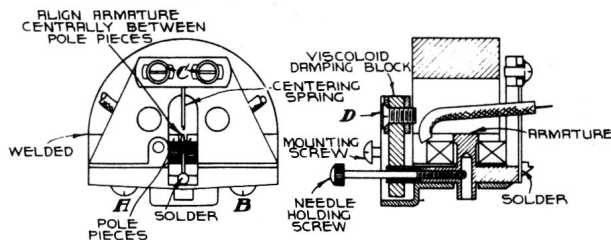


# Automatic Phonograph Service

## Magnetic Pickup:—

The magnetic pickup used is of an improved design. The horseshoe magnet is rigidly welded to the pole pieces and is irremovable. There is a centering spring attached to the armature to maintain proper adjustment and to provide a limiting effect on the movement of the armature. Service operations which may be necessary on the pickup are as follows:

**Centering Armature.**—Refer to the figure showing the pickup inner structure. The armature is shown in its proper relation to the magnet pole pieces, i. e., exactly centered. Whenever this centering adjustment has been disturbed it will be necessary to remove the pickup mechanism from the tone arm for re-adjustment. Unsolder the two leads from the lugs on the terminal board at the rear of the pickup. Insert a small rod or nail into the armature needle hole and tighten the needle holding screw to hold the rod securely. If the armature clamping screws A and B have not been disturbed, screws C should be loosened which will permit the armature to be moved from side to side, the rod acting as a lever to perform this operation. The proper adjustment is obtained when the armature is brought to the mid position between the pole pieces. Screws C should then be tightened. The armature position should then be central between the pole pieces and at right angles to them. Check to make sure that the armature is not touching the coil. The air gap between the pole pieces and the armature should be kept free from dust, filings, and other foreign material which would obstruct the movement of the pickup armature.

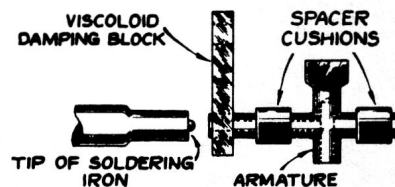


Magnetic Pickup Detail

**Replacing Coil.**—Whenever there is defective operation due to an open or shorted pickup coil, this coil should be replaced. Remove the pickup mechanism and terminal board. Remove screws A and B and the magnet assembly. Remove the bakelite coil support (with coil attached) and insert the new coil support assembly in its place, after which replace the magnet assembly and center the armature as described above, then re-assemble the remainder of the unit. Only rosin core solder should be used for soldering the coil leads and pickup leads to the pickup terminal board. This same type of solder

should be used when necessary for soldering the centering spring to the armature.

**Magnetizing.**—Loss of magnetization will not usually occur when the pickup has received normal care because the magnet and pole pieces are one unit and the magnetic circuit remains practically closed at all times. When the pickup has been mishandled, subjected to a strong a-c field, jolted, or dropped, there may be an appreciable loss of magnetic strength, in which case it will be necessary to remagnetize the entire structure. To do this, it will be necessary to first remove the pickup mechanism from the tone arm, and then remove the magnet assembly. Place the magnet assembly on the poles of a standard pickup magnetizer such as the RCA Stock No. 9549 Pickup Magnetizer and charge the magnet in accordance with the instructions accompanying the magnetizer. It is preferable to check the polarity of the pickup magnet and to remagnetize it so that the same polarity is maintained.



Attaching Damping Block

**Damping Block.**—The viscoloid damping block which is attached to the front end of the armature shank serves to reduce undesirable resonances and to cause the frequency response to be uniform. Should it be necessary to replace this damping block, the pickup mechanism should be removed from the tone arm. Remove screw D and the damping block from the pickup assembly. Make sure that the shaft of the armature which contacts the viscoloid is clean. Then insert the new damping block so that it occupies the same position as that of the original block, and is in correct vertical alignment with the armature. The hole in the block is somewhat smaller than the diameter of the armature in order to permit a snug fit. With the damping block properly aligned on the armature, screw D with its washer should then be replaced. Heat should be applied to the armature (viscoloid side) so that the damping block will fuse at the point of contact and become rigidly attached to the armature. A special-tip soldering iron, constructed as shown, will be found very useful in performing this operation. The iron should be applied only long enough to slightly melt the block, causing a small bulge on both sides.

**Pickup Angle.**—The pickup head should be set at 15° angle to the pickup arm. This may be done by loosening the nut No. 2, Fig. 1 on top of the pickup arm and adjusting the pickup bracket to the correct angle.

## LUBRICATION.

Due to its careful design and precise workmanship, this record changer requires a minimum of oiling.

About once each year a light coat of vaseline or petroleum jelly should be applied to all moving surfaces which were coated with graphite at the factory.

A very light coat of vaseline should be applied to the surfaces of the magazine, indicated at "E" in Fig. 2. It is best to apply this coating every six months. The vaseline should be applied with, and removed by, the fingers, on the magazine faces. DO NOT USE EXCESSIVE AMOUNTS OF LUBRICANT ANYWHERE ON THE RECORD CHANGER.

A good grade of machine oil, not too light, should be used on the sliding clutches, reverse cam shaft and all eccentric and shoulder screws.

NEVER OIL THE "DUREX" BUSHINGS (one of which is shown as No. 17 in Fig. 1), AS THIS WILL CAUSE THEM TO DISINTEGRATE.

Once each year the motor oil cups should be oiled with a good grade of motor oil. At the same time the gear box should be inspected, and the grease replaced if it has become hard. A good mixture to use here is 75% vaseline and 25% SAE 40 motor oil.

## RECORD SIZE LIMIT.

The record changer will play any 10" or 12" record of standard size. The minimum size for 12" records is 11 $\frac{7}{8}$ ". The minimum size for 10" records is 9 $\frac{27}{32}$ ". Records smaller than these limits are very apt to miss centering over the turntable spindle and in most cases are broken.

These record changers will automatically trip on any record having an automatic stop change groove, either spiral or oscillating, where the blank space in the center of the record is not more than 6 $\frac{1}{2}$ " in diameter.

Always inspect the records to see that no rough edges are present. Occasionally you will find a record which has a rough outside edge. This rough edge will greatly interfere with the satisfactory performance of the record changer. A small piece of No. 00 sandpaper will assist you greatly in removing this rough edge.

## DRIVE CLUTCH.

The phono drive clutch is located on the drive shaft just above the reduction gear box. The clutch should be adjusted so that there is no slippage in the clutch during a cycle of the mechanism, yet the clutch should slip if the turntable is stopped by hand. To adjust clutch, loosen the two nuts above the clutch on the drive shaft, and move the lower nut down the shaft for more pressure in the clutch, or move the lower nut up for less clutch pressure.

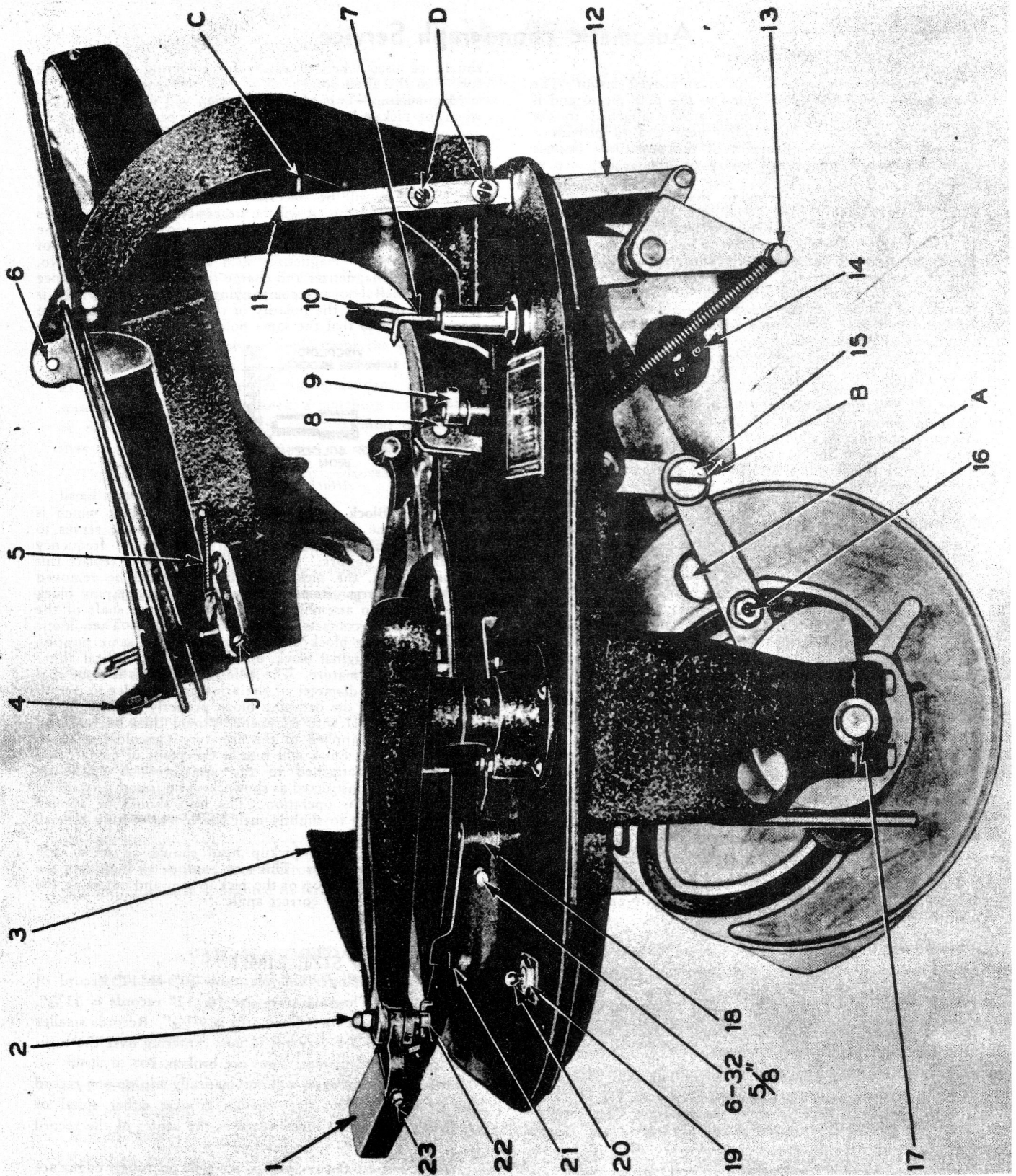


Fig. 1

| Refer-<br>ence<br>No. | Stock<br>No. | Description  |
|-----------------------|--------------|--|
| 1                     | 37293        | Pickup Housing   |
| 2                     | 38068        | 1/4"-28 Hex. Cap Nut                                   |
| 3                     | 38084        | Record Tray Shield Felt-<br>Outer                      |
| 4                     | 38117        | Record Reverse Arm and<br>Fork Assembly                |
| 5                     | 38044        | Spring-Separator                                       |
| 6                     | 38017        | Pin-Magazine Pivot                                     |
| 7                     | 38116        | Separator Hook and Arm<br>Assembly                     |
| 8                     | 38018        | Pin-Record Tray Pivot                                  |
| 9                     | 38119        | Reverse Pinion and Crank<br>Assembly                   |
| 10                    | 38188        | Record Bumper Guide and<br>Felt Assembly               |
| 11                    | 38075        | Magazine Link Upper                                    |
| 12                    | 38076        | Magazine Link Lower                                    |
| 13                    | 38057        | Record Magazine Bushing                                |
| 14                    | 38113        | Chassis Plug   |
| 15                    | 38006        | Shoulder Screw — Record<br>Tray Slide                  |
| 16                    | 38024        | Pin-Record Tray Slide                                  |
| 17                    | 38055        | Main Shaft Bushing Lever As-<br>sembly (Specify color) |
| 18                    | 38151        | Pickup Arm, Stop                                       |
| 19                    | 38005        | Escapement Plate Off-On                                |
| 20                    | 38001        | Switch Automatic                                       |
| 21                    | 38094        | Stop Lever Roller Tubing                               |
| 22                    |              | Pickup Arm Lever Hook                                  |
| 23                    | 38069        | Lock Nut for Pivot Screw                               |

NOTE: In ordering any part  
that is painted, please specify  
color wanted.

# REFERENCE TABLE FOR AUTOMATIC MECHANISM ADJUSTMENTS

| Symptom   | Check and Correct   |
|---|---|
| Does not play automatically.                                    | Solenoid relay circuit and S2, S5, S6, L1, L8. Section 19, 20. S4 under recording arm open. |
| Keeps on repeating automatically.                               | Check S1, S2. Section 15, 26, 27.   |
| Trips before record is finished.                                | Section 27.   |
| Does not trip at end of record.                                 | Section 27, 26.   |
| Does not feed new record.*                                      | Section 2, 3, 1   |
| Record does not center on turntable.                            | Section 1, 7, 9, 10.  |
| Does not reverse records properly.                              | Section 1, 8, 11, 12, 13, 28.   |
| Does not reverse record.  | Section 1, 8, 18, 28, 25.   |
| Pickup does not land correctly on record.                       | Section 5, 6, 16, 17, 14.   |
| Chatter while changing record.                                  | Section 21, or short circuit in relay trip system.  |
| Ringing noise while changing record.                            | Section 4.  |
| Record Selector Lever does not work properly.                   | Section 25, 23, 18.   |
| * Make sure record is not warped or chipped or has rough edges. |   |

**NOTE:** When Automatic Mechanism jams, shut Master "Power" Switch "OFF" before clearing the jam, as the turntable "Motor Switch" does not shut power to the motor off while the mechanism is in cycle.

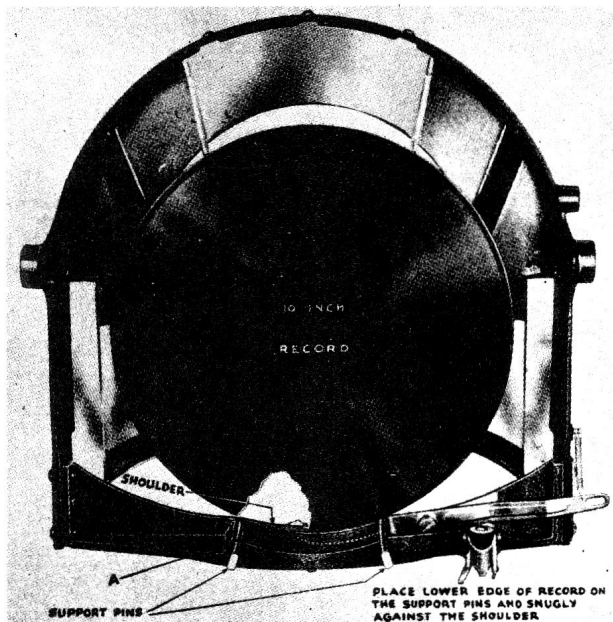
**Note:**—When mechanism jams upon first being played after being unpacked, check to see whether the record magazine is lined up as stated in Adjustment 7. Also check to see if the Record Reverse Arm Lock No. 46 Fig. 2 is on top of the Record Reverse Arm Lock Stop No. 48 Fig. 2.

## 1. MAGAZINE LINK ADJUSTING SCREWS ("D") (Fig. 1).

The record magazine should always come back snugly against the magazine stop screw, "C," Fig. 1. If it does not, it is necessary to loosen the two set screws ("D," Fig. 1) to a sliding tension and run the record changer through a cycle of change. When the magazine has reached the horizontal position, as shown in Fig. 1, press down on the lower end of the magazine; this will lengthen the link assembly. Then when the magazine returns to its normal position, the magazine link will adjust itself so that the magazine is snugly against the stop screw. Then tighten the magazine link screws "D."

## 2. RECORD SEPARATOR ADJUSTMENT.

The separator stop "J," Fig. 1, should be adjusted so that a small 10" record will positively clear the knife portion of the separator lever as shown in the following illustration. A



standard to use is to make certain that there is approximately  $\frac{1}{32}$ " clearance between the edge of the small record and the point of the separator lever, as shown at "A" in illustration below. However, it may be necessary to vary one way or the other from this measurement, depending on whether or not the slotted end of the record separator lever goes over the hook (7) (Fig. 1) without binding.

## 3. RECORD SEPARATOR HOOK ADJUSTMENT.

After adjusting the record separator it will be necessary to check the record separator hook (7) (Fig. 1) to see that it enters the slot in the record separator without binding. This hook is threaded and by loosening the locknut the hook can be turned in either direction, to raise or lower it. After the correct adjustment is obtained, tighten the locknut.

It should never be necessary to change these adjustments on record changers unless they have been tampered with by an inexperienced person.

## SEPARATOR HOOK AND ARM (7) (Fig. 7).

Be sure set screw "K" in Fig. 4 is screwed all the way in.

## 4. RECORD MAGAZINE BUSHING (13) (Fig. 1).

If a ringing noise is heard while the instrument is changing records, i. e., such a noise that might be made by a spring, it will be found that the Durex bushing (13) (Fig. 1) is too tight, in which case it will be necessary to loosen the lock nut of the holding bolt, and back the bolt out, from a quarter to a half turn, then tighten the lock nut.

## 5. TO ADJUST THE TONE ARM HEIGHT.

To adjust the tone arm height, first place a 12" record on the turntable and adjust the tone arm stop lever (18) (Fig. 1) so that the record hits the rubber roller (21) (Fig. 1) in the center. Start the record changer through a cycle and stop it when the tone arm lever hook (22) (Fig. 1) just touches the stop lever assembly. In this position adjust the tone arm height so that the top of the stop lever is the same height as the center of the hook. This adjustment is made by loosening the two Allen set screws at the rear of the tone arm.



These Allen set screws are accessible by raising the tone arm by hand. After making the height adjustment it is necessary to make certain that there is a clearance of approximately  $\frac{1}{8}$ " between the pickup head and the record tray. This distance may be checked between the bottom of the record tray and the bottom of the pickup when the record tray is approximately parallel with the pickup.

## 6. TO ADJUST THE STOP LEVER HOOK (22) (Fig. 1).

Always adjust the tone arm position on a 12" record before adjusting for a 10" record. Adjust the tone arm stop lever hook (22) (Fig. 1) by moving it in or out. This hook is locked in place by a set screw in the stud whose nut is shown in Fig. 1 as No. 2. This set screw is at the bottom of this stud. Adjust the hook so that it will pass through the notch in the pickup arm lever (18) (Fig. 1) without binding against the top or bottom of the notch, when in the playing position. With a 12" record on the turntable, the rubber roller (21) (Fig. 1) against the edge of the record and the stop lever hook (22) against the blade of the stop lever (18) the needle should stop on the record exactly  $\frac{3}{32}$ " from the edge of the record.

With the record changer in exactly the same position as described above, and with a 10" record on the turntable and the hook (22) (Fig. 1) against the blade, the stop lever should allow the needle to stop on the record  $\frac{3}{32}$ " from the edge of the 10" record. A 6-32 screw shown in Fig. 1 is provided for making this adjustment, simply by screwing it in or out. A check should be made for clearance between the roller and the tray, this roller should never bind on the record tray. This can be taken care of by slightly bending the tone arm stop lever (18) (Fig. 1) up or down. If it is necessary to bend the stop lever it will be necessary to re-adjust for 12" records.

## 7. THE ADJUSTMENTS OF THE RECORD MAGAZINE.

Before attempting to adjust the magazine, be sure that the center of the magazine pivot pins (6) (Fig. 1) is  $8\frac{3}{8}$ " above the base plate. This height is very important and we recommend checking the height of the right hand pin, when looking at the magazine, before any adjustments are made.

The record magazine is positioned by moving it sideways on its bearing or pivot pins. The two set screws underneath the pivot pins lock the magazine in position. Loosen these set screws, then see that the left hand side of the record reverse assembly fork (part of 4, Fig. 2) is between  $\frac{1}{32}$ " and  $\frac{1}{16}$ " inside the left hand side of the Reverse crank, when looking at the magazine. That is, the left hand edge of the record reverse fork is about  $\frac{1}{32}$ " or  $\frac{1}{16}$ " to the right of the left hand edge of the crank. After moving the magazine, lightly set up the set screws. Then with the selector arm in the "Repeat" position swing the record reverse arm around in front of the magazine, to see whether the record guide strikes either of the record support pins (55) (Fig. 2). If the guide strikes either of the support pins it will be necessary to bend the pin away from the guide so they can not strike. If it is necessary to bend either pin, set the control lever in the "Repeat" position, then raise the record tray by hand, with a 10" record on it, observing the way the record strikes the support pins, the record should hit both pins about  $\frac{1}{16}$ " from the end of the pin; if it does not it will again be necessary to adjust the pin until the record hits both pins an equal distance from the ends. If it is necessary to bend the pins, check the clearance between the record guide arms and the pins and between the arm carrying the record guide and the right hand pin. Also if the magazine has been shifted it is necessary to see that the two points, which extend down-

ward from the magazine, have ample clearance in the channels, in the record tray, which are provided for their passage. If there is possibility of the points striking it probably means the magazine has been shifted too much.

If the magazine has been adjusted, it is also necessary to see that the record separator hook (7) (Fig. 1) does not bind in the slot in the end of the record separator arm (45) (Fig. 2). If it does the section covering these parts give the adjustment.

## 8. MAGAZINE STOP SCREW.

The magazine stop screw "C," Fig. 1, should be adjusted so that the crank pin (part of 9, Fig. 1) is approximately  $\frac{1}{16}$ " from the edge of the record reverse arm fork (part of 4, Fig. 2) which is furthest from the magazine, when the record reverse guide is in front of the magazine, that is, in the reversing position.

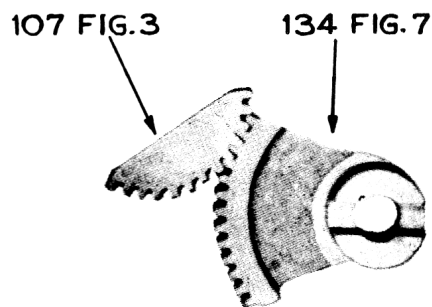
## 9. TO LOCATE AND ADJUST THE RECORD TRAY (29) (Fig. 2).

In assembling the record tray to the record changer, the first tooth of the driver quadrant (107) (Fig. 3) should mesh with the second tooth of the driven quadrant of the tray as shown.

With the two gears properly meshed, loosen the Allen set screws which hold pins No. 8, Fig. 1, in place. This will allow you to move the record tray sideways, adjust tray sideways until the turntable spindle is exactly in the center of the 10" record level of the record tray. (The 10" record level is that part of the tray where the felts No. 24 are indicated in Fig. 2.)

With the control lever in the "one side" position, run the record changer through its cycle until the large hole in the main cam is exactly half way past the upper edge of the record tray cam follower, as shown at "A," figure 1. At this position, the points of the ten-inch felts (24) (Fig. 2) should be level with the top of the turntable felt. If this tray is too low or too high, it may be adjusted to the proper level by loosening the eccentric screw (15) (Fig. 1) "B" and turning this screw until the proper level is obtained. Be sure to tighten the lock nut after adjustment.

If the tray is too high, at this position, the ten-inch records will not be centered over the turntable spindle. If the record tray is too low, the ten-inch records will slide out over the ten-inch tray shoulder and not properly center.



## 10. TO ADJUST THE VERTICAL BUMPER GUIDE (10) (Fig. 2).

This guide is located back of the magazine cross bar (33) (Fig. 2). After the records are separated from the magazine they are guided in dropping off the separator so they hit the center of the record bumpers (31) (Fig. 2). This vertical bumper guide also guides the records when the elevating hook, on the rear of the record tray lifts the record. The vertical bumper should be set back just far enough to allow a 12" record to drop onto the record bumpers freely. The



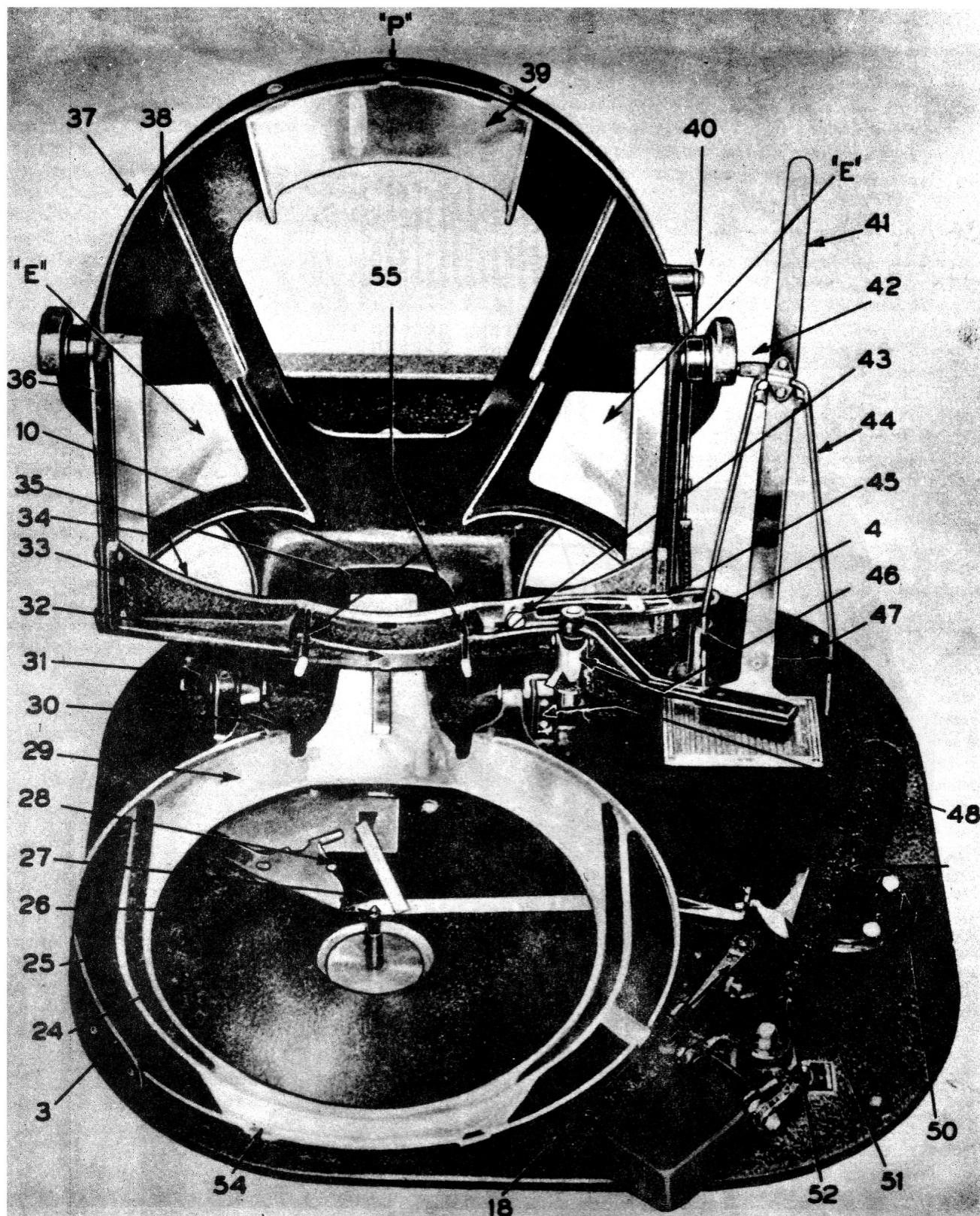
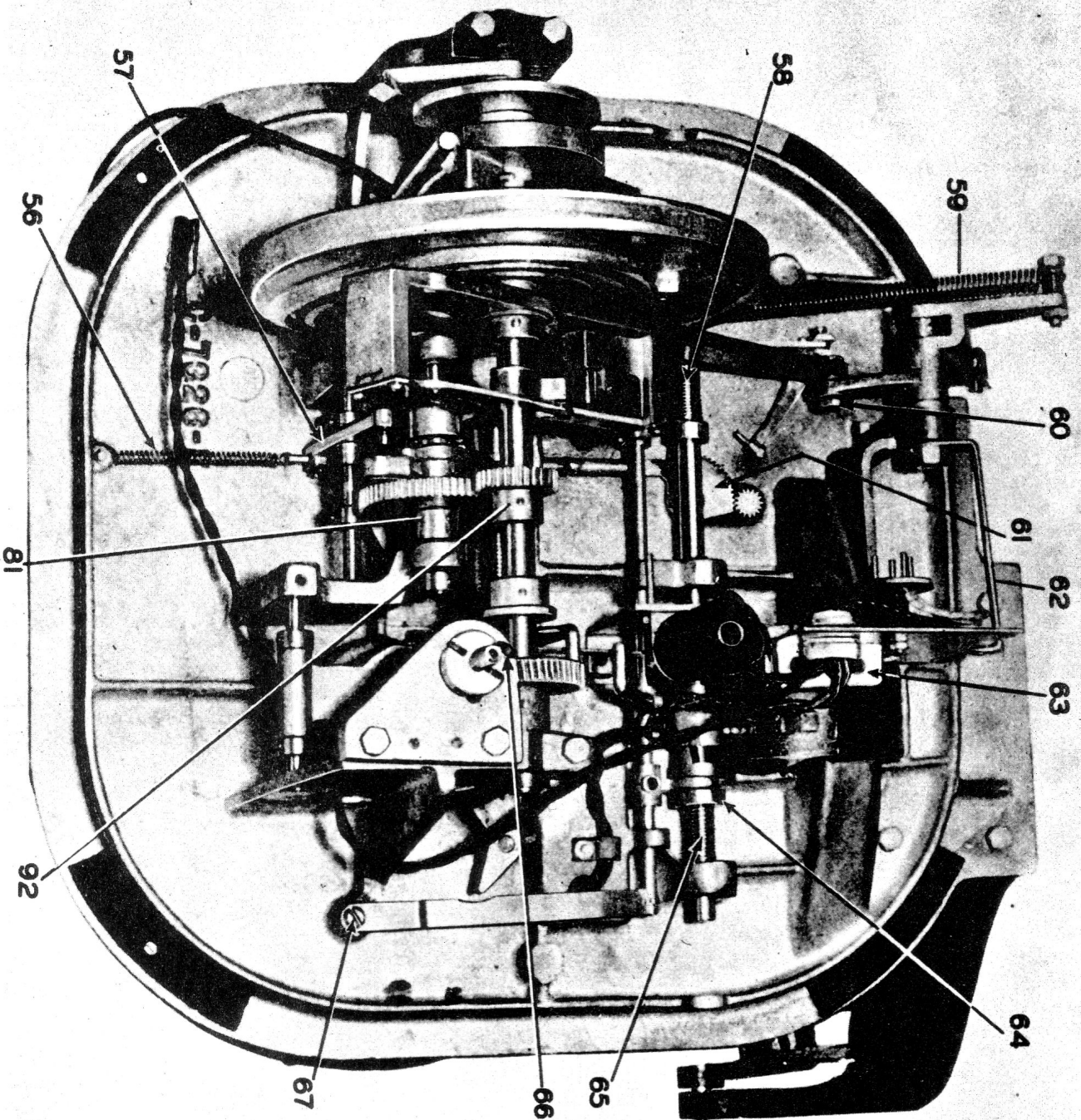


Fig. 2

| Reference No. | Stock No. | Description  |
|---------------|-----------|--|
| 3             | 38084     | Record Tray Shield Felt Outer                        |
| 4             | 38117     | Record Reverse Arm and Fork Assembly (specify color) |
| 10            | 38138     | Record Bumper Guide and Felt Assem.                  |
| 18            | 38131     | Pickup Arm Stop Lever Assembly (specify color)       |
| 24            | 38079     | Record Tray Felt—Small                               |
| 25            | 38078     | Record Tray Felt—Large                               |
| 26            | 38139     | Turntable Drive Shaft Cap                            |
| 27            | 38132     | Automatic Stop Trip Lever Assembly                   |
| 28            | 38023     | Pin—Record Control Rod                               |
| 29            | 38137     | Record Tray Assembly                                 |
| 30            | 38089     | Record Tray Bumper—Rear                              |
| 31            | 38097     | Record Bumper  |
| 32            | 38092     | Reverse Arm Bumper                                   |
| 33            | 38135     | Lower Record Support Assembly                        |
| 34            | 38081     | Lower Record Support Felt                            |
| 35            | 38082     | Record Bumper Guide Felt                             |

| Reference No. | Stock No. | Description                       |
|---------------|-----------|-----------------------------------|
| 36            | 38083     | Magazine Side Felt                |
| 37            | 38136     | Record Magazine Assembly          |
| 38            | 38080     | Record Magazine Felt              |
| 39            | 38106     | Record Support—Upper              |
| 40            | 38008     | Shoulder-Screw—Magazine Link      |
| 41            | 38126     | Record Reverse Guide Assembly     |
| 42            |           | Pin—Reverse Guide Stop            |
| 43            | 38011     | Shoulder Screw—Separator          |
| 44            | 38108     | Record Reverse Guide              |
| 45            | 38127     | Record Separator and Hub Assembly |
| 46            | 38072     | Record Reversing Arm Lock         |
| 47            | 38052     | Record Reverse Guide Spring       |
| 48            | 38074     | Record Reverse Arm Lock Stop      |
| 50            |           | Pickup Arm Base                   |
| 51            | 38071     | Automatic Stop Trip Lever, Short  |
| 52            | 38110     | Pickup Arm Casting only           |
| 54            | 38088     | Record Tray Bumper—Front          |
| 55            | 38140     | Pin—Record Support                |



| Refer-<br>ence<br>No. | Stock<br>No. | Description                          |
|-----------------------|--------------|--------------------------------------|
| 56                    | 38050        | Spring—Reverse Arm                   |
| 57                    | 38128        | Reverse Cam Arm and Roller Assembly  |
| 58                    | 38038        | Spring—Record Separator Hook Lever   |
| 59                    | 38039        | Spring—Magazine Slide Arm            |
| 60                    | 38007        | Shoulder Screw—Magazine Slide Arm    |
| 61                    | 38031        | Record Reverse Pinion Segment        |
| 62                    |              | Solenoid Plate Bracket               |
| 63                    | 38000        | Condenser—1.0 Mfd. 400-Volt (in can) |
| 64                    | 38037        | Record Repeat Sliding Clutch Cam     |
| 65                    | 38040        | Spring—Record Repeat Clutch          |
| 66                    | 38016        | Screw—Turntable Shaft Collar         |
| 67                    | 38012        | Shoulder Screw—Repeat Lever          |
| 81                    | 38121        | Record Reverse Cam Shaft Assembly    |
| 92                    |              | Gear—Reverse Cam Shaft Driver        |

Fig. 3

lower part of the vertical bumper, which extends into the record well, should extend toward the center of the well rubber bumpers far enough to make sure that the upper edges of the records fall behind the points of the upper record support (39) (Fig. 2). This adjustment is not critical. In most cases it will be found that the upper end of the vertical bumper will just clear the elevating hook on the rear of the tray. In cases where it is found that 10" records are chipping about the edges, due to bouncing against the points of the upper record support (39) (Fig. 2) it will be necessary to bend the vertical bumper (10) (Fig. 2) back at the top to a point where it just barely clears the elevating hook at the rear of the tray. It should never be bent back far enough to raise the front of the tray.

#### 11. RECORD REVERSE GUIDE (41) (Fig. 2).

With a 12" record in the magazine the record reverse guide assembly (41) (Fig. 2) should be parallel with the record when in the reversing position, in front of the magazine.

If the record reversing assembly is parallel with a 12" record as above, it should come around and lay against the reverse guide pin tubing (42) (Fig. 2), if the eccentric cam (77) (Fig. 4) is properly adjusted. This cam can be adjusted, by loosening the screw through the cam and turning it so that the record reversing assembly returns to the reverse guide pin tubing. Care should be taken when making this adjustment so that the crank pin (part of 9, Fig. 1) does not hold the reverse guide away from the pin tubing. This cam should be turned so that the reverse guide assembly just touches the pin tubing; if the cam is turned too far it will allow the reverse guide assembly to hit the pin tubing, but in the reversing position the assembly will not be able to assume a position parallel with a 12" record.

#### 12. REVERSE ASSEMBLY LINK ROD.

Loosen lock nut "H," Fig. 6, while the record changer is in the reversing position, that is, when the reversing assembly (41) (Fig. 2) is in front of the magazine. Remove the screw (79) (Fig. 4) holding the reverse segment link (80) (Fig. 4) to the reverse segment (61) (Fig. 4) and lengthen or shorten the link, by the link thread until the reversing crank (9) (Fig. 1) stands with the crank pin just barely touching, but not binding, against the front side of the fork (4) (Fig. 2). After the adjustment has been made, lock the link in place with the lock nut "H," Fig. 6.

#### 13. TO ADJUST REVERSE CAM ARM AND ROLLER ASSEMBLY (57) (Fig. 3).

See Section 7 under Instructions For Replacing a Reverse Cam.

#### 14. LATERAL LOCATION OF THE MAIN CAM SHAFT.

Both end bearings of the main cam shaft are movable, and are used to locate the cam shaft in its proper lateral position, as well as adjust the amount of end play. The main cam shaft is located laterally so that the ball in the end of the tone arm lift rod (87) (Fig. 5) travels in the exact center of the tone arm lift cam (86) (Fig. 5). As shown at "M" in Fig. 5.

#### 15. TO ADJUST THE CLUTCH THROWOUT LEVER AND CAM.

The clutch throwout lever cam is shown as No. 125 in Fig. 7 and is adjusted by loosening the shoulder screw (69) (Fig. 4) to a sliding tension after the record changer has been stopped in the playing position. The clutch throwout lever

cam should just clear the point of the turntable throwout cam (93) (Fig. 5) with the clutch disengaged. Unless clearance between the turntable throwout cam and the clutch-lever throwout cam is maintained the record changer will jam. If too much clearance is allowed the turntable throwout cam will not disengage the clutch and the record changer will continue to change records without playing them.

#### 16. TO ADJUST THE PICKUP ELEVATION.

When the tone arm swings in towards the record, the pickup arm lever hook (22) (Fig. 1) comes to rest against the pickup arm stop lever (18) (Fig. 1) and when the tone arm lowers the pickup toward the record it pauses momentarily before the pickup arm lever hook goes through the stop lever. If the record changer is stopped during this pause, it will be found that the ball in the end of the pickup arm lift shaft (87) (Fig. 5) is at the point marked "L" in Fig. 5 on the lift cam (86) (Fig. 5). Now if the pickup, with a needle in the proper position, is moved beyond the edge of the record, the point of the needle will extend below the top surface of the record a distance equal to half the thickness of the record. The correct elevation of the pickup is made by the screw in the underside of the tone arm fork against which the pickup cover rests. Loosen the locknut, adjust the screw to bring the needle to the position mentioned above, then lock the locknut.

#### 17. PICKUP FEED IN ADJUSTMENT.

The collar of the pickup arm swing lever and collar assembly (84) (Fig. 5) should ride on the leather facing of the friction cam (96) (Fig. 5) until the pickup arm lever hook (22) (Fig. 1) has engaged the stop lever (18) (Fig. 1). Then a slight amount of friction should be maintained after the ball at the end of the pickup lift arm (87) (Fig. 5) has engaged with the lift cam (86) (Fig. 5). This friction should be maintained until the needle has touched the record, otherwise the pickup arm may move away from the stop lever and the needle miss the record. If the friction be maintained too long the needle may be forced beyond the first playing groove. To adjust this, the pin locking the friction cam to the main cam shaft should be driven out and the Allen set screw loosened to a sliding tension. The cam is rotated forward, in the direction of rotation of the main cam shaft, to maintain the friction a longer time and backward to maintain it for a shorter time.

#### 18. TO ADJUST THE REVERSE CAM SHIFT LEVER (105) (Fig. 7).

This lever is moved by the record control shaft (116) (Fig. 7) and is held in position by an Allen set screw. It should be positioned on its shaft so that the record reverse cam (85) (Fig. 5) is firmly engaged with its pin (74) (Fig. 4) in the "Both Sides" position. In the "One Side" and "Repeat" positions it should have good clearance with the pin. If any adjustment of this lever is made be sure to check the setting of the Reverse Cam Arm and Roller Assembly (57) (Fig. 4) as instructed in Section 7 of the instructions on replacing a reverse cam.

#### 19. TO ADJUST THE SOLENOID MOTOR SWITCH (108) (Fig. 6).

After the switch cover has been removed the switch is exposed. The upper switch points should make good electrical contact, while the main clutch is disengaged, in this position the clearance between the bottom points should be approximately  $\frac{3}{32}$ ". While the clutch moves from the dis-



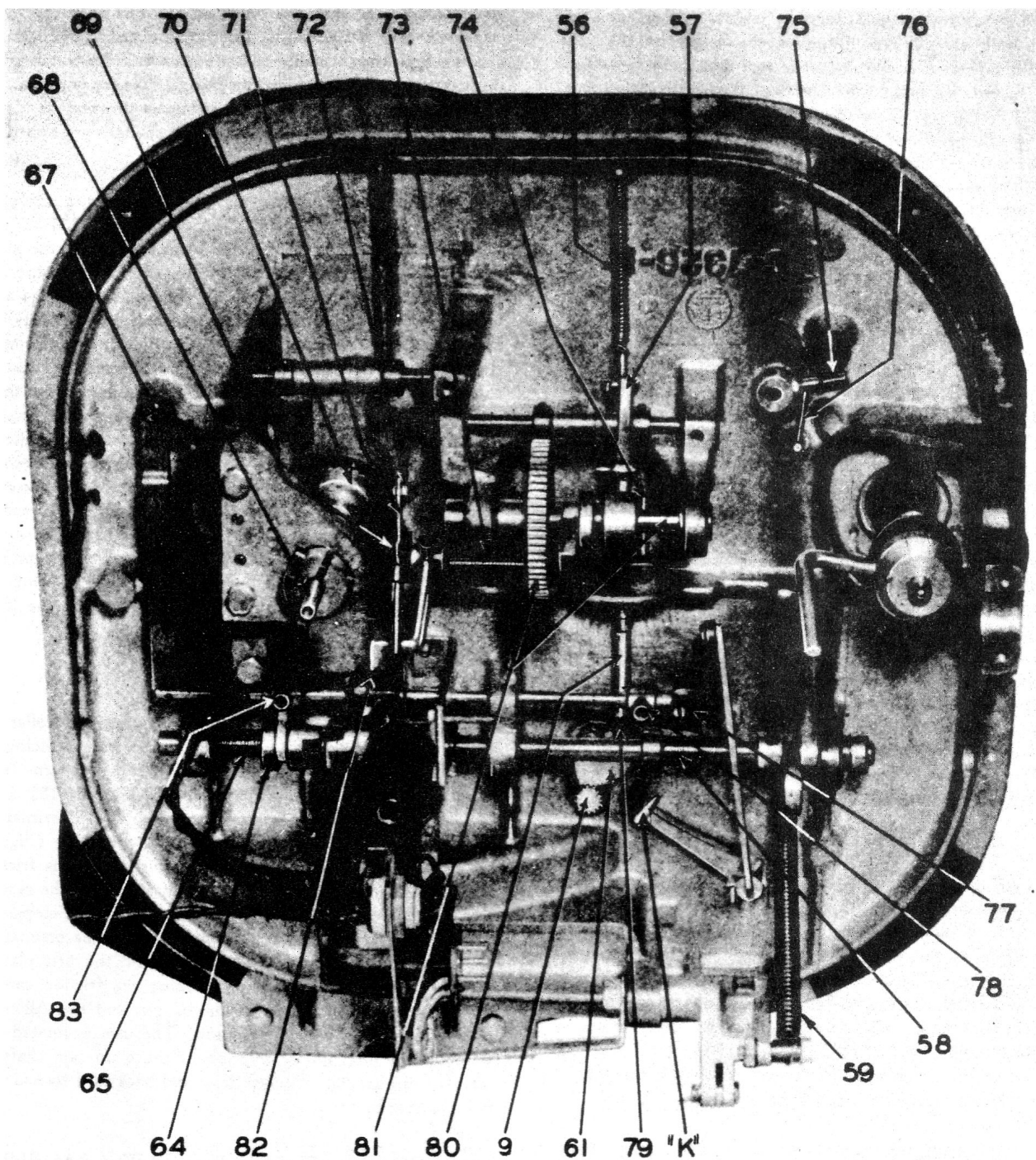


Fig. 4

| Reference No. | Stock No. | Description                         |
|---------------|-----------|-------------------------------------|
| 9             | 38119     | Reverse Pinion and Crank Assembly   |
| 56            | 38050     | Spring—Reverse Arm                  |
| 57            | 38128     | Reverse Cam Arm and Roller Assembly |
| 58            | 38038     | Spring—Record Separator Hook Lever  |
| 59            | 38039     | Spring—Magazine Slide Arm           |
| 61            | 38031     | Record Reverse Pinion Segment       |
| 64            | 38037     | Record Repeat Sliding Clutch Cam    |
| 65            | 38040     | Spring—Record Repeat Clutch         |
| 67            | 38012     | Shoulder Screw—Repeat Lever         |
| 68            |           | Turntable Drive Shaft Assembly      |
| 69            | 38015     | Screw—Clutch Throwout Cam           |
| 70            | 38124     | Worm and Bushing Assembly           |

| Reference No. | Stock No. | Description                               |
|---------------|-----------|---|
| 71            | 38130     | Clutch Throwout Lever and Spring Assembly |
| 72            | 38013     | Shoulder Screw—Clutch Throwout Lever      |
| 73            | 38043     | Spring—Record Reverse Cam Control         |
| 74            | 38022     | Pin—Reverse Cam Shaft                     |
| 75            | 38095     | Stop Lever Collar Pin Tubing              |
| 76            | 38046     | Spring—Tone Arm Lever                     |
| 77            | 38036     | Reverse Segment Stop Cam                  |
| 78            | 38101     | Record Repeat Throwout Hook Lever         |
| 79            | 38010     | Shoulder Screw—Reverse Segment Link       |
| 80            | 38021     | Pin—Short—Reverse Segment                 |
| 81            | 38121     | Record Reverse Cam Shaft Assembly         |
| 82            | 38104     | Record Repeat Lock Lever                  |
| 83            | 38102     | Record Repeat Clutch Fork Lever           |

engaged to the engaged position the upper switch points should remain closed until the lower set of points are closed. When the clutch is fully engaged the lower points should make good contact and the clearance between the upper points should be approximately  $\frac{3}{32}$ ".

To adjust the switch loosen the screw through the bakelite switch base at the rear of the switch assembly. After the position is found where proper clearance is secured, with the clutch engaged and disengaged, the switch should be locked in position with the screw.

In some machines a headless set screw is used to lock the switch in position. This screw is near the point of the tapered bakelite insulating block. Loosen this screw and adjust switch to get proper clearance then lock the switch in position by the set screw.

The two upper contacts are in series with the auto trip switch and the two lower contacts are shunted across the motor switch. When the clutch is engaged the auto trip switch is out of circuit and the motor switch is shunted by the lower contacts thus insuring the completion of the change cycle even though the instrument is switched to radio or turned off.

## 20. CLUTCH CLEARANCE.

The clearance between the driven (70) (Fig. 5) and driving (99) (Fig. 5) members of the clutch should be approximately .020" (Twenty thousandths), and is adjusted by loosening screw "N" Fig. 7 to a sliding tension and adjusting the clutch fork (121) (Fig. 7) and the solenoid to clutch lever and pin assembly until the proper clearance is obtained. After adjustment is made lock the screw "N," Fig. 6.

## 21. TO ADJUST SOLENOID WEDGE SPRING.

This phosphor bronze spring is located on one of the three spacers used to mount the solenoid plate bracket to the solenoid bracket. It is used to prevent clutch chatter or bounce when the clutch engages. The only adjustment is to bend the spring to a snug fit with a long screw driver so as to increase or decrease its pressure on the solenoid to clutch lever (118) (Fig. 7).

## 22. TO ADJUST THE RECORD REPEAT LOCK LEVER (82) (Fig. 7).

The purpose of this lever is to prevent accidental shifting of the Selector Arm while the instrument is not in the playing position. In the "Repeat" position this lever is on the side of the Solenoid to Clutch Lever (118) (Fig. 7) away from the main cam. In the "One Side" and "Both Sides" positions it is on the main cam side of the solenoid to clutch lever. With the tone arm in the playing position (Main Clutch Disengaged) this lock lever should clear the solenoid to clutch lever by approximately  $\frac{3}{16}$ " when moved under it.

## 23. TO ADJUST THE REVERSE CAM LOCK LEVER (115) (Fig. 7).

This lever should be on the main cam side of the solenoid to clutch lever when in the "Both Sides" position. And on the opposite side when in the "One Side" and "Repeat" positions. With the main clutch disengaged the lock lever should clear the solenoid to clutch lever by approximately  $\frac{1}{16}$ " when moving under it.

## 24. TO ADJUST RECORD REPEAT THROW-OUT LEVER (119) (Fig. 7).

No adjustment of this part is necessary.

## 25. TO ADJUST RECORD REPEAT CLUTCH LEVER (83) (Fig. 7).

The adjustment of this lever is made by loosening the Allen set screw to a sliding tension then moving the part along the shaft. The sliding clutch should engage in the "One Side" and "Both Sides" positions, but should be disengaged in the "Repeat" position. The fork of this lever should not bind the sliding clutch in either the "Repeat" or "Both Sides" position.

## 26. TO ADJUST THE STOP TRIP SWITCH (137) (Fig. 8).

This switch is accessible by removing the turntable, which will expose the switch cover. To remove the switch cover it is necessary to remove the trip arm, which goes through the switch cover and the two flat head screws which hold the cover in place. The clearance between the contact points on the fixed and movable arms of the switch should be  $\frac{1}{32}$ ". After replacing the trip arm (27) (Fig. 8) in the switch, after the switch cover has been removed, set the turntable on the spindle, push stop trip arm (142) (Fig. 8) slowly about  $\frac{1}{4}$ " toward the magazine and then turn the turntable through one complete revolution. This will insure the fibre cam, on the turntable, resetting the trip switch, the clearance between the trip arm and the moveable arm of the switch should be  $\frac{1}{32}$ ". The distance between the trip arm and the switch trip guard finger should also be  $\frac{1}{32}$ ".

To adjust the clearance between the trip arm hook (27) (Fig. 8) and the moveable switch arm, loosen the screw in the bakelite switch base, at the end nearest the tone arm. Move the switch until  $\frac{1}{32}$ " clearance is secured between the trip arm hook and the moveable arm of the switch, then tighten the screw holding the switch. In making this adjustment be sure that the stationary arm of the switch is not bent when tightening this screw.

On some models a headless set screw, near the end of the coil spring, is used to lock the switch in position; loosen this screw, adjust the switch, then tighten the set screw.

## 27. TO ADJUST THE FRICTION JOINT OF AUTOMATIC TRIP SWITCH.

The amount of friction necessary in the friction joint between the auto stop trip lever—long (27) (Fig. 8) and the auto stop trip lever—short (142) (Fig. 8) should be just sufficient to close the automatic stop trip switch (137) (Fig. 8). The friction is regulated by adjusting the screw which tightens the flat spring (141) (Fig. 8). If the tension is too great the instrument may trip before finishing a record, if not enough tension is had the instrument will not change records when the needle hits the automatic change groove.

## 28. INSTRUCTIONS FOR REPLACING THE RECORD REVERSE CAM AND ITS ADJUSTMENTS.

1. Set record changer in the playing position. Carefully mark the drive gear (92) (Fig. 3) on the main shaft and the driven gear as shown 81, Fig. 3, by prick punch marks or scriber, so that the same teeth can be engaged after re-assembly, thus insuring proper timing.

2. Remove the two bolts, one (60) (Fig. 3) securing the magazine slide and roller assembly to the magazine slide arm lever, and one (15) (Fig. 1) securing the record slide arm and stud assembly to the record tray drive crank.

3. Looking in from the rear of the instrument, remove the Durex bushing from the end of the main cam shaft, nearest the motor drive shaft. This is accomplished by loosening the bolt to the right of the main shaft. Care should be

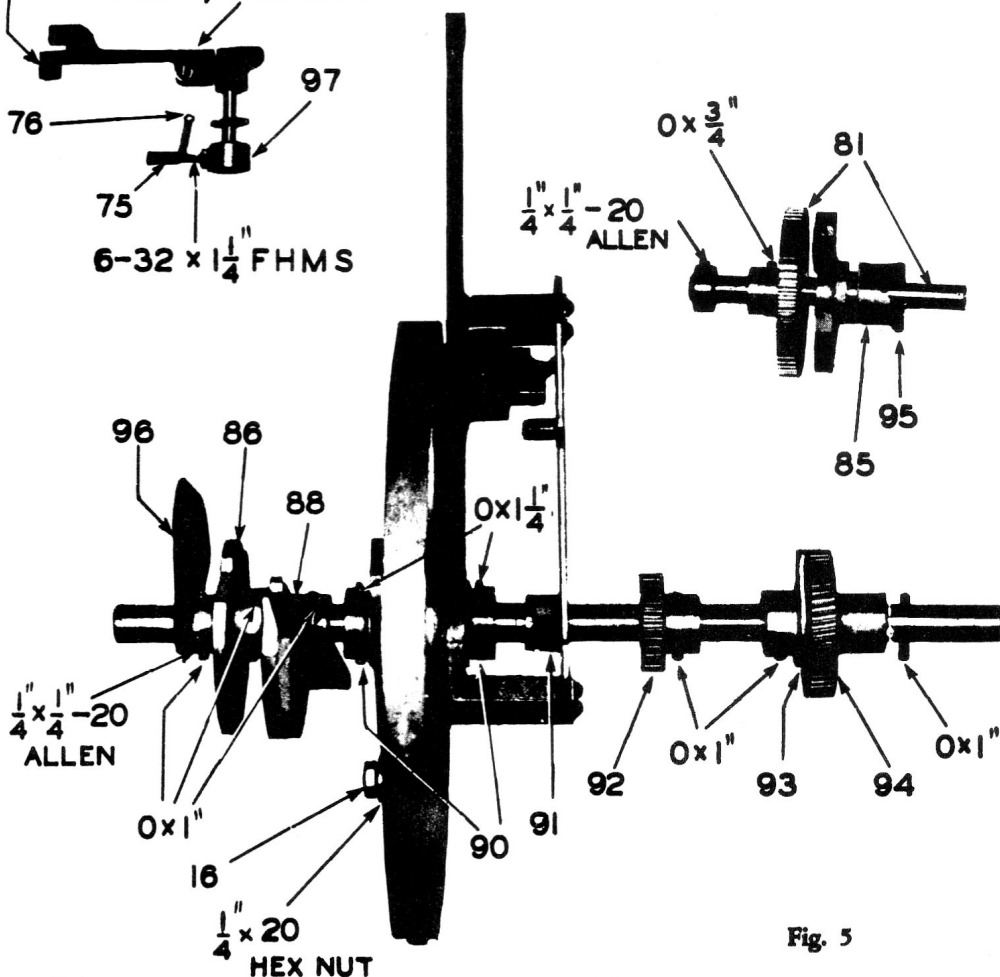
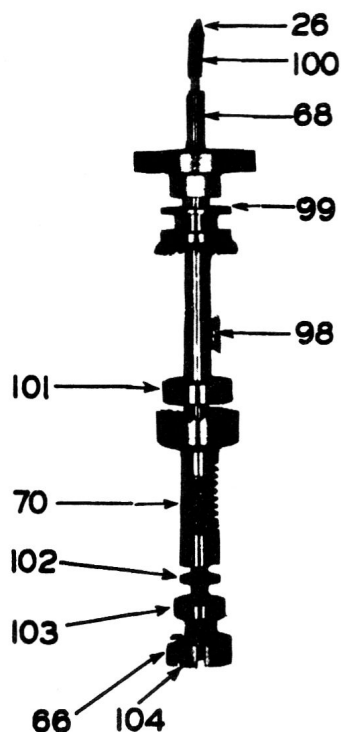
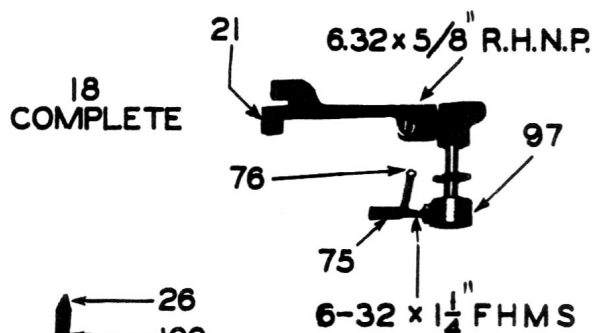
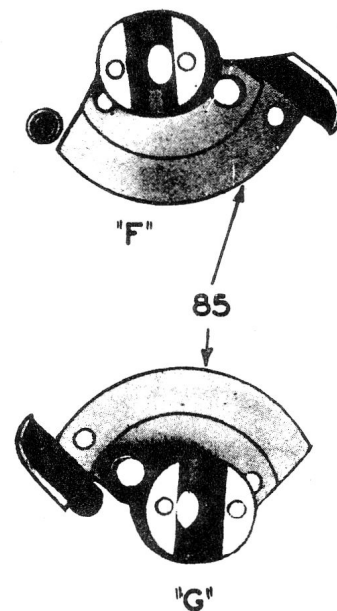
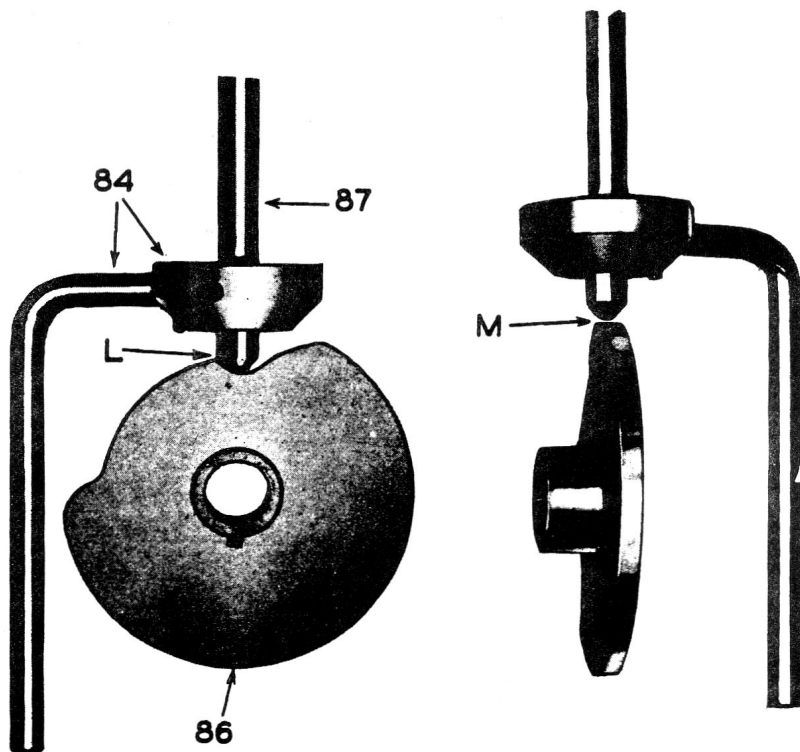


Fig. 5

| Reference No. | Stock No. | Description                  |
|---------------|-----------|------------------------------|
| 16            | 88024     | Pin—Record Tray Slide        |
| 18            | 88181     | Pickup Arm Stop Lever        |
| 21            | 88094     | Stop Lever Roller Tubing     |
| 26            | 88189     | Turntable Driveshaft Cap     |
| 66            | 88016     | Screw—Turntable Shaft Collar |
| 68            |           | Turntable Shaft Assembly     |
| 70            | 88124     | Worm and Bushing Assembly    |
| 74            | 88022     | Pin—Reverse Cam Shaft        |
| 75            | 88095     | Stop Lever Collar Pin Tubing |
| 76            | 88046     | Spring—Tone Arm Stop Lever   |

| Reference No. | Stock No. | Description                             |
|---------------|-----------|---|
| 81            | 88121     | Record Reverse Cam Shaft Assembly       |
| 86            |           | Pickup Swing Lever and Collar Assembly  |
| 88            | 88128     | Record Reverse Cam and Pin              |
| 96            |           | Pickup Lift Cam and Hub Assembly        |
| 97            |           | Pickup Arm Lift Shaft                   |
| 98            |           | Pickup Arm Swing Cam                    |
| 99            |           | Main Cam Collar                         |
| 100           |           | Magazine Slide Arm Cam                  |
| 101           |           | Gear—Reverse Cam Shaft Driver           |
| 102           |           | Turntable Throwout Cam and Hub Assembly |

| Reference No. | Stock No. | Description                      |
|---------------|-----------|----------------------------------|
| 94            | 88080     | Gear—Main Drive                  |
| 96            |           | Pickup Arm Friction Cam Assembly |
| 97            |           | Pickup Arm Stop Lever Collar     |
| 98            | 88162     | No. 2 Woodruff Key               |
| 99            | 88084     | Turntable Shaft Clutch           |
| 100           |           | Turntable Driveshaft Cap Tubing  |
| 101           | 88083     | Ball Bearing—Upper               |
| 102           | 88060     | Thrust Washer—Worm Shaft         |
| 108           | 88082     | Ball Bearing—Lower               |
| 104           | 88064     | Turntable Shaft Collar           |



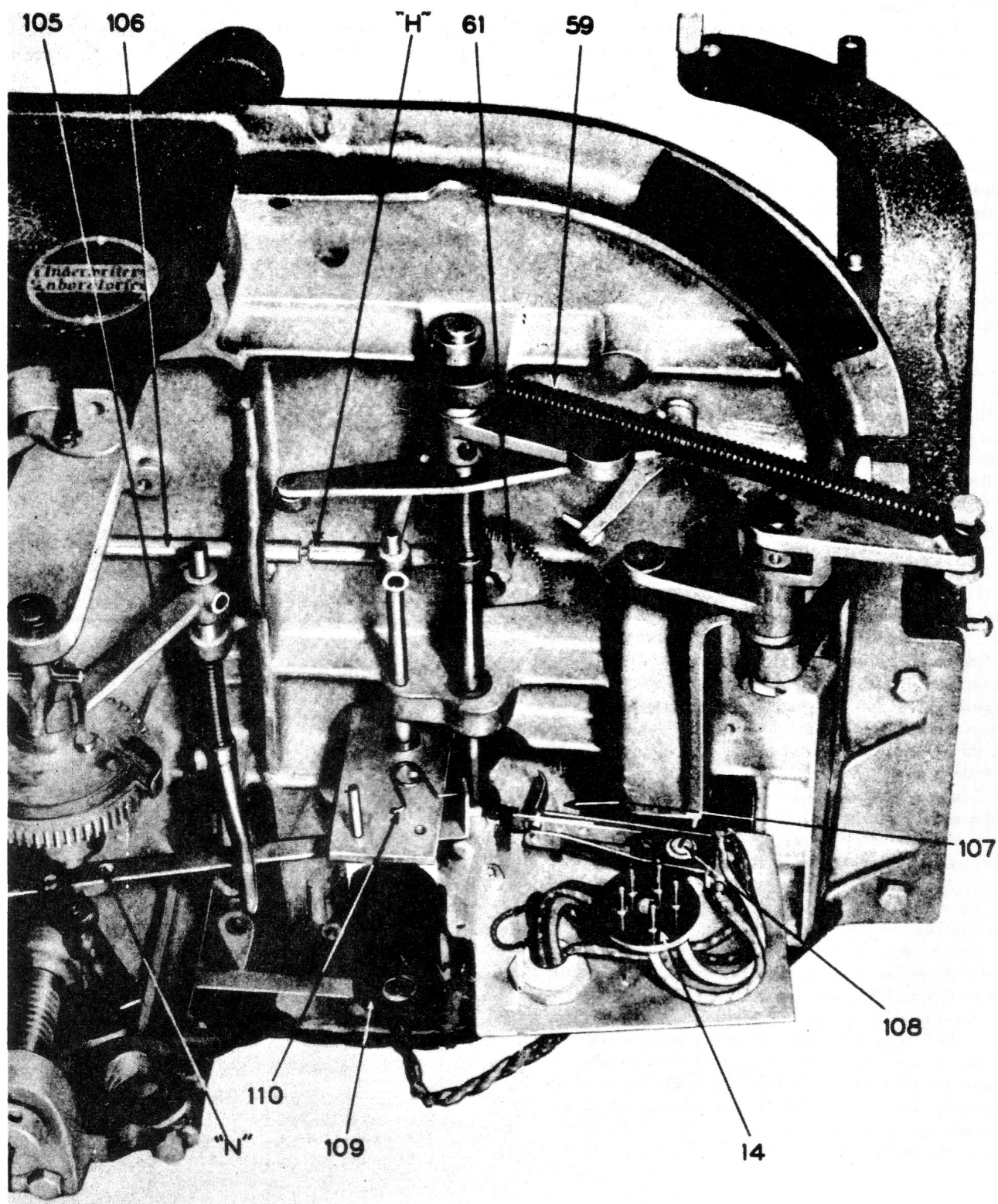


Fig. 6

| Reference No. | Stock No. | Description                        |
|---------------|-----------|------------------------------------|
| 14            | 38113     | Chassis Plug 5 Prong Male          |
| 59            | 38039     | Spring—Magazine Slide Arm          |
| 61            | 38031     | Record Reverse Pinion Segment      |
| 105           | 38100     | Record Reverse Cam Shaft Lever     |
| 106           | 38020     | Pin—Long, Reverse Segment          |
| 107           | 38111     | Record Tray Gear—Driver            |
| 108           | 38003     | Switch Assembly—Solenoid and Motor |
| 109           | 38141     | Solenoid Coil only                 |
| 110           | 38047     | Spring—Solenoid Lever Torsion      |

taken when replacing this bushing so as not to tighten the bolt enough to crush the bushing; a snug fit only is required.

4. Remove lower half of bearing and Durex bushing from the other end of the main cam shaft and work the cam shaft out of the record changer. The same precaution against crushing this bushing should be taken with this one as with the one in the preceding section.

5. Remove taper pin from gear and loosen set screw in the collar, both shown as 81 in Fig. 4, of the reverse cam shaft assembly, as well as the pin (74) (Fig. 5) over which the reverse cam forks, when in the reversing position. After removing the collar and sliding the gear to one side, file all burrs from the edges of the holes in the reverse cam shaft. Slide the shaft through its Durex bushing toward the rear of the instrument far enough to allow the removal and replacement of the reverse cam (85) (Fig. 5).

6. Reassemble the reverse cam shaft assembly, making certain that the taper pin holes in the shaft and gear are correctly aligned to permit the taper pins being properly inserted. The set screw in the collar at the end of the shaft should be properly tightened.

7. Remove the reverse cam arm and roller assembly (57) (Fig. 4) and make sure that the roller pin and arm are not bent, if either of these items are found bent we suggest that you replace the reverse arm and roller assembly.

8. In reassembling the reverse cam arm and roller assembly (57) (Fig. 4) in its proper position for alignment with the reverse cam, be sure the roller is about  $\frac{1}{32}$ " inside the ridge on the reverse cam, when the cam is in the reversing position.

9. Remove the taper pin from the gear (92) (Fig. 5) on the main shaft, which drives the gear on the reverse cam shaft assembly (81) Fig. 5) and remount the main shaft to the record changer chassis, pushing the above gear, from which the pin was removed, to one side so that it will not mesh with its driven gear.

10. Locate the main shaft so that the lower end of the pickup arm lift shaft travels in the center of the pickup arm lift cam, as shown at "M" in Fig. 5. With the main shaft in this position, adjust the main shaft Durex bushings so that there is no end play in the main cam shaft assembly.

11. Rotate the main cam shaft to the playing position so that the pickup arm is lowered over the turntable.

12. Set the reverse cam in its lowest position, with the control lever in the "Both Sides" position, so that the fork of the reverse cam is meshed with the driving pin.

13. Mesh the reverse cam assembly driver gear (92) (Fig. 5) with the reverse cam assembly driven gear so that the identifying punch marks correspond to the original position. The taper pin for the driver gear should be inserted next. If the assembly has been properly made there should be approximately  $\frac{1}{32}$ " clearance between the roller or the reverse cam arm and the reverse cam. See "F," Fig. 5.

14. Throw the control lever to the "One Side" position and rotate the reverse cam with the fingers until it is in the reversing position. Again throw the control lever to the "Both Sides" position. Now there should be approximately  $\frac{1}{32}$ " clearance between the reverse cam and the roller. See "G," Fig. 5. If the clearance is not approximately  $\frac{1}{32}$ " for both positions of the reverse cam it indicates either the gears are not properly meshed or the reverse segment link rod may be bent. A careful check of the latter while the main shaft is out will save time and trouble later.

## 29. INSTRUCTIONS FOR REMOVING THE AUTOMATIC MECHANISM FROM THE CABINET.

In most cases, any repairs and adjustments on this mechanism can be made with the mechanism in the cabinet. If

it is necessary to remove the mechanism for any reason, it is recommended that the following procedure be observed, and that two persons take part in the removal. Make sure the mechanism is not in cycle.

1. There is a great possibility, when removing the chassis from the cabinet, to mar or scratch the cabinet. If you will place a piece of cardboard around the record changer it will eliminate, to a great extent, the possibility of marring the finish. A rubber auto mat, with a hole for the record changer, the same size as the one in the cabinet makes an excellent pad. This pad can be split and is easily put in position and removed. Pad the sides of the cabinet with pieces of cardboard.

2. Remove the backs from the record changer, and amplifier compartments.

3. Remove the five prong socket cable from the solenoid assembly, remove the pickup lead from the terminal board, and free the shielded lead going to the shorting switch.

4. Remove the four bolts that hold mechanism to the shelf.

5. Loosen the two Allen set screws in the flexible coupling and allow it to slide down the drive shaft, so as to clear the record changer shaft.

6. Remove the screw marked "P" in Fig. 2. This is the middle of the screws of the upper record support.

7. Remove the magazine link shoulder screw No. 40 Fig. 2. This will allow the magazine to be swung parallel to the turntable, and take up less room.

8. Remove the pickup arm assembly by removing the three screws in the pickup arm base, swinging the pickup arm to the back of the mechanism and working the bottom of the pickup assembly out of the hole.

9. Carefully mark the drive gear (92) (Fig. 3) on the main shaft and the driven gear shown as part of 81, Fig. 3, by prick punch marks or scriber, so that the same teeth can be engaged after reassembly, thus insuring proper timing.

10. Remove the two bolts, one (60) (Fig. 3) securing the magazine slide and roller assembly to the magazine slide arm lever, and one (15) (Fig. 1) securing the record slide arm and stud assembly to the record tray drive crank.

11. Looking in from the rear of the instrument, remove the Durex bushing from the end of the main cam shaft, nearest the motor drive shaft. This is accomplished by loosening the bolt to the right of the main shaft. Care should be taken when replacing this bushing so as not to tighten the bolt enough to crush the bushing; a snug fit only is required.

12. Remove lower half of bearing and Durex bushing from the other end of the main cam shaft and work the cam shaft out of the record changer. The same precaution against crushing the bushing should be taken as stated, in the preceding section.

13. From the rear of the cabinet, lift the mechanism straight up, and carry it straight back until the rear bearing bracket of the main shaft has cleared the shelf; then rotate the mechanism 90°, turning it so that the record magazine comes toward the back of the cabinet until the record magazine is clear of the cabinet. Then drop the record magazine end of the mechanism slightly so that the drive shaft will clear the bottom shelf, and remove the mechanism.

**To Replace Mechanism:**—1. Replace mechanism by reversing procedure of step 13 above.

2. Replace the main cam shaft and its bushings, but do not tighten the bushings in place. Make sure that the gears marked in (9) above are meshing properly as marked. Make sure the throw-out cam 71 Fig. 4 is resting on top of the main shaft.



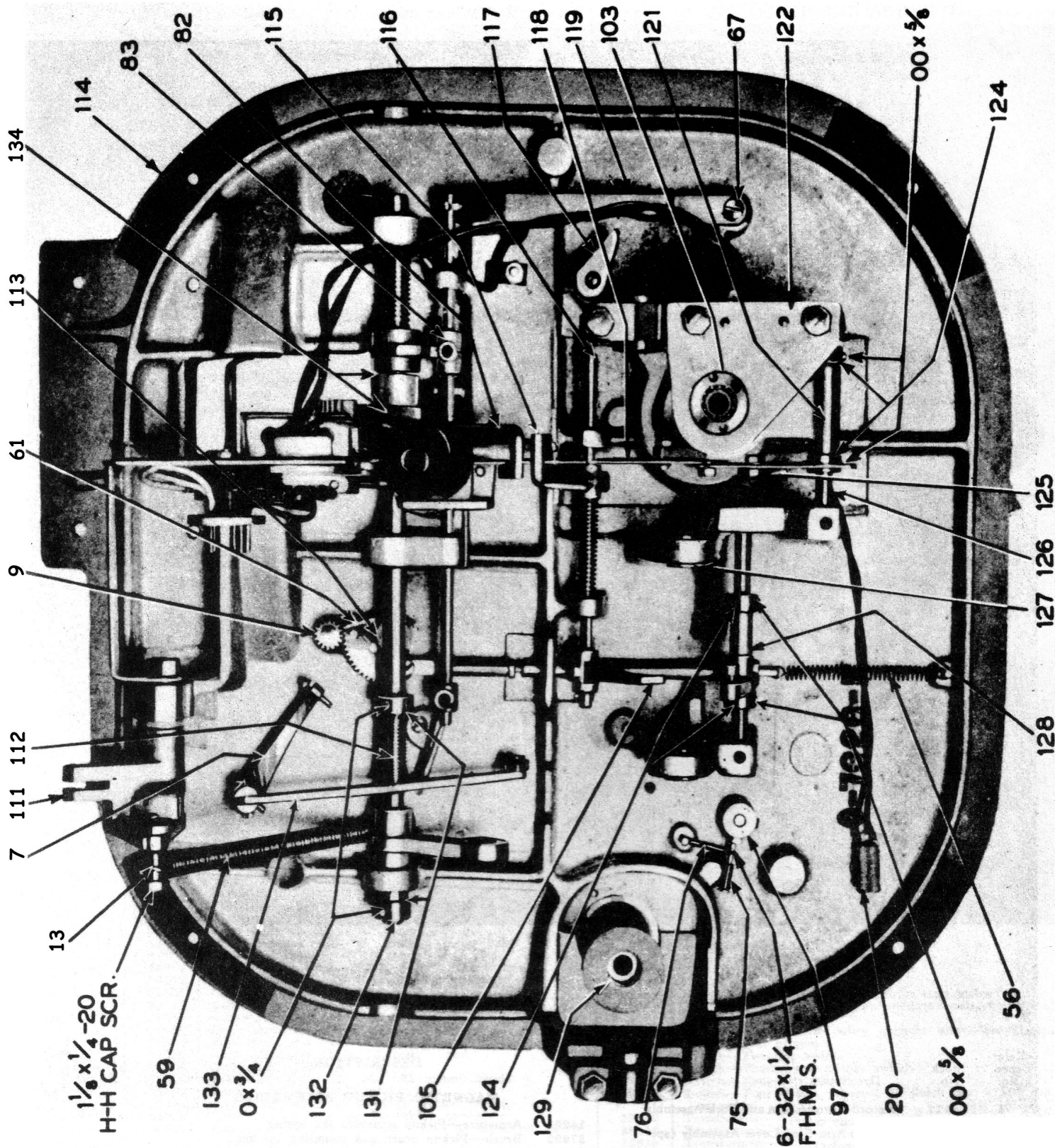


Fig. 7

| Reference No. | Stock No. | Description                               |
|---------------|-----------|---|
| 7             | 38116     | Separator Hook and Arm Assembly           |
| 9             | 38119     | Reverse Finion and Crank Assembly         |
| 13            | 38057     | Record Magazine Bushing                   |
| 20            | 38051     | A.C. Line Toggle Switch                   |
| 56            | 38050     | Reverse Arm Spring                        |
| 59            | 38039     | Magazine Slide Arm Spring                 |
| 61            | 38031     | Record Reverse Finion Segment             |
| 67            | 38012     | Repeat Lever Shoulder Screw               |
| 75            | 38095     | Stop Lever Collar Pin                     |
| 76            | 38044     | Tone Arm Stop Lever Spring                |
| 82            | 38044     | Record Repeat Lock Lever                  |
| 83            | 38102     | Record Repeat Clutch Fork Lever           |
| 97            |           | Pickup Arm Stop Lever Collar              |
| 103           | 38032     | Ball Bearing                              |
| 105           | 38100     | Record Reverse Cam Shaft Lever            |
| 111           | 38045     | Magazine Slide Arm Lever                  |
| 112           | 38009     | Separator Hook Spring                     |
| 113           | 38009     | Reverse Segment Shoulder Screw            |
| 114           | 38098     | Main Frame Pad                            |
| 115           | 38153     | 0x4 Taper Pin                             |
| 116           | 38154     | 0x4 Taper Pin                             |
| 117           | 38105     | Reverse Cam Lock Lever                    |
| 118           | 38120     | Record Control Shaft                      |
| 119           | 38129     | Record Control Lever and Stud Assembly    |
| 121           | 38073     | Solenoid to Clutch Lever and Pin Assembly |
| 122           | 38103     | Record Repeat Throwout Lever              |
| 124           | 38066     | Main Clutch Fork Lever                    |
| 125           | 38083     | Bearing Retainer Plug                     |
| 126           | 38107     | 5/16" Shaft Collar                        |
| 127           | 38115     | Clutch Throwout Cam                       |
| 128           | 38115     | Solenoid Lever Shaft Assem.               |
| 129           | 38114     | Record Tray Shaft Bushing                 |
| 131           | 38090     | Record Reverse Arm Shaft Assem.           |
| 132           | 38092     | Pickup Arm Brake Facing                   |
| 133           | 38092     | 7/16" Shaft Collar                        |
| 134           | 38144     | Record Tray Drive Shaft Assembly          |
| 138           | 38144     | Separator Hook Lever and Roller Assembly  |
| 144           | 38122     | Record Tray Gear and Sliding Cam Clutch   |



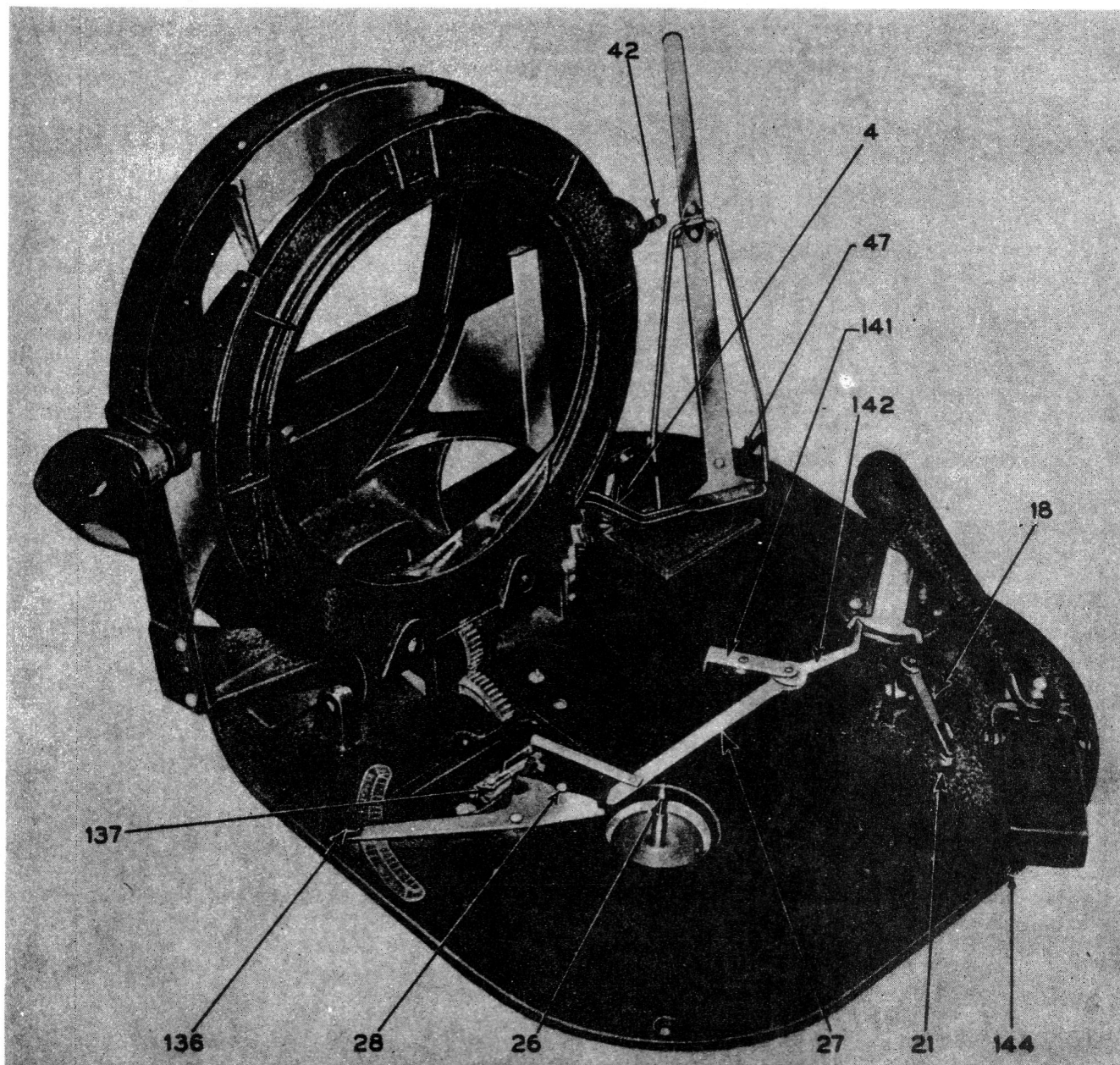


Fig. 8

| Reference No.                     | Stock No. | Description  | STOCK No. | DESCRIPTION  |
|-----------------------------------|-----------|--|-----------|--|
| <b>MAGNETIC PICKUP ASSEMBLIES</b> |           |  |           |  |
| 4                                 | 38117     | Record Reverse Arm and Fork Assembly (specify color) | 14291     | Armature—Pickup armature and spring                            |
| 18                                | 38131     | Pickup Arm Stop Lever Assembly (specify color)       | 37292     | Brush—Pickup brush and mounting bracket                        |
| 21                                | 38094     | Stop Lever Roller Tubing                             | 14672     | Coil—Pickup coil and support assembly                          |
| 26                                | 38139     | Turntable Drive Shaft Cap                            | 14292     | Damper—Pickup armature damper block                            |
| 27                                | 38132     | Automatic Stop Trip Lever Assembly                   | 37293     | Housing—Finished pickup housing only—less mechanism and cover  |
| 28                                | 38023     | Pin—Record Control Rod                               | 37291     | Mechanism—Magnetic pickup unit only—less housing and brush     |
| 42                                | 38052     | Pin—Reverse Guide Stop                               | 3811      | Screw—Pickup needle screw                                      |
| 47                                | 38052     | Record Reverse Guide Spring                          | 37294     | Terminal—Pickup connector block with set screws and mtg. screw |
| 136                               | 38004     | Selector Knob  | 37286     | Pivot—Pickup unit pivot screw and locknut                      |
| 137                               | 38004     | Record Trip Switch Assembly—complete                 | 37287     | Bearing—Pickup unit pivot bearing                              |
| 141                               | 38048     | Spring—Automatic Trip Lever Pin                      |           |  |
| 142                               | 38071     | Automatic Stop Trip Lever—Short                      |           |  |
| 144                               | 37292     | Pickup Brush Assembly                                |           |  |

Note: Additional Parts List Not Shown in Figs. 1 to 8, will be found on page 28.

3. Replace the pickup arm assembly. Locate the main shaft so that the lower end of the pickup arm lift shaft travels in the center of the pickup arm lift cam, as shown at "M" in Fig. 5. With the main shaft in this position, adjust the main shaft Durex bushings so that there is no end play in the main cam shaft assembly.

4. Replace the two bolts removed in (4) (6) (7) and (10) above.

5. Adjust the position of the record tray as described under: "9. TO LOCATE AND ADJUST THE RECORD TRAY", by adjusting screw 15 (Fig. 1).

6. Turn the drive shaft or turntable with the fingers and put the mechanism thru a cycle to see that it is working correctly.

7. Replace the flexible coupling on drive shaft and replace connections to record changer.

## Replacement Parts

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

| STOCK No.                 | DESCRIPTION  | STOCK No. | DESCRIPTION  |
|---------------------------|--|-----------|--|
| <b>CHASSIS ASSEMBLIES</b> |  |           |  |
| 37206                     | Arm—Trip arm used on high frequency tone control   | 37212     | Gear—Gear and hub used on Stock No. 37196 tone control shaft                                       |
| 35642                     | Calibrator—Drive drum calibrator scale   | 37211     | Hub—Microphone volume control shaft bracket and hub  |
| 12714                     | Capacitor—Air trimmer—medium 2-12 mmfd.  | 37882     | Jack—Double circuit phone jack   |
| 36631                     | Capacitor—Mica trimmer comprising 3 sections of 2-20 mmfd. each, 1 section of 5-50 mmfd. and 1 section of 3-30 mmfd.                       | 37609     | Lever—Arm and lever for tone control switch  |
| 36630                     | Capacitor—Mica trimmer comprising 5 sections of 3-30 mmfd. each  | 37207     | Link—Link assembly actuated by Stock No. 37206 trip arm  |
| 35646                     | Capacitor—6 mmfd.  | 37192     | Plug—6-prong male plug for power supply cable  |
| 33381                     | Capacitor—8.2 mmfd.  | 14404     | Plug—7-prong male plug for power supply cable  |
| 36636                     | Capacitor—Mica trimmer—1 section 8-80 mmfd.  | 31048     | Plug—Single prong phono input cable plug   |
| 13200                     | Capacitor—10 mmfd., moulded mica   | 35630     | Pulley—Drive cord pulley   |
| 37621                     | Capacitor—10 mmfd., silvered mica  | 36842     | Resistor—5 ohms, 1 watt  |
| 33380                     | Capacitor—12 mmfd., ceramic  | 37622     | Resistor—6 ohms, 1 watt  |
| 37618                     | Capacitor—12 mmfd., silvered mica  | 37204     | Resistor—Voltage divider comprising a 137-100-37-500 and 2,000 ohm section                         |
| 13141                     | Capacitor—47 mmfd., moulded mica   | 5201      | Resistor—220 ohms, $\frac{1}{2}$ watt  |
| 33102                     | Capacitor—47 mmfd., ceramic  | 34766     | Resistor—1,000 ohms, $\frac{1}{2}$ watt  |
| 37329                     | Capacitor—47 mmfd., silvered mica  | 14499     | Resistor—1,500 ohms, $\frac{1}{2}$ watt  |
| 12723                     | Capacitor—56 mmfd., moulded mica   | 30654     | Resistor—1,500 ohms, $\frac{1}{2}$ watt  |
| 36843                     | Capacitor—56 mmfd., ceramic  | 34767     | Resistor—2,200 ohms, $\frac{1}{2}$ watt  |
| 37619                     | Capacitor—56 mmfd., silvered mica  | 30128     | Resistor—12,000 ohms, $\frac{1}{2}$ watt   |
| 12720                     | Capacitor—100 mmfd.  | 36714     | Resistor—15,000 ohms, $\frac{1}{2}$ watt   |
| 12724                     | Capacitor—120 mmfd., moulded mica  | 5114      | Resistor—15,000 ohms, 1 watt   |
| 31813                     | Capacitor—120 mmfd., mica  | 3219      | Resistor—18,000 ohms, $\frac{1}{2}$ watt   |
| 37620                     | Capacitor—200 mmfd.  | 13998     | Resistor—22,000 ohms, $\frac{1}{2}$ watt   |
| 12694                     | Capacitor—220 mmfd., moulded mica  | 12738     | Resistor—27,000 ohms, $\frac{1}{2}$ watt   |
| 36616                     | Capacitor—220 mmfd., mica  | 12454     | Resistor—33,000 ohms, $\frac{1}{2}$ watt   |
| 30964                     | Capacitor—330 mmfd., mica  | 12412     | Resistor—47,000 ohms, $\frac{1}{2}$ watt   |
| 13894                     | Capacitor—390 mmfd.  | 30787     | Resistor—47,000 ohms, $\frac{1}{2}$ watt   |
| 33235                     | Capacitor—580 mmfd.  | 30650     | Resistor—56,000 ohms, $\frac{1}{2}$ watt   |
| 12536                     | Capacitor—820 mmfd.  | 13715     | Resistor—68,000 ohms, $\frac{1}{2}$ watt   |
| 37617                     | Capacitor—1,000 mmfd.  | 14023     | Resistor—82,000 ohms, $\frac{1}{2}$ watt   |
| 30057                     | Capacitor—2,700 mmfd.  | 14560     | Resistor—100,000 ohms, $\frac{1}{2}$ watt  |
| 30851                     | Capacitor—.0035 mfd.   | 3252      | Resistor—100,000 ohms, $\frac{1}{2}$ watt  |
| 30852                     | Capacitor—.005 mfd., 500 volts   | 13734     | Resistor—120,000 ohms, $\frac{1}{2}$ watt  |
| 5242                      | Capacitor—.005 mfd., 1,000 volts   | 30493     | Resistor—150,000 ohms, $\frac{1}{2}$ watt  |
| 30854                     | Capacitor—.007 mfd.  | 12199     | Resistor—270,000 ohms, $\frac{1}{2}$ watt  |
| 30855                     | Capacitor—.01 mfd.   | 14983     | Resistor—330,000 ohms, $\frac{1}{2}$ watt  |
| 30859                     | Capacitor—.025 mfd.  | 30784     | Resistor—330,000 ohms, $\frac{1}{2}$ watt  |
| 30857                     | Capacitor—.035 mfd.  | 30648     | Resistor—470,000 ohms, $\frac{1}{2}$ watt  |
| 30847                     | Capacitor—.05 mfd.   | 12413     | Resistor—680,000 ohms, $\frac{1}{2}$ watt  |
| 30858                     | Capacitor—.07 mfd.   | 30562     | Resistor—680,000 ohms, $\frac{1}{2}$ watt  |
| 30848                     | Capacitor—.1 mfd.  | 12013     | Resistor—1 meg., $\frac{1}{10}$ watt   |
| 12741                     | Capacitor—.5 mfd.  | 13730     | Resistor—1 meg., $\frac{1}{2}$ watt  |
| 32342                     | Capacitor—Electrolytic, comprising 2 sections of 10 mfd., 450 volts  | 30208     | Resistor—1.2 meg., $\frac{1}{2}$ watt  |
| 35017                     | Capacitor—Electrolytic, comprising 1 section of 30 mfd., 350 volts, and 1 section of 20 mfd., 150 volts                                    | 31449     | Resistor—1.5 meg., $\frac{1}{2}$ watt  |
| 37210                     | Clip—Spring clip for volume control shaft  | 12679     | Resistor—2.2 meg., $\frac{1}{2}$ watt  |
| 34649                     | Coil—Antenna coil—"A" band   | 13167     | Resistor—3.9 meg., $\frac{1}{2}$ watt  |
| 34647                     | Coil—Antenna coil—"B" and 31 meter band  | 30992     | Resistor—10 meg., $\frac{1}{2}$ watt   |
| 32823                     | Coil—Antenna coil—"X" band   | 14350     | Screw—No. 8-32 square head set screw   |
| 36629                     | Coil—Antenna coil—"25-19-16-13" meter bands  | 37209     | Shaft—Radio volume control extension shaft   |
| 36632                     | Coil—Oscillator coil—"A" and "B" bands   | 37194     | Shaft—Tuning shaft and flywheel  |
| 31837                     | Coil—Oscillator coil—"X" band  | 4452      | Shield—Tube shield   |
| 36617                     | Coil—Oscillator coil—"13 meter" band   | 34799     | Socket—6-contact "Magic Eye" socket  |
| 34657                     | Coil—Oscillator coil—"16 meter" band   | 31251     | Socket—8-contact tube socket   |
| 36633                     | Coil—Oscillator coil—"19 meter" band   | 31365     | Socket—Band indicator lamp socket  |
| 36634                     | Coil—Oscillator coil—"25 meter" band   | 31364     | Socket—Pilot lamp socket   |
| 36635                     | Coil—Oscillator coil—"31 meter" band   | 13638     | Spring—Drive cord or pointer drive cord spring   |
| 34652                     | Coil—R.F. coil—"A" band  | 31261     | Spring—Retaining spring for oscillator coils, cores, and studs                                     |
| 34650                     | Coil—R.F. coil—"B" and "31 meter" bands  | 37205     | Support—Drive cord pulley support only—less pulleys and rubber grommet                             |
| 33765                     | Coil—R.F. coil—"X" band  | 37201     | Switch—Function switch   |
| 34651                     | Coil—R.F. coil—"25-19-16-13" meter bands   | 37344     | Switch—Phonograph fidelity switch  |
| 34645                     | Condenser—3-gang variable tuning condenser   | 37193     | Switch—Range switch  |
| 37832                     | Connector—3-contact female socket as used on microphone and cutter cables  | 37208     | Switch—Tone switch actuated by Stock No. 37207 link assembly                                       |
| 12493                     | Connector—5-contact female socket as used on band indicator cable  | 37202     | Transformer—First I.F. transformer   |
| 11934                     | Connector—6-contact female socket as used on function lamp cable   | 36614     | Transformer—Second I.F. transformer  |
| 37197                     | Control—H.F. tone control  | 36615     | Transformer—Third I.F. transformer   |
| 37196                     | Control—L.F. tone control (long shaft)   | 37203     | Transformer—AVC, I.F. transformer  |
| 37214                     | Control—L.F. tone control (short shaft)  | 37343     | Transformer—Driver audio transformer   |
| 37198                     | Control—Microphone volume control complete with flexible and control shafts  | 30251     | Transformer—Microphone transformer   |
| 37195                     | Control—Radio volume control   | 2917      | Washer—"C" washer for tuning shaft, microphone volume control shaft, or radio volume control shaft |
| 32634                     | Cord—Pointer drive cord—50-inch length with clips  | 33726     | Washer—"C" washer to hold pulley   |
| 35788                     | Core—Adjustable core and stud for "A" and "B" band oscillator coil   |           |  |
| 31259                     | Core—Adjustable core and stud for "13 meter" band, "16 meter" band, "19 meter" band, "25 meter" band, and "31 meter" band oscillator coils |           | <b>POWER AND AMPLIFIER UNIT</b>  |
| 36093                     | Core—Adjustable core and stud for "X" band oscillator coil   | 30859     | Capacitor—.025 mfd.  |
| 35627                     | Drum—Drive drum—less calibrator scale  | 37250     | Capacitor—20 mfd.  |
| 37213                     | Gear—Gear and hub used on Stock No. 37214 tone control shaft   | 37248     | Capacitor—20-10 mfd.   |
|                           |  | 37308     | Capacitor—40 mfd.  |
|                           |  | 35016     | Capacitor—1 section of 40 mfd., and 1 section of 100 mfd.  |
|                           |  | 37249     | Capacitor—100 mfd.   |
|                           |  | 37307     | Choke—Filter choke   |
|                           |  | 30868     | Connector—2-contact female connector for reject cable  |
|                           |  | 37625     | Connector—5-contact female connector for record changer cable                                      |
|                           |  | 12493     | Connector—5-contact female connector for speaker cable   |

# Replacement Parts (Continued)

| STOCK No.   | DESCRIPTION   | STOCK No.   | DESCRIPTION  |
|---|---|---|--|
| 11934   | Connector—6-contact female connector for speaker cable                                      | 37259   | Housing—Wooden band indicator lamp housing   |
| 37626   | Connector—6-contact female power supply cable connector                                     | 13103   | Jewel—Pilot light jewel only   |
| 14409   | Connector—7-contact female connector for power supply cable                                 | 37256   | Knob—Large control knob and spring   |
| 35052   | Connector—8-contact male connector for attenuator cable                                     | 37257   | Knob—Small control knob and spring   |
| 32069   | Holder—Fuse holder with extractor   | 11891   | Lamp—6.3 volt pilot lamp—Mazda No. 44  |
| 33960   | Plug—Single contact phono input cable plug  | 37823   | Lamp—115 volt, 7½ watt frosted compartment lamp bulb   |
| 36637   | Receptacle—A.C. receptacle  | 37266   | Plate—11 inch finished auxiliary plate for turntable   |
| 37253   | Relay—Bias relay switch   | 37270   | Plug—2-contact male plug for phono motor power cable   |
| 37254   | Relay—Record changer relay switch   | 37290   | Plug—2-prong male plug and shell for cutter base plunger switch cable and compartment lamp cable |
| 34761   | Resistor—10 ohms, ½ watt  | 30870   | Plug—2-prong male plug for reject button cable   |
| 37623   | Resistor—27 ohms, 3 watts   | 37244   | Plug—3-prong male plug and shell for pilot lamp cable  |
| 37624   | Resistor—50 ohms, 5 watts   | 12567   | Plug—5-prong male plug used on dial frame cable  |
| 37252   | Resistor—Voltage divider comprising a 250, 940, and a 400 ohm section                       | 11953   | Plug—6-prong male plug for function panel  |
| 37251   | Resistor—2,000 ohms, 5 watts  | 31048   | Plug—Single contact plug for phono input cable   |
| 30685   | Resistor—33,000 ohms, ½ watt  | 37261   | Pointer—Station selector pointer and carriage  |
| 33165   | Socket—2-contact female socket  | 37825   | Reflector—Compartment lamp reflector only—less housing and lamp                                  |
| 37255   | Socket—3-contact female socket  | 37288   | Screen—Diffusing screen for function lamp housing  |
| 35279   | Socket—5-prong tube socket  | 37260   | Screen—Diffusing screen for Stock No. 37259 housing  |
| 31251   | Socket—8-prong tube socket  | 33438   | Screw—Thumb screw for "Magic Eye" clip   |
| 37246   | Transformer—105-120 volts, 50-60 cycle bias power transformer                               | 31199   | Shield—Lamp shield for jewel light   |
| 37245   | Transformer—110-125-150-210-240 volts, 50-60 cycle power transformer                        | 37173   | Sleeve—Cutter base adjusting sleeve  |
| 37247   | Transformer—Output transformer  | 31364   | Socket—Bayonet socket with clip for pilot lamp   |
| <b>RECORDER ASSEMBLY</b><br><b>MI-4832</b>            |   | 30900   | Spring—Control knob spring   |
| 37171   | Base—Main recorder base   | 37265   | Switch—2-gang speaker switch   |
| 37161   | Bracket—Carriage stop bracket   | 37668   | Switch—Master power switch   |
| 37162   | Bracket—Feed bracket engages with feed screw  | 37306   | Switch—Motor control toggle switch   |
| 37160   | Carriage—Main carriage and pin  | 32875   | Switch—Phono motor off-on switch   |
| 37163   | Center—Conical feed screw center—used on drive end of recorder assembly                     | 37289   | Switch—Plunger switch used in cutter base  |
| 37165   | Center—Conical feed screw center—used on pivot end of recorder assembly                     | 37305   | Switch—Reject button switch—less plug  |
| 36906   | Cutter—Recorder cutter head only  | 14609   | Transformer—Input transformer  |
| 37167   | Flange—Drive flange with three pins   | <b>Additional Automatic Mechanism Parts not shown in Fig. 1 to 8 inclusive.</b> |  |
| 37169   | Nut—Recorder head tension spring adjusting nut  | 38002   | Switch Assembly—Pickup shorting  |
| 19721   | Pinion—Feed screw drive pinion  | 38014   | Screw—Pickup arm brake   |
| 37164   | Screw—Feed screw with gear  | 38025   | Pin—Solenoid   |
| 37170   | Screw—Recorder head spring adjusting screw  | 38026   | Pin—Magazine slide arm   |
| 19703   | Screw—Yoke pivot screw and nut  | 38027   | Pin—Magazine slide arm lever   |
| 37166   | Shaft—Drive pinion shaft only   | 38028   | Pin—Reverse throwout arm   |
| 37173   | Sleeve—Main base adjusting sleeve   | 38029   | Pin—Pickup pivot   |
| 37168   | Spring—Recorder head tension spring   | 38035   | Ball Bearing—Tone arm  |
| 37172   | Yoke—Main yoke with pin—less pivot screws   | 38041   | Spring—Pickup arm brake  |
| <b>MICROPHONE ASSEMBLIES</b>                          |   | 38042   | Spring—Pickup arm lift shaft   |
| 32212   | Adapter—Microphone to stand adapter   | 38049   | Spring—Clutch throwout   |
| MI-4036K  | Microphone—Junior velocity microphone complete—less stand, adapter, and connection plug     | 38051   | Spring—Trip switch   |
| 37244   | Plug—3-prong microphone plug and shell  | 38053   | Spring—Solenoid wedge  |
| 20911   | Ribbon—Replacement ribbon only for microphone   | 38054   | Spring—Ball joint  |
| MI-6232A  | Stand—Microphone stand complete—less adapter, microphone and cord                           | 38056   | Turntable Shaft Bushing  |
| <b>SPEAKER ASSEMBLIES</b><br>(RL-76-B2)<br>(RL-76-B3) |   | 38058   | Record Tray Bushing  |
| 14604   | Coil—Neutralizing coil used in RL-76B2 only   | 38061   | Collar—¼-inch shaft  |
| 37311   | Coil—900 ohm field coil for RL-76B2   | 38065   | Pivot Bushing  |
| 37312   | Coil—3,000 ohm field coil for RL-76B3   | 38067   | Pickup Center Bolt   |
| 37310   | Cone—Coil and voice coil assembly for either RL-76B2 or RL-76B3                             | 38077   | Turntable Felt   |
| 31539   | Plug—5-prong male plug for RL-76B2  | 38085   | Turntable Drive Facing—heavy   |
| 11953   | Plug—6-prong male plug for RL-76B3  | 38086   | Turntable Drive Facing—light   |
| <b>MISCELLANEOUS ASSEMBLIES</b>                       |   | 38087   | Turntable Drive Facing—medium  |
| 37172   | Base—Flanged cutter base with set screw   | 38091   | Pickup Arm Friction Cam Facing   |
| 37669   | Bracket—Multiple lamp bracket   | 38093   | Reverse Guide Pin Tubing   |
| 37670   | Bracket—Tuning tube clip bracket  | 38096   | Automatic Stop Lever Washer  |
| 37267   | Brush—Dust brush for recording  | 38099   | Rubber Bushing   |
| 30766   | Cap—Magic Eye cap for function panel  | 38109   | Turntable Assembly   |
| 37262   | Clamp—Spring steel retaining clamp for bottom of dial                                       | 38112   | ¼-inch Allen Head Wrench   |
| 37263   | Clamp—Spring steel retaining clamp for top of dial  | 38125   | Pickup Arm Stop Lever—Bracket and pin assembly   |
| 30716   | Clip—"Magic Eye" mounting clip and thumb screw  | 38133   | Main Shaft Assembly  |
| 34285   | Clip—Tuning tube clip and thumb screw   | 38134   | Magazine Support Assembly  |
| 37832   | Connector—3-contact female socket as used on cutter and microphone cables                   | 38142   | Record Bumper—left   |
| 12493   | Connector—5-contact female connector for band indicator cable                               | 38143   | Record Bumper—right  |
| 37264   | Control—344 ohm and 250 ohm dual speaker control  | 38145   | ¼-in. x 20 x 1.125-in. Hex Head Cap Screw  |
| 37320   | Decalcomania—"Master Control" decal   | 38146   | Cotter Pin—1/16-in. dia. x ½-in.   |
| 37323   | Decalcomania—"Microphone" decal   | 38147   | Cotter Pin—1/16-in. dia. x ¾-in.   |
| 37319   | Decalcomania—"Microphone Level" decal   | 38148   | Cotter Pin—3/32-in. dia. x ½-in.   |
| 37324   | Decalcomania—"Motor" decal  | 38149   | Cotter Pin—¼-in. dia. x ½-in.  |
| 36603   | Decalcomania—"Power" decal  | 38150   | No. 00x¼-in. Taper Pin   |
| 37318   | Decalcomania—"Radio" decal  | 38152   | No. 00x¼-in. Taper Pin, Nickel Plated  |
| 35392   | Decalcomania—"RCA Victor" decal   | 38153   | No. 00x¼-in. Taper Pin   |
| 36386   | Decalcomania—"RCA Victor" trade mark decal  | 38154   | No. 00x¼-in. Taper Pin   |
| 37321   | Decalcomania—"Recorder" decal   | 38155   | No. 00x1-in. Taper Pin   |
| 37322   | Decalcomania—"Reject" decal   | 38156   | No. 00x1¼-in. Taper Pin  |
| 37326   | Dial—Function indicator dial  | 38157   | No. 0x¼-in. Taper Pin  |
| 37325   | Dial—Station selector dial  | 38158   | No. 0x1-in. Taper Pin  |
| 37258   | Frame—Dial frame—less plugs, "Magic Eye" clip, thumb screw, screen, and wooden lamp housing | 38159   | No. 1 x 1¼ in. Taper Pin   |
| 37884   | Fuse—3 Ampere, 250 volt fuse  | 38160   | No. 0000x½-in. Taper Pin   |
| 37883   | Fuse—5 Ampere, 250 volt fuse  | 38161   | No. 1x1¼-in. Taper Pin   |
| 37824   | Housing—Compartment lamp cast housing only—less switch socket and reflector                 | 38162   | No. 2 Woodruff Key   |
| 37667   | Housing—Function lamp housing only—less tube clip, brackets, switch, and cable              | 38118   | TT Drive Shaft Assembly  |
|   |   | 38163   | Drive Shaft—Main motor   |
|   |   | 38164   | Pivot Bushing—Pickup head  |
|   |   | 38165   | Base Plate—Die cast plate  |
|   |   | 38166   | Rubber Ins. Bushing—Pickup head  |
|   |   | 38167   | Tone Arm Assembly  |
|   |   | 38182   | Turntable  |
|   |   | 38168   | Drive Motor (60 cycle)   |
|   |   | 38169   | 5-Prong Plug—Motor leads   |
|   |   | 38170   | Gear Box (60 cycle)  |
|   |   | 38171   | Friction Drive Assembly  |
|   |   | 38172   | Flex Coupling Assembly   |
|   |   | 38173   | Light Socket (brown)   |
|   |   | 38174   | Light Shade and Pin Assembly   |
|   |   | 38175   | Pin—Lamp Shade   |
|   |   | 38176   | Reflector—Compartment lamp   |
|   |   | 38177   | Plug and Lead Assembly   |
|   |   | 38178   | Bracket and Switch Assembly  |
|   |   | 38180   | Light Shade Bracket  |
|   |   | 38181   | Drive Motor (50 cycle)   |
|   |   | 38151   | Gear Box (50 cycle)  |