass plates. The main ("tank," in REL's terms) section measured 210 pF, the bandspread section 20 pF. REL claimed several unique design features for this capacitor. One of the more interesting points was the rotor contact; the rotor shaft revolved in a pool of mercury, assuring a positive constant contact. The initial selling price was \$6.50.

NOTE: Obviously anyone who decides to disassemble one of these capacitors should be very

careful to avoid physical contact with any mercury which may be present. Ample ventilation is also a must, as the mercury fumes can be toxic. Disposing of the mercury is a problem, as it is considered toxic waste.

Unfortunately, the frames were cast with the notorious "white metal," with the result that many are now distorted and some are electrically non-functional. However, it seems that not many of



A top view of the No. 192 with cover removed.

these unique capacitors have survived, and it would be a shame to throw them out. New frames can be fabricated from 1/8" aluminum stock using simple tools, and fitted with a conventional shaft bearing with a contact spring.

The receiver was sold principally in kit form for \$40, with all parts except tubes, four pages of assembly instructions, a large photograph of the chassis layout, and a wiring diagram. As noted above, REL attempted to put their stamp on all the parts. The audio transformer had an REL part number, but was actually made by Acme.

The base was a piece of 3/4" plywood covered with a copper sheet in direct contact with, and bonded with a ground strap to, the front panel. The components were mounted directly to the base and the front panel, with both the regeneration control and the filament rheostat insulated from the panel. Interestingly, the assembly instructions emphasized that all RF connections (identified on the diagram) must be made with heavy copper bus, as short as possible. All soldered joints were to be cleaned with alcohol and then covered with black enamel.

Tubes were UX-201A or equivalent (CX-301A, etc.). The recommended power source was 45 and 90 V "B," and 6 V for the filaments, all from batteries. Battery eliminators could be used, but were not recommended. No "C" battery was needed.

This particular receiver, dubbed "the old stand-

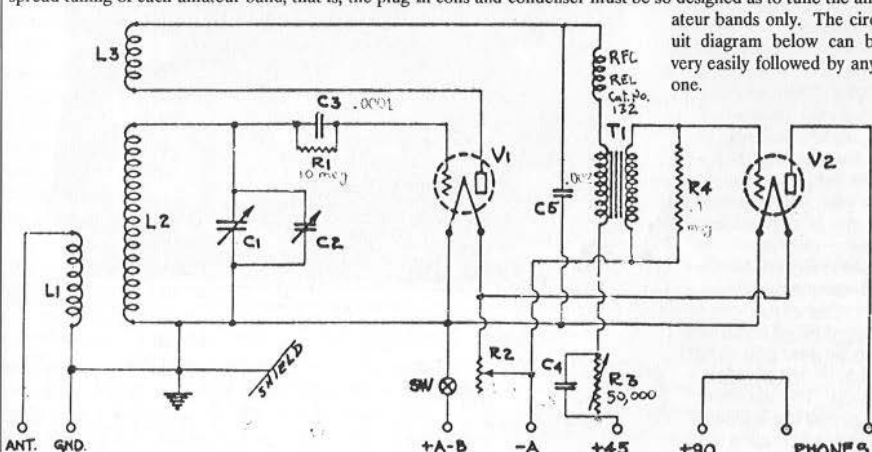
by" by the manufacturer, appears to have had a short market life, and to have served primarily as a market test of the new capacitor and coils. The circuit was already obsolete - newer equipment was being designed and introduced almost daily. Indeed, an elegantly designed coil-capacitor combination is largely wasted in a simple two-tube set, where both the antenna and the regeneration circuit have major uncontrolled influences on the tuning. The 182-187 combination, which was heavily promoted for some time, was used much better in REL's small transmitter kits and such three- and four-tube receivers, starting as soon as February, 1929, as the No. 217. Prices dropped as time went on. The physical format of REL equipment was distinctive, easy to recognize.

Sharp-eyed readers may note that the REL ads (for example, in *QST* for January, 1929, p. 53) showed a pointer with the dial scale engraved directly on the panel, while the set pictured here has a Kurz-Kasch dial. This is not a retrofit; REL did ship receivers with the K-K dial, although the pointer version of the dial was made and sold.

It would be nice to report that the receiver was hooked up to a power supply, an antenna connected, and that signals rolled in from around the world. Alas, such is not yet the case; 60-plus years have taken their toll of the components and the receiver will have to be rebuilt. When this is done, the writer will report the results.

TWO TUBE "OLD STANDBY" AMATEUR BAND RECEIVER

The simplest and most popular short wave receiver for amateur purposes is the old "Standby" Regenerative Detector with one stage audio. The new narrowed amateur bands which become effective in 1929 require revisions to this popular circuit. The main and most desired feature necessary to modernize this receiver is to obtain full spread tuning of each amateur band, that is, the plug-in coils and condenser must be so designed as to tune the amateur bands only. The circuit diagram below can be very easily followed by anyone.



L1- 1 - REL Cat. No. 182 - 3 circuit receiver
L2- coil kit. This kit contains inductances for
L3- the 3500, 7000, and 14,000 KC bands and
also the base\$10.00

C1- 1 - REL Cat. No. 187E secondary tank
C2- variable condenser with special movable
vernier for obtaining full scale spread for
each band. Max. tank Cap. 115 Mmfd.
.....6.25