

# SERVICE NOTES

*for*

## RCA Victor Model CE-29

(Coin Operated Automatic Electrola)

### ELECTRICAL SPECIFICATIONS

Voltage Rating.....	105-125 Volts
Frequency Rating.....	25, 50 and 60 Cycles
Power Consumption.....	130 Watts
Type of Circuit.....	Two Stage Audio Amplifier (Push-Pull Power Stage)
Type and Number of Radiotrons.....	One RCA-230, Two RCA-247, One UX-280—Total 4
Type of Magnetic Pickup and Tone Arm.....	Low Impedance Pickup with Inertia Type Tone Arm
Type of Record Changer.....	RCA Victor Continuous Type, Playing One Side of Ten 10-inch Records and Repeating Indefinitely
Turntable Speed.....	78 or 33 1/3 R. P. M.
Type of Phonograph Motor.....	Induction, Operating at Synchronous Speed
Turntable Diameter.....	8 Inches
Type of Rectifier.....	Full Wave, UX-280
Type of Loudspeaker.....	Dynamic
Wattage Dissipation in Loudspeaker Field.....	10 Watts
Undistorted Output.....	4.0 Watts
Capacity of Coin Box.....	Approximately 300 Coins—Maximum of 23 May Be Inserted at Once

### PHYSICAL SPECIFICATIONS

Height.....	46 1/2 Inches
Depth.....	19 5/8 Inches
Width.....	28 3/8 Inches
Weight Packed for Shipment.....	200 Pounds

The RCA Victor Coin Operated Automatic Electrola Model CE-29 consists of a standard RCA Victor automatic record changing mechanism that holds ten 10-inch records, a two stage audio amplifier using Radiotrons RCA-247 as a push-pull output amplifier, a coin box with the necessary switches for controlling operation, an eight-inch dynamic type loudspeaker and a continuously variable tone control. Due to the large area of the cabinet, excellent low frequency reproduction is obtained.

The following description covers the technical features of the equipment. Refer to the Schematic Diagram, Figure 1.

The output of the magnetic pickup is connected directly across the volume control potentiometer. The arm and one side of the potentiometer are connected to the primary of the input transformer. It should be noted that a reactor is connected across the unused portion of the volume control. The purpose of this reactor is to increase the volume of the lower frequencies—from 400 cycles down—at low volume. This compensates for the lesser sensitivity of the ear for low frequencies at low volume.

The secondary of the input transformer is connected to the grid circuit of the first stage audio amplifier, Radiotron RCA-230. The filament of this Radiotron is heated by rectified and filtered current from the UX-280. The reason for using this tube instead of the usual heater type tube is due to the thermal inertia of the latter type. Although the UX-226 would be suitable in this respect, its filament must be heated from A. C. and this would produce excessive hum.

The power stage consists of two Radiotrons RCA-247 connected in push-pull. A 200,000 ohm variable resistor connected in series with a 0.01 mfd. capacitor across the secondary of the input transformer provides a continuously variable tone control. Transformer coupling is used between the two stages as well as between the output stage and loudspeaker.

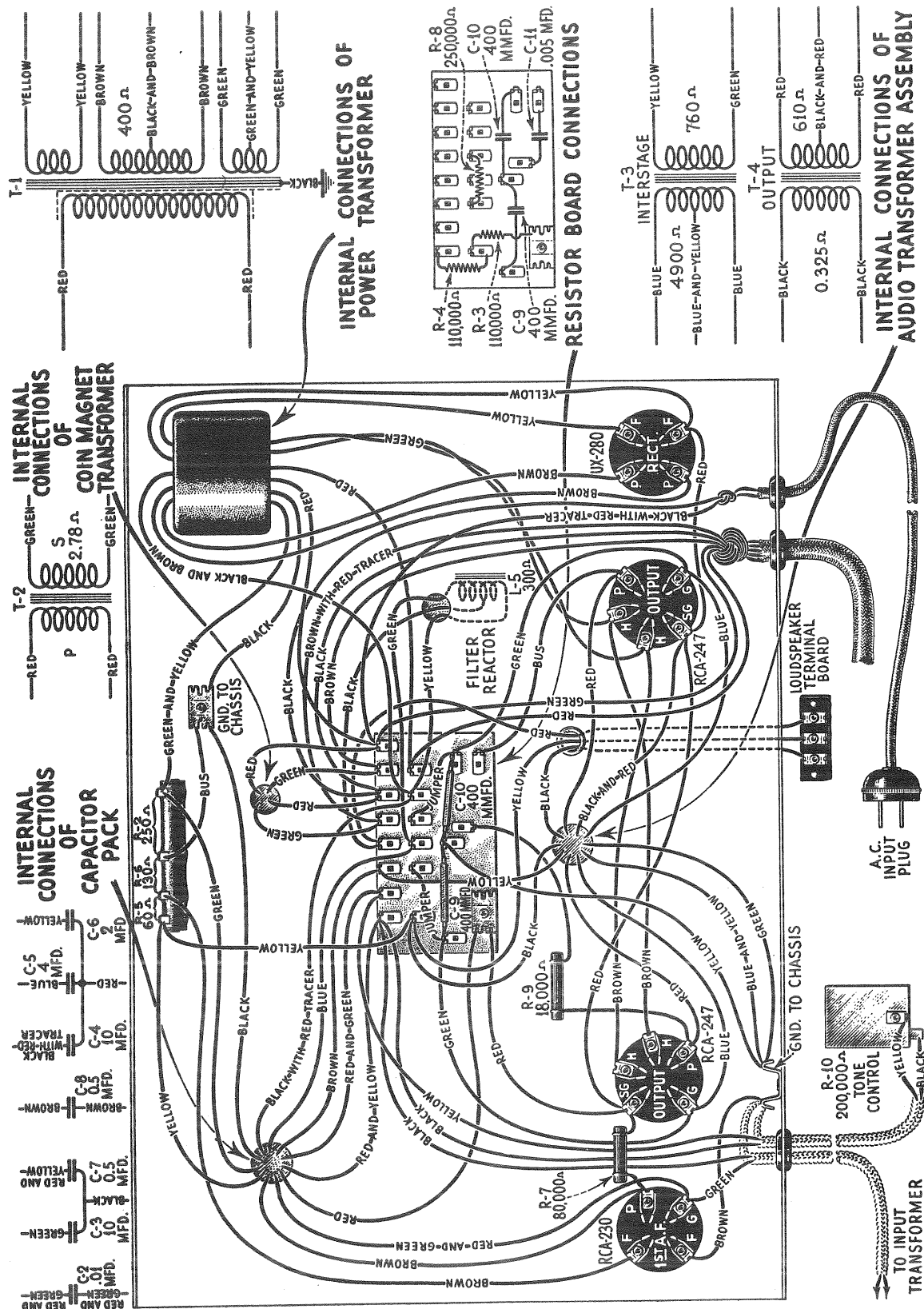


Figure 2—Amplifier Wiring Diagram

The Radiotron UX-280 provides a means of rectifying the high voltage output of the transformer which after suitable filtering is used as plate and grid supply for all Radiotrons and filament supply for the RCA-230.

Figure 3 shows a detail view of the coin mechanism with its adjacent schematic wiring. A detailed explanation of its functioning follows.

A coin inserted in the coin slot makes a momentary contact of the coin switch and thereby energizes the additive magnet. This magnet is energized by a small transformer, having a 16 volt secondary winding, the primary being permanently connected across the line.

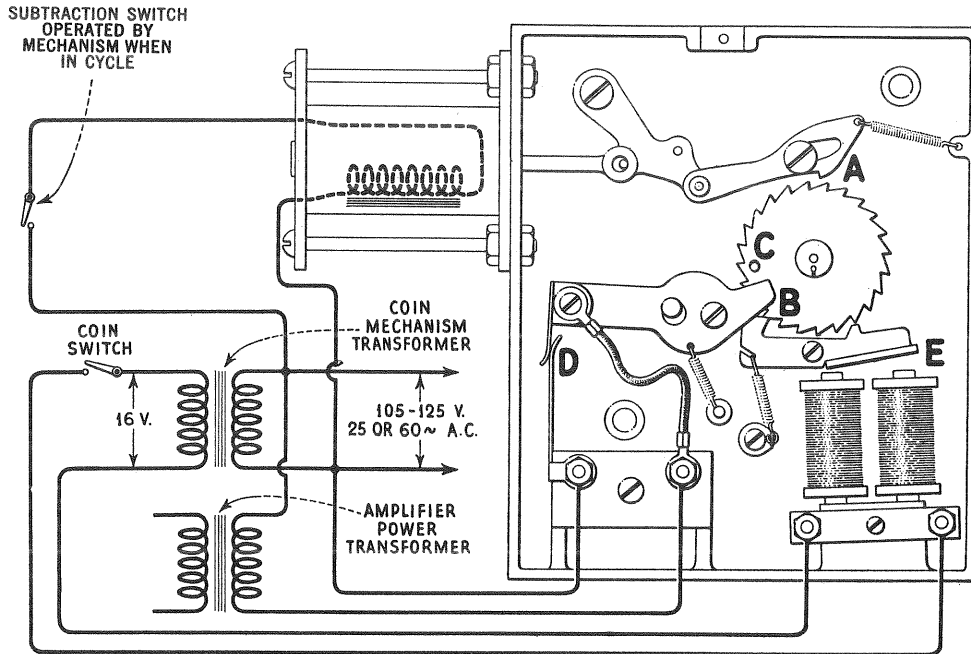


Figure 3—Coin Box Wiring

The energizing of the magnet pulls the lever "E" to the magnet and releases it after momentary contact of the coin switch. This closes the contact "D" by releasing the pressure on the contact arm by the pin "C." Also the lever "E" moves the ratchet due to its contact at "B." The ratchet will therefore move one notch for each nickel placed in the slot up to 23 nickels, it having only 23 teeth. As the contact "D" closes the power to the amplifier and turntable as soon as one nickel is inserted in the slot, the machine begins operation.

Upon completing one record the subtraction switch closes momentarily and energizes the solenoid which pulls lever "A" sufficiently to move the ratchet back one notch. If only one nickel has been inserted, the pin "C" will engage the contact lever and open the switch "D." However if more than one nickel has been inserted, the machine must go through an equal number of cycles before the pin "C" will engage the contact arm and open the circuit.

### SERVICE DATA

Service work in conjunction with Model CE-29 will be similar to that of the usual amplifier and will consist of the location and replacement of parts that may prove defective. The amplifier wiring is shown in Figure 2, the assembly wiring in Figure 4 and the voltage readings and Replacement Parts on the following pages.

### RADIOTRON SOCKET VOLTAGES

120 VOLT A. C. LINE

Radiotron No.	Control Grid to Filament Volts, D. C.	Screen Grid to Filament Volts, D. C.	Plate to Filament Volts, D. C.	Plate Current M. A.	Screen Current M. A.	Filament Volts
RCA-230	**2.0	—	80	2.0	—	*2.0 D. C.
RCA-247	17	270	250	30	6.0	2.6 A. C.
RCA-247	17	270	250	30	6.0	2.6 A. C.

\*The filament voltage of the RCA-230 may vary considerably due to variations in filament resistance. The current however should be very close to 60 M. A. Measuring the current will give a much more accurate indication of correct operation than measuring voltage.

\*\*This actual voltage is 4.5. Different resistance meters will give varying readings, the above value being approximate.

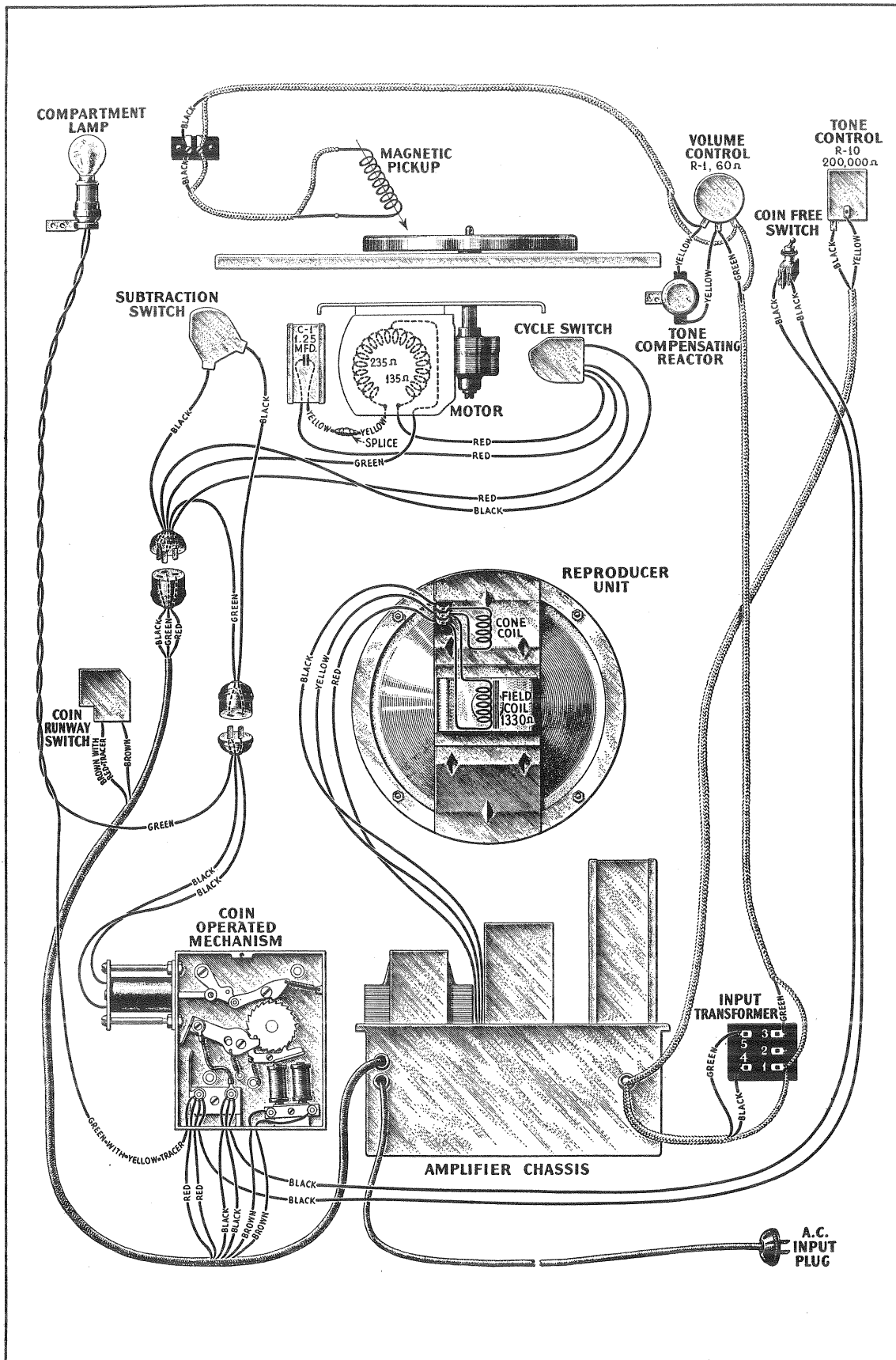


Figure 4—Assembly Wiring Diagram

## REPLACEMENT PARTS

Stock No.	DESCRIPTION	List Price	Stock No.	DESCRIPTION	List Price
<b>LOUDSPEAKER ASSEMBLY</b>			2896	Spring—Cable lever spring—Package of 10	\$0.50
3237	Speaker mounting screw assembly—Comprising 4 screws, 8 nuts, 8 washers and 4 eyelets—Package of 1 set	\$0.50	2897	Screw and nut—Pickup arm cable adjusting screw and nut—Package of 5	.50
8559	Ring—Cone retaining ring	.80	2898	Screw and nut—Adjusting screw and lock nut for elevator shaft—Package of 10	.50
8601	Cone—Speaker paper cone—Package of 5	15.00	2900	Screw—Adjusting screw for magazine lever—No. 3210—Package of 10	.50
8639	Coil—Speaker field coil assembly—Comprising field coil, magnet and cone support	5.00	2902	Screw and nut—Motor turntable spindle screw and nut—Package of 10	.50
<b>AMPLIFIER ASSEMBLY</b>			2903	Screw—Motor mounting screw—Package of 10	.50
2857	Plug—Polarity 3 prong male connector plug	.70	2904	Lever—Front elevator actuating lever	.50
2882	Socket—Five contact Radiotron socket complete with insulator	.50	2905	Screw—Gear and bracket mounting screw—Package of 10	.50
2968	Socket—Four contact Radiotron socket complete with insulator—For Radiotron UX-280	.50	2906	Spring—Check lever spring—Package of 10	.50
3032	Socket—Four contact Radiotron socket complete with insulator—For Radiotron RCA-230	.50	2907	Screw—Clutch set screw—Package of 10	.50
3085	Capacitor—400 mmfd.	.60	2908	Spring—Clutch pawl spring—Package of 10	.50
3099	Capacitor—0.005 mfd.	.75	2909	Spring—Four finger lever spring— $1\frac{1}{4}$ " long—Package of 10	.60
3173	Plug—3 prong polarity female connector plug	1.30	2910	Spring—Four finger lever spring $1\frac{1}{8}$ " long—Package of 10	.60
3295	Resistor—110,000 ohms—Carbon type— $\frac{1}{2}$ watt—Package of 5	2.50	2911	Screw—Slide bracket screw—Package of 10	.50
3296	Resistor—250,000 ohms—Carbon type— $\frac{1}{2}$ watt—Package of 5	2.50	2912	Roller—Slide roller complete with screw stud—Package of 5	1.50
3297	Resistor—80,000 ohms—Carbon type— $\frac{1}{2}$ watt—Package of 5	2.50	2913	Spring—Cable lever spring—Package of 10	.60
7054	Cord—Power cord	1.00	2914	Spring—Flat spring with screws—Package of 10	.50
7270	Reactor	4.00	2915	Spring—Locating lever spring—Package of 10	.50
7458	Resistor—Flat type—440 ohms—Tapped at 60, 130, and 250 ohms—Complete with mounting rivets	1.10	2916	Plate—Latch plate with mounting screws—Package of 5	.60
7459	Board—Resistor board complete less resistors and capacitors	1.00	2917	Washer—Spring washer—Package of 10	.50
7460	Cable—13 $\frac{1}{2}$ " green and black shielded cable—From input transformer to amplifier	.50	2918	Spring—Index lever spring—Package of 10	.50
7461	Cable—52 $\frac{1}{2}$ " yellow and black shielded cable—From tone control to amplifier	.50	2919	Screw and nut—Stop screw and nut—Package of 10	.50
7462	Control—Tone control complete with mounting nut and washer	1.90	2920	Washer—Friction washer—Package of 10	.50
8899	Transformer—Relay transformer	3.40	2929	Lever—Rear elevator actuating lever—Package of 2	.50
8900	Transformer—Power transformer	9.00	3052	Screw assembly—Pickup pole shoe mounting screw, nut and washer—Package of 10 sets	.50
8901	Transformer—Interstage and output audio transformer in metal container	6.00	3159	Friction brake—Gear reducing friction brake spring and pad with mounting rivet—Package of 4	2.00
8902	Capacitor pack—Comprising two 10.0 mfd., one 4.0 mfd., one 2.0 mfd., two 0.5 mfd. and one 0.01 mfd. capacitors in metal container	8.50	3161	Spring—Shift lever spring—Package of 5	1.20
8903	Cable—From amplifier to coin operated mechanism, coin runway switch and automatic mechanism	3.00	3167	Magnet—Pickup magnet	2.60
<b>AUTOMATIC RECORD CHANGING MECHANISM</b>			3169	Pole shoe—Pickup pole shoe—R. H.	1.45
2614	Switch—Motor switch	1.40	3170	Pole shoe—Pickup pole shoe—L. H.	1.45
2620	Cushions—Pickup rubber cushions—Comprising two pivots and one damper cushions—Package of 5 sets	1.25	3198	Bushing—Insulator rubber bushing—Package of 10	.50
2767	Spring—Pickup magnet retaining spring—Package of 10	.50	3200	Shaft—Front or rear elevator shaft	.80
2768	Armature—Pickup armature	.50	3204	Cable—Pickup arm cable—Package of 5	1.50
2769	Coil—Pickup coil	.50	3209	Lever—Trip lever	1.10
2770	Plate—Pickup damper plate—Package of 5	.50	3210	Lever—Magazine lever	.65
2771	Screw—Pickup damper plate mounting screw—Package of 10	.50	3211	Washer—Turntable spindle leather washer—Package of 10	.50
2893	Spring—Trip lever spring—Package of 10	.60	3212	Spring—Turntable spindle plunger spring—Package of 10	.50
			3214	Pulley—Cable pulley with mounting stud—Package of 5	.50
			3217	Lever—Check lever	.50

## REPLACEMENT PARTS—(Continued)

Stock No.	DESCRIPTION	List Price	Stock No.	DESCRIPTION	List Price
3280	Washer—Metal washer located underneath gear reducing unit—Package of 20.....	\$0.50	7476	Lever—Speed reducing shift lever.....	\$0.80
3303	Post—Roller post assembly for supporting record magazine.....	.80	8644	Capacitor—Motor capacitor—1.25 mfd.....	1.40
3305	Screw—Pickup arm base mounting screw and nut—Package of 10.....	.50	8646	Slide—Main slide.....	2.20
3306	Lever—Record transfer lever with screw and nut.....	1.70	8647	Lever—Four finger lever.....	1.20
3307	Screw and nut—Record transfer lever mounting screw and nut—Package of 10.....	.50	8755	Motor—Motor complete—60 cycles.....	33.50
3308	Escutcheon—Turntable speed escutcheon plate with mounting rivets—Package of 2.....	.60	8906	Arm — Pickup arm complete — Less pickup.....	5.50
3309	Screw—Bottom plate mounting screw—Package of 10.....	.70	8907	Magazine—Record magazine.....	4.10
3310	Screw—Magazine bearing mounting screw and nut—Package of 10.....	.60	8908	Board—Motor board assembled with speed reducing lever, lever spring elevator bushings and speed escutcheon plate.....	12.50
3311	Screw — Elevator mounting screw — Package of 10.....	.50	8909	Turntable—Turntable with cover.....	7.80
3312	Screw—Pickup needle holder screw—Package of 10.....	.60		<b>MISCELLANEOUS PARTS</b>	
3313	Cover—Pickup cover.....	.60	3137	Knob—Volume or tone control knob—Package of 5.....	3.25
3314	Screw—Pickup cover mounting screw—Package of 10.....	.60	3184	Board — Magnetic pickup terminal board complete with 2 terminals and terminal screws.....	.50
3315	Screw assembly — Pickup mounting screw, nut and washer—Package of 10.....	.60	3266	Bracket—Compartment lamp socket mounting bracket—Package of 5.....	.50
3316	Bolt—Motor board mounting bolt—Package of 8.....	1.50	3267	Bushing—Bakelite lamp socket cord bushing—Package of 10.....	.50
3317	Screw and nut—Record transfer lever adjusting screw and nut—Package of 10.....	.50	3298	Switch—Power switch—Toggle type—Single pole, single throw—Complete with mounting nuts and washer.....	1.60
3318	Screw and nut—Pickup arm height adjusting screw and lock nut—Package of 10.....	.50	3299	Magnet—Coin slide magnet.....	.50
3319	Washer—Metal washer located underneath record magazine—Package of 20.....	.60	3300	Switch—Coin operated switch.....	1.20
3320	Lever—Coin box kick-off operating switch lever with mounting rivet.....	.50	3301	Key—Glass door key—Package of 2.....	.50
3321	Spring—Coin box kick-off operating switch lever spring—Package of 10.....	.60	3302	Lock—Coin box lock and key.....	2.50
3322	Switch—Coin box kick-off operating switch—Complete with fibre insulator and mounting screws.....	1.40	3304	Box—Needle box with lid—Package of 2.....	.70
6115	Pawl—Clutch pawl.....	1.25	6226	Transformer—Input transformer.....	3.75
6116	Ratchet—Gear and ratchet complete with set screw.....	.90	7387	Reactor—Tone compensating reactor with mounting bracket.....	.85
7151	Back—Pickup back housing.....	.50	7463	Shielded cord—42" green shielded wire—From input transformer to volume control.....	.50
7186	Gear—Gear and bracket.....	1.40	7464	Shielded cord—38" black shielded wire—From pickup terminal board to volume control.....	.50
7188	Bracket—Slide bracket with roller.....	.75	7465	Control—Volume control complete with mounting nut and washer.....	1.90
7189	Lever—Front and rear elevator cam lever—Package of 5.....	2.20	7466	Cord—54" twisted lamp socket conductor cord.....	.60
7190	Lever—Locating lever.....	.85	7467	Coin slide assembly—Comprising coin slide, slide frame, escutcheon and magnet.....	6.10
7191	Lever—Cable lever.....	.60	7468	Coin runway and switch assembly—Comprising coin runway and coin operated switch.....	6.30
7192	Cam—Cam gear and cam.....	1.50	7469	Receptacle—Tungstone needle receptacle.....	.60
7194	Rotor and shaft—60 cycles.....	8.00	8904	Coin mechanism—Coin operated mechanism box complete.....	32.20
7305	Gear reducing unit complete.....	4.50	8905	Box—Coin box for nickels.....	.80
7318	Spindle and gear—Turntable spindle with gear—60 cycles.....	5.00	10371	Socket—Compartment lamp socket.....	1.40
7321	Lever—Cable guide lever with pulley.....	.90		<b>CABINET PARTS</b>	
7374	Cover—Turntable covering.....	.50		(Prices Furnished On Application)	
7393	Block and wire—Pickup connector block and wire.....	.90	X-93	Post—Front post—R. H.....	
7470	Rear elevator.....	1.00	X-94	Post—Back post—R. H.....	
7471	Front elevator.....	.80	X-95	Post—Front post—L. H.....	
7472	Lever—Manual index lever.....	1.10	X-96	Post—Back post—L. H.....	
7473	Bearing—Magazine bearing—Located on motor board.....	1.00	X-97	Foot.....	
7474	Bearing—Pickup arm base bearing—Located on motor board.....	1.00	X-98	Panel—Drop panel with glass.....	
7475	Pickup—Pickup unit complete.....	12.50	X-99	Back—Loose back—Assembled.....	
			X-100	Baffle board and grille cloth.....	
			3323	Hinge assembly—Drop panel hinge assembly—Comprising R. H. and L. H. hinge with mounting screws.....	
			3324	Pull—Drop panel pull with mounting screw and washer.....	
			3325	Lock—Drop panel lock.....	