



# *RCA Victor*

## MODEL R-96

Three-Tube, A-C, Electric Phonograph

### TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA VICTOR COMPANY LIMITED • MONTREAL



### Electrical Specifications

|                             |                                       |                        |                        |
|-----------------------------|---------------------------------------|------------------------|------------------------|
| <b>RADIOTRON COMPLEMENT</b> |                                       | (2) Type 6F6G .....    | Power Output           |
| (1) Type 6F5 .....          | Audio Voltage Amplifier               | (3) Type 5Y4G .....    | Rectifier              |
| <b>POWER SUPPLY RATINGS</b> |                                       |                        |                        |
| Rating A .....              | 105-125 volts, 50-60 cycles, 75 watts |                        |                        |
| Rating B .....              | 105-125 volts, 25 cycles, 75 watts    |                        |                        |
| <b>POWER OUTPUT</b>         |                                       | <b>LOUDSPEAKER</b>     |                        |
| Undistorted .....           | 1.75 watts                            | Type .....             | 8-inch Electrodynamic  |
| Maximum .....               | 4.5 watts                             | Impedance (V.C.) ..... | 2.2 ohms at 400 cycles |
| <b>MOTOR-BOARD</b>          |                                       |                        |                        |
| Type .....                  | Manual                                |                        |                        |
| Turntable Speed .....       | 78 r.p.m.                             |                        |                        |
| Pickup .....                | High-impedance crystal                |                        |                        |
| Pickup Impedance .....      | 80,000 ohms at 1000 cycles            |                        |                        |

### Mechanical Specifications

|                               |                                                            |
|-------------------------------|------------------------------------------------------------|
| Height .....                  | 13 $\frac{5}{8}$ inches                                    |
| Width .....                   | 17 $\frac{1}{8}$ inches                                    |
| Depth .....                   | 14 $\frac{3}{8}$ inches                                    |
| Weight (Net) .....            | 30 pounds                                                  |
| Weight (Shipping) .....       | 36 pounds                                                  |
| Chassis Base Dimensions ..... | 9 $\frac{3}{4}$ inches x 5 $\frac{1}{2}$ inches x 2 inches |
| Over-all Chassis Height ..... | 5 $\frac{3}{4}$ inches                                     |
| Operating Controls .....      | (1) Volume Control and Power Switch, (2) Turntable Switch  |

## General Description

The Model R-96 Electric Phonograph consists of a three-tube audio amplifier, an eight-inch dust-proof electrodynamic loudspeaker, a constant speed motor, and a new type, balanced arm, crystal pickup, combined in a hinged-top table-type cabinet. Its

design includes a phonograph pickup jack, resistance-coupled audio system, self-starting constant-speed motor, automatic motor switch, and an aurally compensated volume control.

## 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.

**The crystal pickup unit** is thoroughly sealed in a metal casing as protection against extreme changes of climate. If failure occurs due to a defective crystal unit, no attempt should be made to repair the unit, but a new replacement crystal unit should be installed.

The turntable drive is a self-starting, constant-speed, induction motor. The motor speed should be 78 r.p.m., and may be checked by placing a piece of paper between a record and the turntable, with the paper protruding beyond the edge of the record, and counting the number of revolutions of the turntable per minute while playing a record.

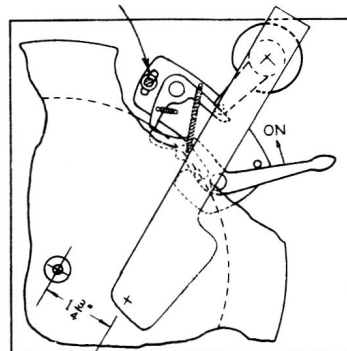
**The motor spindle** is tapered, and a conical rubber piece fits snugly on the spindle. The hole in the turntable bushing is tapered to fit the rubber. This provides an excellent self-centering floating mounting.

A metal washer is placed on the spindle under the rubber piece. The washer has ears on the under side which fit over a pin that projects through the spindle.

**Switch lever adjustments** are described in the accompanying illustration. Note that the switch lever should be adjusted so that the lever will snap to the "off" position when the pickup needle is  $1\frac{3}{4}$  inches from the center-line of the spindle.

**Operation.**—To *start* turn on the amplifier switch, and push the turntable switch lever toward the base of the pickup arm. To *stop* move the pickup arm toward the spindle, in order to actuate the turntable switch, before returning the arm to the arm rest. Records with the standard eccentric or spiral stopping groove will automatically throw the turntable switch at the end of a record.

ADJUST SWITCH TO TRIP WHEN NEEDLE  
IS ON 1-3/4" RADIUS FROM C. OF MOTOR SPINDLE

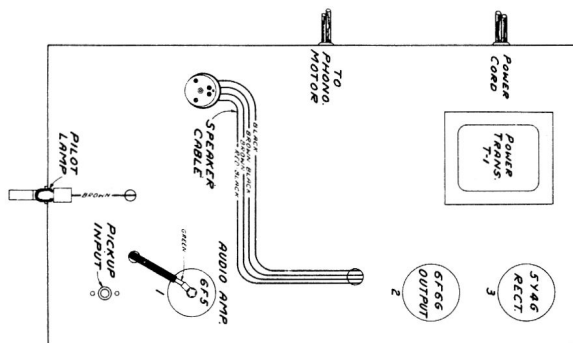


### Adjustment of Automatic Switch

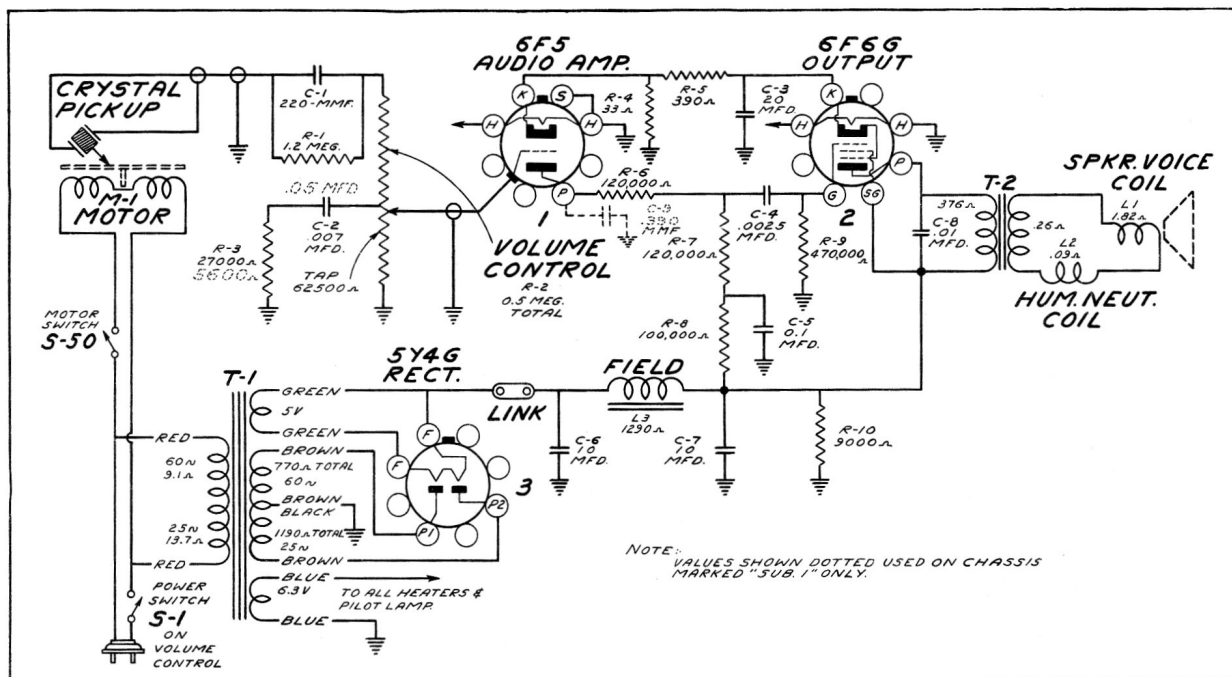
## Electrical Description

The High Impedance crystal pickup is coupled to the control grid of the Type 6F5 audio amplifier tube through the aurally-compensated volume control circuit. The output of the type 6F5 is resistance-coupled to the Type 6F6G power output Pentode. The output of the Type 6F6G is fed to the loudspeaker through a step-down transformer.

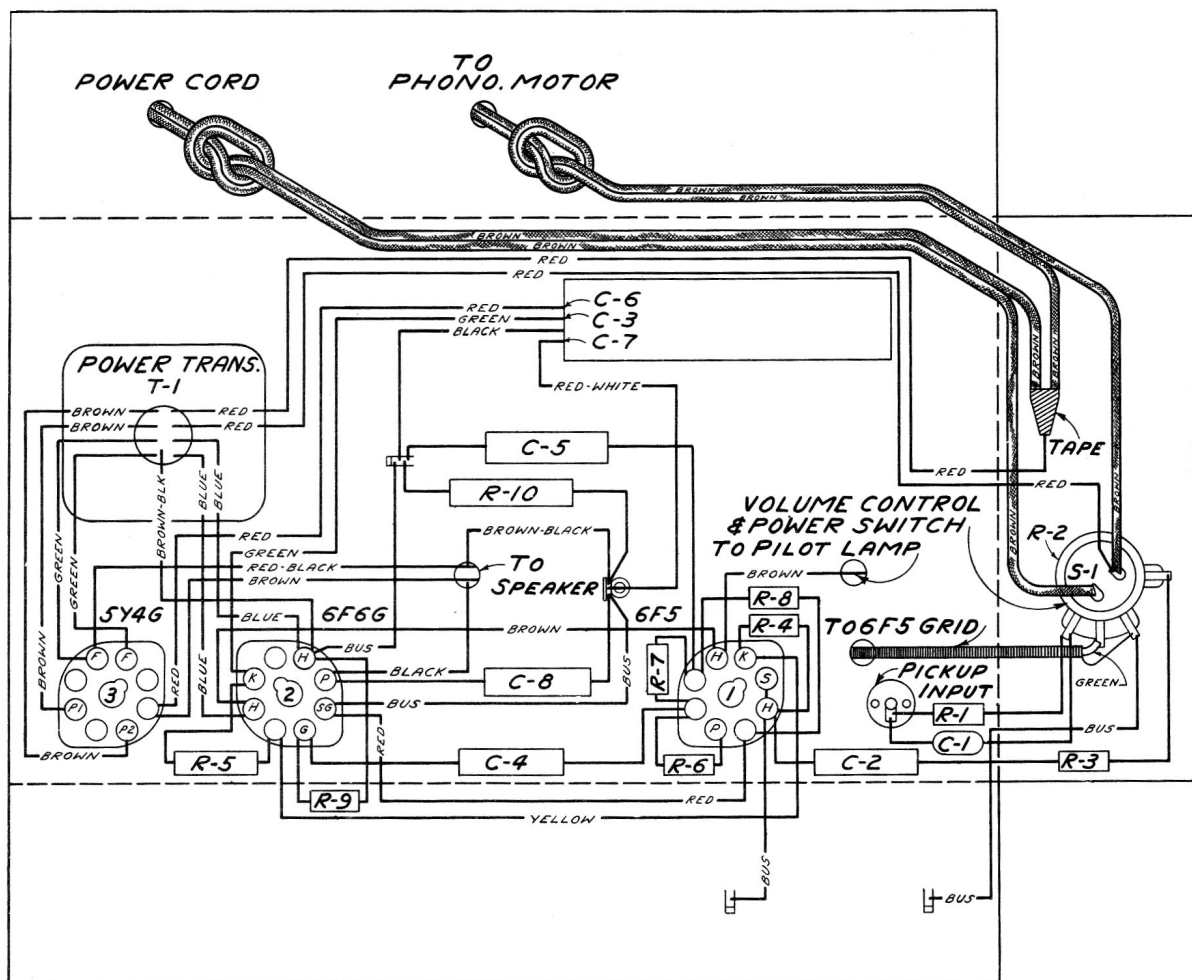
A Type 5Y4G Radiotron is employed as a full-wave rectifier supplying the necessary voltages to the plates of the amplifier tubes. Figures 2 and 3 show the Schematic Diagram and Chassis Wiring diagram respectively.



*Figure 1—Radiotron Locations*



**Figure 2—Schematic Circuit Diagram**



*Figure 3—Chassis Wiring Diagram*

# Radiotron Socket Voltages

| Type | Plate                                | Screen Grid | Control Grid | Filament |
|------|--------------------------------------|-------------|--------------|----------|
| 6F5  | 230V                                 |             | —0.2V        | 6.3V     |
| 6F6G | 250V                                 | 266V        | —0.3V        | 6.3V     |
| 5Y4G | From Each Plate to gnd.<br>346V A.C. |             |              | 5.0V     |

Note:—All the above voltage values should hold within  $\pm 20\%$  when instrument is operated at its rated line voltage. To duplicate the conditions under which the voltages are measured, use 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.

## REPLACEMENT PARTS MODEL R-96

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>    |                                                                                                        | <b>PICKUP ASSEMBLIES</b>                   |                                                                                                                               |
| S-2301                        | Cap-Grid connector cap (Pkg.of 5)...                                                                   | 31050                                      | Crystal-Pickup crystal cartridge....                                                                                          |
| 12694                         | Capacitor-220 mmfd.(C1).....                                                                           | 32500                                      | Mounting-Mounting washer and clip for pickup assembly.....                                                                    |
| 5107                          | Capacitor-.0025 mfd.(C4).....                                                                          | 31211                                      | Pickup-Crystal pickup complete less mounting.....                                                                             |
| 5148                          | Capacitor-.007 mfd. (C2).....                                                                          | 31048                                      | Plug-Pickup cable male plug.....                                                                                              |
| 4937                          | Capacitor-.01 mfd. (C8).....                                                                           | 11547                                      | Screw-Pickup needle screw (Pkg.10)..                                                                                          |
| 4835                          | Capacitor-0.1 mfd. (C5).....                                                                           |                                            |                                                                                                                               |
| S-2329                        | Capacitor-Electrolytic capacitor consisting of two 10 mfd.sections and one 20 mfd. section(C3,C6,C7).. | <b>REPRODUCER ASSEMBLIES<br/>RL63H-505</b> |                                                                                                                               |
| 4573                          | Connector-Motor cable female connector.....                                                            | 13866                                      | Cap-Dust cap for reproducer cone (Pkg.of 10).....                                                                             |
| 5040                          | Connector-4 contact female connector for reproducer cable.....                                         | 11469                                      | Coil-Hum neutralizing coil (L2)....                                                                                           |
| 11891                         | Lamp-Pilot lamp.....                                                                                   | 12012                                      | Coil-Field coil (L3).....                                                                                                     |
| 14671                         | Resistor-33 ohms-1/4 watt (R4).....                                                                    | 31310                                      | Cone-Reproducer cone and voice coil (L1).....                                                                                 |
| 31388                         | Resistor-390 ohms-1 watt (R5).....                                                                     | 31302                                      | Plug-4 contact male plug.....                                                                                                 |
| S-2330                        | Resistor-900 ohms-15 watt (R10)....                                                                    | 31453                                      | Reproducer-Reproducer complete.....                                                                                           |
| 12738                         | Resistor-27,000 ohms-1/4 watt (R3)..                                                                   | 14358                                      | Screw-Screw, washer and lock washer to hold core in yoke (Pkg.of 2)....                                                       |
| 12263                         | Resistor-100,000 ohms,1/4 watt(R8)..                                                                   | 14355                                      | Transformer-Output transformer (T2)..                                                                                         |
| 13734                         | Resistor-120,000 ohms,1/4 watt (R6,R7).....                                                            | 14357                                      | Washer - Spring washer to hold field coil (Package of 5).....                                                                 |
| 11172                         | Resistor-470,000 ohms,1/4 watt (R9).                                                                   |                                            |                                                                                                                               |
| 30208                         | Resistor-1.2 meg.-1/2 watt (R1).....                                                                   | <b>MISCELLANEOUS ASSEMBLIES</b>            |                                                                                                                               |
| 11196                         | Socket-Radiotron socket.....                                                                           | 11762                                      | Cup-Needle cup.....                                                                                                           |
| 31364                         | Socket-Pilot lamp socket.....                                                                          | 14269                                      | Knob-Volume control knob.....                                                                                                 |
| 14278                         | Socket-Pickup socket.....                                                                              | S-2328                                     | Mounting - Motor mounting assembly consisting of mounting screws, washers, spacers and grommets sufficient for one motor..... |
| S-2331                        | Transformer-Power transformer 105/125 volt-25 cycle (T1).....                                          | 30306                                      | Mounting - Amplifier chassis mounting assembly - (Package of 4).....                                                          |
| S-2332                        | Transformer-Power transformer 105/125 volt-80 cycle (T1).....                                          | 30100                                      | Spring-Automatic brake latch springs - (Package of 10).....                                                                   |
| S-2333                        | Volume control and switch (R2,S1)...                                                                   |                                            |                                                                                                                               |
| <b>MOTOR BOARD ASSEMBLIES</b> |                                                                                                        |                                            |                                                                                                                               |
| S-2278                        | Brake-Automatic brake and switch assembly.....                                                         |                                            |                                                                                                                               |
| S-2285                        | Damper-Turntable damper plate and sleeve.....                                                          |                                            |                                                                                                                               |
| 32558                         | Motor-105/120 volt-60 cycle motor less turntable and mountings.....                                    |                                            |                                                                                                                               |
| 32638                         | Motor-105/120 volt-25 cycle motor less turntable and mountings.....                                    |                                            |                                                                                                                               |
| S-2268                        | Switch-Motor switch only (S50).....                                                                    |                                            |                                                                                                                               |
| 31463                         | Turntable-Motor turntable.....                                                                         |                                            |                                                                                                                               |

Parts peculiar to chassis marked "Sub 1"  
Refer to above list for all other replacement parts.

| Stock No. | Description                           | List Price |
|-----------|---------------------------------------|------------|
| 13894     | Capacitor-390 mmfd. (C9).....         | \$ .49     |
| 4886      | Capacitor-0.05 mfd. (C2).....         | .28        |
| S-1894    | Resistor-5600 ohms, 1/4 watt (R3).... | .20        |