

RCA VICTOR MODELS T6-11 and C6-12

Six-Tube, Two-Band, A-C, Superheterodyne Receivers

TECHNICAL INFORMATION

Electrical Specifications

FREQUENCY RANGES		ALIGNMENT FREQUENCIES	
Broadcast Band (A)	540-1,850 kc.	Band (A)	600 kc. (osc.), 1,720 kc. (osc., ant.)
Short-wave Band (B)	1,850-6,900 kc.	Band (B)	No Adjustments Required
Intermediate Frequency	460 kc.		
RADIOTRON COMPLEMENT			
(1) RCA-6A8	First Detector-Oscillator	(4) RCA-6F5	Audio Voltage Amplifier
(2) RCA-6K7	Intermediate Amplifier	(5) RCA-6F6	Audio Power Amplifier
(3) RCA-6H6	Second Detector-A.V.C.	(6) RCA-5Z4	Full-wave Rectifier
POWER SUPPLY RATINGS			
Rating A	105-125 Volts, 50-60 Cycles, 75 Watts		
Rating B	105-125 Volts, 25-60 Cycles, 75 Watts		
Rating C	100-130/140-160/195-250 Volts, 40-60 Cycles, 75 Watts		
POWER OUTPUT RATINGS		LOUDSPEAKER	
Undistorted	2.0 Watts	Type	Electrodynamic
Maximum	4.5 Watts	Voice Coil Impedance	2.25 Ohms at 400 Cycles

Mechanical Specifications

	Model T6-11	Model C6-12
Height	17 ⁵ / ₈ inches	36 ¹ / ₄ inches
Width	13 ¹ / ₄ inches	22 ¹ / ₂ inches
Depth	8 ¹ / ₄ inches	9 ⁵ / ₈ inches
Weight (Net)	21 pounds	37 pounds
Weight (Shipping)	25 pounds	48 pounds
Chassis Base Dimensions	12 inches x 7 inches x 2 ¹ / ₂ inches	
Controls	(1) Power Switch-Volume, (2) Tuning, (3) Tone, (4) Range Selector	
Tuning Drive Ratio	6-to-1	

General Features

These receivers each employ the same chassis and have many distinctive features. Model T6-11 employs an 8-inch dynamic loudspeaker and Model C6-12 employs a 12-inch dynamic loudspeaker. The new RCA All-Metal Radiotrons are employed in a superheterodyne circuit. The tuning ranges cover the standard broadcast band and extend above it to include the 49-meter short-wave broadcast band. The short-wave portion of this extensive range also includes the channels assigned for police, amateur, and aviation communication.

A high-ratio gang condenser drive is provided to facilitate accurate tuning. This feature is especially

valuable for short-wave reception. The dial is clearly graduated and uniformly illuminated.

Automatic volume control is incorporated in the circuit to compensate for fluctuations of signal strength due to fading and variations of signal strength from station to station.

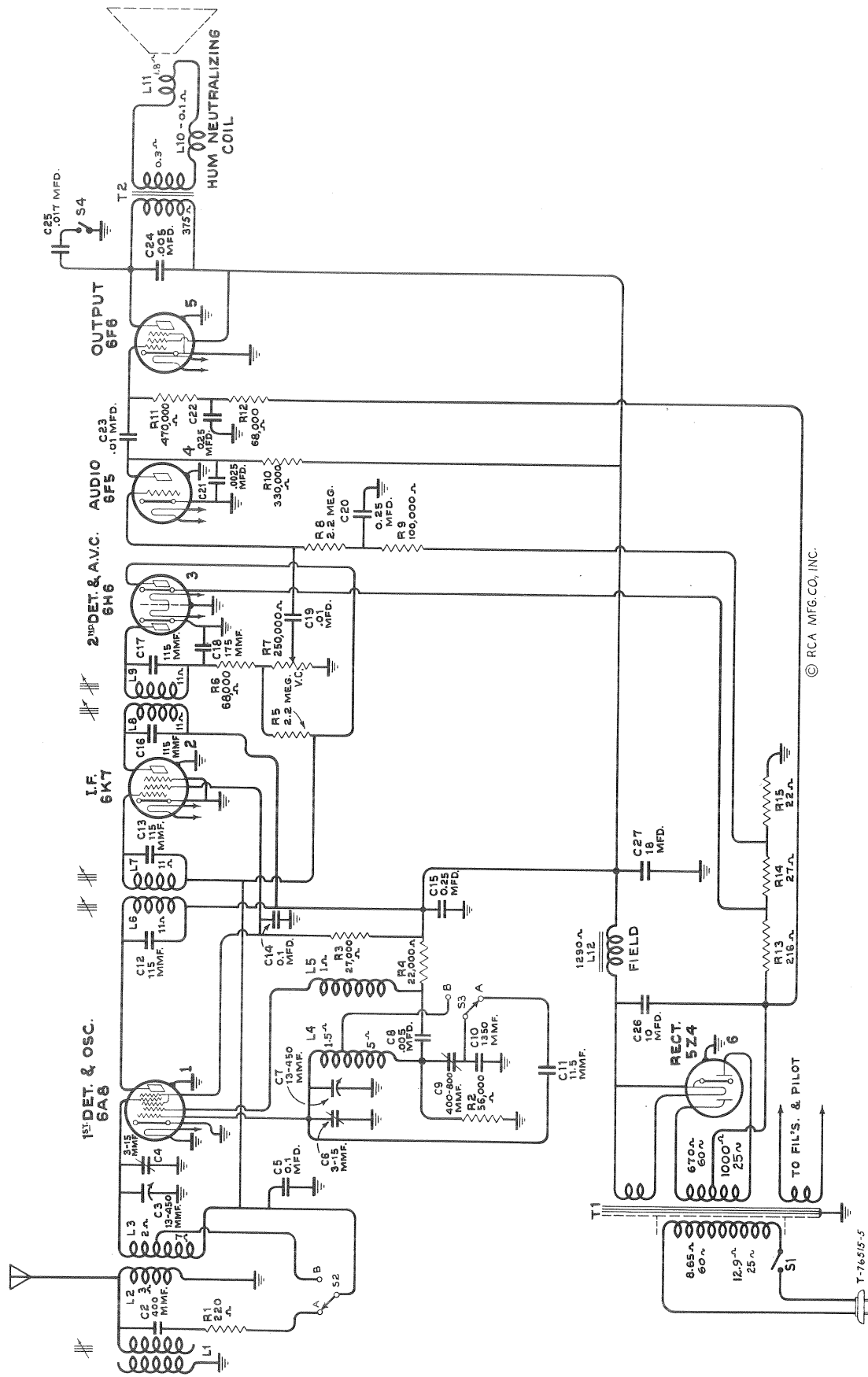
High-frequency tone control enables the listener to reduce high-frequency response as well as certain noises and static.

An adjustable wave trap, in parallel with the antenna input, serves to suppress code interference which may be encountered in certain localities from intermediate frequency radio telegraph signals.

Circuit Arrangement

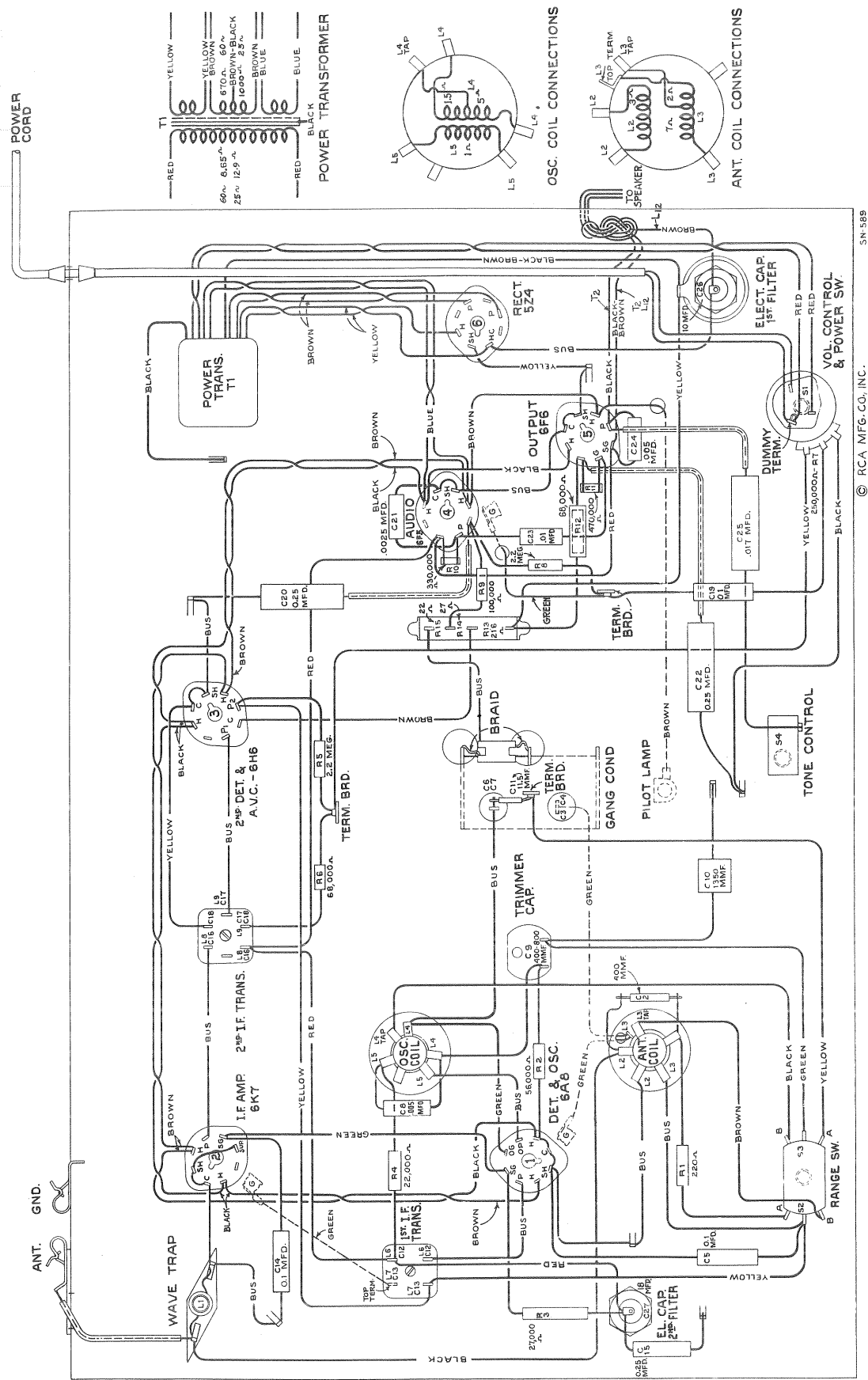
The first detector and oscillator functions are accomplished in a single tube, an RCA-6A8. The input of this tube is coupled to the antenna through

a tuned transformer. A shunt (permeability tuned) wave trap is connected across the primary of this transformer to prevent signals of intermediate fre-



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Figure 1—Schematic Circuit Diagram



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Figure 2—Chassis Wiring Diagram

quency (460 kc.) from being introduced into the first stage as interference. The two-section gang condenser, which tunes the antenna transformer secondary and the heterodyne oscillator coil, has adjustable trimmers for obtaining exact alignment. Each of these coils is tapped so that the range switch increases the range of tuning by decreasing the amount of inductance.

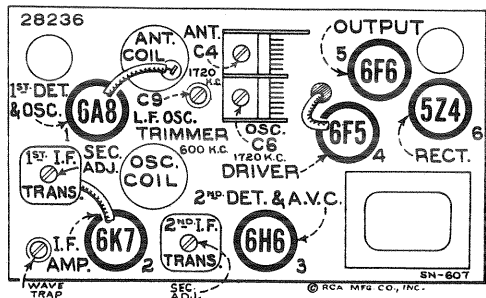


Figure 3—Radiotron and Coil Locations

The intermediate frequency stage is coupled to the RCA-6A8 and to the RCA-6H6 by means of tuned transformers. These transformers resonate with fixed capacitors and are tuned by molded cores to 460 kc.

The modulated signal as obtained from the output of the i-f system is detected by an RCA-6H6 twin-diode tube. Audio frequency secured by this process is passed on to the a-f system for amplification and final reproduction. The d-c voltage, which results from detection of the signal, is used for auto-

matic volume control. This voltage, which develops across the volume control resistor R-7, is applied as automatic control grid bias to the first detector and i-f tubes through a suitable resistance filter. The second diode of the RCA-6H6 is used to supply residual bias for the controlled tubes under conditions of little or no signal. This auxiliary diode, under such conditions, draws current which flows through resistors R-5 and R-7, thereby maintaining the desired minimum operating bias on such tubes. On application of signal energy above a certain level, however, the auxiliary bias diode ceases to draw current and the a.v.c. diode takes over the biasing function.

Manual volume control is effected by means of an acoustically tapered potentiometer connected as a variable coupling element between the output of the second detector and the first audio control grid. After amplification by the RCA-6F5, the audio signal is transmitted by resistance-capacitance coupling to the input of the RCA-6F6 power output stage, which, in turn, is transformer-coupled to the dynamic speaker. High-frequency tone control is provided by means of a shunt capacitor across the plate circuit of the output tube, which may be cut in or out of the circuit with a control switch (S-4).

The power supply system consists of an RCA-5Z4 rectifier tube which is supplied from an efficiently designed power transformer and which works into a suitable filter. The various potentials required for the plate, screen, control grid, and cathode circuits are obtained from the output of the filter. The electrodynamic loudspeaker field coil is used as a filter reactor.

SERVICE DATA

The various diagrams of this booklet contain such information as will be needed to isolate causes for defective operation when such develops. The ratings of the resistors, capacitors, coils, etc., are indicated adjacent to the symbols signifying these parts on the diagrams. Identification titles, such as R-3, L-2, C-1, etc., are provided for reference between the illustrations and the Replacement Parts List. The coils, reactors, and transformer windings are rated in terms of their d-c resistances only. Ratings of less than one ohm are generally omitted.

Alignment Procedure

There are three alignment trimmers provided in the antenna transformer and oscillator coil tuned circuits. The i-f transformer adjustments are made by means of screws attached to molded cores. All of these circuits have been accurately adjusted during manufacture and should remain properly aligned unless affected by abnormal conditions or altered during servicing. Loss of sensitivity, improper tone quality, and poor selectivity are the usual indications of improper alignment.

The correct performance of this receiver can only be obtained when the aligning has been done with adequate and reliable apparatus. The manufacturer of

this receiver has available, for sale through its distributors and dealers, a complete assortment of such service equipment as may be needed for the alignment operation.

An oscillator (signal generator), such as the RCA Stock No. 9595, is required as a source of the specified alignment frequencies. Visual indication of receiver output during the adjustment is necessary and should be accomplished by the use of an indicator

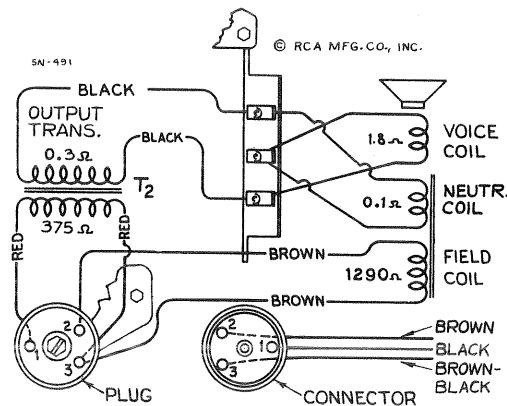


Figure 4—Loudspeaker Wiring

such as the RCA Stock No. 4317 Neon Output Indicator.

The following method of procedure should be followed in adjusting the various trimmer capacitors and molded cores:

I-F Core Adjustments

The four adjustment screws (attached to molded cores) of the two i-f transformers (one on top and one on bottom of each i-f transformer) are located as shown by Figures 3 and 6. Each circuit must be aligned to a basic frequency of 460 kc. To do this, attach the output indicator across the loudspeaker

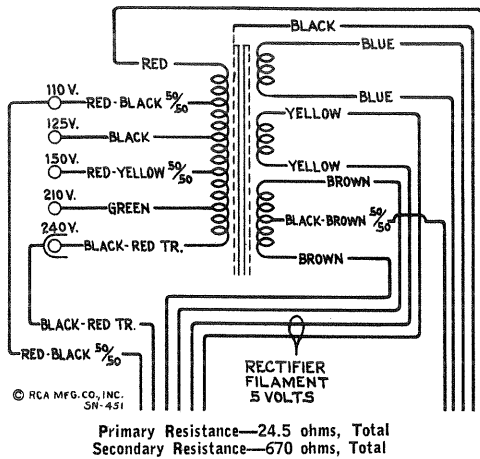


Figure 5—Universal Transformer

voice coil or across the output transformer primary. Connect the output of the test oscillator between the control grid of the RCA-6A8 and chassis ground. Tune the oscillator to 460 kc. Advance the receiver volume control to its full-on position and adjust the receiver tuning control to a point, within its range, where no interference is encountered either from local broadcast stations or from the heterodyne oscillator. Increase the output of the test oscillator until a slight indication is present on the output indicator. Then, adjust the two screws of the second i-f transformer to produce maximum (peak) indicated receiver output. Then, adjust the two screws of the first i-f transformer for maximum (peak) receiver output as shown by the indicating device. During these adjustments, regulate the test oscillator output so that the indication is always as low as possible. By doing so, broadness of tuning due to a.v.c. action will be avoided. It is advisable to repeat the adjustment of all i-f screws to assure that the interaction between them has not disturbed the original adjustment.

R-F Trimmer Adjustments

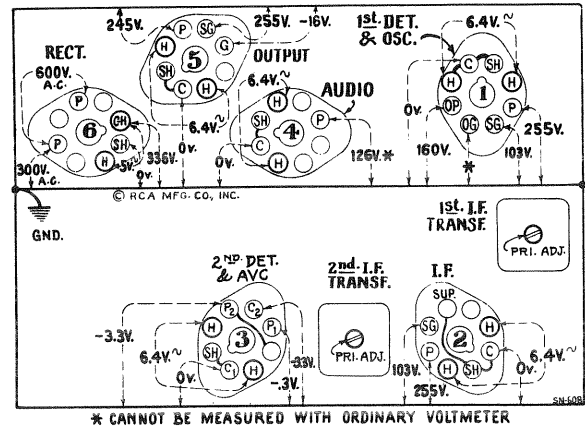
Calibrate the tuning dial by setting pointer to horizontal line at low-frequency end of broadcast band scale while variable condenser is at maximum capacity.

The output indicator should be left connected to the output system. Attach the output of the test oscillator between the antenna and ground terminals of the receiver input. Adjust the oscillator to 1,720

kc. and set the receiver tuning control to a dial reading of 1,720 kc. Leave the volume control of the receiver at its maximum position. Make sure that the range selector is at its broadcast position. Regulate the output of the test oscillator until a slight indication is perceptible at the receiver output. Then adjust the two trimmers, C-6 and C-4, of the oscillator and antenna transformer coils (mounted on the variable condenser) so that each produces maximum (peak) receiver output. After this maximum has been accurately obtained, shift the test oscillator to 600 kc. Tune the receiver to pick up this signal, disregarding the dial reading at which it is best received. Then, adjust the receiver oscillator series trimmer, C-9, simultaneously rocking the tuning control backward and forward through the signal until maximum receiver output results from these combined operations. The adjustment at 1,720 kc. should then be repeated to correct for any change which may have been caused by the oscillator series trimmer adjustment.

Radiotron Socket Voltages

Voltage values indicated at the Radiotron socket contacts on Figure 6 form a reference basis for test of the receiver. It is to be noted that all voltages are given with respect to chassis ground, excepting those appearing across the heaters (H-H). The values shown are obtainable when the receiver is in normal operating condition, with all tubes intact. They do not take into account inaccuracy caused by



Measured at 115 volts, 60 cycle supply
Figure 6—Radiotron Socket Voltages

the resistance of the voltmeter used for the tests, the lower the voltmeter resistance the lower the degree of accuracy. Allowance must, therefore, be made, dependent upon the type of test instrument used, for the loading effect of the voltmeter on the circuit.

Wave-Trap Adjustment

With the receiver in operation using its normal antenna, tune station selector to the point at which the intermediate frequency interference is most intense. Then adjust the wave trap screw (core) to the point which causes maximum suppression of the interference.

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
RECEIVER ASSEMBLIES					
5237	Bushing—Variable tuning condenser mounting bushing assembly—Package of 3	\$0.43	11195	Socket—5-contact 5Z4 Radiotron socket	\$0.15
11350	Cap—Grid contact cap—Package of 5	.20	11198	Socket—7-contact 6K7, 6H6 or 6F5 Radiotron socket	.15
11465	Capacitor—Adjustable capacitor—(C9)	.48	11196	Socket—8-contact 6A8 or 6F6 Radiotron socket	.15
11450	Capacitor—11.5 Mmfd.—(C11)	.14	12007	Spring—Retaining spring for adjustable core in stock Nos. 12002, 12003, 12005—Package of 10	.36
11998	Capacitor—115 Mmfd.—(C12, C13, C16, C17)	.28	11461	Switch—Range switch—(S2, S3)	.56
11500	Capacitor—175 Mmfd.—(C18)	.18	12001	Switch—Tone control switch—(S4)	.30
4297	Capacitor—400 Mmfd.—(C2)	.30	5238	Terminal—Antenna terminal clip assembly	.14
11449	Capacitor—1.350 Mmfd.—(C10)	.26	12002	Transformer—First intermediate frequency transformer complete with shield—(L6, L7, C12, C13)	1.85
5107	Capacitor—.0025 Mfd.—(C21)	.16	11999	Transformer—Power transformer, 105-125 volts, 50-60 cycles—(T1)	3.80
4868	Capacitor—.005 Mfd.—(C8, C24)	.20	12132	Transformer—Power transformer, 105-125 volts, 25 to 50 cycles	5.48
4858	Capacitor—.01 Mfd.—(C19, C23)	.25	12133	Transformer—Power transformer, 110-220 volts, 60 cycles	6.25
11451	Capacitor—.017 Mfd.—(C25)	.18	12003	Transformer—Second intermediate frequency transformer complete with shield—(L8, L9, C16, C17, C18)	2.05
4840	Capacitor—.25 Mfd.—(C20, C22)	.30	12005	Trap—Wave trap—(L1)	1.20
5170	Capacitor—.25 Mfd.—(C15)	.25	12000	Volume control—Volume control and power switch—(R7, S1)	1.12
4841	Capacitor—.1 Mfd.—(C5)	.22	MISCELLANEOUS ASSEMBLIES		
4835	Capacitor—.1 Mfd.—(C14)	.28	11455	Knob—Station selector, volume control, tone control or power switch knob—Package of 5	.48
11240	Capacitor—10 Mfd.—(C26)	1.08	11456	Screw—Chassis mounting screw assembly—for Model T6-11—Package of 2	.12
5212	Capacitor—18 Mfd.—(C27)	1.16	11586	Screw—Chassis mounting screw assembly—for Model C6-12—Package of 10	.22
11462	Coil—Antenna coil—(L2, L3)	1.85	11349	Spring—Retaining spring for knob stock No. 11455—Package of 5	.15
11463	Coil—Oscillator coil—(L4, L5)	1.65	REPRODUCER ASSEMBLIES		
11457	Condenser—2-gang variable tuning condenser—(C3, C4, C6, C7)	3.46	11232	Board—Terminal board assembly with two lead wire clips	.18
12006	Core—Adjustable core for wave trap stock No. 12005 and i-f transformer stock Nos. 12002 and 12003	.22	11231	Bolt—Yoke and core assembly bolt and nut	.16
11583	Dial—Station selector dial scale	.40	8060	Bracket—Output transformer mounting bracket	.14
12042	Drive—Vernier drive for tuning condenser stock No. 11457	.35	11257	Clamp—Cone center suspension clamping nut and screw assembly—Package of 5	.25
11467	Indicator—Station selector indicator pointer	.10	12012	Coil—Field coil—(L12)	1.85
5226	Lamp—Dial lamp—Package of 5	.70	11469	Coil—Neutralizing coil—(L10)	.20
12004	Resistor—Voltage divider resistor—comprising one 216-ohm, one 27-ohm, and one 22-ohm sections—(R13, R14, R15)	.45	11235	Cone—Reproducer cone—(L11)—Package of 5—(Table Model)	3.50
11174	Resistor—220 ohms—carbon type— $\frac{1}{4}$ watt—(R1)—Package of 5	1.00	11258	Cone—Reproducer cone—(L11)—Package of 5—(Console Model)	3.85
8070	Resistor—22,000 ohms—carbon type— $\frac{1}{2}$ watt—(R4)—Package of 5	1.00	5118	Connector—3-contact male connector for reproducer	.25
12011	Resistor—27,000 ohms—carbon type—1 watt—(R3)—Package of 5	1.10	5119	Connector—3-contact female connector for reproducer cable	.25
5029	Resistor—56,000 ohms—carbon type— $\frac{1}{4}$ watt—(R2)—Package of 5	1.00	9638	Reproducer complete—(Table Model)	6.50
12009	Resistor—68,000 ohms—carbon type— $\frac{1}{4}$ watt—(R12)—Package of 5	1.00	9639	Reproducer complete—(Console Model)	6.95
12010	Resistor—68,000 ohms—carbon type— $\frac{1}{10}$ watt—(R6)—Package of 5	.75	11253	Transformer—Output transformer—(T2)	1.56
3118	Resistor—100,000 ohms—carbon type— $\frac{1}{4}$ watt—(R9)—Package of 5	1.00	11886	Washer—Spring washer used to hold field coil securely—Package of 5	.20
11297	Resistor—330,000 ohms—carbon type— $\frac{1}{10}$ watt—(R10)—Package of 5	.75			
11452	Resistor—470,000 ohms—carbon type— $\frac{1}{10}$ watt—(R11)—Package of 5	.75			
11626	Resistor—2.2 megohms—carbon type— $\frac{1}{4}$ watt—(R5, R8)—Package of 5	1.00			
11464	Shield—Antenna or oscillator coil shield	.25			
12008	Shield—Intermediate frequency transformer shield for stock No. 12002 and 12003	.28			
8098	Socket—Dial lamp socket	.10			

The prices quoted above are subject to change without notice.