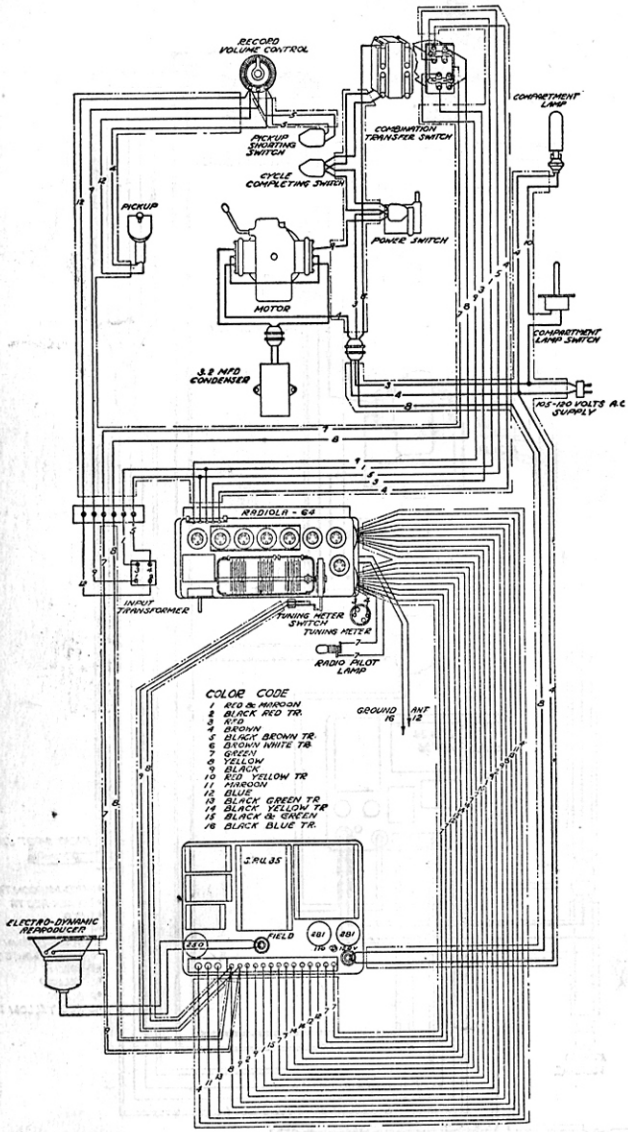


Cable Wiring Diagram Automatic Electrola Radiola 9-54 above Serial No. 6401

Printed Victor Division, RCA Victor Company, Inc.
Camden, N. J., U. S. A. 4-15-30 ta

IMPORTANT:—

FOR YOUR SERVICE DEPARTMENT

Victor Division

R C A Victor Company, Inc.

Camden, N. J.

Service Bulletin No. 24-C

This Bulletin Does Not Supersede Service Bulletin No 24-A nor 24-B

NEW TYPE AUTOMATIC VICTROLA AND ELECTROLA

The information contained in this Service Bulletin is intended as a guide in making adjustments to the following automatic operating units:

10-35	above	serial	number	8126
10-69	"	"	"	5001
9-54	"	"	"	6401
9-56	"	"	"	1701

and later instruments.

A correct understanding of the operation and a complete familiarity with the mechanical parts are highly desirable to the proper maintenance of the instruments. The instruction books and the following general information and service instructions should be read carefully.

GENERAL

1. RECORDS—The instruments will not function as automatics unless Victor eccentric groove records are used. *Warped records or those with chipped edges or centers should not be used.*

2. LOADING RECORDS—When loading records into the magazine, always make certain that the records are placed centrally and are pushed back until they touch the two record support pins. Records should preferably be placed in the magazine one at a time, and should not be inserted while the changing mechanism is in operation.

3. REMOVING RECORDS—Do not allow more than one complete magazine of records (12) to accumulate in the record discharge compartment at one time. Damage to the records or to the mechanism may result if this point is not carefully observed

37

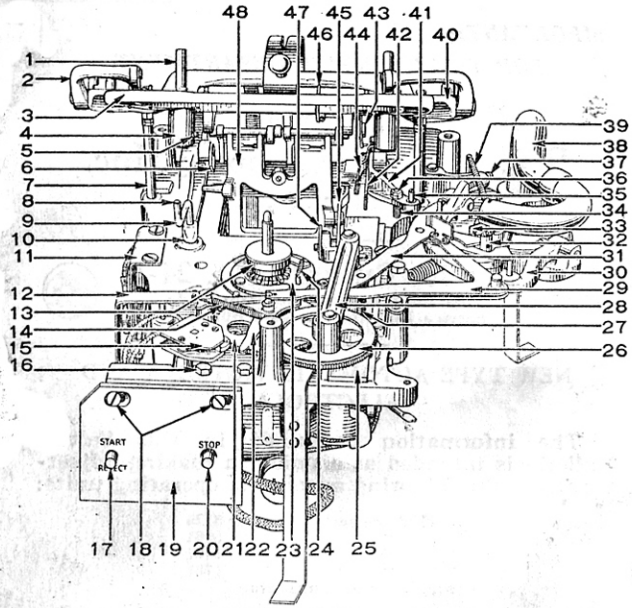
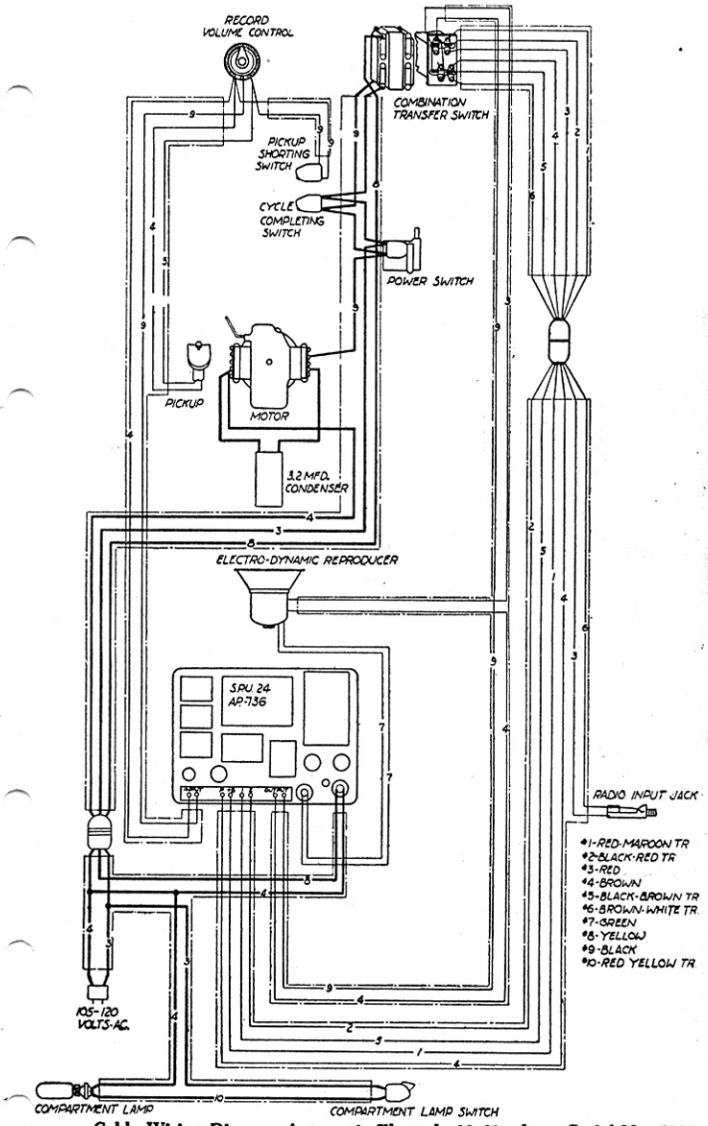


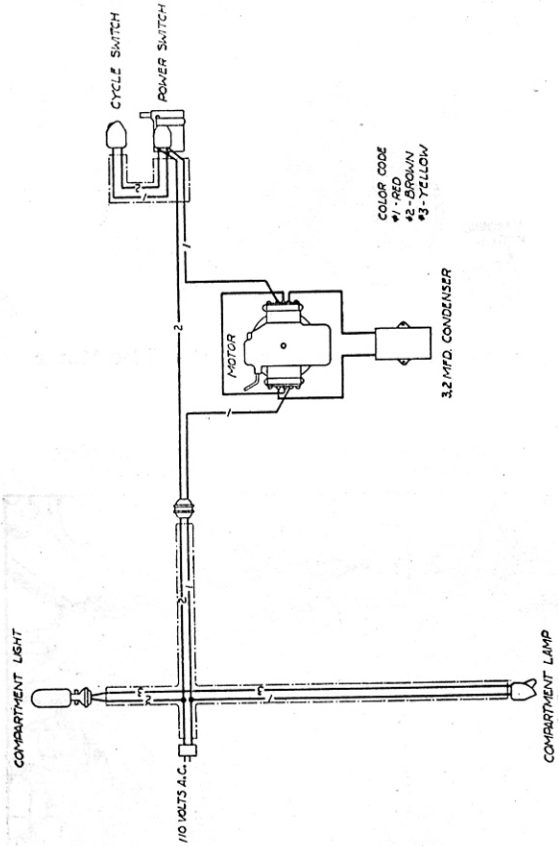
Fig. 1—Automatic Mechanism with Motor Board Removed

PARTS LIST

	Name of Part	Part No.
1.	Record Locating Pin (R. H.)	52541
	Record Locating Pin (L. H.)	52542
2.	Hopper Arm (R. H.)	50745
	Hopper Arm (L. H.)	50746
4.	Spiral Cam (R. H.) (Complete with Set Screw)	53267
	Spiral Cam (L. H.) (Complete with Set Screw)	53268
	Spiral Cam (L. H.)	52519
5.	Set Screw	52566
6.	Eject Lever Cam	22089
7.	Hopper Support	22181
	Lock Washer	16070
	Nut	16456
8.	Leather	2720
9.	Eject Lever (Complete)	52645
10.	Rubber Pad	22288
11.	Switch Plate	52628
12.	Trip Lever	52596
13.	Clutch Wheel	16942B
14.	Spring	52597
15.	Cycle Completing Switch	50129
16.	Screw	50411
	Lock Washer (1 used)	16070
17.	Start and Reject Rod (10-35)	52605
	(10-69)	52602
	(9-54)	52603
	9-56)	52604



Cable Wiring Diagram Automatic Electrola 10-69, above Serial No. 5001



Cable Wiring Diagram Automatic Orthophonic Victrola 10-35, above Serial No. 6401

	Name of Part	Part No.
18.	Screw (2 used)	52095
19.	Control Panel (10-35)	52419
	(10-69)	52414
	(9-54)	52414
	(9-56)	52414
20.	Stop Push Rod (10-35)	52905
	(9-54)	52903
	(9-56)	52906
	(10-69)	52904
21.	Intermediate Gear	51857
22.	Clutch Release Lever	50720
23.	Pawl and Pawl Carrier	50718
24.	Spring	16951
25.	Main Slide (Complete)	50710
26.	Gear	51856
27.	Main Slide Spring	22020
28.	Connector Link	22027
29.	Eccentric Stop Lever Bracket	52901
	Stop Lever Trip Plate	52582
	Screw	15501
	Nut	52974
	Lock Washer	18190
30.	Sound Box Lift Lever	50712
31.	Taper Tube Return Lever	22340
32.	12" Eccentric Screw	52609
33.	Latch Trip Blade	52608
	Screw (2 used)	2845
	Washer (2 used)	1750
34.	Spring	52524
	Washer	1784
35.	10" Eccentric Stop	22094
	Nut	3604
	Lock Washer	17419
36.	Nut (2 used)	51819
37.	Sound Box Operating Lever	22103
	Adjusting Screw	9134
	Nut	3604
38.	Taper Tube (Complete) (10-35)	51820
	Electrola	51802
39.	Spring	50321
40.	Hopper (Complete)	53239
41.	Index Lever (Complete)	52546
42.	Index Lever Extension	
43.	Index Trip Lever	52534
44.	Stop Lever	52635
45.	Latch Lever	22086
46.	Index Lever Trip Cam	52547
	Screw	18725
47.	Link Pin Adjuster	22337
	Washer	7336
	Screw	16690
	Lock Washer	17638
48.	Lift Lever (Complete)	50705

4. REGULATING SPEED—The speed regulator should never be changed except to regulate the speed of the turntable to 78 revolutions per minute while playing.

5. SOUND BOX AND PICKUP—Do not drop the sound box or the electric pickup forward or backward on its stop. If care is not observed, the vertical traveling height of the needle may be forced out of

adjustment, which may, during operation, scratch the record or damage the sound box or pickup. The instruments should not be operated at any time with the sound box or electric pickup turned back to the stop. Failure to observe this point may result in the sound box or pickup striking the side of the cabinet or the lid support, thus "jamming" the mechanism, or causing the 12" eccentric stop to be forced out of its correct adjustment.

6. LUBRICATION—Lubrication is an essential factor in the operation of the automatic instruments, and should be given careful attention. It is suggested that the motor and automatic mechanism be lubricated at least once a month with the proper lubricants. If the instrument is being operated in a public place on the usual average of eight hours a day, this lubrication period should be reduced to at least once a week. The oiling diagrams are shown in Figs. 20, 21 and 22.

SERVICING

Before making adjustments to the mechanism, determine first that the trouble is not caused by badly warped records, records with damaged centers, or with chipped edges.

SPECIAL TOOLS RECOMMENDED FOR ADJUSTING AUTOMATIC MECHANISM

Name	Part No.
1. Screw driver for 10" eccentric stop	52323
2. Socket wrench for 10" eccentric stop	52324
3. Right angle screw driver	18461
4. Tool for removing "C" washers in hopper shafts	51719
5. Brackets for supporting mechanism out of cabinet (3 required)	51761
6. .120" Gauge for record support knives	52468
7. .065"—.070" Gauge for record support knives	53370
8. .120" Gauge for angularity of record support	52855
9. Socket wrench for spiral cam adjusting screws	52992
10. Socket wrench for start rod collar set screws	53306

All the major adjustments including lubrication can be made without disturbing the position of the automatic unit in the cabinet. The unit is so mounted on steel runners that it can be moved out from the back should it become necessary to replace any of the parts under the motor board. Certain adjustments can be made by removing the unit only part of the way out of the cabinet.

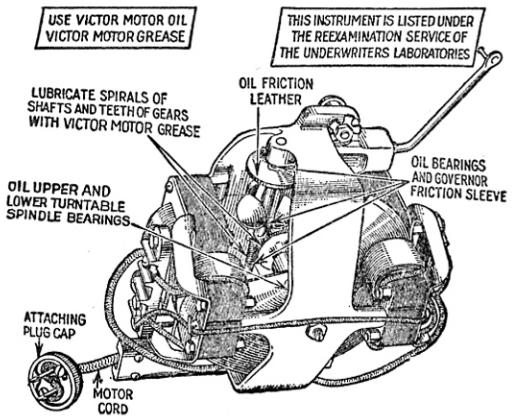


Fig. 21—Oiling Diagram Induction Disc Motor

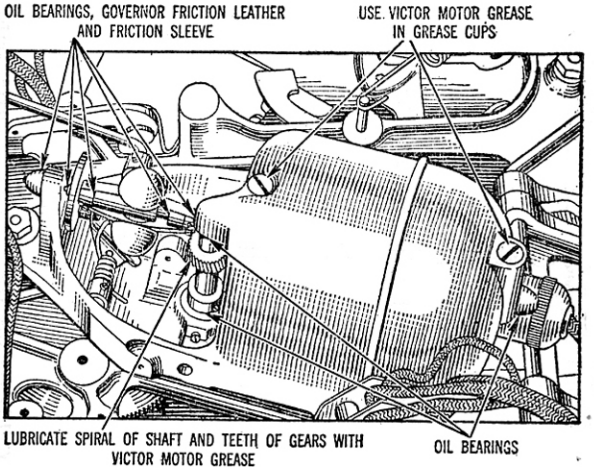


Fig. 22—Oiling Diagram Universal Motor

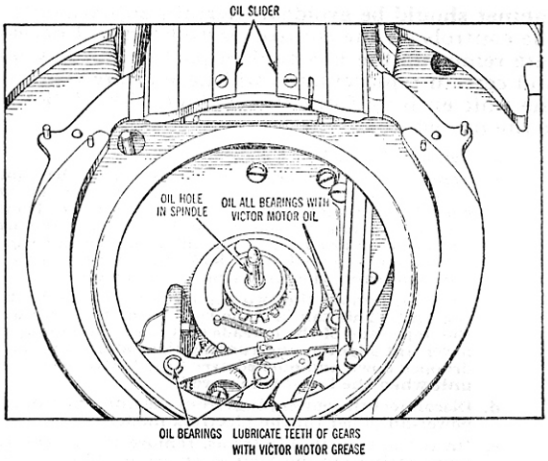


Fig. 20—Oiling Diagram Automatic Mechanism

Proceed in the following manner to remove the motor board:

h. Push the two hopper shafts 71, Fig. 11, inwardly as far as possible.

i. Turn the automatic mechanism by hand until the lift ring is in its raised position.

j. Move the record pusher slide cam 56, Fig. 5, forward and at the same time raise the lift ring back far enough to allow the motor board to be removed.

k. Lift the motor board high enough to clear the hopper supports 7, Fig. 1, and then carefully turn the board at the same time to allow it to clear the tone arm.

30. LUBRICATION—A hollow motor spindle with openings at the various bearings permits lubrication of these parts as well as the back governor bearing from the oil hole shown in Fig. 20. The front governor bearing, the governor friction sleeve, and friction leather can be lubricated by inserting a long spout oil can down through the hole in the top of the mechanism below the intermediate gear. The mechanism should be oiled at least once a month, and in commercial installations, playing an average of eight hours a day, this period should be reduced to once a week. The gears and spirals should be greased once every six months.

There are fifteen primary mechanical adjustments to the automatic unit. A correct knowledge jo these, their functions, and the method of procedure as outlined in the following pages should enable a service man to correct practically any of the more common troubles with the mechanism. It is suggested that in all cases a complete check of the adjustments be made in the order listed below.

ADJUSTER	PURPOSE	ILLUSTRATED
1. Sound box lift lever adjusting screw	Adjusting proper height of needle clearance above record	Fig. 2
2. Sound box crook stop	Adjusting height of needle above record	Fig. 3
3. Link pin adjuster	Adjusting for proper length of stroke on pusher plate	Fig. 4
4. Hopper adjusting nuts and screws	Adjusting height of hopper with respect to lift ring	Fig. 6
5. Lift ring screws	Adjusting height of lift ring with respect to hopper	Fig. 8
6. Spiral cam adjusting screws	Adjusting height of knives on record support pins	Fig. 9
7. Lift ring spring adjusting nuts	Adjusting tension of lift ring spring	No. 69, Fig. 11
8. Hopper arm adjusting screws	Adjusting hopper arms onto front of lift ring	Fig. 10
9. 12″ eccentric	Adjusting overall horizontal position of tone arm	Fig. 13
10. 10″ eccentric	Adjusting horizontal position of tone arm for 10″ record	Fig. 14
11. Index trip lever	Adjusting for 10″ and 12″ indexing and stop	Fig. 15
12. Index lever adjusting nuts	Adjusting height of index lever	No. 36, Fig. 1
13. Reject rod collar	Adjusting for proper reject action	Fig. 16
14. Latch trip	Adjusting for proper eject action on eccentric groove	No. 33, Fig. 1
15. Collars on stop rod	Adjusting for proper stop action	No. 86, Fig. 12

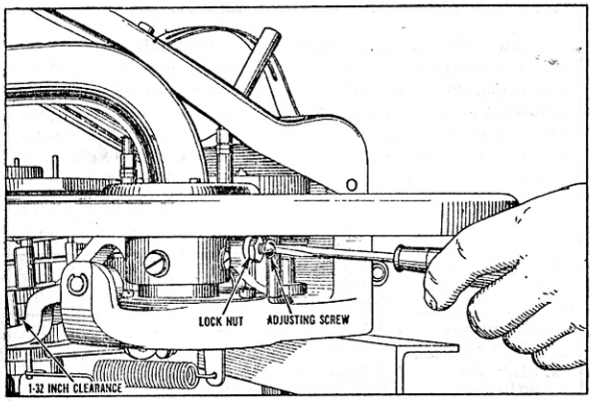


Fig. 2—Adjusting Sound Box Lift Lever

1. FAILURE OF NEEDLE TO SWING INTO FIRST RECORD GROOVE—If the needle fails to swing into the first record groove after striking the smooth outside rim:

a. Determine if the instrument is level by placing a spirit level on the turntable.

b. If the right side of the cabinet is low, raise this side slightly by placing a thin wooden wedge or other available material under the feet of the lower end.

c. If the condition is not corrected by the above adjustment:

Loosen the lock nut and adjust the sound box lift lever adjusting screw as shown in Fig. 2 until there is a clearance of approximately $\frac{1}{32}$" between the under side of the taper tube arm casting and the top of the sound box lift lever as shown. This clearance can be checked by placing a thin piece of cardboard between the two points and observing whether or not there is a dragging on the cardboard when the tone arm is moved toward the center of the record. *This clearance is highly important and will affect other conditions of the mechanism if not properly adjusted.*

2. EXCESSIVE WEAR ON RECORDS—If excessive wear on the records is noted, the same adjustments as described in subject 1 above should be made. It may be possible that the needle will move into the record groove after striking the smooth outside rim, but will cause excessive wear on the record due to a slight contact between the two points shown in Fig. 2 where the $\frac{1}{32}$" clearance should exist.

cabinet should be avoided. Certain adjustments to the controls on the control escutcheon will necessitate removing the mechanism part of the way out, and certain replacements will necessitate removing the unit entirely from the cabinet. The following is the procedure:

a. Remove the back of the cabinet.

b. Remove the four screws, at the sides of the motor board. NOTE—The automatic mechanism is supported to the motor board with three screws. Do not attempt to remove the motor board until the unit has been removed from the cabinet. The two back screws are fastened with lock nuts which must be removed before the screws can be taken out.

c. On 9-54, remove the two support rods in the back of the unit. This can be done by turning the top nut to the upper end of the threads on the rod, loosening the lower nut slightly, and turning the rod until it can be dropped down and pushed over sufficiently to clear the unit when the latter is removed.

d. Disconnect the power plugs from the unit and from the power-amplifier (in the Electrola models).

e. On the automatic Electrolas, remove the pickup terminal strip from the cabinet partition and the ground lead from the terminal strip to the back support of the unit. On 9-54, remove ground lead from control panel to radio terminal strip at the latter point, marking the terminal so that the lead can be properly replaced.

f. On the 10-35, remove the horn elbow.

g. Pull the unit out from the back of the cabinet. It is suggested that three metal supports such as part 51761, be used to hold the unit after it has been removed from the cabinet.

When replacing the unit in the cabinet, great care must be observed that the start switch 83, Fig. 12, is not pushed against any part of the cabinet and its position thus altered.

When replacing the 10-35 unit, be sure that the sealing washer between the horn and the unit is re-shellaced and properly placed and the screws securely tightened to form an air tight joint.

29. REMOVING MOTOR BOARD FROM MECHANISM—Certain replacements will require the removal of the motor board from the mechanism after the latter has been removed from the cabinet. The following parts should first be removed in the order listed:

a. Sound box or pickup from the tone arm.

b. Speed regulator screw.

c. Turntable.

d. Tone arm cover plate.

e. Spring washers, one on each hopper shaft as indicated at 66, Fig. 11. Push washers from the shaft with a thin blade or special tool such as part 51719.

f. The two hopper support screws 80, Fig. 11.

g. The three screws which hold the automatic unit to the motor board.

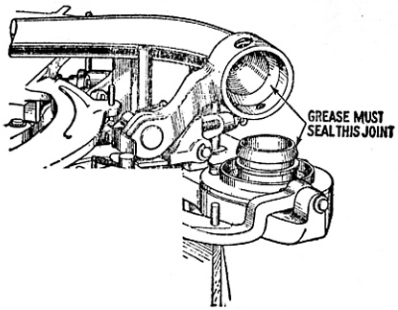


Fig. 19—Tone Arm Removed, Showing Grease Seal

If the leak has been found to exist between the top of the horn elbow casting and the horn elbow flange:

1. Remove the screws which hold the automatic unit to the cabinet.
2. Remove the three screws which hold the flange to the unit.
3. Lift the back of the automatic unit slightly, and then lift the flange from the horn elbow casting.
4. Place firm cup grease around the inside surface which fits over the top of the horn elbow casting, and around the under side of the felt washer.
5. Place shellac over the fibre washer which seals the joint between the flange and the automatic unit.
6. Replace and re-connect the flange.
7. Replace the motor board screws.

g. If the air leak has been found to exist in the joint between the horn elbow and the horn:

1. Tighten the four screws in this joint.
2. If this does not correct the leak, remove the four screws.
3. Remove the screws which hold the automatic unit in the cabinet as described in f above.
4. Lift the automatic unit about two inches and support it in this raised position.
5. Remove the fibre gasket and shellac both its surfaces.
6. Replace the gasket and screws, and then tighten the joint securely.

It is suggested that in all cases a small amount of grease or oil be placed around the end of the sound box crook so as to seal the joint between the sound box and the crook.

28. REMOVING MECHANISM FROM CABINET —Whenever possible, removal of the unit from the

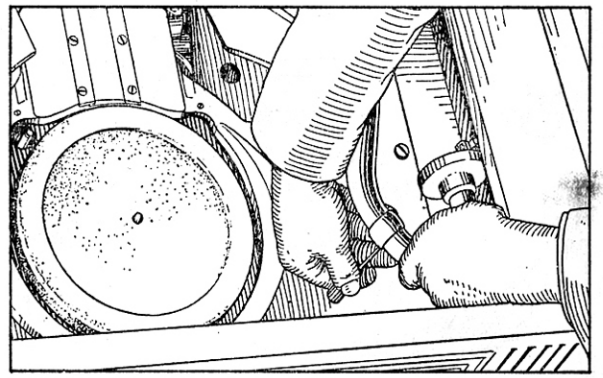


Fig. 3—Adjusting Crook Stop

3. NEEDLE DOES NOT LOWER SUFFICIENTLY —When the $\frac{1}{32}$" clearance described in c of subject 1 above is obtained, the clearance between the needle point and the record should be approximately $\frac{3}{16}$" on the return of the tone arm. If this clearance does not exist:

a. Examine the position of the tone arm cover plate. It should be so placed on the motor board that the tone arm does not touch the plate at any time. The screws in the plate can be loosened if necessary, care being taken not to turn these so far that the nuts on the bottom are dropped, and the plate then moved slightly to allow clearance of the tone arm. Re-tighten the screws securely when the proper clearance has been obtained.

b. Examine the sound box or pickup crook stop. Loosen the lock nuts and turn the stop screw, which is an eccentric, until the proper lowering has been obtained. Re-tighten the lock nut when the proper lowering has been obtained. See Fig. 3.

4. NEEDLE DOES NOT CLEAR RECORD—If the tone arm does not rise sufficiently for the needle to clear the record on the return of the tone arm:

a. Examine the position of the tone arm cover plate and the crook stop making the same adjustments as described in subject 3 above except that the eccentric screw must be turned in the opposite direction.

b. If the condition is still not corrected, particularly if there seems to be a sluggish action of the return of the tone arm, remove the sound box lift lever spring shown in Fig. 2, and increase its tension by shortening the straight section of the spring, bending it nearer the coiled section.

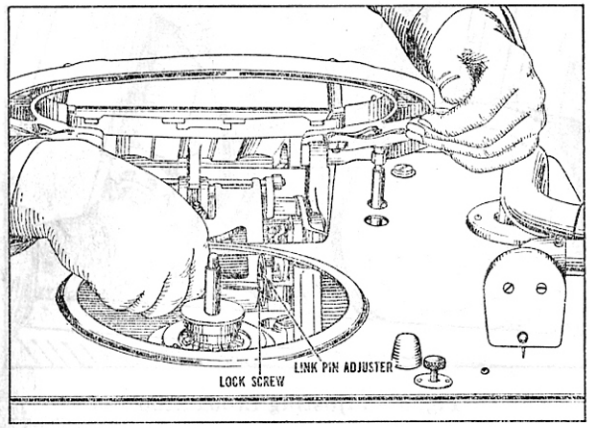


Fig. 4—Adjusting Link Pin Adjuster

5. LIFT RING DROPS SLIGHTLY WHEN DESCENDING—If the lift ring suddenly drops about ¼" when first starting down, make the following adjustments:

a. Remove the turntable.

b. Loosen the lock screw in the link pin adjuster as shown in Fig. 4.

c. Turn the mechanism until the main slide is in its extreme forward position.

d. Turn the link pin adjuster until the rollers of the lift lever mechanism 48, Fig. 1, are in the slots pressing against the extreme end of their track (cam).

NOTE—Do not advance the adjuster so far that the rollers are too tight against the end of the cam since there will be a strain and possible binding of the entire mechanism.

e. Re-tighten the lock screw.

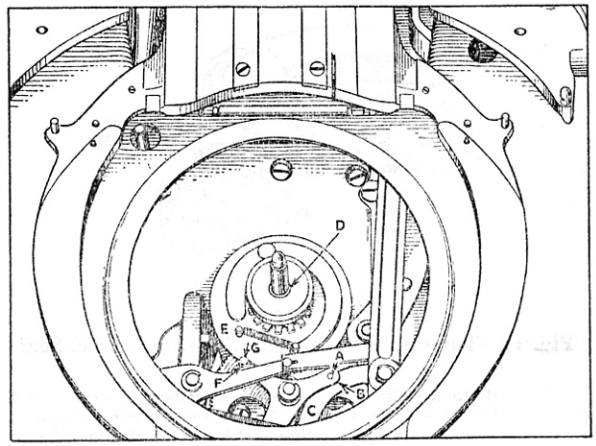


Fig. 18—Method of Timing Gears

27. POOR TONE QUALITY IN 10-35 AUTOMATIC ORTHOPHONIC VICTROLA—If the tone quality of the Automatic Orthophonic Victrola instrument is not up to standard:

a. Replace sound box, bearing in mind if this is done that it may be necessary to re-adjust the tone arm as described in subject 3 above.

b. If replacing the sound box does not correct the quality, it is possible that there is an air leak in the sound system between the end of the tone arm and the horn.

c. Remove the sound box from the tone arm. Blow smoke lightly into the tube, taking care not to use too great force since the grease seal around the joint at the base of the tone arm may otherwise become broken. Smoke can be seen escaping where the leak exists.

d. If the above tests show an air leak at the joint between the sound box crook and the tone arm:

1. Remove the crook, and distribute firm cup grease around the joints in the sleeve inside the tone arm.
2. Replace the crook, again test for air leaks.

e. If the leak has been found to exist in the joint at the base of the tone arm:

1. Remove the tone arm by taking out the three screws.
2. Remove the spring 39, Fig. 1.
3. Distribute firm cup grease around the two surfaces as shown in Fig. 19.
4. Replace the tone arm, and again test for air leaks.

NOTE—Victor motor grease should not be used to seal joints as described above since this grease is too light for the purpose.

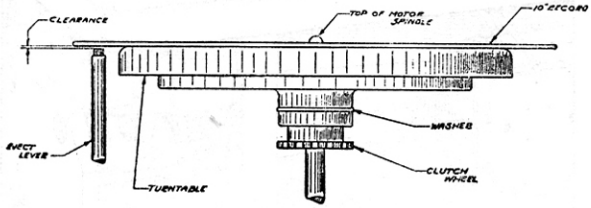


Fig. 17—Correct Height of Record on Turntable Spindle

24. FAILURE TO STOP AFTER LAST RECORD—If the mechanism fails to stop after the last record has been played, look for any of the following:

a. Improper adjustment of index trip lever, Fig. 15. See b, subject 16, above for proper adjustment.

b. Defective start switch 83, Fig. 12.

c. Defective cycle completing switch 15, Fig. 1.

25. PICKUP SHORTING SWITCH FAILURE—If the pickup shorting switch fails to open before the needle reaches the first music grooves, or fails to close after the eccentric groove has been reached:

a. Remove the turntable.

b. Loosen the screws in the switch with a small right angle screw driver, and adjust the position on the switch until the contacts are approximately $\frac{1}{32}$" apart when the tone arm is in the playing position.

c. Examine the bakelite arm of the switch, noting if there is any binding. Such binding should be removed by prying the arm loose with a screw driver.

26. TIMING MECHANISM—When the motor or any of the gears have been removed, it will be necessary to re-time the mechanism in the following manner:

a. Remove the turntable.

b. Turn the mechanism by hand until the roller A, Fig. 18, is engaged in the slot B of the cam gear C.

c. Loosen the set screw in the clutch wheel D, lift the wheel, the pawl and pawl carrier E, and turn the latter until the roller F is in line with the slot G.

d. Lower the pawl and pawl carrier and the clutch wheel, and then re-tighten the set screw, aligning the screw with the spot in the motor spindle.

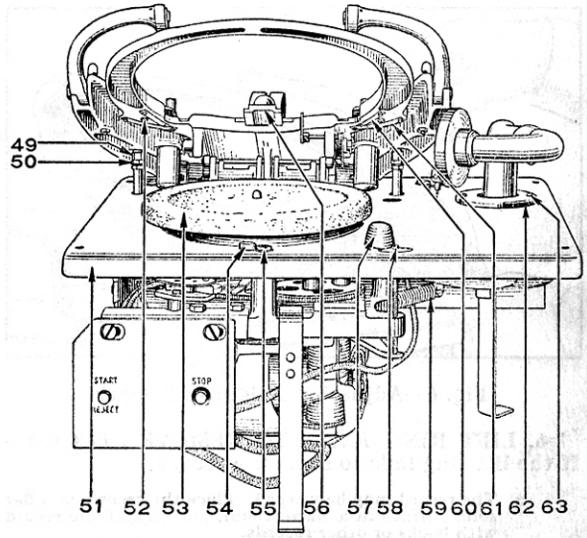


Fig. 5—Automatic Unit Front View

PARTS LIST—Continued

	Name of Part	Part No.
49.	Hopper Adjusting Nut	22183
50.	Nut	3604
51.	Motor Board (complete)	52556
52.	Lift Ring Stop Screw	52611
	Nut	52328
53.	Turntable	51644
54.	Rubber Stop Pad	50362
55.	Motor Board Screw	51885
	Lock Washer	52173
56.	Pusher Slide Cam	22223
57.	Rubber Button	52520
58.	Speed Regulating Screw	51516
	Spring	51506
59.	Sound Box Lift Lever Spring	22064
60.	10" Spring	51560
	Screw	50775
	Nut	5377
61.	12" Spring (Same as No. 60)	
62.	Taper Tube Cover Plate	22145
63.	Screw (2 used)	51402
	Lock Washer	18767
	Nut	4137

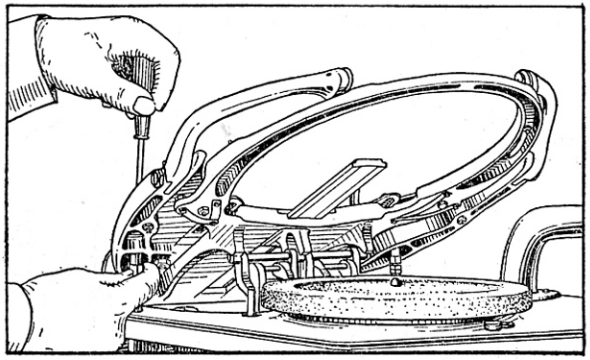


Fig. 6—Adjusting Height of Hopper

6. LIFT RING FAILS TO REMOVE RECORD—If the lift ring fails to remove a record,

a. The record may be warped. Place the record on a flat solid surface in a warm room, and weight the record with books or other records.

b. The vertical height of the hopper (magazine) with respect to the lift ring is not correctly adjusted.

1. Loosen the hopper support screws as shown in Fig. 6.
2. With the lift ring in its highest position, turn the hopper adjusting nuts so that the top surface of the hopper is exactly flush with the top of the lift ring. A straight edge can be used as a gauge for this height. It should be placed across the two surfaces as shown in Fig. 7. This same method should then be used for gauging the height on the opposite side of the hopper. Turn the hopper support screws so that there can be an additional upward movement of the hopper of approximately $\frac{1}{32}$" on each side with the hopper resting on each top adjusting nut. This amount of play will prevent any possible binding of the lift ring and hopper. Adjust the lift ring screws as shown in Fig. 8, until the ends touch the under side of the hopper when the ring is in its highest position.
3. Note the action of the knives on the record support pins. The height of these should be tested by means of the gauges 52467, 52468 and 52855. Pushing the top of the record support pins down, insert the .065"—.070" gauge, Part 53370, under each knife. This adjustment should be made when lift ring is up and knives turned inward. If the knife is too high or too low, it should be bent slightly by prying with a screw driver until the proper height is obtained.

   Part 52855 can be used to obtain the proper angularity as well as the .120" height. With the lift ring down, insert the gauge 52855

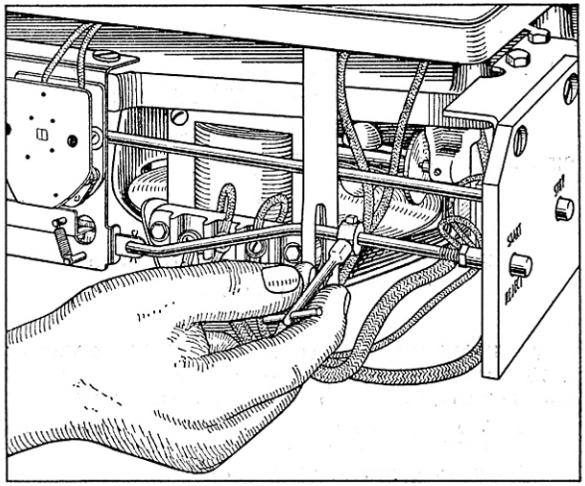


Fig. 16—Adjusting Reject Collar

22. FAILURE TO START—If the mechanism fails to start, look for any of the following:

a. Open circuit in power supply. Check all plug connections both inside and outside the instrument.

b. Defective motor coil.

c. Open or shorted 3 Mfd. condenser.

d. Start switch position 83, Fig. 12, out of adjustment, preventing switch slide 81, Fig. 12, from tripping switch.

e. Defective start switch 83, Fig. 12.

23. FAILURE TO STOP WHEN STOP BUTTON IS PRESSED—The mechanism will not stop if the button is pressed during the cycle until the cycle is completed. If the mechanism still fails to stop, look for any of the following:

a. Defective start switch 83, Fig. 12.

b. Defective cycle completing switch 15, Fig. 1.

c. Improper adjustment of mechanical connection between stop lever 44, Fig. 1, and start switch. When facing the back of the mechanism, adjust the right hand collar on the stop shaft until the collar on the stop rod just touches the stop arm on the switch when the stop button is out.

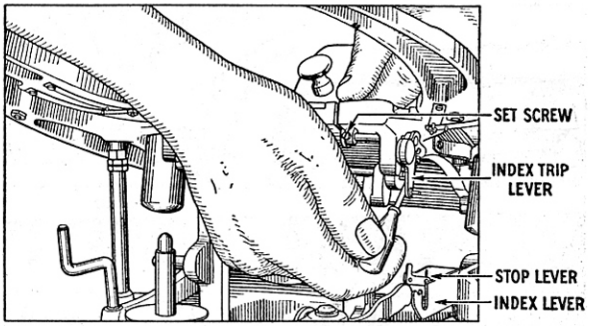


Fig. 15—Adjusting Index Trip Lever

19. FAILURE TO TRIP ON ECCENTRIC GROOVE —If the mechanism does not trip when the eccentric groove is reached:

a. Observe the action of the sound box crook, noting if it is too loose on the tone arm. The crook should be so tightened that it is free to move up and down, and yet sufficiently tight to prevent any side motion.

b. If the crook is found to be correct, remove the back of the cabinet, and with the aid of a flashlight, observe the action of the latch trip blade 33, Fig. 1, which is mounted on the 12″ eccentric screw 32, Fig. 1. If the blade does not make contact with the latch plate, loosen the screws in the latch trip, and move the blade until proper contact is made with the plate.

20. FAILURE TO EJECT—If the eject lever 9, Fig. 1, fails to remove a record from the turntable, and the record lift ring raises the record, eliminate any binding in the eject lever cam 6, Fig. 1, near the end of the eject lever, by prying the cam away from the lever with a screw driver. The cam may be stuck slightly because of dirt or other foreign matter becoming lodged between it and the eject lever.

21. SLUGGISH ACTION OF EJECT MECHANISM OR RECORD EJECTS TOWARD FRONT OF CABINET—If the record is not entirely ejected from the turntable before the lift ring starts to rise, or if a record is ejected toward the front of the cabinet rather than in the discharge compartment:

a. Note the height of the record on the motor spindle, and compare this height with the correct height as shown in Fig. 17. If the record is considerably lower, raise the height by placing one or more cork or fibre washers, part 51870, under the turntable.

b. Examine the leather on the end of the eject lever. If this is worn smooth, roughen it by scraping with a sharp knife or file.

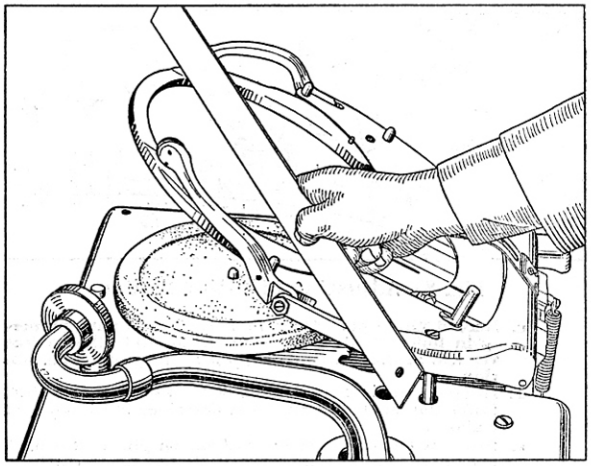


Fig. 7—Straight Edge on Lift Ring

as shown in Fig. 9. There should be no play in the height of the knives and the sharp edge should be against the curved surface of the gauge. If this condition does not exist, loosen the set screws in the spiral cams as shown in Fig. 9. Using a socket wrench such as part 52992, make the necessary setting of the knives, pushing the spiral cams toward the back center of the mechanism, and then re-tighten the set screws.

7. LIFT RING REMOVES TWO RECORDS—If two or more records are entirely removed from the hopper and deposited on the lift ring at the same time:

a. Records are improperly loaded. (See Subject 2 under GENERAL).

b. Hopper improperly adjusted with respect to lift ring. See b of subject 6 above.

c. Hopper arm improperly aligned, allowing the two bottom records to pass under the arms. Lower the hopper arms by turning the small adjusting screws as shown in Fig. 10, so that both hopper arm spacers touch the lift ring when the latter is in its raised position and there are no records in the hopper. Spacing for gates on hopper arms should be between .093″ and .107″.

8. RECORD CENTER FAILS TO ALIGN WITH TURNTABLE SPINDLE—The mechanism is designed to allow a 10″ record to fall directly over the turntable spindle and a 12″ record to fall $\frac{1}{16}$″ in back and then fall of its own weight forward over the spindle. If this condition does not exist:

a. Records are not properly loaded in hopper.

b. Record is warped.

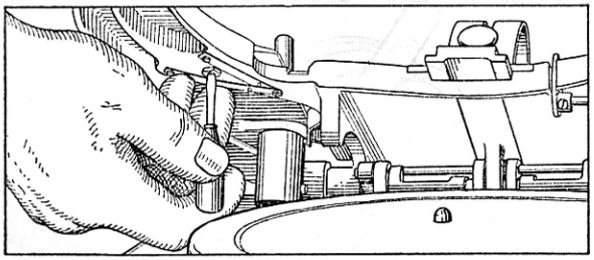


Fig. 8—Adjusting Lift Ring Screws

c. Record guide pins 74 or 75, Fig. 11, not fitting properly in holes of lift ring. This fit should allow a free vertical motion of the pins, but a minimum side motion.

d. Hopper improperly adjusted with respect to lift ring. Make the same adjustment as described in b of subject 6 above.

e. Note the position of the record pusher pins on the back edge of the record. If both pins do not touch the back edge of the record as the latter is being moved into position, loosen the upper screw in the pusher plate, and adjust the plate until proper contact is made, or, if one of the pins is below the record, bend the pusher spring slightly until proper contact is made.

9. LIFT RING RISES TOO SLOWLY—If the lift ring rises too slowly with a resulting strain on the mechanism, or if it descends too fast, increase the tension of the spring 68, Fig. 11, in the back of the mechanism in the following manner:

a. Loosen the two lock nuts on the eye screw.

b. Increase the spring tension by turning first the top and then the bottom lock nut toward the eye in the screw.

c. Test the adjustment by trial until the proper rising of the lift ring has been obtained and the ring descends slowly without a record. The ring should slightly overbalance the spring when the former is in its lowered position.

10. LIFT RING RISES TOO FAST—If the lift ring rises too fast, if it descends too slowly, or if it touches the under side of the record on the turntable during playing, decrease the tension of the spring 68, Fig. 11, in the following manner:

a. Loosen the two lock nuts on the eye screw.

b. Decrease the spring tension by turning first the bottom and then the top lock nut away from the eye in the screw.

c. Test the adjustment by trial until the proper rising of the lift ring has been obtained, and the ring descends slowly without a record.

11. LIFT RING VIBRATES IN DESCENDING—If the lift ring does not descend evenly:

a. Oil the bearings of the lift lever rollers.

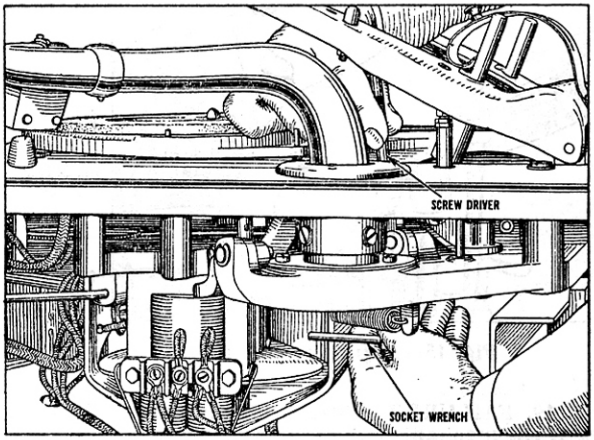


Fig. 14—Adjusting 10″ Eccentric Stop

c. If the mechanism still fails to select properly, adjust the lock nuts 36, Fig. 1, over the index lever so that the taper tube return lever strikes near the top of the 12″ stop face on the index lever casting 41, Fig. 1, when set for a 12″ record and the approximate midpoint of the 10″ eccentric stop pin when set for a 10″ record.

17. FAILURE TO REJECT RECORD—If the automatic mechanism does not trip when the "Reject" button is pressed, and the record is therefore not rejected:

a. Note that the condition is not caused by a wire between the reject rod collar 87, Fig. 12, and the fork portion of the trip lever.

b. If the condition is not yet corrected, loosen the set screws in the collar as shown in Fig. 16, using a socket wrench such as part 53306, and set the collar approximately ⅛″ away from the trip lever. Re-tighten the set screws.

18. CONTINUED REJECTION—Continued rejection may be caused by any one of the following:

a. Collar on reject rod set too near trip lever, preventing latter from disengaging from end of pawl.

b. "Start" and "Reject" button stuck or binding.

c. Pawl 23, Fig. 1, sticking between teeth of clutch wheel.

d. Mechanism improperly timed. (See subject 26, below).

b. Check the 10″ position, making any necessary adjustments as described in d of subject 12 above.

14. NEEDLE LOWERS OUTSIDE 10″ RECORD DIAMETER—Should the needle lower outside the diameter of a 10″ record, but lowers properly on a 12″ record, make the same adjustments as described in d of subject 12 above.

15. NEEDLE LOWERS INSIDE 10″ RECORD GROOVES—Should the needle lower inside the record grooves of a 10″ record, but lowers satisfactorily on a 12″ record, make the same adjustments as described in d of subject 12 above.

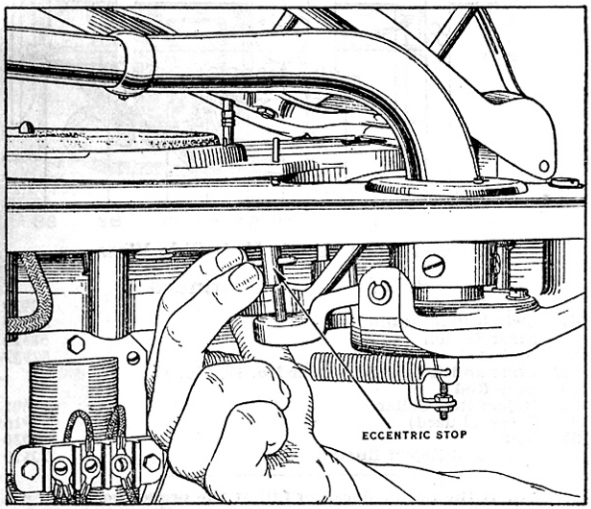


Fig. 13—Adjusting 12″ Eccentric Stop

16. FAILURE TO SELECT 10″ AND 12″ POSITION—If the mechanism does not select the 10″ and 12″ position, that is, if the needle lowers in the 10″ position on a 12″ record, or on the rubber support block when a 10″ record is on the turntable:

a. Records are improperly loaded in hopper.

b. Tighten the set screw on the index lever trip cam, shown in Fig. 15, so that it is against the flat of the index trip lever shaft. Loosen the lock nut in the index trip lever as shown in Fig. 15, and adjust the screw until the inside pin lowers on the stop lever and the outside pin lowers in the larger slot of the index lever when the lift ring comes down without a record.

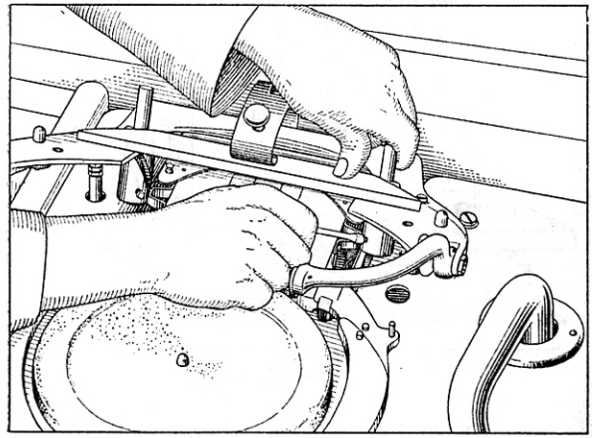


Fig. 9—Gauging Record Support Pin Knives

b. Examine the pusher plate and the portion of the lift ring over which the plate moves, noting if there is any binding between the two when the pusher plate is advancing. Usually if there is contact between the two, a worn line will be noticeable on the lift ring, being produced by the contact of the bottom of the plate on the lift ring. This condition can be readily eliminated by bending up the plate slightly on the side which is touching the ring.

c. Examine the pusher slide, noting if it is properly lubricated or if there is any grit or other foreign matter in the channel of the slide. ***It is important that this channel be clean and well lubricated at all times.***

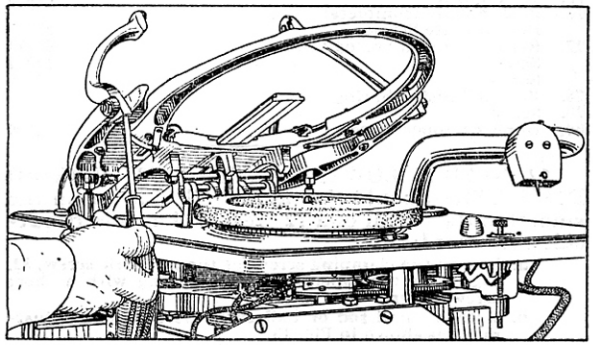


Fig. 10—Adjusting Hopper Arm Screws

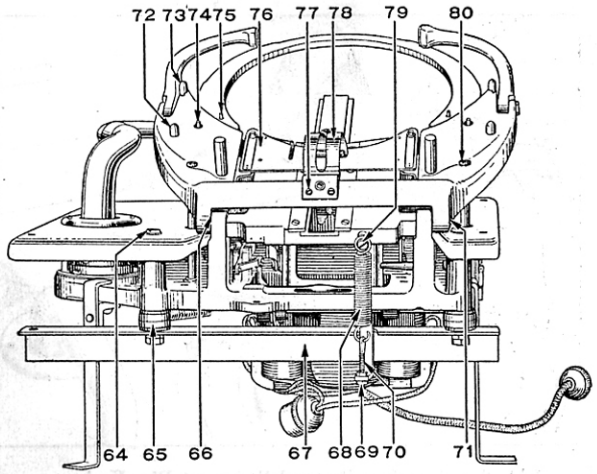


Fig. 11—Automatic Mechanism Back View

PARTS LIST—Continued

64.	Motor Board Screw	52592
65.	Rubber Washer	52590
66.	Spring Washer	22264
67.	Mechanism Support	51653
68.	Lift Ring Spring	50306
69.	Nut (2 used)	2930
70.	Eyebolt	16460
71.	Hopper Shaft	22060
72.	Hopper Pin	51639
	Nut	22629
73.	12″ Record Stop Pin	52565
74.	12″ Plunger	22050
75.	10″ Plunger	52266
76.	Pusher Plate (complete)	53236
	Pusher Plate Screw	52968
77.	Record Tension Spring Clamp	53279
	Screw (2 used)	19212
	Screw	3266
78.	Record Tension Spring	53269
79.	Screw	22233
80.	Hopper Support Screw	51729

12. NEEDLE LOWERS OUTSIDE 12″ RECORD DIAMETER—Should the needle fail to lower on the smooth outside rim of a 12″ record, but lowers outside the record:

a. Loosen the clamping screw for the eccentric screw, 32, Fig. 1, in the taper tube arm casting with a short screw driver.

b. With a small rod or nail turn the eccentric adjustment as shown in Fig. 13.

c. Check the setting after successive trials until the proper position is obtained, and then re-tighten the clamping screw securely.

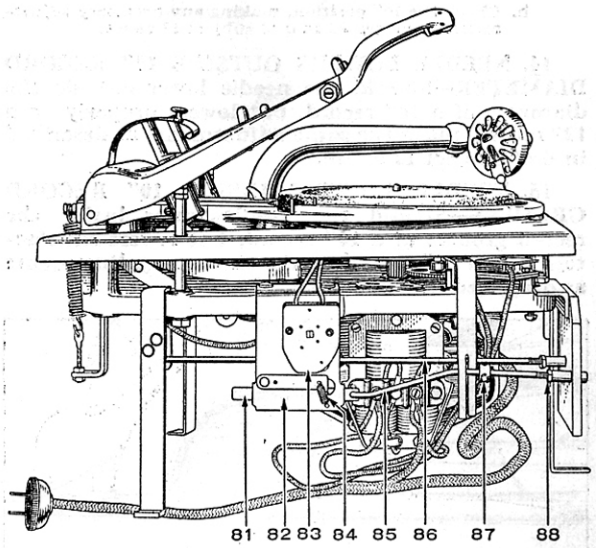


Fig. 12—Automatic Unit Side View

PARTS LIST—Continued

81.	Switch Slide	52929
82.	Switch Plate (Complete)	52629
83.	Start Switch	50129
84.	Spring	52932
85.	Start and Reject Rod (See No. 17, Fig. 1)	
86.	Stop Rod	
87.	Reject Rod Collar	52601
	Screw (2 used)	52915
88.	Nut	2930
	Start and Reject Button	22179

d. If the needle does not fall at the proper position on a 10″ record after making the above adjustment, refer to Fig. 13.

1. Place a socket wrench such as part 52324 over the lock nut on the under side of the 10″ eccentric stop 35, Fig. 1, and a short screw driver such as part 52323 down through the hole in the motor board and into the slot of the 10″ eccentric stop.
2. Loosen the lock nut and turn the eccentric in either direction as may be required.
3. Make a test after each successive trial until the proper setting has been obtained.

13. NEEDLE LOWERS INSIDE 12″ RECORD GROOVES—If the tone arm swings inwardly too far before the needle lowers on a 12″ record, but not as far as the 10″ position:

a. Make the same adjustments as described in subject 12 above, but turn the 12″ eccentric in the opposite direction.