

RECORD CHANGERS

MODEL M-8

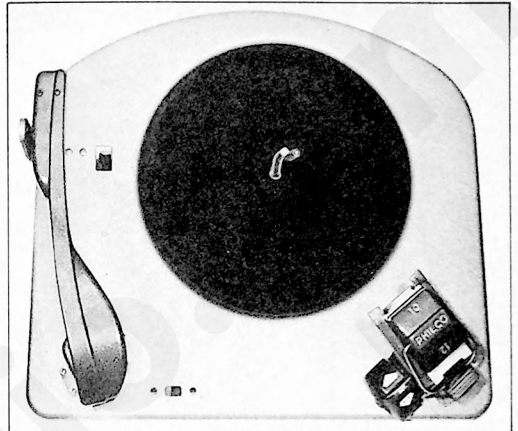
INTRODUCTION

Philco Automatic Record Changer Model M-8, shown in figure 1, is designed for quiet, smooth, and efficient automatic playing of records.

A safety feature is incorporated in the tone-arm mechanism to prevent damage to the mechanism if, at any time, the arm is held by the user during the change cycle.

The changer, which operates on 117 volts, 60 cycles, a.c., plays ten 12" records or twelve 10" records automatically. Provision is also made for manual operation.

The tone arm is equipped with a semi-permanent type of needle, which gives long needle and record life and is easily replaced if necessary.



TP-4103

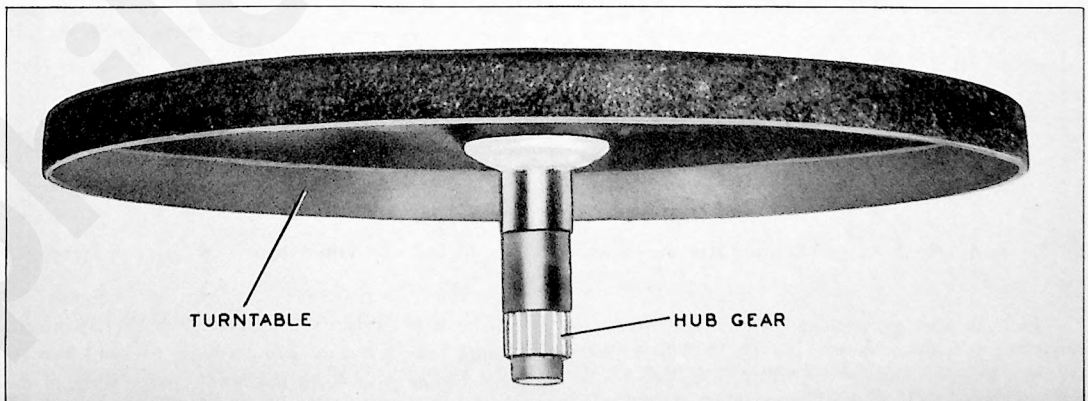
Figure 1. Philco Automatic Record Changer Model M-8

DESCRIPTION OF OPERATING CYCLE

Power for the motor is applied through the on-off switch. The turntable is rim-driven by a rubber-tired idler wheel mounted between the motor shaft and the turntable rim.

The turntable hub is a combined shaft and gear

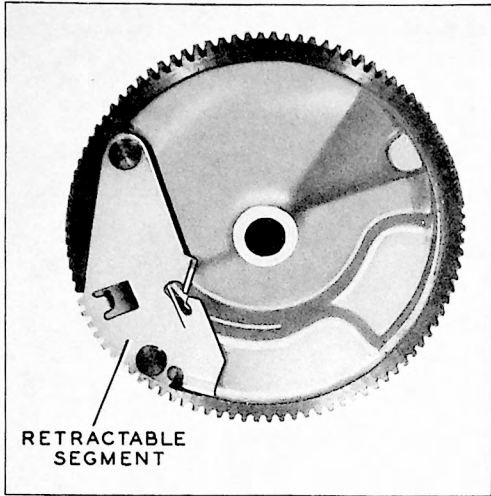
(figure 2). This small hub gear engages a large cam gear (figure 3) when the retractable segment of the cam gear is brought into position by the action of the trip mechanism; the cam gear, in turn, operates the changer mechanism.



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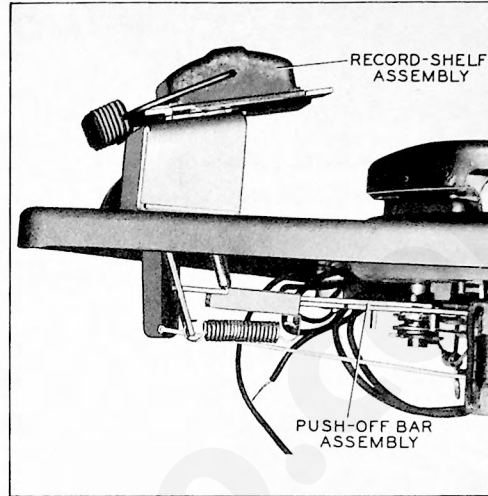
Figure 2. Turntable and Hub Gear

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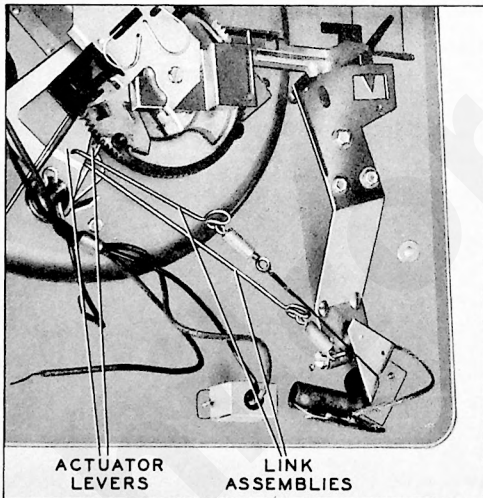
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Figure 3. Cam Gear, Showing Retractable Segment



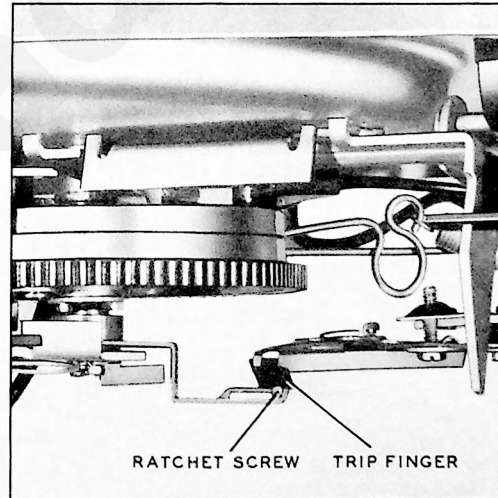
TP-4181

Figure 5. Record-Shelf and Push-Off Assemblies



TP-4101A

Figure 4. Link Assemblies and Actuator Levers



TP-4135-1

Figure 6. Trip Finger and Ratchet Screw

The tone arm is operated by two link assemblies attached to actuator levers (figure 4) which are in contact with the cam surface of the cam gear.

The record-shelf push-off mechanism is connected, through a series of bars (figure 5), to a push-off actuator; the mechanism is operated when a roller on the cam gear comes in contact with the actuator.

The trip mechanism is operated by a trip finger, riding over a ratchet screw (figure 6), which starts the change cycle when the needle is traveling in the eccentric finish groove of the record. The trip mechanism is locked in a disengaged position when the control button is in the manual position.

PHILCO RADIO-PHONOGRAPH TROUBLE-SHOOTING PROCEDURE

The following tests are given for quickly localizing trouble either in the radio or phonograph section of the radio phonograph combination. Be sure to make each test in the order given, before removing either the radio chassis or the record changer from the cabinet. If the trouble is found in the audio amplifier, refer to the radio service information pertaining to the particular model radio. If the trouble is in some part of the record changer, use information following.

AUDIO AMPLIFIER TEST

The audio amplifier is common to both the radio and the phonograph section of the combination using the M-9 changer.

Tune in a station and note the volume and tone quality. If the performance is abnormal, check the audio section of the radio, and correct the trouble.

PICKUP TEST

Play a familiar record on the phonograph, and again note the volume and tone quality.

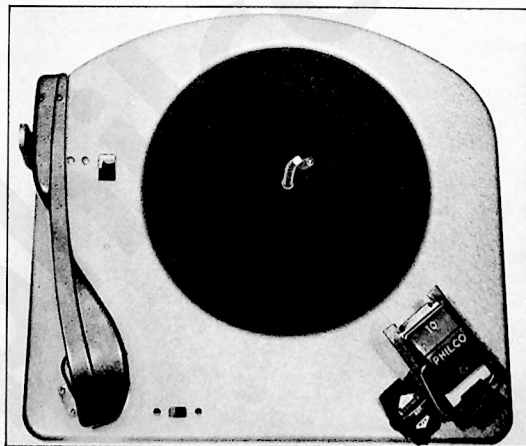
NOTE

It is advisable to carry a familiar record as a part of the service test equipment.

If distortion is noted when playing the record, first try a new needle. If the distortion continues, a faulty crystal pickup is indicated.

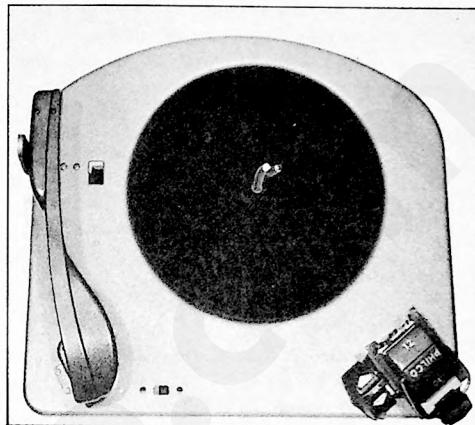
CHANGER-MECHANISM TEST

The following series of record-changer operating tests is given for quickly locating any troubles that



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Figure 7. Changer, Record Shelf in 10-Inch Position



TP-4105

Figure 8. Changer, Record Shelf in 12-Inch Position

may be encountered. Each test should be performed with several records before making any adjustments.

Set the record shelf to the 10" position and place the tone arm on the rest post (figure 7). Place a 10" record over the spindle and onto the record shelf.

Push the control button to REJ (reject), and observe the record-dropping action. The record should fall smoothly, the edge leaving the lips of the record shelf *after* the center has started to fall. Adjustment of the record shelf is given on page 485.

The tone arm should rise from the rest post, and the needle should come down on the record, starting about $\frac{1}{8}$ " from the outer edge. The index adjustment is given on page 479.

Play the record through and observe the tripping action; the trip mechanism should operate within the first two or three revolutions after the needle has entered the eccentric finish groove. Trip adjustments are given on page 483.

Remove the record from the turntable and set the record shelf to the 12" position (figure 8). Place a 12" record over the spindle and onto the record shelf. Push the control button to REJ., and observe the record-dropping action. The record should leave the lips of the record shelf *after* the center has started to fall. Refer to page 485 for the record-shelf adjustment, if needed. The tone arm should rise from the rest post, and the needle should come down on the record, starting about $\frac{1}{8}$ " from the outer edge. If index adjustment is required, refer to page 479.

Play the record through and observe the tripping action. Trip adjustments are given on page 483.

Observe whether the lower edge of the tone arm, during a change cycle, clears the top of the hook on the

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tone-arm rest post by a minimum of $\frac{1}{8}$ ". Take the tone arm off the rest post, and place the pickup over the changer base plate; the needle point should clear the base plate by at least $\frac{1}{16}$ ", and should be no higher than the turntable top. Lift and height adjustments are given on page 480.

TURNTABLE AND MOTOR TEST

NOTE

Before making this test, warm up the motor by allowing it to run for at least ten minutes.

Set the control button to MAN. (manual), load the turntable with ten 12" records, and place the tone arm on the top record.

Place a stroboscope disc, such as Philco Part No.

45-9531, on the record, and illuminate the disc with a lamp (preferably a neon bulb) operated on 60-cycle a.c. The dots in the row calibrated for 78 r.p.m. should appear to remain stationary, or drift *very* slowly, but smoothly, backward or forward.

If the turntable speed is steady, but is appreciably below 78 r.p.m., refer to the lubrication data on the turntable upper bearing, motor bearings, and motor idler plate, given under CLEANING AND LUBRICATION, page 478; if the lubrication appears to be adequate, the motor is probably defective.

Unsteady drift of the dots on the stroboscope disc indicates uneven turntable speed, the cause of wows; see UNEVEN TURNTABLE SPEED (WOWS), page 486.

CLEANING AND LUBRICATION

The M-8 record changer, like any other mechanism, requires lubrication after long periods of use. Whenever a major part or assembly is to be replaced, the changer should be cleaned and lubricated. Carbon tetrachloride or other similar cleaning fluids may be used to remove old grease, oil, and dirt. Apply lubricants sparingly. All lubrication points are shown in figures 9 and 10. It may be necessary to remove some parts and assemblies in order to lubricate their bearings—for example, the actuator and cam gear must be removed to lubricate the actuator stud and the cam-gear spindle.

PARTS NOT TO BE LUBRICATED

The following parts should not be lubricated at any time: Trip receiver; trip finger; ratchet screw on trip plate; selector.

PARTS TO BE GREASED

The following parts are to be lubricated with a grease having the consistency of vaseline:

Record-Shelf Assembly (point A of figure 10)

Four protruding dimples.

Bridge Assembly and Slider Control Bar (point B of figure 9)

Three dimples and four upturned ears.

Cam Gear (point C of figure 9)

Cam-gear teeth, cam surfaces, and cam-gear spindle.

Main Assembly (points D, figures 9, 10, and 14)

Trip-plate ear where contact is made with gear segment.

Actuator stud.

All parts with ears sliding on changer base plate.

Index-lever surface which slides on base plate.

Push-off actuator dimples which slide on base plate.

Turntable shaft (upper bearing).

Tone-arm shaft.

PARTS TO BE OILED

The following parts are to be lubricated with S.A.E. 20 oil:

Tone Arm (point E of figure 10)

Tone-arm pivot pin where pin rides in elongated hole of tone arm—apply one drop with a pointed rod.

Motor (points F, figures 9 and 10)

Motor idler plate—one or two drops in each dimple.

Motor bearings.

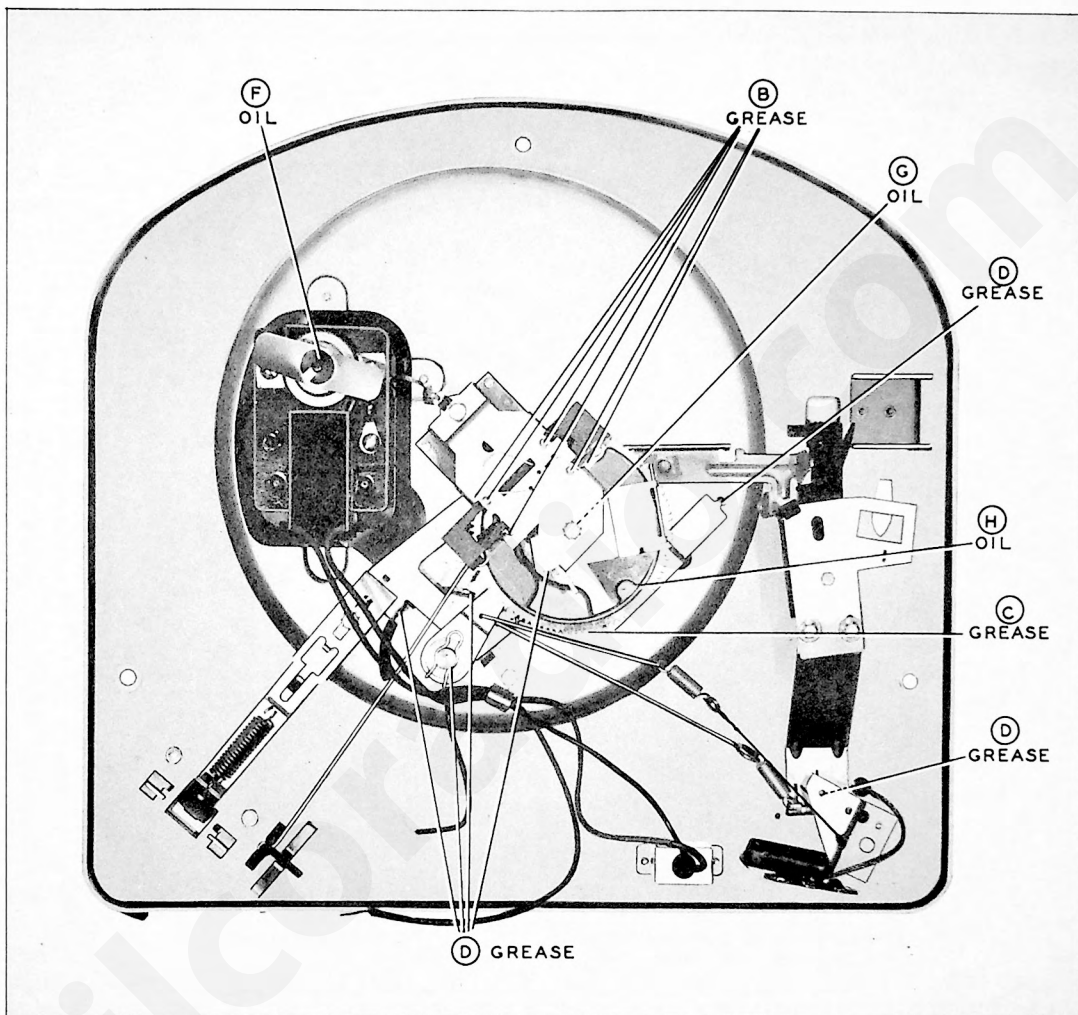
Trip-Plate Bushings (point G of figure 9)

Cam-Gear Roller (point H of figure 9)

CAUTION

Do not get any oil or grease on the motor shaft or the idler-wheel tire. Should this occur, remove the oil or grease immediately with carbon tetrachloride.

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Figure 9. Bottom View of Changer, Showing Lubrication Points

ADJUSTMENTS

10" INDEX ADJUSTMENT

Set a 10" record on the turntable; push the control button to REJ., and rotate the turntable $4\frac{1}{2}$ turns by hand. The tone arm should then be approximately $\frac{1}{2}$ " above the record.

Loosen the clamp screw on the trip arm (figure 11). Hold the tone arm (steady) $\frac{1}{8}$ " in from the edge of the record, and set the trip arm so that the trip-arm

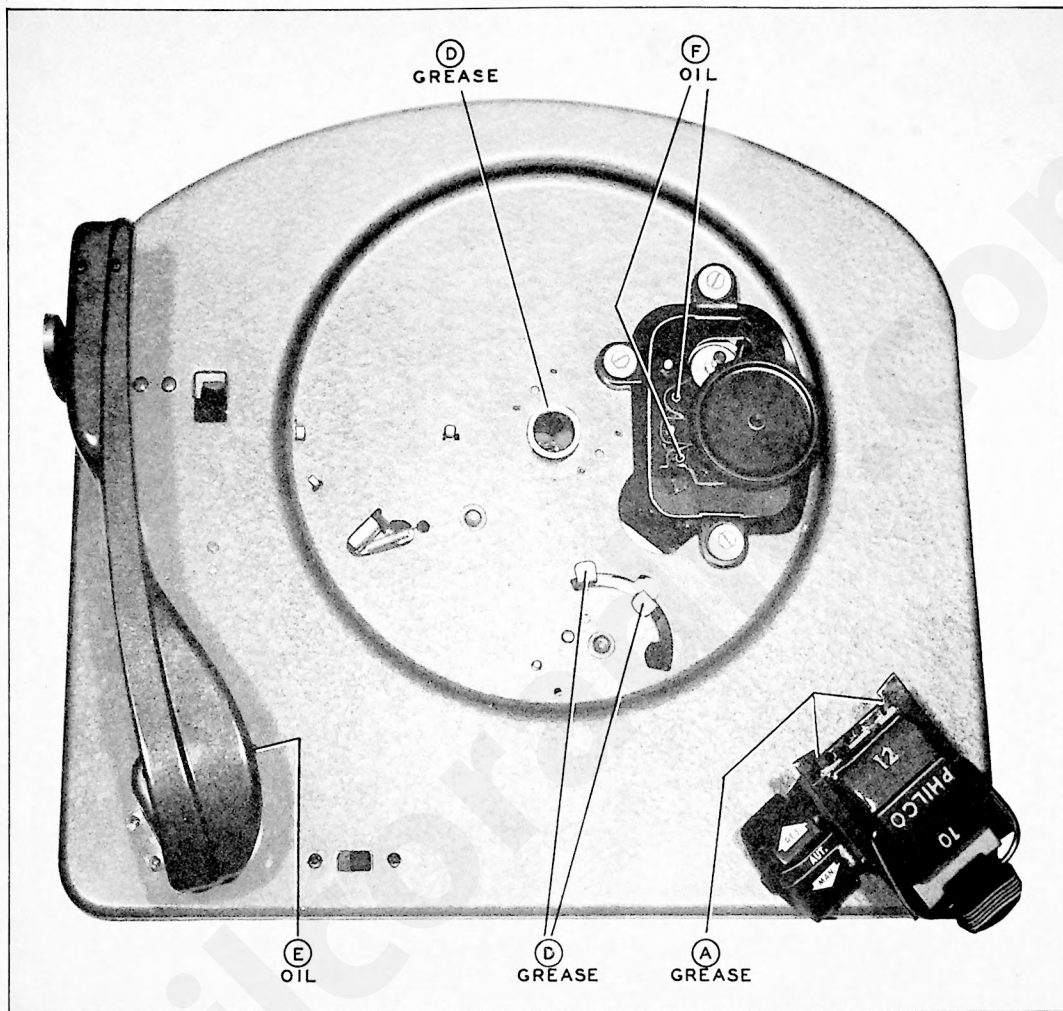
stop is in contact with the selector hinge. See figure 11.

Tighten the clamp screw, leaving $\frac{1}{32}$ " vertical play, or clearance, between the trip arm and the base plate.

12" INDEX ADJUSTMENT

Make the 10" index adjustment first. The 12" indexing will ordinarily be satisfactory after the 10"

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Figure 10. Top View of Changer, Showing Lubrication Points

adjustment is made; if not, bend the selector, 56-4618FA3, slightly to the right or left as required for proper indexing of the needle on the record, as shown in figure 12.

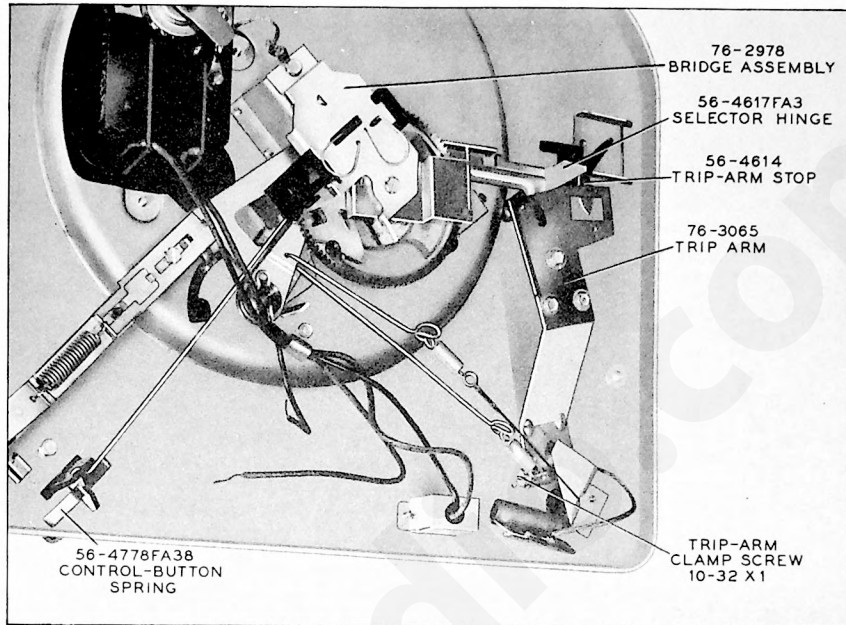
TONE-ARM HEIGHT AND LIFT ADJUSTMENTS

With the changer out of cycle (change cycle completed; tone arm lowered), and the tone arm off the rest post, the needle point should clear the changer base plate by at least $\frac{1}{16}$ " , and should not be higher than the turntable top. See figure 13. To adjust the height, shape the *top* ear of the tone-arm swivel, shown

in figure 13 (bending the ear downward raises the tone arm).

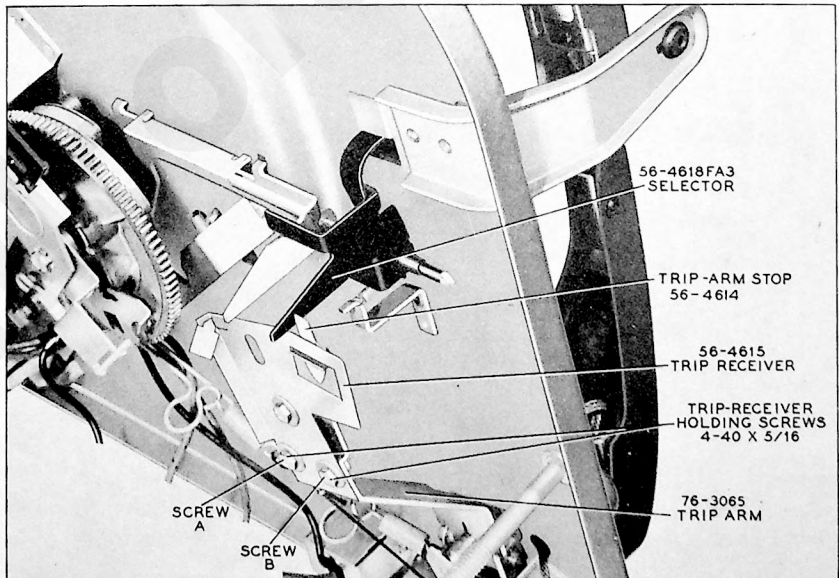
To adjust the lift, take the tone arm off the rest post, push the control button to REJ., and rotate the turntable (approximately $1\frac{1}{2}$ turns) by hand until the tone arm comes against the rest post. See figure 14; the lower edge of the tone arm should clear the top of the protruding hook on the rest post by not less than $\frac{1}{8}$ " , and not more than $\frac{1}{4}$ " . Adjust by shaping the *lower* ear of the tone-arm swivel (bending the ear downward raises the tone arm).

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TP-4101

Figure 11. 10-Inch Indexing Adjustment



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Figure 12. 12-Inch Indexing and Trip-Receiver Adjustments

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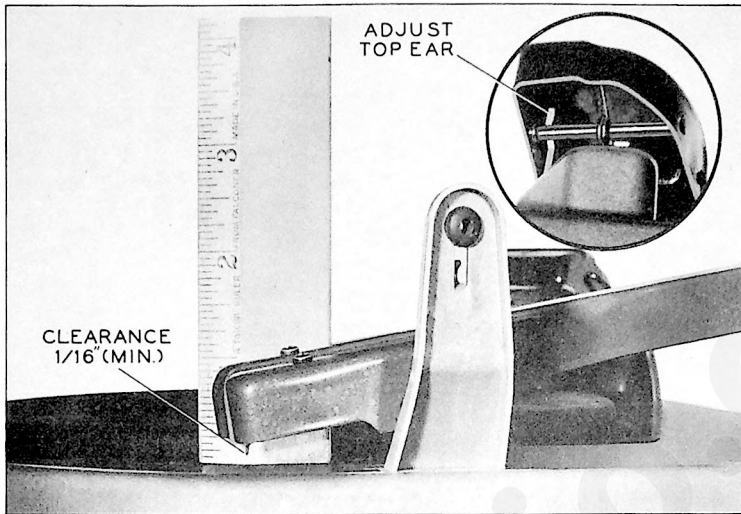


Figure 13. Tone-Arm Height Adjustment

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TONE-ARM VERTICAL AND HORIZONTAL TIMING ADJUSTMENTS

NOTE

Before making these adjustments, make the tone-arm height and lift adjustments given above.

For the vertical adjustment, start with the changer out of cycle, push the control button to REJ., and rotate the turntable, by hand, three-quarters of a revolution; this setting can be obtained more accurately by making a mark on the turntable to coincide with some starting point. At the three-quarter-revolu-

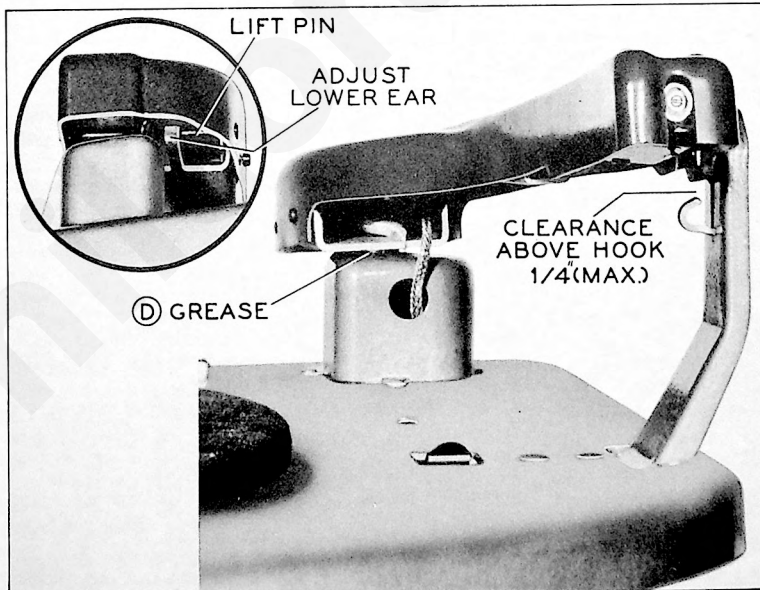
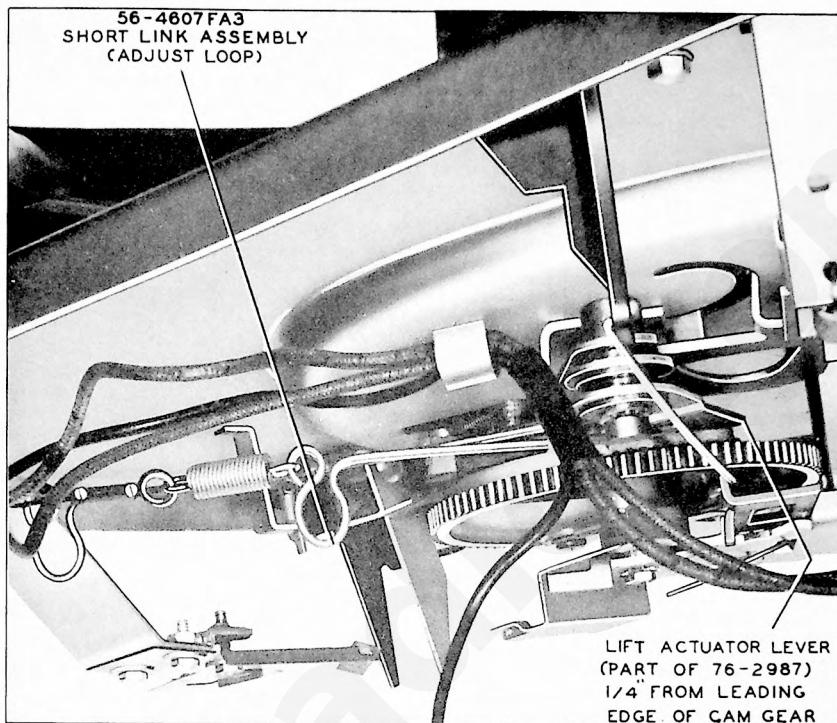


Figure 14. Tone-Arm Lift Adjustment

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TP-4116-1

Figure 15. Tone-Arm Vertical Timing Adjustment

tion point, the leading edge of the cam surface is approximately $\frac{1}{4}$ " from the end of the lift actuator lever; this is the lower actuator lever, shown in figure 15. Adjust the wire loop of the short link (link, cord, and spring assembly), attached to the tone-arm lift pin, by squeezing or opening the loop until the tone-arm lift pin makes contact with the lower ear of the tone-arm swivel (figure 14).

For the horizontal adjustment, rotate the turntable another three-quarter revolution from the point at which the vertical adjustment was made. At this point, the leading edge of the cam surface is approximately $\frac{1}{4}$ " from the end of the horizontal-return actuator lever; this is the upper actuator lever, shown in figure 16. Adjust the wire loop of the long link and spring assembly, attached to the trip arm, by squeezing or opening the loop until the tone arm makes contact with the rubber bumper on the tone-arm rest post.

TRIP-FINGER AND TRIP-RECEIVER ADJUSTMENTS

For the trip-finger adjustment, move the tone arm toward the spindle. Adjust the screw on the trip-receiver plate (figure 17) so that the trip finger,

when riding over the ratchet screw on the trip plate, assumes an angle of 25° to 30° with respect to the screw. Do *not* bend the trip finger to obtain the correct angle.

For the trip-receiver adjustment, place the tone arm on a record with the needle resting in the eccentric finish groove. The vertical center line of the trip finger should coincide with the center line of the ratchet screw. To adjust the centering of the trip finger over the ratchet screw, loosen screw B slightly, and screw A completely (see figure 12). Rotate the trip receiver about screw B, as a center, to obtain the correct adjustment (see figure 17). Tighten the screws.

Approximately $\frac{1}{8}$ " of the trip-arm stop should engage the selector (see figure 12). To adjust the engagement of the trip-arm stop, loosen screw A slightly, and screw B completely (see figure 12). Rotate the trip receiver about screw A, as a center, to obtain the correct adjustment. Tighten the screws.

The above adjustments will affect each other slightly; therefore, it may be necessary to repeat each adjustment until both are correct.

After making the above adjustments, it will be necessary to correct the index adjustments.

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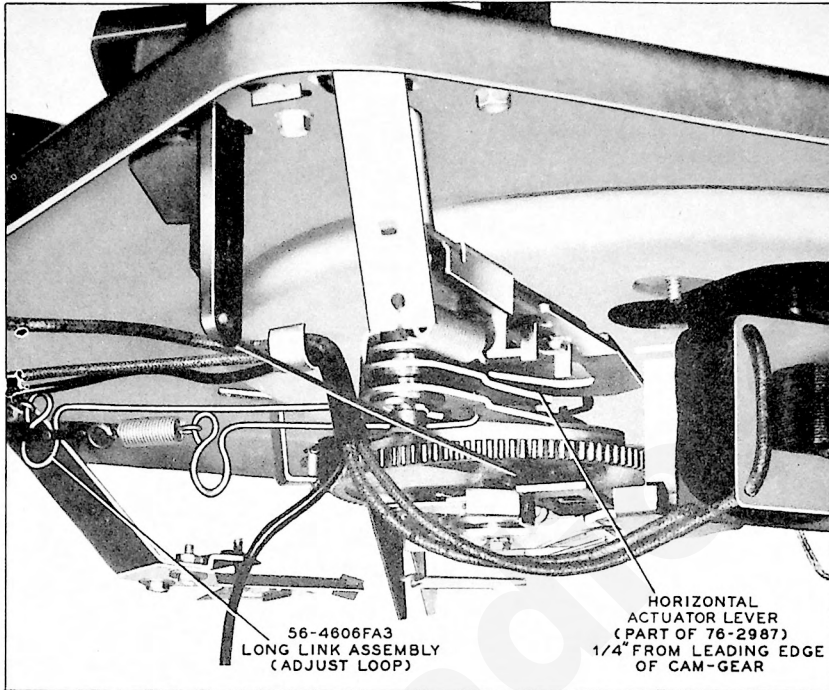


Figure 16. Tone-Arm Horizontal Timing Adjustment

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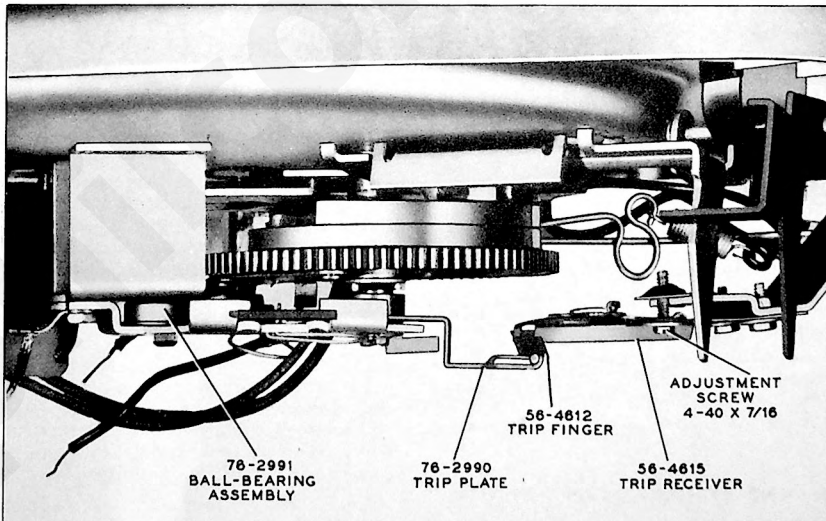
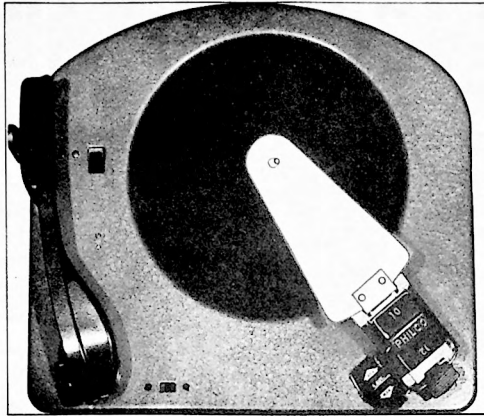


Figure 17. Trip-Finger Adjustment

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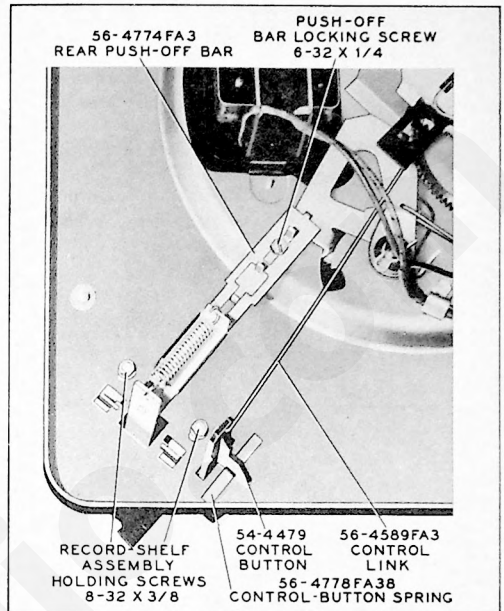


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Figure 18. Special Gauge, Shown in Correct Position on Record Shelf and Spindle

RECORD-SHELF ADJUSTMENT

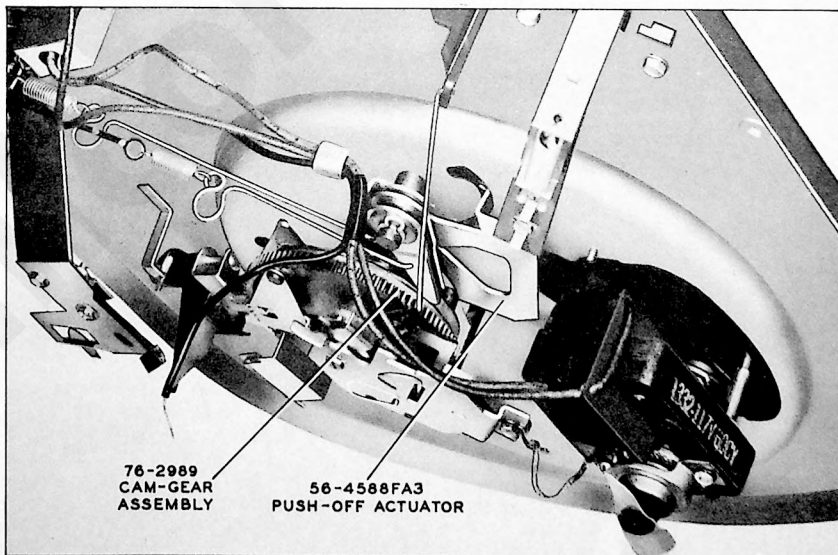
Place the shelf in the 10" position, and the changer out of cycle. Place the Philco record-shelf gauge, 45-1470 (also used for M-4), over the spindle and onto the record shelf, as shown in figure 18. Loosen the two hex-head screws which hold the record-shelf assembly to the changer base plate (figure 19). Move the record-shelf assembly away from the record spindle until the large curved part of the gauge drops even with the record-shelf lips, as shown in figure 18. Now push the record shelf and gauge lightly



TP-4117A

Figure 19. Push-Off-Lever Adjustment

against the spindle, taking out all play toward the spindle; keep the lips of the record shelf in even contact with the edge of the gauge. Tighten the two hex-head screws.



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Figure 20. Push-Off Actuator Against Cam Roller

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PUSH-OFF ADJUSTMENT

Push the control button to REJ., and rotate the turntable $2\frac{1}{2}$ revolutions, by hand; at this point, the push-off actuator is in its most forward position, in contact with the roller on the cam gear (see figure 20). Loosen the push-off-bar locking screw, shown in figure 19. Squeeze the push-off-bar ears toward each other to the point where the slider blade on the record shelf extends $\frac{1}{32}$ " beyond the lips of the shelf. Tighten the hex-head locking screw.

UNEVEN TURNTABLE SPEED (WOWS)

Uneven turntable speed (wows) may be caused by the following:

Dirt under and around the turntable or idler-wheel assembly. Remove the turntable and clean out the dirt. Be careful to lift the turntable straight up. When replacing the turntable, be sure the idler is behind the turntable rim before the turntable is fully lowered (the spindle may be used to hold the idler back).

Flat or worn spots, or grease, on the rubber tire of the idler wheel.

Defective turntable shaft or bearing assembly.

Replace the defective parts as directed under REPLACEMENT OF PARTS AND ASSEMBLIES, below.

Lack of lubrication on idler-wheel assembly. Follow the directions under CLEANING AND LUBRICATION, page 478.

REPLACEMENT OF PARTS AND ASSEMBLIES

The following procedures are recommended for correct replacement of parts and assemblies. The part should be replaced by reversing the order of removal, and should be adjusted according to the directions given in the ADJUSTMENTS section of this manual.

When any part is to be removed, the control button should be in the AUT. (automatic) position, and the changer should be out of cycle.

1. NEEDLE

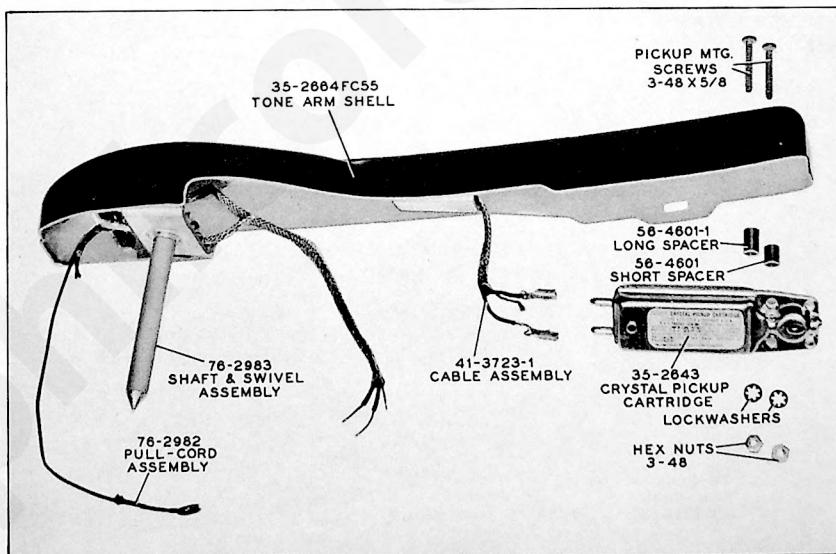
There are two types of needle chucks. the type de-

pending upon the type of pickup cartridge in the tone arm. One type of chuck has a setscrew, for vertical needle insertion; the other has a knurled nut, for horizontal needle insertion.

To remove needle from tone arm, loosen setscrew or knurled nut in front of crystal cartridge, and pull needle out.

2. CRYSTAL-PICKUP CARTRIDGE

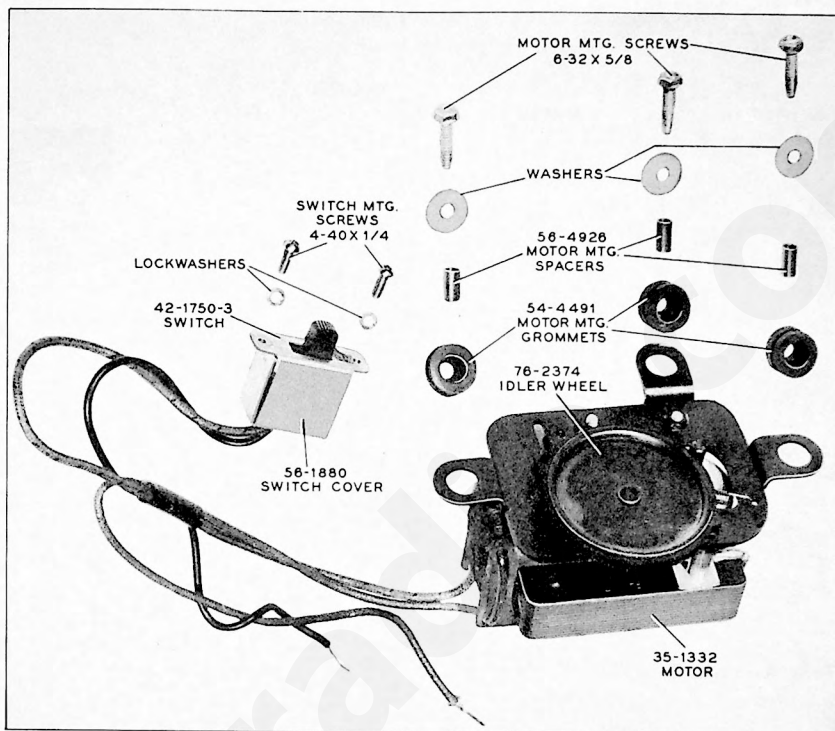
At the present time, the pickup cartridge may be either of two types, one identified by vertical needle



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Figure 21. Tone Arm (35-2663), Crystal Cartridge (35-2643) Removed

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Figure 22. Motor, Switch, and Mounting Hardware

insertion, and the other by horizontal needle insertion. The cartridge type may also be identified by the part number stamped on the bottom of the cartridge. Since the loading circuit in the radio differs for each type of pickup, the two cartridges are not interchangeable.

- a. Bring tone arm toward center of turntable.
- b. Remove the two screws, nuts, lock washers, and spacers which hold cartridge to tone arm.
- c. Drop cartridge below tone arm sufficiently to allow removal of the two clips from cartridge, as shown in figure 21. If pickup leads are shielded, unsolder shield.

NOTE

When mounting cartridge, be sure to insert long spacer in side toward spindle. For cartridge 35-2643, use mounting spacers 56-4601 and 56-4601-1; for cartridge 35-2671-1, use mounting spacers 56-4601-2 and 56-4601-3.

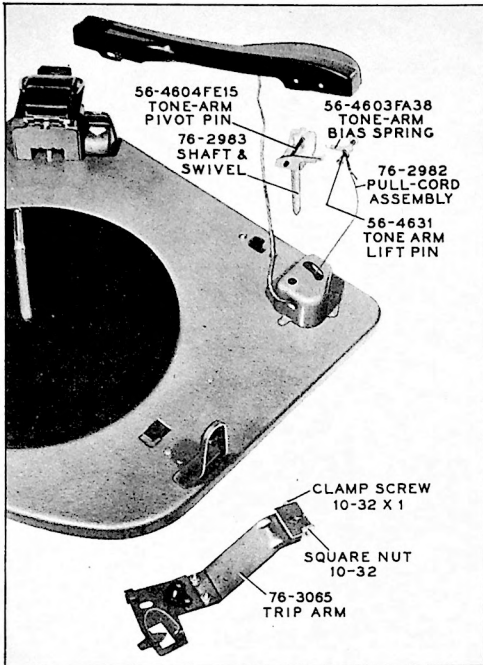
3. MOTOR

- a. Push control button to MAN. position.
- b. Remove spindle. Remove turntable by pulling straight out.
- c. Remove switch cover, and unsolder motor lead from switch contact.
- d. Loosen screw of clamp which holds wire against base plate, and pull wire through clamp.
- e. Unsolder second motor lead from power plug or disconnect at splice from chassis power lead, whichever is used.
- f. Remove ground lead from lug on motor.
- g. Remove the three screws, washers, and bushings from motor frame (figure 22), and lift motor out.

4. TONE-ARM ASSEMBLY

- a. Unsolder tone-arm lead wires from terminal panel on underside of changer base plate.

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Figure 23. Tone Arm and Trip Arm, Removed

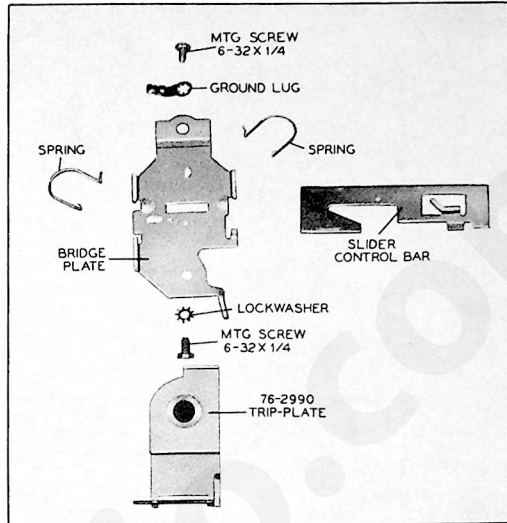
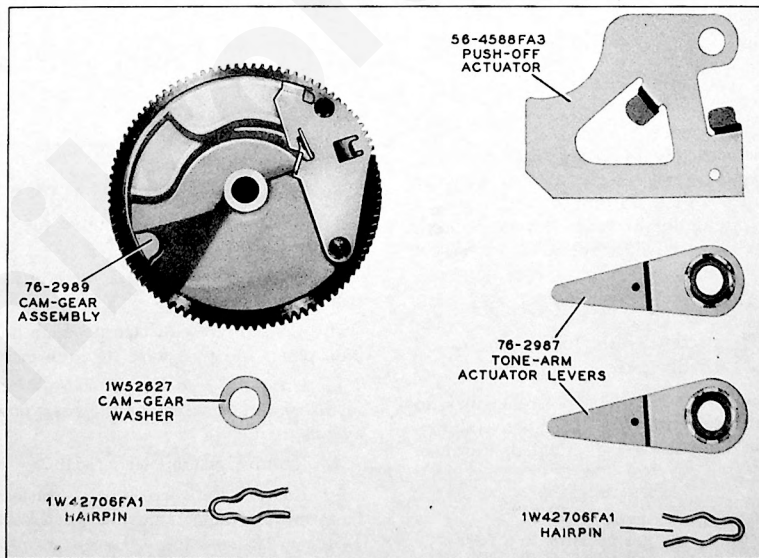


Figure 24. Bridge Assembly TP-4180

b. Remove pull cord from spring and short link, 56-4607FA3.

c. Loosen clamp screw which holds trip arm to tone-arm shaft, 76-2983 (figure 23). Lift out tone arm and shaft.



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Figure 25. Cam Gear, Push-Off Actuator, and Tone-Arm Actuator Levers

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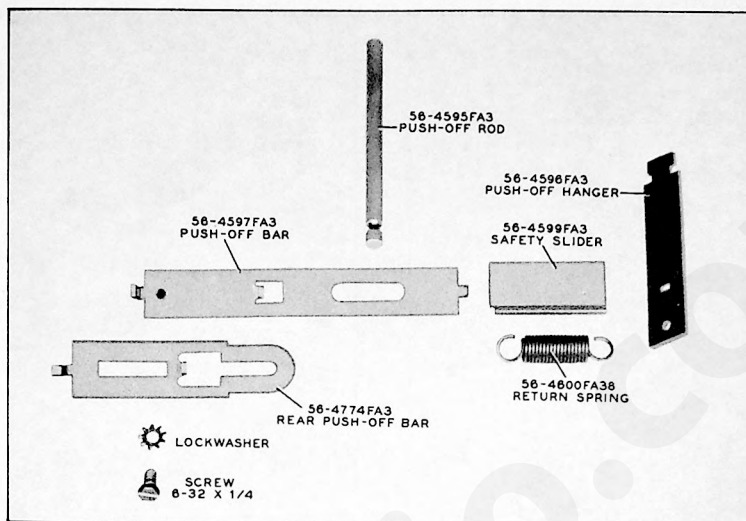


Figure 26. Push-Off Assembly

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5. BRIDGE ASSEMBLY

- a. Remove the two hex-head screws from bridge plate.
- b. Remove link rod, 56-4589FA3, from slider control bar. Complete assembly of bridge is shown in figure 24.

6. TRIP PLATE

- a. Remove bridge assembly, 76-2978, as directed in paragraph 5.
- b. Slide trip plate, 76-2990, off cam-gear spindle.

7. CAM-GEAR ASSEMBLY

- a. Remove bridge assembly and trip plate, as directed in paragraphs 5 and 6.
- b. Remove ball-bearing assembly, 76-2991 (figure 17), by pulling it off.
- c. Remove large hairpin, 1W42706FA1, from cam-gear spindle, and slide washer off.
- d. Slide cam gear off spindle. Figure 25 shows cam-gear assembly.

8. TONE-ARM ACTUATOR LEVERS

- a. Remove large hairpin, 1W42706FA1, from actuator stud.
- b. Slide lower actuator lever from stud, and remove short link, 56-4607FA3.
- c. Remove upper actuator lever from stud, and disengage long link, 56-4606FA3. Figure 25 shows actuator-lever assembly.

9. PUSH-OFF ACTUATOR

- a. Remove two motor-mounting screws, and loosen the third one; swing motor to one side.
- b. Remove tone-arm actuator levers, 76-2987, as directed in paragraph 8.
- c. Press push-off rod, 56-4595FA3, and push-off hanger bar, 56-4596FA3, together, and pull downward, releasing the entire assembly.
- d. Slide push-off actuator, 56-4588FA3, over, to align upturned ears with cutout in base plate. Slide actuator off stud.

NOTE

After removing the push-off actuator and push-off-bar assembly, the slider blade on the record shelf may slide out of the assembly. When reassembling, this blade should be inserted in the record-shelf assembly with the elongated hole toward the 12" position of the record shelf. The push-off assembly is shown in figure 26.

10. RECORD-SHELF ASSEMBLY

- a. Remove push-off actuator assembly as directed in paragraph 9.
- b. Remove the two hex-head screws which hold record-shelf assembly to base plate (figure 19).
- c. Align ears on record-shelf assembly with cutout on base plate. Lift out record-shelf assembly. Record-shelf assembly is shown in figure 27.

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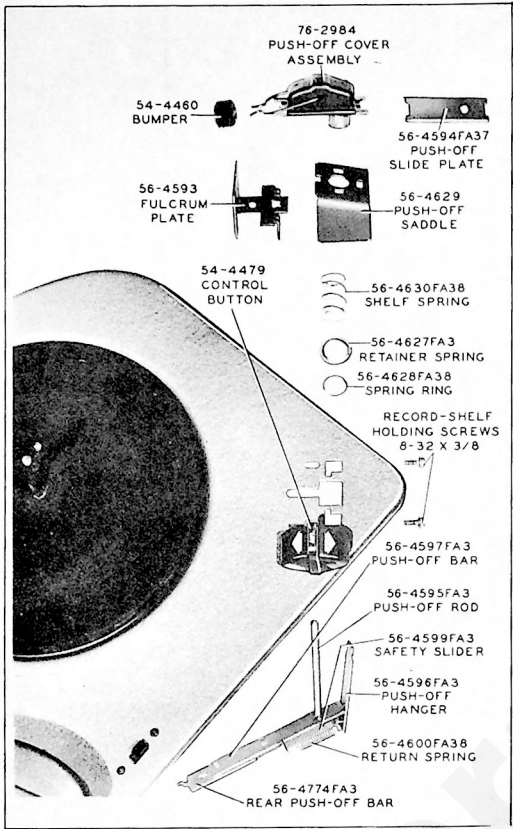


Figure 27. Record-Shelf and Push-Off Assemblies, Removed

11. CONTROL-BUTTON ASSEMBLY

- a. Remove flat spring, 56-4778FA38, by sliding it laterally through underside of button (figures 11 and 19).
- b. Remove the two hex-head screws and drop bridge assembly, 76-2978 (shown in figure 11).
- c. Disengage control link, 56-4589FA3, from underside of control button. Lift out control button.

12. TRIP-ARM ASSEMBLY

- a. Loosen clamp screw on trip arm, 76-3065 (figure 28).

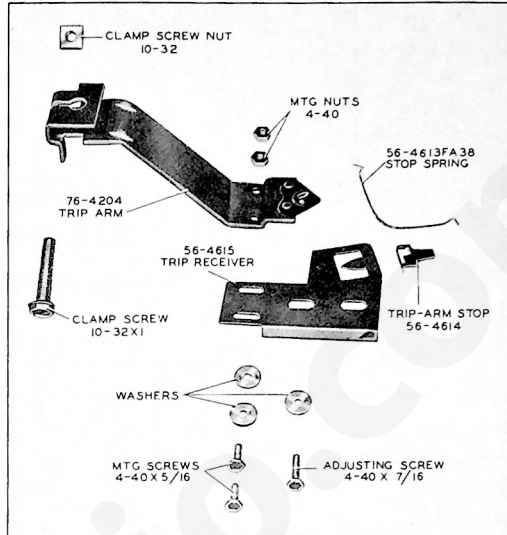


Figure 28. Trip-Arm and Trip-Receiver Assemblies

- b. Raise tone arm and shaft sufficiently to clear trip arm. Remove trip arm.

NOTE

When assembling, maintain $\frac{1}{32}$ " vertical play (clearance between trip arm and base plate) in tone-arm shaft.

13. TRIP-RECEIVER ASSEMBLY

Remove the three screws, washers, and nuts from trip arm (figure 28).

Remove trip receiver.

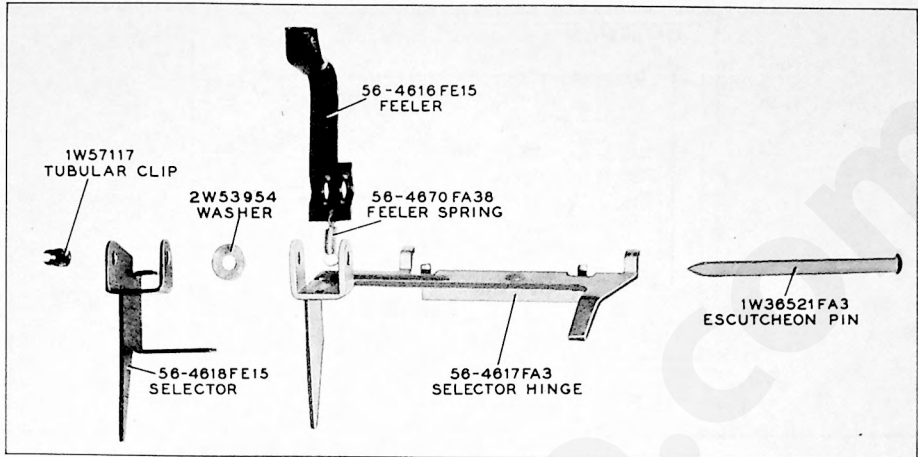
14. SELECTOR ASSEMBLY

Remove cam gear as directed in paragraph 7. Remove feeler spring from attachment point on motor board. Tilt selector assembly, and remove from base plate.

NOTE

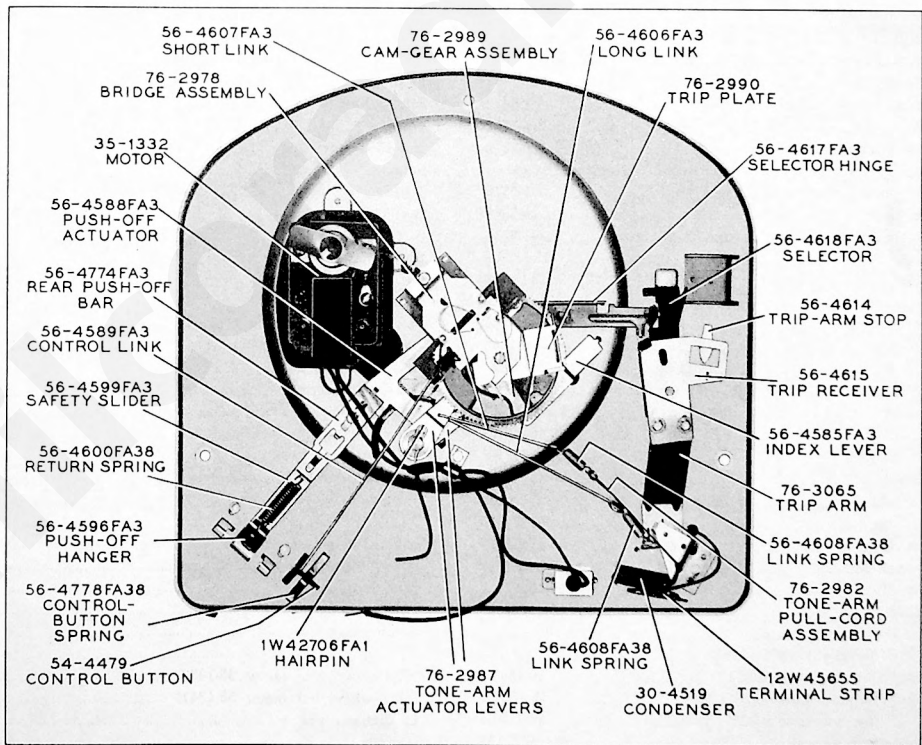
When assembling selector assembly, be sure to maintain .005" clearance between selector hinge, 56-4617FA3, and washer, 2W53954. For correct assembly refer to figures 29 and 12.

RECORD CHANGERS (MODEL M-8)



TP-4123-1

Figure 29. Selector and Selector-Hinge Assembly



TP-4107A

Figure 30. Bottom View of Changer, with Parts Identification

RECORD CHANGERS (MODEL M-8)

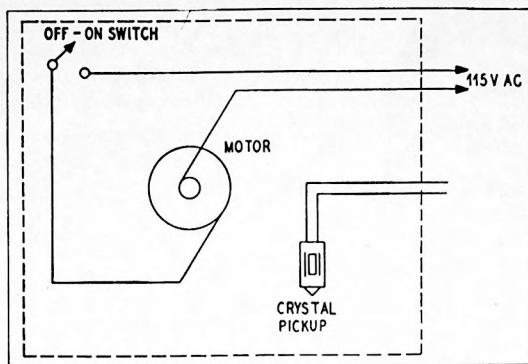


Figure 31. Changer Wiring Diagram

TP-4073

REPLACEMENT PARTS LIST

Description	Service Part No.	Description	Service Part No.
Motor	35-1332	Finger, trip	56-4612
Crystal-pickup cartridge (vertical needle insertion)	35-2643	Spring, stop	56-4613FA38
Tone-arm assembly (for cartridge 35-2643)	35-2663	Stop, trip-arm	56-4614
Tone-arm assembly (for cartridge 35-2671-1)	35-2663-2	Trip receiver	56-4615
Needle (for pickup cartridge 35-2643)	35-2669	Feeler	56-4616FE15
Needle (for pickup cartridge 35-2671-1)	35-2670	Hinge, selector	56-4617FA3
Crystal-pickup cartridge (horizontal needle insertion)	35-2671-1	Selector	56-4618FA3
Tone-arm shell	35-2672	Spring, retainer	56-4627FA3
Turntable assembly	35-3066	Spring ring	56-4628FA38
Cable assembly, shielded, tone arm (M-8 console)	41-3704	Saddle, push-off	56-4629
Switch	42-1750-3	Spring, shelf	56-4630FA38
Bumper	54-4460	Tone-arm lift pin	56-4631
Button, control	54-4479	Spring, feeler	56-4670FA38
Grommet, motor mtg.	54-4491	Push-off bar, rear	56-4774FA3
Cover, switch	56-1880	Spring, control-button	56-4778FA38
Plug	56-2027	Spacer, motor mtg.	56-4926
Cover, plug, motor-assembly cable (M-8 console)	56-2071-2	Plug (M-8 console)	76-1794-1
Lever, index	56-4585FA3	Cable, motor assembly	76-2172
Spindle	56-4587FA8	Idler wheel (for motor 35-1332)	76-2374
Actuator, push-off	56-4588FA3	Bridge assembly	76-2978
Link, control	56-4589FA3	Pull-cord assembly, tone arm	76-2982
Plate, fulcrum	56-4593	Shaft-and-swivel assembly	76-2983
Plate, push-off slide	56-4594FA37	Push-off cover assembly	76-2984
Rod, push-off	56-4595FA3	Levers, tone-arm actuator	76-2987
Hanger, push-off	56-4596FA3	Base-plate assembly	76-2988
Bar, push-off	56-4597FA3	Cam-gear assembly	76-2989
Slider, safety	56-4599FA3	Trip plate	76-2990
Spring, return	56-4600FA38	Ball-bearing assembly	76-2991
Spacer, 7/32" (for cartridge 35-2643)	56-4601	Trip arm	76-3065
Spacer, 7/32" (for cartridge 35-2643)	56-4601-1	Idler wheel (for motor 35-1339)	76-3556
Spacer, 3/8" (for cartridge 35-2671-1)	56-4601-2	Idler wheel (for motor 35-1341)	76-3557
Spacer, 7/16" (for cartridge 35-2671-1)	56-4601-3	Escutcheon pin	1W36521
Spring, tone-arm bias	56-4603FA38	Hairpin	1W42706FA1
Pin, tone-arm pivot	56-4604FE15	Cam-gear washer	1W52627
Link, long	56-4606FA3	Clip, tubular	1W57117
Link, short	56-4607FA3	Washer, selector	2W53954
Spring, link	56-4608FA38	Terminal strip	12W45655