



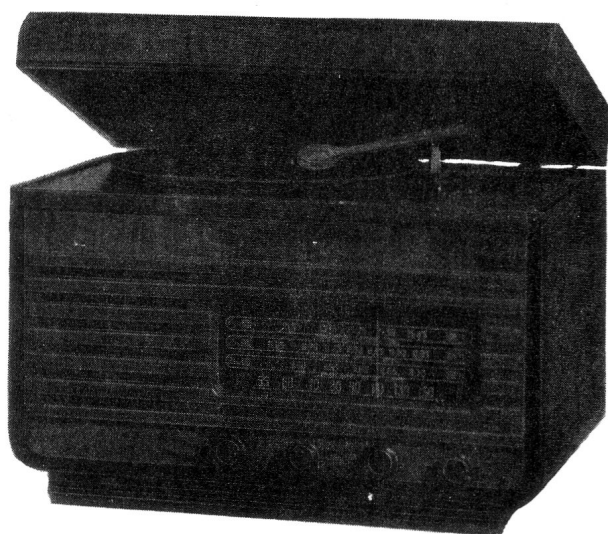
RCA Victor

MODELS VR-44A AND VR-44C

Five-Tube Four-Band, A-C, Superheterodyne Radio Phonograph Combination

TECHNICAL INFORMATION AND SERVICE DATA

SERVICE DIVISION • RCA VICTOR COMPANY LIMITED • MONTREAL



Model VR-44A



Model VR-44C

Electrical and Mechanical Specifications

FREQUENCY RANGES

Standard Broadcast (A)	540-1,570 k.c.
31 M	9,450-9,700 k.c.
25 M	11,680-11,920 k.c.
19 M	15,030-15,380 k.c.

Intermediate Frequency

Tuning Drive Ratio

RADIOTRON COMPLEMENT

- (1) Type-6SA7 First Detector-Oscillator
- (2) Type-6SK7 Intermediate Amplifier
- Pilot Lamps (2)

POWER SUPPLY RATINGS

Rating A	105-125 volts, 50-60 cycles, 90 watts
Rating B	105-125 volts, 25-60 cycles, 90 watts

POWER OUTPUT

Undistorted	2 watts
Maximum	4.5 watts

LOUDSPEAKER (Elliptical)

Type	6"x9" Electrodynamic
Impedance (V.C.)	4.5 ohms at 400 cycles

CABINET DIMENSIONS

	VR-44C	VR-44A
Height	16 $\frac{3}{4}$	13 $\frac{1}{4}$ inches

R. F. ALIGNMENT FREQUENCIES

31 M (31 Meters)	9,550 k.c. (osc., ant.)
25 M (25 Meters)	11,800 k.c. (osc.)
19 M (19 Meters)	15,200 k.c. (osc.)
Standard Broadcast (A)	1,500 k.c. (osc., ant.)

Intermediate Frequency 455 k.c.

Tuning Drive Ratio 12:1

- (3) Type-6SQ7 2nd Det., A. V. C. & A. F.
- (4) Type-6F6G Power Output
- (5) Type-5Y4G Full Wave Rectifier
- Mazda No. 51, 6.3 volts, 0.2 amp.

PHONOGRAPH (VR-44A)

Type Manual; self-starting constant-speed motor; Edge-driven Turntable.

PHONOGRAPH (VR-44C)

Type Automatic (For details see Service Notes for RP-158)

Record Capacity Twelve 10-inch or Ten 12-inch

Turntable Speed 78 R.P.M.

Pickup Crystal; 100,000 ohms at 1,000 cycles

Average Output 1 $\frac{1}{2}$ volts at 1,000 cycles across $\frac{1}{2}$ meg.

	VR-44C	VR-44A
Width	21 $\frac{1}{8}$	20 $\frac{5}{8}$ inches
Depth	16 $\frac{1}{2}$	14 $\frac{1}{8}$ inches

General Description

The Models VR-44A and VR-44C table type Phonograph radio combinations employ a five-tube, four band superheterodyne circuit, the arrangement of which is shown in the Schematic Circuit Diagram. Features of design include:—Loop antenna as the first tuned circuit; three spread bands; stabilized oscillator circuit resulting in less frequency drift; magnetite core I.F. transformers; magnetite core oscillator coils; automatic volume control; two position tone control

circuit; dust proof electrodynamic loudspeaker; temperature stabilized capacitors in the oscillator circuits; and a large, edge lighted dial individually calibrated for each band. Features of the VR-44A Phonograph include permanent stylus crystal pickup, constant speed synchronous motor and an automatic motor switch. Model VR-44C is equipped with an automatic record changer mechanism. Type RP-158.

Circuit Arrangement

The circuit consists of a first detector (oscillator) stage incorporating the Loop Antenna as the first tuned circuit; I.F. amplifier stage; second detector, A.V.C. and first Audio stage; single pentode output operating in Class A-B; and a well regulated power supply.

The Loop Antenna used in the first tuned stage is in the circuit on the "A" band; temperature compensated capacitors are used in the oscillator circuits to reduce

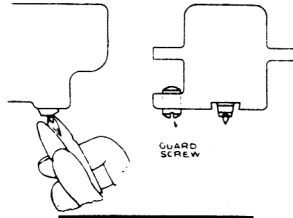
oscillator drift.

The intermediate frequency amplifier consists of a Type 6SK7 tube in a single stage transformer-coupled circuit. The windings of both I.F. Transformers are resonated by magnetite cores and are adjusted by adjustable capacitors to tune to 455 K.C.

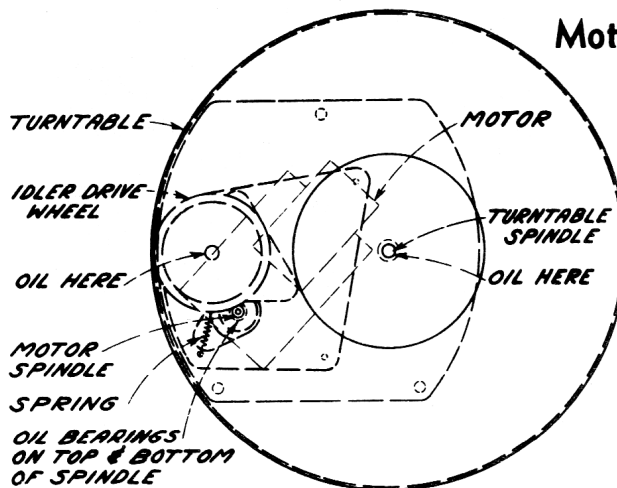
The Audio circuit is a conventional resistance-coupled stage.

Replacement of Pickup Stylus

As an additional precaution against rough handling, the top of the stylus is dipped in a rubber cement before being inserted in the pickup. To remove the stylus, grasp it firmly with a pair of tweezers, give it a few turns to loosen the cement and then pull it out. Much easier handling of the stylus will result if the tweezers are



notched with a file as shown. Naphtha may be used as a thinner should difficulty with the rubber cement be experienced. Before inserting the new stylus it should be dipped in the rubber cement previously thinned with naphtha. After insertion clean the point with naphtha if there is any doubt as to the presence of cement.

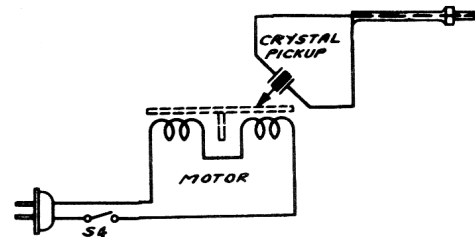


Motor Top View

Phonograph Motor Service Data:—

The phonograph motor is of the self starting synchronous type and operates the turntable through friction drive between the motor drive spindle and the rubber tired idler on the rim of the turntable.

Motor and Pickup Data



Motor & Pickup Circuit

The motor should be lubricated once or twice a year by placing a few drops of S. A. E. 20 (or equivalent) on the turntable spindle and saturating the oil retaining felt pads on the motor shaft with S. A. E. 10 oil. **Caution—The motor drive spindle and the rubber tire on the idler must be kept clean and entirely free from oil and grease at all times.**

RADIOTRON SOCKET VOLTAGES

Type	Plate	Screen Grid	Control Grid	Cathode	Heater
6SA7 Conv.	270V	100V			6.4V
6SK7 I.F.	275V	100V			6.4V
6SQ7 Audio	80V				6.4V
6F6G Output	250V	260V		16V	6.4V
5Y4G Rectifier	Transformer A.C. output measured from each plate to chassis			345V A.C.	5.0V

Note:—All the above values hold within plus or minus 20% when measured with a 20,000 ohm-per-volt meter, on a line voltage of 115 volts. All voltages are measured to chassis.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph should be made to the chassis and the green lead on the volume control.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord-Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the tuning drum. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical and directly above the center of the shaft of the tuning drum when the plates are fully meshed. The drum is held to the shaft by means of two set-screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the condenser gang, and bend the wire so that it points to the 180° mark on the calibration scale when the plates are fully meshed.

Spread-Band Alignment.—The most satisfactory method of aligning or checking the spread-band ranges is on actual reception

of short-wave stations of known frequency, by adjusting the magnetite-core oscillator coil for each band so that these stations come in at the correct points on the dial.

In exceptional cases, when the set is being serviced in a location where the noise level is high enough to prevent reception of short-wave stations, a test-oscillator may be used for alignment, but an extremely high degree of accuracy is required in the frequency settings of the test-oscillator, as a slight error will produce considerable inaccuracy on the spread-band scales. The frequency settings of the test-oscillator may be checked by one or both of the following methods:

1. Determine the exact dial settings of the test-oscillator (for frequencies at or close to the specified alignment frequencies) by zero-beating the test-oscillator against short-wave stations of known frequency.
2. Use harmonics of the standard-broadcast range of a test-oscillator, first checking the frequency settings on this range by means of a crystal calibrator (RCA Stock No. 9572), or by zero-beating against standard broadcast stations.

When a test oscillator is employed for spread-band alignment, a final check should be made on actual reception of short-wave stations of known frequency, and the magnetite-core oscillator coil for each band should be re-adjusted so that the stations come in at the correct points on the dial.

NOTE.—Whenever possible spread band final adjustments should be made with the chassis fastened in the cabinet and the pointer accurately aligned to the dial.

Order of Alignment	Test Oscillator			Range Selector	Receiver Dial Setting	Circuit to Adjust	Adjustment Symbols
	Connection to Receiver	Dummy Antenna	Frequency Setting				
1	Control Grid 6SK7	.1 Mfd.	455 k.c.	"A"	No Signal 550-750 k.c.	2nd I.F. Transformer	C11 & C12
2	Control Grid 6SA7	.1 Mfd.	455 k.c.	"A"	550-750 k.c.	1st I.F. Transformer	C8 & C9
3	Ant. Terminal	300 Ohms	1,500 k.c.	"A"	1,500 k.c. 22°	"A" Osc.	C25
4	Radiated signal *	—	1,500 k.c.	"A"	1,500 k.c. 22°	"A" Ant.	C1
5	Ant. Terminal	300 Ohms	15,200 k.c.	19 M	15,200 k.c. 93°	19 M Osc.	L11
6	Ant. Terminal	300 Ohms	11,800 k.c.	25 M	11,800 k.c. 82°	25 M Osc.	L12
7	Ant. Terminal	300 Ohms	9,550 k.c.	31 M	9,550 k.c. 104°	31 M Osc.	L13
8	Ant. Terminal	300 Ohms	9,550 k.c.	31 M	9,550 k.c. 104°	31 M Ant.	C4

All adjustments indicated above except operation 4, are made with antenna link in the open position.

*Radiation loop comprising two turns of wire 18 inches in diameter should be connected to test oscillator and placed approximately 4 feet from receiver before adjusting C1.

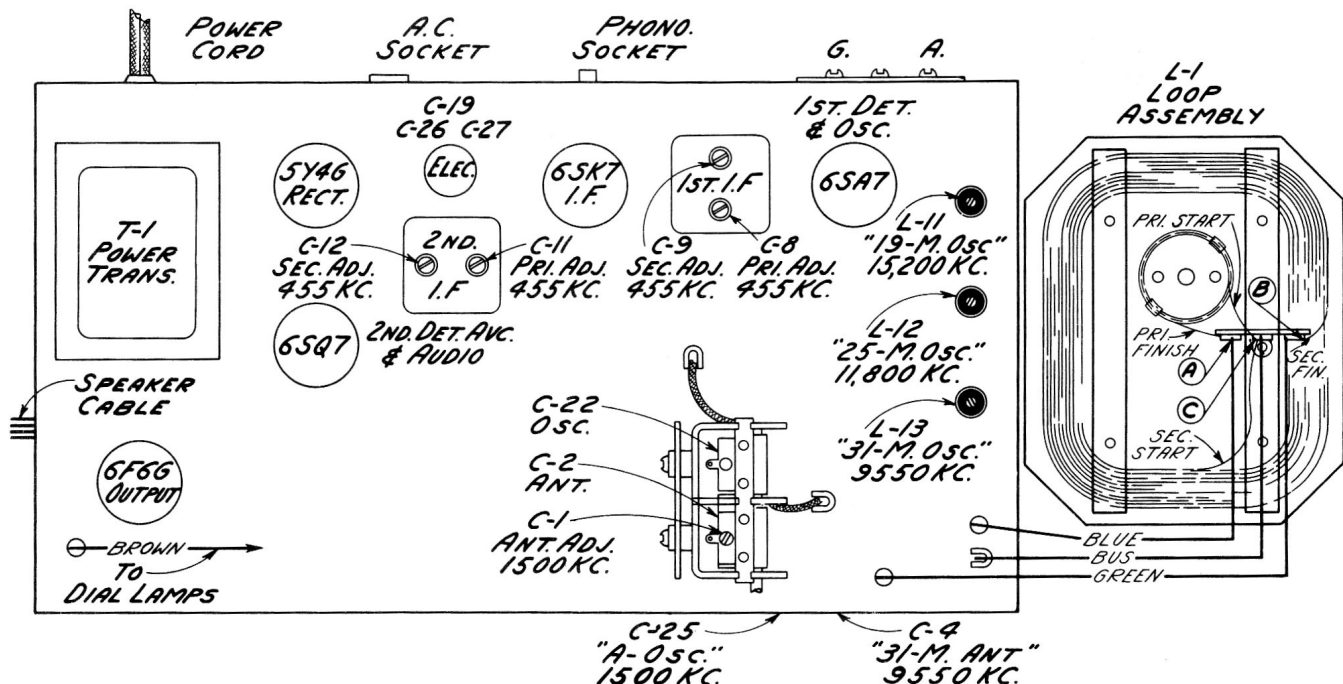


Figure 1—Chassis Layout and Alignment Adjustments

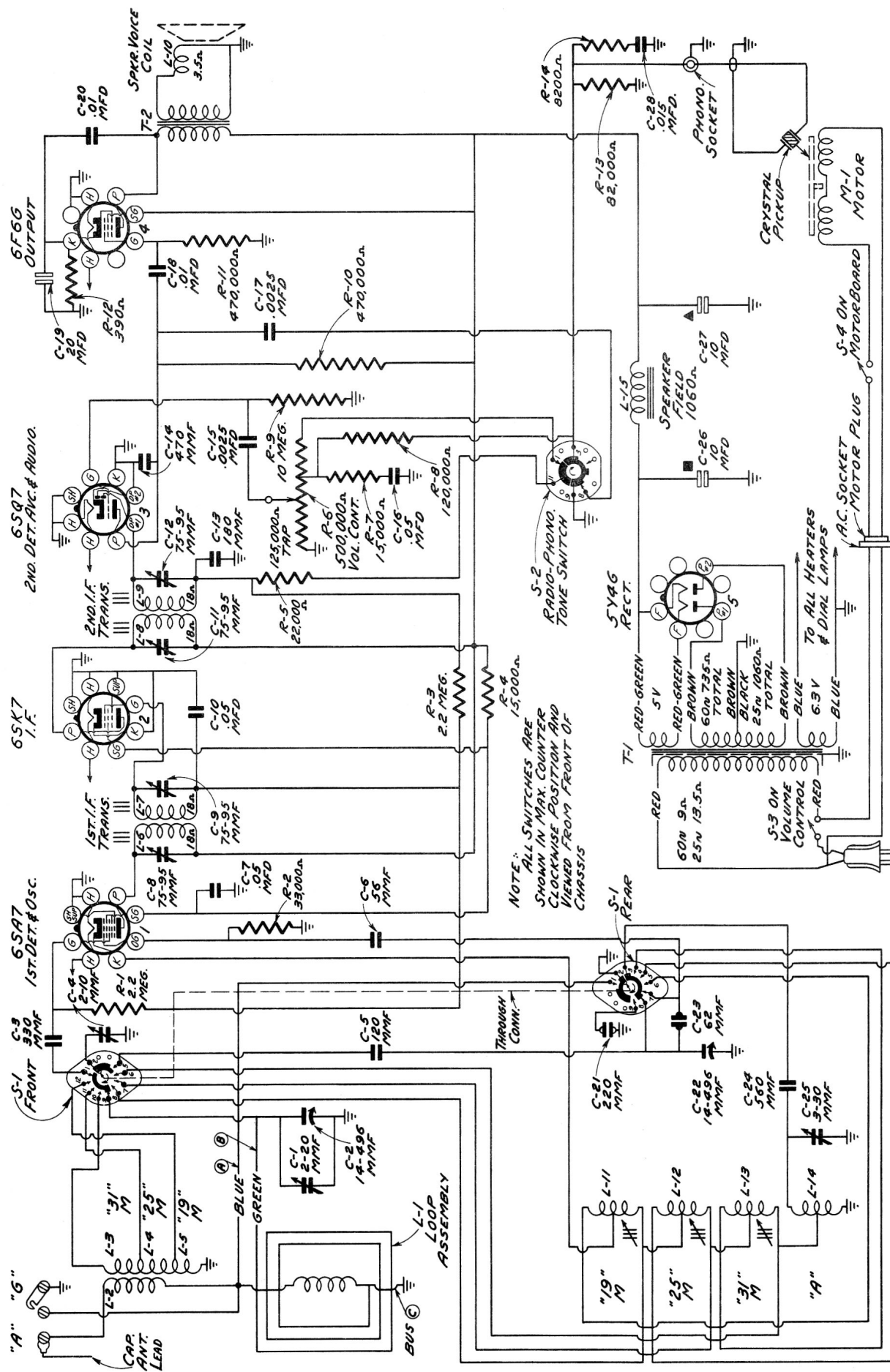


Figure 2—Schematic Circuit Diagram

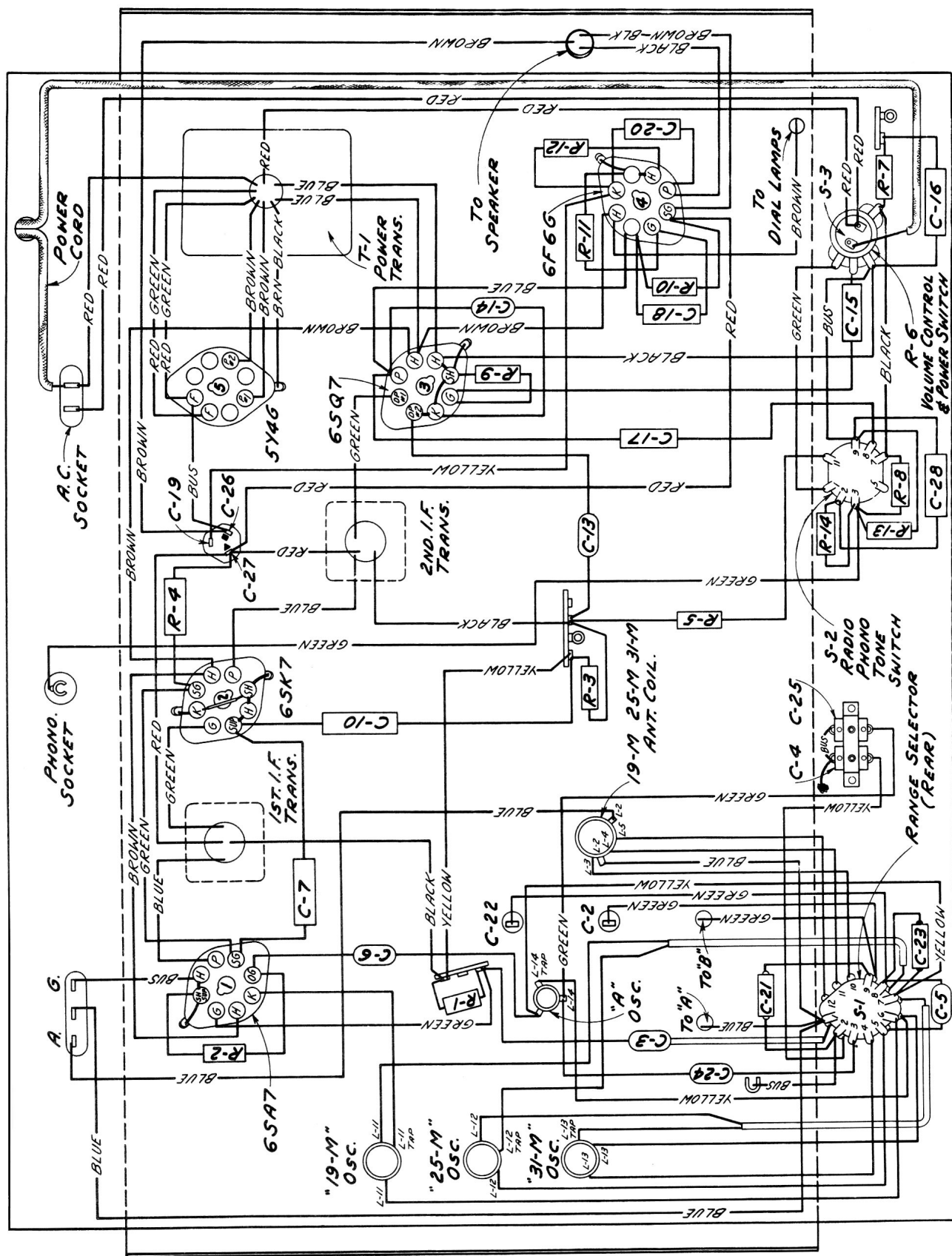


Figure 3—Chassis Wiring Diagram

REPLACEMENT PARTS FOR MODELS VR-44A AND VR-44C

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

STOCK NO.	DESCRIPTION	STOCK NO.	DESCRIPTION
RECEIVER ASSEMBLIES		SPEAKER ASSEMBLIES (Elliptical)	
34025	Board-Antenna and Ground Terminal Board	31825	Cap-Dust cap for cone centre(Pkg.5)
S-3099	Capacitor-Adjustable trimmer bank (C4, C25).....	S-3311	Cone-Speaker cone and voice coil (L10).....
12723	Capacitor- 56 mmfd. (C6).....	5118	Plug-3 contact male connector plug.
S-3123	Capacitor- 62 mmfd.(Temp.Comp.)(C23)	S-3231	Speaker-complete (L10,L15,T2).....
12724	Capacitor-120 mmfd.(C5).....	S-3312	Transformer-Output (T2).....
13003	Capacitor-180 mmfd.(C13).....	MOTOR ASSEMBLIES (Model VR-44A only)	
S-2895	Capacitor-220 mmfd.(Close Tol.)(C21)	S-3077	Motor-110 volt 60 cycle motor complete (M1).....
12952	Capacitor-330 mmfd.(C3).....	S-3078	Motor-110 volt 25 cycle motor complete (M1).....
30433	Capacitor-470 mmfd.(C14).....	4577	Plug-2 contact male motor plug.....
12537	Capacitor-560 mmfd.(C24).....	S-3079	Spindle-Turntable spindle.....
5107	Capacitor-.0025 mfd. (C15, C17)....	S-3080	Spring-Drive wheel tension spring (Pkg.2).....
33584	Capacitor-.01 mfd. (C18, C20)....	S-3081	Turntable-Motor Turntable.....
11315	Capacitor-.015 mfd. (C28).....	S-3082	Wheel-Rubber tired drive wheel.....
32787	Capacitor-.05 mfd. (C7,C10,C16)...	AUTOMATIC SWITCH ASSEMBLY (Model VR-44A only)	
32240	Capacitor-Electrolytic,comprising two sections of 10 mfd; and one of 20 mfd.(C19,C26,C27).....	36772	Cam-Cam assembly comprising main and auxiliary cam,hub and set screw
S-3109	Coil-Antenna 19,25,31 M bands(L2,L3, L4,L5).....	32869	Screw-Set screw for cam hub(Pkg.10)
S-3111	Coil-Oscillator "A" band (L14)....	36521	Spring-Actuating lever tension spring (Pkg.2).....
S-3114	Coil-Oscillator 19M band (L11)....	36529	Switch-Contact and Plunger (S4)....
S-3112	Coil-Oscillator 25M band (L12)....	PICK-UP ASSEMBLIES (Model VR-44A only)	
S-3113	Coil-Oscillator 31M band (L13)....	38602	Arm-Pickup arm-shell only.....
S-3149	Condenser-Two gang tuning condenser (C1,C2,C22).....	S-3403	Base-Pickup arm base and pivot shaft
* 32634	Cord-Drive cord.....	38610	Crystal-Crystal cartridge with permanent stylus.....
35627	Drum-Drive cord drum.....	39949	Damper-Viscoid damper.....
S-3152	Indicator-Station selector indicator pointer.....	31054	Grommet-Pickup base rubber grommet.
11765	Lamp-Dial Lamp Mazda #51.....	38458	Nut-Speed nut to hold cable in arm (Pkg.2).....
S-3108	Loop-Antenna loop assembly (L1)....	39387	Plate-Bottom plate for pickup arm, less screws.....
S-3178	Pulley-Dial cord pulley (Pkg.2)....	38609	Screw-No.4-40x1/4 in.headless set screw for pickup arm (Pkg.10)....
31388	Resistor- 390 ohm 1 watt (R12)....	38605	Screw-No.4-40x1/4 in.screw to mount crystal (Pkg.25).....
14075	Resistor-8,200 ohm 1/4 watt (R14)...	38611	Screw-No.4-40x3/16 in.headless set screw for pickup crystal (oval point) (Pkg.5).....
12695	Resistor-15,000 ohm 1/4 watt (R7)...	39388	Screw-No.4-40x3/16 in.screw for pickup arm bottom plate (Pkg.25)...
33489	Resistor-15,000 ohm 2.5 watt wire-wound (R4).....	38608	Screw-No.6-32x9/32 in.headless set screw for pickup arm (Pkg.15)....
13998	Resistor-22,000 ohm 1/4 watt (R5)...	30585	Spring-Pivot arm spring (Pkg.2)....
12454	Resistor-33,000 ohm 1/4 watt (R2)...	39564	Stylus-Permanent Stylus.....
14023	Resistor-82,000 ohm 1/4 watt (R13)...	AUTOMATIC RECORD CHANGER (Used on Model VR-44C)	
13734	Resistor-120,000 ohm 1/4 watt (R8)...	REFER TO RP-158 Service Notes for Replacement Parts and Service Details.	
30648	Resistor-470,000 ohm 1/4 watt(R10, R11).....	MISCELLANEOUS ASSEMBLIES	
12679	Resistor-2.2 megohm 1/4 watt(R1,R3)	S-3148	Dial Scale.....
30992	Resistor-10. megohm 1/4 watt(R9)...	S-3184	Knob-Range switch knob.....
33726	Retainer-"C" washer for drive shaft (Pkg.5).....	S-3086	Knob-Phono radio tone switch knob..
34373	Retainer-"C" washer for pulleys (Pkg.5).....	S-3101	Knob-Tuning knob.....
S-3155	Shaft-Station selector drive shaft.	S-3102	Knob-Volume Control knob.....
S-2824	Socket-A.C. Socket.....	31048	Plug-Pickup cable plug.....
31364	Socket-Dial Lamp socket.....	30900	Spring-Knob retaining spring(Pkg.5)
14278	Socket-Phono Input socket.....	31041	Tip-Pickup rest rubber tip(Pkg.2) (VR-44A only).....
34723	Socket-Speaker cable connector.....		
31319	Socket-Tube socket.....		
30585	Spring-Drive cord tension spring (Pkg.2).....		
S-3151	Switch-Range Switch (S1).....		
S-3252	Switch-Phono Radio Tone Switch (S2)		
S-3239	Transformer-1st I.F. Transformer (L6,L7,C8,C9).....		
S-3240	Transformer-2nd I.F. Transformer (L8,L9,C11,C12).....		
S-2457	Transformer-105-125 volt,60 cycle power (T1).....		
33618	Transformer-105-125 volt,25/60 cycle power (T1).....		
S-3150	Volume Control and Power Switch (R6,S3).....		
*(Universal type approx. 50" long).			