MORE ABOUT 150-WATT SINGLE BANDERS..................... page 2
Sweeping the Spectrum........................................ page 7
Single Banders Random Ideas................................. page 8
The main features in the RF chassis of the 3.5 megacycle transmitter model—single two-stage circuit, extra high-C oscillator and automatic VFO switch—have attracted a great deal of attention. The hundreds of radio amateurs who have personally inspected the transmitter models, and comments received in letters, all seem to agree that this is an ideal transmitter for CW operation on a favorite band.

In addition, many fellows have requested information on, or suggested changes; those fall mainly into the following statements:

1. "What is the easiest way to provide for both VFO and crystal control of the oscillator circuit?"

2. "How should the oscillator be wired for crystal control only for moving?"

3. "Do you have a circuit for a bandswitching model of this transmitter covering 3.5 to 30 megacycles, or at least two or three bands?"

4. "Can you suggest the best way to build a bandswitching VFO using the extra high-C circuit?"

5. "What changes are necessary to convert the transmitters to double sideband operation?"

Some of these questions will be answered in the description of the 7 and 14-megacycle transmitters that follows. The remaining suggestions will be commented upon at the conclusion of this article.

---

**General Parts List**

- C—100-μf and silvered wax
- C—0.001-μf, 2500-volt working only
- D—general-purpose germanium diode (G-E Type 102B)
- J—closed disc type potentiometer
- K—totem tube socket
- L—high-capacity resistor (Witten 38001)
- M—thick film resistor
- N—1-lb. box, No. 14 stranded wire stapled on a ¼-inch clamping type, 1-lb. variety
- MA—0.1-ohm/50-watt (G-E RW-71 or equivalent)
- Fp—parallel lamp holder (Johnson 147-330)
- Fb—single pole, single-throw, normally open push-button switch (Switchcraft No. 101 or equivalent)
- S—2-ohm, 5-megohm tapping ceramic top switch
- [Control No. 3855]
- T—8-pin cathode tap terminal strip

---

![Diagram of the 7 and 14-megacycle transmitters](image)

**Notes**

- A VFO-CATL circuit
- B CATL circuit
CIRCUIT DETAILS—7 AND 14-MEGACYCLE TRANSMITTERS

The same tube lineup used in the 3.5-megacycle transmitter, 6AG7 oscillator, and both 807's in the amplifier, was found equally suitable for the 7 and 14-megacycle transmitters. Comparison of the schematic diagram for the latter units, as shown in Fig. 1, with that in the November-December, 1957 issue, will indicate some differences. In all three transmitters, the oscillator grid circuit operates at half the amplifier output frequency.

The frequency-determining circuitry is identical to that in the 3.5-megacycle transmitter, but variable capacitors having a smaller capacitance range are used for Cs, the oscillator tuning. Since the 7 and 14-megacycle amateur bands are quite narrow, percentageage, it was possible to employ a single parallel-tuned tank circuit, C5—C8, and capacitive interstage coupling between the oscillator plate and amplifier grid circuits. The oscillator plate circuit operates as a frequency doubler, being tuned to the same band as the amplifier plate circuit.

Sufficient regeneration occurred in the 807 amplifier stage to cause oscillation under certain conditions in the 14-megacycle transmitter with no grid driving power, full screen voltage and class A bias applied to the 807's. So, a neutralizing circuit was added to both transmitters with capacitor C3 forming one leg of a bridge neutralizing circuit that balances the combined grid-to-plate capacitance in the 807 tubes. The tube plates compose one plate of this capacitor, the other plate.

<table>
<thead>
<tr>
<th>PART NO.</th>
<th>BAND MC</th>
<th>COMPONENT</th>
<th>VALUE</th>
<th>RATING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cs</td>
<td>3.5</td>
<td>capacitor, air variable</td>
<td>13-225 mfd</td>
<td>0.024 inch air gap</td>
</tr>
<tr>
<td>C5</td>
<td>16</td>
<td></td>
<td>16-150 mfd</td>
<td></td>
</tr>
<tr>
<td>C6, C7, C8</td>
<td>3.5</td>
<td>capacitor, silvered mica</td>
<td>0.005 mfd</td>
<td>500 volts working</td>
</tr>
<tr>
<td>C6, C7</td>
<td>3.5</td>
<td></td>
<td>0.004 mfd</td>
<td></td>
</tr>
<tr>
<td>C6, C8</td>
<td>7</td>
<td>capacitor</td>
<td>200 mfd</td>
<td>500 volts working</td>
</tr>
<tr>
<td>C8</td>
<td>16</td>
<td></td>
<td>700 mfd</td>
<td></td>
</tr>
<tr>
<td>Cm</td>
<td>7 &amp; 16</td>
<td>capacitor, mica-padder variable</td>
<td>100-500 mfd</td>
<td>500 volts working</td>
</tr>
<tr>
<td>Cm</td>
<td>7 &amp; 16</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cl</td>
<td>3.5</td>
<td>capacitor, air variable</td>
<td>13-330 mfd</td>
<td>0.425-0.606 inch air gap</td>
</tr>
<tr>
<td>Cl</td>
<td>3.5</td>
<td></td>
<td>10-150 mfd</td>
<td></td>
</tr>
<tr>
<td>Cl</td>
<td>3.5 &amp; 7</td>
<td>capacitor, 2 gap air variable</td>
<td>10-350 mfd</td>
<td>0.015-0.020 inch air gap</td>
</tr>
<tr>
<td>L1</td>
<td>3.5</td>
<td>inductance, iron slug tuned</td>
<td>2.1 uH, 12 turns, No. 20 wire 11/16 in. long</td>
<td>wound on Haskal XX-50 coil form</td>
</tr>
<tr>
<td>L1, L2A</td>
<td>7</td>
<td></td>
<td>2.0 uH, 12 turns, No. 18 wire 11/16 in. long</td>
<td></td>
</tr>
<tr>
<td>L2, L3</td>
<td>16</td>
<td></td>
<td>0.0 uH, 7 turns, No. 18 wire 11/16 in. long</td>
<td></td>
</tr>
<tr>
<td>L3</td>
<td>7</td>
<td>inductance, iron slug tuned</td>
<td>2.18 uH, 10 turns, No. 20 wire 11/16 in. long</td>
<td>wound on Haskal XX-50 coil form</td>
</tr>
<tr>
<td>L4, L5</td>
<td>7</td>
<td></td>
<td>2.1 uH, 12 turns, No. 20 wire 11/16 in. long</td>
<td></td>
</tr>
<tr>
<td>L4, L5</td>
<td>7</td>
<td></td>
<td>0.0 uH, 7 turns, No. 18 wire 11/16 in. long</td>
<td></td>
</tr>
<tr>
<td>L5</td>
<td>7</td>
<td>inductance, air-wound, plastic strip insulation</td>
<td>6.3 uH, 20 turns, No. 16 wire 11/16 in. dia., 2 3/4 in. long</td>
<td>(air-die No. 1208)</td>
</tr>
<tr>
<td>L5</td>
<td>7</td>
<td></td>
<td>3.4 uH, 15 turns, No. 16 wire 11/16 in. dia., 2 3/4 in. long</td>
<td>(air-die No. 1206)</td>
</tr>
<tr>
<td>L5</td>
<td>7</td>
<td></td>
<td>1.2 uH, 12 turns, No. 14 wire 15/16 in. dia., 3 in. long</td>
<td>(air-die No. 1204)</td>
</tr>
<tr>
<td>LC1</td>
<td>3.5</td>
<td>inductance, wound over grounded end of L5</td>
<td>3 turns, HV insulated wire</td>
<td>National 8-50</td>
</tr>
<tr>
<td>LC2, RC3, RC6</td>
<td>7 &amp; 14</td>
<td></td>
<td>3 turns, HV insulated wire</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3 turns, HV insulated wire</td>
<td></td>
</tr>
<tr>
<td>RC3, RC6, RC7</td>
<td>3.5</td>
<td>RF choke, small 3 pi</td>
<td>0.5 mfd, 75 watts</td>
<td>National 8-50</td>
</tr>
<tr>
<td>RC6, RC7</td>
<td>3.5, 7</td>
<td>RF choke, small 3 pi</td>
<td>0.5 mfd, 75 watts</td>
<td>National 8-50</td>
</tr>
<tr>
<td>RC7</td>
<td>3.5</td>
<td>RF choke, medium 3 pi</td>
<td>1.0 mfd, 300 mwa</td>
<td>National 8-50</td>
</tr>
<tr>
<td>RC7</td>
<td>7</td>
<td>RF choke, medium 3 pi</td>
<td>0.5 mfd, 300 mwa</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>200 mwa, 300 mwa</td>
<td></td>
</tr>
<tr>
<td>RC7</td>
<td>7</td>
<td>RF choke, small 3 pi</td>
<td>0.5 mfd, 300 mwa</td>
<td>National 8-50</td>
</tr>
</tbody>
</table>

PARTS LIST—3.5-, 7- AND 14-MEGACYCLE TRANSMITTERS
PARTS LIST—ANTENNA RELAY—HARMONIKER

3.5 MEGACYCLES

- L<sub>1</sub>: 440 mH, 500-volt wire, 1 inch in diameter, 1/16 inches long (Belden No. 3014, or al-dex No. 8202)
- L<sub>2</sub>: 3.5 ohm, 12 turns, No. 18 wire, 1 inch in diameter, 1/16 inches long (Belden No. 3006, or al-dex No. 501)

7 MEGACYCLES

- C<sub>1</sub>: 450 pF, 500-volt wire, 1.1-1.3 ohm, 12 turns, No. 18 wire, 1/16 of an inch in diameter, 1/16 inches long (Belden No. 3006, or al-dex No. 501)

14 MEGACYCLES

- C<sub>1</sub>: 330 pF, 500-volt wire, 1.1-1.3 ohm, 12 turns, No. 18 wire, 1/16 of an inch in diameter, 1/16 inches long (Belden No. 3006, or al-dex No. 501)

- J: 8-inch coaxial cable connector, or female chasis phone jack

RF: single pole (or double pole)—see text, double throw switch, relay, switching relay, SPDT type, or 115-volt AC sub (Pottier and Brindley KT-11A, or Azatim AR-12)

The power, metering, and RF output coupling circuitry is essentially similar to corresponding circuits in the 3.5-megacycle transmitter in the November-December, 1937 issue. If desired, an antenna switching relay and half-wave "HARMONIKER" type bandpass filter can be incorporated into the transmitter chassis. This was done on the 14-megacycle transmitter model instead of placing these items in an secured corner of the table relay rack cabinet. Although a single-pole double-throw relay, RF<sub>1</sub> is shown in the suggested circuit of Fig. 3, three relays can be substituted. The extra set of contacts will come in handy if the antenna connection to the receiver when the relay is energized.

MECHANICAL DETAILS

The photo on page 1 of this issue shows how the three versions of the complete transmitter—RF unit, dual-voltage power supply and a combination keyer-modulator unit—will look when they are placed inside a table relay rack cabinet. universal construction simplifies the task of making changes or rebuilding any of these units later on.

Both the 7 and 14-megacycle transmitters were constructed on 7 x 12 x 3-inch aluminum chassis (Bu
AC-4000. The parts layout is quite similar to that used in the 3.5-megacycle transmitter. Changes shown in the diagram, Fig. 4, include moving the latter tube closer to the panel and changing the interstage coupling and neutralizing components.

Two locations were tried for the RFT amplifier plate circuit coil, L6, with no apparent difference in performance. In the 7-megacycle transmitter, L6 was fastened to the chassis deck behind C1 with 1-inch long ceramic pillar insulators, as shown in the top view, Fig. 5. This location for L6 was not practical in the 3.5-megacycle transmitter, where C1 was over an inch longer. Since C1 in the 14-megacycle transmitter was considerably shorter than L6, a 3½-inch long ceramic pillar insulator supported the "hot" end of L6 directly from the chassis.

The neutralizing capacitor, C40, was formed by bending a ½-inch wide strip, drilled at the middle, on one end of a ¼ inch wide strip of ½-inch thick soft aluminum sheet. This strip was then mounted between the RFT's on a ½-inch high feedthrough insulator. The small components are mounted under the chassis either on the tube socket lugs or small terminal lug strips, as shown in Fig. 6. The exact placement of these parts is not critical provided that the RF and bypass circuit leads are made as short as possible. Each transmitter in this series was wired somewhat differently in order to check on lead drop.

The following adjustments were tried on the 14-megacycle transmitter; these included shielding the RFT amplifier, placing 500-mfd bypass capacitors on all terminals running out of the transmitter chassis, and mounting the Harmonaker output filter directly on the chassis.

A shield box, 9½ inches wide, 7 inches deep, and 5 inches high was fashioned from perforated aluminum sheet. This shield is shown in the diagram, Fig. 5. The covers and 1-inch wide lips were extended down over the side, rear, and chassis deck. The front of the shield was located to lip-bent onto a second piece of perforated aluminum sheet fastened behind the panel. A metal chassis bottom plate was also added.

The Harmonaker was constructed in a 2½ x 2½ x 5-inch Minibox (Bud CU-3004) which also supports the amplifier shield. Holes which match the location of L6 on the chassis diagram were punched in both ends of the Minibox, as shown in the detail view of the 14-megacycle amplifier, Fig. 7 (left). Note that another piece of perforated aluminum sheet serves as a shield between the coil, L6, in the Harmonaker. Capacitors C40 were soldered between the ends of the ribs and grounding lugs fastened to the side of the box. The lead running through the shield was microwired with a small plastic sleeve.

The antenna switching relay, R7, in Fig. 3, was fastened beneath the chassis next to L7. The short lead from the relay arm to the Harmonaker may be brought up through the hole in the chassis, as shown, or through a small ceramic feedthrough insulator.

Since a parallel-fed system was intended to apply plate voltage to the RFT stages, some care must be exercised in the selection of the ceramic feedthrough insulator. A ceramic feedthrough insulator, a soldered type single layer wound RF choke was found to work best. In Fig. 6 (left), a commercially made choke (Wayne RL-112) is shown mounted upon a 500-mfd high-voltage ceramic capacitor from a television receiver.

[Fig. 5. Top view of the 7-megacycle transmitter chassis. Note the ceramic feedthrough insulator between the RFT's or which the neutralizing capacitor jar, C40, is mounted.]

[Fig. 6. Bottom view of the 7-megacycle transmitter chassis. All power and control leads are placed close to the chassis wherever practical. The power-supply leads run to the 6AG7 tube socket which was used in earlier high-voltage experiments on this model.]
A suitable homemade RF choke for this transmitter may be wound on a 1 1/2-inch-diameter polystyrene rod, also shown in Fig. 7 (center). Both ends of the rod are threaded for 8-32 machine screws. Three soldering lugs at the upper end hold the RF plate cap leads and RF choke wire. This wire was secured at the lower end of the winding by threading it through a small hole in the plastic rod.

Cut the polystyrene rod 3 inches long if the home-made choke is to be mounted upon a ceramic capacitor, as was done with the RF choke which was cut 1 1/2 inches long so that the choke could be used between the crystals and the RF plate capacitor. Resonance is at 1,600,000 cycle inductance, 4,000 cycle capacitance, connected between the high-voltage feedthrough insulator just behind the choke and a soldering lug between the plastic rod and the chassis, for the cylindrical bypass capacitor.

Two types of commercially wound RF choke were found suitable for RFPs in the 14-megacycle transmitter. In the detail view of Fig. 7 (right), a Rayner-type RL-102 RF choke was mounted on a small 0.001-mfd, 5000-volt cylindrical ceramic capacitor (Centralab type 6318B-1000) having tapped holes for terminals. A conventional 0.5-mw-g type RF choke, such as the National RN-202T, also permitted normal performance.

This type of choke, having a threaded stud on one end, was mounted on a 1/2-inch-diameter ceramic pillar insulator 2 1/2 inches high. A 0.001-mfd disc ceramic by-pass capacitor was placed beneath the chassis adjacent to the high-voltage feedthrough insulator.

OPERATION—7 AND 14-MEGACYCLE TRANSMITTERS

The initial tune-up procedure for the 7 and 14-megacycle transmitters follows that described in the last in two parts. 1.5- and 2.5-watt SSB transmitters are used to check the oscillator and the transmitters are checked for proper operation and adjusted for desired frequency coverage by setting the slug in L8. For CW operation, adjust LA so that the oscillator is a few kilocycles inside the low-frequency end of the respective bands with C9 set at maximum capacity. The adjustment for maximum output and maximum capacity, the 7-megacycle transmitter should cover approximately 4350 to 4350 cycle; the 14-megacycle transmitter should tune 14.0-14.25 megacycles, both with the capacity values set for C9, as shown in the PARTS LIST.

The interstage coupling coil, CL, should be tuned for maximum grid current in meter position "A" with C9 set in the center of the tuning range. It is best to not apply vacuum and plate voltage to the 807 amplifier until after the above adjustments, and the following neutralizing procedure, have been completed.

With the oscillator running, set C13 at maximum capacity. Tune the 807 plate tuning capacitor, C14, through its range and note whether the 807 grid current fluctuates. Some variation probably will be noted, indicating that the 807 amplifier is not neutralized. Slowly turn C13 toward minimum capacity whilerocking the meter back and forth through the capacity setting at which the variation in grid current occurred. A setting of C13 should be found where there was practically no fluctuation in grid current can be noted.

Plates and screen voltages (560-750 and 250-300, respectively) can now be applied to the 807 amplifier stage to test the transmitter with a dummy antenna before putting it on the air. A 100-watt lamp connected in L8 makes a suitable dummy antenna load. With 600-700- volt plates on the 807- all transmitters could be loaded up to 250 milliamperes plate current (motor position "C") by adjusting C13 for maximum RF output voltage, as indicated in meter position "D." Normal screen cur rent (position "FB") on the 807 stage will be about 12-15 milliamperes at full plate current.

The look output coupling circuit shown in the main schematic diagram is suitable for loading the transmitter directly into half-wave dipole antennas fed either with 52 or 72-diamond coaxial cable; or with 72-diamond twin-lead. "All-band" antennas fed with these cables also should load the transmitter to full output, usually with C9 set at some point between half and maximum capacity. A suitable antenna coupler should be inserted between the transmitter and antenna feeders having low input impedance (one of the 72-diamond taps near the end of the antenna). Most amateur radio and antenna designers have accurate means for properly matching the low-impedance transmitter output to these higher impedance antennas.

PARASITES

There is an error in the schematic diagram for the Clapp cir cuit page of the January 1949, issue of G.T.E., FIG. 5, page 6. The coupling coil CL in the schematic diagram is shown as the RF choke in the tank half-crest fed circuit. It should be in series with the 1000-ohm resistor R16 and in parallel with the 1000-ohm resistor R17, and the feed running from the cathode to the 2-001-mfd capacitances from grid to ground.
Wherever you find persons who have distinguished themselves in community and other public service activities, you are sure to find radio amateurs.

This has been proven time and time again in our annual Edison Radio Amateur Award program; it's equally true of the thirteen full-time electronics technicians who recently were recipients of the first annual All-American Awards for public service, sponsored by General Electric's Receiving Tube Department. All thirteen winners received trophies and checks for $500, for use in a community activity of their preference, at a ceremony in Washington, D. C., last month.

Five of the thirteen technicians are FCC-licensed radio amateurs. Their names, call letters, and the public services for which they were honored, are as follows:

Frank J. Marlin, WE2UL, Roselle, N. J., cited for long and outstanding organizational efforts in civil defense communications and educational radio and several instances of on-the-scene emergency service, including their aircraft crash disaster.

Morris Libowitz, W1BDD, Brooklyn, N. Y., has trained many youngsters in the art and science of radio, developing some into hams, and others into repairmen; also active in civil defense and Red Cross communications.

Richard W. Wells, Jr., WPASE, Pikesville, Ky., furnished free cable connections to a community television system to public schools and hospitals, aided in flood emergency and Civil Defense communications and encouraged homebodies in electronics.

Scott A. Wicher, Jr., WLY5, Lampasas, Texas, saved the lives of many trapped persons during disastrous floods in May, then directed emergency communications through his amateur radio station.

Rex Rytapa, W8WZ0, Charlotte, Mich., cited for outstanding community service with Boy Scouts, rendering free radio and television service for needy people, and assisting in civil defense communications with his amateur station.

Heartfelt congratulations to these outstanding radio amateurs!

We've never seen such a rehabilitation, rebuilding and rehabilitating of short-wave radio stations. Radio news has taken place ever since the automobile stylists systematically designed their workspaces so much in dead space that were immediately below the dashboard in the newer cars. This is in evidence in airports, in hospitals, in University power supply circuit rewiring brought about by the changeover from 6 to 12 kilovolt-ampere electrical systems.

Those smoothly sloping underdashes may cause some new interest, but it was obviously, however, all but four the trade who is attempting to install his mobile receiver and transmitter snugly against the dash and still leave some footroom for the middle front seat passenger, and outstanding organizational efforts in civil defense communications. The need for longer than normal arms, plus diverted attention that causes a safety hazard, is the price paid by the motorist.

We've seen that much-fibered "bulk-in-buck" in only one installation of mobile gear in a 1937 auto, in a make having a large removable panel in the center of the dash. But even the 1938 model of this vehicle has been altered to effectively remove this space un- available for mobile gear.

What will be the answer to this problem? The user of commercially built equipment may resign himself to installing his mobile station on the transmission hump. The home constructor can still hope for a less con- spicuous installation by building his gear in some weird shape which will fit up behind the right corner of the dash, and bring out a remote tuning dial and other essential controls to an accessible location on the dash. Non-smoking motorists might even consider dedicating the dash ash tray, substituting these controls in its place.

Whatever the solution to your particular mobile gear installation problem, it is clear that you will have to call upon ingenuity never before utilized in order to be able to call, "QO... QC... this is W... mobile..."

About a year ago in this column I mentioned that General Electric has produced a series of educational motion picture films on subjects related to electronics. These films all standard 16-millimeter sound projection and run from ten to thirty minutes in length. Some are in black and white; others are in color. These films are available for loan to amateur radio clubs, school classes, and any other groups; at no charge, from eighteen film libraries which G.E. maintains in large cities in the United States. In each case your club secretary, group advisor, or program chairman has not received a copy of the catalog in which all current films are listed, he may do so by sending a postal card to me requesting it.

This catalog also lists the film library address in your area from which the films should be obtained. I'm sure you'll enjoy sharing a club program.

We've been seeing—and hearing—more and more about a relative newcomer to the ranks of amateur radio periodicals—one that has been very well received in our western states—the West Coast Ham Jot.
SINGLE BANDER RANDOM IDEAS

Some of the most numerous questions we have received regarding the 150-watt single band transmitters—those pertaining to inclusions of crystal controlled operation, and circuit data for 7 and 14-meter transceiver—have been answered elsewhere in this issue. Other questions—circuit data for 1.8 and 21-meter transmitters; hollow sandwich ideas for both the high-C VFO and complete transmitter; circuit changes for double sideband operation; and a mechanical arrangement whereby separate RF units for each band could be plugged into a cabinet containing a common power supply, keyer or modulator and metering circuits—will be covered in future lessons.

Generally, circuit data for a 1.8-meter transceiver—capacitances and inductances of Cc, Cc1, Cs, C1, Cu, Cu1, and L1—will be based on the data shown for the 21-meter transceiver. The value of Cc, however, will depend upon the amateur's particular requirements, and on the supply voltage available.

Two methods of scaling the data shown for the 14-meter transceiver to a 21-meter transceiver are practical. First, the oscillator grid circuit can be left as is, with the plate circuit tripling to 21 megacycles. For this Cc1, Cu1, and L1 are doubled to two-thirds of those used in the 14-meter transceiver. Or, the oscillator grid circuit can be placed on 10.5 megacycles, tripling in the plate circuit to 21 megacycles. This method requires that Cc, Cs, Cu, and L1 be scaled down to one-third of those used in the 14-meter transmitter values.

Developing a panelized switching system for the— or any transmitter—that does not assure the proportions of a mechanical compatibility is quite a problem. We've tried several ideas, both on paper and on test models, but, as the old saying goes, "the issue is still in doubt." Contacts on the compact, interphase, ceramic-encased, tap switches are not quite durable enough for switching the 807 plate circuit unless caution is always exercised when changing bands—i.e., turning off the high voltage first. The heavy duty tap switches will withstand this abuse, but their approach suggests that of a rotary inducer.

Preliminary tests with double sideband circuitry in the 807 stage—incorporating a push-pull grid circuit and bringing out separate screen voltage connections for each RF—indicates that some isolation would be desirable between the oscillator and amplifier stages to eliminate any trace of frequency modulation. This could be achieved by adding a miniature potentiometer as the oscillator and operating the 807T as a frequency doubler to drive the 807.

Building a transmitter having plug-in RF units introduces some mechanical problems, such as cutting a large hole in the panel through which the RF unit is plugged in, and the necessity of maintaining close tolerances to position the lower and RF output transformer. The two common-hole type transformers with heavy filtering capacitors should fit into a somewhat smaller chassis—say 5 10 x 3 inches—when some of the extras we've included in our RF units are transferred to the fixed portion of the transmitter.

Still another mechanical layout which shows promise is to construct an RF unit containing all components except those which change in value for the different bands. Coils for a specific band could then be placed in a plug-in tuning unit having holeside between them. Thus, tuning units could be remated for only those bands in which the constructor is interested.

Each of the transmitters described elsewhere differ slightly in parts layout, indicating that as the usual precautions against stray coupling between stages and making all RF leads as short as possible are followed, a successful transmitter will result. We've simply brought out the foregoing random ideas for those amateurs who desire to build something different and possess a measure of mechanical ingenuity, plus reasonably well-equipped shop facilities.