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C. -

# GENERAL PURPOSE COMMUNICATIONS RECEIVER

MODEL AR-88.LF

## INSTRUCTIONS

Manufactured by

**RCA Victor Company, Limited**

Montreal, Canada

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**RigReference.com**

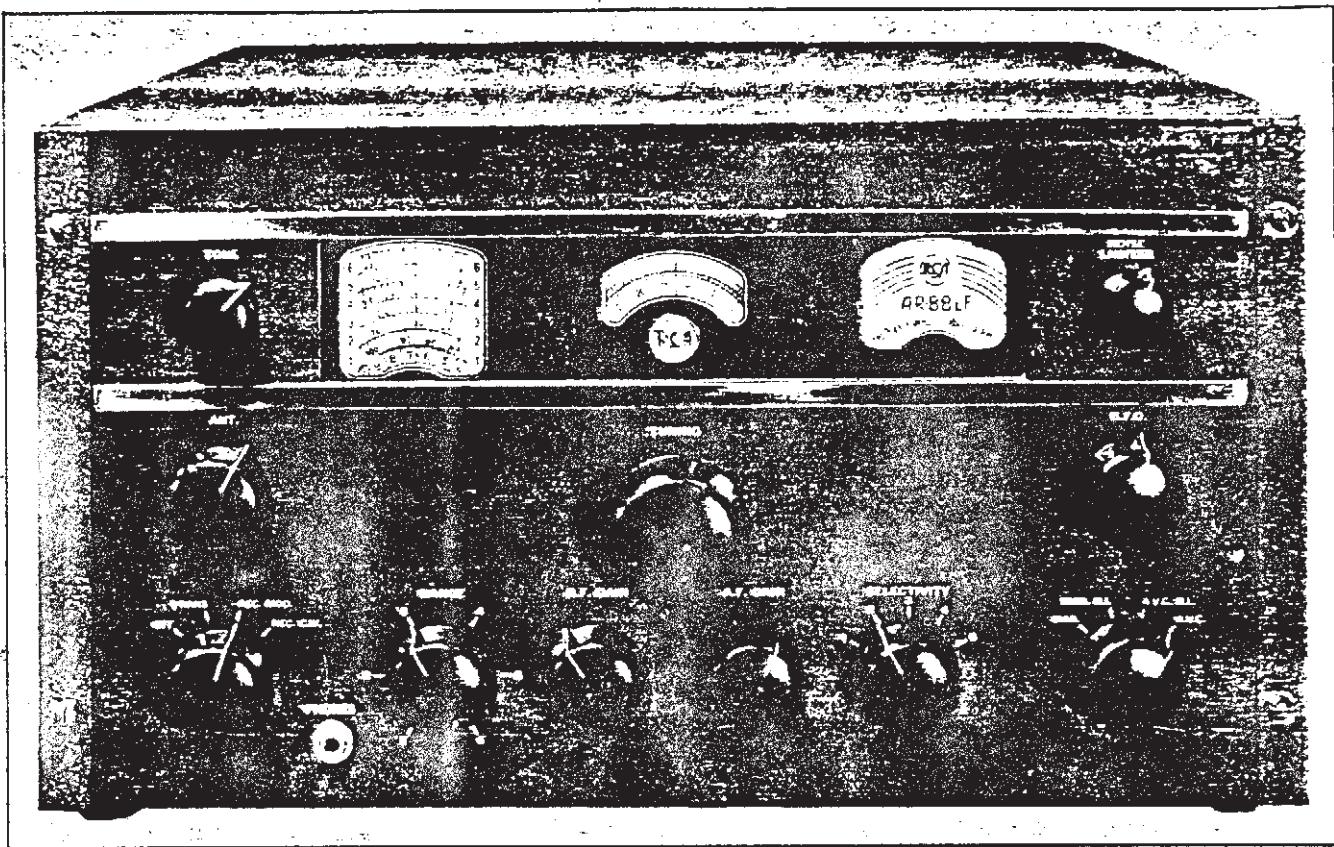


Figure 1.—General Purpose Communication Receiver—Front View.

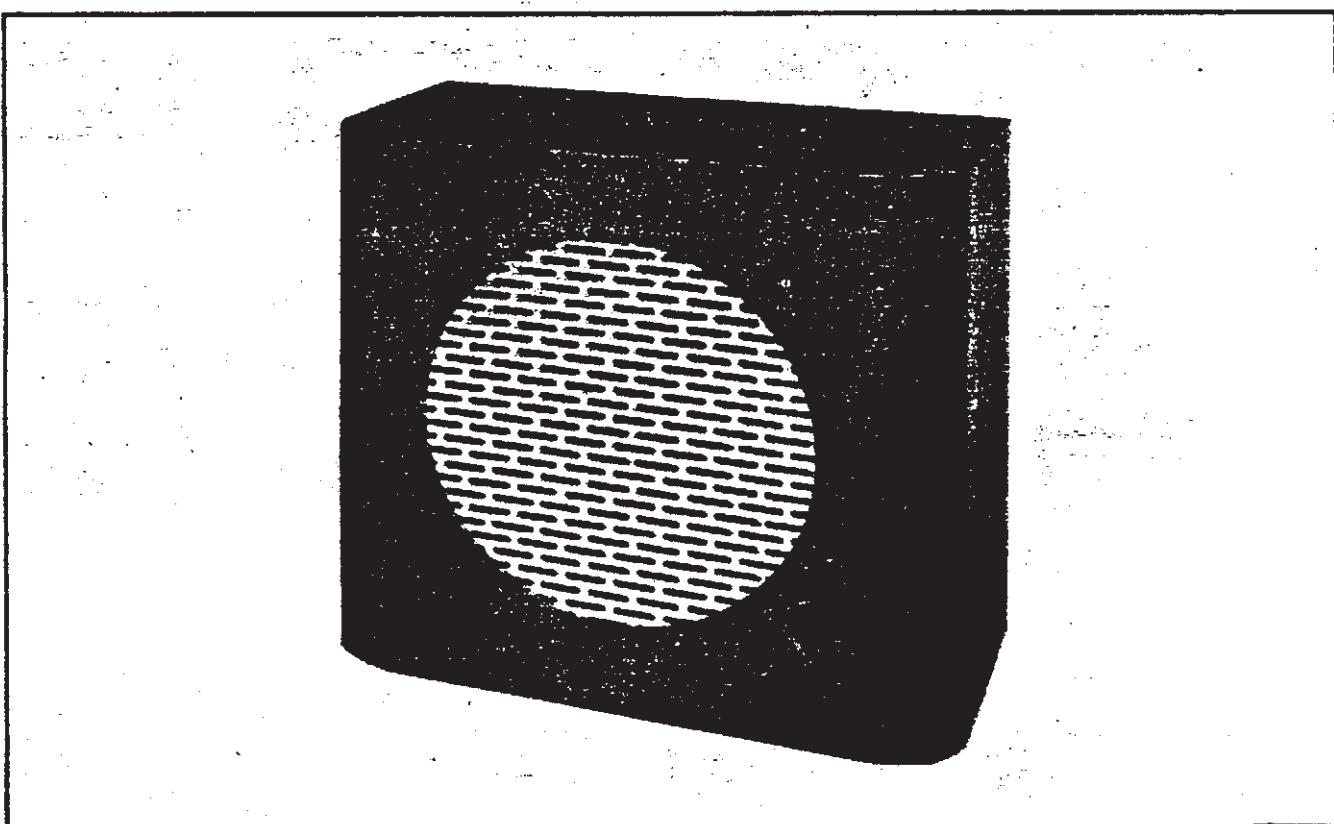


Figure 2.—General Purpose Communications Receiver—Loudspeaker.



# GENERAL PURPOSE COMMUNICATIONS RECEIVER

## INSTRUCTIONS

### 1. GENERAL

- 1.1 This receiver has been designed for general purpose communication. It is designed to withstand severe climatic and line voltage variations without appreciable impairment in performance.
- 1.2 The following features have been incorporated into the design of this unit.
  - (a) Mechanical Band Spread, with Single Control for ease of tuning a previously logged station.
  - (b) Automatic Noise Limiter which automatically limits interference to a percentage of modulation.
  - (c) Noise Limiter Switch for switching Noise Limiter on or off.
  - (d) Continuously variable High Frequency Tone Control.
  - (e) Panel Antenna Trimmer for circuit alignment.
  - (f) Variable selectivity, with expansion of the normal selectivity characteristic for standby, and a crystal filter for ultra sharp selectivity when required. The crystal filter circuit is adjusted at the factory to give selectivity characteristics as shown in Figure 12.
  - (g) Temperature compensated oscillator circuits on all bands.
  - (h) Regulation of the anode voltage of the oscillator, giving good oscillator stability through normal variations in line voltage.
  - (i) Four-ganged Condenser giving high image ratio, and very low oscillator radiation on all bands.
  - (j) Special screening devices have been built around the gang condenser, the master oscil-
- 1.3 Frequency Range:—

|        |          |       |    |
|--------|----------|-------|----|
| Band 1 | 73 to    | 205   | KC |
| Band 2 | 195 to   | 550   | KC |
| Band 3 | 1480 to  | 4400  | KC |
| Band 4 | 4250 to  | 12150 | KC |
| Band 5 | 11900 to | 19500 | KC |
| Band 6 | 19000 to | 30500 | KC |
- 1.4 Sensitivity:—Better than 15 microvolts for 20 db signal to noise ratio, for MCW (A-2) reception and better than 5 microvolts for CW (A-1) reception (see table No. 1).
- 1.5 Radiation:—Less than 40 micro-microwatts of power radiated, as dissipated in resistance connected from Antenna input terminal to ground. Value of resistance is such as to cause maximum power to be radiated (see Section 3 below).
- 1.6 Output Power:—(Maximum undistorted) — 2.5 Watts when loudspeaker used. When low impedance headphones are used, maximum output fed to the phones is 100 milliwatts approximately.
- 1.7 Power Supply Requirements: — 115 or 230 volts, 25/60 cycle, 100 Watts or 6 volts D.C., 12 amps when external power supply MI-22215 is used. (Note—external power supply MI-22215 is only supplied when specially ordered.)
- 1.8 Output Load:—This receiver has provision in the output circuit to take loads of 2.5 ohms, 20 ohms, and also low impedance headphones.
- 1.9 Mechanical Specifications:—Overall Dimensions — 19 $\frac{1}{4}$  inches wide x 11 inches high x 19 $\frac{1}{4}$  inches deep. Weight — 100 Pounds (unpacked).

### 2. TECHNICAL DETAILS

- 2.1 Circuit Details and Features:—The schematic diagram of this receiver is shown in Figure 11. It consists of two stages of R.F. amplification, first detector, first heterodyne oscillator; three of I.F. amplification, second detector and A.V.C., noise limiter, second heterodyne oscillator; A.F. amplifier stage, output power stage, and power supply system.
- 2.2 Input Coupling:—The antenna coupling system is designed to provide optimum coupling from a 200 ohm transmission line, but equivalent performance is realized with a straight line antenna

(see Section 4.4) with a conventional lead-in wire. The first tuned circuit is provided with a trimmer condenser adjustable from the front panel. This insures the proper tuning of this circuit with any antenna system.

For all bands, conventional antenna and ground connections may also be used.

The antenna terminal board is provided with three terminals (see Figures 3 and 7), two of which may be joined together with a link. When a single wire antenna is used, the link should be closed and the antenna connected to "A". If a ground is used, it should be connected to "G".

If a transmission line or balanced input is used, the link should be opened and the line connected to terminal "A" and the center terminal. Protection against damage due to high voltages across the antenna coil primaries is provided by a gas gap protector (Type 991 Valve). This protector will break down with an applied potential of approximately 50 Volts R.M.S.

2.3 **R.F. Amplifier:**—The R-F Amplifier is designed to provide ample selectivity ahead of the first detector for minimizing cross modulation and blocking effects from strong interfering signals and for obtaining a high degree of image signal suppression. The amplification is adjusted to provide optimum signal-to-noise ratio by making noise contributions of circuits following the first valve negligible in comparison with the noise contributed by the first R-F grid circuit; that is, each tuned circuit in the receiver contributes some noise voltage, but by making the gain of the first valve as high as practicable, the noise contributed by succeeding circuits is unimportant.

2.4 **Band Spread:**—The mechanical band spread with single control knob enables the operator to tune quickly to a previously logged station. The log scale on the main dial and the separate vernier dial provide for exact logging and tuning.

2.5 **First Heterodyne Oscillator:**—The first heterodyne oscillator is aligned to track with the R-F Amplifier at 735 kc higher than the signal frequency, thus producing a 735 kc intermediate frequency in the first detector plate circuit which is amplified further in the I-F stages. The oscillator voltage is regulated by the Type VR-150 regulator valve to provide maximum frequency stability under conditions of variations in power supply voltage.

2.6 **Intermediate Frequency Crystal Filter:**—The first detector plate circuit is tuned to the intermediate frequency and a balanced link circuit is used to couple the first detector plate and first I-F grid circuits. A 735 kc crystal is connected in one arm of the link circuit by the selectivity switch and a neutralizing capacitor is connected in the other. The impedance of the coils in the link circuit are designed so that the crystal selectivity characteristic is not impractically sharp. The band width at two times resonant input may be adjusted to 550 cycles, 2000 cycles, 4,000 cycles, 8000 cycles, or 16,000 cycles. For this adjustment see "Operation".

2.7 **Intermediate Frequency Amplifier:**—Three stages of I-F amplification are used; Type 6SG7 valves are used in all stages and a Type 6H6 valve is used for AVC and second detector. The first I-F transformer has its primary and secondary tuned, and is coupled through the crystal filter link. The second and third I-F

transformers are composed of four tuned circuits each. These circuits are varied in coupling by the selectivity switch. The fourth I-F Transformer has two tuned circuits.

The third I-F stage is not connected to the AVC nor to the manual volume control so that a good AVC characteristic with little overload distortion is obtained. This also permits the CW oscillator to be coupled to the grid circuit of this stage.

2.8 **Second Heterodyne Oscillator:**—The second heterodyne (CW) oscillator is a triode Type 6J5 valve which is electrostatically coupled to the final I-F stage. A panel control is provided by means of which the frequency of the heterodyne oscillator and resultant audio beat note may be varied. Particular care has been taken in the design of the circuit constants to minimize oscillator harmonics.

2.9 **Automatic Volume Control:**—The AVC voltage is obtained from the second detector, a Type 6H6 valve. A variable delay is obtained depending on the setting of the R-F gain control. The second heterodyne (CW) oscillator excitation voltage is just lower than the AVC diode bias voltage so that it does not decrease the sensitivity of the receiver.

2.10 **Manual Volume Control:**—Two manual volume controls are provided: an audio gain control which is employed when the AVC is in use, to obtain the desired output level, and an R-F gain control.

2.11 **Noise Limiter:**—The noise limiter circuit utilizes a Type 6H6 valve and limits the noise interference to 100% modulation and to continuously lower percentages down to any modulation whatsoever, determined by the setting of the noise limiter control. A noise limiter switch in conjunction with AVC provides for use of the noise limiter on CW or on modulated reception when interference is present.

2.12 **Output Valve:**—The Type 6V6GT/G output valve is resistance coupled from the A-F amplifier, a Type 6SJ7 valve, and operates into an output transformer which has taps for matching into a 2.5 ohm load, or headphones. Terminals are provided on the rear apron for each of these load impedances. The output from the 2.5 ohm tap is fed directly to the 2.5 ohm output terminal, while the output from the 20 ohm tap is fed to the 20 ohm output terminal and also to a jack mounted on the panel. With the phone plug inserted into the jack, the phones are across the 20 ohm output and a load resistor, R-56, provides correct matching for the valve and reduces output supplied to the headphones.

**2.13 Power Pack:**—The power pack mounted on the receiver chassis consists of a power transformer, rectifier valve Type 5Y3GT, G and filter. A toggle switch is provided on the rear apron for changing the power transformer voltage tap to either 115 or 230 Volts. The instrument may also be operated from 6V. "A" and 250 to 300 V. "B" batteries. (See Section 2-4).

**2.14 Vibrator Power Unit:**—The M.I.-22216 Vibrator Power Unit is designed for use with this Receiver to supply the DC voltage necessary from 6 volt DC battery. It is a separate assembly and is fitted with a plug to attach it to the receiver

by means of Socket J-1 on the rear apron. (Note. --This Vibrator Power Unit is only supplied when specially ordered.)

It consists of non-synchronous Vibrator used in conjunction with a step-up transformer. Rectification is obtained by the use of a type OZ4A valve. (See Section 7 below.)

**2.15 Shielding:**—Interstage shielding is provided to insure stability under all operating conditions and to minimize oscillator radiation. Complete external shielding prevents coupling to any portion of the circuit except through the antenna circuit.

### 3. PERFORMANCE

**3.1** The performance data below and the data for the various curves, (Figures 12, 13, 14) are approximate values taken on a sample receiver. Variations in these values are to be expected because of practical manufacturing tolerances. The data were taken with an artificial antenna of 700 mmf. capacity for band 1 and 2 and 200

ohms resistance for bands 3 to 6 inclusive. The output was measured across a resistance of 2.5 rhms connected in place of the speaker voice coil. The selectivity switch was placed in position 2 unless otherwise stated. Figures are for MCW (A-2) reception, unless otherwise stated.

**3.2 Performance Data:**—Approximate values only—Taken on Sample Receiver. (See Table I.)

TABLE No. I

| Band | Frequency in Kc. | Input in microvolts for 20 db s. to n. CW(A-1) reception | Input in microvolts for 20 db s. to n. | Image Ratio            | I.F. Rejection Ratio   | *Radiation from Oscillator in micro-microwatts |
|------|------------------|--|--|------------------------|------------------------|--|
| 1    | 80               | 3.0  | 12.0                                   | greater than 1,000,000 | greater than 1,000,000 | less than .05                                  |
|      | 140              | 3.1  | 12.5                                   | "                      | "                      | " " .05  |
|      | 195              | 2.8  | 10.5                                   | "                      | 1,000,000              | " " .05  |
| 2    | 205              | 1.8  | 6.0                                    | "                      | 1,000,000              | " " .05  |
|      | 375              | 2.6  | 8.0                                    | "                      | 1,000,000              | " " .05  |
|      | 500              | 3.7  | 9.8                                    | 1,000,000              | 37,000                 | " " .03  |
| 3    | 1,600            | 2.6  | 8.0                                    | 1,000,000              | greater than 1,000,000 | " " .05  |
|      | 3,000            | 1.9  | 6.5                                    | 100,000                | "                      | " " .05  |
|      | 4,250            | 1.8  | 6.0                                    | 25,000                 | "                      | " " .05  |
| 4    | 4,400            | 3.7  | 9.5                                    | 600,000                | "                      | " " .05  |
|      | 7,500            | 2.0  | 7.9                                    | 11,000                 | "                      | " " .05  |
|      | 11,900           | 1.8  | 7.0                                    | 6,000                  | "                      | " " .05  |
| 5    | 12,100           | 1.7  | 7.0                                    | 15,000                 | "                      | " " .05  |
|      | 15,500           | 2.9  | 8.2                                    | 5,000                  | "                      | .09  |
|      | 19,000           | 2.5  | 7.0                                    | 3,100                  | "                      | .05  |
| 6    | 19,500           | 2.5  | 7.5                                    | 4,000                  | "                      | .05  |
|      | 27,500           | 3.0  | 7.9                                    | 600                    | "                      | .135   |
|      | 30,000           | 2.8  | 7.7                                    | 375                    | "                      | .300   |

\* Radiated power measured is that dissipated in a resistor connected from Antenna post to ground. Value of resistor is that which results in maximum power being radiated.

### 3.3 Oscillator Stability:—

- (a) Oscillator frequency stable within 0.001% for line voltage variation of  $\pm 5\%$ .
- (b) Oscillator frequency stable within 0.003% for temperature change of  $1^{\circ}\text{C}$ .
- (c) Oscillator frequency stable within 0.001% for total variation of both the audio and R.F. gain controls.
- (d) Resetting of range switch from either direction does not vary the frequency of the oscillator on any band more than 1 kc.

3.4 Dial Resetability—better than 2 kc. when the dial is reset from either direction, at any frequency.

3.5 Dial Calibration:—Calibration of the dial is accurate to within 0.5%.

3.6 AVC Characteristics:—The AVC circuit holds the audio output level to 12 db when the MCW (A-2) input is varied between 10 and 100,000 microvolts at any frequency, with any modulation percentage from 10 to 90, and with any modulation frequency from 300 to 4000 cycles. (See Figure 14.)

## 4. INSTALLATION

4.1 Power Supply:—The power supply circuit is integral with the receiver. Determine line voltage and frequency and check with the rating of the receiver. The power transformer primary may be connected for either 115 or 230 volts 25/60 cycle by means of the toggle switch on the rear apron. This toggle switch is protected by a protector plate. To alter the connection of the primary, remove the protector plate, throw the switch, and replace the protector plate, with the reverse face out.

4.2 For Battery or Other Supply Operation:—For connections see Schematic Diagram Figure 11. It is only necessary to remove the plug from the socket on the rear of the receiver, and connect the batteries to the proper terminals as indicated by the schematic diagram. A battery cable terminating in an octal male plug is necessary for this purpose.

If the Vibrator Power Unit MI-22216 is used, remove the plug from the socket on the rear of the receiver, and plug in the cable from the Vibrator Power Unit. Connect the 6 volts D.C. input to the power unit with heavy, low resistance leads. See Section 7. for more detailed information concerning the Power Unit.

4.3 Valves:—Inspect the chassis before applying

power to see that all valves are firmly seated in their respective sockets.

4.4 Antenna:—The input impedance at the antenna terminals is designed to match a 100 to 200 ohm transmission line or a straight wire capacity type antenna.

For general use it is recommended that a straight wire antenna between 25 and 50 feet long be used for bands 3 to 6 inclusive, and a wire of 200 feet or more for bands 1 and 2.

4.5 Speaker:—Terminals for connection of a loudspeaker are indicated in Figures 3 and 7. The output transformer is designed to match a p.m. dynamic speaker having 2.5 ohms impedance.

4.6 Headphones:—A jack is provided on the left of the front panel for plugging in a pair of headphones. If additional phones are required, they may be connected to the 20 ohm output terminals on the rear apron of the receiver. Phones having an impedance in the range of 150 to 600 ohms should be used.

4.7 Mounting:—The instrument may be placed on a table or mounted on a rack. For rack mounting loosen the panel mounting screws and remove the front panel and chassis complete from the cabinet. Then mount on rack by means of the slots at the sides of the panel.

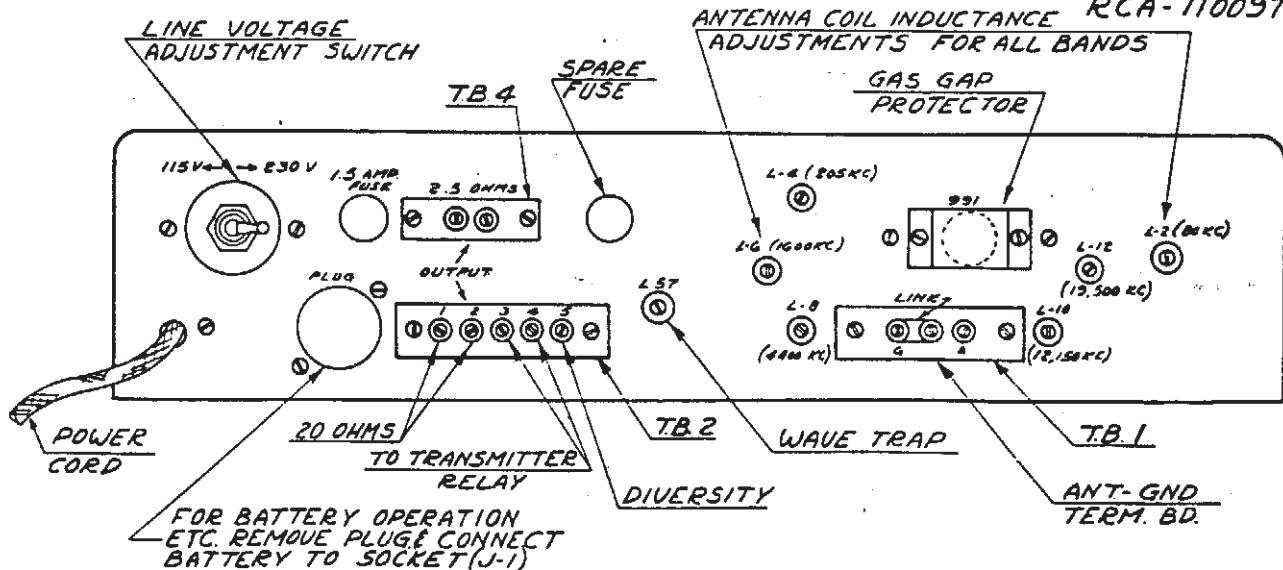


Figure 3.—General Purpose Communications Receiver—Rear Apron

## 5. OPERATION

5.1 Before attempting to operate the receiver, the information contained in this section should be thoroughly understood by the operator. The symbols on panel used to designate the various controls as shown in Figure 1, should be learned with respect to function, as described herein.

5.2 **The Antenna Trimmer:**—The center knob on the left is the Antenna Trimmer. Before tuning on any frequency range, it should be adjusted for maximum performance on the band. This control may be adjusted by tuning for maximum background noise.

Occasionally it is desired to test a signal that seems out of place, to see whether or not it is a fundamental signal or an "image". When doing this, if the maximum signal point coincides with the point of maximum background noise, the signal is a fundamental. If the control does not affect the signal strength, or if it is a maximum at some other point, it is an "image".

5.3 **The Main Tuning Dial** is on the left and consists of a disc with seven scales, one for each of the six bands and a log scale. The two low frequency bands are calibrated in kilocycles and the other four bands in megacycles.

5.4 **The Vernier Tuning Dial** is in the center and has a scale with arbitrary calibrations for exact tuning and log records of particular communication stations. It is used in conjunction with the log scale on the main tuning dial to give additional figures for logging.

5.5 **Power-Transmit-Receiver Switch:** — This is a four-position switch: Starting from fully counterclockwise these positions are:

1. Power off.
2. Transmit position which gives energized tube filaments, open plate circuits, and shorted terminals (for transmitter relay) on the speaker terminal board on the back of the chassis. (3. & 4. on T.B.-2.). Connect relay to these two terminals for transmitter operation. (See Figure 3.)
3. Normal reception.
4. CW reception — Beat frequency oscillator switched on.

5.6 **Selectivity Switch:** — This is a five-position switch and the band widths and control of selectivity are illustrated in the curves of Figure 12. The five positions are:

1. I-F band width for High Fidelity, modulated reception, — for "Stand-by" use.
2. I-F band width for normal modulated reception.
3. Crystal Filter in — for CW telegraph or sharp modulated signal reception.

4. Crystal Filter in -- for sharper CW telegraph reception.

5. Crystal Filter in — for sharpest CW telegraph reception.

5.7 **Noise Limiter—AVC Switch:**—This is a four-position switch and starting from the fully counterclockwise position these are:

1. AVC and NL out — Manual gain only — for CW — no interference.
2. NL on, AVC out — Manual gain — for CW with interference.
3. NL and AVC on — for Modulated Reception with interference.
4. AVC on, NL out — for Modulated Reception — no interference.

5.8 **R-F Gain Control:**—This continuously variable sensitivity control is for use in conjunction with the audio gain (Volume) control for all manual gain operation. With AVC on, it should as a rule be set to its fully clockwise position or may be turned to eliminate interference. For reception of strong CW signals, it must be retarded somewhat.

5.9 **Noise Limiter Control:**—This control sets the instrument for operation at the required percentage value of Noise Limitation. The fully clockwise position limits the noise interference to 100% modulation. As the knob is turned counterclockwise, the noise interference is limited to continuously lower percentages of modulation so that in the fully counterclockwise position the Noise Limiter is operative on any modulation whatsoever. Normally, the fully clockwise position will be used, but under extreme conditions of interference a balance point should be found for maximum intelligibility of signal with best modulation and least noise.

5.10 **Tone Control:**—This is a continuously variable control for reducing HF response. In the fully clockwise position the full tone is obtained and as turned counterclockwise, high tones are lessened. Set it to suit the particular tonal conditions for the signal being received.

5.11 **Beat Frequency Oscillator Control:**—This control is normally used for CW code signals. It should be adjusted to give the desired audio pitch after the signal has been accurately tuned.

5.12 **Tuning:**—For functions of controls see the foregoing paragraphs.

1. Turn receiver on and set the Power-Transmit-Receive Switch for the required type of operation.
2. Set Range Switch for band required.
3. Set Antenna Trimmer for maximum background noise.

4. Set Selectivity Switch for the required operating conditions — See Selectivity Curves — Figure 12.
5. Set Noise Limiter—AVC Switch for the required operating conditions.
6. Set R-F Gain Control fully clockwise.
7. Set Audio Gain Control about halfway.
8. Tune in the station.
9. Reset Audio Gain Control to give desired volume.
10. Reset Selectivity and Sensitivity (R-F Gain) Controls and Noise Limiter Control in accordance with requirements due to interference, station transmission, and other conditions.
11. Set Tone Control for preferred tone.
12. On CW (A-1) operation set Power-Transmit-Receive Switch to "Rec. CW" (position 4) and set BFO Control to give desired pitch. When a strong CW signal is being received, it is necessary to retard the R.F. Gain Control to reduce the volume.

13. If the receiver is subject to vibration, the tuning may be locked by turning clockwise the knurled screw directly beneath the tuning knob. Turning the screw moderately tight will lock the tuning.

5.13 Diversity Reception: — Provision is made to operate two or three of these receivers together for "diversity" reception. For this type of reception the A.V.C. circuits of the receivers are tied together. The receivers are operated on separate antennas, and the receiver receiving the strongest signal, thus generating the greatest A.V.C. voltage, dominates the other receivers. If the separate antennas are faced to the incoming signal at different angles, the good reception with minimum fading results.

Refer to Figure 3: Connect together the terminals, marked "Diversity" of the receivers, and equip each receiver with a separate antenna. Tune each receiver to the same station as explained in Section 5.12 above.

## 6. MAINTENANCE

6.1 This receiver should maintain its correct factory adjustments over a reasonably long period of time. Causes of trouble and the probable sequence of their development are outlined in the following paragraphs:

6.2 **Valves:**—A noticeable decrease in the sensitivity

of the receiver usually indicates worn out valves. If the sensitivity is low, remove and check the valves in a reliable valve tester or substitute new valves one at a time. See Schematic Diagram, Figure 11. Valve socket voltages are given in Table II.

TABLE No. II  
VALVE SOCKET VOLTAGES

| Valve             | Symbol | Plate Volt. | Screen Volt. | Cathode Volt. | Valve               | Symbol | Plate Volt. | Screen Volt. | Cathode Volt. |
|-------------------|--------|-------------|--------------|---------------|---------------------|--------|-------------|--------------|---------------|
| Type 6SG7         |        |             |              |               | Type 6H6            |        |             |              |               |
| 1st R-F Amplifier | 1      | 235         | 150          | 0             | 2nd Det. & AVC.     | 8      | —           | —            | —             |
| Type 6SG7         |        |             |              |               | Type 6H6            |        |             |              |               |
| 2nd R-F Amplifier | 2      | 235         | 150          | 0             | Noise Limiter       | 9      | —           | —            | —             |
| Type 6J5          |        |             |              |               | Type 6SJ7           |        |             |              |               |
| Oscillator        | 3      | 110         | —            | 0             | 1st Audio Amplifier | 10     | 83          | 34           | 0             |
| Type 6SA7         |        |             |              |               | Type 6V6GT/G        |        |             |              |               |
| 1st Detector      | 4      | 235         | 50           | 2             | Power output        | 11     | 256         | 240          | 0             |
| Type 6SG7         |        |             |              |               | Type 6J5            |        |             |              |               |
| 1st I-F Amplifier | 5      | 235         | 150          | 7             | B.F.O.              | 12     | 40          | —            | 0             |
| Type 6SG7         |        |             |              |               | Type VR-150         |        |             |              |               |
| 2nd I-F Amplifier | 6      | 235         | 150          | 1.3           | Voltage Regulator   | 13     | 150         | —            | 0             |
| Type 6SG7         |        |             |              |               | Type 5Y3GT/G        |        |             |              |               |
| 3rd I-F Amplifier | 7      | 235         | 150          | 3.1           | Rectifier           | 14     | —           | —            | 300           |

NOTE—These voltages all measured to chassis. Measured with a 1000 ohm per volt meter. Variations of  $\pm 20\%$  may be expected due to resistance tolerances, etc.

6.3 Range Switch:—A switch may operate defectively on certain positions after long periods of inoperation. Usually rotating the switch back and forth several times will clean the contacts and operation will become normal.

A bad range-switch contact is likely to cause a change in the sensitivity of the receiver, or the frequency of a received signal, as the switch is moved back and forth slightly in a certain frequency band position. A further check is to turn the switch off and on at one particular frequency band several times and note the apparent sensitivity of the receiver each time the switch comes into position. The sensitivity should be the same each time and may be adequately judged for this test by listening to the receiver background noise.

#### 6.4 Circuit Alignment:

**WARNING:—The Circuit Alignment of this receiver has been done very carefully at the factory, and re-alignment should not be attempted unless it has been definitely ascertained that the Circuits are out of alignment. It should be attempted only by skilled personnel. It must be performed in a test laboratory where proper test equipment is available.**

**All adjustments must be done very carefully and the exact procedure as outlined below must be followed.**

6.4-1 Alignment Tools:—Special tools for alignment of R-F and I-F circuits are provided. They are mounted in fuse clips on either side of the gang condenser cover, and are available after removing the large R-F unit cover. The shorter one of the two is for adjustment of all R-F and I-F coils, and the longer one is for adjustment of the plunger type trimmers. One end of this tool is for turning the lock nut on the trimmers and the other end has a hook for engaging in the hole in the end of the plungers. After adjustment, the lock nut should be securely tightened.

6.4-2 I-F Alignment:—The intermediate frequency is 735 kc. The only satisfactory method of I-F alignment is by means of a sweep oscillator and cathode ray oscilloscope. The I.F. circuits must be aligned at exactly 735 kc, and the frequency of the sweep oscillator carrier must be checked against a 735 kc. crystal oscillator. Make connections as in Table III (a), and follow the sequence as in Table III (b).

TABLE No. III (a)  
I.F. ALIGNMENT CONNECTIONS

|   |   |
|---|---|
| Oscillograph Connections .....                  | Vertical "HI" to Terminal C on last I-F Transformer (L-47, L-48), Vertical "LO" to chassis. |
| Dummy Antenna .....                             | Insert in series with generator output, 0.01 mfd.   |
| Connection of Generator Output Lead .....       | See Chart below.  |
| Connection of Generator Ground Lead .....       | To Chassis.   |
| Position of Range Switch .....                  | Band No. 1  |
| Position of Power Transmit-Receive Switch ..... | Position 3 (Rec. Mod.)  |
| Position of R-F Gain Control .....              | Fully clockwise.  |
| Position of Selectivity Switch .....            | Position 2.   |
| Position of Noise Limiter and AVC Switch .....  | Position 4 (AVC).   |

TABLE No. III (b)  
I.F. ALIGNMENT ADJUSTMENTS  
(Alignment Frequency is 735 Kc)

| Steps | Generator Connections | Slug Adjustments (See Fig. 4) |
|-------|-----------------------|-------------------------------|
| 1     | 6SG7 - 3rd I-F Grid   | L-47, L-48                    |
| 2     | 6SG7 - 2nd I-F Grid   | L-41, L-42, L-43, L-44        |
| 3     | 6SG7 - 1st I-F Grid   | L-35, L-36, L-37, L-38        |
| 4     | 6SA7 - 1st Det. Grid  | L-32, L-33                    |

| Trimmer Function    |
|---------------------|
| 4th I-F Transformer |
| 3rd I-F Transformer |
| 2nd I-F Transformer |
| 1st I-F Transformer |

6.4-3 Align each transformer to give a symmetrical flat-topped curve on the oscilloscope. Before performing step 4 above, set crystal phasing control C-75 at approximately one-half of its maximum capacity. This is ap-

proximately its final setting and changing it appreciably will slightly detune the first I-F transformer.

With Selectivity Switch in Position 2 the I-F band width is normal without over-

coupling in the transformers. With Selectivity Switch in Position 1, the second and third I-F Transformers are expanded and over-coupled. It is well in going through the alignment steps outlined above to check the I-F curves on the oscillograph screen with switch in Position 1 to see that the curves expand symmetrically.

**6.4-4 Adjustment of Crystal Phasing Control:**—This adjustment is best made by means of a signal generator and a high resistance sensitive DC voltmeter. Place Selectivity Switch in Position 3. Connect the generator to the grid of the 6SA7 first det., and the Voltmeter to Terminal C on last I-F transformer (L-47, L-48). Tune the generator to about 7 k.c. off I-F resonance and adjust the crystal phasing control C-75 for minimum response. If C-75 is adjusted much from its position as in Section 6.4-3, check alignment of first I.F. transformer.

**6.4-5 Adjustment of Crystal Load Circuit:**—Make connections as listed in Table III (a).

- (a) Place Selectivity switch in Position 3. Rock the signal generator frequency back and forth across the I-F resonant frequency and adjust the crystal load circuit trimmer L-34 or symmetrical round-top curve.
- (b) Place the Selectivity switch in Position 4. Rock the signal generator frequency and adjust trimmer C-81 for symmetrical curve.
- (c) Place the Selectivity switch in Position 5. Adjust trimmer C-80 rocking the signal generator as for (a) and (b) above.

The above three adjustments are very critical and must be made carefully to obtain symmetrical curves.

**6.4-6 Adjustment of Wave Trap:**—A wave trap is connected across the No. 3 band, first R.F. primary to increase the rejection of I-F signal frequencies. With the range switch on Position 3, apply a modulated I-F signal to the antenna and ground terminals. Adjust the wave trap trimmer L-57 (See Fig. 3) for minimum output. The wave trap should be adjusted before the final R-F alignment on No. 3 band, or the R.F. coil alignment may be affected.

**6.4-7 R-F Alignment:**—A signal generator covering a range from 70 to 550 kc and 1.5 to 30 megacycles, and an output volt-

meter, are required. It is desirable to connect a speaker across the output terminals. The output voltmeter should then be connected across the speaker voice coil. The output impedance is 2.5 ohms. Remove the cover from over the R-F unit by loosening the four knurled screws and lifting off.

Refer to Figures 3 and 4. Make connections as per Table IV (a). Align the R.F. circuits carefully, following the procedure as indicated in Table IV (b). Always align for maximum output. A correctly aligned receiver should have performance equivalent to that described in Section 3. Replace cover after alignment is completed.

**6.4-8 Adjustment of Beat Frequency Oscillator:**—Tune in a signal either R-F or I-F to exact resonance with Power-Transmit-Receive Switch at "Rec. Mod" (Fig. 1.). Turn on beat frequency oscillator by turning switch to "Rec. CW". If zero beat does not fall within the range of the BFO control, adjust BFO Trimmer L-22 (see Fig. 4) until zero beat occurs at the mid-point setting of the BFO control.

## 6.5 Mechanical Construction:

**6.5-1** The receiver has been designed to be very rugged so that it will stand up under severe conditions of use, and yet have all parts available for easy replacement. All component parts such as transformers, chokes, filter and by-pass capacitors, etc., are mounted with screws and nuts rather than with rivets. All wiring other than that involving high frequency circuits is made up in the form of a laced cable so that no loose leads are left floating which might cause damage or change capacity to various portions of the circuit. The tuning condenser is mounted so as to be rigid with respect to the tuning unit, and yet is flexible with respect to the chassis. This prevents distortion of the chassis from having any appreciable effect on the stability of the oscillator.

**6.5-2** The R-F unit which consists of the tuning condenser, tuning unit, range switch, and all of the R-F and oscillator coils and trimmers, is mounted on a separate base which bolts to the main base. The various coils and trimmers on this base may be easily replaced by means of a single nut which screws on the individual mounting bushings. However if a major repair is to

(Continued on page 14)

TABLE No. IV (a)  
R.F. ALIGNMENT CONNECTIONS

|   |                           |
|---|---------------------------|
| Output Meter Connections                  | Across speaker voice coil |
| Dummy Antenna                             | See Table IV (b) below    |
| Generator Modulation                      | 30% at 400 cycles         |
| Position of Tone Control                  | Fully clockwise           |
| Position of Antenna Trimmer               | See Table IV (b) below    |
| Position of Power-Transmit-Receive Switch | Position 3 (Rec. Mod.)    |
| Position of Range Switch                  | See Table IV (b) below    |
| Position of R-F Gain Control              | Retard to reduce noise    |
| Position of Audio Gain Control            | Fully clockwise           |
| Position of Noise Limiter and AVC Switch  | Position 1 (Manual)       |
| Position of Selectivity Switch            | Position 2                |

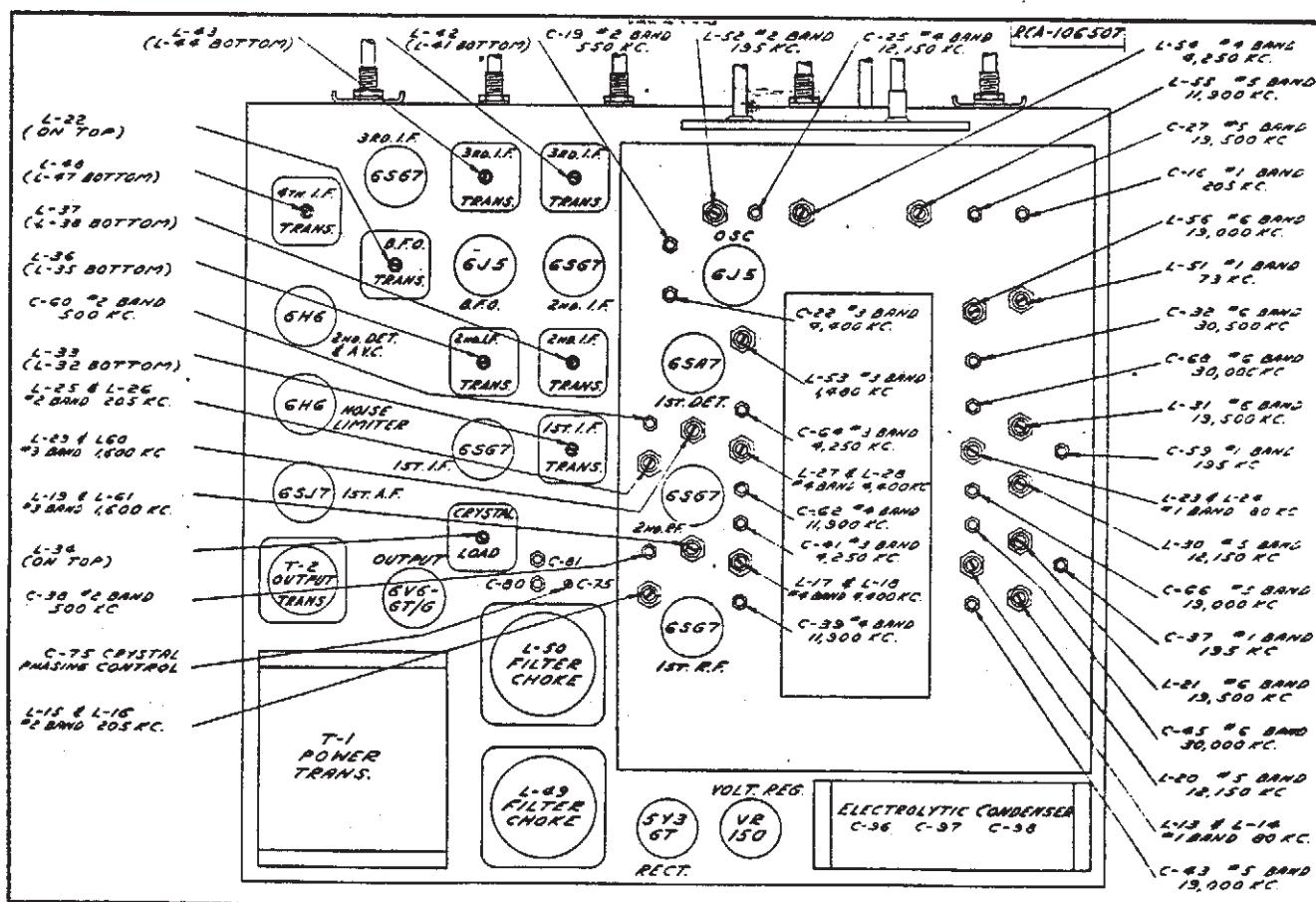


Figure 4.—General Purpose Communications Receiver—Alignment Layout.

TABLE No. IV (b)  
R.F. ALIGNMENT ADJUSTMENTS

| Oper-<br>ation<br>No.   | Range<br>Switch<br>Posi-<br>tion | Position of Dial,<br>and Generator<br>Frequency | Dummy<br>Antenna | Position of<br>Antenna<br>Trimmer | Trimmer Adjust-<br>ments for Max.<br>Peak Output<br>(See Figures<br>3 and 4) | Trimmer<br>Function        |
|---|----------------------------------|---|------------------|-----------------------------------|--|----------------------------|
| 1   | 1                                | 74  | 700 mmf          | —                                 | L-51   | Low end osc.               |
| 2   | 1                                | 200   | 700 mmf          | —                                 | C-16   | High end osc.              |
| 3 Repeat 1 and 2 until end frequencies are as indicated.              |                                  |   |                  |                                   |  |                            |
| 4   | 1                                | 195   | 700 mmf          | Max. output                       | C-37, C-59   | 1st & 2nd R-F              |
| 5   | 1                                | 80  | 700 mmf          | Untouched                         | L-2, L-14, L-24  | Ant. & 1st and<br>2nd R/F  |
| 6 Repeat 4 and 5 until circuits remain in alignment over the band.    |                                  |   |                  |                                   |  |                            |
| 7   | 2                                | 200   | 700 mmf          | —                                 | L-52   | Low end osc.               |
| 8   | 2                                | 545   | 700 mmf          | —                                 | C-19   | High end osc.              |
| 9 Repeat 7 and 8 until end frequencies are as indicated.              |                                  |   |                  |                                   |  |                            |
| 10  | 2                                | 500   | 700 mmf          | Max. output                       | C-38, C-60   | 1st & 2nd R-F              |
| 11  | 2                                | 205   | 700 mmf          | Untouched                         | L-4, L-16, L-26  | Ant. & 1st and<br>2nd R-F. |
| 12 Repeat 10 and 11 until circuits remain in alignment over the band. |                                  |   |                  |                                   |  |                            |
| 13  | 3                                | 1,500   | 200 ohms         | —                                 | L-53   | Low end osc.               |
| 14  | 3                                | 4,350   | 200 ohms         | —                                 | C-22   | High end osc.              |
| 15 Repeat 13 and 14 until end frequencies are as indicated.           |                                  |   |                  |                                   |  |                            |
| 16  | 3                                | 4,250   | 200 ohms         | Max. output                       | C-41, C-64   | 1st & 2nd R-F              |
| 17  | 3                                | 1,600   | 200 ohms         | Untouched                         | L-6, L-19, L-29  | Ant. & 1st and<br>2nd R-F. |
| 18 Repeat 16 and 17 until circuits remain in alignment over the band. |                                  |   |                  |                                   |  |                            |
| 19  | 4                                | 4,300   | 200 ohms         | —                                 | L-54   | Low end osc.               |
| 20  | 4                                | 12,100  | 200 ohms         | —                                 | C-25   | High end osc.              |
| 21 Repeat 19 and 20 until end frequencies are as indicated.           |                                  |   |                  |                                   |  |                            |
| 22  | 4                                | 11,900  | 200 ohms         | Max. output                       | C-39, C-62   | 1st & 2nd R-F              |
| 23  | 4                                | 4,400   | 200 ohms         | Untouched                         | L-8, L-18, L-28  | Ant. & 1st and<br>2nd R-F. |
| 24 Repeat 22 and 23 until circuits remain in alignment over the band. |                                  |   |                  |                                   |  |                            |
| *25   | 5                                | 12,000  | 200 ohms         | —                                 | L-55   | Low-end osc.               |
| 26  | 5                                | 19,400  | 200 ohms         | —                                 | C-27   | High end osc.              |
| 27 Repeat 25 and 26 until end frequencies are as indicated.           |                                  |   |                  |                                   |  |                            |
| 28  | 5                                | 19,000  | 200 ohms         | Max. output                       | C-43, C-66   | 1st & 2nd R-F              |
| 29  | 5                                | 12,150  | 200 ohms         | Untouched                         | L-10, L-20, L-30   | Ant. & 1st and<br>2nd R-F. |
| 30 Repeat 28 and 29 until circuits remain in alignment over the band. |                                  |   |                  |                                   |  |                            |
| *31   | 6                                | 19,100  | 200 ohms         | —                                 | L-56   | Low end osc.               |
| 32  | 6                                | 30,400  | 200 ohms         | —                                 | C-32   | High end osc.              |
| 33 Repeat 31 and 32 until end frequencies are as indicated.           |                                  |   |                  |                                   |  |                            |
| 34  | 6                                | 30,000  | 200 ohms         | Max. output                       | C-45, C-68   | 1st & 2nd R-F              |
| 35  | 6                                | 19,500  | 200 ohms         | Untouched                         | L-12, L-21, L-31   | Ant. & 1st and<br>2nd R-F. |
| 36 Repeat 34 and 35 until circuits remain in alignment over the band. |                                  |   |                  |                                   |  |                            |

\*NOTE: On all coils, except Nos. 5 and 6 band oscillator coils (L-55, and L-56) turning the core clockwise increases the inductance. On the above two mentioned coils, turning the core clockwise decreases the inductance.

On all bands the oscillator tracks above the signal frequency.

If more than one peak is obtainable on oscillator, use the higher frequency peak.

## 6.5 Mechanical Construction (Continued from page 11)

be made such as replacement of the range switch, it is necessary first to remove the complete R-F unit from the receiver. To do this the following procedure should be observed:

- (a) Remove the chassis and panel from the cabinet by removing the four panel mounting screws and sliding the chassis forward out of the cabinet.
- (b) Remove the knobs by means of the small wrench held in the spring clip on the right hand side of the chassis. This wrench fits the set screws in all knobs except the main tuning knob. For this knob use an ordinary small screw driver.
- (c) Remove the panel by removing the eight nuts with which it is held to the support brackets.
- (d) Remove the large cover from the top of the R-F unit, by removing the four knurled nuts with which it is supported.
- (e) Remove the small cover from the tuning condenser, by removing the eight knurled nuts with which it is supported.
- (f) Remove the dial light sockets where they are clipped on to the tuning unit.
- (g) Remove the antenna trimmer shaft extension by loosening set screw in coupling with same wrench as used above for knobs.
- (h) Remove support bracket from flywheel tuning shaft.
- (i) Remove main dial, vernier dial, and

flywheel by loosening set screws with same wrench as used for knobs.

- (j) Disconnect the eight leads which connect the R-F unit to the main base. These leads are as follows:—
  - (i) Two on the antenna terminal board (blue and black).
  - (ii) One on number 7 pin of the 6V6GT/G output valve (brown).
  - (iii) One on terminal E of the crystal load circuit (yellow).
  - (iv) One on terminal E of the first I-F Transformer (red).
  - (v) One on terminal F of the first I-F Transformer (blue).
  - (vi) One on pin 6 of the second I-F valve (green).
  - (vii) One on pin 7 of the second I-F valve (brown).
- In addition, the by-pass condenser which grounds to the R-F unit near the second I-F valve must be disconnected.
- (k) Remove eleven screws which hold R-F unit to main base. Three of these are on under side of chassis along the front edge. The other eight are removed from the top.
- (l) The R-F unit may now be removed from the bottom by lifting up first the rear of the R-F unit and sliding it back out of the opening. After the unit has been repaired it may be reassembled by following the above procedure in reverse order.





**TABLE NUMBER V**  
**PARTS LIST**  
**GENERAL PURPOSE COMMUNICATION RECEIVER**

| Schematic Reference | Nomenclature | DESCRIPTION  | RCA Victor Mfg. No. | Qty. of Naval Spares | R.C.A.P. Ref. No. |
|---------------------|--------------|--|---------------------|----------------------|-------------------|
| A-1                 | Crystal      | 735 KC Crystal & Case.....   | MI-19454-2          | 1                    | 10X/735           |
| C-1                 | Condenser    | 4700 mmfd. $\pm$ 10%, 500V, (mica)   | 102899-507          | 3                    | 10C/8102          |
| C-2                 | Condenser    | 3-25 mmfd. 5 Plate Antenna Trimmer   | 253132-2            | 1                    | 10C/8121          |
| *C-3                | Condenser    | 10-410 mmfd.   | 90581-341           | 2                    | 10C/8086          |
| C-4                 | Condenser    | 220 mmfd. $\pm$ 10%, 500V, Temp. Coeff. — .00075 mmf./mmf./°C                  | 90581-309           | 1                    | 10C/8087          |
| C-5                 | Condenser    | Same as C-4.   | 90581-327           |                      |                   |
| *C-6                | Condenser    | 8-88 mmfd.   |                     |                      |                   |
| C-9                 | Condenser    | 10 mmfd. $\pm$ 10%, 500V, Temp. Coeff. — .00075 mmf./mmf./°C                   |                     |                      |                   |
| C-11                | Condenser    | Same as C-1.   |                     |                      |                   |
| C-12                | Condenser    | 56 mmfd. $\pm$ 10%, 500V, Temp. Coeff. — .00075 mmf./mmf./°C<br>(inc. in L-57) |                     |                      |                   |
| C-13                | Condenser    | Same as C-4.   |                     |                      |                   |
| C-14                | Condenser    | Same as C-4.   |                     |                      |                   |
| C-15                | Condenser    | 47 mmfd. $\pm$ 5%, 500V, Temp. Coeff. — .00015 mmf./mmf./°C                    | 90577-225           | 1                    | 10C/8093          |
| C-16                | Condenser    | Air trimmer 2-20 mmfd.   | 95534-502           | 2                    | 10C/8118          |
| C-17                | Condenser    | 68 mmfd. $\pm$ 5%, 500V, (mica)  | 720538-39           | 1                    | 10C/8111          |
| C-18                | Condenser    | 39 mmfd. $\pm$ 5%, 500V, Temp. Coeff. — .00012 mmf./mmf./°C                    | 90574-223           | 1                    | 10C/8092          |
| C-19                | Condenser    | Air trimmer 2-12 mmfd.   | 95534-503           | 1                    | 10C/8119          |
| C-20                | Condenser    | 240 mmfd. $\pm$ 5%, 500V, (mica)   | 720538-32           | 1                    | 10C/8105          |
| C-21                | Condenser    | 15 mmfd. $\pm$ 5%, 500V, Temp. Coeff. — .00047 mmf./mmf./°C                    | 90580-213           | 1                    | 10C/8094          |
| C-22                | Condenser    | Air Trimmer — Same as C-19.  | 721133-4            | 1                    | 10C/8114          |
| C-23                | Condenser    | 1000 mmfd. $\pm$ 5%, 375V, (mica)  | 721133-24           | 1                    | 10C/8116          |
| C-24                | Condenser    | 2500 mmfd. $\pm$ 5%, 500V, (mica)  |                     |                      |                   |
| C-25                | Condenser    | Air Trimmer — Same as C-19   |                     |                      |                   |
| C-26                | Condenser    | Same as C-21.  |                     |                      |                   |
| C-27                | Condenser    | Air Trimmer 2-25 mmfd.   | 95534-501           | 2                    | 10C/8120          |
| C-28                | Condenser    | 3000 mmfd. $\pm$ 5%, 500V, (mica)  | 721133-12           | 1                    | 10C/8115          |
| C-29                | Condenser    | 30 mmfd. $\pm$ 5%, 500V, Temp. Coeff. — .00047 mmf./mmf./°C                    | 90580-220           | 1                    | 10C/8099          |
| C-30                | Condenser    | 3900 mmfd. $\pm$ 5%, 500V, (mica)  | 720538-46           | 1                    | 10C/8112          |
| C-31                | Condenser    | 39 mmfd. $\pm$ 5%, 500V, Temp. Coeff. — .00047 mmf./mmf./°C                    | 90580-223           | 1                    | 10C/8098          |
| C-32                | Condenser    | Air Trimmer — Same as C-27.  |                     |                      |                   |
| C-33                | Condenser    | Same as C-1.   |                     |                      |                   |
| C-34                | Condenser    | Same as C-4.   |                     |                      |                   |
| *C-35               | Condenser    | 10-370 mmfd.   | 98041-1             | 1                    | 10C/8100          |
| C-36                | Condenser    | 1500 mmfd. $\pm$ 20%, 600V, (mica)   |                     |                      |                   |
| C-37                | Condenser    | Air Trimmer — Same as C-16.  |                     |                      |                   |
| C-38                | Condenser    | Air Trimmer — Same as C-16.  |                     |                      |                   |
| C-39                | Condenser    | Air Trimmer — Same as C-16.  |                     |                      |                   |
| *C-40               | Condenser    | 8-128 mmfd.  |                     |                      |                   |
| C-41                | Condenser    | Air Trimmer — Same as C-16.  |                     |                      |                   |
| C-43                | Condenser    | Air Trimmer — Same as C-27.  |                     |                      |                   |
| C-44                | Condenser    | 6.8 mmfd. $\pm$ 10%, 500V, Temp. Coeff. — .00075 mmf./mmf./°C                  | 90581-305           | 1                    | 10C/8088          |
| C-45                | Condenser    | Air Trimmer — Same as C-27.  |                     |                      |                   |
| C-46                | Condenser    | Same as C-21.  |                     |                      |                   |
| C-47                | Condenser    | Same as C-1.   |                     |                      |                   |
| C-48                | Condenser    | .05 mfd., 400V, (oil filled) (C-48, C-109, C-110, in one assembly)             | 98034-1             |                      | 10C/8083          |
| *C-49               | Condenser    | 8-128 mmfd.  |                     |                      |                   |
| *C-50               | Condenser    | 10-370 mmfd.   |                     |                      |                   |
| C-51                | Condenser    | Same as C-1.   |                     |                      |                   |
| C-52                | Condenser    | Same as C-1.   |                     |                      |                   |
| C-53                | Condenser    | Same as C-44.  |                     |                      |                   |
| C-54                | Condenser    | Same as C-1.   |                     |                      |                   |
| C-55                | Condenser    | 390 mmfd. $\pm$ 5%, 500V, (mica) (included in T-3).                            | 86079-505           |                      |                   |
| C-56                | Condenser    | .01 mfd., 400V, (oil filled) (C-56, C-76, C-93, in one assembly)               | 98034-4             | 1                    | 10C/8084          |
| C-57                | Condenser    | Same as C-4.   |                     |                      |                   |
| C-58                | Condenser    | Same as C-36.  |                     |                      |                   |
| C-59                | Condenser    | Air Trimmer — Same as C-16.  |                     |                      |                   |
| C-60                | Condenser    | Air Trimmer — Same as C-16.  |                     |                      |                   |
| C-61                | Condenser    | Same as C-9.   |                     |                      |                   |
| C-62                | Condenser    | Air Trimmer — Same as C-16.  |                     |                      |                   |
| C-63                | Condenser    | Same as C-1.   |                     |                      |                   |
| C-64                | Condenser    | Air Trimmer — Same as C-16.  |                     |                      |                   |
| C-66                | Condenser    | Air Trimmer — Same as C-27.  |                     |                      |                   |
| C-67                | Condenser    | 22 mmfd. $\pm$ 10%, 500V, Temp. Coeff. — .00075 mmf./mmf./°C                   | 90581-317           | 1                    | 10C/8090          |
| C-68                | Condenser    | Air Trimmer — Same as C-27.  |                     |                      |                   |
| C-69                | Condenser    | Same as C-46.  |                     |                      |                   |
| *C-70               | Condenser    | 8-128 mmfd.  |                     |                      |                   |
| C-71                | Condenser    | 0.1 mfd., 400V, (oil filled) (C-71, C-95, C-102, in one assembly)              | 98034-2             | 1                    | 10C/8085          |
| C-72                | Condenser    | Same as C-55 (included in T-3).  |                     |                      |                   |
| C-73                | Condenser    | 100 mmfd. $\pm$ 5%, 500V, (included in T-4) (mica)                             | 86034-522           |                      |                   |
| C-75                | Condenser    | 3-15 mmfd. Crystal Phasing Trimmer   | 253132-6            | 1                    | 10C/8123          |
| C-76                | Condenser    | .01 mfd., 400V, (see C-56)   |                     |                      |                   |

TABLE NUMBER V — PARTS LIST (Continued)

| Schematic Reference  | Nomenclature | DESCRIPTION  | RCA Victor Mfg. No. | Qty. of Naval Spares | R.C.A.F. Ref. No. |
|--|--------------|--|---------------------|----------------------|-------------------|
| *C-77  | Condenser    | 10-370 mmfd.   |                     |                      |                   |
| C-78   | Condenser    | Same as C-55 (included in T-5)   | 98034-2             |                      | 10C/8085          |
| C-79   | Condenser    | 0.1 mfd., 400V. (oil filled) (C-79, C-84, C-92, in one assembly)             |                     |                      |                   |
| C-80   | Condenser    | Air Trimmer — Same as C-16   |                     |                      |                   |
| C-81   | Condenser    | Air Trimmer — Same as C-16   |                     |                      |                   |
| C-82   | Condenser    | 56 mmfd. $\pm$ 5%, 500V, (mica) (included in T-10)                           | 86034-517           |                      |                   |
| C-83   | Condenser    | Same as C-1  |                     |                      |                   |
| C-84   | Condenser    | 0.1 mfd., 400V, (See C-79)   | 86034-524           |                      |                   |
| C-85   | Condenser    | 330 mmfd. $\pm$ 20%, 500V, (mica) (included in T-10)                         | 253132-7            | 1                    | 10C/8124          |
| C-86   | Condenser    | 3-15 mmfd. B.F.Osc. Panel Trimmer  | 86034-548           |                      |                   |
| C-87   | Condenser    | 1500 mmfd. $\pm$ 10%, 500V, (mica) (included in T-10)                        |                     |                      |                   |
| C-88   | Condenser    | Same as C-82 (included in T-10)  |                     |                      |                   |
| C-89   | Condenser    | Same as C-55 (included in T-5)   |                     |                      |                   |
| C-90   | Condenser    | Same as C-55 (included in T-6)   |                     |                      |                   |
| C-91   | Condenser    | Same as C-55 (included in T-6)   |                     |                      |                   |
| C-92   | Condenser    | 0.1 mfd., 400V, (See C-79)   |                     |                      |                   |
| C-93   | Condenser    | 0.1 mfd., 400V, (See C-56)   |                     |                      |                   |
| C-94   | Condenser    | Same as C-55 (included in T-7)   |                     |                      |                   |
| C-95   | Condenser    | 0.1 mfd., 400V, (See C-71)   |                     |                      |                   |
| C-96   | Condenser    | 4 mfd., $\pm$ 20% — 10%, Dry Electrolytic (C-96, C-97, C-98 in one assembly) | 72026-515           | 1                    | 10C/8081          |
| C-97   | Condenser    | 4 mfd., $\pm$ 20% — 10%, Dry Electrolytic (See C-96)                         |                     |                      |                   |
| C-98   | Condenser    | 4 mfd., $\pm$ 20% — 10%, Dry Electrolytic (See C-96)                         | 98034-3             | 1                    | 10C/8082          |
| C-99   | Condenser    | .25 mfd., 400V, (oil filled) (C-99, C-112, C-113, in one assembly)           |                     |                      |                   |
| C-100  | Condenser    | Same as C-55 (included in T-7)   |                     |                      |                   |
| C-101  | Condenser    | Same as C-55 (included in T-8)   |                     |                      |                   |
| C-102  | Condenser    | 0.1 mfd., 400V, (See C-71)   |                     |                      |                   |
| C-103  | Condenser    | .05 mfd., 400V, (oil filled) (C-103, C-106, C-107, in one assembly)          | 98034-1             | 1                    | 10C/8083          |
| C-104  | Condenser    | Same as C-55 (included in T-8)   | 100404-528          | 1                    | 10C/8101          |
| C-105  | Condenser    | .560 mmfd. $\pm$ 10%, 500V, (mica)   |                     |                      |                   |
| C-106  | Condenser    | .05 mfd., 400V, (See C-103)  |                     |                      |                   |
| C-107  | Condenser    | .05 mfd., 400V, (See C-103)  |                     |                      |                   |
| C-108  | Condenser    | Same as C-73 (included in T-9)   |                     |                      |                   |
| C-109  | Condenser    | .05 mfd., 400V, (See C-48)   |                     |                      |                   |
| C-110  | Condenser    | .05 mfd., 400V, (See C-48)   | 102899-508          | 1                    | 10C/8103          |
| C-111  | Condenser    | 2700 mmfd. $\pm$ 10%, 500V, (mica)   |                     |                      |                   |
| C-112  | Condenser    | .25 mfd., 400V, (See C-99)   |                     |                      |                   |
| C-113  | Condenser    | .25 mfd., 400V, (See C-99)   |                     |                      |                   |
| C-114  | Condenser    | Same as C-73 (included in T-9)   |                     |                      |                   |
| C-115  | Condenser    | 180 mmfd. $\pm$ 5%, 500V, (mica) (included in T-9)                           | 86034-513           |                      |                   |
| C-116  | Condenser    | Same as C-111  |                     |                      |                   |
| C-117  | Condenser    | Same as C-1  |                     |                      |                   |
| C-118  | Condenser    | Same as C-1  |                     |                      |                   |
| C-119  | Condenser    | .003 mfd. $\pm$ 10%, 1000V, (oil filled)                                     | 251248-3            | 1                    | 10C/8117          |
| C-121  | Condenser    | Same as C-1  |                     |                      |                   |
| C-122  | Condenser    | Same as C-1  |                     |                      |                   |
| C-123  | Condenser    | Same as C-4  |                     |                      |                   |
| C-124  | Condenser    | 150 mmfd. $\pm$ 10%, 500V, Temp. Coeff. — .00075 mmf./mmf./°C                | 90581-337           | 1                    | 10C/8091          |
| C-125  | Condenser    | 650 mmfd. $\pm$ 10%, 300V, (mica)  | 720592-13           | 1                    | 10C/8113          |
| C-126  | Condenser    | Same as C-125  |                     |                      |                   |
| C-127  | Condenser    | Same as C-20   |                     |                      |                   |
| C-128  | Condenser    | 285 mmfd. $\pm$ 5%, 500V, (mica)   | 720538-31           | 1                    | 10C/8104          |
| C-129  | Condenser    | Same as C-9  |                     |                      |                   |
| C-130  | Condenser    | Same as C-105  |                     |                      |                   |
| * NOTE: C-3, C-6, C-35, C-40, C-50, C-70, C-77, all parts of |              | Variable Condenser Assembly  | 92444-502           |                      | 10C/8122          |
|  |              | 1.5 amp, 3 A G. in AC Line   | 55544-2             | 8                    | 5C/1705           |
|  |              | Connections for battery operations   | 421395-509          | 2                    | 10H/8168          |
|  |              | Jack, phone  | 98965-3             |                      | 10H/8185          |
|  |              | Antenna Prim. 73-205 KC (L-1 & L-2 on same coil form)                        | 253674-506          |                      | 10C/8142          |
|  |              | Antenna Sec. 73-205 KC (See L-1)   |                     |                      |                   |
|  |              | Antenna Prim. 195-550 KC (L-3 & L-4 on same coil form)                       | 253674-507          |                      | 10C/8143          |
|  |              | Antenna Sec. 195-550 KC (See L-3)  |                     |                      |                   |
|  |              | Antenna Prim. 1480-4400 KC (L-5 & L-6 on same coil form)                     | 95521-501           |                      | 10C/8144          |
|  |              | Antenna Sec. 1480-4400 KC (See L-5)  |                     |                      |                   |
|  |              | Antenna Prim. 4250-12150 KC (L-7 & L-8 on same coil form)                    | 95521-502           |                      | 10C/8145          |
|  |              | Antenna Sec. 4250-12150 KC (See L-7)   |                     |                      |                   |
|  |              | Antenna Prim. 11900-19500 KC (L-9 & L-10 on same coil form)                  | 95521-503           |                      | 10C/8146          |
|  |              | Antenna Sec. 11900-19500 KC (See L-9)  |                     |                      |                   |
|  |              | Antenna Prim. 19000-30500 KC (L-11 & L-12 on same coil form)                 | 253671-505          |                      | 10C/8147          |
|  |              | Antenna Sec. 19000-30500 KC (See L-11)                                       |                     |                      |                   |
|  |              | 1st R.F. Prim. 73-205 KC (L-13 & L-14 on same coil form)                     | 253674-501          |                      | 10C/8148          |
|  |              | 1st R.F. Sec. 73-205 KC (See L-13)   |                     |                      |                   |
|  |              | 1st R.F. Prim. 195-550 KC (L-15 & L-16 on same coil form)                    | 253674-502          |                      | 10C/8149          |
|  |              | 1st R.F. Sec. 195-550 KC (See L-15)  |                     |                      |                   |

TABLE NUMBER V — PARTS LIST (Continued)

| Schematic Reference | Nomenclature | DESCRIPTION  | RCA Victor<br>Mfg. No. | Qty. of<br>Naval<br>Spares | R.C.A.F.<br>Ref. No. |
|---------------------|--------------|--|------------------------|----------------------------|----------------------|
| L-17                | Coil         | 1st R.F. Prim. 4250-12150 KC (L-17 & L-18 on same coil form) | 253674-508             |                            | 10C/8150             |
| L-18                | Coil         | 1st R.F. Sec. 4250-12150 KC (See L-17)                       |                        |                            |                      |
| L-19                | Coil         | 1st R.F. Sec. 1480-4480 KC (L-19 & L-61 on same coil form)   | 95520-503              |                            | 10C/8151             |
| L-20                | Coil         | 1st R.F. Coil 11900-19500 KC                                 | 253671-501             |                            | 10C/8152             |
| L-21                | Coil         | 1st R.F. Coil 19000-30500 KC                                 | 253671-502             |                            | 10C/8153             |
| L-22                | Coil         | B.F. Osc. Coil (See T-10)                                    |                        |                            |                      |
| L-23                | Coil         | 2nd R.F. Prim. 73-205 KC (L-23 & L-24 on same coil form)     | 253674-501             |                            | 10C/8148             |
| L-24                | Coil         | 2nd R.F. Sec. 73-205 KC (See L-23)                           |                        |                            |                      |
| L-25                | Coil         | 2nd R.F. Prim. 195-550 KC (L-25 & L-26 on same coil form)    | 253674-502             |                            | 10C/8149             |
| L-26                | Coil         | 2nd R.F. Sec. 195-550 KC (See L-25)                          |                        |                            |                      |
| L-27                | Coil         | 2nd R.F. Prim. 4250-12150 KC (L-27 & L-28 on same coil form) | 253674-508             |                            | 10C/8150             |
| L-28                | Coil         | 2nd R.F. Sec. 4250-12150 KC (See L-27)                       |                        |                            |                      |
| L-29                | Coil         | 2nd R.F. Sec. 1480-4400 KC (L-28 & L-60 on same coil form)   | 95520-503              |                            | 10C/8151             |
| L-30                | Coil         | 2nd R.F. Coil 11900-19500 KC                                 | 253671-501             |                            | 10C/8152             |
| L-31                | Coil         | 2nd R.F. Coil 19000-30500 KC                                 | 253671-502             |                            | 10C/8153             |
| L-32                | Coil         | I.F. Trans. Prim. (See T-3)                                  |                        |                            |                      |
| L-33                | Coil         | I.F. Trans. Sec. (See T-3)                                   |                        |                            |                      |
| L-34                | Coil         | Crystal Selectivity Coil (See T-4)                           |                        |                            |                      |
| L-35                | Coil         | I.F. Trans. Prim. (See T-5)                                  |                        |                            |                      |
| L-36                | Coil         | I.F. Trans. Sec. (See T-5)                                   |                        |                            |                      |
| L-37                | Coil         | I.F. Trans. Prim. (See T-6)                                  |                        |                            |                      |
| L-38                | Coil         | I.F. Trans. Sec. (See T-6)                                   |                        |                            |                      |
| L-39                | Coil         | Variable Selectivity Coil (See T-5)                          |                        |                            |                      |
| L-40                | Coil         | Variable Selectivity Coil (See T-6)                          |                        |                            |                      |
| L-41                | Coil         | I.F. Trans. Prim. (See T-7)                                  |                        |                            |                      |
| L-42                | Coil         | I.F. Trans. Sec. (See T-7)                                   |                        |                            |                      |
| L-43                | Coil         | I.F. Trans. Prim. (See T-8)                                  |                        |                            |                      |
| L-44                | Coil         | I.F. Trans. Sec. (See T-8)                                   |                        |                            |                      |
| L-45                | Coil         | Variable Selectivity Coil (See T-7)                          |                        |                            |                      |
| L-46                | Coil         | Variable Selectivity Coil (See T-8)                          |                        |                            |                      |
| L-47                | Coil         | I.F. Trans. Prim. (See T-9)                                  |                        |                            |                      |
| L-48                | Coil         | I.F. Trans. Sec. (See T-9)                                   |                        |                            |                      |
| L-49                | Coil         | Filter Choke   | 901433-501             | 1                          | 10C 8154             |
| L-50                | Coil         | Filter Choke — Same as L-49                                  |                        |                            |                      |
| L-51                | Coil         | Oscillator 73-205 KC   | 253674-503             |                            | 10C/8155             |
| L-52                | Coil         | Oscillator 195-550 KC  | 253674-504             |                            | 10C/8156             |
| L-53                | Coil         | Oscillator 1480-4400 KC                                      | 95520-506              |                            | 10C/8157             |
| L-54                | Coil         | Oscillator 4250-12150 KC                                     | 253674-505             |                            | 10C/8158             |
| L-55                | Coil         | Oscillator 11900-19500 KC                                    | 253671-503             |                            | 10C/8159             |
| L-56                | Coil         | Oscillator 19000-30500 KC                                    | 253671-504             |                            | 10C/8160             |
| L-57                | Coil         | I.F. Wave Trap (includes C-12)                               | 253481-502             | 1                          | 10C 8161             |
| L-60                | Coil         | 2nd R.F. Prim. 1480-4400 KC (See L-29)                       |                        |                            |                      |
| L-61                | Coil         | 1st R.F. Prim. 1480-4400 KC (See L-19)                       |                        |                            |                      |
| P-1                 | Plug         | AC Power Plug & Cord   | 811638-1               |                            |                      |
| P-2                 | Plug         | in J-1 for normal AC operation                               | 99895-501              | 1                          | 10H 8184             |
| R-1                 | Resistor     | 33,000 ohms $\pm$ 10% 1/2 W.                                 | 850981-80              | 1                          | 10C 8134             |
| R-2                 | Resistor     | 2.2 meg. $\pm$ 20% 1/2 W.                                    | 850981-33              | 1                          | 10C 8131             |
| R-3                 | Resistor     | 1,000 ohms $\pm$ 10% 1/2 W.                                  | 82283-62               | 2                          | 10C/1673             |
| R-4                 | Resistor     | 100,000 ohms $\pm$ 10% 1/2 W.                                | 82283-86               | 1                          | 10C/3281             |
| R-5                 | Resistor     | 1.0 meg. $\pm$ 20% 1/2 W.                                    | 82283-31               | 1                          | 10C/5750             |
| R-6                 | Resistor     | Same as R-1  |                        |                            |                      |
| R-7                 | Resistor     | 330 ohms $\pm$ 10% 1/2 W.                                    | 82283-56               | 1                          | 10C/7729             |
| R-9                 | Resistor     | Same as R-4  |                        |                            |                      |
| R-10                | Resistor     | Same as R-3  |                        |                            |                      |
| R-11                | Resistor     | 10,000 ohms $\pm$ 10% 1/2 W.                                 | 82283-74               | 1                          | 10C/1675             |
| R-12                | Resistor     | Same as R-3  |                        |                            |                      |
| R-13                | Resistor     | 560 ohms $\pm$ 10% 1/2 W.                                    | 850981-59              | 1                          | 10C/7259             |
| R-14                | Resistor     | Same as R-4  |                        |                            |                      |
| R-15                | Resistor     | 22,000 ohms $\pm$ 10% 1/2 W. (included in T-3)               | 82283-78               |                            |                      |
| R-16                | Resistor     | Same as R-3  |                        |                            |                      |
| R-17                | Resistor     | Same as R-7  |                        |                            |                      |
| R-19                | Resistor     | Same as R-1  |                        |                            |                      |
| R-20                | Resistor     | 100 ohms $\pm$ 10% 1/2 W.                                    | 82283-50               | 1                          | 10C/3260             |
| R-22                | Resistor     | Same as R-3  |                        |                            |                      |
| R-23                | Resistor     | 560,000 ohms $\pm$ 10% 1/2 W.                                | 82283-95               | 2                          | 10C/6688             |
| R-24                | Resistor     | 120,000 ohms $\pm$ 10% 1/2 W. (included in T-10)             | 82283-87               |                            |                      |
| R-25                | Resistor     | 47 ohms $\pm$ 10% 1/2 W.                                     | 82283-46               | 1                          | 10C/7747             |
| R-26                | Resistor     | Same as R-3  |                        |                            |                      |
| R-27                | Resistor     | Same as R-23   |                        |                            |                      |
| R-28                | Resistor     | Same as R-24 (included in T-10)                              |                        |                            |                      |
| R-29                | Resistor     | 47,000 ohms $\pm$ 10% 1/2 W. (included in T-10)              | 82283-82               |                            |                      |
| R-30                | Resistor     | 2,700 ohms $\pm$ 10% 4 W.                                    | 90497-3                | 1                          | 10C/8128             |
| R-31                | Resistor     | Same as R-3  |                        |                            |                      |
| R-32                | Resistor     | 390 ohms $\pm$ 10% 1/2 W.                                    | 850981-57              | 1                          | 10C/7282             |

TABLE NUMBER V — PARTS LIST (Continued)

| Schematic Reference | Nomenclature  | DESCRIPTION  | RCA Victor Mfg. No. | Qty. of Naval Spares | R.C.A.F. Ref. No. |
|---------------------|---------------|--|---------------------|----------------------|-------------------|
| R-33                | Resistor      | Same as R-2  |                     |                      |                   |
| R-34                | Resistor      | Same as R-3  |                     |                      |                   |
| R-35                | Resistor      | 680,000 ohms $\pm$ 10% 1/2 W.  |                     |                      |                   |
| R-36                | Resistor      | Same as R-2  |                     |                      |                   |
| R-37                | Resistor      | 1.0 meg. $\pm$ 20% 1/2 W.  |                     |                      |                   |
| R-38                | Resistor      | 1.5 meg. $\pm$ 10% 1/2 W.  |                     |                      |                   |
| R-39                | Resistor      | Same as R-20   |                     |                      |                   |
| R-40                | Resistor      | 270,000 ohms $\pm$ 10% 1/2 W.  |                     |                      |                   |
| R-41                | Resistor      | 100,000 ohms $\pm$ 10% 1/2 W.  |                     |                      |                   |
| R-42                | Resistor      | 390,000 ohms $\pm$ 10% 1/2 W.  |                     |                      |                   |
| R-43                | Resistor      | 100 ohms $\pm$ 10% 4 W.  |                     |                      |                   |
| R-44                | Resistor      | 150 ohms $\pm$ 10% 4 W.  |                     |                      |                   |
| R-45                | Resistor      | 15 ohms $\pm$ 10% 1/2 W.   |                     |                      |                   |
| R-46                | Potentiometer | 66,000 ohms R.F. Gain Control  |                     |                      |                   |
| R-47                | Resistor      | Same as R-2  |                     |                      |                   |
| R-48                | Potentiometer | Same as R-46 (Noise Limiter Control)                                 |                     |                      |                   |
| R-49                | Resistor      | Same as R-1  |                     |                      |                   |
| R-50                | Resistor      | Same as R-23   |                     |                      |                   |
| R-51                | Potentiometer | 2. meg. Audio Gain Control   | 251402-3            | 1                    | 10C/8140          |
| R-52                | Potentiometer | 1 meg. Tone Control  | 251402-1            | 1                    | 10C/8141          |
| R-53                | Resistor      | 330,000 ohms $\pm$ 10% 1/2 W.  | 82283-92            | 1                    | 10C/8126          |
| R-54                | Resistor      | 2,700 ohms $\pm$ 10% 1/2 W.  | 850981-67           | 1                    | 10C/8132          |
| R-55                | Resistor      | 6,800 ohms $\pm$ 10% 1/2 W.  | 850981-72           | 1                    | 10C/8133          |
| R-56                | Resistor      | 39 ohms $\pm$ 10% 4 W.   | 90497-7             | 1                    | 10C/8130          |
| R-58                | Resistor      | 5,600 ohms $\pm$ 10% 1/2 W.  | 82283-71            | 1                    | 10C/8125          |
| R-60                | Resistor      | Same as R-58   |                     |                      |                   |
| R-61                | Resistor      | Same as R-25   |                     |                      |                   |
| R-62                | Resistor      | Same as R-25   |                     |                      |                   |
| R-63                | Resistor      | Same as R-23   |                     |                      |                   |
| R-64                | Resistor      | Same as R-23   |                     |                      |                   |
| R-65                | Resistor      | Same as R-23   |                     |                      |                   |
| R-66                | Resistor      | Same as R-54   |                     |                      |                   |
| R-67                | Resistor      | Same as R-54   |                     |                      |                   |
| S-1                 | Switch        | Range Sw. Wafer Oscillator Ccts. (S-1 & S-2 on same wafer)           |                     |                      |                   |
| S-2                 | Switch        | Range Sw. Wafer Oscillator Ccts. (See S-1)                           |                     |                      |                   |
| S-3                 | Switch        | Range Sw. Wafer Oscillator Ccts. (S-3 & S-4 on same wafer)           |                     |                      |                   |
| S-4                 | Switch        | Range Sw. Wafer Oscillator Ccts. (See S-3)                           |                     |                      |                   |
| S-5                 | Switch        | Range Sw. Wafer 2nd R.F. Ccts. (S-5 & S-6 on same wafer)             |                     |                      |                   |
| S-6                 | Switch        | Range Sw. Wafer 2nd R.F. Ccts. (See S-5)                             |                     |                      |                   |
| S-7                 | Switch        | Range Sw. Wafer 2nd R.F. Ccts. (S-7 & S-8 on same wafer)             |                     |                      |                   |
| S-8                 | Switch        | Range Sw. Wafer 2nd R.F. Ccts. (See S-7)                             |                     |                      |                   |
| S-9                 | Switch        | Range Sw. Wafer 1st R.F. Ccts. (S-9 & 10 on same wafer)              |                     |                      |                   |
| S-10                | Switch        | Range Sw. Wafer 1st R.F. Ccts. (See S-9)                             |                     |                      |                   |
| S-11                | Switch        | Range Sw. Wafer 1st R.F. Ccts. (S-11 & 12 on same wafer)             |                     |                      |                   |
| S-12                | Switch        | Range Sw. Wafer 1st R.F. Ccts. (See S-11)                            |                     |                      |                   |
| S-13                | Switch        | Range Sw. Wafer Antenna Ccts. (S-13 & S-14 on same wafer)            |                     |                      |                   |
| S-14                | Switch        | Range Sw. Wafer Antenna Ccts. (See S-13)                             |                     |                      |                   |
| S-15                | Switch        | Range Sw. Wafer Antenna Ccts. (S-15 & S-16 on same wafer)            |                     |                      |                   |
| S-16                | Switch        | Range Sw. Wafer Antenna Ccts. (See S-15)                             |                     |                      |                   |
|                     |               | NOTE: S-1 to S-16 included all on one assembly.                      | 253660-1            |                      | 10F/8167          |
| S-17                | Switch        | Crystal Sw. Wafer (S-17 & S-18 on same wafer)                        |                     |                      |                   |
| S-18                | Switch        | Crystal Sw. Wafer (See S-17)   |                     |                      |                   |
| S-19                | Switch        | Crystal Sw. Wafer (S-19 & S-20 on same wafer)                        |                     |                      |                   |
| S-20                | Switch        | Crystal Sw. Wafer (See S-19)   |                     |                      |                   |
|                     |               | NOTE: S-17-18-19-20 all on same assembly.                            |                     |                      |                   |
| S-21                | Switch        | A.V.C. — N.L. Switch Wafer (S-21 & S-22 on same wafer)               | 253134-1            |                      | 10F/8165          |
| S-22                | Switch        | A.V.C. — N.L. Switch Wafer (See S-21)                                | 253099-1            |                      | 10F/8166          |
| S-23                | Switch        | Off.Trans.-B.F.O. Switch Wafer (includes S-24)                       | 253098-1            | 1                    | 10F/8163          |
| S-24                | Switch        | On/Off Toggle Sw. (See S-23)   |                     |                      |                   |
| S-25                | Switch        | D.P. D.T. Line voltage Switch  |                     |                      |                   |
| T-1                 | Transformer   | Power. 115/230 V. 25-60 cycle  |                     |                      |                   |
| T-2                 | Transformer   | Output. 2.5 ohms & 20 ohms   |                     |                      |                   |
| T-3                 | Transformer   | 1st I.F. (includes L-32, L-33, C-55, C-72, R-15) 735 KC              | 901602-501          | 1                    | 10A/8173          |
| T-4                 | Transformer   | I.F. Crystal Load (includes L-34 & C-73) 735 KC                      | 901611-501          | 1                    | 10A/8174          |
| T-5                 | Transformer   | 2nd I.F. (Includes L-35, L-36, L-39, C-78, C-89) 735 KC              | 255401-501          | 1                    | 10A/8175          |
| T-6                 | Transformer   | 2nd I.F. (Includes L-37, L-38, L-40, C-90, C-91) 735 KC              | 255401-505          | 1                    | 10A/8176          |
| T-7                 | Transformer   | 3rd I.F. (Includes L-41, L-42, L-45, C-94, C-100) 735 KC             | 255401-503          | 1                    | 10A/8177          |
| T-8                 | Transformer   | 3rd I.F. (Includes L-43, L-44, L-45, C-101, C-104) 735 KC            | 255401-503          | 1                    | 10A/8178          |
| T-9                 | Transformer   | 4th I.F. (Includes L-47, L-48, C-108, C-114, C-115) 735 KC           | 255401-502          | 1                    | 10A/8179          |
| T-10                | Transformer   | B.F. O. (Inc. L-22, C-82, C-85, C-87, C-88, R-24, R-28, R-29) 735 KC | 255401-504          | 1                    | 10A/8179          |
| TB-1                | Term. Bd.     | Antenna & Ground. 3 term.  | 253669-2            |                      |                   |
| TB-2                | Term. Bd.     | 5 Term.  | 253669-1            |                      |                   |
| TB-4                | Term. Bd.     | Output for external spk. 2 term.                                     | 253669-3            |                      |                   |
| V-1                 | Valve         | 1st R.F. Amplifier   | 6SG7                |                      |                   |

TABLE NUMBER V — PARTS LIST (Continued)

| Schematic Reference  | Nomenclature | DESCRIPTION                             | RCA Victor Mfg. No. | Ory. of Naval Spares | R.C.A.F. Ref. No. |
|----------------------|--------------|---|---------------------|----------------------|-------------------|
| V-2                  | Valve        | 2nd R.F. Amplifier                      | 6SG7                |                      |                   |
| V-3                  | Valve        | Master Oscillator                       | 6J5                 |                      |                   |
| V-4                  | Valve        | 1st Detector, Converter                 | 6SA7                | 6                    |                   |
| V-5                  | Valve        | 1st I.F. Amplifier                      | 6SG7                |                      |                   |
| V-6                  | Valve        | 2nd I.F. Amplifier                      | 6SG7                | 12                   | 10E/8188          |
| V-7                  | Valve        | 3rd I.F. Amplifier                      | 6SG7                |                      |                   |
| V-8                  | Valve        | 2nd Detector & A.V.C.                   | 6H6                 |                      |                   |
| V-9                  | Valve        | Noise Limiter                           | 6H6                 | 8                    |                   |
| V-10                 | Valve        | 1st A.F. Amplifier                      | 6SJ7                | 6                    |                   |
| V-11                 | Valve        | Output                                  | 6V6GT/G             | 6                    |                   |
| V-12                 | Valve        | B.F. Oscillator                         | 6J5                 | 8                    |                   |
| V-13                 | Valve        | Voltage Regulator                       | VR-150              | 6                    | 10E/4298          |
| V-14                 | Valve        | Rectifier                               | 5Y3GT/G             | 6                    |                   |
| V-16                 | Valve        | Gas Gap Protector                       | 991                 | 4                    | 10E/6827          |
| X-1                  | Socket       | Tube socket for V-1                     | 421395-507          | 1                    | 10H/8169          |
| X-2                  | Socket       | Tube socket for V-2 Same as X-1         | 421395-508          | 1                    | 10H/8170          |
| X-3                  | Socket       | Tube socket for V-3                     |                     |                      |                   |
| X-4                  | Socket       | Tube socket for V-4 Same as X-3         |                     |                      |                   |
| X-5                  | Socket       | Tube socket for V-5 Same as J-1         |                     |                      |                   |
| X-6                  | Socket       | Tube socket for V-6 Same as J-1         |                     |                      |                   |
| X-7                  | Socket       | Tube socket for V-7 Same as X-1         |                     |                      |                   |
| X-8                  | Socket       | Tube socket for V-8 Same as X-1         |                     |                      |                   |
| X-9                  | Socket       | Tube socket for V-9 Same as X-3         |                     |                      |                   |
| X-10                 | Socket       | Tube socket for V-10 Same as J-1        |                     |                      |                   |
| X-11                 | Socket       | Tube socket for V-11 Same as X-1        | 421395-510          | 1                    | 10H/8171          |
| X-12                 | Socket       | Tube socket for V-12                    |                     |                      |                   |
| X-13                 | Socket       | Tube socket for V-13 Same as J-1        |                     |                      |                   |
| X-14                 | Socket       | Tube socket for V-14 Same as J-1        |                     |                      |                   |
| X-16                 | Socket       | Tube socket for V-16                    | 837884-2            | 1                    | 10H/8172          |
| <b>MISCELLANEOUS</b> |              |   |                     |                      |                   |
|                      |              | Board, Resistor                         | 98958-1             |                      |                   |
|                      |              | Board, Terminal assembly 2 Way          | 81641-23            |                      |                   |
|                      |              | Board, Terminal assembly 1 Way          | 81641-32            |                      |                   |
|                      |              | Board, Terminal assembly 1 Way vertical | 81641-57            |                      |                   |
|                      |              | Bracket assembly (for tuning shaft)     | 99819-501           |                      |                   |
|                      |              | Coupling                                | 99850-1             |                      |                   |
|                      |              | Coupling                                | 99630-1             |                      |                   |
|                      |              | Caps — Shield Can.                      | 99840-1             |                      |                   |
|                      |              | Dial Assembly                           | 98947-503           |                      |                   |
|                      |              | Fuse Holder                             | 844027-2            |                      |                   |
|                      |              | Knob (Large)                            | 712336-503          |                      | 10A/8187          |
|                      |              | Knob (Medium)                           | 712336-505          |                      | 5C/1304           |
|                      |              | Knob (Small)                            | 712336-507          |                      | 10A/8180          |
|                      |              | Lamp — Pilot 1/4 Amp. 6V                | 61114-15            | 12                   | 10A/8181          |
|                      |              | Screw — Knurled Thumb                   | 252664-1            |                      | 10A/8182          |
|                      |              | Screw — Thumb                           | 99610-9             |                      | 5L/777            |
|                      |              | Screw — Set # 8-32 for small knob       | 844365-12           |                      |                   |
|                      |              | Screw — Set # 8-32 for medium knob      | 844365-13           |                      |                   |
|                      |              | Screw — Set # 10-32 for large knob      | 59101-6             |                      |                   |
|                      |              | Socket Pilot Lamp (complete)            | 98983-501           |                      |                   |
|                      |              | Tool — Air Trimmer Adj.                 | 81059-501           |                      | 10D/8189          |
|                      |              | Tool — I.F. Adj.                        | 86183-501           |                      | 10D/8186          |
|                      |              | Tool — Set Screw Wrench                 | 828505-12           |                      |                   |
|                      |              | Tuning Unit                             | 92417-1             |                      |                   |
|                      |              | Vernier Assembly                        | 98947-502           |                      | 10A/8183          |

TABLE NUMBER VI — PARTS LIST — Vibrator Power Supply Unit (MI-22215)

|      |                |  |            |
|------|----------------|--|------------|
| C-1  | Condenser      | 0.5 mfd., $\pm 10\%$ , 120 volts         | 114125-5   |
| C-2  | Condenser      | .008 mfd., $\pm 10\%$ , 2000 volts       | 114125-6   |
| C-3  | Condenser      | .05 mfd., $\pm 10\%$ , 600 volts         | 114125-7   |
| C-4  | Condenser      | 0.1 mfd., $\pm 10\%$ , 600 volts         | 114125-8   |
| C-5  | Condenser      | 500 mmfd., $\pm 10\%$ , 600 volts (mica) | 114125-9   |
| C-6  | Condenser      | Electrolytic, 10 mfd., 450 volts         | 114125-10  |
| C-7  | Condenser      | Electrolytic, 25 mfd., 40 volts          | 114125-11  |
| C-8  | Condenser      | Same as C-5                              |            |
| CP-1 | Cable          | Power Cable, includes P-1, S-1           | 107617-501 |
| F-1  | Fuse           | Type 3 AG, 20 Amperes                    | 55544-10   |
| L-1  | Coil           | Filter Choke (iron core)                 | 98567-1    |
| L-2  | Coil           | Filter Choke                             | 114125-2   |
| P-1  | Plug           | 8 prong octal plug (on CP-1)             | 413691-8   |
| R-1  | Resistor       | 5,000 ohms, $\pm 10\%$ , 1/4 Watt        | 114125-4   |
| S-1  | Switch         | ON-OFF Switch, D.P.S.T. (on CP-1)        | 845786-3   |
| S-2  | Switch         | Voltage Tap Switch—Water type            | 114125-3   |
| T-1  | Transformer    | Vibrator Transformer                     | 114125-1   |
| TB-1 | Terminal Board | Voltage Terminal Board, 3 term.          | 114125-14  |
| V-1  | Valve          | Rectifier                                | OZ4A       |
| VS-1 | Vibrator       | Dual Contact Vibrator                    | 110112-1   |
| X-1  | Socket         | Octal Socket for V-1                     | 114125-13  |
| X-2  | Socket         | 6-Pin Socket for VS-1                    | 114125-12  |



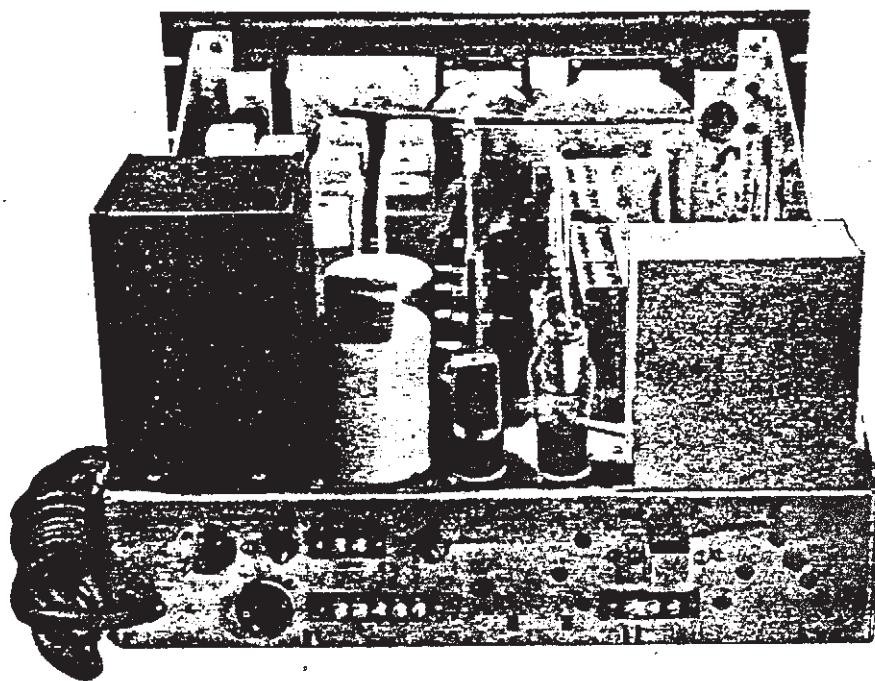


Figure 6.—General Purpose Communications Receiver—Rear View

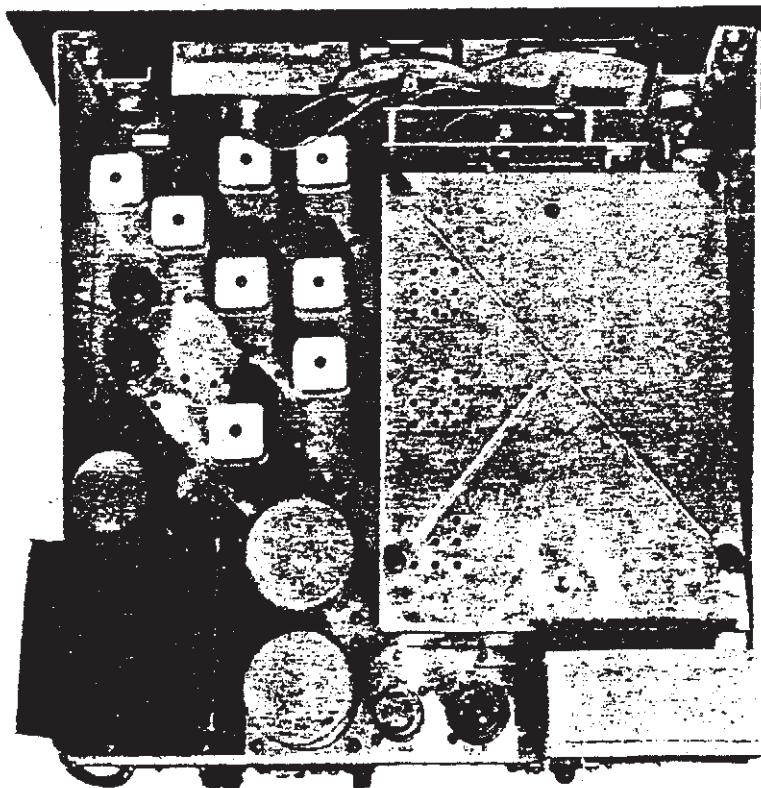


Figure 7.—General Purpose Communications Receiver—Top View



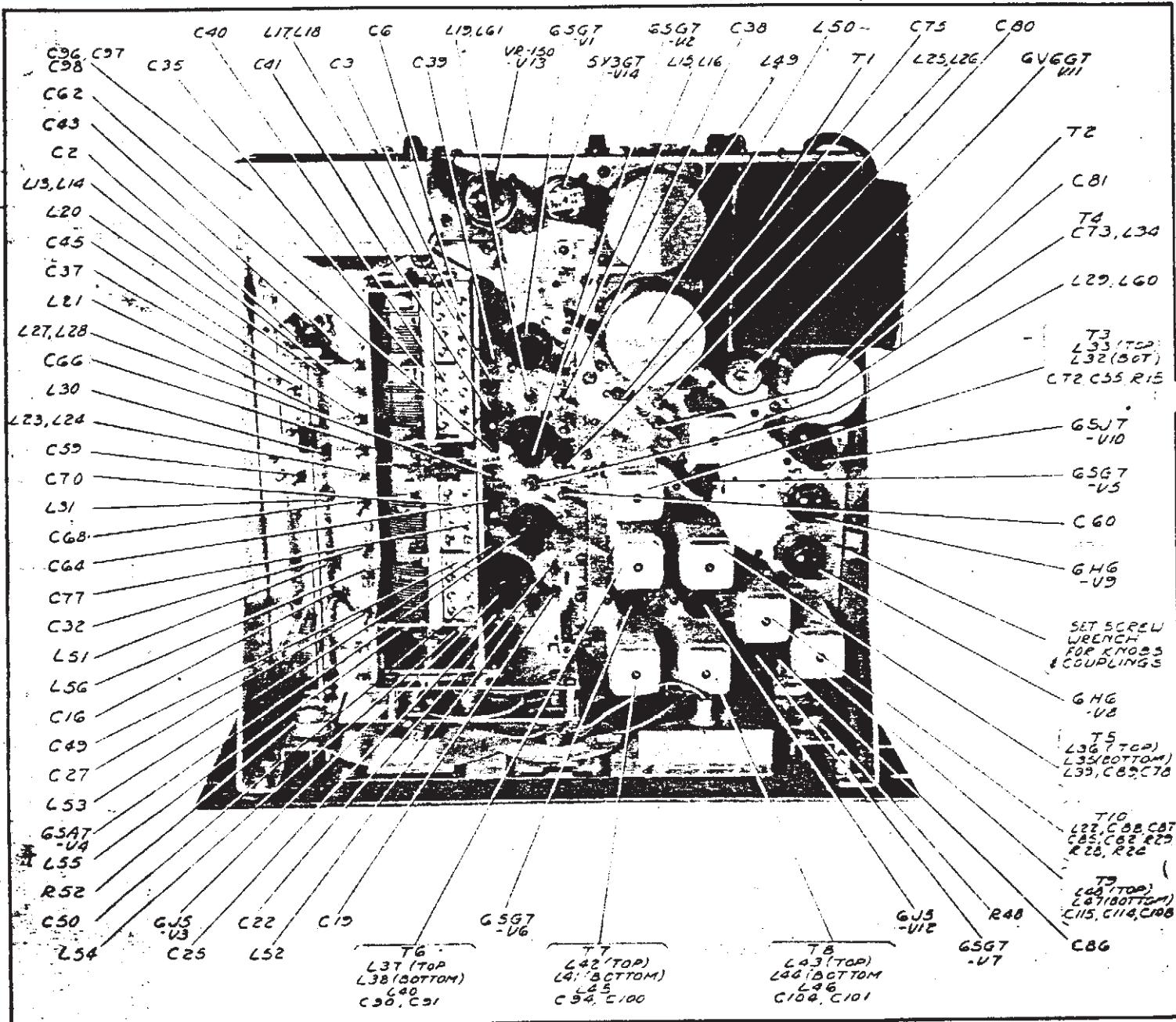


Figure 8.—General Purpose Communications Receiver—Top View—Covers Removed.



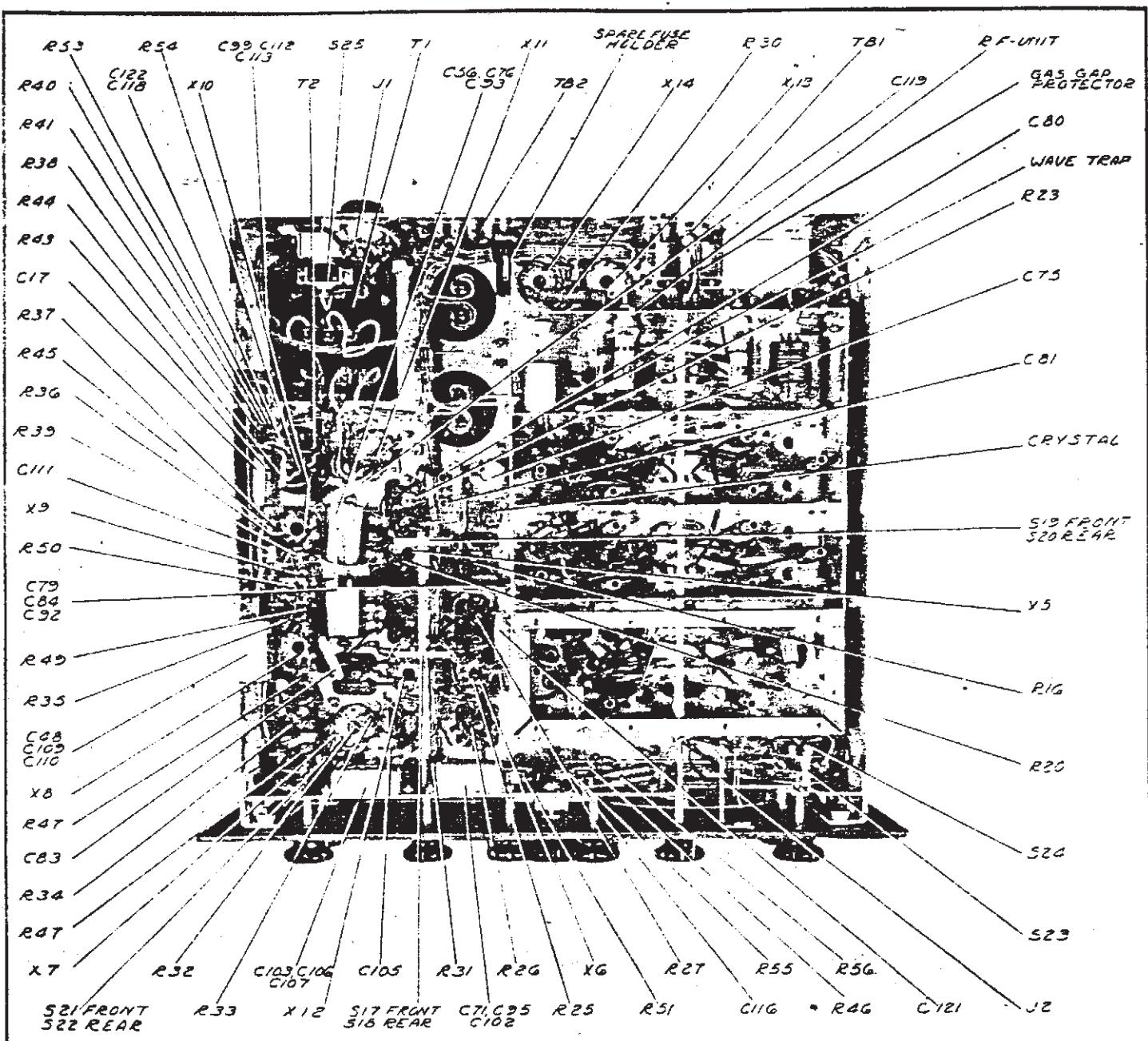


Figure 9.—General Purpose Communications Receiver—Bottom View—Covers Removed.



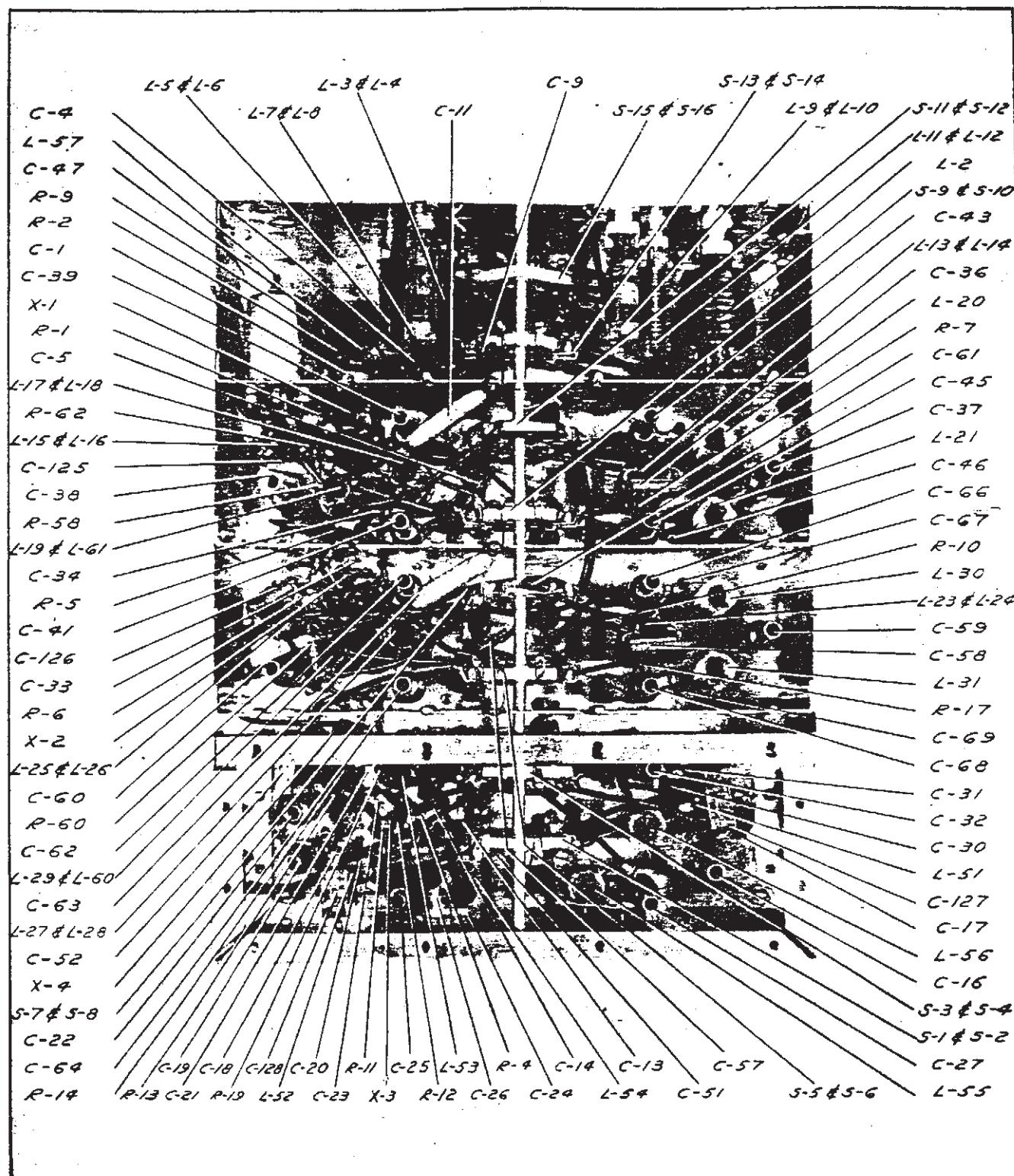


Figure 10.—General Purpose Communications Receiver—R.F. Unit.







I.F. SELECTIVITY CURVES AR-88 LF.

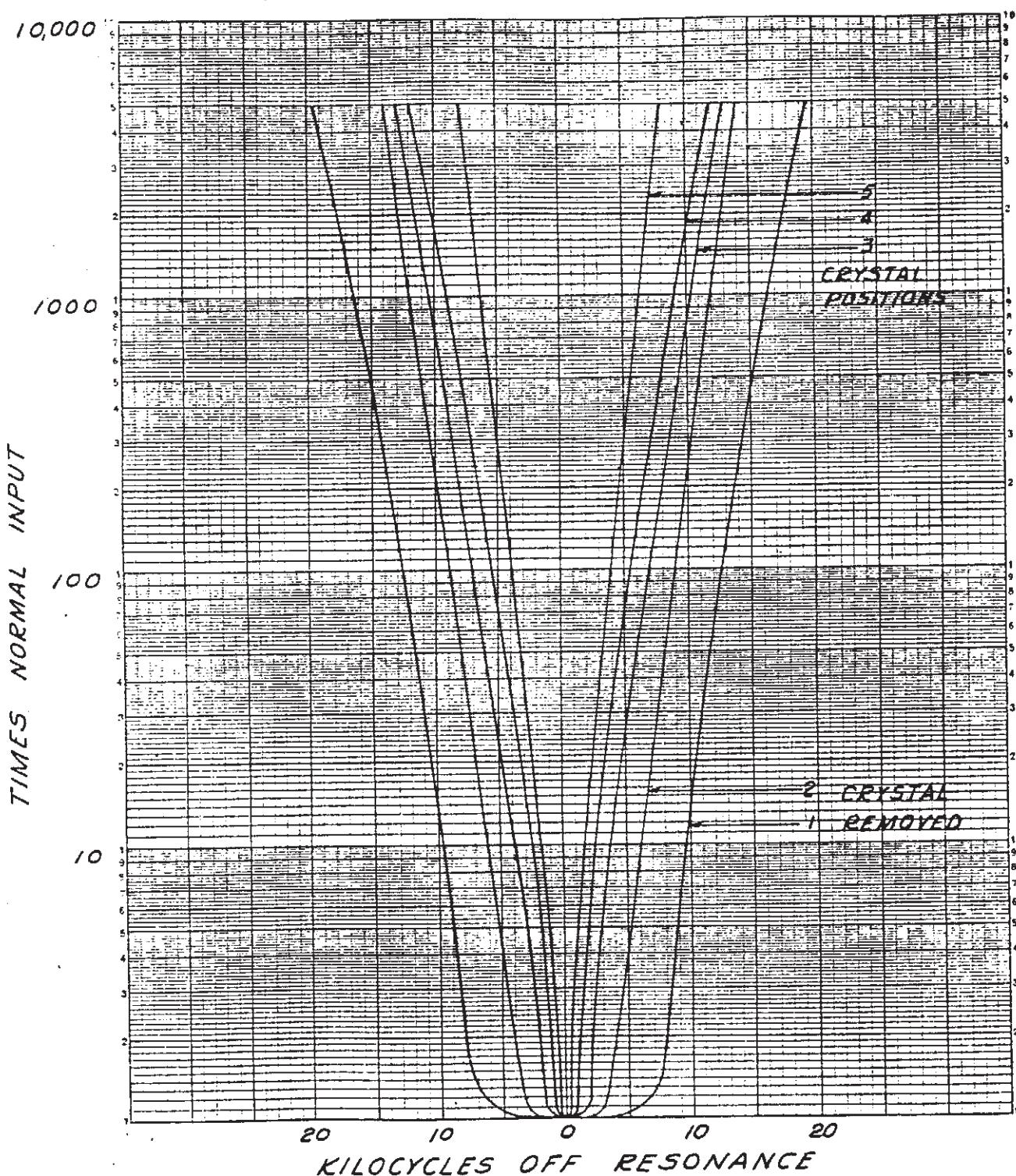


Figure 12.—General Purpose Communications Receiver—Selectivity Characteristics.

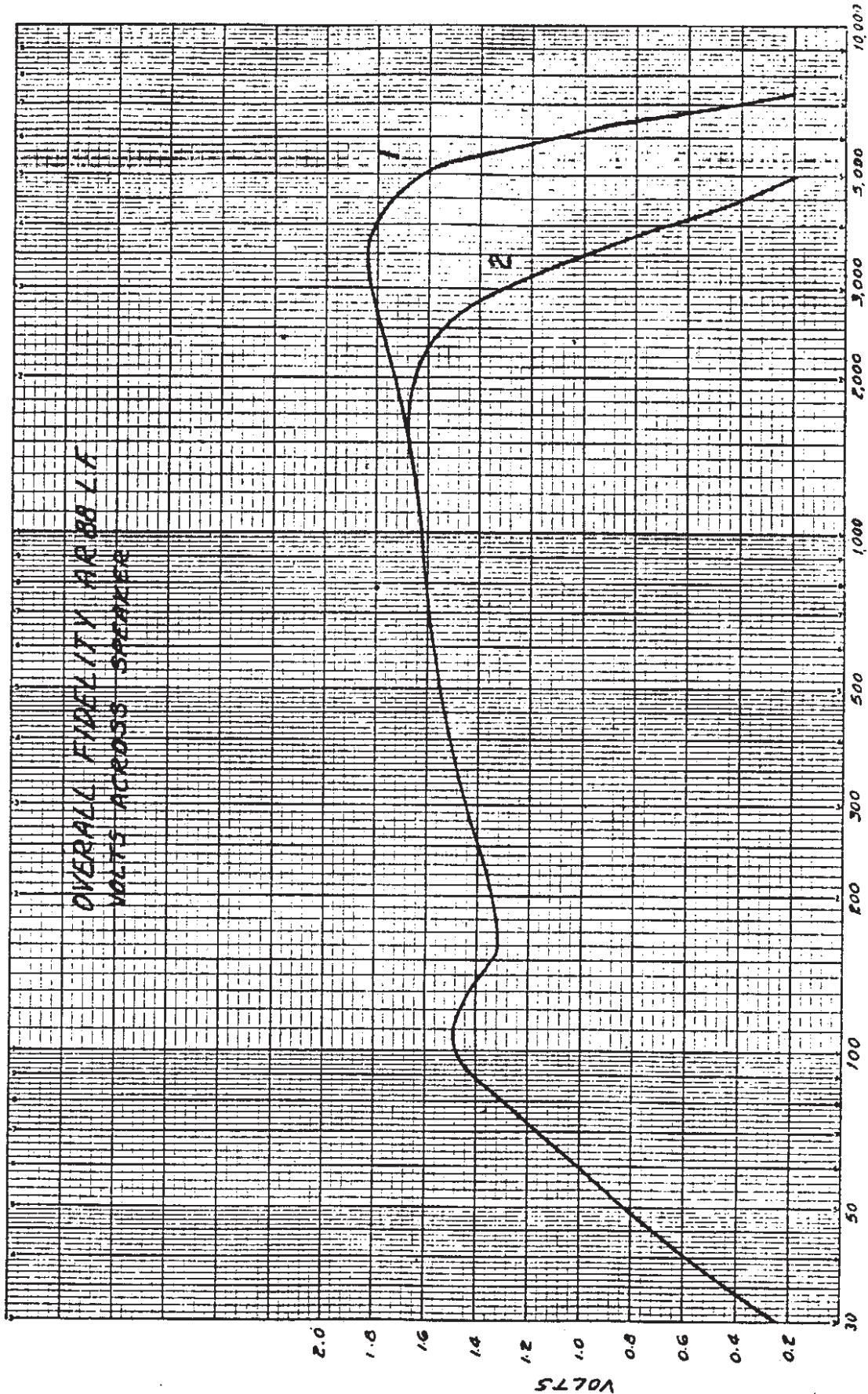


Figure 13.—General Purpose Communications Receiver—Fidelity Characteristics.

OVERLOAD AND A.V.C. AR-8845

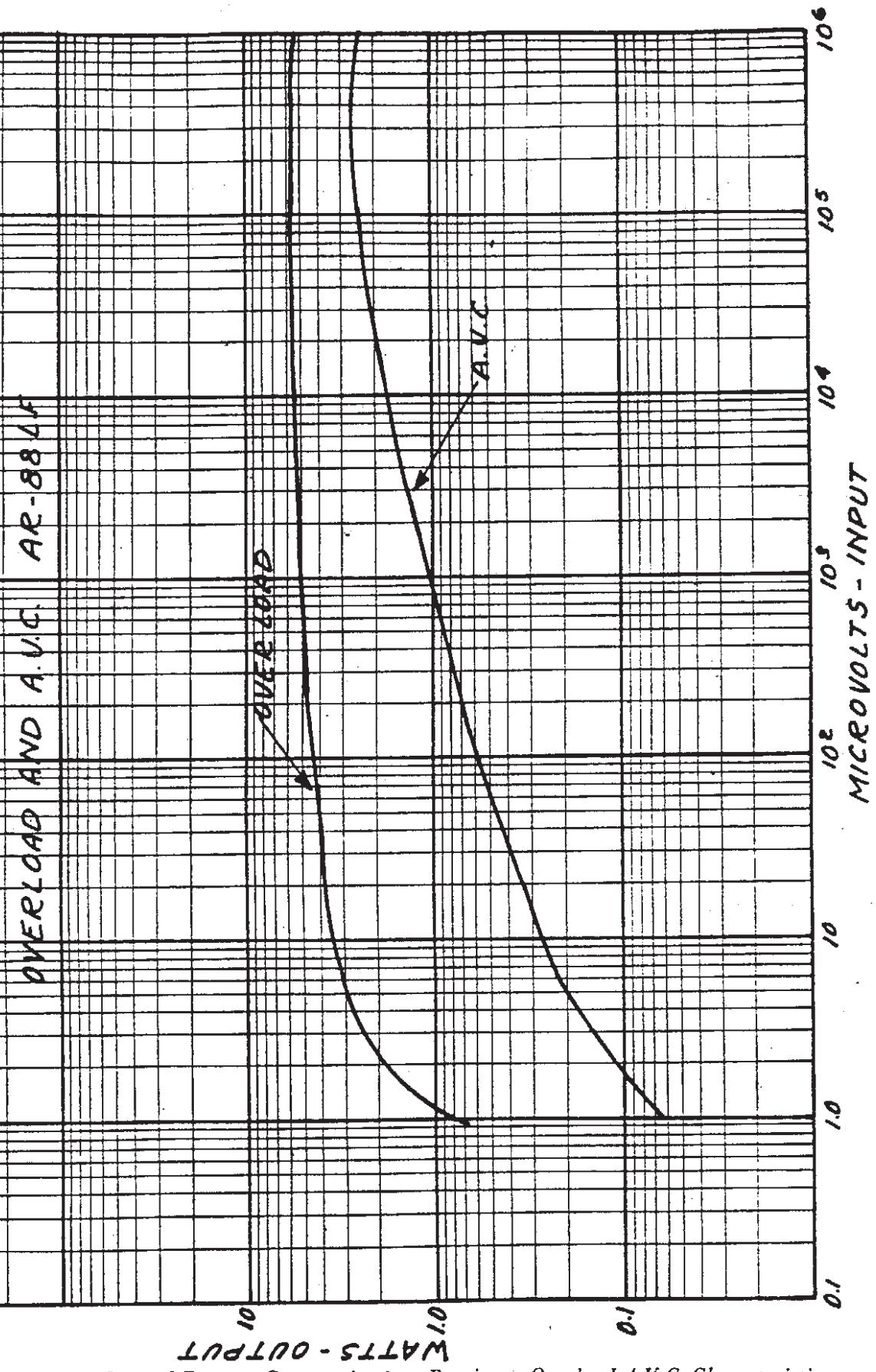


Figure 14.—General Purpose Communications Receiver—Overload A.V.C. Characteristics.



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