

# Model 112 A

## 220-Volt AC/DC Radio Broadcast Receiver

### Five-Tube Superheterodyne Table Model

#### —INSTRUCTIONS—

### INSTALLATION

**Location**—The receiver should be supported upon a level surface such as a table or shelf, convenient to an electrical outlet and to the antenna lead-in and ground wires. In any installation, care should be taken to avoid restriction of natural ventilation through the cabinet as would occur with the back of the set placed too close to a wall or other plane surface. To prevent damage to the cabinet finish and possibly more serious internal injury, the instrument should not be placed upon or close to a radiator or other heating device.

**Antenna and Ground**—An outdoor antenna having a length of from 25 to 75 feet, including the lead-in and ground connections, is recommended. In many cases, however, an indoor antenna of short or medium length will be found satisfactory in buildings of non-metallic construction. The antenna should be well insulated from all objects and run neither close nor parallel to electrical circuits inside or outside the building.

A good ground connection is essential for best performance. The ground lead should be as short as possible and preferably attached to a cold water pipe. The pipe surface should be scraped clean and an approved ground clamp used to insure a tight and permanent connection.

Two flexible leads are provided at the rear of the receiver for connection to the antenna and ground. Connect the *black* lead to the antenna wire or lead-in and the *yellow* lead to the ground wire. Both joints should be soldered and wrapped with insulating tape.

**Power Supply**—Connect the power cord to an electrical outlet upon which is impressed a supply

voltage (either AC or DC) within the limits specified on the license label attached to the rear panel of the instrument. Never operate the instrument from a supply voltage exceeding the maximum limit (230 volts). Consult your local power company if in doubt as to the actual voltage available.

**Radiotrons**—The instrument is equipped and tested at the factory with RCA Radiotrons and is shipped with the tubes in their sockets. The set therefore is ready to operate when it is removed from the carton and external connections are made as heretofore described.

If, when first installed, the receiver either performs imperfectly or fails to operate, it is probable that one or more of the tubes, shields or dome terminal clips have been jarred loose in shipment. Remove the cabinet rear panel (held in place by screws at the edges), then refer to the tube location diagram printed on the license label and *make certain*:

- (a) That all tubes are in the proper sockets and pressed down firmly. Never apply power to the instrument unless all Radiotrons are in place.
- (b) That all shields are rigidly in place over the Radiotrons represented by double circles on the diagram.
- (c) That the spring connectors of the short flexible (grid) leads shown on the diagram are securely attached to the dome terminals of the proper Radiotrons and are not bent to an extent where contact with any tube shield is established.

**NOTE**—The grid lead for Radiotron RCA-6A7 must be suspended over the notched support as illustrated, in order to insure proper operation.

### OPERATION

**Controls**—The instrument has two operating controls located on the front panel of the cabinet as follows:

- (1) **Volume Control—Combined with Power Switch** (Left-hand Knob)—In the extreme counter-clockwise position, the power is "off." A slight clockwise rotation turns the power "on," as indicated by illumination of the dial; further rotation increases the volume.
- (2) **Station Selector** (Right-hand Knob)—This control is provided with a dial calibrated to facilitate the location and identification of stations (add one cipher to scale markings to obtain the frequency in kilocycles).

**Procedure**—To operate the receiver, proceed as follows:

1. Turn the power "on" and set the Volume Control fully clockwise for maximum volume—reduce the setting if too noisy after allowing a few seconds for the tubes to heat.

2. Rotate the Station Selector slowly over the range of the dial until a desirable station program is heard.

**IMPORTANT**—If no sounds (station signals or static) are heard on DC supply, reverse the prongs of the power plug in the receptacle.

3. For best reproduction, reduce the Volume Control setting and adjust the Station Selector accurately for loudest volume. Always use the Volume Control—never the Station Selector—for regulation of volume.

4. When through operating, turn the Volume Control knob fully counter-clockwise, thus switching "off" the power.

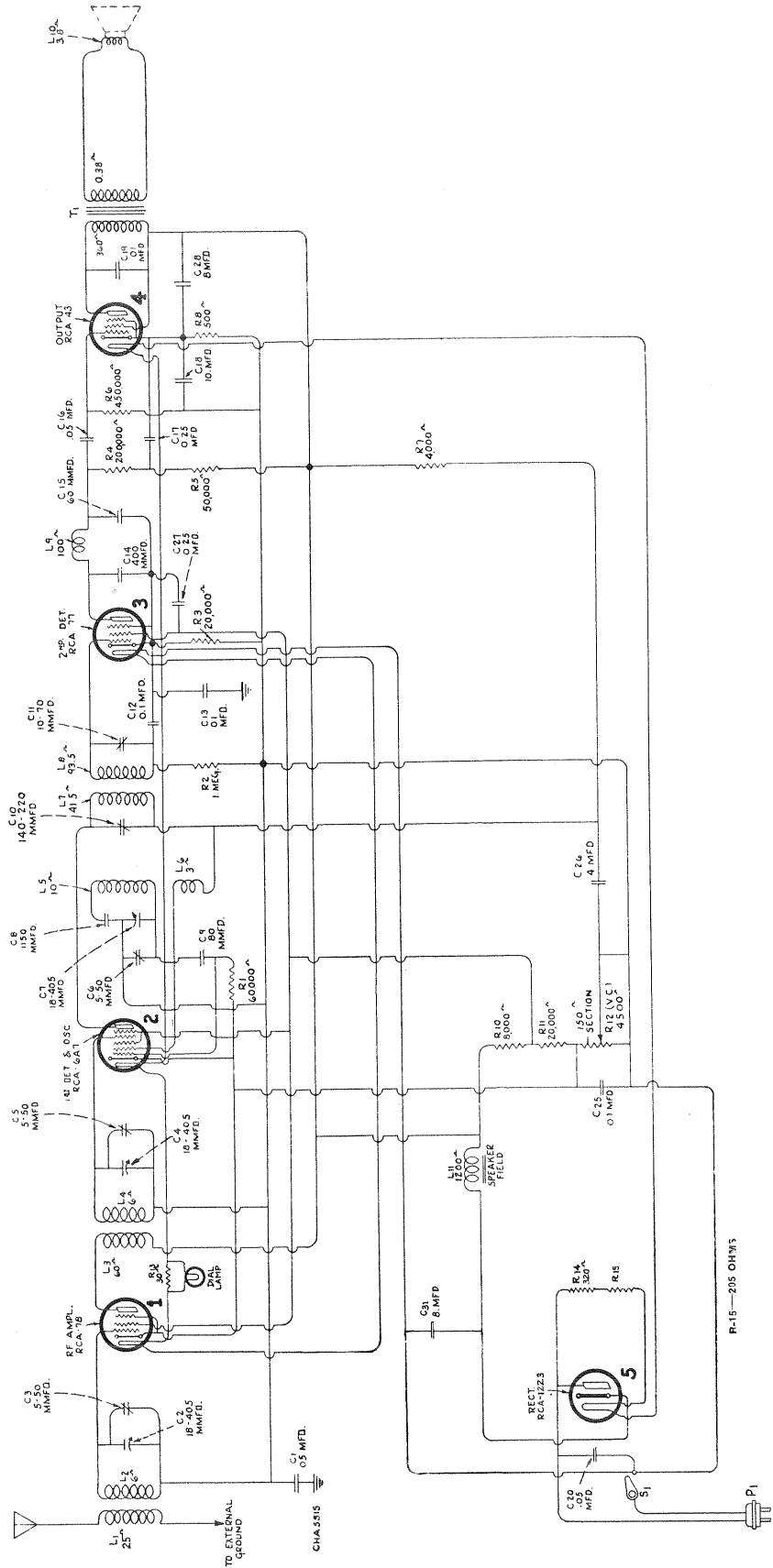


Figure A—Schematic Diagram



# SERVICE DATA

## Electrical Specifications

Voltage Rating	200-230 AC or DC
Frequency Rating (AC)	50-60 Cycles
Power Consumption	AC 60 Cycles-105 Watts-DC-85 Watts
Number and Types of Radiotrons	1 RCA-78, 1 RCA-6A7, 1 RCA-77, 1 RCA-43, 1 RCA-12Z3—Total, 5
Undistorted Output	1.5 Watts
Frequency Range	.540 KC-1500 KC

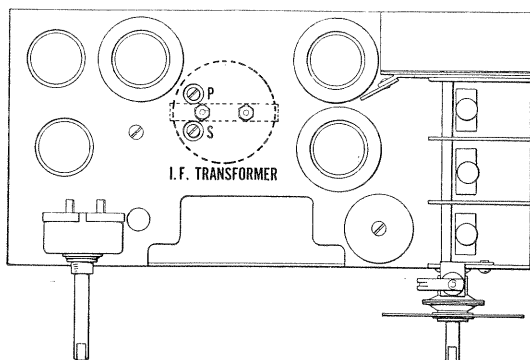


Figure C—Location of Line-Up Capacitors

This receiver is a five-tube Super-Heterodyne designed to operate on AC or DC over the voltage and frequency range indicated. Features such as compact construction, dynamic speaker, single Pentode Output tube and the inherent sensitivity, selectivity and tone quality of the Super-Heterodyne are included in this instrument.

The circuit consists of an R. F. stage using Radiotron RCA-78, a combined oscillator and first detector using Radiotron 6A7, an I. F. transformer using two tuned circuits, a second detector using Radiotron RCA-77 and a power stage using Radiotron RCA-43. The rectifier is Radiotron RCA-12Z3, which is used in a half-wave circuit.

## Line-Up Capacitor Adjustments

The line-up capacitor adjustments for the I. F. stage and for the R. F. circuits should be made in the following manner:

- Procure a modulated oscillator giving a signal at 175 KC and 1400 KC. An output meter and non-metallic screw driver are also necessary. The Stock No. 9050 test oscillator and Stock No. 7065 screw driver are suitable for this purpose. Figure C shows the location of the I. F. capacitors.
- The I. F. line-up capacitors should be first adjusted. This is done by placing the oscillator in operation at 175 KC, coupling its output between the control grid of the first detector and grounds connecting the output meter across the cone coil of the loudspeaker and adjusting the two I. F. line-up capacitors until maximum output is obtained.
- After the I. F. circuits are aligned, the R. F. and oscillator circuits are adjusted at 1400 KC. Prior to making the adjustment, however, the dial should be checked. This is done by making sure the dial indicator reads 530 (indicator in center position) when the tuning capacitor rotor plates are fully meshed with the stator plates. The adjustments are then made in similar manner as that of the I. F. except that the oscillator is set at 1400 KC, its output is connected from antenna to ground of the receiver, and the dial is set at 140. The adjustment is made with the trimming capacitors located on top of the gang capacitor and each capacitor is adjusted for maximum output.

## RADIOTRON SOCKET VOLTAGES

\*Measured at 220 Volts A. C., 60 cycles (Maximum Volume Control)

Radiotron No.	Cathode to Control Grid, Volts DC	Cathode to Screen Grid, Volts DC	Cathode to Plate, Volts DC	Plate Current M. A.	Heater Volts
RCA-78 R. F.	3.0	100	165	5.5	6.0
RCA-6A7 Oscillator 1st Detector	—	—	145	1.7	6.0
	3.0	100	145	2.5	—
RCA-77 2nd Detector	Plate and Bias Supply 165 Volts			—	6.0
RCA-43 Power	21.0	140	130	35.0	25.0
RCA-12Z3 Rectifier	220 RMS			—	12.0

\*Voltages with 220 Volts D. C. supply will be approximately 10 per cent less than tabulated values

## REPLACEMENT PARTS

Insist on genuine factory tested parts, which are readily identified and may be purchased from authorized dealers

Stock No.	DESCRIPTION	List Price	Stock No.	DESCRIPTION	List Price
<b>RECEIVER ASSEMBLIES</b>					
2747	Cap—Contact cap—Package of 5	\$0.50	6228	Resistor—200,000 ohms—Carbon type— $\frac{1}{2}$ watt (R4)—Package of 5	\$1.00
3710	Capacitor—60 mmfd. (C15)	.36	3700	Resistor—450,000 ohms—Carbon type— $\frac{1}{2}$ watt (R6)—Package of 5	1.00
3711	Capacitor—80 mmfd. (C9)	.40	3632	Resistor—500 ohms—Carbon type—1 watt (R8)—Package of 5	1.10
3712	Capacitor—400 mmfd. (C14)	.40	2963	Resistor—8,000 ohms—Carbon type—1 watt (R10)—Package of 5	1.10
3754	Capacitor—1150 mmfd. (C8)	.50	6114	Resistor—20,000 ohms—Carbon type—1 watt (R11)—Package of 5	1.10
3701	Capacitor—0.01 mfd. (C19)	.30	3914	Resistor—30 ohms—Flexible type (R13)	.28
3888	Capacitor—0.05 mfd. (C16)	.25	4718	Resistor—205 ohms—Porcelain type—(R15)	.90
3916	Capacitor—0.05 mfd. (C20)	.32	3915	Resistor—320 ohms—Porcelain type—(RR14)	.88
3917	Capacitor—0.25 mfd. (C17)	.40	3584	Ring—Antenna R. F. or oscillator coil retaining ring—Package of 5	.40
3755	Capacitor—Comprising two 0.1 mfd. and one 0.25 mfd. (C12, C13, C27)	.60	3993	Screw—No. 6-32 square head set screw for condenser dial and drive assembly—Package of 10	.25
6621	Capacitor—Comprising one 0.05 and one 0.1 mfd. (C1, C25)	.46	7065	Screwdriver—Insulated screwdriver and socket wrench—For I. F., R. F. and oscillator condenser adjustment	1.00
6728	Capacitor—Comprising one 4.0 mfd., one 10.0 mfd. and two 8.0 mfd. (C18, C26, C28, C31)	2.94	3623	Shield—Antenna R. F. or oscillator coil shield	.30
6726	Coil—Choke coil (L9)	.62	3950	Shield—Radiotron shield	.26
6519	Coil—Antenna coil (L1, L2)	.88	4700	Socket—Dial lamp socket	.35
6521	Coil—Oscillator coil (L5, L6)	.60	3859	Socket—4-contact Radiotron socket	.30
6520	Coil—R. F. coil (L3, L4)	.94	6676	Socket—6-contact Radiotron socket	.40
6723	Condenser—3-gang variable tuning condenser (C2, C3, C4, C5, C6, C7)	4.15	7485	Socket—6-contact Radiotron socket—Second detector	.40
4701	Dial—Tuning condenser dial and drive assembly	1.50	6727	Transformer—Intermediate frequency transformer (L7, L8, C10, C11)	1.68
4703	Escutcheon—Station selector escutcheon	.35	4702	Volume control (R12, S1)	1.30
4449	Knob—Volume control or station selector knob—Package of 5	.60	<b>REPRODUCER ASSEMBLIES</b>		
3602	Resistor—60,000 ohms—Carbon type— $\frac{1}{4}$ watt (R1)—Package of 5	1.00	7845	Coil—Field coil magnet and cone support (L11)	2.50
3033	Resistor—1 megohm—Carbon type— $\frac{1}{4}$ watt (R2)—Package of 5	1.00	9492	Cone—Reproducer cone (L10)—Package of 5	3.70
6250	Resistor—4000 ohms—Carbon type— $\frac{1}{2}$ watt (R7)—Package of 5	1.00	7847	Reproducer complete	6.30
6303	Resistor—20,000 ohms—Carbon type— $\frac{1}{2}$ watt (R3)—Package of 5	1.00	7846	Transformer—Output transformer (T1)	1.65
3594	Resistor—50,000 ohms—Carbon type— $\frac{1}{2}$ watt (R5)—Package of 5	1.00			

# Radio-Receptor para C. A. o C. C. de 220 Voltios

## Superheterodino de Cinco Tubos, Modelo de Mesa

### — INSTRUCCIONES —

#### INSTALACIÓN

**Sitio para el Aparato**—Este receptor debe colocarse sobre una superficie plana, como por ejemplo una mesa o un tablero, y cerca de las entradas de la antena y tierra, así como próximo a un toma-corriente. Cualquiera que sea la instalación que se haga, debe tenerse mucho cuidado de no impedir la ventilación natural del mueble, como ocurriría si se colocara su parte posterior muy junto a una pared o contra cualquier otra superficie vertical plana. Para evitar daño al acabado del mueble y posiblemente al circuito que contiene, no debe colocarse este radio sobre un aparato de calefacción ni demasiado cerca de cualquier artículo que produzca calor.

**Antena y Tierra**—Se recomienda una antena exterior de 7.5 a 22.5 metros de longitud, incluyendo el hilo de entrada y el hilo a tierra. Sin embargo, en muchos casos una antena interior de longitud corta o mediana dará resultados satisfactorios en edificios que no sean de construcción metálica. La antena debe aislarse perfectamente de todo objeto y no debe instalarse ni cerca ni paralelamente a circuitos eléctricos dentro o fuera del edificio.

Sólo haciéndose una buena conexión a tierra podrá conseguirse un funcionamiento superior. La conexión a tierra debe ser lo más corta y directa posible y con preferencia debe hacerse a la tubería de agua fría. La superficie de la tubería debe limarse para que quede absolutamente limpia, y recomendamos el uso de una pinza especial para que la conexión resulte apretada y permanente.

Se han provisto dos hilos flexibles en la parte de atrás del receptor para las conexiones a la antena y a tierra. Conéctese el hilo negro al hilo de entrada de la antena y el amarillo al hilo a tierra. Ambas conexiones deben soldarse y cubrirse con tira de aislar.

**Suministro de Energía**—Conéctese el cordón de la energía a un toma-corriente que indique un voltaje (sea C.A. o C.C.) que esté dentro de los límites especificados en la etiqueta de licencia, pegada en el panel de atrás del instrumento. Este instrumento no debe hacerse funcionar nunca

con una corriente cuyo voltaje exceda del límite máximo (230 voltios). En caso de duda sobre el voltaje exacto de la corriente, consulte este particular con la Compañía de Electricidad de la localidad.

**Radiotrons**—Este instrumento se ha equipado y probado en la fábrica con Radiotrons RCA y se despacha con los tubos en sus respectivos enchufes. Por lo tanto, este receptor estará listo para funcionar cuando se haya desempacado cuidadosamente y las conexiones externas se hayan hecho conformes a las instrucciones que anteceden.

Si, al instalarse, el receptor no funciona bien o deja de funcionar, uno o más tubos, corazas o contactos de tope se habrán alojado durante el transporte. Sáquese el panel de atrás del mueble (sostenido en su posición por medio de tornillos en los bordes), luego consúltese el diagrama de la distribución de tubos que aparece en la etiqueta de graduación y **cerciórese** de lo siguiente:

- (a) Que cada tubo esté en el enchufe que le corresponde y que todos hayan sido introducidos firmemente hasta el fondo. Nunca aplique la corriente al aparato hasta que todos los tubos estén en sus lugares respectivos.
- (b) Que todas las corazas o pantallas metálicas tubulares estén firmemente colocadas encima de los tubos que protegen (estos tubos están indicados por un círculo doble en el diagrama).
- (c) Que los conectadores de resorte de los hilos cortos y flexibles (rejilla), que se muestran en el diagrama, estén firmemente unidos a los contactos o terminales de tope de los Radiotrons respectivos, y que los mismos no estén torcidos de tal modo que haya un contacto con cualquiera de la corazas tubulares.

**NOTA**—El hilo de rejilla para el Radiotron RCA-6A7 debe quedar suspendido sobre el soporte ranurado, según se ilustra, a fin de obtener un funcionamiento satisfactorio.

#### FUNCIONAMIENTO

**Controles**—Este instrumento tiene dos controles para su funcionamiento, los cuales se hallarán en el panel de enfrente del mueble, y son como sigue:

- (1) **Control de Volumen—Combinado con el Interruptor de la Energía** (Perilla de la Izquierda)—Girada hasta el fin hacia la izquierda, esta perilla desconectará toda la energía. Haciéndola girar levemente hacia la derecha, se aplicará energía, según lo indicará la iluminación del cuadrante. Haciéndola girar más se aumentará gradualmente el volumen.
- (2) **Selector de Estaciones** (Perilla de la Derecha)—Este control está provisto de un cuadrante debidamente calibrado, el cual facilita la sintonización e identificación de las estaciones (agréguese un cero a los numerales de la escala para obtener la frecuencia en kilociclos).

**Modo de Proceder**—Para hacer funcionar este receptor, hágase lo siguiente:

1. Aplíquese la corriente y hágase girar hacia la derecha la perilla del Control de Volumen para conseguir un volumen

máximo. Redúzcase esta graduación si la reproducción es demasiado potente (déjense pasar unos segundos para el calentamiento de los tubos).

2. Hágase girar el Selector de Estaciones, poco a poco en todo el recorrido del cuadrante, hasta que se oiga el programa de la estación que se desee.

**MUY IMPORTANTE**—Si no se oye nada que venga del altoparlante (sea señal de radio o interferencia de la estática) al hacer funcionar el aparato con Corriente Continua, cámbiense en sentido contrario la posición del tapón conector en el toma-corriente.

3. Para obtener una reproducción perfecta, redúzcase la graduación del Control de Volumen y ajústese con todo cuidado el Selector de Estaciones para el volumen máximo. Úsese siempre el Control de Volumen—nunca el Selector de Estaciones—para regular el volumen.

4. Cuando se desee que el instrumento cese de funcionar, córtese la corriente, haciendo girar la perilla del Control de Volumen hacia su posición máxima de la izquierda.