

# ECHOPHONE *radio*

Echophone Division • The Hallicrafters Co. CHICAGO, U. S. A.

## SERVICE DATA FOR THE ECHOPHONE COMMERCIAL MODEL EC-1B



### DESCRIPTION

The Echophone Commercial model EC-1B receiver is a six tube, three band, A-C/D-C, semi-portable receiver covering the frequency range 550 kc to 30 mc. The receiver accepts either amplitude modulated radio telephone signals in this range or c-w code signals. Provision is made for either speaker or headset operation, the speaker being built into the cabinet. Bandsread is provided for amateur band reception or vernier tuning in the short wave range.

### INSTALLATION AND ADJUSTMENT

#### 1. INSTALLATION.

a. **Unpacking.** - Carefully unpack and inspect the equipment for any possible damage during shipment. In case of damages, a claim should be filed immediately with the transportation company.

b. **Mounting.** - The receiver is designed for table top operation, hence is equipped with rubber feet. In your installation allow for adequate ventilation.

c. **Antenna Recommendations.** - Three terminals are provided on the antenna terminal strip at the rear apron of the receiver chassis. Terminals "A<sub>1</sub>" and "A<sub>2</sub>" are connected to the primaries of the first detector stage transformers and the "G" (ground) terminal is connected to the receiver ground system.

(1) **Single Wire Antenna.** - When using a single wire antenna installation, connect the jumper bar between the antenna terminals "A<sub>2</sub>" and "G". A single wire antenna of about 50 to 75 feet (including lead-in) is then connected to terminal "A<sub>1</sub>". Use a No. 14 (AWG) or heavier wire for best results. Erect the antenna as high and free from surrounding objects as possible. This type of antenna works well where the signal to noise ratio is relatively high and a more elaborate installation is not available.

(2) **Doublet Antenna.** - The doublet antenna is recommended where receiving conditions are relatively bad or where maximum sensitivity is required over a relatively narrow range of frequencies. The transmission line from the doublet antenna is connected to terminals "A<sub>1</sub>" and "A<sub>2</sub>" and the jumper bar is disconnected. If a concentric line with a grounded outer conductor is used, connect the inner conductor to terminal "A<sub>1</sub>" and the outer conductor to terminal "A<sub>2</sub>", and connect the jumper bar between terminals "A<sub>2</sub>" and "G". To determine the proper length in feet of the doublet antenna, divide 468 by the frequency of reception in megacycles. Keep in mind that this type of antenna is directional broadside to its length and should be so orientated if maximum pick-up from a given direction is desired.

d. **Headset Connections.** - A phone tip jack is located on the rear apron for head set cord tips. When using phones the PHONES/SPEAKER switch must be set at PHONES.

## 2. PREPARATION FOR USE.

a. **A-C Operation.** - The receiver may be operated from a 115-volt, 60 cycle, single phase alternating current line. Check the line voltage with your utility company, if in doubt, as the receiver should not be operated from an outlet having a potential higher than 125 volts.

b. **D-C Operation.** - The receiver may be operated from a 115-volt direct current source. Do not operate the receiver from an outlet having a potential higher than 125 volts. If the receiver fails to respond to the power switch reverse the line plug in its receptacle to obtain the required polarity.

## 3. ADJUSTMENTS.

No preliminary adjustments are required on this equipment to put it into operation as the receiver has been properly aligned and tested at the factory before shipment.

# OPERATION

## 1. CONTROLS AND THEIR FUNCTIONS.

Scanning across the front panel from left to right, the controls and their functions are as follows:

a. **C.W./A.M. Switch.** - This switch is set at C.W. for code reception and at A.M. for phone reception.

b. **TUNING Control.** - This control tunes the receiver to the desired frequency of reception. The frequency of reception is read directly from the dial when the BANDSPREAD pointer is set at zero.

c. **NOISE LIMITER Switch.** - This switch when set at ON helps to limit excessive background noise. It should be used only when background noise is troublesome.

d. **VOLUME Control.** - The volume control, as its name implies, controls the level of the aural signal. Also included as a part of this control is the receiver's power switch. Turning the control all the way to the left shuts off the receiver.

e. **BAND SELECTOR Switch.** - The band switch selects one of the three bands or frequency ranges available to the operator. The frequencies covered by each band switch position are read directly from the main tuning dial.

f. **BANDSPREAD Control.** - This control operates in conjunction with the main TUNING control, spreading the tuning out over a wider arc, hence acting as a vernier adjustment. When this control is set at zero the main tuning dial calibration will be the frequency of reception.

g. **STANDBY Switch.** - Use this switch for stand-by purposes when the receiver is to be disabled for short periods of time. This switch disconnects the d-c plate voltage and leaves the tube heaters at operating temperature for instant use.

h. **PHONES/SPEAKER Switch.** - Located on the front of the receiver. This switch directs the audio signal to either the speaker or the headset plugged into the PHONES jack on the rear chassis apron.

## 2. OPERATION.

Listed below are the receiver controls and their settings for the two types of reception provided by this receiver, namely, radio telephone and c-w code reception.

### a. Radio Telephone Reception. - To receive radio telephone stations set the controls as follows:

VOLUME control	- Set at OFF when the receiver is not in use. Turn to the right until desired volume is obtained after tuning in the station.
BAND SELECTOR switch	- Set at band number corresponding to the range covering desired frequency of reception.
C.W./A.M. switch	- Set at A.M. This switch may be set at C.W. to help tune in weak phone signals by tuning for zero beat and then switching back to A.M.
PHONES/SPEAKER switch	- Set at PHONES for headset reception; set at SPEAKER for loudspeaker reception.
STANDBY switch	- Set at ON during reception, set at OFF during short standby periods.
BANDSPREAD control	- Set at zero when tuning in stations with the TUNING control. Tuning dial calibrations are true only when the bandspread pointer is set at zero. Use the bandspread control for amateur band reception or for vernier tuning in the short wave bands.
TUNING control	- Set main tuning pointer at frequency of desired signal. Bandspread pointer must be set at zero for true calibration.
NOISE LIMITER Switch	- Set at OFF unless background noise is excessive.

b. C.W. Code Reception. - To receive c-w code stations set the C.W./A.M. switch at C.W. and tune receiver for 500 to 1000 cycle note. All other controls are to be handled as for radio telephone reception.

## MAINTENANCE

### 1. PREVENTIVE MAINTENANCE.

All components of the receiver should be given a thorough inspection at regular intervals. The time interval between inspections will be determined by the operating conditions of the individual installation. In general keep the components clean and dry. Dust should be blown out with dry air or brushed out carefully. Do not oil condenser wipers or switch contacts as noisy reception will result from intermittent electrical contact at these points. Check the tubes and make sure that all are held securely in their sockets.

### 2. ALIGNMENT.

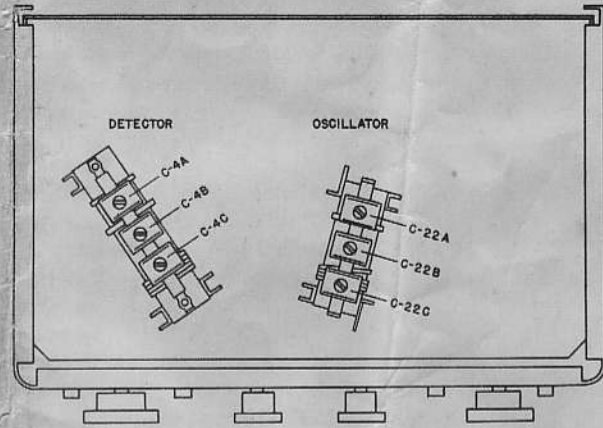
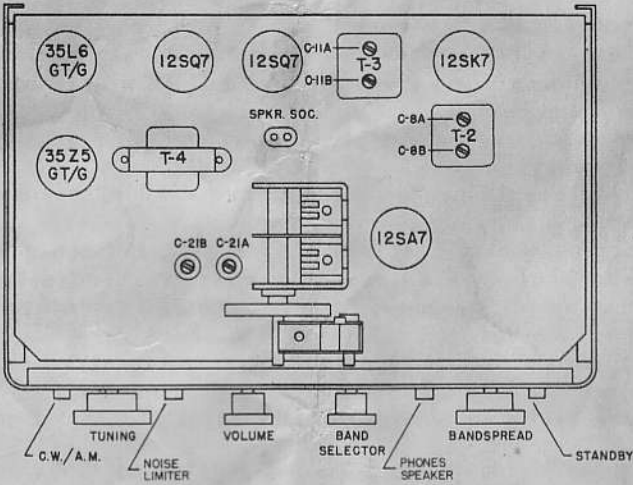
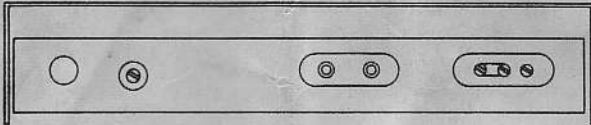
Listed below in table form, are the alignment frequencies and adjustments necessary to align the receiver. CAUTION - Do not connect signal generator ground directly to the chassis, connect it to the "G" terminal of the antenna terminal strip.

NOTE - Set BANDSPREAD dial at "0" before attempting alignment. (Slug should be between Band 1 and Band 2 coils.)

ALIGNMENT DATA

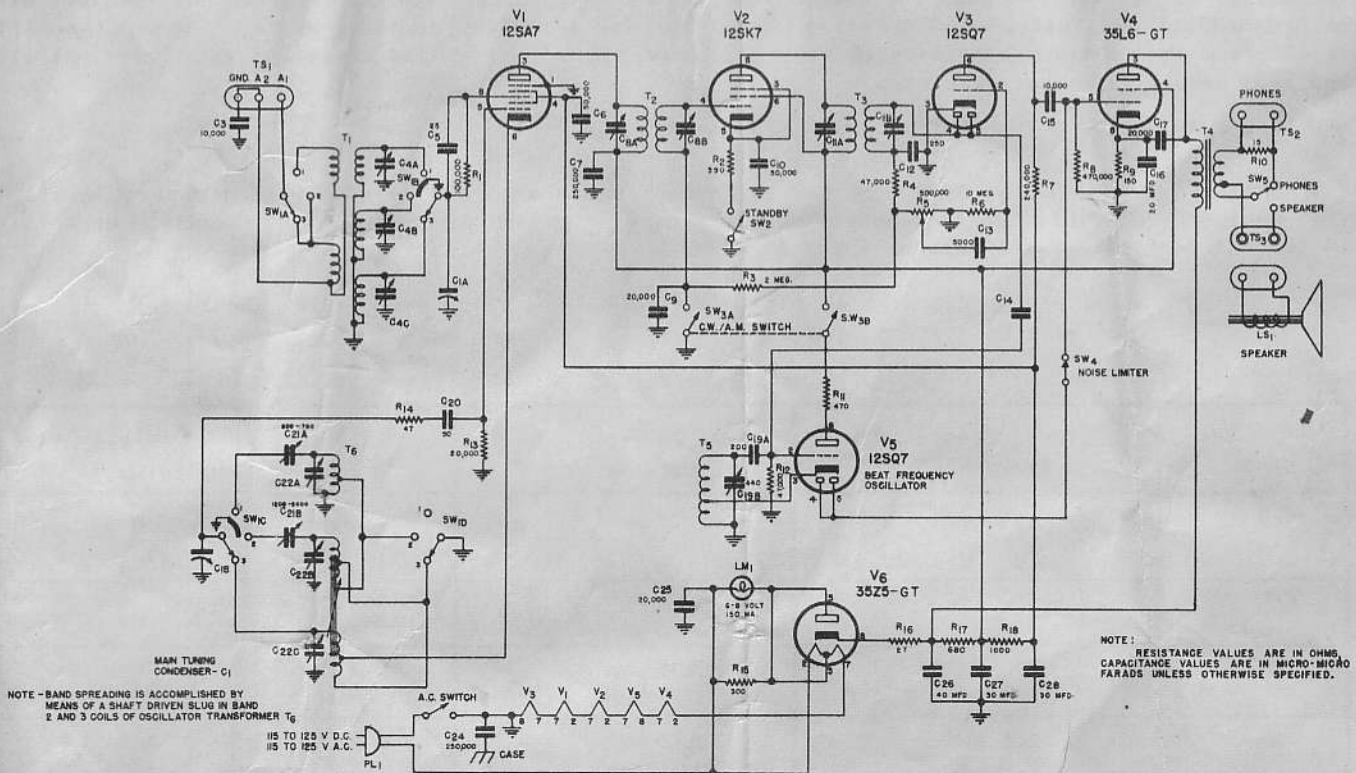
BAND	Signal Generator Frequency	Dummy Antenna	Adjust Pads	Adjust Trimmers
I-F	455 kc.	None	None	C-8A, C-8B, C-11A, C-11B
BFO	455 kc.	None	Adjust capacitor C-19 for zero beat.	
1	600 kc. 1800 kc	330 ohm 330 ohm	C-21A None	None C-22A, C-4A
2	2.4 mc. 7.0 mc.	330 ohm 330 ohm	C-21B None	None C-22B, C-4B
3	No low frequency adjustment on this band. 28 mc.	330 ohm	None	C-22C, C-4C

LINE CORD B.F.O. ADJ. HEADSET JACK ANTENNA TERMINAL STRIP  
C-19 C-19



92D288

Tube locations and alignment points - Model EC-1B.



Schematic Diagram - Echophone Commercial - Model EC-1B.

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