



# RCA Victor

## MODEL VR-40

Five-Tube, Single-Band, AC, Victrola

### TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA VICTOR COMPANY LIMITED • MONTREAL



### Electrical Specifications

Frequency Range ..... 540-1,600 kc  
Intermediate Frequency ..... 455 kc

#### TUBE COMPLEMENT

- (1) Type 12SA7 ..... 1st Det. Osc.
- (2) Type 12SK7 ..... I.F. Amplifier
- (3) Type 12SQ7 ..... 2nd Det. A.V.C., A.F.
- (4) Type 35L6GT ..... Power Output
- (5) Type 35Z5GT ..... Rectifier
- Dial Lamp ..... Mazda No. 51, 7.5 volts, .2 amp.

#### POWER SUPPLY RATINGS

A ..... 105-125 volts, 25 cycles, 40 watts  
B ..... 105-125 volts, 60 cycles, 40 watts

#### POWER OUTPUT (125-volt, 60-cycle supply)

Undistorted ..... 1.0 watt  
Maximum ..... 1.5 watts

#### LOUDSPEAKER

Type ..... 5-inch Electrodynamic  
Voice-Coil Impedance ..... 4.4 ohms at 400 cycles

#### PHONOGRAPH ..... Synchronous (manual starting)

Records ..... 10-inch and 12-inch, 78 r.p.m.  
Pickup ..... Crystal, 100,000 ohms at 1,000 c.p.s.  
Average Output of Pickup .. 1½ volts at 1,000 c.p.s.  
across ¼-meg. load

### Mechanical Specifications

	Height	Width	Depth
Cabinet Dimensions (inches)	9	12 ¼	9 ⅝
Chassis Base (inches)	2 ½	9	5 ½

Overall Chassis Height (inches) ..... 6  
Weight ..... 16 lbs. (shipping)  
Tuning Drive Ratio ..... 1 to 1

### General Description

The RCA Victor Model VR-40 is a five tube single band, superheterodyne receiver combined with a motor and crystal pickup unit to form a victrola of practical design. Although the receiver chassis is of the AC-DC type it can only be operated on AC of the proper rating, due to the phono motor. Features of design include:—Magnetite Core I.F. Trans-

formers; built in loop assembly with provision for use with an external antenna; Radio-phono switch incorporating the AC motor switch, beam power output tube; sensitive, five inch electrodynamic loudspeaker; light weight crystal pickup unit and a synchronous type manual starting motor.

## CAUTION

Remove Power plug from outlet before servicing this receiver. Avoid contact of chassis or component parts to external ground.

## Alignment Procedure

**Output Meter Alignment.**—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

**Test-Oscillator.**—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

**Pre-Setting Dial.**—With gang condenser in full mesh, the pointer should be adjusted so that pointer is vertical.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 (I-F) grid in series with .01 mfd.	455 kc	Quiet point at 600 kc end of dial	C13, C14 (2nd I-F trans.)
2	Tuning condenser stator (ant.) in series with .01 mfd.			C11, C12 (1st I-F trans.)
3	Radiation loop consisting of two turns of wire 18 inches in diameter	1,600 kc	Full clockwise (out of mesh)	C8 (oscillator)
4		1,400 kc	Resonance on 1,400 kc signal	C3 (antenna)

**Antenna.**—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

**Power-Supply Polarity.**—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

## Radiotron Socket Voltages

Type	Plate	Screen Grid	Cathode	Filament
12SA7 Def.	90V	90V	—	12V
12SK7	90V	90	1.1V	12V
12SQ7	40V	—	—	12V
35L6GT	84V	90V	5V	35V
35Z5GT	114V	—	112V	35V

Note:—All voltages are measured to common wiring insulated from chassis with a line voltage of 117 volts.

## Phonograph Motor Service Data

The synchronous motor used in this instrument is designed to be simple and foolproof. Among its many features are constancy of speed, low power consumption, single moving part, ease of starting, rubber damper, ease of repair and long life. The parts that may require attention are plainly shown by Figure 1. The motor is started by turning the radio-phono switch to "phono" position and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

## Rotor Adjustment

Use three 16-mil shims, spaced equally around the gap between rotor and stator. When rotor is suitably adjusted, securely tighten the three screws which hold the rotor to the turntable. The centering operation is very similar to that done with a dynamic speaker.

If top of rotor lamination assembly is not flush with top of stator laminations, additional steel washers should be inserted beneath the stator until it is raised to the desired level.

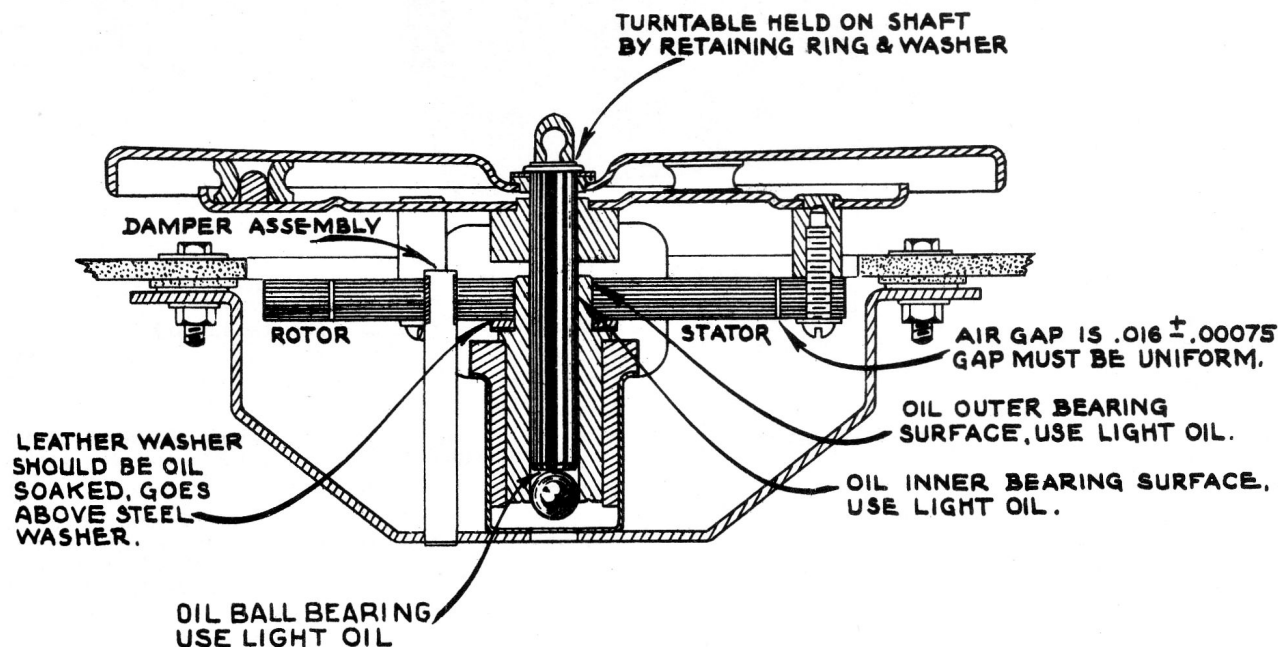


Figure 1—Motor Assembly

## Hum and Vibration

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 lubrication in outer bearing or any other failure that will cause the stator to bind.
- (2) Metal washer above the leather washer at the bottom of the main bearing. It must be below.
- (3) Leather washer not oiled. When replacing the leather washer, make sure that it is thoroughly soaked in oil.
- (4) Motor not properly supported from motor board. Unless the motor is properly supported from the motor board, vibration will be excessive.

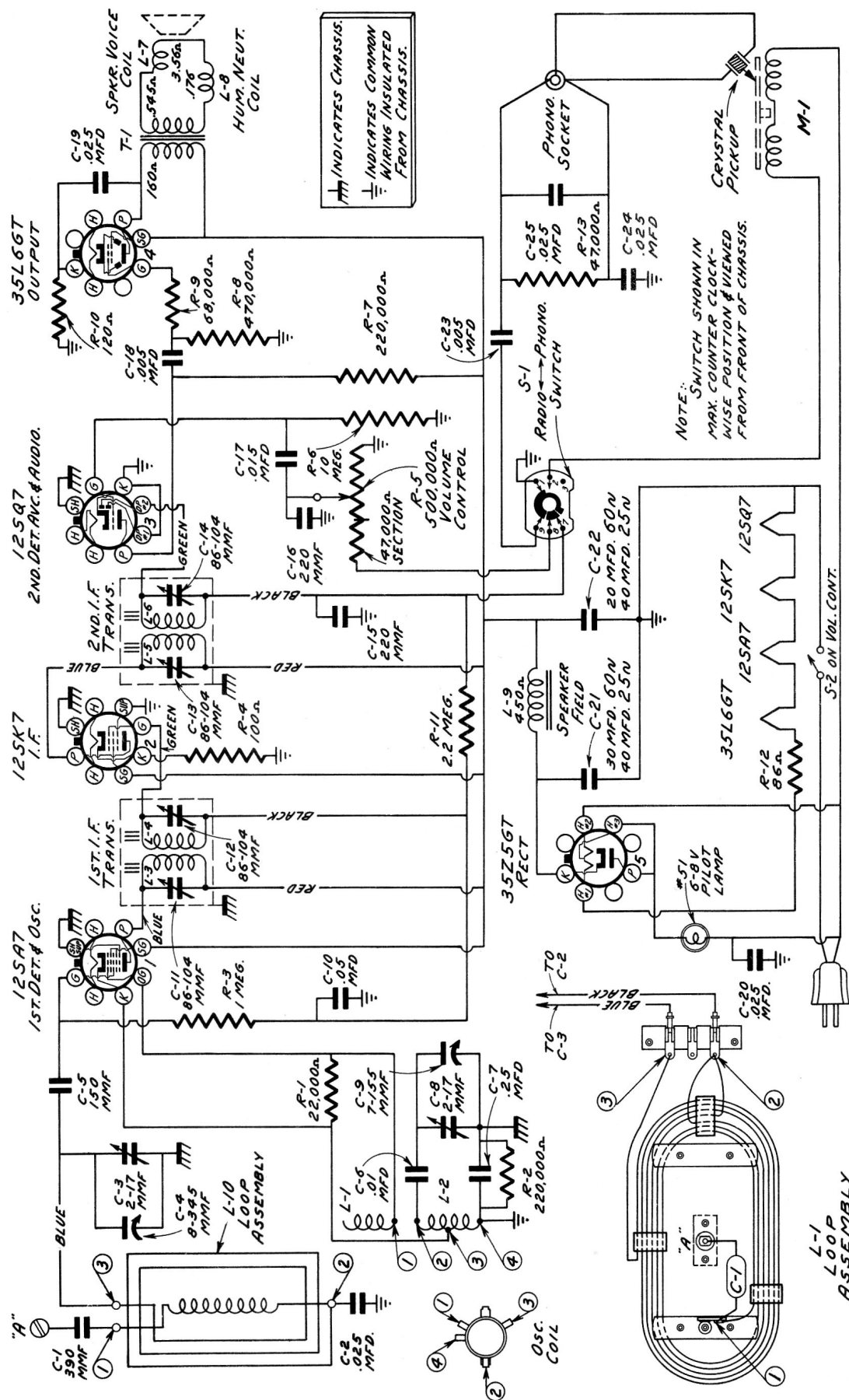
- (5) Burrs on salient poles of rotor or stator. They should be removed with fine emery cloth.

## Removing the Rotor from the Stator

The rotor and turntable assembly simply rests on the ball bearing at the bottom of the vertical bearing, and may be removed by lifting out.

## Lubrication

Both the rotor and stator have bearing surfaces about the center vertical axis. These bearings and the ball bearing at the bottom of the turntable's shaft should be oiled whenever motor is serviced. The leather washer beneath the stator is to be pliable and soaked in light oil.



### Schematic Circuit Diagram

## Precautionary Lead Dress

1. Audio coupling capacitor to volume control must be dressed under the terminal board and down against the corner of the chassis.
2. The voice coil leads from the output transformer to the

speaker must be dressed away from the terminal on the terminal-board to which the above audio coupling capacitor is connected.

3. The output tube bypass condenser must be dressed away from the 12SQ7 tube.

## REPLACEMENT PARTS FOR MODEL VR-40

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>REPRODUCER ASSEMBLIES</b>	
12725	Capacitor-150 mmfd. (C5).....	32907	Cap-Dust cap for cone centre (Pkg.5).....
12694	Capacitor-220 mmfd. (C15,C16).....	S-2775	Coil-Field coil (L9).....
13894	Capacitor-390 mmfd. (C1).....	35066	Cone-Reproducer cone & voice coil (L7).....
4838	Capacitor-.005 mfd. (C23,C18).....	S-2777	Reproducer complete.....
11315	Capacitor-.015 mfd. (C17).....	<b>MOTOR ASSEMBLIES</b>	
4870	Capacitor-.025 mfd. (C2,C19,C20, C24,C25).....	S-2277	Base-Motor support,damper and bearing cup assembly.....
4858	Capacitor-.01 mfd. (C6).....	31046	Bearing-Motor bearing assembly....
32787	Capacitor-.05 mfd. (C10).....	31041	Cap-Rubber spindle cap (Pkg.2)....
12484	Capacitor-0.25 mfd. (C7).....	S-3038	Coil-Set of 25 cycle motor coils..
S-2421	Capacitor-Electrolytic consisting of two 40 mfd. sections 25 cycle (C21,C22).....	S-3039	Coil-Set of 60 cycle motor coils..
35348	Capacitor-Electrolytic consisting of one 30 mfd. section and one 20 mfd. section 60 cycle (C21,C22).....	31047	Cushion-Rubber cushion for bearing
S-2776	Coil-Oscillator coil (L1,L2).....	S-2269	Motor-110 volt,60 cy.motor complete (M1).....
S-2786	Condenser-2 gang variable tuning condenser and drum assembly (C3,C4,C8,C9).....	S-2270	Motor-110 volt,25 cy.motor complete (M1).....
32634	Cord-Condenser drum drive cord....	S-2852	Mounting-Motor mounting assembly comprising screws, nuts, washers (1 complete set).....
35059	Dial-Station selector dial scale...	31040	Mounting-Turntable top, rubber mountings (Pkg.3).....
35063	Drum-Tuning condenser drive drum...	4577	Plug-Motor cable male plug.....
35062	Indicator-Station selector indicator pointer.....	S-2271	Retainer-Turntable top retaining ring, bushing and washer.....
11765	Lamp-Dial lamp.....	S-2273	Turntable-Turntable top plate 60 cycle.....
S-2850	Loop-Antenna loop assembly less name plate (L10).....	S-2274	Turntable-Turntable top plate 25 cycle.....
33558	Resistor-86 ohm, flexible type (R12).....	4083	Washer-Leather spacing washer (Pkg.10).....
32535	Resistor-120 ohm,flexible type(R10)	14231	Washer-Metal spacing washer (Pkg.10).....
S-2575	Resistor-100 ohm,1/4 watt (R4).....	<b>PICKUP ASSEMBLIES</b>	
13998	Resistor-22,000 ohm,1/4 watt (R1)..	S-2451	Base-Pickup arm pivot shaft, and base assembly.....
12412	Resistor-47,000 ohm,1/4 watt (R13)..	33122	Crystal-Pickup crystal and needle screw complete with viscoloid damper.....
13715	Resistor-68,000 ohm,1/4 watt (R9)..	33123	Damper-Viscoloid damper for pickup armature.....
12264	Resistor-220,000 ohm,1/4 watt (R2,R7).....	S-2853	Pickup arm and crystal assembly complete.....
12285	Resistor-470,000 ohm,1/4 watt (R8)..	33529	Screw-Needle screw.....
13730	Resistor-1.0 meg.,1/4 watt (R3)....	33591	Shell-Pickup shell less crystal unit and base.....
12679	Resistor-2.2 meg.,1/4 watt (R11)...	<b>MISCELLANEOUS ASSEMBLIES</b>	
13601	Resistor-10 meg., 1/4 watt (R6)....	35079	Crystal-Station selector dial crystal.....
35058	Shaft-Tuning condenser drive shaft.	S-2778	Knob-Volume, tuning or radio phono control knob.....
31319	Socket-Radiotron socket.....		
34449	Socket-Pilot lamp socket.....		
S-2854	Socket-Phono input socket and insulating plate.....		
30585	Spring-Drive cord tension spring (Pkg.2).....		
S-2851	Switch-Radio phono switch (S1)....		
35056	Transformer-Output transformer (T1)		
S-2787	Transformer-First I.F. transformer (L3,L4,C11,C12).....		
S-2788	Transformer-Second I.F. transformer (L5,L6,C13,C14).....		
S-2774	Volume control and power switch (R5,S2).....		