

Instructions for  
**RCA Victor 300**  
Radio-Phonograph Combination (A. C.)  
Four-Tube Table Model

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## INSTALLATION

**Preliminary**—After unpacking the instrument, remove the base cover (held in place by screws). Refer to the tube location diagram on the rating label inside the cabinet 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 the spring connectors at the ends of the short flexible leads are securely attached to the dome terminals of the RCA-38, 77 and 78 Radiotrons.

Push both the power cord and antenna lead through the large hole in the base cover and remount the cover. Finally, raise the lid and remove all packing material from the phonograph playing compartment.

**Location**—The instrument should be placed on a table or other level surface near an electrical outlet or lamp socket. Care must be taken to avoid restriction of natural ventilation as would occur with the set resting upon a soft cloth pad or situated so that the back of the cabinet is flush with a wall of the room. 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 Connections**—The most satisfactory length of antenna for use with the receiver should be

determined by trial in each installation. In general, it is advisable always to use the shortest length which provides the desired signal pickup. The attached antenna lead is approximately 20 feet in length and in itself will provide sufficient local pickup (when fully uncoiled) in the majority of installations. In many cases, improved selectivity will be obtained by re-coiling a portion of the lead but the coil must be allowed to remain outside of the cabinet.

Improved pickup for distant reception may be obtained by connecting the end of the antenna lead to a piping system (water, gas or heating), to a large-area conducting surface or to an external antenna system of from 25 to 75 feet in length. If the receiver is to be installed in a building of metallic construction, the antenna lead ordinarily will have to be dropped out of the nearest window, since such structures form an effective shield which greatly impedes the passage of radio waves.

**Power Supply**—Connect the power cord to the electrical outlet, making certain first, however, that the voltage and frequency (cycles) of the alternating-current power supply correspond to the nominal rating of the instrument as indicated on the rating label. *Do not operate this instrument from any power supply circuit on which is impressed a voltage exceeding 125 volts.*

**CAUTION: DISCONNECT INSTRUMENT FROM POWER SUPPLY BEFORE TOUCHING CHASSIS, TUBES OR METAL PARTS INSIDE CABINET.**

## OPERATION

The instrument has three operating controls, two located upon the front panel of the cabinet, and one contained in the phonograph playing compartment. These controls perform the following functions:

- (1) **Station Selector (Left-hand knob on front panel)**—The pointer of this knob passes over an escutcheon marked in equally-spaced divisions (0-100) covering the complete tuning range (540-1712 kilocycles). Stations in the standardized broadcast band (540-1500 kilocycles) will be received between the dial settings "100" and "10," approximately. *Police calls* transmitted at 1554, 1575, 1596, 1662 and 1712 kilocycles will be received at settings near the "0" end of the scale.
- (2) **Radio Volume Control and Power Switch (Right-hand knob on front panel)**—In the extreme counter-clockwise position, the power switch is *off*. A slight clockwise twist of the knob turns on the power and further rotation serves to increase the volume on radio reception.
- (3) **Record Volume Control (Knob in phonograph playing compartment)**—The volume produced by a phonograph record will be increased upon rotation of this knob in a clockwise direction. When not operating the phonograph, this control should be turned fully counter-clockwise in order to insure proper radio performance.

## RADIO RECEPTION

To operate the radio receiver, proceed as follows:

1. Apply power to the receiver by turning the right-hand knob on the front panel clockwise from the "off" position of the switch. A definite "snap" should be heard at first; continue rotation of the knob to the opposite extremity of this control.

2. Allow a minute or two for the Radiotron filaments to heat and make certain that the record volume control (in playing compartment) is turned fully counter-clockwise. Then proceed to rotate the station selector slowly until a signal is heard.

3. Upon receiving a desirable signal, reduce the volume level if necessary and then adjust the station selector (for best reproduction) to a position midway between the points where the signal disappears.

NOTE 1—When tuned to a strong local station with the radio volume control fully advanced, a condition may be observed where a certain amount of counter-clockwise rotation of that control will improve the quality of reproduction and actually increase the volume. This condition is caused by "overloading" and may be corrected simply by setting the radio volume control below the readily-apparent critical point.

NOTE 2—If the antenna lead is bunched or coiled too near the set, oscillation (indicated by "whistling" on stations) may occur. This condition also may be corrected by reducing the radio volume control setting. When operated at or near the point of oscillation, however, the sensitivity of the set will be greatly increased—ordinarily to a point in excess of that required for normal reception.

4. When through operating, turn off the power by rotating the radio volume control counter-clockwise until the "snap" of the power switch is heard.

## PHONOGRAPH REPRODUCTION

Facilities for electrical reproduction of standard-speed (78 revolutions per minute) phonograph records are contained in this instrument. To play records of this type, swing back the hinged lid of the cabinet (remove the lid, if desired, by sliding from its hinges) and proceed as follows:

1. Turn the power *on*, as for radio reception, by a slight clockwise rotation of the right-hand knob on the front panel. To prevent radio interference, this knob should not be turned beyond that point at which the "click" of the power switch is heard. If the receiver is tuned to a local or strong station, it may be found necessary to rotate the station selector a slight amount to eliminate such interference.

2. Place the record upon the turntable and insert a *new* needle—*Chromium* (orange or green shank), *Tungstone* (full volume) or *steel* (full volume)—in the electric pickup. To insert the needle, first loosen the knurled screw on the front of the pickup, push the needle to the full depth of the opening and tighten the screw.

NOTE—Do not play more than one recording with a steel needle. With care, the *orange* Chromium needles may be used to play 25, and the *green* Chromium needles from 75 to 100 recordings. Chromium needles should never be replaced in the pickup (if removed for any reason before completely worn) as undue record wear would result. Tungstone needles are capable of playing from 100 to 200 recordings, provided care is taken not to injure the point.

Do not use *Tungstone* needles on thin, flexible records or on transparent-faced (illustrated) records.

3. Start the turntable rotating in a *clockwise* direction by a quick twirl with the hand. Then lower the pickup carefully on the record, starting the needle at the outside groove.

4. Adjust the record volume control to obtain the desired volume.

5. Upon completion of the selection, lift the pickup and swing it to the right so as to clear the turntable. While changing records, the turntable either may be left rotating or may be stopped by pressure of the hand as found most convenient.

6. When through operating return the record volume control to its counter-clockwise extremity. The pickup should be placed upon the rubber rest at the right-hand side of the turntable when not operating the phonograph—do not leave the pickup resting on the record or turntable. Replace the cabinet lid.

Lubrication—Lift off the turntable at least once each year and apply a few drops of high-grade light machine oil around the *outside* of the shaft bushing, to provide lubrication for the metal washer upon which the motor field member floats. The shaft bushing is self-lubricating; however, no harm will result if excess oil runs inside the bushing.

# SERVICE DATA

## Electrical Specifications

Voltage Rating.....105-115 Volts  
 Frequency Rating.....25, 50, and 60 Cycles  
 Power Consumption.....55 Watts  
 Tuning Range.....540-1710 K. C.  
 Type and number of Radiotrons  
 1 RCA-78, 1 RCA-77, 1 RCA-38, 1 RCA-25Z5—Total, 4  
 Undistorted Output.....0.3 Watts at 60 Cycles

This table type combination instrument consists of a four tube tuned R. F. receiver and a new compactly constructed motor board assembly. It is designed for A. C. operation only. Features such as wide tuning range, electro-dynamic loudspeaker, ability to play both 10 and 12 inch records and excellent quality of reproduction characterize this instrument. Figures C and D show the schematic and wiring diagrams respectively while the voltage readings and replacement parts are given below:

## RADIOTRON SOCKET VOLTAGES

Measured at Maximum Volume—115 Volts, 60 Cycles

Radiotron No.	Cathode to Control Grid, Volts D.C.	Cathode to Screen Grid, Volts D.C.	Cathode to Plate, Volts D.C.	Plate Current M. A.	Filament or Heater Volts
RCA-78, R. F.	2.5	100	200	8.0	6.0
RCA-77, Detector	*5.0	95	*100	0.2	6.0
RCA-38, Output	18.0	180	170	14.0	6.0
RCA-25Z5, Rectifier	—	—	115	30.0	25.0

\* Impossible to measure on ordinary voltmeter.

NOTE: 25 cycle voltages will be less than those obtained on 60 cycles.

## Pickup Service Data

The magnetic pickup and tone-arm assembly of this instrument is of new design and unique construction. Service work will consist of centering the armature, replacing the rubber pivots and replacing the magnet coil.

## Disassembling the Pickup

The pickup may be disassembled in the following manner:

- Unsolder the two cable connections to the terminal strip.
- Remove the needle screw and screws "A" and "B."
- Remove the pickup assembly from the arm and housing.
- Unsolder the two magnet coil leads attached to the terminals and then remove screw E. This will allow the removal of the fibre terminal board.
- If centering of the armature is the only adjustment required, such centering can be done without further disassembly. The armature is centered by loosening screw F and holding the armature with the finger in proper position while screw F is tightened. A visual inspection is sufficiently accurate for centering. When centering after any work has been done or the magnet removed, it is important that the magnet be re-magnetized while in place.
- If the coil or pivot rubbers are to be replaced, the pickup must be further disassembled. This is done by first removing the magnet and then removing screws C and D. The pole piece is now removed, paper sleeve pushed out and the magnet coil slipped from between the pole pieces. Be careful to replace the paper sleeve that centers the coil and to replace it in the new coil assembly.
- The pivot rubbers are replaced by loosening the armature adjusting screw F and removing the armature from its bracket. The rubbers can then be removed by slipping them from each end of the pivot shaft.

It is important to remember that in all operations after reassembling, but before placing in the tone arm, the pickup should be magnetized and the armature centered after remagnetizing. Magnetizing should be done by placing the pickup magnet on the magnetizer and sliding it onto the pole pieces, after magnetizing being careful not to break the magnetic circuit.

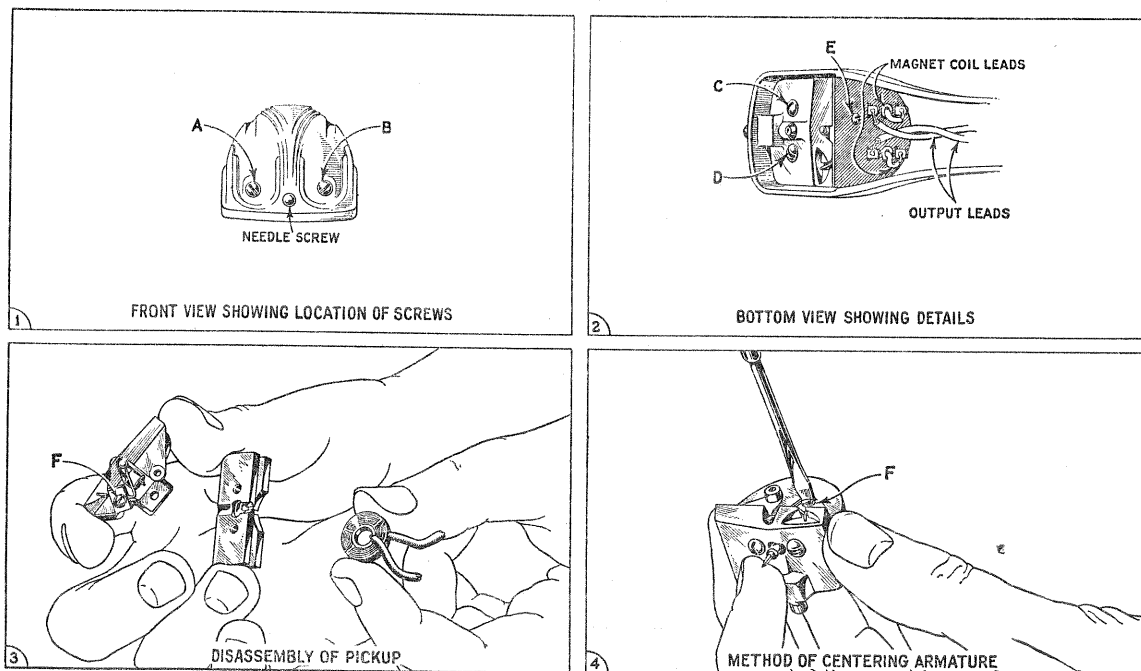


Figure A—Pickup Details

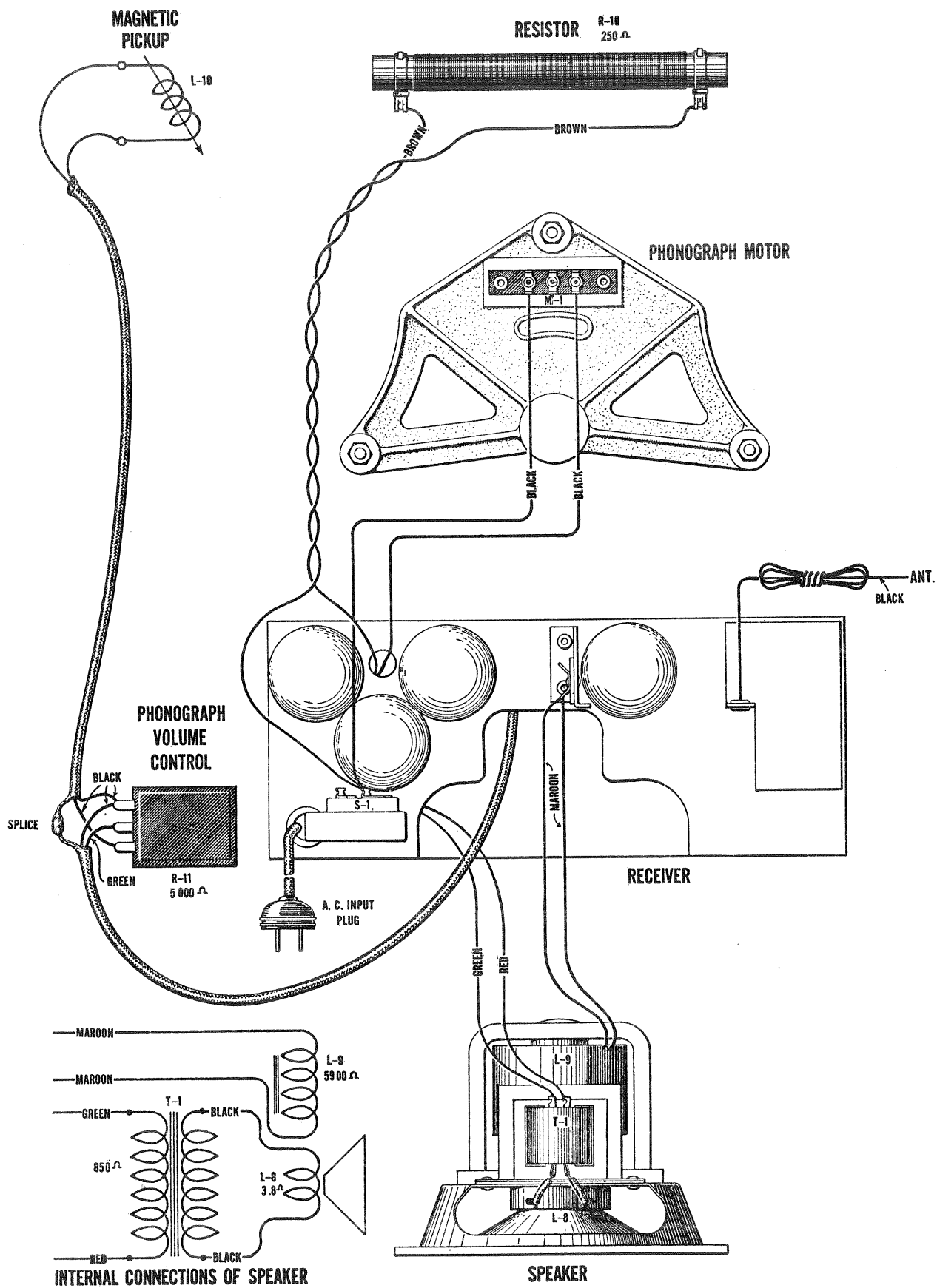


Figure B—Assembly Wiring

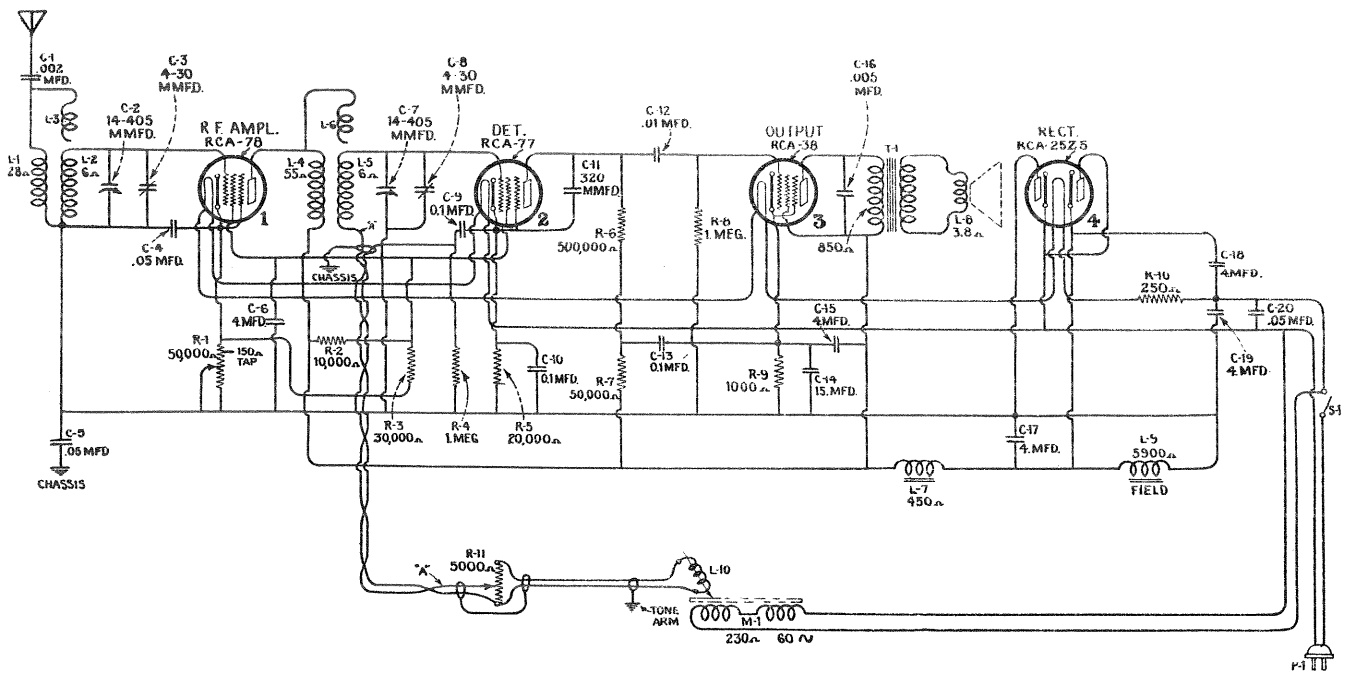


Figure C—Schematic Wiring Diagram

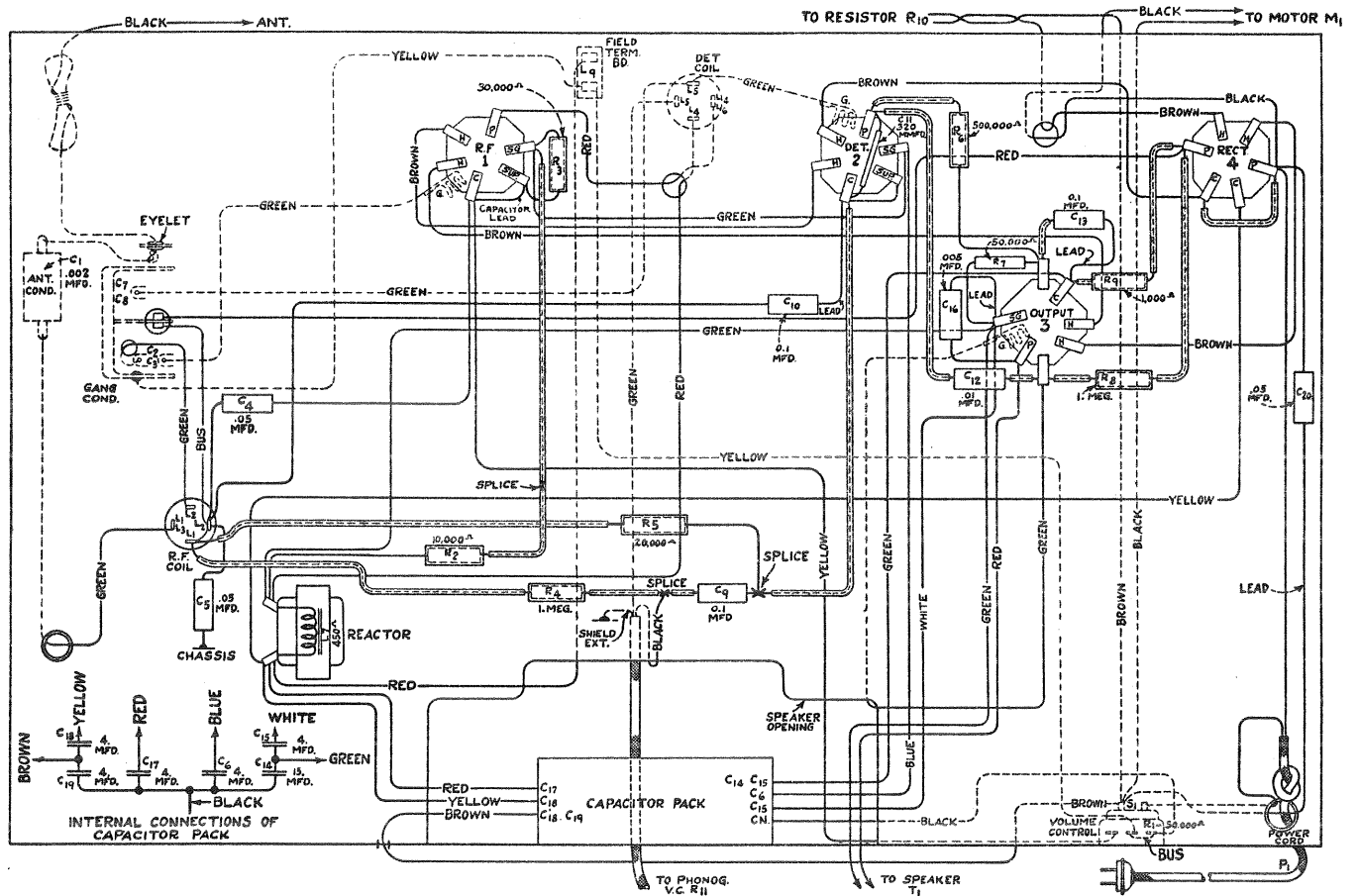


Figure D—Wiring Diagram

# PHONOGRAPH MOTOR SERVICE DATA

The synchronous motor used in this instrument is of simple design and foolproof construction. Among its many features are low power consumption, single moving part, ease of starting, oilless main bearing, resilient bumper, and long life with freedom from service repairs.

Figure E shows the main parts of the motor and the points that may require attention.

**Operation**—The two stator coils are connected in series and the motor is started by giving it a clockwise spin with the hand. If it is found to be difficult of starting, or if it runs at a sub-synchronous speed such as at 70 R. P. M., such action may result from one of the following causes:

**Difficult to Start**—This may be due to the stator failing to rotate on the outer bearing. This can be caused by the spaghetti sleeve being jammed in the slot, or sticking to the resilient bumper. The outer bearing not being properly lubricated may also cause this condition. It is important that the ball bearing be at the bottom of the main bearing assembly.

**Slow Speed**—If the turntable is jarred or slowed down, the motor may run at a sub-synchronous speed, such as 70 R. P. M. This is remedied by merely lifting the tone arm from the turntable, thereby removing the load. The turntable speed will then immediately increase to normal.

**Excessive Vibration and Hum**—A small amount of hum when starting decreasing to a

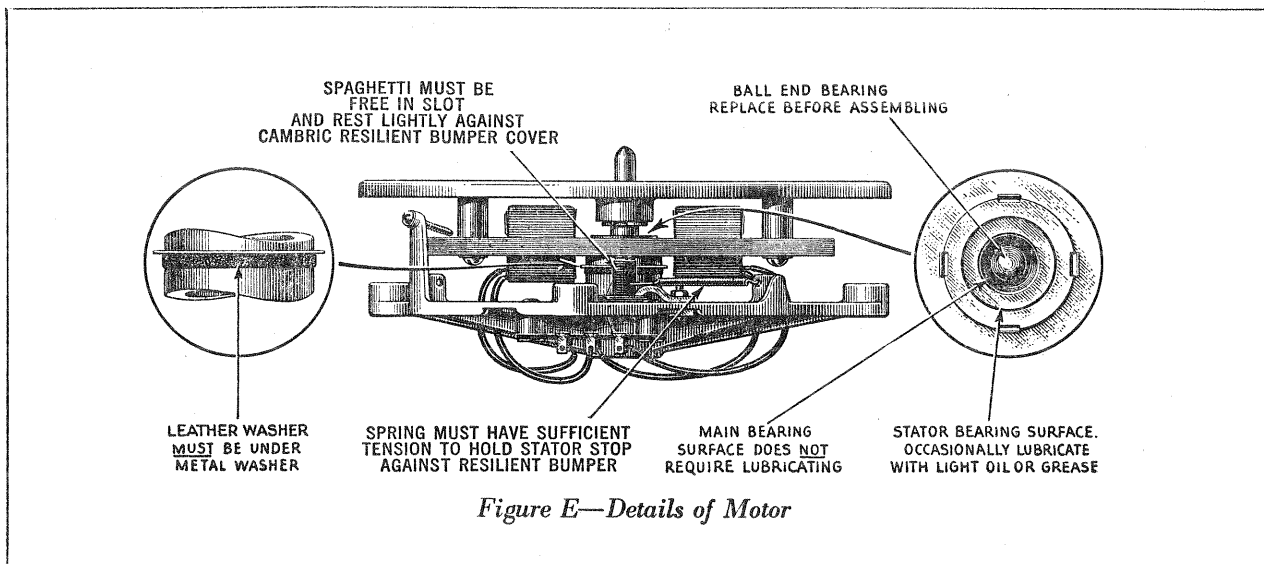
negligible amount while running is normal. If excessive vibration occurs either at starting or running, it may be due to one of the following:

- (1) Insufficient lubricant in outer bearing or any other failure that will cause the stator to bind.
- (2) The metal washer should be above the leather washer at the bottom of the main bearing.
- (3) Motor not properly supported from motor board. Unless the motor is properly supported from the motor board, normal vibration will be excessive.

**Removing Rotor from Stator**—The rotor which includes the turntable may be removed by loosening the screw shown in Figure E until it clears the rotor and then lifting the turntable. Be careful not to lose the ball end-bearing when this is removed. After replacing the rotor, tighten the restraining screw securely to eliminate the possibility of rattle in operation.

**Power Consumption**—The motor consumes 4 watts. It should never be turned on when the rotor is removed, as in this condition excessive current will be drawn with consequent increase in temperature.

**NOTE:** The above values of power consumption are average for a 60 cycle motor at 125 volts. At lower voltages the power consumption will be less.



# 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>					
2816	Resistor—1,000 ohms—Carbon type— $\frac{1}{2}$ watt (R9)—Package of 5.....	\$1.00	7484	Socket—Radiotron five contact socket.....	\$0.35
2981	Capacitor—320 mmfd. (C11).....	.30	7458	Socket—Radiotron six contact socket.....	.40
3048	Resistor—500,000 ohms—Carbon type— $\frac{1}{2}$ watt (R6)—Package of 5.....	1.00	<b>PICKUP AND ARM ASSEMBLIES</b>		
3076	Resistor—1 megohm—Carbon type— $\frac{1}{2}$ watt (R4, R8)—Package of 5.....	1.00	3810	Coil—Pickup coil (L10).....	.32
3077	Resistor—30,000 ohms—Carbon type— $\frac{1}{2}$ watt (R3)—Package of 5.....	1.00	3811	Screw—Needle holding screw—Package of 10.....	.46
3078	Resistor—10,000 ohms—Carbon type— $\frac{1}{2}$ watt (R2)—Package of 5.....	1.00	3812	Armature.....	.32
3556	Capacitor—0.05 mfd. (C4, C5).....	.34	6592	Pickup and arm assembly complete.....	3.36
3569	Knob—Station selector or volume control knob—Package of 5.....	.65	<b>TURNTABLE AND MOTOR ASSEMBLIES</b>		
3594	Resistor—50,000 ohms—Carbon type— $\frac{1}{2}$ watt (R7)—Package of 5.....	1.00	3808	Board—Motor terminal board.....	.20
3615	Knob—Phonograph volume control knob—Package of 5.....	.60	3809	Spring—Package of 5.....	.24
3460	Capacitor—0.05 mfd. (C20).....	.25	3813	Motor suspension assembly—Comprising one screw, one metal bushing, two rubber bushings, one flat washer, one lockwasher and one nut—3 sets.....	.56
3641	Capacitor—0.1 mfd. (C9, C10, C13).....	.35	4052	Spring—Stator tension spring—Package of 5.....	.40
3697	Escutcheon—Station selector escutcheon—Package of 2.....	.28	4123	Damper—Motor damping block—Package of 5.....	.50
3698	Escutcheon—Volume control escutcheon—Package of 2.....	.28	7651	Coil—Stator coil—60 cycle operation.....	.48
3701	Capacitor—0.01 mfd. (C12).....	.30	7652	Coil—Stator coil—50 cycle operation.....	.48
3724	Reactor—Filter reactor (L7).....	1.10	7653	Lamination—Stator laminations—Assembled—60 cycle operation.....	.66
3806	Resistor—250 ohms—Wire wound—Porcelain type—Filament resistor (R10).....	.40	7654	Lamination—Stator laminations—Assembled—50 cycle operation.....	.66
3807	Screw—Chassis mounting screw and washer—Package of 10.....	.46	7655	Lamination—Rotor lamination assembly—60 cycle operation.....	1.00
4007	Capacitor—0.0024 mfd. (C1).....	.35	7656	Lamination—Rotor lamination assembly—50 cycle operation.....	1.00
6303	Resistor—20,000 ohms—Carbon type— $\frac{1}{2}$ watt (R5)—Package of 5.....	1.00	7657	Base—Motor base and bearing assembly.....	1.20
6512	Capacitor—0.005 mfd. (C16).....	.28	9038	Motor complete—105-125 volts—60 cycles.....	4.20
6585	Condenser—Two gang variable tuning condenser.....	2.20	9039	Motor complete—105-125 volts—50 cycles.....	4.20
6586	Volume control—Radio volume control (R1).....	1.20	9040	Turntable complete—With spindle for 50 or 60 cycle operation.....	1.16
6587	Capacitor—Comprising five 4.0 mfd. and one 15.0 mfd. capacitors (C6, C14, C15, C17, C18, C19).....	2.42	10194	Ball—Steel ball bearing—Package of 20.....	.25
6588	Coil—R. F. coil assembly (L1, L2, L3).....	.70	<b>REPRODUCER ASSEMBLIES</b>		
6589	Coil—Detector coil (L4, L5).....	.80	6591	Transformer—Output transformer.....	1.22
6590	Volume control—Phonograph volume control (R11).....	1.20	8987	Cone—Reproducer cone complete (L8)—Package of 5.....	5.00
			9037	Coil assembly—Comprising field coil, magnet and cone support (L9).....	2.78
			9044	Reproducer complete.....	5.00

# **RCA Victor Company, Inc.**

**CAMDEN, N. J., U. S. A.**