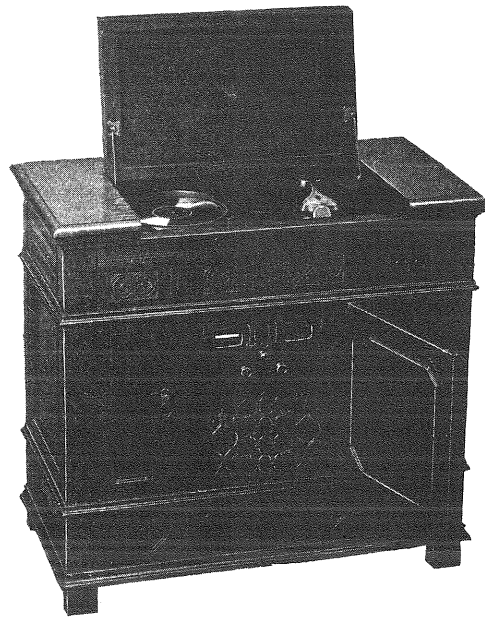


RCA Victor Model RAE-68

SERVICE NOTES



RCA Victor Model RAE-68

RCA Victor Company, Inc.
Camden, N.J.

A RADIO CORPORATION OF AMERICA SUBSIDIARY
REPRESENTATIVES IN PRINCIPAL CITIES

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RCA Victor Model RAE-68

SERVICE NOTES

SPECIFICATIONS

Voltage Rating.....	105/125 Volts.
Frequency Rating.....	50 and 60 Cycles
Maximum Power Consumption.....	60 Cycles—150 Watts
Maximum Power Consumption.....	50 Cycles—155 Watts
Height.....	38½ Inches
Width.....	41¾ Inches
Depth.....	21¾ Inches
Weight.....	284 Pounds
Weight Packed for Shipment.....	362 Pounds

DESCRIPTION

The Model RAE-68 is a combination instrument containing the RCA Radiola 82 receiver with remote control and the RCA Victor automatic electric phonograph. The instrument will play ten 10-inch records automatically, or it can be set by means of a convenient lever to play either 10-inch or 12-inch records singly without the automatic feature.

One of the features of the instrument is the safety clutch arrangement which prevents the mechanism from jamming during the cycle should any of the moving parts happen to bind. A spring on the tone arm also prevents the possibility of damage being caused to the mechanism by moving the arm while the mechanism is in cycle.

Another feature is the capacitor type motor which furnishes more than ample power for operation of the instrument with a minimum power consumption. The motor is dependent upon proper power supply frequency to maintain its speed and, therefore, does not require a speed regulator or governor. A 1.25 mfd. condenser connected in the motor field circuit produces sufficient phase displacement to cause the motor to be self starting. The standard instruments are designed for operation on 105 to 125 volts, 60 cycles. Maximum power consumption is 150 watts. Special instruments are available for operation on 105 to 125 volts, 50 cycles.

INSTALLATION

Reference should be made to the instruction card and to the Radiola 80 series of Service Notes for complete information on installation. An important point to bear in mind on the RAE-68 is that the cabinet must be level for correct operation of the needle swing into the first record groove.

Replacement Parts for RCA Victor Model RAE-68

Automatic Mechanism

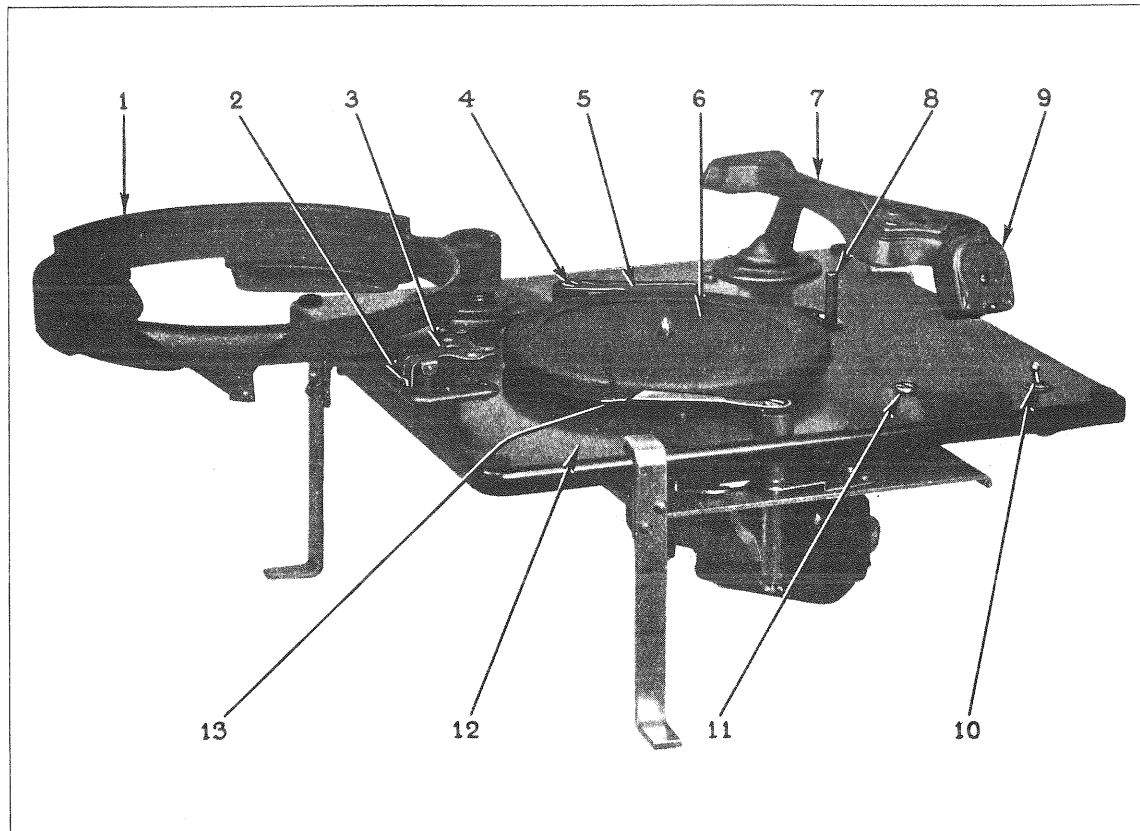


Figure 1—Top View of Automatic Mechanism

Key No.	Stock No.	DESCRIPTION	List Price	Key No.	Stock No.	DESCRIPTION	List Price
1	8641	Magazine — Record magazine complete with washer.....	\$3.50	7	8643	Arm—Tone arm and base complete with screws and nuts...	\$4.00
2	2883	Screw and nut—For record transfer lever (Pkg. of 10)....	.50		2825	Block—Pickup connector block and wire (Not illustrated)....	1.10
3	2884	Lever—Record transfer lever complete with screw and nut..	1.50	8	2888	Lever — Manually operated lever.....	.50
4	2885	Screw — Elevator pad screw (Pkg. of 10).....	.50	9	7085	Pickup—Magnetic pickup complete, less tone arm.....	12.50
5	2886	Pad—Rear elevator pad (Pkg. of 5).....	2.50	10		Switch—Not used.....	
6	8642	Turntable.....	2.00	11	2889	Screw—Bottom plate mounting screw (Pkg. of 10).....	.50
	2887	Washer — Turntable leather washer (Pkg. of 10).....	.50	12	9313	Motor board.....	5.50
				13	2890	Pad—Front elevator pad (Pkg. of 5).....	2.50

Replacement Parts for RCA Victor Model RAE-68 Automatic Mechanism

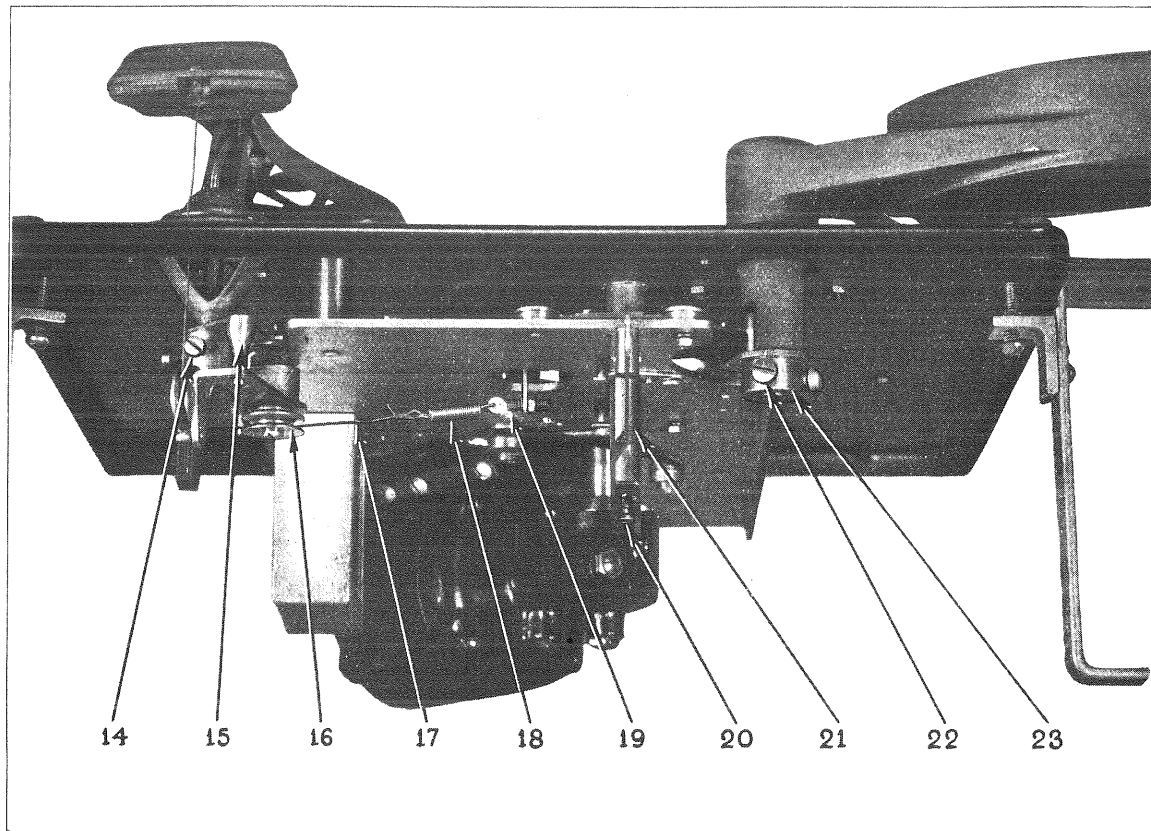


Figure 2—Back View of Automatic Mechanism

Key No.	Stock No.	DESCRIPTION	List Price	Key No.	Stock No.	DESCRIPTION	List Price
	2891	Screw—Trip lever set screw (Pkg. of 10).....	\$0.50	18	2896	Spring — Pickup arm cable spring (Pkg. of 10).....	\$0.50
14	2892	Lever—Trip lever, complete with set screws.....	.90	19	2897	Screw and nut—For pickup arm cable (Pkg. of 5).....	.50
15	2893	Spring—Trip lever spring (Pkg. of 10).....	.60	20	2898	Screw and nut—For elevator shaft (Pkg. of 10).....	.50
16	2894	Pulley—Complete with stud screw (Pkg. of 5).....	.50	21	2899	Shaft—Elevator shaft complete with screw and nut.....	.70
17	2895	Cable—Pickup arm operating cable (Pkg. of 5).....	1.20	22	2900	Screw—Magazine lever screw (Pkg. of 10).....	.50
				23	2928	Lever—Magazine lever.....	.50

Miscellaneous Parts Not Illustrated

Stock No.	DESCRIPTION	List Price	Stock No.	DESCRIPTION	List Price
2923	Knob—Tuning knob and tone control knob (Pkg. of 5).....	\$2.50	7083	Transformer—Pickup input transformer.....	\$5.00
2924	Knob—Local-Distance switch knob (Pkg. of 5).....	2.50	7196	Lamp—Compartment lamp (Pkg. of 5).....	5.50
2925	Knob—Pickup volume control and control switch knob (Pkg. of 5).....	2.50	7198	Switch—Control switch.....	5.00
7078	Volume control—60 ohms volume control.....	1.50	2563	Resistor—6000 ohms resistor (Used on control switch) (Pkg. of 5).....	3.00

Replacement Parts for RCA Victor Model RAE-68

Automatic Mechanism

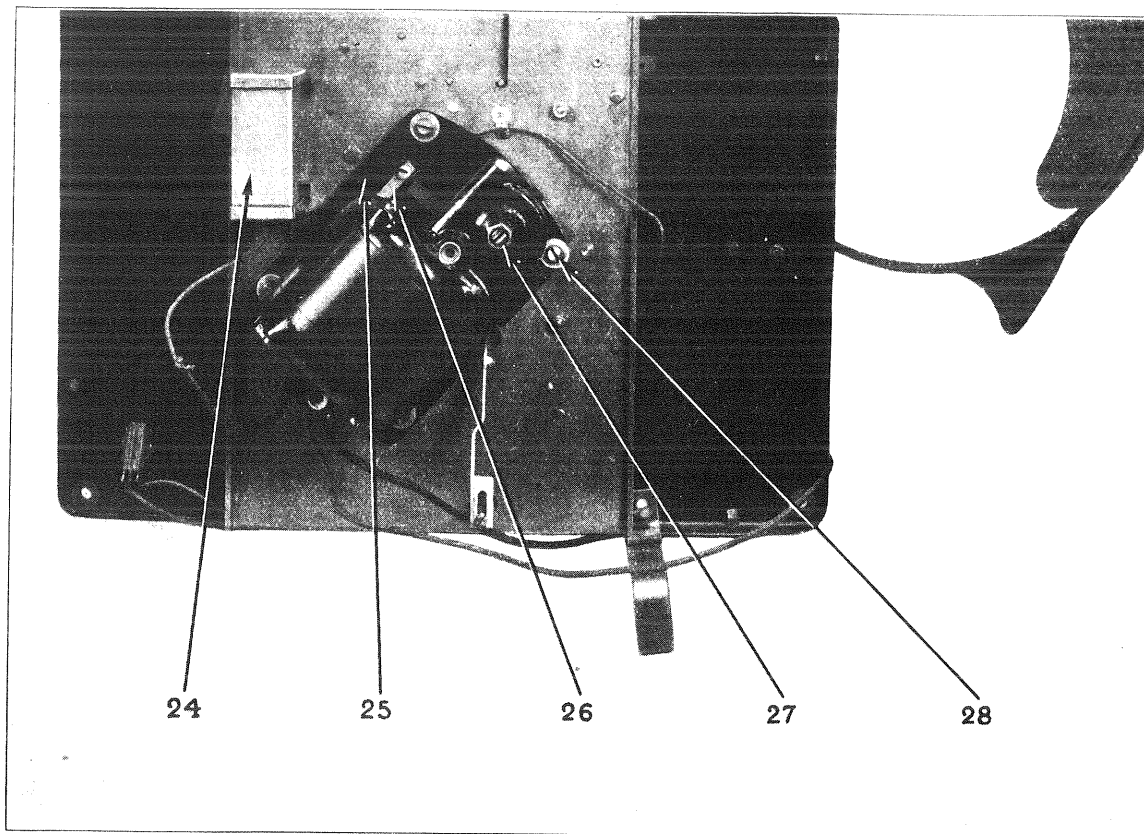


Figure 3— Under View of Automatic Mechanism

Special Parts							
To be supplied on special order only. Not to be stocked							
Key No.	Stock No.	DESCRIPTION	List Price	Key No.	Stock No.	DESCRIPTION	List Price
24	8644	Capacitor—Motor capacitor—1.25 mfd.....	\$1.40		2775	Stop—Door stop with mounting screws (Pkg. of 5).....	\$0.65
25	8645	Base—Motor base.....			2776	Catch—Door catch and strike with nail (Pkg. of 2).....	.50
26	2901	Springs—Motor base springs complete with 8 screws (Pkg. of 2).....	.50		2922	Hinge—Lid hinge with mounting screws (Pkg. of 2).....	.50
27	2902	Screw and nut—Motor thrust (Pkg. of 10).....	.50		2926	Pull—Door pull complete (Pkg. of 3).....	3.00
28	2903	Screw—Motor mounting screw (Pkg. of 10).....	.50		2927	Hinge—Door hinge with mounting screws (Pkg. of 2).....	.50
	7194	Rotor and shaft (60 cycles).....			7197	Shade — Compartment lamp Shade (Pkg. of 5).....	1.75
	7204	Rotor and shaft (50 cycles).....			7199	Support—Lid support R. H. with mounting screws.....	3.50
	7195	Spindle and gear—Turntable spindle complete with gear (60 cycles).....			7200	Support—Lid support L. H. with mounting screws.....	5.00
	7205	Spindle and gear—Turntable spindle complete with gear (50 cycles).....			7201	Cable—Inside cable.....	4.50
	2921	Tip — Turntable spindle tip, spring and pin (Pkg. of 5).....			7202	Bolt assembly—For mounting mechanism in cabinet (Set of 4).....	.80
	7206	Bearing — Turntable spindle bearing.....			8584	Escutcheon — Tuning dial escutcheon.....	3.00
	8648	Motor complete (60 cycles).....	32.50		8585	Grille.....	2.00
	8649	Motor complete (50 cycles).....			8587	Baffle Board—Complete with grille cloth and pad.....	2.00
	2752	Support—Screen support.....	.50				

Replacement Parts for RCA Victor Model RAE-68

Automatic Mechanism

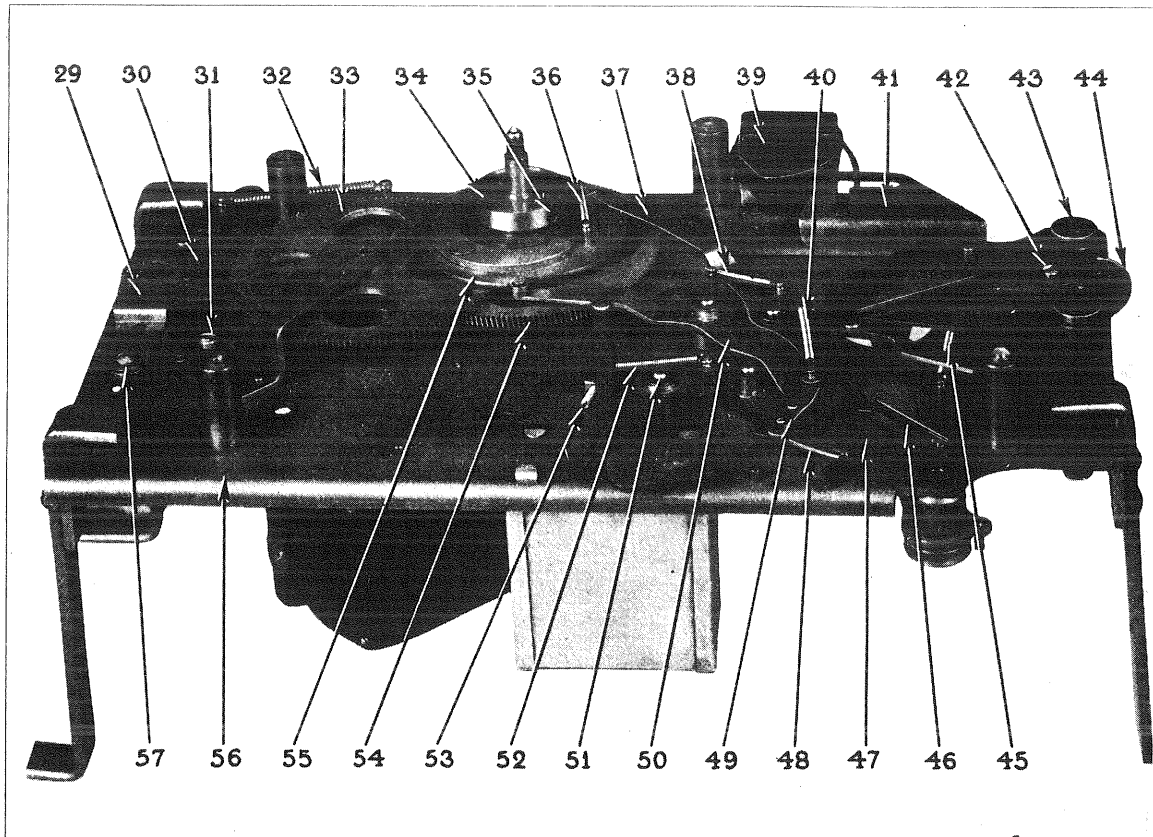


Figure 4—Top View of Automatic Mechanism with Motor Board Removed

Key No.	Stock No.	DESCRIPTION	List Price	Key No.	Stock No.	DESCRIPTION	List Price
29	2904	Lever—Front elevator shaft actuating lever.....	\$0.50	43	2912	Roller—Slide roller complete with screw stud (Pkg. of 5)...	\$1.50
	2929	Lever — Rear elevator shaft actuating lever (Not illust.) (Pkg. of 2).....	.50	44	7189	Lever — Elevator cam lever (Pkg. of 5).....	2.20
30	8646	Slide.....	2.20	45	2913	Spring—Four finger lever spring (Pkg. of 10).....	.60
31	2905	Screw—Gear and bracket mounting screw (Pkg. of 10).....	.50	46	2914	Spring—Flat spring complete with two screws (Pkg. of 10).....	.50
32	2906	Spring—Check lever spring (Pkg. of 10).....	.50	47	7190	Lever—Locating lever.....	.85
33	7186	Gear and bracket.....	1.40	48	2915	Spring—Locating lever spring (Pkg. of 10).....	.50
34	7187	Clutch—Complete with set screw.....	.80	49	2916	Plate—Latch plate complete with 2 screws (Pkg. of 5).....	.60
35	2907	Screw—Clutch set screw (Pkg. of 10).....	.50	50	7191	Cable lever.....	.60
36	2908	Spring — Clutch pawl spring (Pkg. of 10).....	.50	51	2917	Washer—Spring washer (Pkg. of 10).....	.50
37	8647	Lever—Four finger lever.....	1.20	52	2918	Spring—Index lever (Pkg. of 10).....	.50
38	2909	Spring—Four finger lever spring (Pkg. of 10).....	.60	53	2919	Screw and nut—Stop screw complete with nut (Pkg. of 10).....	.50
39	2614	Switch—Motor switch complete.....	1.50	54	7192	Cam and gear.....	1.50
40	2910	Spring — Four finger spring (Pkg. of 10).....	.60	55	7193	Pawl—Clutch pawl.....	1.00
41	7188	Bracket — Slide bracket complete with screws.....	.75	56	9314	Plate—Bottom plate.....	3.50
42	2911	Screw—For slide bracket (Pkg. of 10).....	.50	57	2920	Washer—Friction washer (Pkg. of 10).....	.50

SERVICING

The service information which follows applies only to the automatic mechanism. Service data on the Radiola, the remote control units and the electric phonograph are covered in service notes of the Radiola 80 series. Copies of these service notes can be obtained from your Distributor.

All of the major adjustments can be made from the back of the cabinet without removing the mechanism. For the sake of clearness, the illustrations which follow are shown with the mechanism removed.

No special tools are required other than a small offset screw driver, such as Stock No. 2930, and a suitable support for the mechanism such as the three metal stands shown in the illustrations (three units, Stock No. 7203).

(1) **Needle Fails to Swing Into First Groove**—A small flat spring pressing against the tone arm lever causes the needle to swing into the first record groove after descending onto the smooth outer rim. If the needle does not move into the first groove properly, the condition may be caused by:

- (a) *Cabinet Not Level*—Place a spirit level on the motor board parallel with the cabinet front, and note whether or not the instrument is level. If it is not, a small wooden wedge or a piece of heavy cardboard should be placed under the feet at the low side of the cabinet.
- (b) *Weak Spring Tension*—Weak tension of the flat spring against the tone arm lever will prevent the needle from swinging over properly into the record groove. This condition can be corrected by bending the spring slightly to increase its pressure. *Do not bend the spring too much since excessive pressure will cause the needle to swing in more than one groove.*

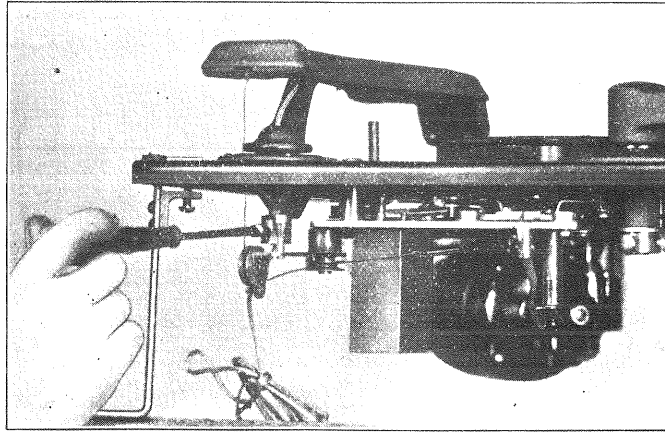


Figure 5—Adjusting Tone Arm Setting

(2) **Needle Fails to Lower in Proper Position**—Failure of the needle to lower into the smooth outer rim of the 10-inch records when the instrument is playing automatically may be caused by:

- (a) *Improper Tone Arm Setting*—Loosen the set screws as shown in Figure 5. With the mechanism out of its cycle, press the locating lever 47, Figure 4, at a point near the arrow head until the lever strikes the stop screw 53, Figure 4. Holding the locating lever in this position, move the front portion of the trip lever 15, Figure 2, until the pin, against which the flat spring operates, is making contact with the locating lever. Holding the two levers in this position, move the pickup arm until the needle is $\frac{1}{8}$ " away from the first groove of a standard 10-inch record. Now retighten the two set screws shown in Figure 5.
- (b) *Improper Adjustment of Locating Screw*—This adjustment screw shown at 53, Figure 4, can be used to make a substitute adjustment for that described in (a) above, when the mechanism is out of the cabinet, and should be so regulated that the needle will lower exactly $\frac{1}{8}$ " away from the first groove on a standard 10-inch record. Loosen the lock nut on the adjusting screw by means of a No. 4 Spintite wrench on which the shoulder has been ground sufficiently thin for clearance. Make the necessary adjustment as shown in Figure 6. *Caution—Do not attempt to make this adjustment without first loosening the lock nut since the screw will likely snap.* Tighten the lock nut when the proper adjustment has been made.

(3) **Needle Fails to Lower Onto Record Surface**—Failure of the needle to lower onto the record surface may be caused by:

- (a) *Cable Out of Pulleys*—Examine the tone arm cable and note if it is properly seated in the pulleys.
- (b) *Shielded Pickup Wire Improperly Placed*—Examine the shielded lead coming out of the tone arm base to note if it is free from the moving parts of the mechanism.
- (c) *Incorrect Setting of the Tone Arm Lowering Screw*—Loosen the lock nut as shown in Figure 7, adjust the screw so that a full volume needle when placed all the way in the pickup can be lowered properly onto the record on the turntable.
- (d) *Turntable Washer Not in Place*—A felt washer is supplied to fit under the turntable. If this part is not in place, the turntable will be too low, and may cause the needle not to lower onto the record.

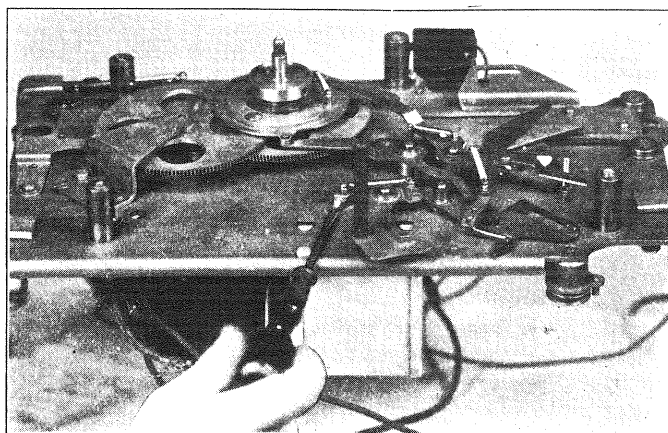


Figure 6—Adjusting Tone Arm Locating Lever

- (e) *Incorrect Adjustment of Cable Tension Screw*—The cable tension screw 19, Figure 2, should be so adjusted that the needle will lower smoothly onto the record without dropping. When this adjustment is obtained, the cable will be slightly loose when the needle is lowered onto a record. Loosen the lock nuts, turn the screw to the right or left as required (see Figure 8), and retighten the lock nut. Check the adjustment to make sure the needle clears the record on the return of the tone arm. The needle should rise $\frac{1}{16}$ " from the record before any horizontal motion takes place.



Figure 7—Adjusting Tone Arm Lowering Screw

(4) **Needle Fails to Clear Record After Playing**—Failure of the needle to clear the record surface on the return of the tone arm is caused by too loose adjustment of the cable tension. Adjust this tension as described in No. 3 above.

(5) **Failure of Record to Deposit on Turntable**—Incorrect lowering of the record onto the turntable may be caused by:

- (a) *Improper Turntable Spindle Height*—The height of the turntable spindle nose should be $\frac{1}{2}$ " above the inside bottom surface of the record magazine. Adjustment of this height made by means of the screw at the bottom of the motor. (See Figure 9.)

- (b) *Improper Setting of Magazine*—The horizontal swing of the magazine should be so adjusted when the mechanism is out of cycle that the outer surface at its nearest point to the nearest side of the turntable spindle is $5\frac{1}{2}$ ". This can be done by loosening the two screws as shown in Figure 10, moving the magazine to its correct position and retightening the screws.

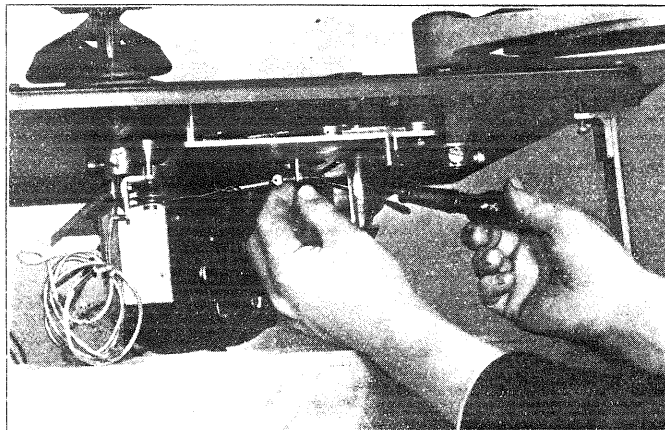


Figure 8—Adjusting Cable Tension Screw

- (c) *Improper Setting of Record Locating Plate*—The small plate on top of the motor board at the left side of the turntable should be so adjusted that it will be depressed approximately $\frac{1}{2}$ " when the magazine swings over the turntable. When this adjustment is made correctly, the locating plate will engage the bottom record in the magazine as the latter is swinging back into the playing position. A small adjusting screw and lock nut are provided for this adjustment. (See Figure 11.)
- (d) *Weak Spring in Turntable Spindle*—The spring inside the turntable spindle which holds up the spindle nose will cause the records to align improperly with the turntable spindle if the spring tension is too weak or if the spindle nose is sticking inside the spindle. Access to the spring for stretching its coils or for replacement can be had by driving out the small pin in the spindle nose, and lifting out the latter.

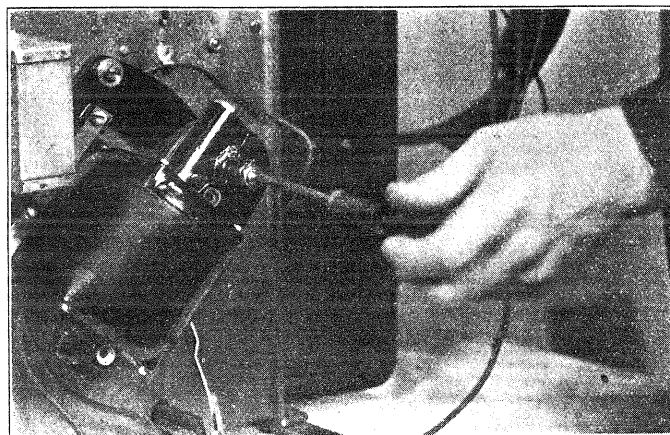


Figure 9—Adjusting Turntable Spindle Height

- (6) **Records Discharge Improperly from Turntable**—Failure of the record on the turntable to be removed properly and placed in the magazine can be caused by:
- (a) *Improper Horizontal Adjustment of Elevator Pads*—The elevator pads 13, Figure 1, should be so adjusted that the inside of the pad flange is $5\frac{1}{16}$ " from the nearest side of the turntable spindle. Loosen the screw on top of the elevator shaft, move the pad to its correct position as shown in Figure 12, holding both the pad and the elevator shaft in position,

and retighten the screw. Care should be observed that the ridge in the elevator shaft is not turned against the slot in the elevator shaft actuating lever so as to cut the latter. In some cases, it may be necessary to grip the shaft with padded pliers while this adjustment is being made in order to prevent the shaft from turning.

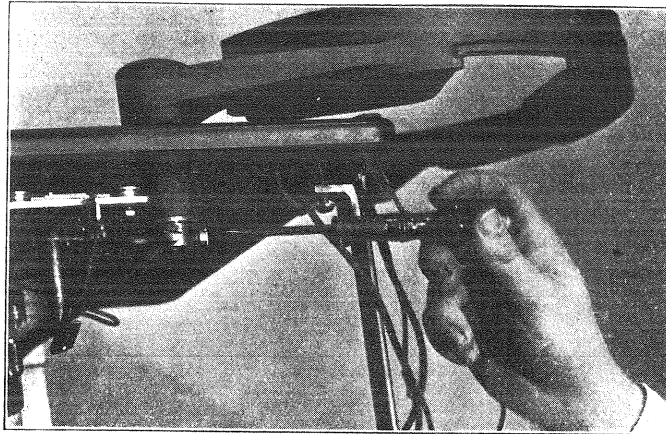


Figure 10—Adjusting Magazine

NOTE—If for any reason the elevator pads have been removed, always place the one with the rubber surface toward the front of the mechanism when replacement is being made.

- (b) *Improper Adjustment of Elevator Shafts*—The elevator shafts 21, Figure 2, should rise to such a height as to give $\frac{3}{2}$ " clearance between the lowest surface of the elevator pad bottom and the top of the empty magazine. This adjustment can be made by means of the screw and lock nut as shown in Figure 13.
- (7) **Failure to Trip on Eccentric Groove**—Failure of the mechanism to change records when the eccentric groove is reached may be caused by:
 - (a) *Improper Setting of Latch Plate*—Adjust the latch plate 49, Figure 4, by means of a small offset screw driver such as Stock No. 2930, as shown in Figure 14 until it makes proper contact with the latch trip when the eccentric groove is reached.

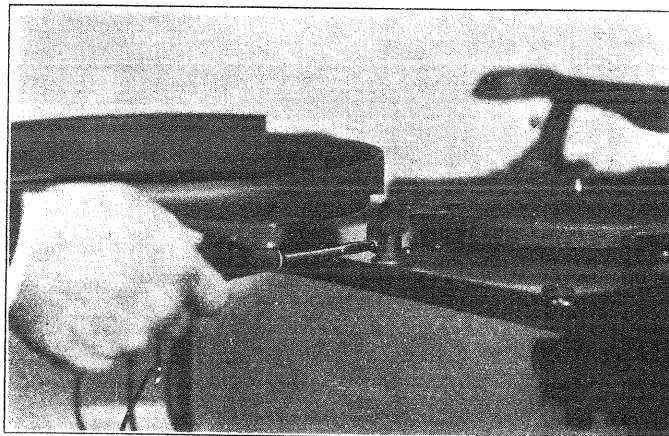


Figure 11—Adjusting Record Locating Plate

- (b) *Weak Spring on Trip Lever*—A weak spring on the trip lever will be a cause of failure to trip.
- (8) **Inability to Set for Manual Operation**—The manually operated lever 8, Figure 1, should set in its back position so as to free the tone arm and prevent the mechanism from tripping. This change from automatic to manual operation should be made only when the mechanism is out

of its cycle, otherwise the mechanism will reject continuously. The back position of the lever should be such that the end of the lever causes the latch trip to clear the latch plate by $\frac{1}{2}$ ". An incorrect setting of the latch plate may cause the trip lever to clear the plate at one position of the tone arm, but to make contact with the plate at some other position of the tone arm.

(9) **Failure to Start**—Failure of the mechanism to start may be caused by:

(a) No power from electrical outlet.

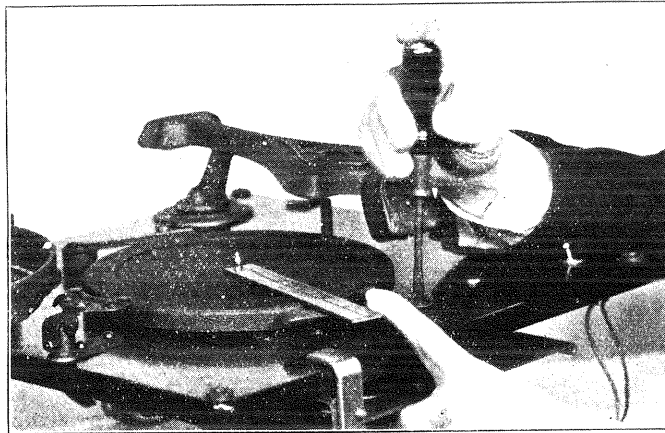


Figure 12—Adjusting Horizontal Position of Elevator Pads

(b) Faulty plug connections.

(c) Faulty switch connections.

(d) Open in 1.4 mfd. motor condenser wiring or connections.

(e) Faulty power wiring or connections.

(f) Faulty motor.

(10) **Failure to Stop**—Failure of the mechanism to stop after the "off" button has been pressed, and the mechanism has completed its cycle is caused by improper setting of the secondary stop switch 39, Figure 4. The switch body should be so mounted that the contacts will open $\frac{1}{4}$ " when the cycle is completed, but will close as soon as the mechanism is tripped.

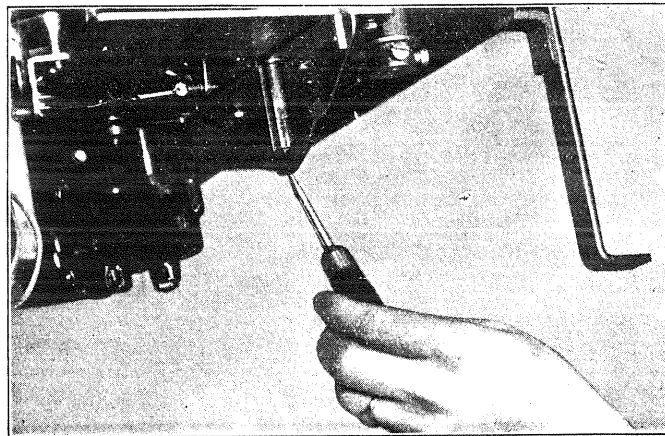


Figure 13—Adjusting Elevator Shafts

(11) **Continued Tripping of Mechanism**—This condition may be caused by:

(a) Manually operated lever 8, Figure 1, set for non-automatic operation during cycle.

(b) Improper setting of latch plate 49, Figure 4.

(c) Improper timing of the gears and associated parts. See Subject 13 below for the correct method of retiming.

(12) **Clutch Slipping**—Slipping of the clutch when the mechanism is passing through its cycle, causing a loud clicking noise, may be caused by:

- (a) *Weak Spring on Pawl Carrier*—Remove the spring 36, Figure 4, and increase its tension by removing two or three coils.
- (b) *Turntable Spindle Shaft Too Low*—This condition will cause binding between the pawl carrier and the clutch wheel. Raise the spindle as shown in Figure 9.

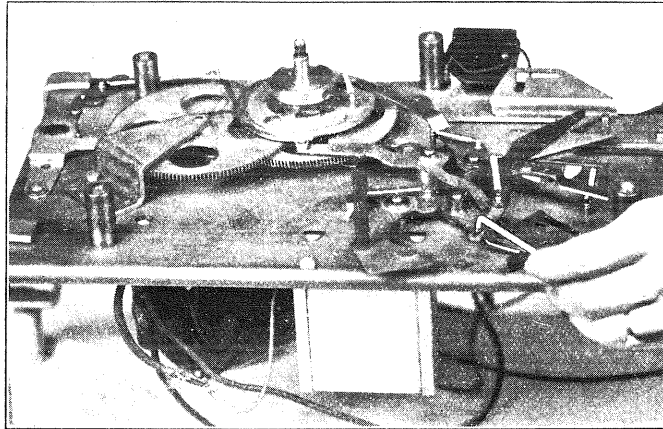


Figure 14—Adjusting Latch Plate

- (c) *Binding in Any of the Moving Parts*—Such binding may be in the slide, the magazine, the elevator shafts, or the gears. The slide rollers at the left are mounted on eccentric shafts for adjustment of play. These may be so regulated as to cause excessive binding of the slide. Examine all of these parts carefully, and take any necessary steps to relieve the binding.
- (13) **Retiming the Mechanism**—Should it be necessary to retime the mechanism after replacing certain of the parts, or because of continued tripping, proceed in the following manner:
- (a) Allow the mechanism to operate until the slide 30, Figure 4, is in its extreme forward position. When this setting is reached the straight side of the cam 54, Figure 4, will be parallel with the side of the slide.

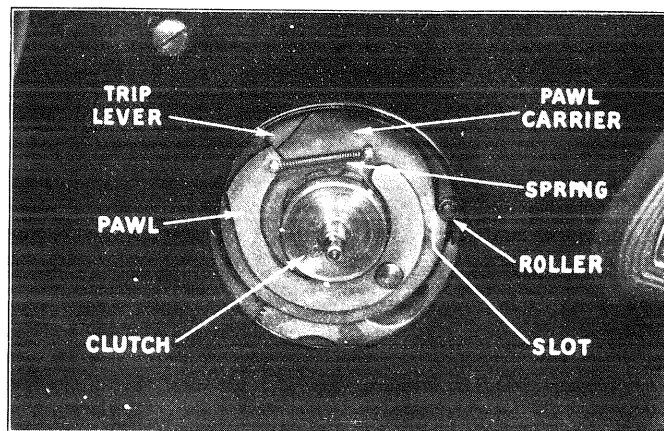


Figure 15—Proper Timing Position

Check the position of the trip lever and roller at this time to see that they are approximately as shown in Figure 15. If the various parts are not in their proper relation, the mechanism should be retimed.

- (b) Loosen the set screw in the clutch wheel 35, Figure 4, and lift the wheel from the turntable spindle.
- (c) Lift the pawl carrier 55, Figure 4, until it disengages from the gears.

- (d) Lower the pawl carrier into mesh with the gears so that the trip lever is touching the end of the pawl as shown in Figure 15, when the cable lever roller is engaged in the slot on the side of the pawl carrier as shown.
 - (e) Recheck to see that the straight side of the cam is parallel with the slide.
 - (f) Replace the clutch wheel, and retighten the set screw, making sure that the set screw fits into the spot on the turntable spindle.
- (14) **Removing Motor Board**—Should it be necessary to remove the motor board from the mechanism for replacement of any of the parts, the following procedure should be used:
- (a) Remove nuts and washers from the through bolts which hold the motor board to the cabinet, and disconnect the pickup leads and power wiring to the mechanism; then lift the mechanism from the cabinet.
 - (b) Loosen the two set screws, and remove the magazine lever, 23, Figure 2.
 - (c) Lift out magazine.
 - (d) Unhook tone arm cable from spring 18, Figure 2.
 - (e) Loosen the two set screws in the tone arm lever 15, Figure 2.
 - (f) Remove the three small screws in the tone arm base, taking care not to lose the lock nuts.
 - (g) Disengage the tone arm lever from the tone arm shaft, and carefully lift the tone arm from the motor board, bringing the tone arm lever and the shielded cable up through the tone arm base hole in the motor board.
 - (h) Remove the screws and lock nuts in the bottom of the elevator shafts, 20, Figure 2.
 - (i) Lift elevator shafts from mechanism.
 - (j) Unfasten wires from motor board.
 - (k) Remove the four motor board screws which support the bottom plate.
 - (l) Carefully lift the motor board from the mechanism.

Access can now be had to all of the parts on the bottom plate. The parts can be reassembled in the reverse order from that given above. It will then be necessary to make various adjustments after the parts have been reassembled.

(15) **Lubrication**—The mechanism will seldom require lubrication. The motor gears run in grease. Unless gear replacements are made, it should not be necessary to relubricate this section. RCA Victor motor oil should be placed in the oil wells at each end of the motor occasionally. Wicks in these wells hold sufficient oil for normal operation from six months to one year. Oil should also be placed on the gear bearings, visible when the turntable is removed, and on the elevator shafts. RCA Victor motor grease should be placed on the slide and the mechanism gears once every six months.

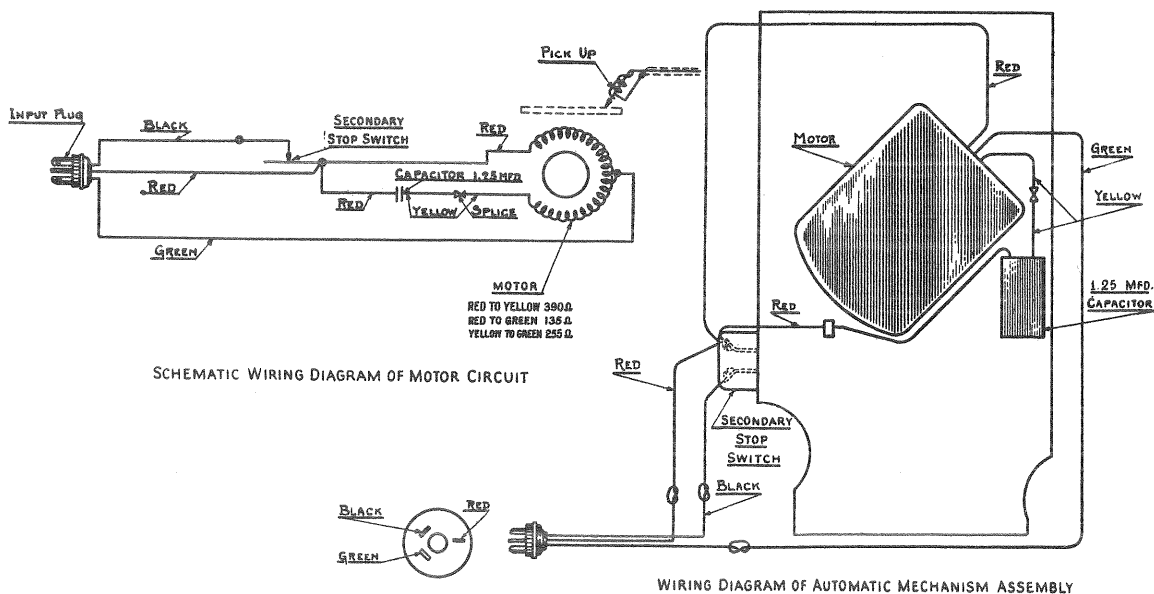


Figure 16—Wiring Diagram of Automatic Mechanism

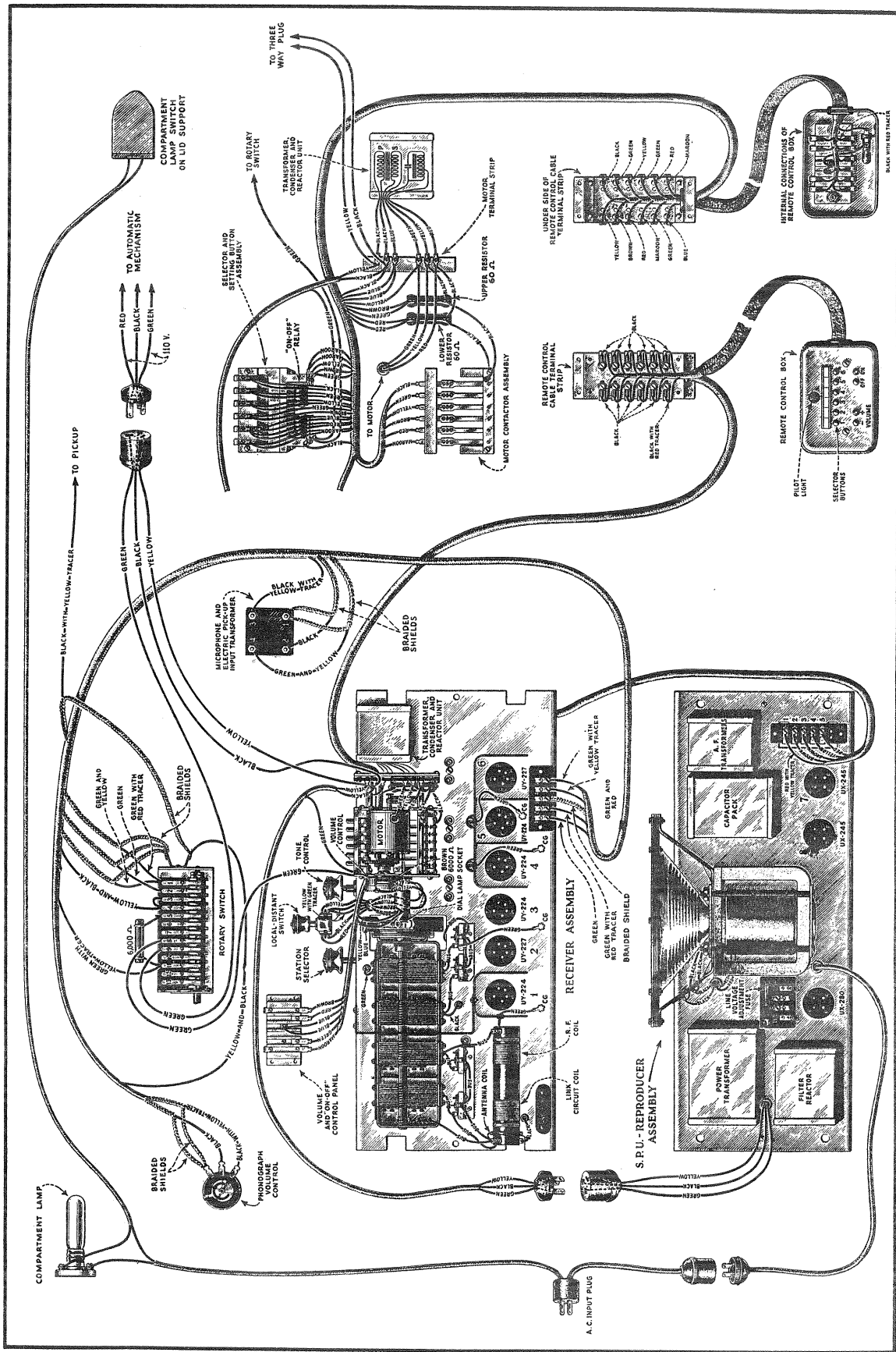
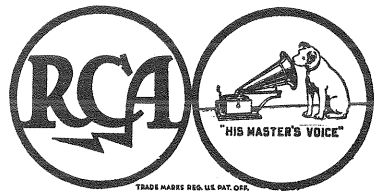


Fig. 17—Wiring Diagram of Model RAE-68



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