

Complete short wave converter with coils.

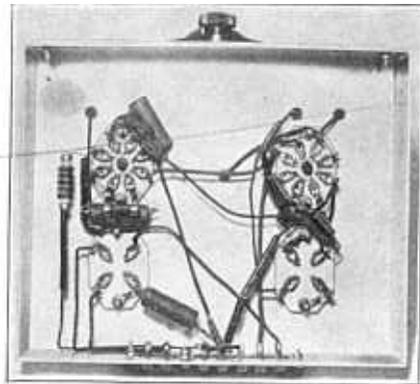
# SW-CONVERTER

WHILE many short wave fans have small one-tube and two-tube receivers and desire a more complicated set, many do not feel equal to the task of building it. If you have a good broadcast receiver, that is, one covering the regular broadcast band but not taking in the short wave bands, this simple two-tube converter will enable you to receive short wave stations on the regular home set at full speaker volume. A combination of the two provides a very effective all wave receiver capable of producing fine results. When combined with this converter, the broadcast receiver merely serves as the I.F. and A.F. amplifier unit having its own power supply. No tuning is done with the broadcast receiver. All adjustments, aside from volume control, are made on the converter. Referring to the wiring diagram, we find that we have a 6L7 pentagrid mixer which is used in conjunction with a 6C5 as high frequency oscillator. The two tubes work together to convert the incoming short wave signal into a frequency suitable for amplification by the broadcast set.

The large receiver is tuned near maximum wavelength, or lowest frequency, in the broadcast band. The exact position of tuning is governed by the broadcast stations in operation. The dial should be set so that no broadcast station comes through to interfere with the short wave signal.

The first coil, or the one in the 6L7 grid circuit, is a standard Hammarlund

SWK-4 coil set with a tuning range of from 17 to 270 meters. The oscillator coil, however, must be especially constructed with the following specifications. The highest frequency coil has 6 turns spaced to a total length of  $\frac{3}{8}$ "; the cathode cap is taken off at approximately 1 turn from the B-minus end of the circuit. The next largest coil has 12 turns spaced to a total length of  $\frac{1}{2}$ " and the cathode tap is at  $1\frac{1}{2}$  turns. The next coil has 27 turns spaced to a length of 1" with the cathode tap at the second turn. The largest coil has 45 turns close wound with the cathode tap at the 4th turn. Number 26 silk covered wire is used for all coils. The diagram shows a separate coil winding for the cathode circuit. If the coil data given above is employed, the cathode will be tapped



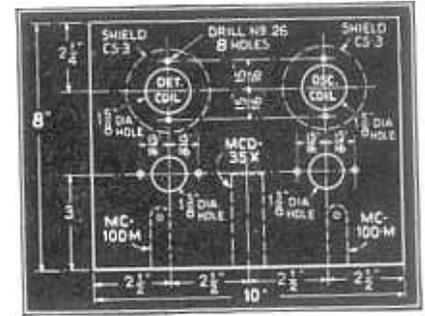
Bottom view showing wiring.

on to the large coil the number of turns specified from the B-minus side of the coil. If standard 4-prong Hammarlund coils are to be used in the oscillator, that is the same type as are used in the 6L7 circuit, then the diagram given would be followed. The small winding at the lower side of the coil will be used for the cathode circuit. This is normally the tickler. It will be necessary to reduce the number of turns until it equals the amount between the tap and the B-negative side of the coil in the specifications already given. The secondary or grid winding will also need modification. In all but the 17 to 41 meter coil, the number of grid turns must be reduced 20%. The 17 to 41 meter coil, requires greater spacing for the same number of turns. Merely increase the spacing slightly between the turns. With the above coil specifications, the two circuits should track fairly close.

Two sets of tuning condensers are employed. One is a two-gang "MCD-35-X" condenser and is the main tuning condenser employed for band spread. The two 100 mmf. condensers adjust the tuning range of the converter.

This converter also employs the receiver power supply described previously. It is not recommended that the power for the converter be taken from the broadcast receiver.

One connection of the converter connects the antenna post of the broadcast receiver. The B-minus lead of the converter should also connect to the ground terminal of the broadcast set. The antenna connections, a doublet being preferred, connect to the antenna coil in the 6L7 grid circuit.



How to drill the chassis.

### Parts List

#### HAMMARLUND

- 1—MCD-35-X condenser
- 2—MC-100-M condensers
- 2—S-8, 8-prong sockets
- 2—S-4, 4 prong sockets
- 2—CS-3 Coil shields
- 1—CHX R.F. choke
- 1—SWK-4, coil kit 17-270 meters
- 4—SWF-4, 4-prong coil forms

#### I. R. C.

##### (Resistors)

- 1—500 ohm  $\frac{1}{2}$  watt
- 1—.1 meg.  $\frac{1}{2}$  watt
- 2—100,000 ohm  $\frac{1}{2}$  watt
- 1—10,000 ohm 1 watt

#### CORNELL-DUBILIER

##### (Condensers)

- 3—.1 mf. tubular
- 1—.01 mf. tubular
- 2—100 mf. mica
- 1—.0005 mf. mica

#### R. C. A.

- 1—6L7 tube
- 1—6C5 tube

#### MISC.

- 2—Knobs
- 1—Dial
- 1—Chassis, 3" x 10" x 2"
- 1—Panel 7" x 10"—both 1/16" aluminum

Wiring diagram for two-tube short wave converter.

