



*RCA Victor*

## MODELS 810K, 810K1, and 810T

Ten-Tube, Three-Band, A-C, Superheterodyne Receivers

### TECHNICAL INFORMATION AND SERVICE DATA

-1937 No. 20-

SERVICE DIVISION • RCA MANUFACTURING COMPANY, INC. • CAMDEN, N. J., U. S. A.

*A Service of the Radio Corporation of America*

### Electrical Specifications

#### FREQUENCY RANGES

"Broadcast" (A)..... 530-1,720 kc  
"Medium Wave" (B)..... 2,100-6,800 kc  
"Short Wave" (C)..... 6,800-22,000 kc

Intermediate Frequency.....

#### RADIOTRON COMPLEMENT

(1) RCA-6K7..... R-F Amplifier  
(2) RCA-6J7..... Heterodyne Oscillator  
(3) RCA-6L7..... First Detector  
(4) RCA-6K7..... Intermediate Amplifier  
(5) RCA-6H6..... Second Detector and A.V.C.

Pilot Lamps (4).....

#### POWER SUPPLY RATINGS

Rating A..... 105-125 volts, 50-60 cycles, 135 watts  
Rating B..... 105-125 volts, 25-60 cycles, 135 watts  
Rating C..... 100-130/140-160/195-250 volts, 40-60 cycles, 135 watts

#### POWER OUTPUT

Undistorted..... 10 watts  
Maximum..... 12.5 watts

#### R-F ALIGNMENT FREQUENCIES

"Short Wave" (C)..... 20,000 kc (osc., det., ant.)  
"Medium Wave" (B)..... 6,000 kc (osc.)  
"Broadcast" (A)..... 600 kc (osc.), 1,500 kc (osc.)

Intermediate Frequency..... 460 kc

(6) RCA-6N7..... Phase Inverter A-F Amplifier  
(7) RCA-6F6..... Power Output  
(8) RCA-6F6..... Power Output  
(9) RCA-6G5..... "Magic Eye" Tuning Tube  
(10) RCA-5T4..... Full-Wave Rectifier

Pilot Lamps (4)..... Mazda No. 46, 6.3 volts, 0.25 amp.

#### LOUDSPEAKER

Type..... Electrodynami  
Impedance (v.c.)..... 2.2 ohms at 400 cycles

### Mechanical Specifications

|                         | 810K                                                                                                                             | 810K1                   | 810T                                                                      |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------|---------------------------------------------------------------------------|
| Height                  | 42 inches                                                                                                                        | 42 inches               | 20 $\frac{1}{4}$ inches                                                   |
| Width                   | 26 inches                                                                                                                        | 26 inches               | 17 $\frac{1}{4}$ inches                                                   |
| Depth                   | 12 inches                                                                                                                        | 12 $\frac{1}{2}$ inches | 11 $\frac{1}{16}$ inches                                                  |
| Weight (net)            | 57 pounds                                                                                                                        | 62 pounds               | 33 pounds                                                                 |
| Weight (shipping)       | 74 pounds                                                                                                                        | 77 pounds               | 40 pounds                                                                 |
| Chassis Base Dimensions |                                                                                                                                  |                         | 14 $\frac{1}{8}$ inches x 9 $\frac{3}{4}$ inches x 3 $\frac{1}{4}$ inches |
| Overall Chassis Height  |                                                                                                                                  |                         | 9 $\frac{3}{4}$ inches                                                    |
| Operating Controls      | (1) Power Switch—Tone; (2) Tuning (large inner knob), Range Selector (small outer knob, left to right "A," "B," "C"); (3) Volume |                         |                                                                           |
| Tuning Drive Ratio      |                                                                                                                                  |                         | 20 to 1                                                                   |

### General Description

These receivers employ a ten-tube, three-band, "Magic Brain," superheterodyne circuit, the arrangement of which is shown by the Schematic Circuit Diagram. Models 810K and 810K1 are console models, each employing a 12-inch electrodynami loudspeaker. Model 810T is a table model employing an 8-inch electrodynami loudspeaker. Features of design include an r-f amplifier stage, "qumulative-wound" antenna and r-f transformers for high signal-to-noise ratio; magnetite-core, i-f transformers and low-frequency oscillator

tracking; automatic volume control; phonograph terminal board; "Magic Eye" tuning tube; plunger-type, air-dielectric trimming capacitors; aural-compensated, audio-volume control; "Mellow-Brilliant" tone control; audio phase-inverter voltage amplifier; push-pull, power-output stage; improved dust-proof electrodynami loudspeaker; and a new sunburst dial with short-wave stations listed by name and illuminated band and tone indicators. In addition, Model 810K1 has a cabinet incorporating the "Sonic-Arc" Magic Voice.

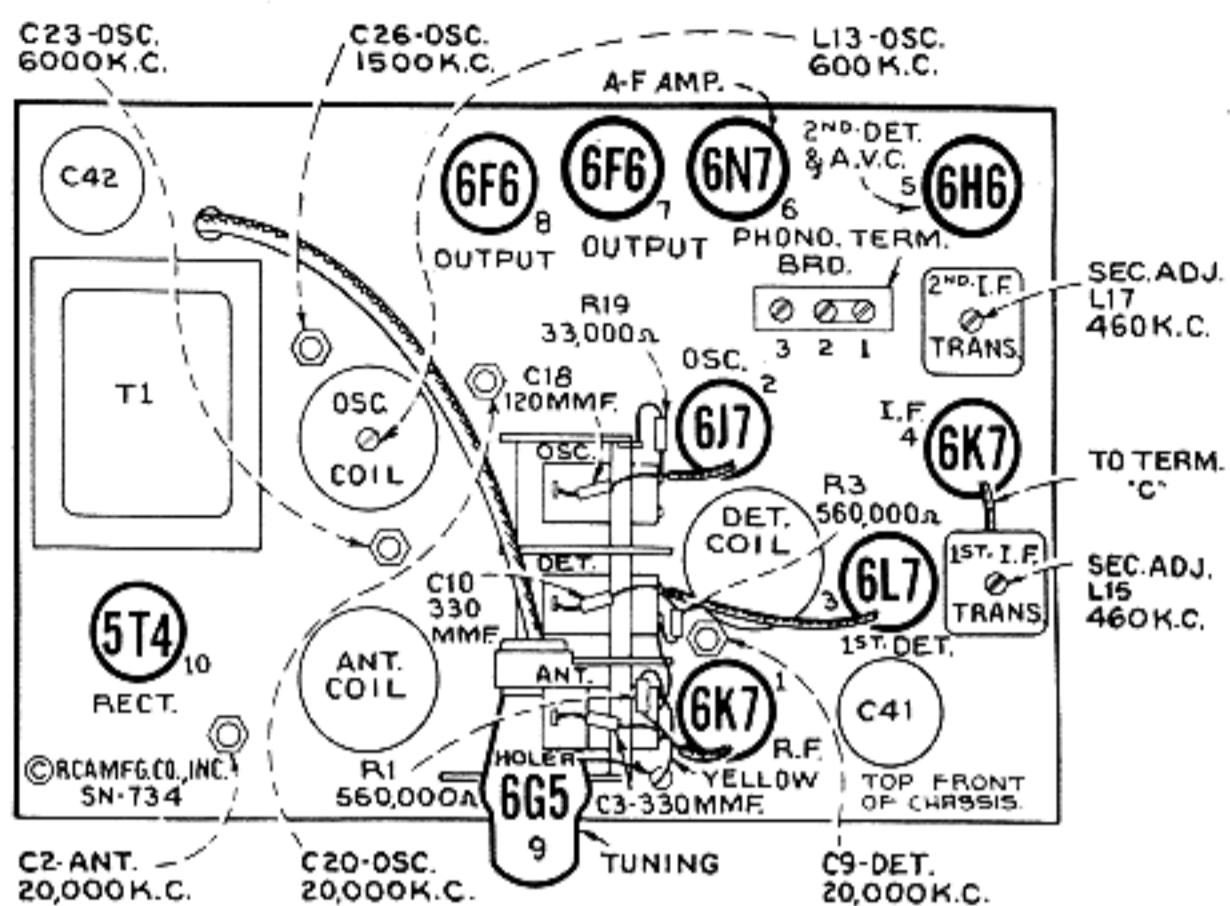
## Service Data

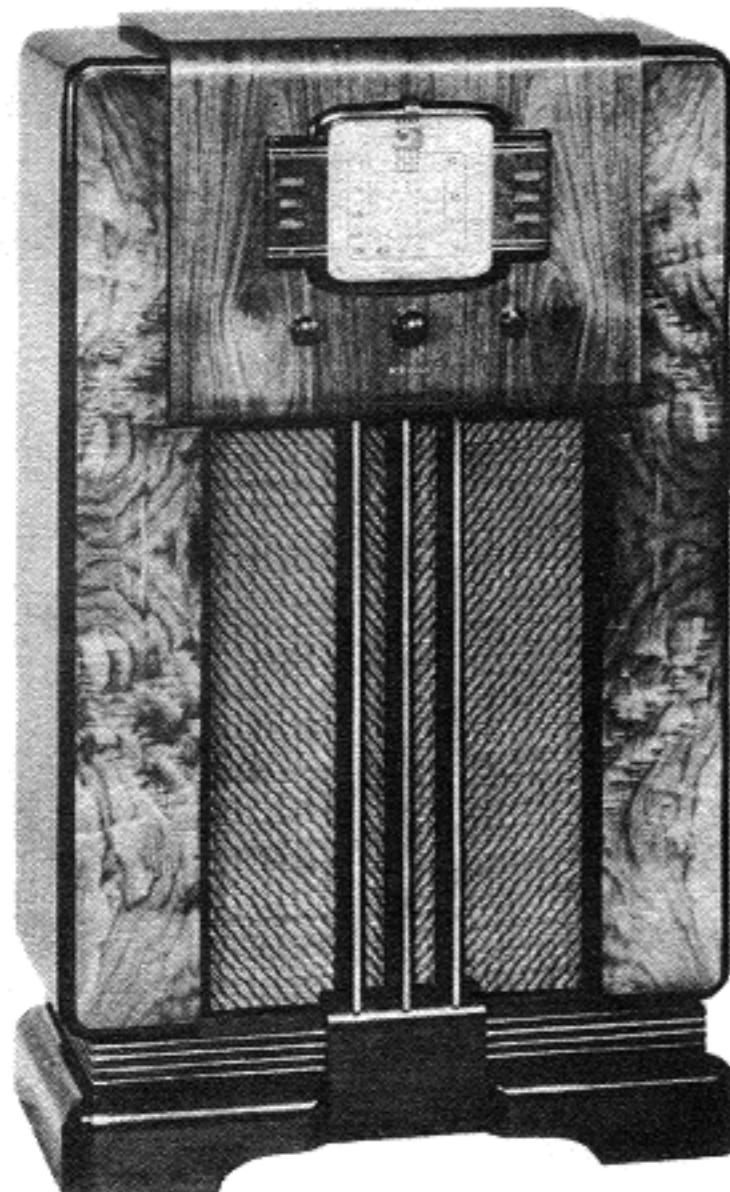
The various diagrams of this booklet contain such information as will be needed to isolate causes for defective operation if such develops. The ratings of the resistors, capacitors, coils, etc., are indicated adjacent to the symbols signifying these parts on the diagrams. Identification titles such as R1, L1, C1, etc., provide reference between the illustrations and Replacement Parts List. The coils, transformer windings, and reactors are rated in terms of d-c resistance to permit continuity checks.

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

**Phonograph Attachment.**—A terminal board is provided for connecting a phonograph into the audio amplifying circuit. RCA Victor Models R-93, R-93-A, R-93-2, or R-94 Record Players should be connected as follows: Remove link between terminals 1 and 2 on terminal board. Connect green wire in Radio-Record switch cable to terminal 1, yellow to terminal 2, and shield extension to terminal 3. Tape unused red and blue leads separately. Connect a 2-conductor twisted cable between the Record Player binding posts and the screw terminals on Radio-Record switch. If additional volume is desired, connect an RCA Stock No. 9632 transformer between the two-conductor twisted cable and the screw-

terminals on Radio-Record switch as follows: yellow and brown transformer leads and one side of twisted cable to ground screw-terminal on switch; black transformer lead to other side of twisted cable; and blue transformer lead to other screw-terminal on switch.

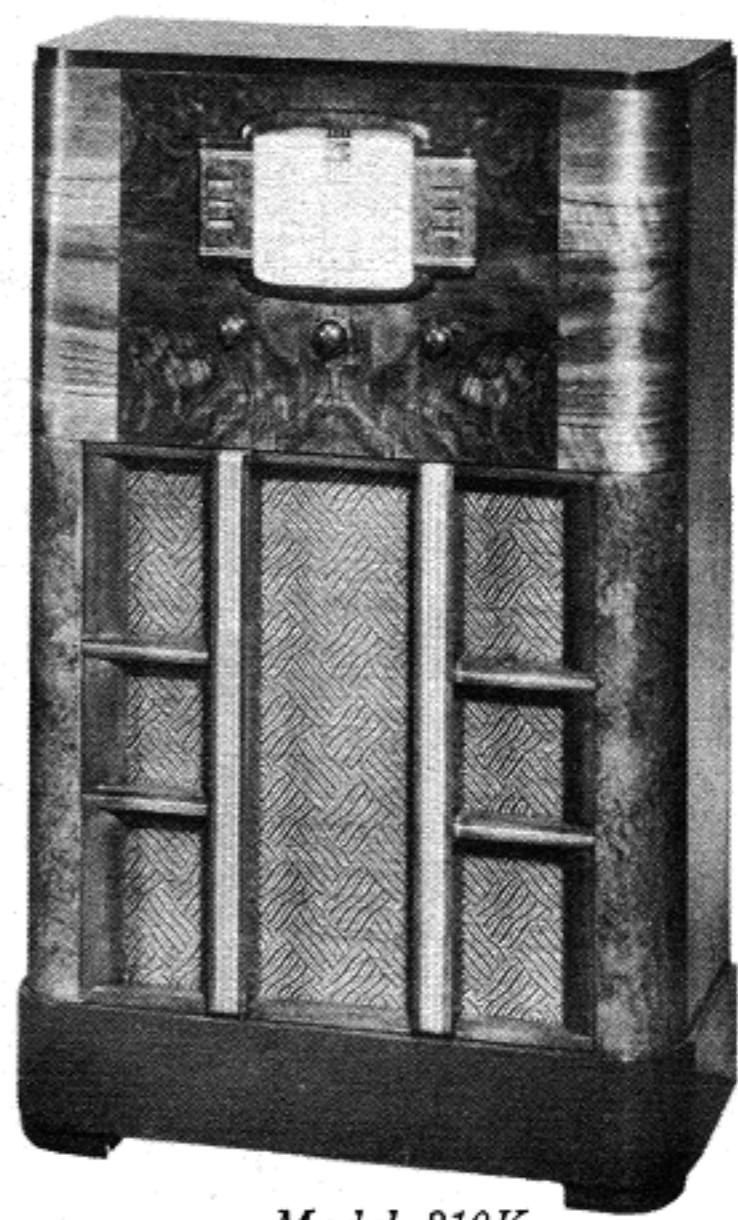




Model 810K1



Model 810T



Model 810K

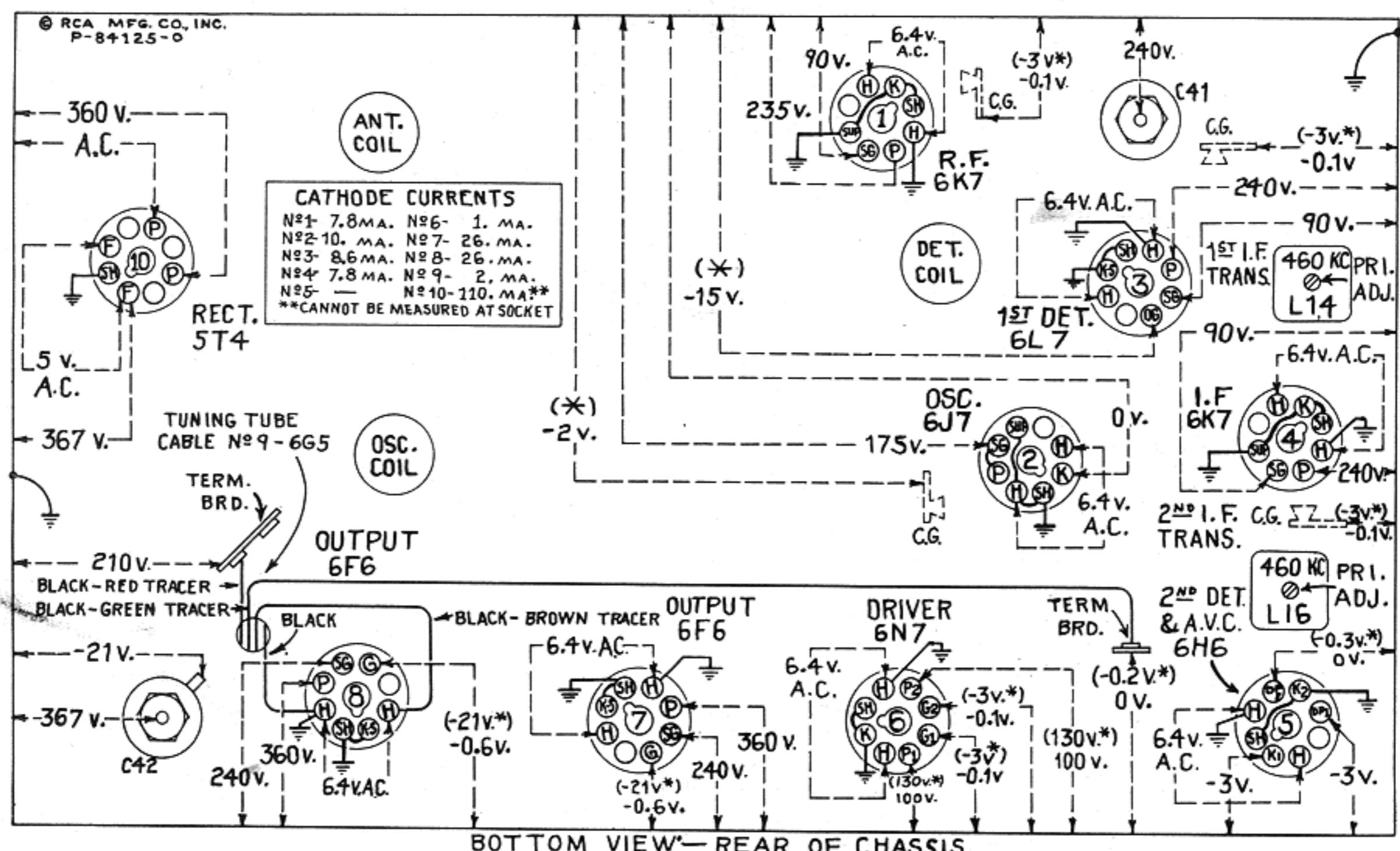


Figure 2—Radiotron Socket Voltages, Coil, and Trimmer Locations

Measured at 115 volts, 60-cycle supply—Tuned to approximately 1,000 kc ("Standard Broadcast")—  
No signal being received—Volume control minimum

**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.

Voltage values as specified should hold within  $\pm 20\%$  when the receiver is normally operative at its rated line voltage. 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, and 500 volts. Use the nearest range above the specified measured voltage. A-c voltages were measured with a corresponding a-c meter.

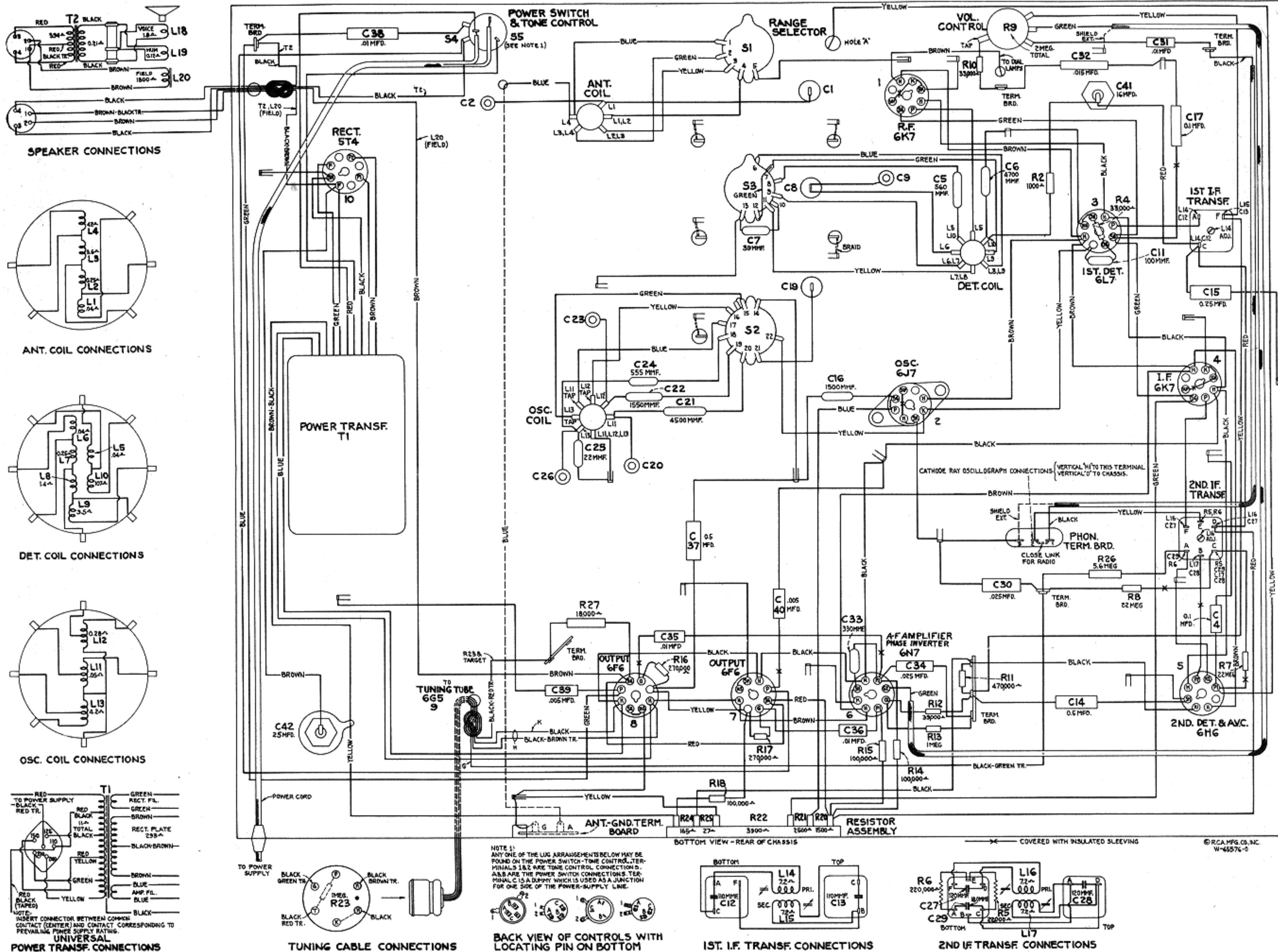


Figure 4—Chassis Wiring Diagram

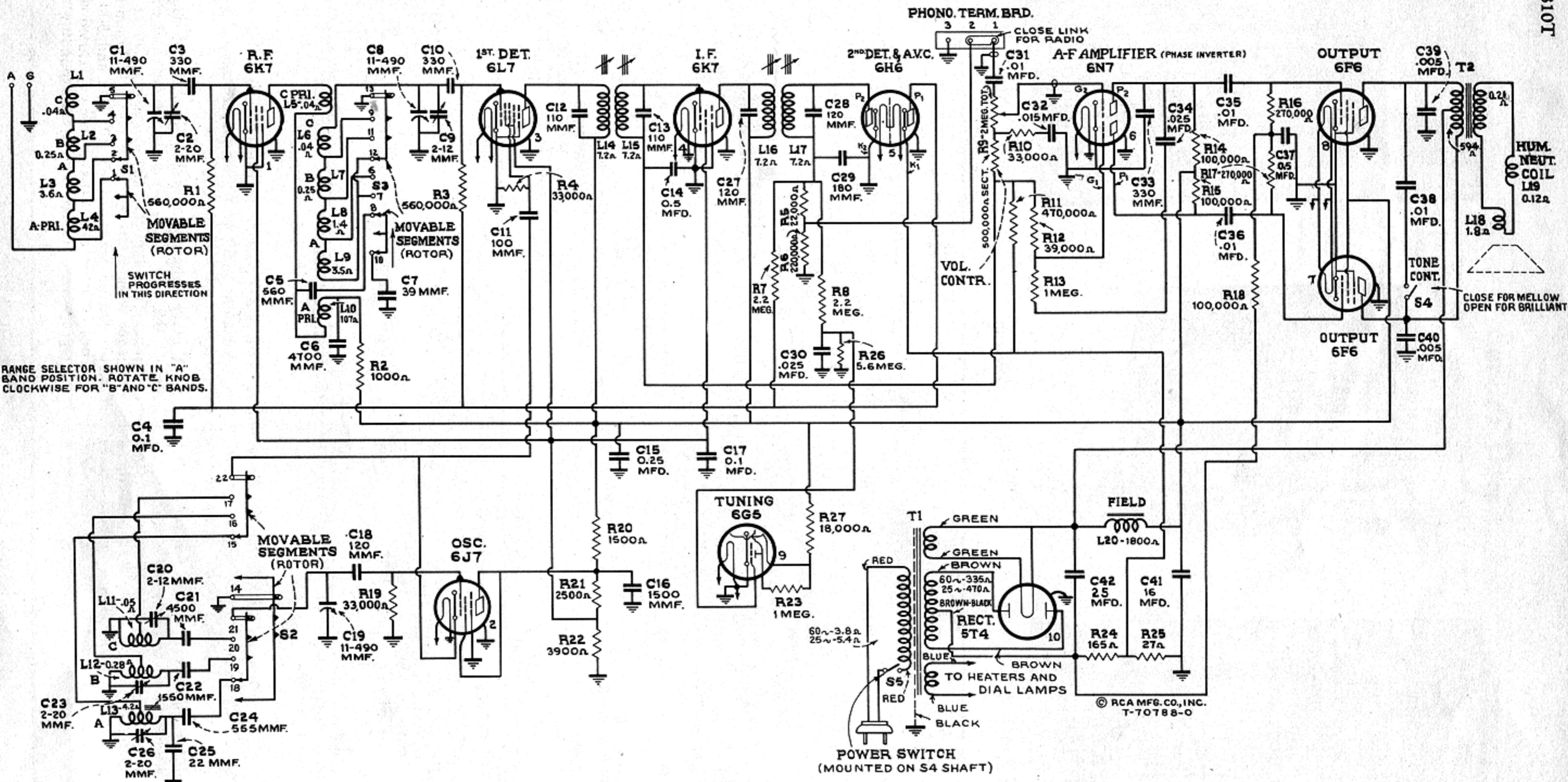


Figure 3—Schematic Circuit Diagram

**Precautionary Lead Dress.**—(1) Keep leads to a-c switch dressed away from antenna coil and trimmer C2. (2) Keep all filament leads twisted. (3) Keep yellow lead from term. E of 2nd i-f trans. to phono. term. board as short as possible. (4) Keep leads of C21 as short as possible. (5) Dress shielded lead from volume control to phono. term. board against side of chassis and away from 6L7 socket. (6) Yellow lead from 6J7 oscillator cathode to dummy terminal on 6L7 socket must be dressed away from chassis base and from brown filament lead. (7) All molded capacitors should be dressed so that flat side is perpendicular to chassis base. (8) Yellow lead from cathode of 6J7 socket to term. 22 of S2 must be dressed under spaghetti on 6J7 socket jumper

and pulled tight away from chassis. The following bus leads should be kept as short as possible and, when necessary, replaced only with wire having same diameter as original: (9) Lead from L11-L12-L13 to ground lance; (10) Lead from term. 13 of S3 to ground lance; (11) Lead from term. 9 of S3 to L6-L7; (12) Lead from L6 to C8; (13) Lead from C9 to C8; (14) Lead from term. 5 of S1 to ground lance; (15) Lead from L1-L2 to term. 4 of S1; (16) Lead from L1 to C1; (17) Lead from term. 21 of S2 to C19. (18) Keep filament leads dressed away from grid prongs of 6N7. (19) Keep blue and green leads from plate prongs of output tubes twisted their entire length.

## REPLACEMENT PARTS

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

| STOCK No.                  | DESCRIPTION                                                                                                            | STOCK No.                    | DESCRIPTION                                                                                                                                 |  |  |
|----------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| <b>RECEIVER ASSEMBLIES</b> |                                                                                                                        |                              |                                                                                                                                             |  |  |
| 12038                      | Band—Rubber band for tuning tube                                                                                       | 11172                        | Resistor—470,000 Ohms, Carbon type, $\frac{1}{2}$ watt (R11)                                                                                |  |  |
| 14384                      | Belt—Variable condenser drive belt                                                                                     | 11397                        | Resistor—580,000 Ohms, Carbon type, 1/10 watt (R1, R3)                                                                                      |  |  |
| 14517                      | Board—Antenna and ground terminal board                                                                                | 12013                        | Resistor—1 Megohm, Carbon type, 1/10 watt (R23)                                                                                             |  |  |
| 12717                      | Board—Phonograph terminal board                                                                                        | 13730                        | Resistor—1 Megohm, Carbon type, $\frac{1}{2}$ watt (R13)                                                                                    |  |  |
| 14338                      | Bushing—Variable condenser mounting bushing assembly                                                                   | 11626                        | Resistor—2.2 Megohm, Carbon type, $\frac{1}{2}$ watt (R7, R8)                                                                               |  |  |
| 14524                      | Cable—Band indicator cable approx. 6 $\frac{1}{2}$ in. long                                                            | 11668                        | Resistor—5.6 Megohm, Carbon type, $\frac{1}{2}$ watt (R26)                                                                                  |  |  |
| 14523                      | Cable—Tone control indicator cable approx. 3 in. long                                                                  | 14532                        | Resistor—Voltage divider comprising one 1500 Ohm, one 2500 Ohm, one 3900 Ohm, one 27 Ohm and one 165 Ohm sections (R20, R21, R22, R24, R25) |  |  |
| 14394                      | Cable—Tuning tube cable and socket                                                                                     | 14343                        | Retainer—Station selector knob shaft and pulley retainer                                                                                    |  |  |
| 11350                      | Cap—Grid contact cap                                                                                                   | 14350                        | Screw—No. 8-32 x 3/16 square head set screw for drum Stock No. 14345 gear Stock No. 30085 and hub and arm on band indicator cable           |  |  |
| 12607                      | Cap—First I.F. transformer shield top                                                                                  | 14374                        | Shield—Antenna or R.F. coil shield                                                                                                          |  |  |
| 12581                      | Cap—Second I.F. transformer shield top                                                                                 | 12008                        | Shield—First or Second I.F. transformer shield                                                                                              |  |  |
| 12884                      | Capacitor—Adjustable trimmer (long) (C2, C23, C26)                                                                     | 14375                        | Shield—Oscillator coil shield                                                                                                               |  |  |
| 12714                      | Capacitor—Adjustable trimmer (Medium) (C9, C20)                                                                        | 14114                        | Socket—Dial lamp socket                                                                                                                     |  |  |
| 14021                      | Capacitor—22 Mmfd. (C25)                                                                                               | 11195                        | Socket—5 contact 5T4 Radiotron socket                                                                                                       |  |  |
| 13545                      | Capacitor—39 Mmfd. (C7)                                                                                                | 11196                        | Socket—8 contact 6F6, 6H6, 6K7, 6L7, 6N7, or 6J7 Radiotron socket                                                                           |  |  |
| 12720                      | Capacitor—100 Mmfd. (C11)                                                                                              | 12907                        | Spring—Tension spring for indicator drum gear Stock No. 30085                                                                               |  |  |
| 14262                      | Capacitor—110 Mmfd. (C12, C13)                                                                                         | 14342                        | Spring—Tension spring for idler Stock No. 14341                                                                                             |  |  |
| 12404                      | Capacitor—120 Mmfd. (C27, C28)                                                                                         | 12007                        | Spring—Retaining spring for core Stock No. 12006 and No. 12800                                                                              |  |  |
| 12724                      | Capacitor—120 Mmfd. (C18)                                                                                              | 14371                        | Switch—Low frequency tone and power switch (S4, S5)                                                                                         |  |  |
| 12406                      | Capacitor—180 Mmfd. (C29)                                                                                              | 14515                        | Switch—Range switch (S1, S2, S3)                                                                                                            |  |  |
| 12952                      | Capacitor—330 Mmfd. (C3, C10, C33)                                                                                     | 14376                        | Transformer—First I.F. transformer (L14, L15, C12, C13)                                                                                     |  |  |
| 12727                      | Capacitor—555 Mmfd. (C24)                                                                                              | 14283                        | Transformer—Second I.F. transformer (L16, L17, C27, C28, C29, R5, R6)                                                                       |  |  |
| 12537                      | Capacitor—560 Mmfd. (C5)                                                                                               | 11211                        | Transformer—Power transformer 105-125 volts, 50-60 cycle (T1)                                                                               |  |  |
| 13762                      | Capacitor—1500 Mmfd. (C16)                                                                                             | 11212                        | Transformer—Power transformer 105-125 volts, 25-60 cycle (T1)                                                                               |  |  |
| 12729                      | Capacitor—1550 Mmfd. (C22)                                                                                             | 11213                        | Transformer—Power transformer 105-125/140-160/200-250 volts, 50-60 cycle (T1)                                                               |  |  |
| 12728                      | Capacitor—4500 Mmfd. (C21)                                                                                             | 14335                        | Volume Control—(R9)                                                                                                                         |  |  |
| 12897                      | Capacitor—4700 Mmfd. (C8)                                                                                              | 14379                        | Washer—Felt washer for indicator pointer                                                                                                    |  |  |
| 4838                       | Capacitor—.005 Mfd. (C39, C40)                                                                                         | <b>REPRODUCER ASSEMBLIES</b> |                                                                                                                                             |  |  |
| 13138                      | Capacitor—.01 Mfd. (C31, C35, C36)                                                                                     | 14356                        | MODEL 810T (RL-63-F2)                                                                                                                       |  |  |
| 4937                       | Capacitor—.01 Mfd. (C38)                                                                                               | 13866                        | Board—3 contact reproducer terminal board                                                                                                   |  |  |
| 11315                      | Capacitor—.015 Mfd. (C32)                                                                                              | 11234                        | Cap—Cone center dust cap                                                                                                                    |  |  |
| 4870                       | Capacitor—.025 Mfd. (C30, C34)                                                                                         | 11469                        | Coil—Field coil (L20)                                                                                                                       |  |  |
| 4839                       | Capacitor—.1 Mfd. (C4, C17)                                                                                            | 12642                        | Coil—Hum neutralizing coil (L-19)                                                                                                           |  |  |
| 12484                      | Capacitor—.25 Mfd. (C15)                                                                                               | 5039                         | Cone—Reproducer cone and dust cap (L18)                                                                                                     |  |  |
| 12741                      | Capacitor—.5 Mfd. (C14, C37)                                                                                           | 14533                        | Plug—4 contact male plug for reproducer                                                                                                     |  |  |
| 5212                       | Capacitor—16 Mfd. (C41)                                                                                                | 14358                        | Reproducer—Reproducer complete                                                                                                              |  |  |
| 14531                      | Capacitor—25 Mfd. (C42)                                                                                                | 14534                        | Screw—Screw, washer, and lockwasher to hold core in yoke                                                                                    |  |  |
| 14372                      | Coil—Antenna coil and shield (L1, L2, L3, L4)                                                                          | 14357                        | Transformer—Output transformer (T2)                                                                                                         |  |  |
| 14516                      | Coil—Oscillator coil and shield (L11, L12, L13)                                                                        | 13866                        | Washer—Spring washer to hold field coil                                                                                                     |  |  |
| 14414                      | Coil—R.F. coil and shield (L5, L6, L7, L8, L9, L10)                                                                    | 11234                        | <b>REPRODUCER ASSEMBLIES</b>                                                                                                                |  |  |
| 14513                      | Condenser—3 gang variable tuning condenser (C1, C8, C19)                                                               | 11469                        | MODELS 810K and 810K1 (RL-70-E2)                                                                                                            |  |  |
| 5040                       | Connector—4 contact female connector for reproducer cable                                                              | 12667                        | Cap—Dust cap for cone center                                                                                                                |  |  |
| 12006                      | Core—Adjustable core and stud for transformer Stock No. 14376 and Stock No. 14283                                      | 5039                         | Coil—Field coil (L20)                                                                                                                       |  |  |
| 12800                      | Core—Adjustable core and stud for coil Stock No. 14516                                                                 | 14535                        | Coil—Hum neutralizing coil (L19)                                                                                                            |  |  |
| 14518                      | Dial—Station selector dial scale complete with tuning tube escutcheon                                                  | 14358                        | Cone—Reproducer cone and dust cap (L18)                                                                                                     |  |  |
| 14514                      | Drive—Variable condenser vernier drive pinion gear and shaft                                                           | 14534                        | Plug—4 contact male plug for reproducer                                                                                                     |  |  |
| 14345                      | Drum—Variable condenser drive belt drum complete with set screws                                                       | 14357                        | Reproducer—Reproducer complete                                                                                                              |  |  |
| 14387                      | Escutcheon—Tuning tube escutcheon                                                                                      | 13866                        | Screw—Screw, washer, and lockwasher to hold core in yoke                                                                                    |  |  |
| 11982                      | Fastener—Dial scale fastener                                                                                           | 11234                        | Transformer—Output transformer (T2)                                                                                                         |  |  |
| 30085                      | Gear—Indicator drive gear and hub, and pointer stem and gear                                                           | 11469                        | Washer—Spring washer to hold field coil                                                                                                     |  |  |
| 14341                      | Idler—Station selector drive belt idler                                                                                | 12667                        | <b>MISCELLANEOUS ASSEMBLIES</b>                                                                                                             |  |  |
| 14519                      | Indicator—Station selector indicator pointer                                                                           | 5039                         | Escutcheon—Station selector escutcheon and crystal complete with tone and band indicating strips                                            |  |  |
| 14520                      | Indicator—Vernier indicator pointer                                                                                    | 14535                        | Index—Tone control indicating strip—mounts in station selector escutcheon                                                                   |  |  |
| 5226                       | Lamp—Dial lamp                                                                                                         | 14358                        | Index—Band indicating strip—mounts in station selector escutcheon                                                                           |  |  |
| 14028                      | Nut—Jamb nut for adjustable trimmer capacitor Stock No. 12714 and No. 12884                                            | 14534                        | Knob—Station selector knob                                                                                                                  |  |  |
| 12471                      | Plate—6J7 Radiotron socket mounting plate and rubber cushions—less socket                                              | 14357                        | Knob—Volume control, tone control or range switch knob                                                                                      |  |  |
| 14340                      | Pulley—Station selector drive belt pulley and knob shaft                                                               | 14527                        | Screw—Chassis mounting screw and washer assembly for console model                                                                          |  |  |
| 14522                      | Reflector—Dial reflector and bracket complete with dial lamp bracket, tuning tube bracket and tone and band indicators | 14528                        | Screw—Chassis mounting screw and washer assembly for the table model                                                                        |  |  |
| 14720                      | Resistor—1000 Ohms, Carbon type, $\frac{1}{2}$ watt (R2)                                                               | 14529                        | Spring—Retaining spring for knob Stock No. 14359                                                                                            |  |  |
| 14078                      | Resistor—18,000 Ohms, Carbon type, 1 watt (R27)                                                                        | 14359                        | Spring—Retaining spring for knob Stock No. 14269                                                                                            |  |  |
| 14284                      | Resistor—22,000 Ohms, Carbon type, 1/10 watt (R5)                                                                      | 14269                        |                                                                                                                                             |  |  |
| 11300                      | Resistor—33,000 Ohms, Carbon type, 1/10 watt (R19)                                                                     | 11210                        |                                                                                                                                             |  |  |
| 13735                      | Resistor—33,000 Ohms, Carbon type, $\frac{1}{2}$ watt (R4, R10)                                                        | 11377                        |                                                                                                                                             |  |  |
| 11322                      | Resistor—39,000 Ohms, Carbon type, $\frac{1}{2}$ watt (R12)                                                            | 4982                         |                                                                                                                                             |  |  |
| 5145                       | Resistor—100,000 Ohms, Carbon type, $\frac{1}{2}$ watt (R14, R15, R18)                                                 | 14270                        |                                                                                                                                             |  |  |
| 11398                      | Resistor—220,000 Ohms, Carbon type, 1/10 watt (R6)                                                                     |                              |                                                                                                                                             |  |  |
| 11453                      | Resistor—270,000 Ohms, Carbon type, 1/10 watt (R16, R17)                                                               |                              |                                                                                                                                             |  |  |