

Figure 5

MFG. CO., INC.

MODEL ACR 111
Chassis Wiring
Coils

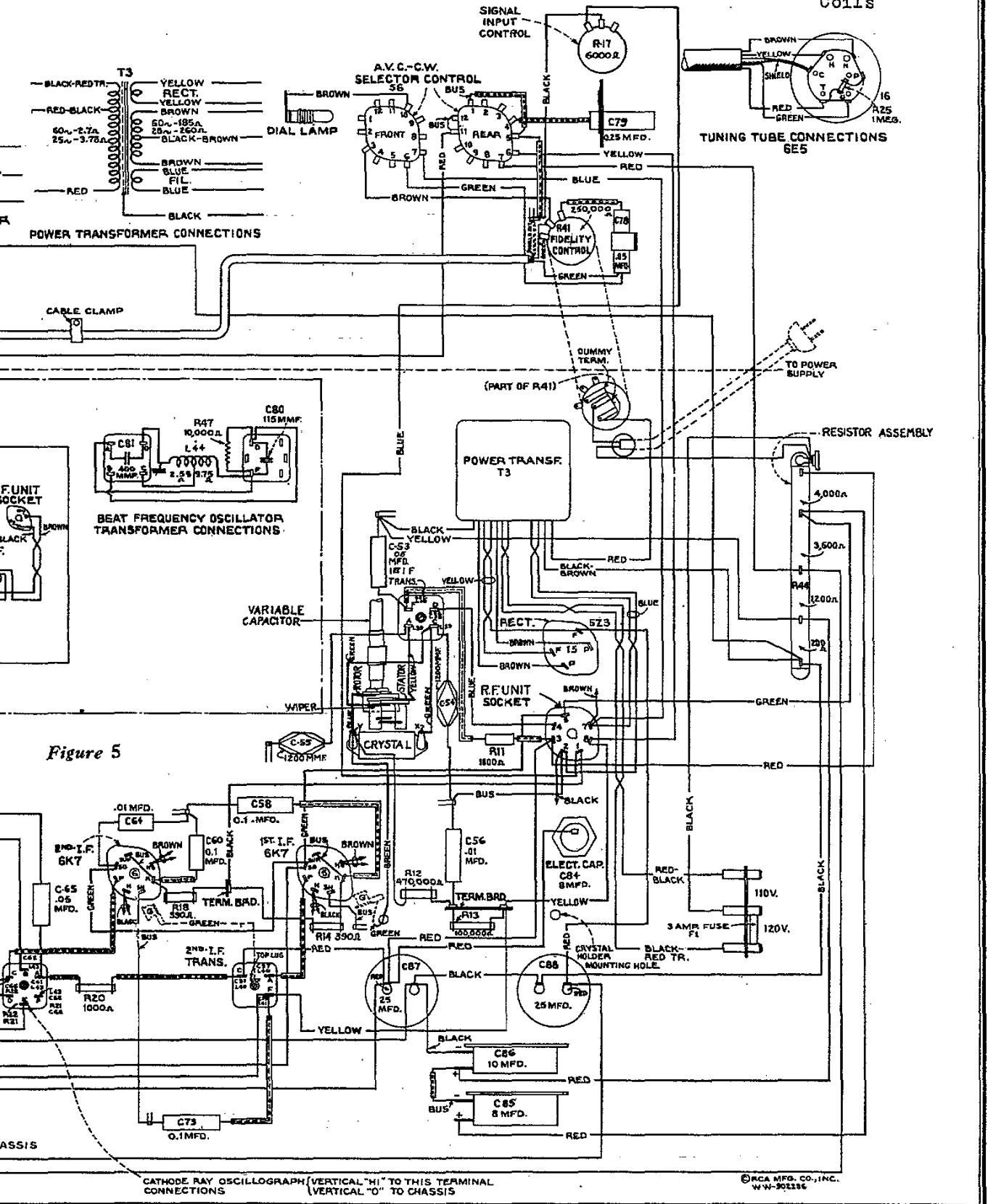
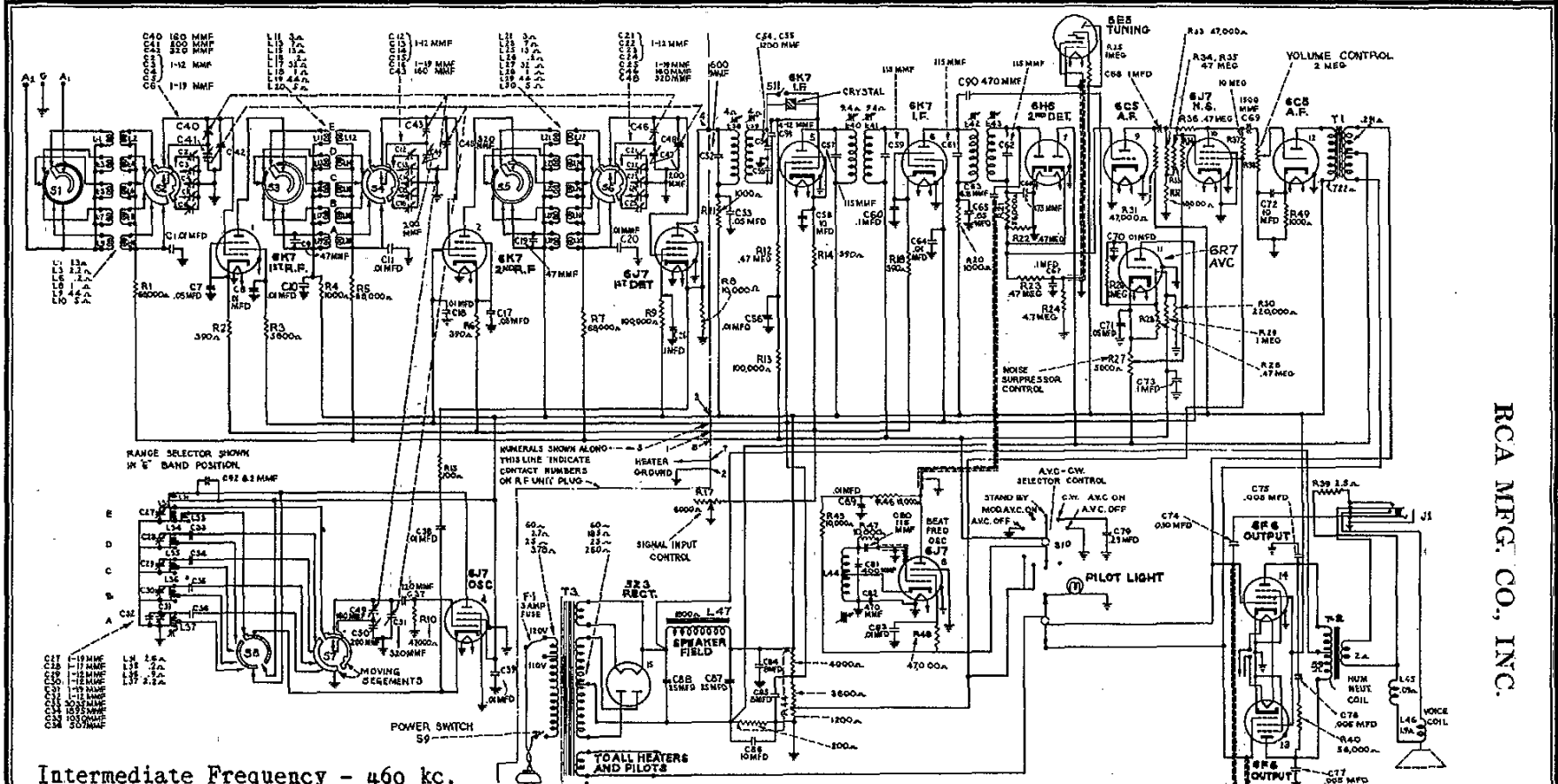


Figure 5

CATHODE RAY OSCILLOGRAPH (VERTICAL "H") TO THIS TERMINAL CONNECTIONS (VERTICAL "O") TO CHASSIS



Intermediate Frequency - 460 kc.

| Symbol | Voltage | Frequency (cycles) | Band | Range Megacycles |
|--------|---------------------------|--------------------|------|------------------|
| A | 105-125 | 50-60 | | |
| B | 105-125 | 25-60 | A | 0.54 to 1.6 |
| C | 100-130; 140-160; 195-250 | 40-60 | B | 1.6 to 4.0 |
| | | | C | 3 to 8 |
| | | | D | 6 to 16 |
| | | | E | 12 to 30 |

As shipped from the factory, rating C receivers are connected for 225-250 volts unless prominently specified otherwise on the chassis. Such receivers may be converted for operation at 100-117, 117-130, 140-160 or 195-225 volts when required.

Voice Coil Impedance 2 1/2 ohms at 400 cycles

RCA MFG. CO., INC.

RCA PAGE 9-151
MODEL ACR 111
Schematic

MODEL ACR 111
Tuner Unit
Chassis Wiring
Coils

RCA MFG. CO., INC.

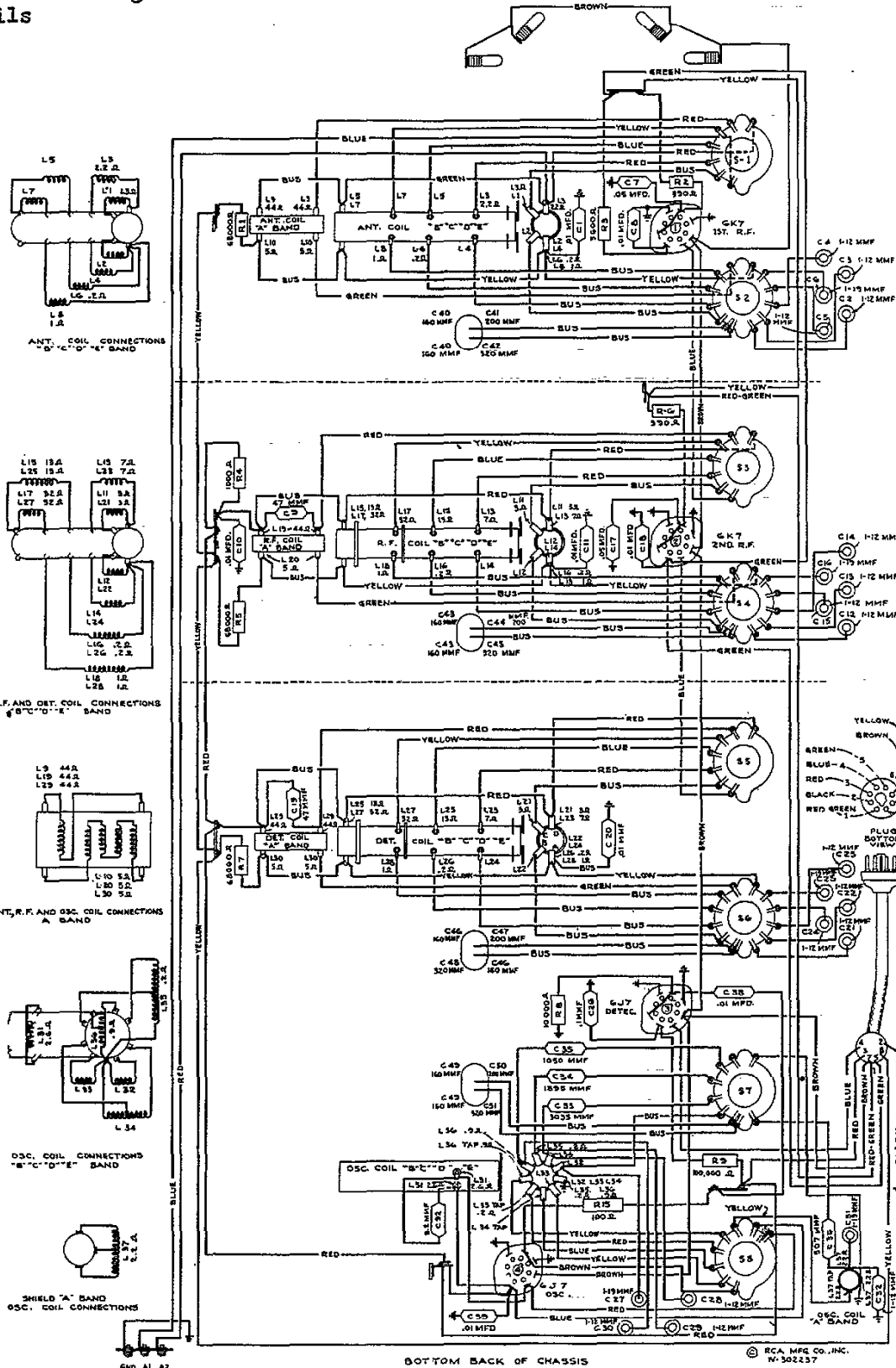
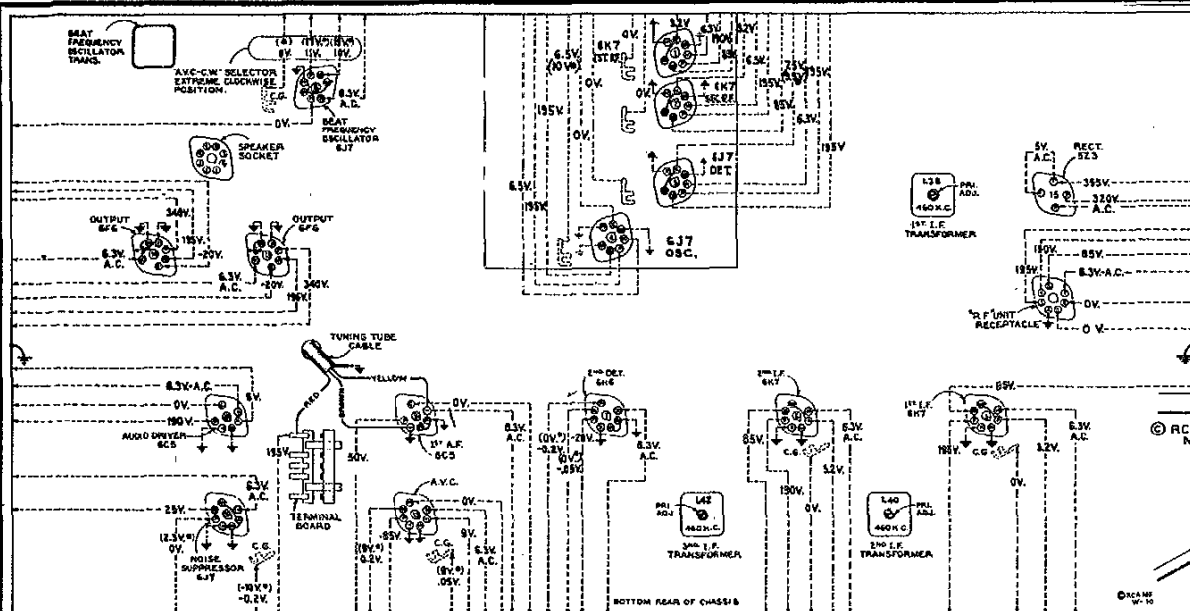


Figure 6—Tuner Unit Wiring Diagram

RCA MFG. CO., INC.
N° 302237



DOUBLE DOUBLET ANTENNA

| | | | |
|----------------|---|-----|-------------------------|
| L ₁ | = | 130 | feet for 160 Meter Band |
| L ₁ | = | 65 | " " 80 " " |
| L ₁ | = | 33 | " " 40 " " |
| L ₁ | = | 16 | " " 20 " " |
| L ₂ | = | 65 | " " 80 " " |
| L ₂ | = | 33 | " " 40 " " |
| L ₂ | = | 16 | " " 20 " " |
| L ₂ | = | 8 | " " 10 " " |

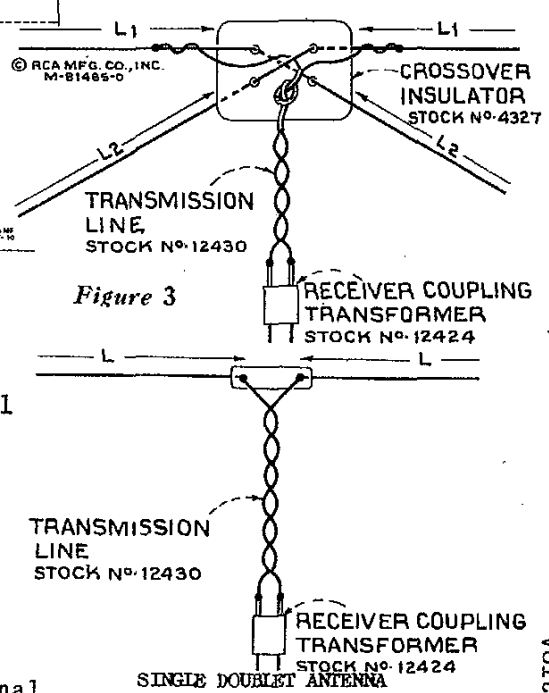


Figure 10—Radiotron Socket, Voltages, Coil and I-F Trimmer Locations
 Measured at 115 volts, 60 cycle supply--Tuned to approximately 1000 kc--No signal being received--"Signal Input" control clockwise--"Noise Suppressor" control counterclockwise--"AVC Selector" to "Mod. AVC OFF"--"Volume" control counterclockwise--"Fidelity" and "Beat Frequency" controls optional.

Note: Two voltage values are shown for some readings. The value shown in parentheses with asterisk(*) indicates operating conditions without voltmeter loading. The other value (generally lower) is the actual measured voltage and differs from the value shown in parentheses because of the additional loading of the voltmeter through the high series circuit resistance.

The correct length (L) in feet for each arm of the doublet for maximum signal input at any particular frequency in kilocycles may be computed from the following formula:

$$L = \frac{233,700}{f} \quad \text{where } L = \text{length of each doublet arm in feet} \\ \text{and } f = \text{frequency in kilocycles.}$$

| | | | |
|---|---|-----|------------------------------------|
| L | = | 130 | feet for 160 Meter (1,900 kc) Band |
| L | = | 65 | " " 80 " (3,800 kc) " |
| L | = | 33 | " " 40 " (7,150 kc) " |
| L | = | 16 | " " 20 " (14,200 kc) " |
| L | = | 8 | " " 10 " (28,000 kc) " |

RCA MFG. CO., INC.

Socket, Trimmer's Voltage, Antenna.

MODEL ACR 111
R-F and I-F
Trimmers, Sockets

RCA MFG. CO., INC.

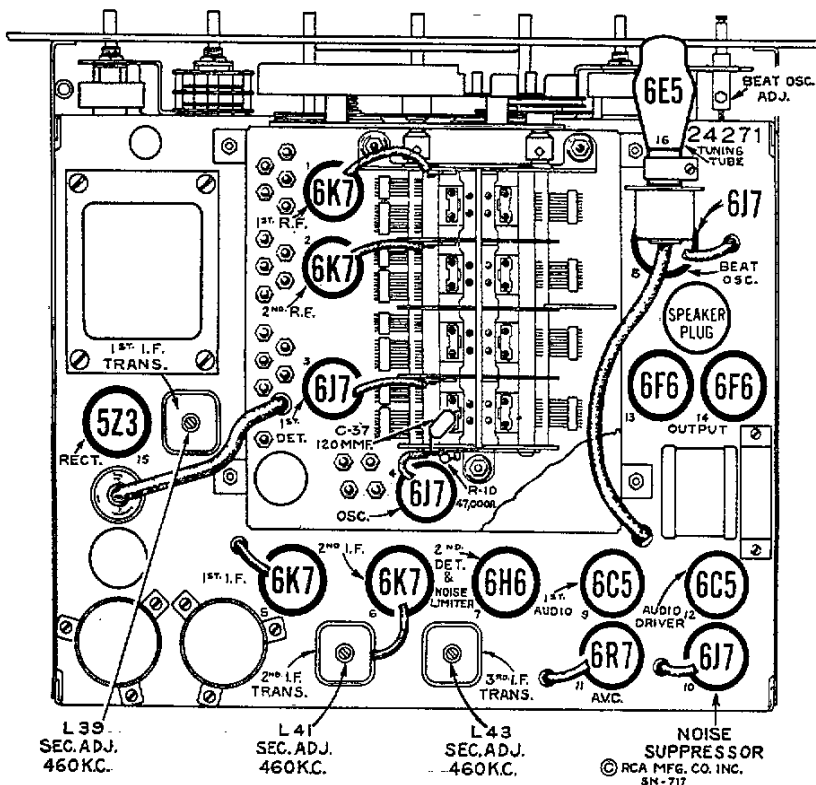


Figure 8—Radiotron and I-F Trimmer Locations

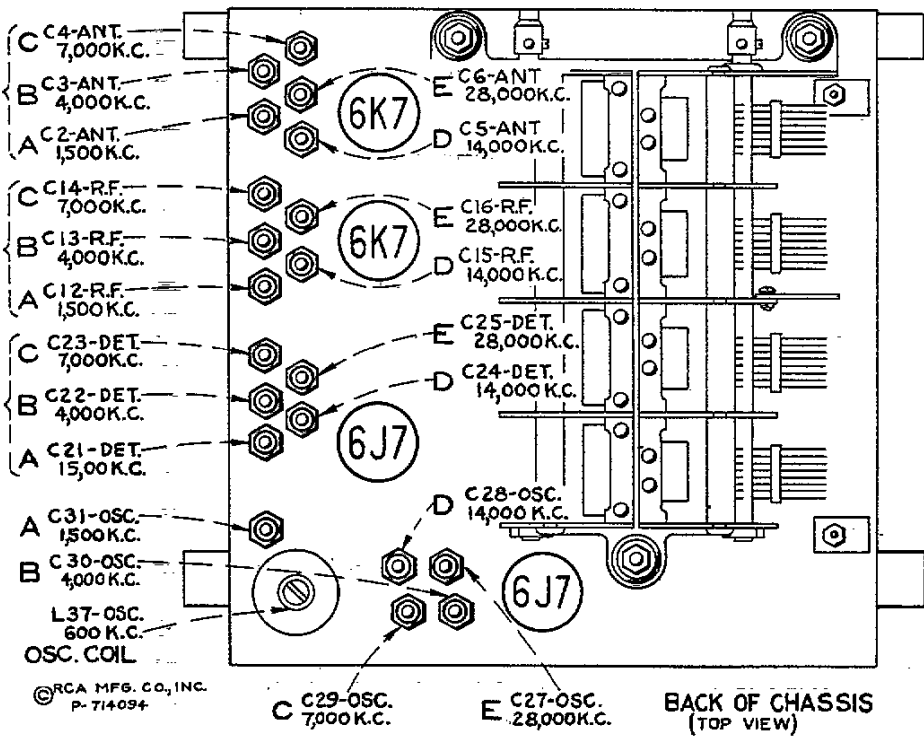


Figure 9—R-F Trimmer Locations

Before aligning the r-f circuits, make receiver dial adjustments as outlined under "Selector Dial" (Figure 11).

In performing services on the oscillator, detector, and r-f circuits, the leads should be restored to their original positions, since the lead-dress is important for proper operation and dial calibration.

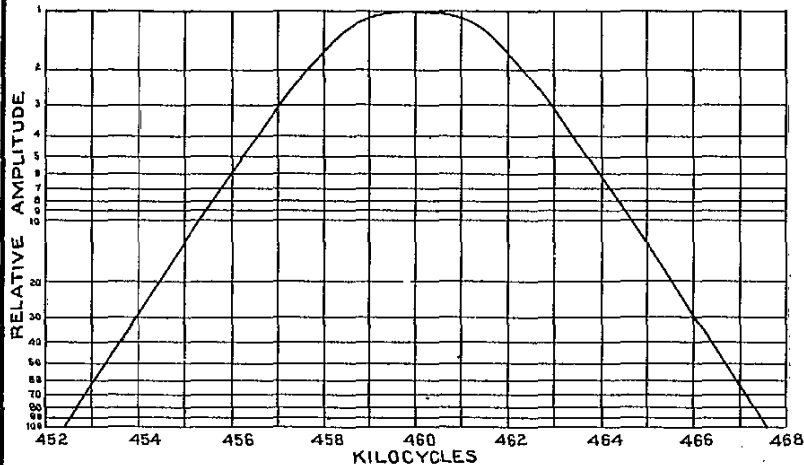
MODEL ACR 111
Alignment Table

RCA MFG. CO., INC.

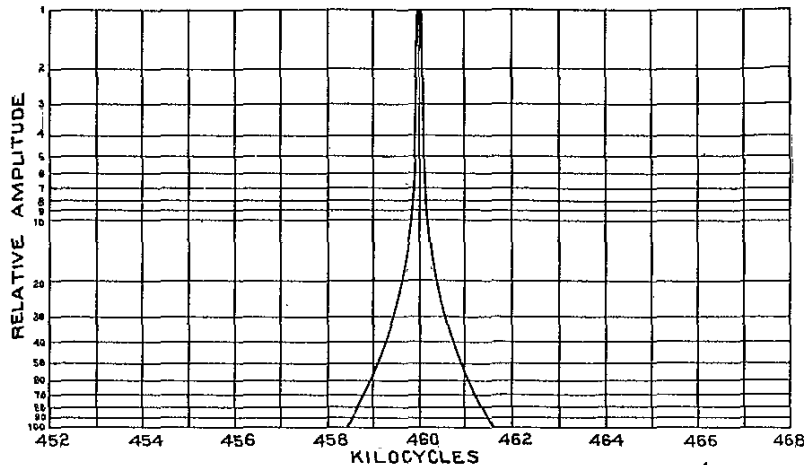
| Order of Alignment | Crystal Filter Control | Test Oscillator | | | Receiver Dial Setting | Circuit to Adjust | Adjustment Symbols | Adjust to Obtain | Dial Setting For Image Check |
|--------------------|--------------------------|------------------------|---------------|--------------------------------|-----------------------|-------------------|--------------------|-----------------------|------------------------------|
| | | Connection to Receiver | Dummy Antenna | Frequency Setting | | | | | |
| 1 | "OFF" | 6L7 Det. Grid Cap | .001 mfd. | 460 kc | No signal 550-750 kc | 3rd i-f Trans. | L43 & L42 | Max. (peak) | — |
| 2 | "OFF" | 6L7 Det. Grid Cap | .001 mfd. | 460 kc | No signal 550-750 kc | 2nd i-f Trans. | L41 & L40 | Max. (peak) | — |
| 3 | "OFF" | 6L7 Det. Grid Cap | .002 mfd. | 460 kc | No signal 550-750 kc | 1st i-f Trans. | I39 & I38 | Max. (peak) | — |
| 4 | "ON" Mid-Position "MAX." | 6L7 Det. Grid Cap | .001 mfd. | Shift Slightly For Max. Output | No signal 550-750 kc | — | — | Max. (peak) | — |
| 5 | " | 6L7 Det. Grid Cap | .001 mfd. | Final Setting of Above | No signal 550-750 kc | 3rd i-f Trans. | L43 & L42 | Max. (peak) | — |
| 6 | " | 6L7 Det. Grid Cap | .001 mfd. | " | No signal 550-750 kc | 2nd i-f Trans. | L41 & L40 | Max. (peak) | — |
| 7 | " | 6L7 Det. Grid Cap | .002 mfd. | " | No signal 550-750 kc | 1st i-f Trans. | I39 & I38 | Max. (peak) | — |
| 8 | "OFF" | 6L7 Det. Grid Cap | .001 mfd. | " | No signal 550-750 kc | — | — | Check for Max. Output | — |
| 9 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 28,000 kc | 28,000 kc | "B" Osc. | C27 | Max. (peak)* | — |
| 10 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 28,000 kc | Rock Thru 28,000 kc | "B" Det. | C25 | Max. (peak)* | — |
| 11 | "OFF" | "A1" Ant. Post | 300 ohm | 28,000 kc | Rock Thru 28,000 kc | "B" R-F | C16 | Max. (peak)* | — |
| 12 | "OFF" | "A1" Ant. Post | 300 ohm | 28,000 kc | Rock Thru 28,000 kc | "B" Ant. | C6 | Max. (peak)* | 28,920 kc |
| 13 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 14,000 kc | 14,000 kc | "D" Osc. | C28 | Max. (peak)* | — |
| 14 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 14,000 kc | Rock Thru 14,000 kc | "D" Det. | C24 | Max. (peak)* | — |
| 15 | "OFF" | "A1" Ant. Post | 300 ohm | 14,000 kc | Rock Thru 14,000 kc | "D" R-F | C15 | Max. (peak)* | — |
| 16 | "OFF" | "A1" Ant. Post | 300 ohm | 14,000 kc | Rock Thru 14,000 kc | "D" Ant. | C5 | Max. (peak)* | 13,080 kc |
| 17 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 7,000 kc | 7,000 kc | "C" Osc. | C29 | Max. (peak)* | — |
| 18 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 7,000 kc | Rock Thru 7,000 kc | "C" Det. | C23 | Max. (peak)* | — |
| 19 | "OFF" | "A1" Ant. Post | 300 ohm | 7,000 kc | Rock Thru 7,000 kc | "C" R-F | C14 | Max. (peak)* | — |
| 20 | "OFF" | "A1" Ant. Post | 300 ohm | 7,000 kc | Rock Thru 7,000 kc | "C" Ant. | C4 | Max. (peak)* | — |
| 21 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 4,000 kc | 4,000 kc | "B" Osc. | C30 | Max. (peak)* | — |
| 22 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 4,000 kc | Rock Thru 4,000 kc | "B" Det. | C22 | Max. (peak)* | — |
| 23 | "OFF" | "A1" Ant. Post | 300 ohm | 4,000 kc | Rock Thru 4,000 kc | "B" R-F | C13 | Max. (peak)* | — |
| 24 | "OFF" | "A1" Ant. Post | 300 ohm | 4,000 kc | Rock Thru 4,000 kc | "B" Ant. | C3 | Max. (peak)* | — |
| 25 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 600 kc | 600 kc | "A" I-F Osc. | I37 | Max. (peak) | — |
| 26 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 1,500 kc | 1,500 kc | "A" H-F Osc. | C31 | Max. (peak) | — |
| 27 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 1,500 kc | 1,500 kc | "A" Det. | C21 | Max. (peak) | — |
| 28 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 600 kc | Rock Thru 600 kc | "A" I-F Osc. | I37 | Max. (peak) | — |
| 29 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 1,500 kc | 1,500 kc | "A" H-F Osc. | C31 | Max. (peak) | — |
| 30 | "OFF" | 6K7 and r-f Grid Cap | 300 ohm | 1,500 kc | 1,500 kc | "A" Det. | C21 | Max. (peak) | — |
| 31 | "OFF" | "A1" Ant. Post | 300 ohm | 1,500 kc | 1,500 kc | "A" R-F | C12 | Max. (peak) | — |
| 32 | "OFF" | "A1" Ant. Post | 300 ohm | 1,500 kc | 1,500 kc | "A" Ant. | C2 | Max. (peak) | — |

+ Use Maximum Capacity Peak If Two Peaks Can Be Found.

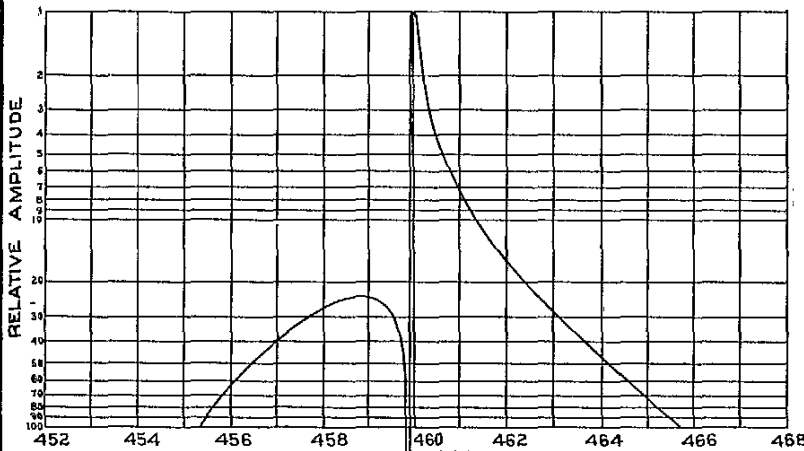
* Use Minimum Capacity Peak If Two Peaks Can Be Found.



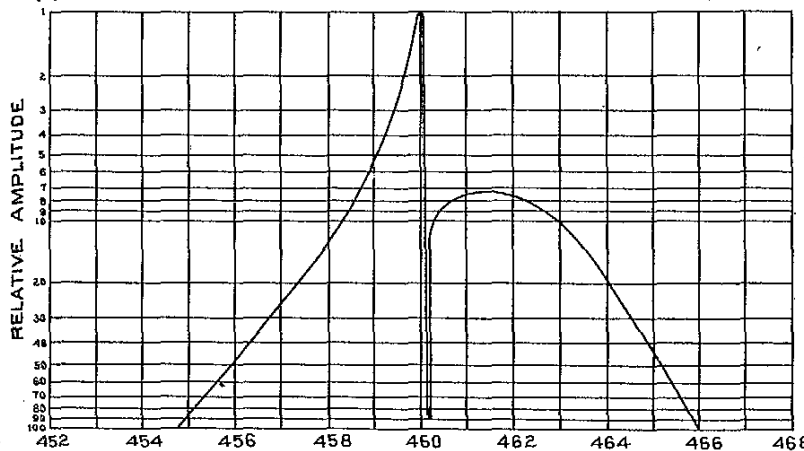
(a) SELECTIVITY CONTROL IN CRYSTAL "OFF" POSITION



(b) SELECTIVITY CONTROL IN "MAX" POSITION (CENTRAL)



(c) SELECTIVITY CONTROL IN CRYSTAL "FULL CLOCKWISE" POSITION
"ON"



(d) SELECTIVITY CONTROL IN EXTREME COUNTERCLOCKWISE POSITION

Figure 13—Selectivity Control Curves—Crystal Filter

Figure 11 illustrates the relation of the various parts of the dial mechanism when in its "B" position with the range switch likewise turned to the same range position. In re-assembling the dial after repairs, see that the gears are meshed in accordance with the diagram, at the same time noting that the range switch is in its "B" position and the lever attached to the range-switch shaft placed in the position shown.

To adjust the dial mechanism, set the range-switch to its "B" position. Place a straight-edge across the center of the dial so that its edge is even with the lower (end) marking at both the low-frequency and high-frequency ends of the dial. Under such conditions the straight-edge should be paralleled with the top of the chassis base. If the straight-edge is not parallel with the top of the chassis base, loosen the nut on the rear of the roller link pivot stud and move the stud up or down until the link roller moves the dial to the desired position so that the end calibration marks obtain the position mentioned above. Tighten the nut on the roller link pivot stud.

Set the gang-tuning condenser to its maximum capacity position. Adjust the dial pointer to the low-frequency (end) mark on the "B" range scale. This is a friction adjustment.

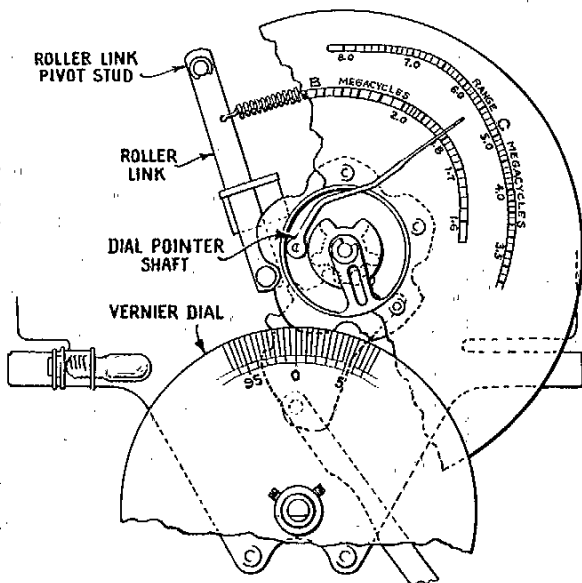


Figure 11—Selector Dial Mechanism

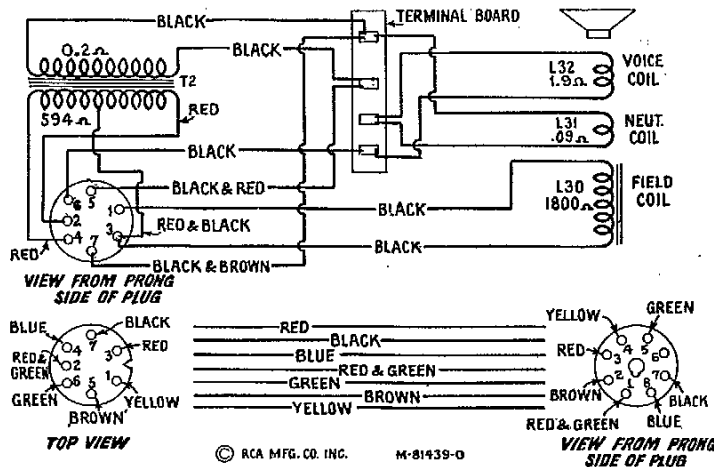
Centering of the loudspeaker voice coil is made with three narrow paper feelers after first removing the front paper dust cover. This may be removed by softening its cement with a very light application of acetone using care not to allow the acetone to flow down into the air gap. The dust cover should be cemented back in place with ambroid upon completion of adjustment.

Average performance data for the ACR-111 is shown in the following table. Slight variations either above or below the values given, may be encountered due to practical manufacturing tolerances.

Noise Equivalent - (microvolts CW) - "Noise Equivalent" is a coined term to express the input in microvolts through the normal input circuit, which would be required to produce an output equal to the receiver noise output.

Selectivity - The Selectivity curve for the average ACR-111 receiver is shown in Figure 13(a).

| Range | Frequency Megacycles | Noise Equivalent Microvolts (CW) | Image Ratio | Sensitivity Input Microvolts (1 w. output) |
|-------|-------------------------|-------------------------------------|-------------|-----------------------------------------------|
| A | 0.6 | 2 | 250,000 | 10 |
| | 1.5 | 2 | 100,000 | 10 |
| B | 1.7 | 1.0 | 150,000 | 5 |
| | 4.0 | 0.85 | 40,000 | 3.5 |
| C | 4 | 1.2 | 3,000 | 5 |
| | 7 | 0.96 | 2,000 | 3.5 |
| D | 7 | 1.1 | 3,000 | 4.5 |
| | 14 | 0.86 | 400 | 3.5 |
| E | 14 | 0.9 | 200 | 15 |
| | 28 | 1.0 | 10 | 8 |



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Figure 12—Loudspeaker Wiring

MODEL ACR 111

Notes, Operation

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1. General

This new, sixteen-tube, RCA Amateur Communications Receiver is built for rack and for table mounting and covers a frequency range of from 500 to 30,000 kc. It embodies the most up-to-date circuits and construction, including RCA metal tubes, electrical band spread, beat-frequency oscillator, crystal filter, noise suppressor, noise limiter, sensitivity and automatic-volume controls, standby switch, loudspeaker, and phone jack. The advanced degree of sensitivity and selectivity of the instrument together with its frequency stability and reliability open to the operator a field of reception covering all communications in the more important ranges.

This book should be studied carefully to learn how to make full use of the ACR-111 and keep it in its optimum operating condition.

2. Special Features

An inspection of the schematic circuit diagram and the wiring diagrams make clear the many developments incorporated in this model. See Fig. 4, 5 and 6.

Metal tubes provide effective shielding as well as minimum terminal spacing and short connecting circuits with their attendant advantages. The eleven labeled controls, including the phone jack, are all on the front panel, thus giving complete front panel operation. The two large diameter tuning knobs with crank handles are comfortable and convenient to the hand and facilitate rapidity and ease of tuning. In conjunction with the vernier drive and electrical band spread system, fine tuning adjustments are easily made. An AVC Switch allows one to dispense with the use of the Automatic-Volume-Control when desired.

The Crystal Filter in the first i-f stage provides single-signal reception with an unusually high degree of selectivity, and the adjustable Selectivity Control is a means of obtaining various degrees of selectivity with or without a rejection dip. The Electron-Ray-Tube Indicator fulfills the dual function of measuring signal input and aiding in precise tuning.

The Noise Suppressor is a valuable aid in reducing interfering noises and thus enabling the operator to obtain reception of maximum strength and fidelity and minimum interference. It is used in conjunction with the Signal Input Control. A Noise Limiter is incorporated in the circuit by means of the second diode of the second detector (RCA 6B6) tube. This device reduces peak noises due to excessive signals or bursts of static which load the anode beyond a certain bias value.

The Selector Dial brings each scale separately into the dial opening by a turn of the Range Selector knob and gives clear vision tuning calibrations for the range in use only. In addition the vernier scale beneath provides for calibration spread, and the readings of both tuning and calibration spread scales may be entered in the station log for future reference when it is again desired to receive the same station.

The Beat Oscillator is equipped with two controls, (1) an "On-Off" switch and (2) a Heterodyne Control with magnetite-core tuning which effectively governs the pitch. The shield enclosing the entire beat-oscillator circuit enables the listener to operate the set with freedom from undesirable beat notes due to harmonics.

The Loudspeaker is a separate unit attached to the chassis by means of a cable with a seven-prong plug-in connection. It is assembled on a small wooden mounting in which holes are provided for fastening to a large baffle whose high-quality reproduction is required.

4. Circuit Data and Power Rating

Circuit - Superheterodyne with beat-frequency oscillator for CW reception, noise suppressor, noise limiter, crystal filter, automatic volume control, electron-ray tuning indicator, calibrated signal input (sensitivity) control, electrical band spread, and class A pentode output system.

Power Output - 5 watts (undistorted); 8 watts maximum.

Loudspeaker - (separate unit) - Electro-dynamic 8-inch (voice-coil impedance 2-1/4 ohms at 400 cycles).

Tubes -

- 2 RCA-6K7 - Radio Frequency Amplifiers
- 1 RCA-6J7 - First Detector
- 1 RCA-6J7 - Oscillator
- 2 RCA-6K7 - Intermediate-Frequency Amplifiers
- 1 RCA-6B6 - Second Detector and Noise Limiter
- 1 RCA-6C5 - Audio-Voltage Amplifier
- 1 RCA-6F6 - Power Output Tubes
- 1 RCA-5Z3 - Full-Wave Rectifier
- 1 RCA-6J7 - Beat-Frequency Oscillator
- 1 RCA-6R7 - Automatic Volume Control
- 1 RCA-6J7 - Noise Suppressor
- 1 RCA-6B5 - Tuning Indicator

See diagram label on shield on chassis for locations of tubes and grid leads.

Power Supply Ratings - Check with rating symbol on chassis.

Power Consumption - 120 watts.

5. Antenna

A most important factor in good reception is the antenna. Both "noise reducing" and "directional" properties as well as definite "length" to suit

the signal frequency are essential antenna requirements for best reception. A three-terminal board with the terminals marked "A", "B", and "G" is provided on the rear of the chassis for connections to antenna and ground. The "G" terminal should always be connected to a good external ground.

For maximum performance in any one or two amateur bands, one of the antenna systems illustrated below is recommended. Essential parts, such as cross-over insulators (Stock No. 4327), transmission lines (Stock Nos. 12429 and 12430) and receiver coupling transformers (Stock No. 12424) may be purchased from your dealer.

PART III - OPERATION

6. Controls

All controls are located upon the front panel and are identified by adjacent markings.

(a) Tuning and Band Spread - The two large knobs to the right and left of the dial are respectively the "Main" and "Band Spread" tuning knobs. The latter covers a range of 10 percent ($\pm 5\%$) of the main dial scale reading.

(b) Volume - The Volume Control is the knob to the left below the "Band Spread" tuning knob. It is connected in the audio-frequency circuit, and the receiver output level is increased with clockwise rotation.

(c) Power and Fidelity - The Power Switch is combined with the Fidelity Control, the power being off in the counter-clockwise position.

The Fidelity Control provides attenuation of the higher frequencies. Full-range reproduction is obtained with the knob turned clockwise. Turning counter-clockwise introduces a capacitance in the secondary circuit of the driver transformer, which attenuates the high-frequency response and aids in the reduction of disturbing background noises.

(d) Range - The Range Selector in the center of the panel below the dial selects any one of the five scales of which the frequency limits are tabulated under "Part II Electrical Specifications". Turn the Range Selector knob to bring the required scale into the dial opening.

(e) Electron-Ray-Tuning Tube - The green illuminated Electron-Ray-Indicator Tube (RCA-6B5) at the left of the dial near the top of the front panel is a visible guide to precise tuning. The deflection of the electron stream by the signal voltage causes a narrowing of the darker sector. Maximum deflection, i.e., when the area of the light sector is at a maximum indicates that the receiver is tuned to exact resonance.

(f) Selectivity Control - This introduces the crystal filter into the i-f circuit for single-signal reception of CW telegraph or telephone transmission. Crystal phasing is performed by means of an air-trimmer capacitor. Near the midway position marked "Max." the crystal circuit is balanced and maximum selectivity is obtained. This setting is characterized by minimum background noise. In the extreme clockwise position the crystal is short-circuited by means of the crystal switch. Other positions broaden the crystal selectivity curve on one side of resonance and cause a rejection dip on the other side. They are useful for phone reception through severe interference.

(g) Beat Frequency - The Beat Frequency knob at the extreme lower left is a heterodyne control governing the Beat Oscillator output frequency. When set at its zero mid-position the Beat Oscillator frequency will approximate zero beat with the receiver tuned accurately to an incoming signal. The calibration figures on either side of the zero position indicate the approximate frequency in kilocycles of the beat produced by the combination of the Beat Frequency Oscillator and the received signal tuned to exact resonance.

(h) Signal Input - The Signal Input Control is calibrated from 1 to 10,000 on a logarithmic scale. It is used in conjunction with the Electron-Ray-Indicator to obtain the approximate value in microvolts of any signal delivered to the receiver. This is accomplished by tuning the receiver to resonance by means of the Electron-Ray-Indicator and then rotating the Signal Input knob fully counter-clockwise to reduce the voltage on the Electron-Ray tube. Then by slowly rotating this control clockwise, a point causing only a slight deflection (1/64 inch) in the dark sector of the Electron-Ray-Indicator, will be obtained. The Signal Input scale reading will then be the approximate signal input value to the receiver, in microvolts. For code reception the correct setting will be at the point where the Electron-Ray-Indicator just begins to flicker.

The absolute accuracy of Signal Input values depends upon the sensitivity of the receiver. This in turn depends on proper alignment, condition of tubes, value of line voltage and similar factors. Relative readings, however, between stations of different signal strengths give a correct comparison. Signal Input readings are also useful for reporting to the transmission station for making tests on different types of antennas, for discovering improvements in transmitters at distant locations, and for making charts of signal strength variations.

Note: Multiply the readings by 5 for obtaining values on band "E" operation.

(i) AVC - CW Selector - This is a five position switch on the right of the dial and by means of this knob the operator may set the receiver for Modulated or CW reception, either with or without Automatic Volume Control, according to requirements. On normal CW reception with the control turned to "CW AVC ON" the time constants of the AVC circuits will be such that they will hold during intervals between characters. For slow-speed CW reception, however, the time constant will not hold and the switch should be turned to "CW AVC OFF" and the Signal Input Control used for adjusting the output level. Furthermore the central point is a "Standby" position which keeps the filaments of all tubes heated ready for immediate reception. This is indicated by means of the Standby Light at the top right hand side of the front panel.

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(j) Noise Suppressor - The Noise Suppression Control is for reducing peaks of noise to a minimum. When used in conjunction with the Signal Input or Sensitivity Control and the Fidelity Control, the Noise Suppressor becomes a very important and valuable device for reducing interfering noises that may impair the intelligibility of radio reception. It is of particular value in minimizing interference caused by the ignition systems of airplanes and automobiles, dial telephones, and similar electrical apparatus. Interference from rotating electrical machinery however is not eliminated by this device.

With a station properly tuned in by the use of the Electron-Ray-Tuning-Indicator, then if the Noise Suppression knob is slowly rotated in a clockwise direction a point of noticeable distortion of the signal will eventually be reached. (If the signal is too strong it may be necessary to reduce the strength by means of the Signal Input Control in order to obtain a point of noticeable distortion on the Noise Suppression Control.) The knob should then be turned very slowly counter-clockwise until the signal becomes clear. This point is the correct setting for the Noise Suppression Control for that particular signal.

This control is also effective for inter-carrier Noise Suppression and its use in this capacity requires the following procedure in order to obtain reception with full strength, maximum fidelity and minimum interference:

- (1) Reduce Signal Input Control as low as possible, meanwhile keeping receiver output at the desired level by means of the Volume Control.
- (2) Set receiver at a point where no signal is being received.
- (3) Adjust Noise Suppression Control till background noise is just audible.
- (4) Tune in desired signal again.

This adjustment of the receiver is of particular value for intermittent signals or when it is desired to standby on a certain channel, the background output of the receiver being extremely low on "no signal" and yet allowing full volume on "signal".

(k) Phones - The Phone Jack is to the left of the front panel. When a phone plug is inserted in this jack, it simultaneously connects a resistance load across the secondary of the output transformer in place of the voice coil of the electro-dynamic loudspeaker. It also connects the phones across the plate circuit of the output tube, a blocking condenser being used to isolate the d-c voltage. The loudspeaker field which is employed as a filter for the rectifier stage, still forms an active part of the circuit when using headphones. By inserting the phone plug part way in the jack both headphone and loudspeaker signals may be obtained. The loudspeaker is connected to the chassis by means of a cable and plug.

7. Dial

The Selector Dial provides for each major band a single clearly calibrated scale in the upper dial opening. Each scale is clearly marked in megacycles. The small lower dial opening gives calibration spread for accurate logging. The mechanism is illustrated in Figure 11.

8. Tuning

The two r-f amplifiers (6K7), first detector (6J7) and oscillator (6J7) are tuned by two four-gang variable capacitors and controlled from two knobs.

The right hand knob controls the main tuning capacitor and the left hand knob the band spread capacitor. The band spread capacitor is connected in the circuit to cover a uniform percentage of band spread regardless of the frequency to which the receiver is tuned. Frequency readings on the dial scale obtained by rotation of the Main Tuning knob are only accurate when the Band Spread Control is at zero - turned fully to right.

The Tuning limits for each of the five ranges are given under "Part II - Electrical Specifications". To tune the receiver for desired reception of modulated signals proceed as follows:

- (a) Turn Power Switch "On".
- (b) Turn Range Selector to bring the desired scale into the Selector Dial opening.
- (c) Set AVC - CW Control to "MOD. AVC ON".
- (d) Advance Signal Input Control fully clockwise for maximum sensitivity.
- (e) Advance Volume Control clockwise until background noise is heard.
- (f) Set Band Spread Control at zero - fully clockwise - and then rotate Main Tuning Control to a point just below desired frequency, such as at the low end of an Amateur Band. Now tune in signal with Band Spread Control. Turn slowly counter-clockwise, observe the Calibration Spread scale to obtain station location and then watch the Electron-Ray-Tuning-Indicator for point of resonance.
- (g) Decrease volume as necessary and set Fidelity Control for preferred quality of reproduction. Full tone range reproduction is obtained with the knob set to its extreme clockwise position.
- (h) Silent Tuning may be obtained by reducing the volume until no signal is heard, and then tuning by means of the visual indications of the Electron-Ray Tube.
- (i) Weak Modulated Signals - The Beat Oscillator may be used to advantage in locating weak, modulated signals. For this purpose it should be

tuned exactly to the intermediate frequency of the receiver by turning the Beat Frequency Control to "0" so that an audio-frequency note of ascending pitch will be obtained on each side of resonance of the incoming signal when the AVC - CW Selector is turned to "CW AVC OFF". Any carrier will then be tuned to exact resonance when the Frequency Control is adjusted for "zero beat" and weak signals will be located almost as well as those of greater strength because of the heterodyne "whistle" produced while passing through resonance. After proper adjustment has been made, turn AVC - CW Selector to "MOD. AVC ON".

(j) CW Signals - For CW (code) reception, the tuning procedure is the same as for modulated signals except that the Beat Oscillator performs a definite rather than incidental function. The Beat Frequency Control is set not at zero, but slightly to either side so as to provide an audio-frequency beat note when the receiver is tuned to resonance with any carrier. Adjust the pitch with the Beat Frequency Control knob. Turn AVC - CW Selector to "CW AVC OFF" when receiving slow speed CW transmission.

(k) If the interference is objectionable during reception, the Noise Suppression Control should be adjusted, as described under "Controls" Section 6, to its "correct setting" for that signal.

(l) Selectivity - The value of the Crystal Selectivity Control is most evident on CW reception. Its importance should not be forgotten in phone reception and for identification of weak stations which are normally lost in the background noise. The curves (Figure 13) should be studied carefully before operating the Selectivity Control.

The following suggestions also may be of value:

Locate the desired frequency or station with control at "Crystal OFF," i.e., in its position of minimum selectivity, then adjust to obtain the desired degree of selectivity.

Tuning is extremely critical with control in the "Max." position and in consequence the movement of the Band Spread knob should be very slow and deliberate.

Heterodyne Control Setting

Connect a source of unmodulated carrier of the i-f frequency from the grid of the RCA-6J7 first-detector to ground. Turn AVC off, crystal filter to maximum selectivity, sensitivity control to maximum, audio volume control partially on and beat oscillator on.

Rotate the Heterodyne Control knob to left or right until the heterodyne beat is heard.

Change the frequency of the unmodulated carrier from the test oscillator very carefully for maximum deflection on the electron-ray-tube indicator. Reduce the signal input if necessary so that the electron-ray-tube does not completely close. The test oscillator is now adjusted to the same frequency as the crystal filter.

Set the Heterodyne Control knob at its zero position and note whether the heterodyne beat is at zero frequency. If not, proceed as follows:

- (a) Rotate the Heterodyne Control knob to obtain zero beat.
- (b) Loosen the knob set screw and turn loosened knob on shaft to its "0" or vertical position.
- (c) Tighten up set screw.

The Heterodyne Control is now adjusted to zero beat at the frequency of the crystal filter.

In the event that the frequency drift is such that the zero beat position of the knob is at or beyond the figure "0" on either side, or outside field of rotation, the following adjustment is necessary:

- (a) Turn knob until the set-screw-stop on the knob control shaft, behind the front panel, is approximately vertical, then loosen shaft with screw driver.
- (b) Turn core stud to obtain zero beat. Use a pair of padded long-nose pliers to rotate the core stud in order to avoid injuring thread.
- (c) Turn set-screw-stop over to left (facing front panel) to its mid-position, and adjust knob control shaft to allow 1/32 to 1/16 inch clearance between front panel and adjacent surface of knob.
- (d) Tighten set-screw-stop with pliers to grip core stud, then swing stop to vertical and tighten securely with screw driver.
- (e) Proceed as first described for setting knob accurately to zero position at zero beat.

Note: Do not pull control shaft loose from bearing bracket when adjusting core stud.

Beat Frequency Oscillator - The frequency generated by the Beat Frequency beat-oscillator (457 to 463 kc) for CW reception is applied to the No. 1 diode plate of the RCA-6J6 second-detector through capacitor C63. This frequency mixes with the incoming intermediate frequency to produce an audio-frequency note which can be readily heard in the loudspeaker or phones. The movable magnetic-core, adjusted by the Beat Frequency Control, provides a variable inductance which acts as a vernier control for adjustment of the oscillator frequency over the required a-f range on either side of the intermediate-frequency signal. The plate and screen-grid voltage supply to this oscillator is turned on and off by means of the AVC - CW selector switch.

AVC - CW Selector - A five-position switch selects the type of reception and controls the Beat Oscillator and AVC circuits. The secondary of the audio transformer T1 is short-circuited in the "Standby" position.

MODEL ACR 111

Circuit Data

Transformer

RCA MFG. CO., INC.

Circuit Arrangement

A schematic diagram of the complete circuit is shown in Figure 4, a wiring diagram illustrating the wiring layout of the radio chassis and front panel controls is detailed in Figure 5, and of the r-f tuner unit in Figure 6. The loudspeaker wiring diagram and connections to chassis are shown in Figure 12, and the wiring of the Universal Transformer for rating "C" receivers in Figure 7. The circuit is based on the superheterodyne principle. It consists of two r-f amplifier stages, a first-detector (converter) stage, a separate oscillator stage, a crystal filter stage, two i-f amplifier stages, a diode-detector and noise limiter stage, an automatic-volume control stage, an audio voltage-amplifier stage, a noise suppressor stage, an audio driver stage, a power-amplifier stage, a beat frequency oscillator stage, and a full-wave rectifier.

A doublet antenna, when connected to the proper input terminals of the receiver, is coupled to the control grid of the first RCA-6K7 r-f amplifier tube through the tuned r-f transformer consisting of L₁, L₂, L₃, L₄, L₅, C₄₀, C₄₁, and C₄₂. C₄₃, C₄₄, C₄₅, and C₄₆ are plunger type air-trimmer capacitors for the respective bands - A, B, C, D, and E. The variable tuning capacitors, C₄₇ and C₄₈, are of the split-stator type and are controlled from the main tuning knob. The band spread capacitor, C₄₉, is connected in series with C₄₇, the combination being in parallel with C₄₈ - the main tuning capacitor. Thus a variable capacitance is effectively placed in series with C₄₇, and its value bears a definite ratio to that of C₄₈, the effective capacitance range of C₄₇ being approximately a constant percentage of that of C₄₈, irrespective of its setting.

The range switch in the "A" position shorts out C₄₀, effectively paralleling C₄₁ and C₄₂.

Separate coils are used for each band, and all primary windings not in use are short-circuited, as well as all secondaries for lower frequencies.

The range switching of the r-f and detector circuits is similar to that of the antenna circuits.

Separate windings are employed in the oscillator stage for each position of the range selector. The inherent stability of this circuit provides maximum frequency drift which is especially advantageous for high-frequency reception. The locally generated signal is capacitance coupled to the cathode of the RCA-6J7 first-detector.

I-F Amplifier - The intermediate-frequency amplifier consists of two RCA-6K7 tubes in a two-stage, transformer-coupled circuit. The windings of all three i-f transformers are resonated by a combination of fixed capacitors, and adjustable noided-magnetic cores (both primary and secondary) tune to 450 kc. The crystal filter is introduced between the first i-f transformer secondary (L₃₉) and the control grid of RCA-6K7 first i-f amplifier tube by means of the crystal switch S-21, Figure 4.

Detector and Noise Limiter - The signal, as obtained from the output of the last i-f stage, is detected by an RCA-6B6 twin-diode tube (No. 1 diode), the useful audio-frequency (a-f) and direct-current (d-c) components appearing across resistor R₂₄. The No. 2 diode of this same Radiotron is effectively placed in shunt with R₂₄, with its anode biased approximately 20 volts negative with respect to the cathode, by means of the bleeder resistor R₂₅. Excessive signals, or bursts of static, of magnitude great enough to cause the voltage across R₂₄ to exceed approximately 20 volts will cause the No. 2 diode to draw current, or present a low impedance across R₂₄, thereby acting as a noise limiter.

Audio System - The control grid of the RCA-6C5 first audio amplifier is connected directly to R₂₄, the tube functioning as a diode-biased voltage-amplifier. The output of this tube is resistance-capacitance coupled to the control grid of the RCA-6C5 audio-driver, potentiometer R₃₈ functioning as the volume control. The output of the driver stage is transformer coupled, through T₁, to the control grids of the RCA-6F6 push-pull, power-output tubes. The output of this stage is transformer coupled, through T₂, to the voice coil of the electro-dynamic loudspeaker. Insertion of a telephone plug in the headphone jack J₁ disconnects the voice coil from the secondary of T₂ and substitutes a dummy resistor R₃₉ in its place. The tip and sleeve of the plug are connected across the input circuit of one of the RCA-6F6 power tubes, through capacitor C₇₄, for headphone reception.

The "Fidelity" or tone control comprises the combination of capacitor C₇₅ and variable resistor R₄₁ shunting the secondary of T₁.

Automatic Volume Control - The operation of the RCA-6B7 Automatic Volume Control Tube and associated circuits is as follows:

Under conditions of no signal, the cathode current flowing through resistor R₄₇ develops a voltage across R₄₇ of approximately 29 volts. This is in opposition to the approximate 20 volts drop across the bleeder resistor R₄₄ thereby making the cathode approximately 9 volts positive with respect to chassis-ground, or to the anode DP-1. When signals are present, a portion of the i-f voltage is applied to anode DP-2, through capacitor C₇₀, for rectification. The d-c voltage which develops across resistor R₄₃ is applied to the control grid of the RCA-6B7 through a resistance-capacitance filter, making the grid more negative with respect to cathode, in turn reducing the cathode current or voltage drop across R₄₇, and consequently making the cathode less positive with respect to anode DP-1 than under the condition of no signal. Sufficient signal will cause the cathode to become negative with respect to diode DP-1; current will then flow through this circuit causing a voltage drop across R₃₀, which is applied as automatic control-grid bias to the r-f, first-detector, and i-f tubes through suitable resistance-capacitance filters.

Noise Suppressor - The Noise Suppressor consists of an RCA-6J7 whose plate circuit effectively shunts the input circuit of the audio-driver stage, and a means of making the shunting plate impedance very high for desired signals, and very low for undesired noise impulses of short duration and amplitude greater than the desired signal. The plate impedance will be very high for control-grid bias values sufficient to cause plate-current cut-off, and low for bias values which will permit plate current to flow. The audio signal appearing across resistor R₃₇, and consequently across the RCA-6C5 audio driver input circuit will, therefore, depend upon the ratio of the plate impedance of the Noise Suppressor Tube to the resistance of R₃₇, the series combination being essentially a voltage-dividing network. When the plate impedance is high, the ratio will be high, and practically the total audio voltage appearing across resistors R₃₆ and R₃₇ will appear across the plate circuit. The converse will occur with a low plate-impedance. In operation, the bias is adjusted just below the point of plate current cut-off by means of the movable arm on R₄₅. Noise impulses of short duration, tending to make the grid more positive; will cause the plate impedance to be low during these impulses with a consequent reduction of input to the audio driver during these intervals.

Electron-Ray-Tuning-Indicator - An RCA-9E cathode-ray tuning tube is used as a means of visually indicating when the receiver is accurately tuned to the incoming signal. This tube consists of an amplifier section and a cathode-ray section built in the same glass envelope. A portion of the voltage developed across resistor R₄₂ is used to actuate the grid of the amplifier section. Maximum voltage is applied to this grid when the receiver is tuned to resonance with an incoming carrier. This condition is evidenced by minimum width of the dark sector of the fluorescent screen.

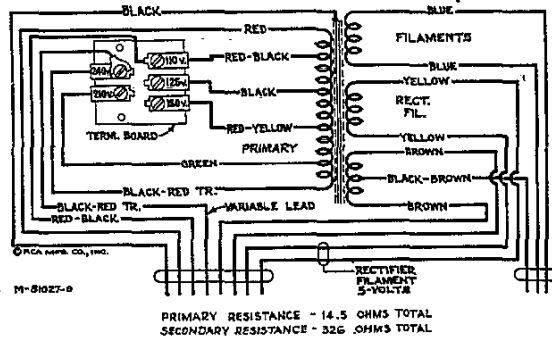


Figure 7—Universal Transformer

Perform alignment in proper order tabulated below, starting with No. 1 and following all operations across, then No. 2, etc. Adjustment locations are shown by Figures 8, 9 and 10. Holes are provided in the left side of the lower r-f unit shield to enable a tuning check with the RCA Stock No. 6679 Tuning Wad.

The RCA Stock No. 12636 Adjusting Tool has been designed for loosening and retightening lock-nut and for making the plunger adjustment of the plunger-type air-dielectric trimming capacitors.

Cathode-ray alignment is preferable; the connections to the chassis are shown on Figure 5. If an output indicator is used, connect it across the loudspeaker voice coil and advance the receiver volume control to full-volume position. Turn AVC - CM Selector to "MOD. AVC OFF"; Signal Input clockwise. Turn Noise Suppression control to extreme counter-clockwise position. Adjust Signal Input control to "100%". Set AVC - CM Selector to "MOD. AVC OFF".

Connect the "Low" output terminal of the test oscillator to the receiver chassis for all alignment operations. Regulate the output of the test oscillator so that the signal applied to the receiver is the minimum which will permit an accurate output observation.

The term "Dummy Antenna" means that device which must be connected between the "High" test oscillator output and the point of connection to the receiver in order to obtain ideal alignment. "No signal, 550-750 kc" means that the receiver should be tuned to a point between 550 and 750 kc where no signal or interference is received from a station or local (heterodyne) oscillator. "Dial setting for image check" means that after alignment is performed following across in proper sequence; the receiver dial should be shifted to the setting specified, without making any other changes, except possibly increasing test oscillator output, at which point image signal should be received. If the image is not received at this dial setting, but at a point approximately 1800 kc below this point in the case of (12) or 1840 kc above this point in the case of (16), it will indicate that the oscillator has been improperly adjusted.

| Stock No. | Description | Stock No. | Description | Stock No. | Description | Stock No. | Description |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------------------------------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| RECEIVER ASSEMBLIES | | | | | | | |
| 4427 | Bracket - Mounting bracket for beat oscillator control shaft, volume control, fidelity control, sensitivity control, selector switch or suppressor control | 12464 | Resistor - 200,000 ohms - Insulated 1/4 watt (R30) | 12724 | Capacitor - 120 mfd (C37) | 14472 | Pulley - Drive belt pulley located on vernier dial shaft - complete with set screws |
| 13024 | Cable - Tuning tube cable and socket | 11454 | Resistor - 470,000 ohms - Carbon type 1/10 watt (R22) | 14443 | Capacitor - 370 mfd (C38) | 14473 | Pulley - Large pulley for drive belt complete with friction discs - drives station indicator pointer drive disc |
| 12581 | Cap - Beat frequency oscillator coil shield top | 12023 | Resistor - 1 megohm - Carbon type 1/10 watt (R25) | 14440 | Capacitor - 3035 mfd (C33) | 14474 | Pulley - Large pulley for drive belt complete with friction discs - drives vernier tuning condenser drive disc and pulley |
| 12607 | Cap - Second i-f transformer shield top | 12400 | Resistor - 1 megohm - Insulated 1/4 watt (R26, R29) | 4839 | Capacitor - 0.1 mfd (C25) | 14445 | Screen - Dial lamp shield |
| 11350 | Cap - Grid contact cap | 13044 | Resistor - 4.7 megohm - Insulated 1/4 watt (R27) | 14431 | Coil - Antenna coil B, C, D and E bands (I2, I2, I3, I4, I5, I6, I7, I8) | 12993 | Screw - #8-32 x 3/8 headless set screw for disc Stock #14446 |
| 13053 | Capacitor - 5.8 mfd (C57, C59, C61, C62) | 13050 | Resistor - 10 megohm - Insulated 1/4 watt (R37) | 14434 | Coil - Antenna r-f or detector coil "A" band (R-F - I29, I20) (DET - L29, I20) (ANT - L9, L10) | 4139 | Screw - #8-32 x 1/4 headless cup point set screw for shaft Stock #14448 |
| 12404 | Capacitor - 120 mfd (C80) | 13037 | Resistor - Voltage divider comprising one 4000 ohm, one 3600 ohm, one 1200 ohm and one 200 ohm sections (R44) | 14433 | Coil - Oscillator coil - B, C, D and E bands (I21, I22, I23, I24, I25, I26) | 4387 | Screw - #8-32 x 1/4 headless set screw for pulley Stock #14472 |
| 12406 | Capacitor - 180 mfd (C66) | 13038 | Sensitivity Control - (R17) | 14435 | Coil - Oscillator coil and shield - "A" band only (I27) | 5042 | Screw - #8-32 x 1/8 headless set screw for vernier dial Stock #14478 |
| 13221 | Capacitor - 390 mfd (C81) | 14427 | Screw - #8-32 x 1/4 headless, cup point set screw for shaft Stock #12405 | 14432 | Coil - R-F or detector coil - B, C, D and E bands (R-F - I11, I29, I33, I34, I35, I36, I37, I38) (DET - L21, L22, L23, L24, L25, L26, L27, L28) | 14418 | Shaft - Indicator pointer shaft complete with set screws |
| 13052 | Capacitor - 470 mfd (C84, C90) | 4119 | Screw - #8-32 x 1/4 headless, cup point set screw for coupling Stock #12407 collar Stock #14449 and gear Stock #14468 | 14437 | Condenser - 8 gang variable tuning condenser (two 4 gang sections assembled Cap, C41, C42, C43, C44, C45, C46, C48, C49, C50, C51) | 14471 | Shaft - Shaft and socket complete with set screws - connects pulley Stock #14470 to shaft of left hand tuning condenser |
| 12204 | Capacitor - 360 mfd (C52) | 12105 | Shaft - Extension shaft for beat oscillator coil adjustment | 12882 | Core - Adjustable core and stud for oscillator coil | 8052 | Spring - Tension spring for link Stock #8252 |
| 13054 | Capacitor - 1200 mfd (C54, C55) | 14205 | Shaft - Extension shaft for crystal phasing condenser | 14028 | Washers - Nut and set for adjustable trimmer | 14450 | Spring - Tension spring for idler |
| 12898 | Capacitor - 1500 mfd (C59) | 14428 | Shaft - Extension shaft for crystal phasing condenser | 14430 | Resistor - 100 ohms - Insulated 1/4 watt (R15) | 14453 | Spring - Friction drive disc tension spring |
| 4858 | Capacitor - .005 mfd (C75, C76, C77) | 14469 | Shaft - Band change knob shaft complete with one "W" washer, one spring washer, and two flat washers | 12261 | Resistor - 390 ohms - Insulated 1/4 watt (R2, R6) | 14454 | Spring - Vernier dial shaft tension spring |
| 4856 | Capacitor - .05 mfd (C74) | 13300 | Shield - Coil shield for Stock #13299 | 12311 | Resistor - 1000 ohms - Insulated 1/4 watt (R2) | 14477 | Stud - Hex head stud for attaching link to gear Stock #14476 |
| 4836 | Capacitor - .05 mfd (C71) | 10711 | Shield - Complete beat oscillator circuit bottom shield | 13714 | Resistor - 5600 ohms - Insulated 1/4 watt (R3) | REPRODUCER ASSEMBLIES | |
| 4885 | Capacitor - .05 mfd (C63, C65) | 12008 | Shield - R-F transformer shield for Stock #12009, 12006, and 12007 | 12288 | Resistor - 10,000 ohms - Insulated 1/4 watt (R8) | 12069 | Board - Reproducer terminal board |
| 4858 | Capacitor - .01 mfd (C56, C64, C70, C83, C89) | 14114 | Socket - Dial lamp and stand-by lamp socket | 13414 | Resistor - 47,000 ohms - Insulated 1/4 watt (R10) | 12649 | Bracket - Output transformer mounting bracket and clamp |
| 4839 | Capacitor - 0.1 mfd (C58, C60, C67, C73, C74) | 4794 | Socket - 4 contact 6Z3 Radiotron socket | 13735 | Resistor - 68,000 ohms - Insulated 1/4 watt (R1, R5, R7) | 12434 | Coil - Reproducer field coil (L47) |
| 13048 | Capacitor - 0.25 mfd (C79) | 11197 | Socket - 6 contact 6C5 Radiotron socket | 14438 | Resistor - 100,000 ohms - Insulated 1/2 watt (R9) | 12433 | Coil - Reproducer neutralizing coil (L45) |
| 13041 | Capacitor - 4 mfd (C85) | 11198 | Socket - 7 contact 6E6, 6H6, 6J7, 6K7 Radiotron or r-f unit power supply socket | 12883 | Shield - Oscillator coil shield | 12640 | Cone - Reproducer cone and dust cap (L46) |
| 13046 | Capacitor - 8 mfd (C84) | 11196 | Socket - 8 contact speaker cable socket | 11280 | Socket - 7 contact det. 6J7 or r-f 6K7 Radiotron socket | 12082 | Connector - 7 contact male connector for speaker leads |
| 13040 | Capacitor - 10 mfd (C72, C86) | 11381 | Socket - Tuning tube socket and cover | 11478 | Socket - 7 contact osc. 6J7 Radiotron socket | 9742 | Transformer Complete |
| 13033 | Capacitor - 25 mfd (C87, C88) | 12106 | Spring - Tension spring for beat oscillator adjustment shaft | 12007 | Spring - Retaining spring for core Stock #12683 | 11229 | Transformer - Output transformer (T2) |
| 13299 | Coil - Beat frequency oscillator coil and shield (I44, C80, C81, R47) | 12007 | Spring - Retaining spring for core Stock #12006 | 14436 | Switch - Range switch (S1, S2, S3, S4, S5, S6, S7, S8) | 11886 | Washer - Spring washer to hold field coil securely |
| 14420 | Collar - Retaining collar for crystal phasing condenser extension shaft complete with set screw | 13042 | Suppressor Control - (R27) | DRIVE ASSEMBLIES | | | |
| 12089 | Condenser - Crystal phasing - variable condenser and switch (C91, S11) | 13043 | Switch - AVC - Cf selector switch (S10) | 14451 | Belt - Vernier dial drive belt | 13066 | Disc - Colored disc and mask for stand-by belt |
| 12085 | Core - Adjustable core and stud for Stock #12009 | 14234 | Tune Control and Power Switch - (R21, S9) | 14452 | Belt - Main or vernier tuning knob drive belt | 14456 | Escutcheon - Tuning tube and stand-by light escutcheon for Table Model |
| 12006 | Core - Adjustable core and stud for Stock #12005, 12008, and 12007 | 14095 | Transformer - First i-f transformer (I28, I29, C52) | 14444 | Dial - Band indicating dial and cam assembly | 14457 | Escutcheon - Tuning tube and stand-by light escutcheon and crystal for Rack Model |
| 12107 | Coupling - Crystal phasing condenser extension shaft flexible coupling | 13035 | Transformer - Interstage driver transformer (T1) | 14446 | Disc - Indicator pointer drive disc complete with set screws | 13064 | Escutcheon - Station selector dial - escutcheon for Rack Model |
| 12108 | Crystal - Filter crystal and case | 12096 | Transformer - Second i-f transformer (L40, I21, C57, C59) | 14464 | Drive - Variable tuning condenser dials and drive assembly complete | 14458 | Escutcheon - Station selector dial - escutcheon and crystal for Table Model |
| 10927 | Fuse - 2 ampere (F1) | 12097 | Transformer - Third i-f transformer (L43, C61, C62, C66, R21, R22) | 14475 | Gear - Tooth segment gear and connecting link for operating band indicating dial | 14460 | Escutcheon - Oscillator control, volume control, band spread, range switch, tuning selectivity and fidelity, knob escutcheon |
| 14468 | Gear - Gear located on band change knob shaft complete with set screws | 12095 | Transformer - Power transformer 105-125 volts 50-60 cycle (T3) | 14449 | Idler - Drive belt idler pulley assembly | 14461 | Escutcheon - Phone jack and suppressor control knob escutcheon |
| 12128 | Jack - Phone jack (J1) | 12097 | Transformer - Power transformer 105-250 volts 50-60 cycle (T3) | 12908 | Indicator - Station selector indicator pointer | 14462 | Escutcheon - Stal-by switch and sensitivity control knob escutcheon |
| 5246 | Lamp - Dial lamp | 13039 | Volume Control - (R38) | 8051 | Link - Band indicating dial link and roller complete with spring | 12995 | Knob - Station selector knob for Rack Model |
| 3376 | Mounting - Fuse mounting board for 110 volt models - less fuse | 12806 | Board - Antenna and ground terminal board | 14447 | Pulley - Vernier dial drive belt pulley and drive disc located on left hand tuning condenser shaft complete with set screws | 14459 | Knob - Station selector knob for Table Model |
| 4604 | Mounting - Fuse mounting board for 250 volt models - less fuse | 5247 | Bushing - Variable tuning condenser mounting bushing assembly | | | | |
| 14467 | Plate - Mounting plate and bearing for band change knob shaft - located on front apron of chassis | 14430 | Cable - R-F unit power supply cable complete with 8 contact male connector | | | | |
| 12261 | Resistor - 390 ohms - Insulated 1/4 watt (R14, R18) | 11350 | Cap - Grid contact cap | | | | |
| 11937 | Resistor - 2.5 ohms - wire wound 5 watts (R39) | 12884 | Capacitor - Adjustable trimmer (long) (C6, C26, C29, C27, C31) | | | | |
| 12311 | Resistor - 1000 ohms - Insulated 1/4 watt (R11, R20, R19) | 12714 | Capacitor - Adjustable trimmer (medium) (C2, C3, C4, C5, C12, C13, C14, C15, C21, C22, C23, C24, C28, C29, C32) | | | | |
| 13302 | Resistor - 10,000 ohms - Carbon type 1/10 watt (R27) | 14399 | Capacitor - 4.7 mfd (C32) | | | | |
| 12288 | Resistor - 10,000 ohms - Insulated 1/4 watt (R25, R26) | 13001 | Capacitor - 8.2 mfd (C92) | | | | |
| 13045 | Resistor - 18,000 ohms - Insulated 1/4 watt (R24) | 13121 | Capacitor - 47 mfd (C9, C19) | | | | |
| 12412 | Resistor - 47,000 ohms - Insulated 1/4 watt (R31) | | | | | | |
| 12573 | Resistor - 47,000 ohms - Carbon type 1/2 watt (R31) | | | | | | |
| 11282 | Resistor - 56,000 ohms - Carbon type 1/10 watt (R21) | | | | | | |
| 13049 | Resistor - 56,000 ohms - Insulated 1 watt (R20) | | | | | | |
| 12263 | Resistor - 100,000 ohms - Insulated 1/4 watt (R13) | | | | | | |

RCA MFG. CO., INC.

Parts List

RCA PAGE 9-161
MODEL ACR 111