R.C.A. Victor Co., Inc.

	Model: 6T2	**Chassis:**	**Year:** Pre October 1936
	Power:	**Circuit:**	**IF:**
	Tubes:		
	Bands:		

Resources
Riders Volume 7 - RCA 7-41
Riders Volume 7 - RCA 7-42
Riders Volume 7 - RCA 7-43

RCA MFG. CO., INC.

MODELS 6T2, 6K2
Schematic, Socket, Pickup
Chassis Wiring, Loudspeaker

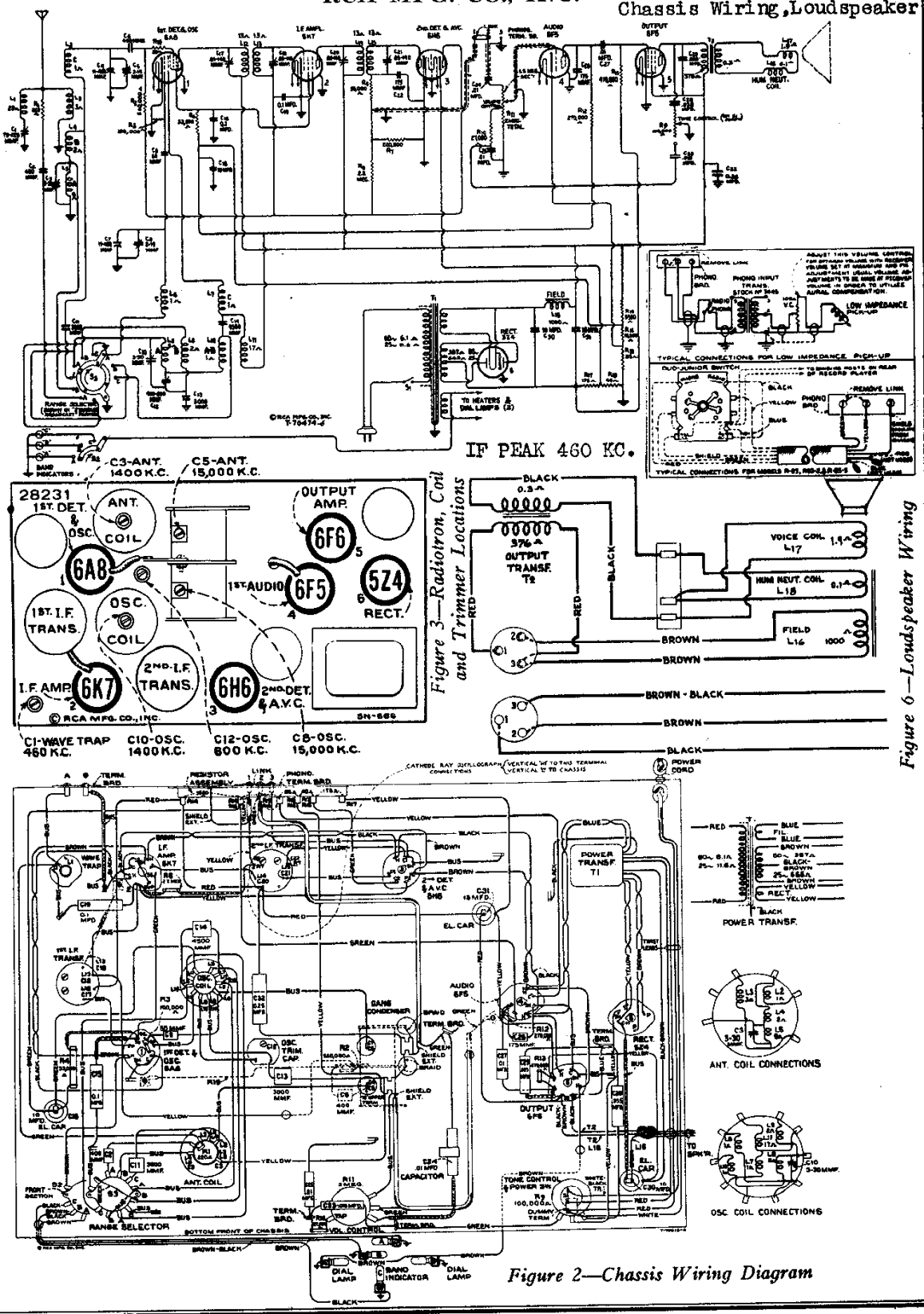


Figure 3—Radiotron, Coil and Trimmer Locations

Figure 6—Loudspeaker Wiring

Figure 2—Chassis Wiring Diagram

MODELS 6T2, 6K2 — Voltage, Socket — RCA MFG. CO., INC. — Trimmers, Resistance Transformer Data

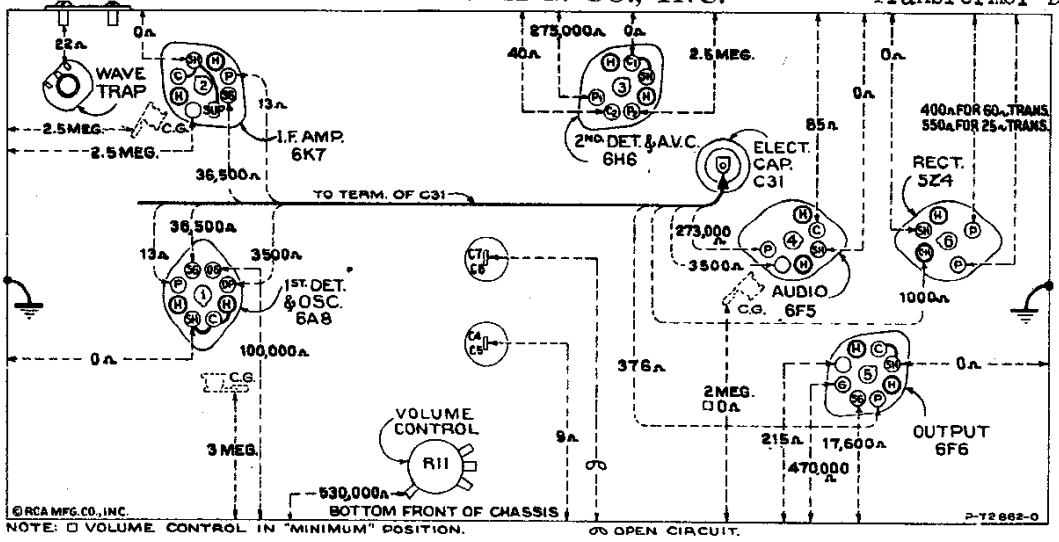


Figure 4—Resistance Diagram

Power supply disconnected—Radiotrons in sockets—Tuning condenser in full mesh—Range selector "Standard broadcast"—Volume control maximum

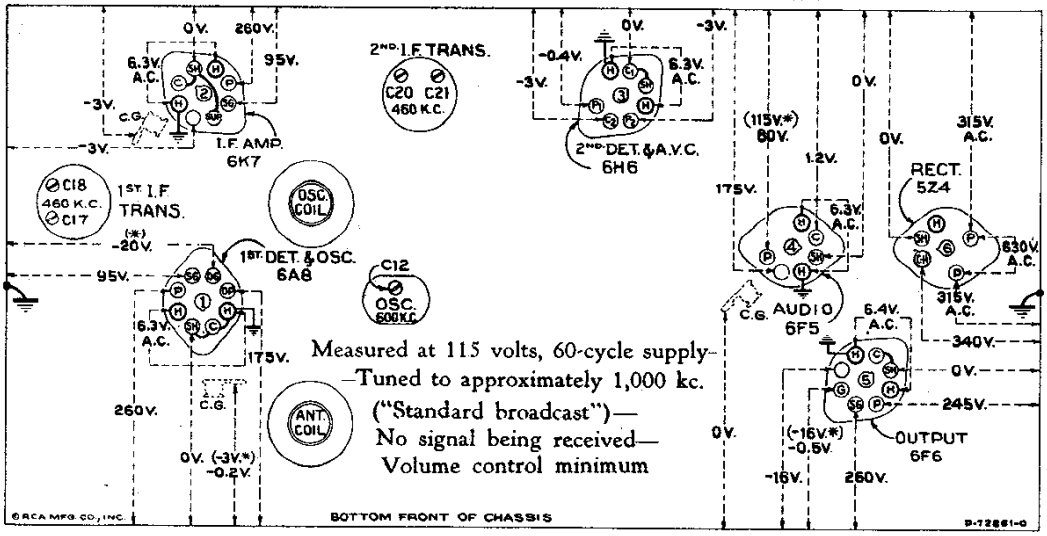
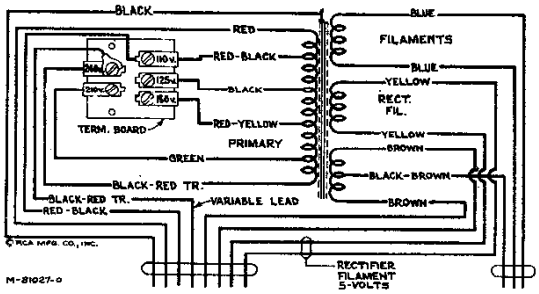


Figure 7—Radiotron Socket Voltages, Coil, and Trimmer Locations

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

The voltage values indicated from the Radiotron socket contacts, grid caps, resistors, and terminals to receiver chassis ground on figure 7 will assist in locating cause of faulty operation. Each value as specified should hold within ±20% when the receiver is normally operative at its rated line voltage. Variations in excess of this limit will usually be indicative of trouble in the basic circuits. These voltages were measured with receiver tuned to approximately 1,000 kc., no signal being received, and volume control set at minimum. To duplicate the conditions under which the voltages were measured requires a 1,000-ohm-per-volt d-c meter, having ranges of 10, 50, 250, 500, and 1,000 volts. Use the nearest range above the voltage to be measured. A-c voltages were measured with a corresponding a-c meter.



Primary Resistance—17.3 ohms total
Secondary Resistance—355 ohms total

Figure 5—Universal Transformer

General Features

These receivers employ the same chassis and have many distinctive features. Model 6T2 employs an 8-inch dynamic loudspeaker and Model 6K2 employs a 12-inch dynamic loudspeaker. The superheterodyne circuit is used with such features of design as: Antenna wave-trap, aural compensated volume control, continuously variable tone control with music-voice switch, automatic volume control, resistance coupled audio system, phonograph terminal board, and band selective indication of dial scales. The tuning range is continuous through the "Standard broadcast" band, "Medium wave" band, and the "Short wave" band. It includes domestic broadcast, police, aircraft and amateur services, and also the important foreign short-wave broadcast bands at 49, 31, 25, 19, and 16 meters.

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. This transformer consists of a single primary and three series-connected secondary windings to provide the three ranges of tuning. The oscillator coil system is similarly wound on a single form. A range-selector switch S3 is used for connecting the various sections of these two coil systems into the circuit to provide operation on the band desired. The coils are tuned by a variable two-section gang condenser having trimming capacitors in shunt with each section. There are additional trimming capacitors across the section of each coil used for the "Standard broadcast" band. A series trimming capacitor is also associated with the "Standard broadcast" oscillator coil.

The intermediate-frequency stage is coupled to the RCA-6A8 and to the RCA-6H6 by means of tuned transformers. The windings of these transformers (both primary and secondary) are resonated with adjustable trimming capacitors to tune 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 automatic volume control. This voltage which develops across resistor R7 is applied as automatic control-grid bias to the first detector and i-f tubes. The second (auxiliary) diode of the RCA-6H6 is used to supply residual bias for the controlled tubes under conditions of little or no signal. This diode, under such conditions, draws current which flows through resistors R6 and R7, thereby maintaining the desired 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 loudspeaker.

Continuously variable tone control is effected by means of the combination of a capacitor C28 and variable resistor R9 shunting the plate circuit of the output tube. Extreme clockwise rotation of the tone control disconnects the resistor R9 from the circuit and places an additional capacitor, C33, in shunt with capacitor C25, thereby reducing the low-frequency response of the amplifier. This point is known as the "Speech" position and provides optimum intelligibility of speech.

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.

Phonograph Attachment

A terminal board is provided for connecting a phonograph into the audio amplifying circuit. Typical methods of connecting a low-impedance pickup, or the RCA Victor Models R-93, R-93-2, and R-93-S Record Players are shown on the schematic diagram (figure 1).

SERVICE DATA

Alignment Procedure

There are six adjustments required for the alignment of the antenna, oscillator, and wave-trap tuned circuits. The i-f transformer adjustments are made by four trimming capacitor screws. Improper alignment usually causes the impairment of sensitivity, selectivity, and tone quality. Such conditions will usually exist simultaneously.

A standard test oscillator, such as the RCA Stock No. 9595, will be required as a source of signal at the specified alignment frequencies. Means for indication of the receiver output during alignment is also necessary to show when the correct point of adjustment is reached. The RCA Stock No. 4317 Neon Glow Indicator is designed for this purpose.

Attach the output indicator across the loudspeaker voice coil. Advance the receiver volume control to its maximum position, letting it remain in such position for all adjustments. For each adjusting operation, regulate the test-oscillator output control so that the signal level is as low as possible and still be observable at the receiver output. Use of such small signal will obviate broadness of tuning which would otherwise result from a.v.c. action on a stronger one.

I-F Adjustments

(a) Connect the test oscillator to the grid cap of the RCA-6A8 through a .001 mfd. capacitor, and connect the test oscillator ground to the receiver chassis. Set test oscillator to 460 kc.

(b) Adjust the two trimming capacitors (C20 and C21) of the second i-f transformer to produce maximum (peak) output.

(c) Adjust the two trimming capacitors (C17 and C18) of the first i-f transformer, to produce maximum (peak) output.

It is advisable to repeat the adjustment of all i-f trimming capacitors a second time to assure that the interaction between them has not disturbed the original adjustment.

R-F Adjustments

Calibrate the tuning dial by adjusting the scale pointer to the extreme end calibration mark (beyond 55 on dial) while the two-gang tuning condenser plates are in full mesh. Alignment (see figure 3 for location of trimming adjustments) of "Wave-trap," "Short wave" band and "Standard broadcast" band should be made in the following order and sequence.

"Wave-Trap"

(a) Connect the output of the test oscillator to the antenna terminal through a 200 mmfd. (important) capacitor, leaving the test oscillator ground connected to the receiver chassis. With the range selector in its "Standard broadcast" position, set the receiver dial to position of no extraneous signals, near 600 kc. (60 on dial). Set the test oscillator to 460 kc. Adjust the wave-trap trimming capacitor C1 to a point which causes minimum amplitude of output. An increase of the test oscillator output may be necessary before the point of minimum amplitude, obtained by adjustment of wave-trap screw, becomes apparent on the output indicator.

"Short Wave" Band

(a) Connect the output of the test oscillator to the antenna terminal through a 300-ohm resistor, leaving the test oscillator ground connected as before.

(b) Set the range selector to its "Short wave" position. Set receiver dial pointer to 15,000 kc. (15 on dial). Adjust the test oscillator to 15,000 kc. Adjust the oscillator trimming capacitor C8 to the point which produces maximum (peak) output. Two points may be found, each of which produces a maximum. The one of maximum trimmer capacitance (most clockwise) is correct and should be used.

(c) Adjust the antenna trimming capacitor C5 of the variable condenser, simultaneously rocking the receiver tuning control backward and forward through the 15,000 kc. input signal, until maximum (peak) output results from these combined operations.

"Standard Broadcast" Band

(a) Connect the output of the test oscillator to the antenna terminal through a 200 mmfd. capacitor, leaving test oscillator ground connected as before.

(b) Set the range selector to its "Standard broadcast" position. Set the receiver dial pointer to 1,400 kc. (140 on dial). Adjust the test oscillator to 1,400 kc. Adjust the oscillator and antenna trimming capacitors, C10 and C3 respectively, to the points where each produces maximum (peak) output.

(c) Shift the test oscillator frequency to 600 kc. and tune the receiver to pick up this signal, disregarding the dial reading at which it is best received.

(d) Adjust the low-frequency oscillator trimming capacitor, C12, simultaneously rocking the tuning control of the receiver backward and forward through the signal, until maximum (peak) output results from these combined operations. Repeat adjustments in (b) to compensate for any changes caused by the adjustment of the low-frequency oscillator coil trimming capacitor.

Electrical Specifications

Frequency Ranges	
"Standard broadcast" (A)	540- 1,625 kc
"Medium wave" (B)	1,625- 5,700 kc.
"Short wave" (C)	5,700-18,000 kc.
Intermediate Frequency	460 kc.
Radiotron Complement	
(1) RCA-6A8	First-detector–oscillator
(2) RCA-6K7	Intermediate amplifier
(3) RCA-6H6	Second-detector–a.v.c.
(4) RCA-6F5	Audio voltage amplifier
(5) RCA-6F6	Audio power amplifier
(6) RCA-5Z4	Full-wave rectifier
Pilot Lamps (3)	Mazda No. 46, 6.3 volts, 0.25 amperes
Power Supply Ratings	
Rating A	105-125 volts, 50-60 cycles, 90 watts
Rating B	105-125 volts, 25-60 cycles, 90 watts
Rating C	100-130/140-160/195-250 volts, 40-60 cycles, 90 watts
Power Output	
Undistorted	2.0 watts
Maximum	4.5 watts
Alignment Frequencies	
"Standard broadcast" (A)	600 kc. (osc.); 1,400 kc. (osc. and ant.)
"Medium wave" (B)	None required
"Short wave" (C)	15,000 kc. (osc. and ant.)
Loudspeaker	
Type	Electrodynamic
Impedance (v.c.)	2.2 ohms at 400 cycles

REPLACEMENT PARTS

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

Stock No.	DESCRIPTION	List Price
	RECEIVER ASSEMBLIES	
12930	Board—Antenna and ground terminal board	$0.20
12717	Board—Phonograph terminal board	.22
12772	Bracket—Top dial lamp socket bracket	.30
5237	Bushing—Variable tuning condenser mounting bushing assembly—Package of 3	.43
11350	Cap—Grid contact cap used on resistor—Stock No. 11624—Package of 5	.25
12511	Cap—Grid contact cap—Package of 5	.15
11465	Capacitor—Adjustable capacitor—(C12)	.48
11289	Capacitor—50 Mmfd.—(C9)	.25
11623	Capacitor—175 Mmfd.—(C22, C26)	.18
11290	Capacitor—400 Mmfd. (C2, C5)	.25
11622	Capacitor—3900 Mmfd.—(C13)	.36
11621	Capacitor—3900 Mmfd.—(C11)	.38
11287	Capacitor—4500 Mmfd.—(C14)	.30
4868	Capacitor—.005 Mfd.—(C29)	.20
11395	Capacitor—.01 Mfd.—(C24)	.18
4858	Capacitor—.01 Mfd.—(C25, C27)	.25
11315	Capacitor—.015 Mfd.—(C33)	.20
12670	Capacitor—.035 Mfd.—(C28)	.20
4841	Capacitor—0.1 Mfd.—(C19)	.22
11414	Capacitor—0.1 Mfd.—(C15)	.20
5170	Capacitor—0.25 Mfd.—(C32)	.25
11387	Capacitor—10 Mfd.—(C16)	.88
11240	Capacitor—10 Mfd.—(C30)	1.08
5212	Capacitor—18 Mfd.—(C31)	1.16
11617	Coil—Antenna coil less shield—(L2, L3, L4, L5, C3, R1)	1.68
11618	Coil—Oscillator coil less shield—(L6, L7, L8, L9, L10, L11, C10)	2.22
12767	Condenser—2-gang variable tuning condenser—(C4, C5, C7, C8)	4.10
5119	Connector—3-contact female connector for speaker cable	.25
12792	Dial—Station selector dial	.85
12768	Drive—Variable tuning condenser vernier drive	1.30
11619	Foot—Chassis mounting foot and bracket—Package of 2	.65
12770	Holder—Dial scale holder and lamp bracket assembly less bracket for top dial lamp socket	.55
12712	Indicator—Station selector indicator pointer	.22
5226	Lamp—Dial lamp—6.3 volt—Package of 5	.70
12718	Mask—Dial light diffuser complete with red, orange and green-colored screen	.40
11466	Resistor—Voltage divider resistor—comprising one 3,000-ohm, one 13,000-ohm, one 85-ohm, one 40-ohm and one 175-ohm sections—(R14, R15, R16, R17, R18)	.95
11624	Resistor—22 ohms—Flexible type complete with grid contact cap—(R19)	.22
11620	Resistor—220 ohms—Carbon type—1/10 watt—(R1)—Package of 5	.75
11400	Resistor—27,000 ohms—Carbon type—¼ watt—(R10)—Package of 5	1.00
8072	Resistor—33,000 ohms—Carbon type—½ watt—(R4)—Package of 5	1.00
11282	Resistor—56,000 ohms—Carbon Type—1/10 watt—(R5)—Package of 5	.75
3118	Resistor—100,000 ohms—Carbon type—½ watt—(R3)—Package of 5	1.00
11398	Resistor—220,000 ohms—Carbon type—1/10 watt—(R7)—Package of 5	.75
11453	Resistor—270,000 ohms—Carbon type—1/10 watt—(R12)—Package of 5	.75
11452	Resistor—470,000 ohms—Carbon type—1/10 watt—(R13)—Package of 5	.75
11397	Resistor—560,000 ohms—Carbon type—1/10 watt—(R2)—Package of 5	$0.75
11626	Resistor—2.2 megohms—Carbon type—½ watt—(R6)—Package of 5	1.00
11390	Shield—I. F. transformer shield for Stock Nos. 11388 and 11389	.25
11603	Shield—Coil shield for Stock Nos. 11617 and 11618	.26
12735	Shield—Dial lamp shield—Package of 5	.25
12771	Socket—Dial lamp socket—Located at top of dial scale	.25
11199	Socket—Dial lamp socket	.14
11195	Socket—5-contact 5Z4 Radiotron socket	.15
11198	Socket—7-contact 6F5, 6H6 Radiotron socket	.15
11196	Socket—8-contact 6A8, 6F6 or 6K7 Radiotron socket	.15
12769	Switch—Range switch—(S2, S3)	1.25
12668	Tone Control—Control and power switch—(S9, S11)	1.22
11388	Transformer—First I. F. transformer less shield—(L12, L13, C17, C18)	1.90
11848	Transformer—Power transformer—105-125-volt, 50-60-cycle—(T1)	4.40
11849	Transformer—Power transformer—105-125-volt, 25-40-cycle—(T1)	5.70
11850	Transformer—Power transformer—105-250-volt, 40-60-cycle—(T1)	8.00
11389	Transformer—Second I. F. transformer less shield—(L14, L15, C20, C21, C22, R5, R7)	3.02
11391	Trap—Wave trap—(L1, C1)	1.22
13144	Volume control—(R11)	1.09
	REPRODUCER ASSEMBLIES	
11212	Board—Reproducer terminal board	.18
8060	Bracket—Output transformer mounting bracket and clamp	.14
11470	Coil—Field coil—(L16)	2.15
11469	Coil—Neutralizing coil—(L18)	.20
11235	Cone—Reproducer cone complete—(L17)—Package of 5 (Model 6T2)	3.50
11258	Cone—Reproducer cone complete—(L17)—Package of 5 (Model 6K2)	3.85
5118	Connector—3-contact male connector for speaker cable	.25
12666	Cover—Speaker cover (Model 6K2)	.65
9621	Reproducer complete (Model 6T2)	6.85
9622	Reproducer complete (Model 6K2)	7.35
11253	Transformer—Output transformer—(T2)	1.56
11886	Washer—Spring washer to hold field coil securely—Package of 5	.20
	MISCELLANEOUS ASSEMBLIES	
12698	Crystal—Station selector crystal and escutcheon	1.02
11582	Knob—Range switch knob—Package of 5	.50
11610	Knob—Station selector knob—includes large and small knob—Package of 5	1.00
11347	Knob—Tone control or volume control knob—Package of 5	.75
11377	Screw—Chassis mounting screw assembly used on Model 6T2—Package of 4	.12
11210	Screw—Chassis mounting screw assembly—Used on Model 6K2—Package of 4	.28
11349	Spring—Retaining spring for knob—Stock No. 11347, No. 11582 and small knob of Stock No. 11610—Package of 5	.15
4982	Spring—Retaining spring for large knob of Stock No. 11610—Package of 10	.26

Prices quoted above are subject to change without notice.

Mechanical Specifications

	Model 6T2	Model 6K2
Height	19¾ inches	38 inches
Width	13¾ inches	23¼ inches
Depth	8¼ inches	11¼ inches
Weight (net)	24 pounds	46 pounds
Weight (shipping)	29 pounds	58 pounds
Chassis Base Dimensions	12 inches x 7 inches x 2½ inches	
Over-all Chassis Height	8 inches	
Operating Controls	(1) Power switch-tone, (2) Tuning, (3) Volume, (4) Range selector	
Tuning Drive Ratios	10 to 1 and 50 to 1	