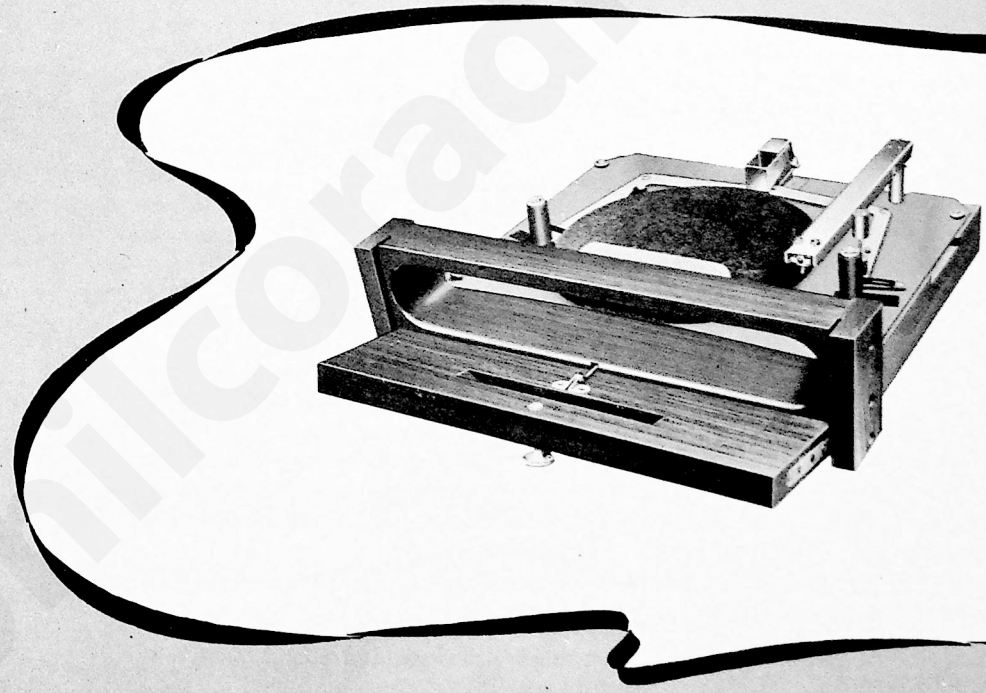
PHILCO SERVICE

HOME RADIO

SERVICING . . . 1946

PHILCO AUTOMATIC RECORD PLAYER

Model M-7



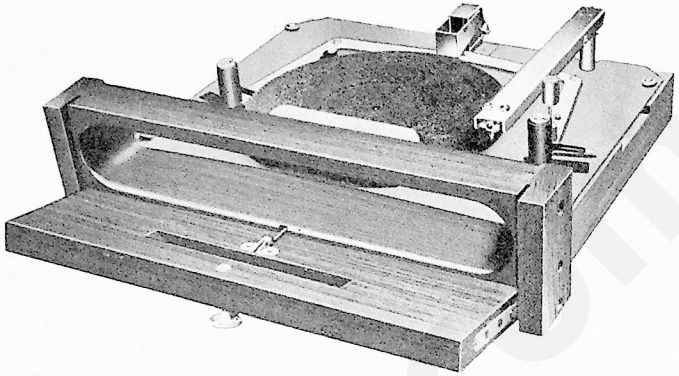
SERVICE DIVISION

PHILCO RADIO AND TELEVISION CORPORATION

PHILADELPHIA, PENNA.

PHILCO MODEL M-7 AUTOMATIC RECORD PLAYER

Part Number 35-1307



110-115 VOLTS A. C. • 60 CYCLES

INTRODUCTION

This bulletin contains service information for the PHILCO MODEL M-7 AUTOMATIC RECORD PLAYER. The information furnished will enable you to make any adjustment that may be required. If servicing becomes necessary, the material in the SERVICING section will enable you to do a good job. In order that any part of the mechanism may be adequately serviced, the information furnished has been made as complete as possible in text detail, drawings, and photographs.

Open Door *Insert Record* *Close Door*

Figure 1

GENERAL DESCRIPTION

The PHILCO M-7 AUTOMATIC RECORD PLAYER automatically plays single 10-inch or 12-inch records. See Figure 1. The player is loaded by simply opening the door in the front and pushing the record through the slot. As the door is closed, the tone arm is placed on the record, and the drive mechanism is started; after the record is played, the drive mechanism is turned off automatically. The door may be opened at any time a record is being played, without harming any part of the mechanism; the opening of the door shuts off the power and places the tone arm in its starting position.

The tone arm is equipped with a crystal pickup unit using a special, alloy needle having a precious-metal point; this needle plays several thousand records before replacement is necessary.

REMOVAL OF PACKING SUPPORTS

Special packing is used for the tone arm, which is supported by a corrugated cardboard strip, and is lashed to the tone-arm index pin. The turntable is held in place by a cord. Remove the packing carefully.

PRELIMINARY INSPECTION

Connect Set to Power Source

After removing the packing from the tone arm, see that the needle is held tightly by its set screw. Close the door, and see that the tone arm swings freely, without undue friction, over the playing range; also, see that it moves easily upward and downward. Turn the RADIO-OFF-PHONO switch knob of the radio receiver to the PHONO position.

Phono Test—Ten-Inch Record

Open the door of the record player and insert a 10-inch record through the slot, pushing the record in until it stops. While observing the player, close the door; the needle should readily enter the lead-in groove of the record, the *spindle* should rise upward through the hole in the record, and the turntable drive mechanism should start.

Adjust the receiver volume control for moderate volume. Listen for general quality of reproduction. After the record is played, the turntable should stop automatically. When the door is opened, the tone arm should lift and swing over against the *tone-arm index pin.*

Check the turntable speed while a record is being played; the speed should be approximately 78 r.p.m. Open the door when a record is partially played; the tone arm should lift and swing aside, and the turntable should stop.

Phono Test—Twelve-Inch Record

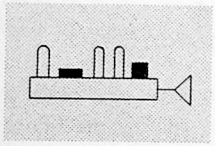
Insert a 12-inch record, pushing inward until the record stops; as the record is pushed home, the tone arm should swing aside (needle remaining over lead-in groove), and the 10-inch hinged section of the *rear index bracket* should lift to clear the edge of the record. When the door is closed, the two rubber-covered *guide rollers* should move away from the edges of the record at least 1/16 inch. When the door is opened, the tone arm should swing aside, and the *guide rollers* should come into contact with the sides of the record; when the record is removed, the hinged section of the *rear index bracket* should fall into its 10-inch position.

SERVICING

TEST PROCEDURES

The following tests are given for quickly localizing trouble in a Philco radio-phonograph. Be sure to make each test, in the order given, *before* removing the record player from the cabinet.

If the trouble is found to be in the audio amplifier, refer to the radio service manual for the particular model under test. If the trouble is in some part of the record player, refer to pages 304 to 308 of this manual.

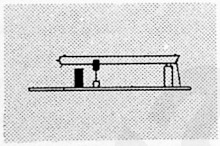


1. AUDIO-AMPLIFIER TEST

The audio amplifier is common to both the radio and phonograph sections of the combination. With a station tuned in, check the audio amplifier by noting the tonal quality and volume of the speaker output.

If the trouble is found to be in the audio amplifier, refer to the radio service manual for the particular model under test.

2. TONE-ARM TESTS



a. Pickup Test

Play a familiar record on the radio-phonograph, and listen to the reproduction. If the audio amplifier was found to be normal in the first test, distortion or low volume indicates trouble in the pickup or in the connecting leads to the radio chassis. Try a new needle if the output is distorted. If the pickup is found to be faulty, replace the unit, following the procedure given on page 308 of this manual.

Note: It is advisable to carry a familiar record with you as a regular part of your test equipment.

b. Indexing and Tripping Test

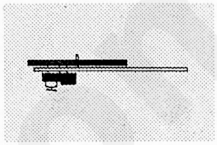
Open the door of the record player. While observing the record player, insert a 10-inch record, and close the door. As the door is closed, the tone arm should set down with the needle in the lead-in groove of the record. After the record has played through, tripping of the mechanism should occur during three to five revolutions with the needle riding in the eccentric groove.

Open the door; the tone arm should lift and swing across to the index pin.

Insert a 12-inch record and repeat the above test.

If the indexing or tripping is incorrect, refer to ADJUSTMENTS in this manual.

3. TURNTABLE-AND-MOTOR TEST



In table-model combinations, it is necessary to raise the top of the cabinet, as directed on page 307. Open the door of the record player, and insert a 12-inch record. Place a stroboscope disc, such as Philco Part No. 45-2900, on the record, and illuminate the disc with a lamp (preferably a neon bulb) operated on 60-cycle a.c. Close the door to start the turntable. The dots in the row calibrated for 78 r.p.m. should appear to remain stationary, or drift slowly but smoothly forward or backward. Erratic motion of the dots indicates trouble in the drive mechanism.

If the speed of the turntable is unstable, refer to POSSIBLE CAUSES OF "WOWS" on page 308 of this manual.

QUALITY OF RECORDS

When diagnosing trouble, or when adjusting or servicing this record player, it should be borne in mind that records, in general, are non-uniform in a number of respects. The characteristics encountered, not only in new records from different manufacturers, but in different records of the same make, include:

Lack of (or incomplete) lead-in groove

Lack of (or incomplete) eccentric groove

Variations in position of eccentric groove

Small hole

Poor recording

In addition to the above, used records may also be found to have cracks, warpage, or high surface noise.

To properly service the PHILCO M-7 AUTOMATIC RECORD PLAYER, the operation of the mechanism should be well understood; therefore, the following explanation is given, preliminary to the actual servicing information.

HOW THE M-7 OPERATES

The operation of the record player is controlled by a *slide-lever assembly,* and an *index-lever assembly.* The *slide-lever assembly,* under the *motor board* (main base plate) is coupled to the door by a *connector-bar,* and is moved forward or backward by the opening or closing of the door.

The indexing (adaptation to 10-inch or 12-inch records) is accomplished by the action of the *index-lever assembly,* which is controlled by the diameter of the record pushed into the slot.

WHEN THE DOOR IS OPENED, as shown in Figure 2, the following operations are performed:

1. The tone arm is moved, by a *pull-cord,* to the starting position; in this position, the pickup and needle are raised, to clear an incoming record.
2. The *record spindle* is retracted.
3. If a record is playing, the motor is turned *off.*

Figure 3 shows the bottom view of the record player (for clarity of reproduction, the wood frame and door are removed). All parts are in their closed-door positions. The *slide-lever assembly* is forward. Note that the tone-arm pull-cord is taut, the record-spindle *connector block* is lowered, and the *mercury switch-case assembly* is tilted to the *off* position.

WHEN A 10-INCH RECORD IS PUSHED INTO THE SLOT, it is guided into place, with the hole approximately centered on the turntable, without altering the positions of the *index-lever assembly* or *rear-inuex bracket.* Figure 4 shows the 10-inch record in position.

WHEN A 12-INCH RECORD IS PUSHED INTO THE SLOT, the *guide rollers* are moved outward, operating the *index-lever assembly* and changing the *rear index bracket* to its 12-inch position. The *tone-arm index pin,* being mounted on the right-hand *index lever,* moves outward, allowing the needle to assume the starting position required by the larger record.

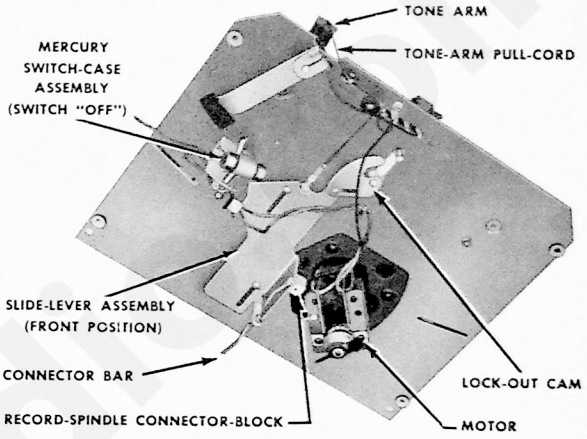


Figure 3—BOTTOM VIEW, COMPONENTS IN OPEN-DOOR POSITIONS, WITHOUT RECORD.

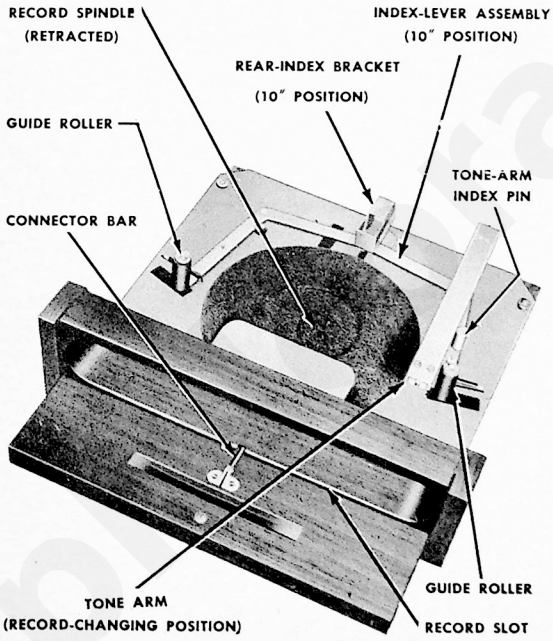


Figure 2—TOP VIEW, DOOR OPEN, WITHOUT RECORD.

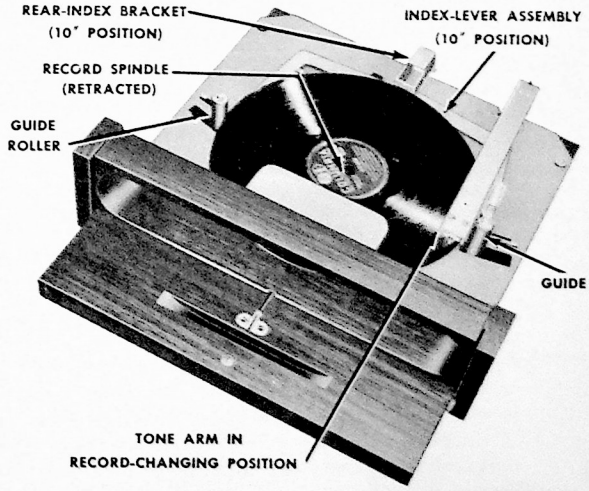


Figure 4—TOP VIEW, DOOR OPEN, WITH 10" RECORD.

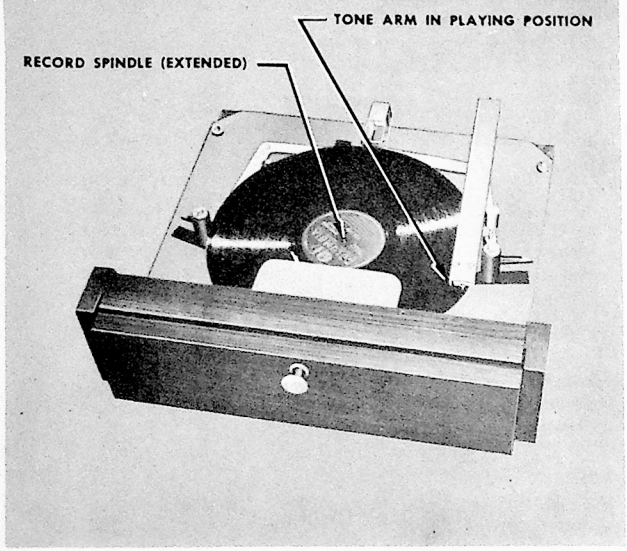


Figure 5—TOP VIEW, DOOR CLOSED, WITH 10″ RECORD.

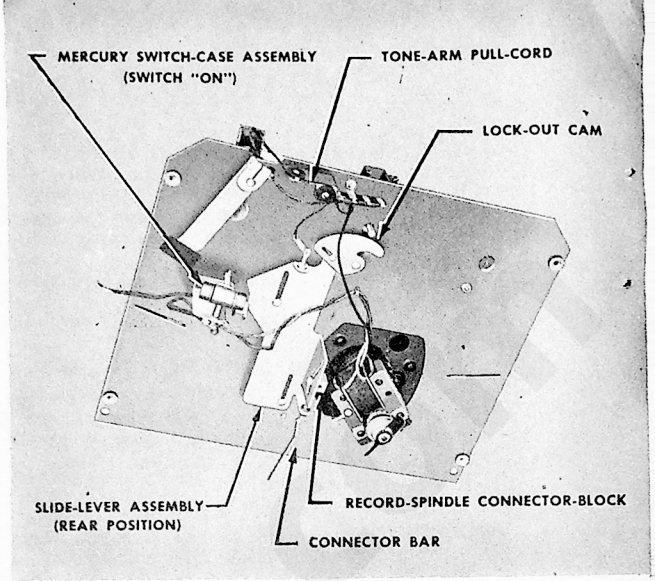


Figure 6—BOTTOM VIEW, COMPONENTS IN CLOSED-DOOR POSITIONS, WITH 10″ RECORD.

WHEN THE DOOR IS CLOSED, WITH A 10-INCH RECORD IN PLACE, the following operations are performed:

1. The *record spindle* is extended through the hole in the record, positioning the record accurately for the tone-arm set down.
2. The needle is lowered to the lead-in groove.
3. The motor is turned *on.*

Figure 5 shows the 10-inch record in place, with the door closed. Note the position of the *record spindle* and the tone arm.

Figure 6 shows the bottom view under the same conditions. Note the positions of the *slide-lever assembly,* the record-spindle *connector-block,* and the *mercury switch-case assembly.* It will be seen that the *tone-arm pull-cord* is slack.

WHEN THE DOOR IS CLOSED, WITH A 12-INCH RECORD IN PLACE, the operations mentioned above are performed, and, in addition, the *stud* of the *index-lever assembly* is engaged by the *lock-out cam;* this causes the two *guide rollers* to be moved away from the edges of the record, permitting the record to turn freely. Figure 7 shows a top view of the record player with a 12-inch record in place. Figure 8 shows the bottom view, with all parts in their closed-door position. Note the positions of the *index-lever stud* and the *lock-out cam.*

When the needle rides into the eccentric portion of the groove, at the finish of the record, the motor is turned *off.* The motor is controlled by the *mercury trip switch;* the power is turned *on* or *off* by closing or opening the door, or turned *off,* at the finish of the record, by the tone-arm trip mechanism.

Figure 7—TOP VIEW, DOOR CLOSED, WITH 12″ RECORD.

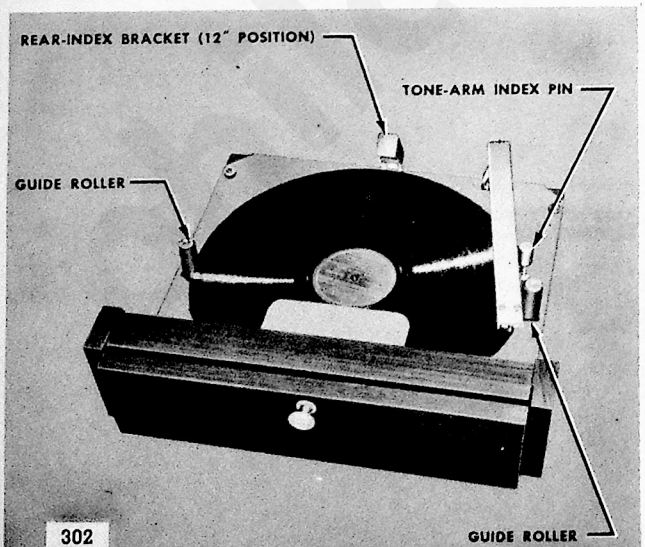
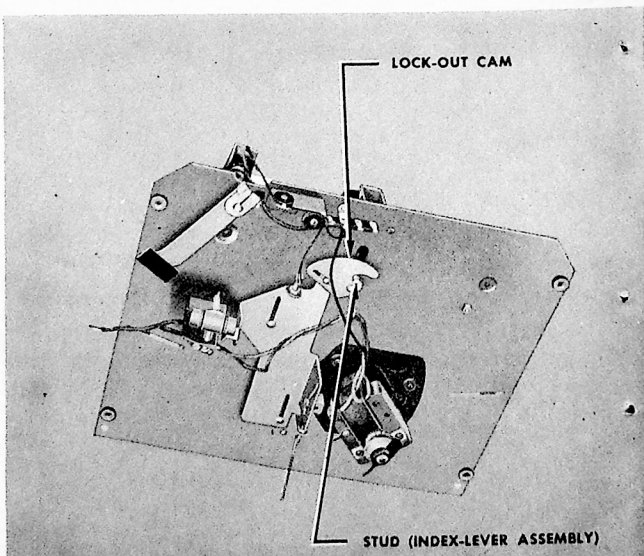


Figure 8—BOTTOM VIEW, COMPONENTS IN CLOSED-DOOR POSITIONS, WITH 12″ RECORD.



SLIDE-LEVER ASSEMBLY

Most of the operations of the record player are controlled by the *slide-lever assembly* (Figure 9), which is actuated by the opening or closing of the door. The door is coupled to a *connector-bar,* the other end of which is attached to the *slide-lever assembly,* located under the motor board (main base plate). The *slide-lever assembly* moves forward or backward as the door is opened or closed. The operations performed by the *slide-lever assembly,* besides positioning the tone arm, are accomplished by its three elements.

1. The trip-switch reset spring turns the trip switch *off* or *on.*

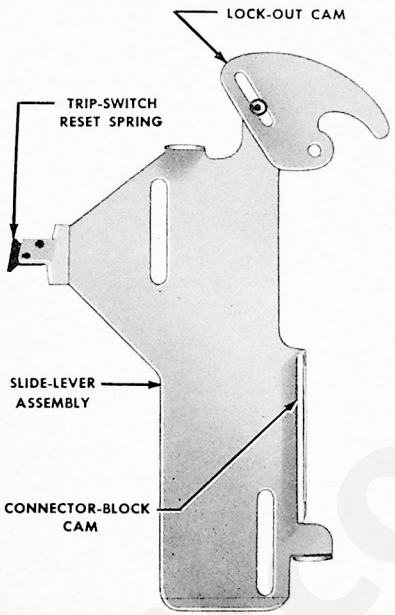


Figure 9—SLIDE-LEVER ASSEMBLY.

2. An ear having a diagonal slot (connector-block cam) retracts or extends the *record spindle.*
3. The *lock-out cam,* at the rear, moves the two *guide rollers* away from the edges of a 12-inch record, allowing the record to turn freely.

TRIP-SWITCH ASSEMBLY

The power to the drive motor is controlled by the *mercury trip switch,* shown in Figure 10A; the *mercury switch-case assembly,* which is mounted in a rocking clamp assembly, is provided with an adjustable *trip lever* at one end of the supporting shaft, and a lever and *trip pawl* at the other end. The switch contacts are closed when the case is tilted so that the mercury settles in the end nearest the *slide lever;* in the *on* position, this end is slightly lower than the opposite end, as shown in Figure 10A. The switch is turned *off* or *on,* when the door is opened or closed, by the *trip-switch reset spring* on the *slide-lever assembly;* this spring engages the tip of the adjustable *trip lever.* The switch is turned *off,* when the needle rides into the eccentric groove of the record, by the *trip pawl;* this pawl is actuated by a reverse motion of the *tone-arm trip lever.*

Figures 10A, 10B, 10C, and 10D show the positions of the *tone-arm trip lever, trip pawl,* and *mercury switch-case assembly* for a sequence of record-playing and tripping actions.

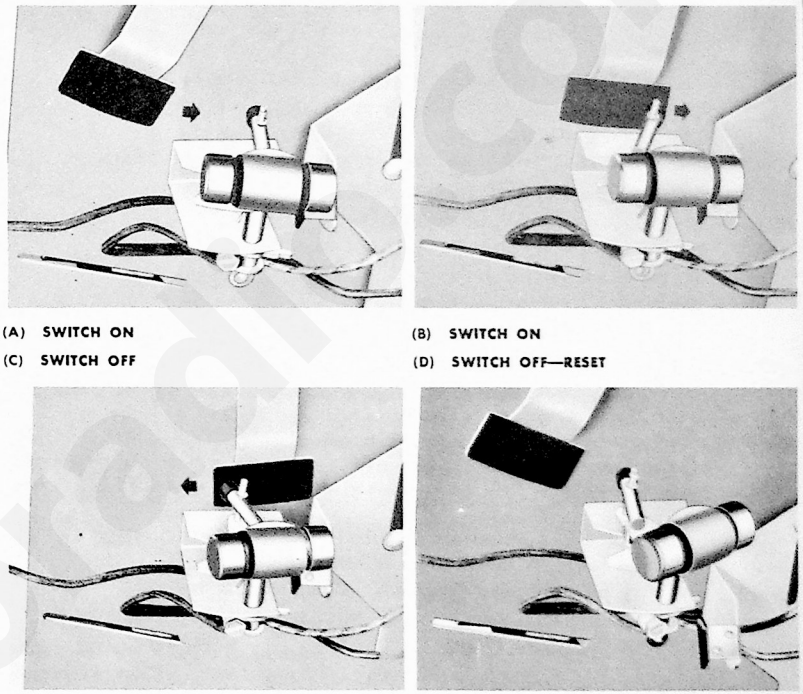


Figure 10—MERCURY TRIP-SWITCH AND TONE-ARM TRIP-MECHANISM OPERATION.

Figure 10A shows the switch in *on* position, and the *tone-arm trip-lever* position soon after the record has started to play.

Figure 10B shows the *trip pawl* starting to ride the *tone-arm trip lever* as the record is partially played.

Figure 10C shows the *trip pawl* after the trip action is completed; the switch is turned *off.*

Figure 10D shows the position of the *mercury switch-case assembly,* after the door is opened; the switch has been *reset,* by the *trip-switch reset spring,* to the position from which it may again be turned *on,* by the same spring, when the door is closed.

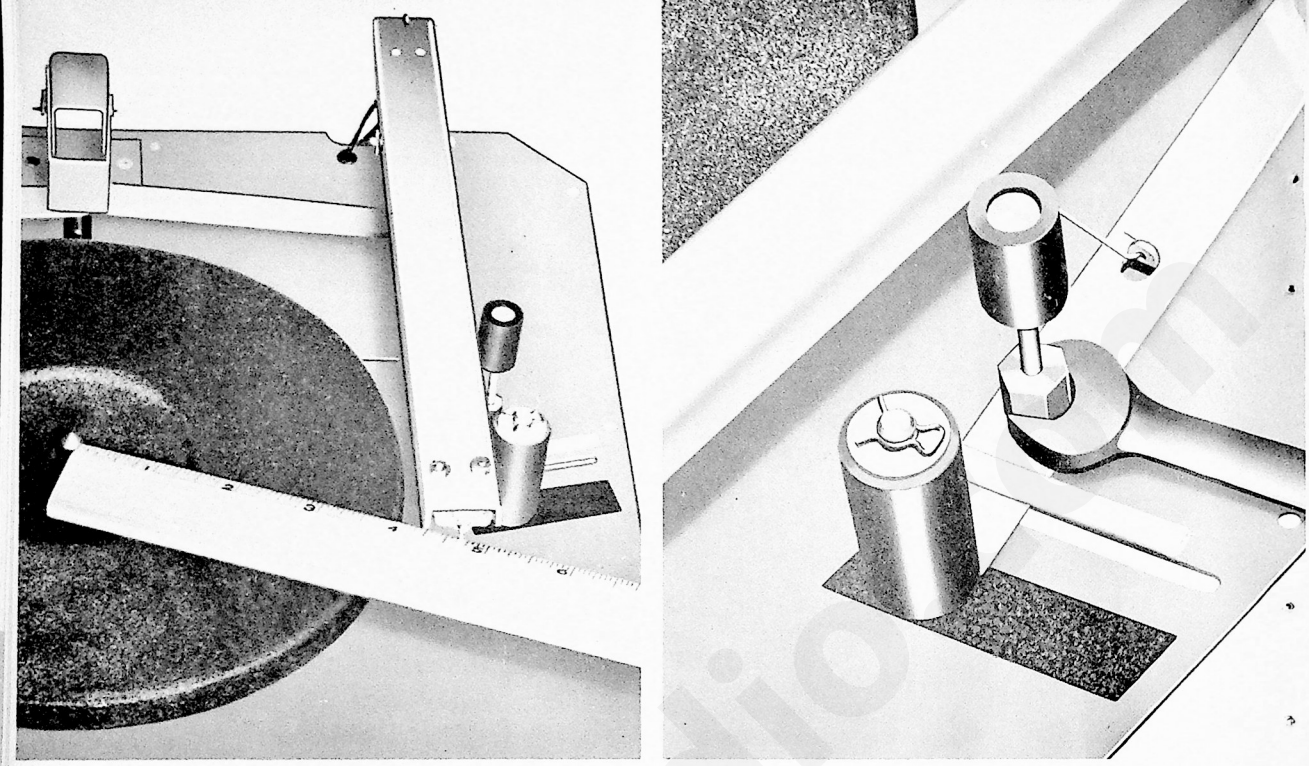


Figure 11—TONE-ARM SET-DOWN ADJUSTMENT.

ADJUSTMENTS

Each of the adjustments described below, unless otherwise stated, is independent of other adjustments, and may be performed separately as required. It is advisable, however, to check all adjustments when servicing the record player.

TONE-ARM SET-DOWN

This adjustment should be made without a record; because of the wide variation in individual records, the adjustment is made by measurement, *to insure the best average set-down position.*

1. See that the door of the record player is closed.
2. Lift the tone arm until the needle is slightly higher than the turntable.
3. Hold the tone arm lightly against the tone-arm index pin.
4. Using a ⅜" open-end wrench on the hex shoulder of the eccentric-mounted tone-arm index pin, turn the pin until the distance between the point of the needle and the *side* of the *spindle* nearest the needle is $4\frac{11}{16}$". See Figure 11.

INDEX-LEVER ASSEMBLY

This adjustment establishes the minimum clearance between the guide rollers and the edges of a 10-inch record. The position of the index-lever assembly carrying these rollers is determined by the adjustable index-lever cam shown in Figure 12.

1. Place a 10-inch record on the turntable, and close the door.
2. Using a socket wrench, loosen the nut (beneath the motor board) holding the adjusting cam.
3. Turn the cam until the clearance between the guide rollers and the edges of the record is $\frac{1}{16}$". Holding the cam firmly, tighten the nut.
4. Try a variety of 10-inch records on the turntable. If the guide-roller tires contact any of these records with the door closed, repeat the adjustment.
5. After this adjustment is satisfactory, make the tone-arm set-down adjustment, since this is disturbed by changing the index-lever cam.

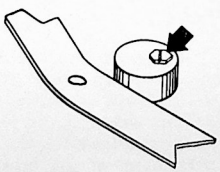


Figure 12 INDEX-LEVER ADJUSTMENT.

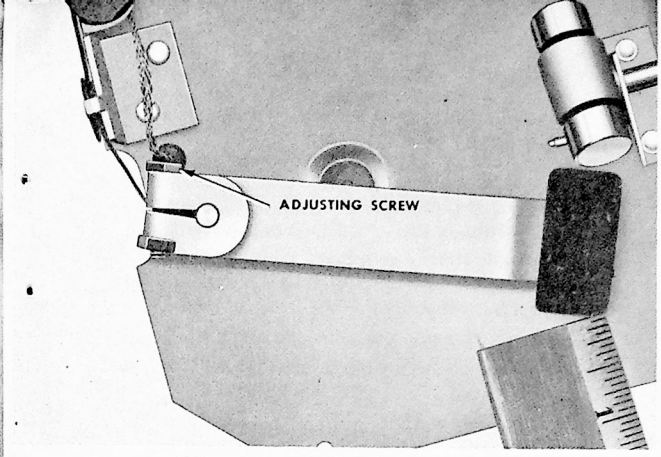
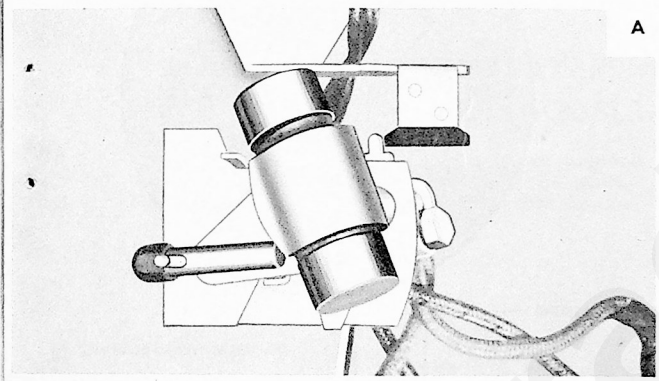
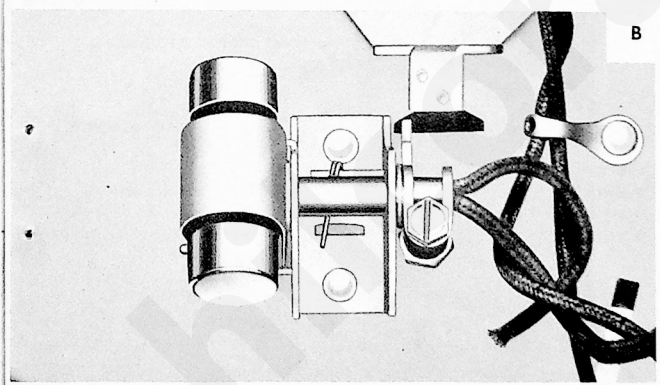
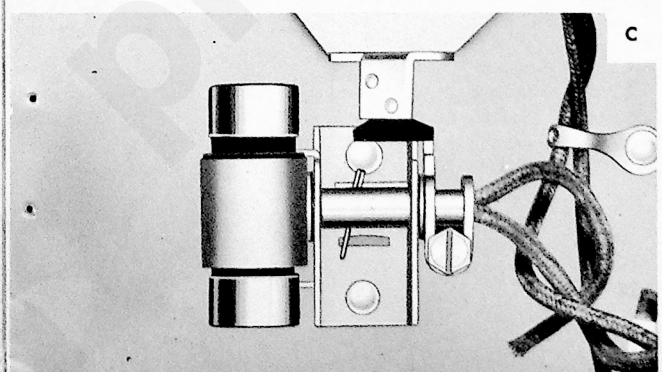


Figure 13—TONE-ARM TRIP-LEVER ADJUSTMENT.

Figure 14—TRIP-SWITCH-LEVER ADJUSTMENT.







TONE-ARM TRIP LEVER

This adjustment is made to obtain the proper relationship between the trip lever and the tone arm, thus allowing the tone arm, when starting to oscillate in the eccentric groove, to turn off the drive-motor power. There should be an angular difference of approximately 15° between the tone arm and its trip lever. The adjustment, when made according to the following procedure, insures proper operation of the trip mechanism with the wide eccentric-groove variations encountered in different records.

1. See that the door of the record player is closed. No record is required.
2. Loosen the screw in the trip-lever clamp on the lower end of the tone-arm spindle. See Figure 13.
3. Hold the tone arm against the tone-arm index pin.
4. Swing the trip lever until the outside corner of the adhesive-coated portion is ¾″ to ⅞″ from the edge of the motor board. See Figure 13. Tighten the clamp screw.
5. Check the end play of the tone-arm spindle; there should be just enough play (.003″ to .005″) to allow the tone arm to swing freely throughout its range. The adhesive-coated end of the trip lever should be close to the motor board, and should swing throughout its range without scraping.
6. When this adjustment is properly made, the trip mechanism should operate through a range between 1½″ and 3″ from the center of the record spindle.

TRIP-SWITCH LEVER

This adjustment establishes the proper relationship between the trip-switch lever and the trip switch, so that the switch is turned *off* or *on* by opening or closing the door, and is turned *off* by the tone-arm trip mechanism after a record is played.

1. Loosen the screw in the trip-switch-lever clamp. See Figure 14A.
2. Open the door of the record player.
3. Tilt the switch to the position shown in Figure 14A; the lever carrying the trip pawl should be against the stop.
4. Turn the trip-switch lever until its tip is contacted, when the door is closed, by the under surface of the switch-reset spring at a point close to the upper tip of the spring, as shown in Figure 14B. When the door is reopened, the lever tip should be contacted by the upper surface of the switch-reset spring at a point close to the lower tip of the spring, as shown in Figure 14C.
5. Open and close the door several times, observing the upper and lower points where the trip lever contacts the spring; readjust the lever until its tip makes contact at equal distances from the tips of the spring as the spring is moved forward and backward. Tighten the screw.

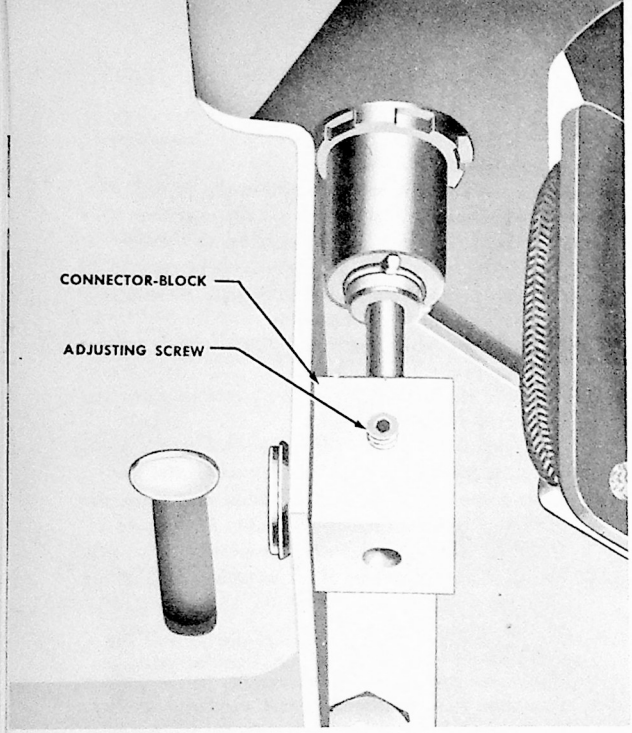
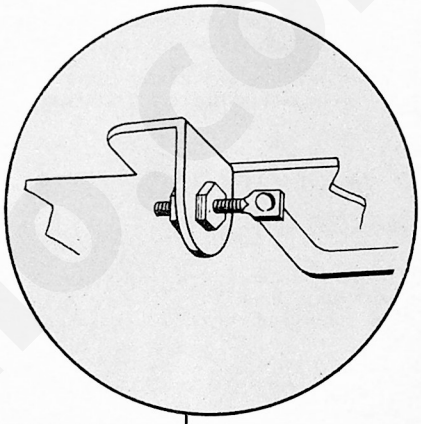


Figure 15—SPINDLE-HEIGHT ADJUSTMENT.

SPINDLE HEIGHT

The height of the record spindle, when extended, should be such that the spindle properly engages the record hole without delay, when the door is closed. The adjustment is made as follows:

1. Open the door of the record player. No record should be used.
2. Using a No. 4 Allen wrench, release the set screw in the spindle connector block. See Figure 15.



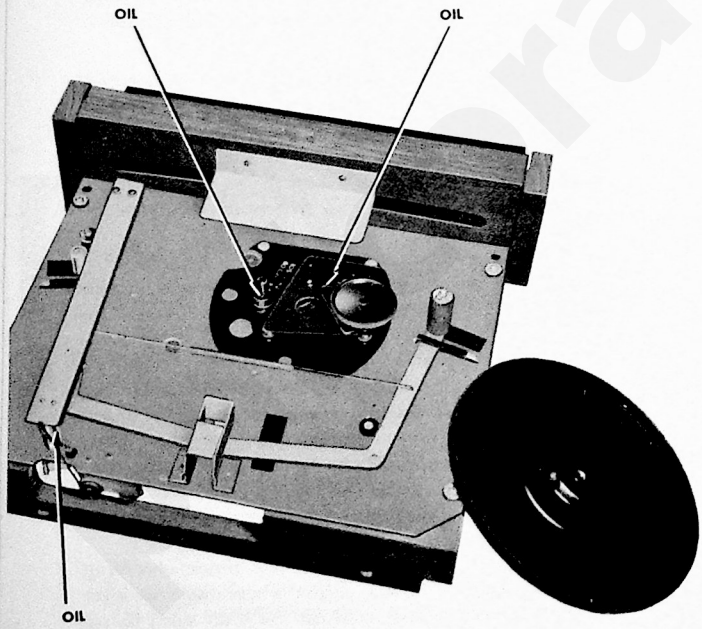


Figure 16—LUBRICATION POINTS UNDER TURNTABLE.

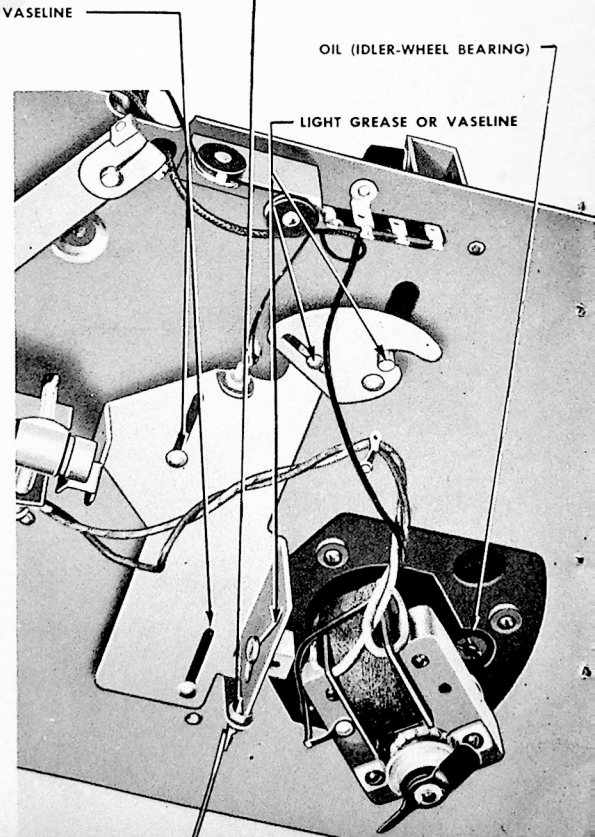


Figure 17—LUBRICATION POINTS UNDER MOTOR BOARD.

3. Adjust the spindle height until the point on the upper end of the spindle is flush with the spindle bushing. Tighten the set screw.

CONNECTOR BAR

This adjustment establishes the correct position of the slide-lever assembly, with respect to the door.

1. Open the door to its limit (do not force).
2. Loosen the two nuts on the threaded stud of the connector bar. See detail, Figure 17.
3. Hold down the door, and separate the two nuts, so that the slide-lever assembly may be pulled forward until stopped by the shoulder rivets in the two straight slots. With the slide-lever assembly held in this forward position, tighten the nuts. Avoid an adjustment which places too much strain on the ear to which the threaded stud is fastened.

After making this adjustment, check the record-spindle height, readjusting if necessary.

MAKING RECORD PLAYER ACCESSIBLE IN TABLE MODELS

Unhook the latch; this can be done by inserting one finger through the hole in the bottom of the cabinet. Push the top of the cabinet backward, then upward.

LUBRICATION

It is recommended that the PHILCO M-7 AUTOMATIC RECORD PLAYER be lubricated about once a year. Remove the turntable, by lifting upward.

CAUTION

Do not get any oil or grease on the idler-wheel tire, drive-motor pinion, or turntable.

The points to be lubricated are indicated in Figures 16 and 17. Apply a few drops of *oil* to the following points:

1. Edges of slot under idler-wheel plate (the slot in which the guide pin rides).
2. Record-spindle and bushing.
3. Tone-arm spindle.
4. Idler-wheel bearing, shown in Figure 17.

Clean off old grease with carbon tetrachloride, and apply *light grease* or *vaseline* to the following points, also shown in Figure 17.

1. Two straight slots of slide-lever.
2. Diagonal slot carrying record-spindle connector block.
3. Slot of lock-out cam.

After completing the lubrication, close the door of the record player and wipe oil from the extended portion of record spindle. Replace the turntable. Dip a pipe cleaner in carbon tetrachloride, and carefully clean the pin on which the trip pawl swings; do not apply any lubrication to this pin.

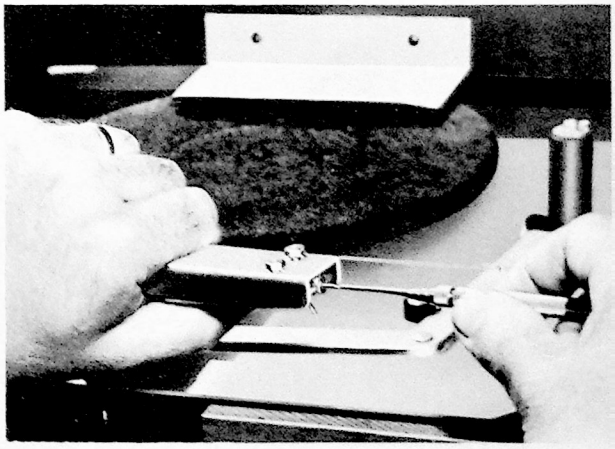
REPLACEMENT OF PARTS

Parts or assemblies which may be replaced for worn, damaged, or broken parts or assemblies are listed in the Replacement Parts List. Many of the parts are attached to the motor board by rivets; movable sections are attached by shoulder rivets. When replacing a part or assembly, drill out the ends of the rivets, and knock them out with a nail set or center punch.

NEEDLE

TO REPLACE THE PICKUP NEEDLE IN TABLE MODELS, first remove the top of the cabinet according to the directions given on this page. Then pull the phonograph-compartment door fully open to tilt the tone arm upward. Hold the end of the tone arm and loosen the needle screw on the end of the arm with a small screwdriver. Remove the old needle, and insert the new one *as far into the needle hole as it will go, with the flat side of the shank facing toward the needle screw.* Hold the end of the tone arm with the needle in the proper position, and tighten the needle screw.

Figure 18—REPLACING NEEDLE.



CRYSTAL-PICKUP UNIT

To replace the pickup unit, first remove the two hex nuts and lockwashers from the tone arm; then withdraw the unit from under the tone arm sufficiently to permit unsoldering the connections.

CAUTION

Excessive heat will damage the crystal in the pickup unit. When unsoldering or soldering connections to this unit, use a well-tinned soldering iron. *Do not apply more heat than is absolutely necessary.*

After removing the connections, the new unit may be connected, and mounted in the tone arm.

MERCURY SWITCH-CASE ASSEMBLY

When replacing the mercury switch-case assembly, this unit must be positioned properly in its clamp, so that, when the switch case is tilted to the *on* position, the mercury covers the contacts. After running the switch leads through the hollow shaft, turn the switch case until the hole through which the leads enter is facing directly upward (toward motor board).

SLIDE-LEVER ASSEMBLY

When any part of the slide-lever assembly becomes worn or damaged, it is recommended that the entire assembly be replaced.

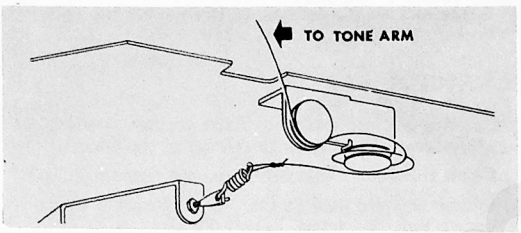


Figure 19—PULL-CORD INSTALLATION DETAILS.

PULL-CORD AND SPRING ASSEMBLY

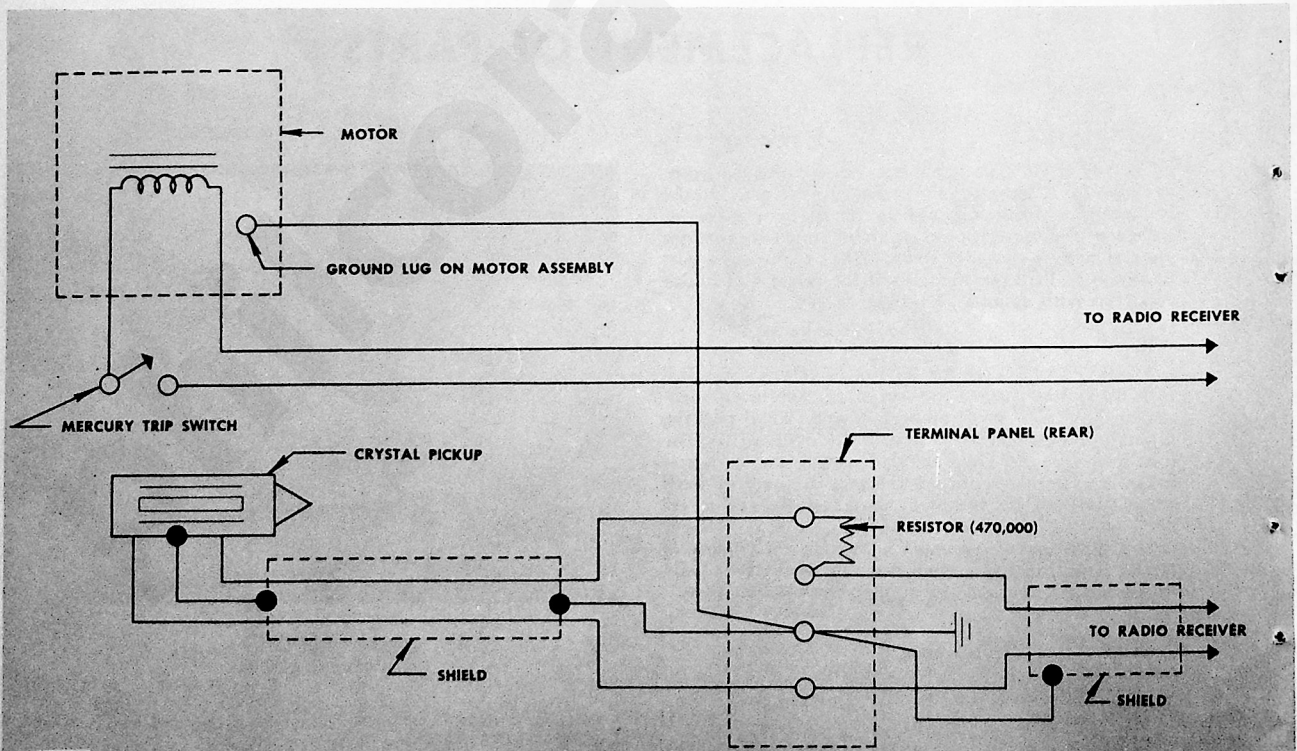
The pull-cord and spring assembly may be replaced by referring to the sketch, Figure 19.

POSSIBLE CAUSES OF "WOWS"

The presence of "wows" (pitch variations) is usually caused by a change in the speed of the turntable during each revolution. If this condition develops, it may be due to one of the following causes:

1. Defective record.
2. Idler-wheel tire unevenly worn.
3. Oil (or other foreign matter) on idler-wheel tire.
4. Binding of idler-wheel shaft.
5. Binding between record spindle and turntable bushing.
6. Guide roller tire touching edge of record.

Figure 20—WIRING DIAGRAM OF M-7 RECORD PLAYER.



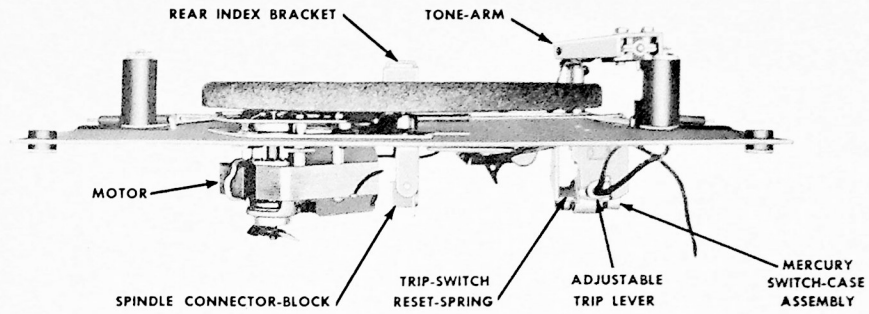


Figure 21

FRONT EYE-LEVEL VIEW.

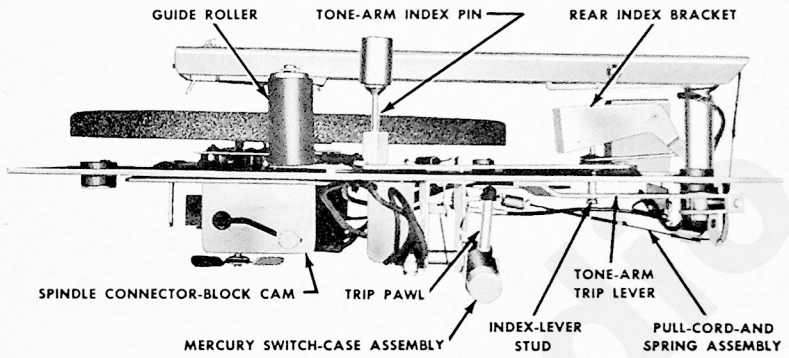


Figure 22

RIGHT EYE-LEVEL VIEW.

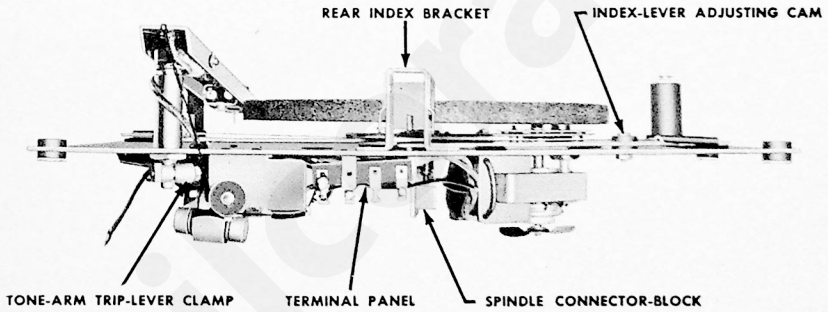


Figure 23

REAR EYE-LEVEL VIEW.

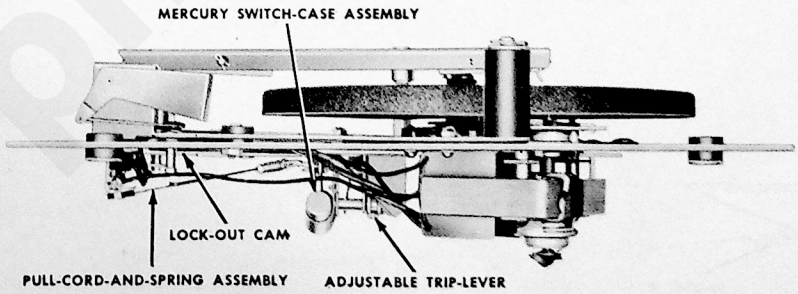


Figure 24

LEFT EYE-LEVEL VIEW.

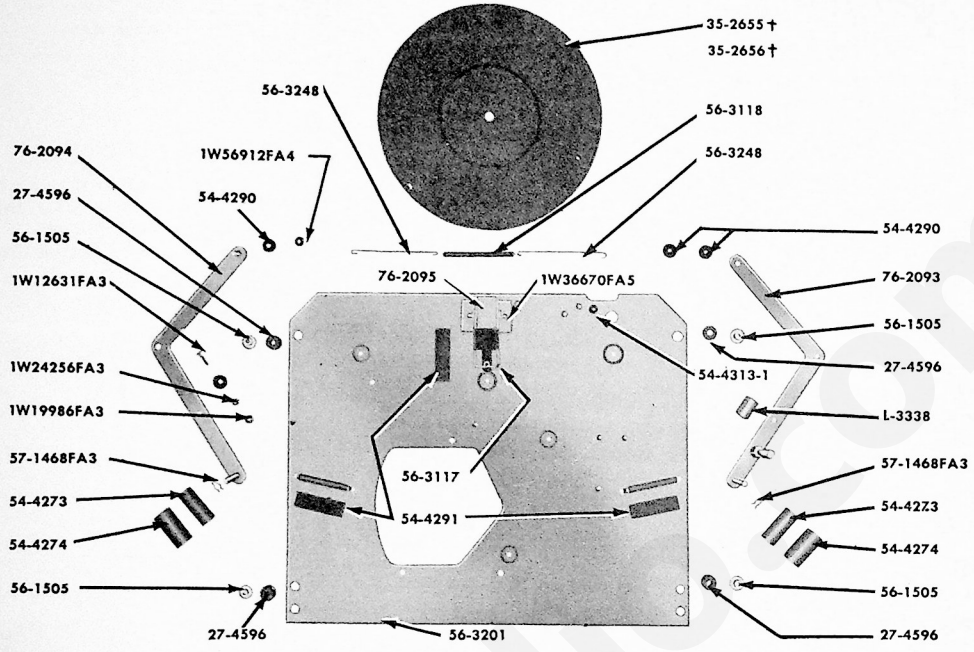
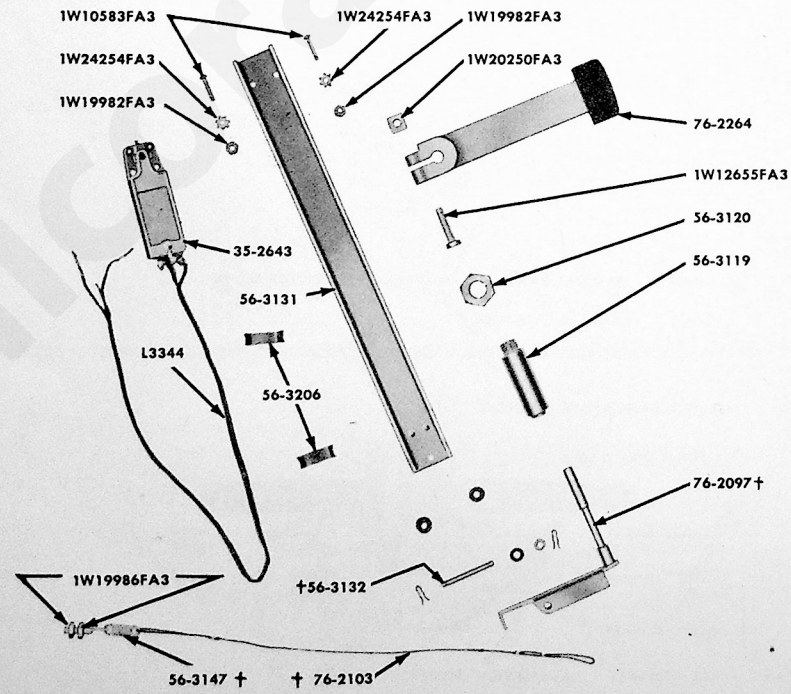


Figure 25—TOP VIEW OF MOTOR-BOARD AND PARTS.

Figure 26—TONE-ARM AND TRIP-LEVER ASSEMBLIES.



† *Refer to GENERAL INFORMATION and PRODUCTION CHANGES*

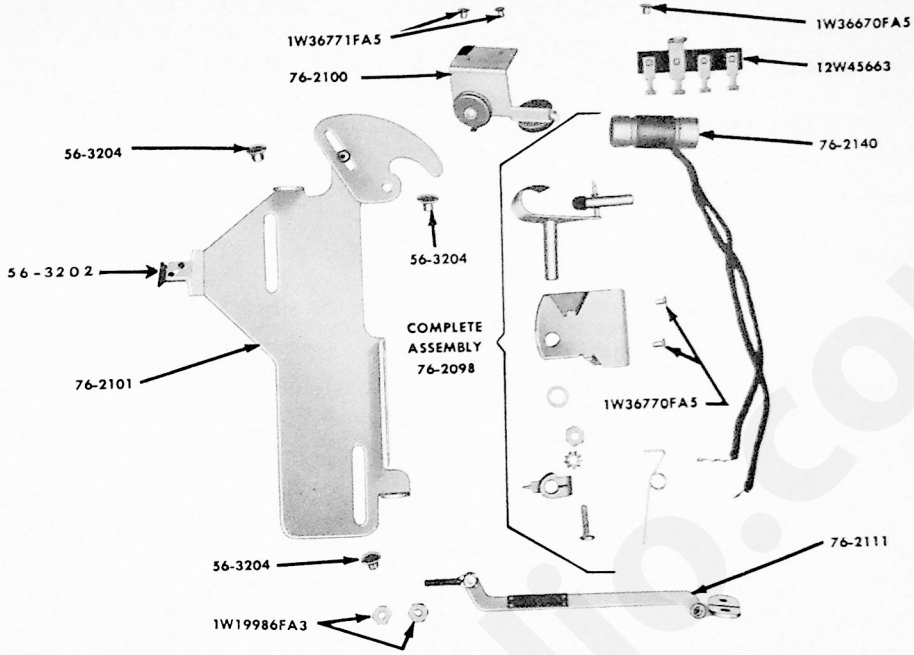
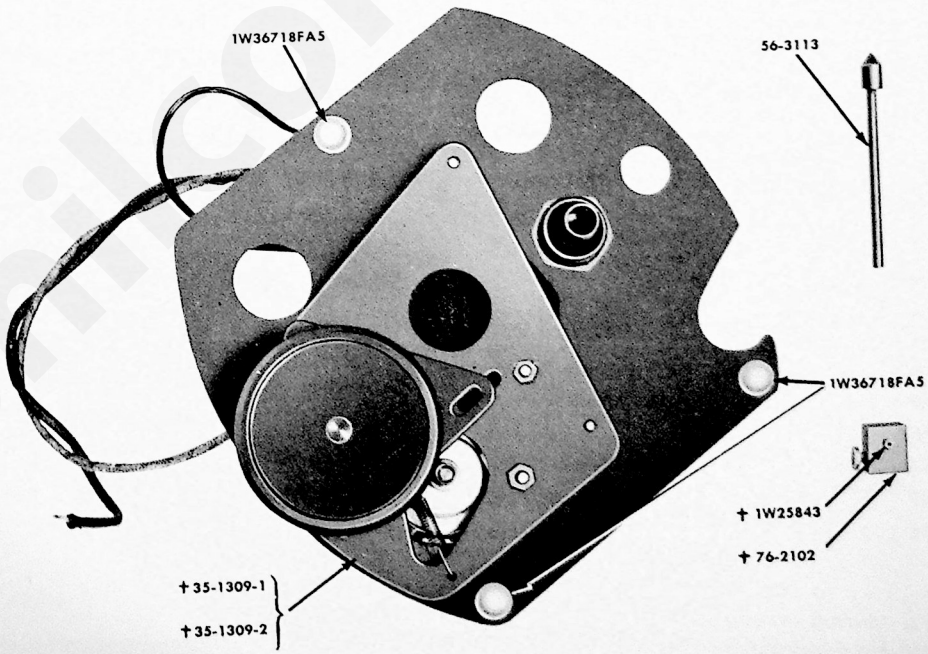


Figure 27—ASSEMBLIES-SLIDE LEVER, TRIP SWITCH, CONNECTOR-BAR, TERMINAL PANEL, BRACKET AND PULLEY.

Figure 28—MOTOR, RECORD SPINDLE, AND CONNECTOR-BLOCK.



† *Refer to GENERAL INFORMATION and PRODUCTION CHANGES*

REPLACEMENT PARTS LIST MODEL M-7

PARTS ARE SHOWN IN FIGURES 25, 26, 27, and 28, ON PAGES 14 and 15

PART No.	PART NAME
27-4596	Grommet
35-1309-1	Motor †
35-1309-2	Motor †
35-2643	Crystal Pickup †
35-2655 used with 35-1309-1	Turntable†
35-2656 used with 35-1309-2	Turntable†
45-1535	Needle (Philco Hi-Quality, Card of 12, 45-1531)†
45-2904	Needle Tightening Screw
45-8760	Cord (for Pull-Cord), 25-Ft. Spool
54-4273	Index Roller
54-4274	Index Tire
54-4275	Cam
54-4290	Rubber Washer
54-4291	Felt Pad
56-1505	Spacer
56-3113	Spindle
56-3117	Wire Clip
56-3118	Index Spring
56-3119	Spindle Bearing
56-3120	Spindle-Bearing Nut
56-3123	Record Hold-down (on Cabinet)
56-3131	Tone Arm
56-3132	Bearing
56-3135	Bracket (Trip Switch)
56-3147	Spring †
56-3201	Motor Board
56-3202	Reset Spring†
56-3204	Shoulder Rivet (Slide Lever and Index Lever)
56-3206	Cable Retainer
56-3248	Extension (Index Spring)
57-1468FA3	Hair Pin
66-4473340	Resistor 470,000 ohms—½ watt
76-2093	Index-Lever Assembly (R.H.)
76-2094	Index-Lever Assembly (L.H.)
76-2095	Rear-Index Bracket Assembly
76-2096	Tone-Arm Assembly
76-2097	Spindle and Bearing-Bracket Assembly†
76-2098	Switch and Clamp Assembly †
76-2100	Bracket and Pulley Assembly
76-2101	Slide-Lever Assembly †
76-2102	Connector-Block Assembly†
76-2103	Cord and Spring Assembly †
76-2111	Connector Bar and Clip Assembly
76-2140	Mercury Switch-Case Assembly
76-2264	Trip-Lever Assembly
76-2374	Idler Wheel, with Tire (35-1309-1 Motor)†
76-2375	Idler Wheel, with Tire (35-1309-2 Motor)†
1W10583FA3	Screw No. 4-40 x ½"
1W12496FA3	Screw No. 6-32
1W12631FA3	Screw No. 6-32 x ½"
1W12655FA3	Screw No. 8-32 †
1W19982FA3	Nut No. 4-40 hex
1W19986FA3	Nut No. 6-32
1W20250FA3	Nut No. 8-32 Square
1W24254FA3	Lockwasher No. 4
1W24256FA3	Lockwasher No. 6
1W24520FA1	Lockwasher
1W25368FA3	Wood Screw No. 8 x ⅜"
1W25843FA3	Screw (Allen) No. 4
1W36670FA5	Rivet
1W36671FA5	Rivet
1W36716FA5	Rivet
1W56912FA4	Speed Nut
2W51909	Flat Washer
12W45663	Terminal Panel
L-3338	Tubing
L-3344	Shielded Cable

† *Refer to GENERAL INFORMATION and PRODUCTION CHANGES*

PRODUCTION CHANGES FOR MODEL M-7

Run 2

a. Reset spring, 56-3202 (see figure 27), was changed to two springs. The same part number was retained.

b. Spring 56-3147 (for pull-cord), ½″ long, was changed to a spring of 1″ in length, 28-9008. The pull-cord length was changed from 12″ to 8-⅝″.

c. Screw No. 8-32 (trip clamp screw), 1W12655-FA3, shown in figure 26, was changed to a hex washer head screw, 1W12925.

Run 3

a. A sleeve was added, over the index tubing on the tone-arm stop, to allow a greater range of tone-arm adjustment. If replacement is necessary, use revised tubing L3338.

b. A spring clip, 28-2488FA1, was added to the slide-lever assembly, 76-2101, to reduce play in the slide-lever action.

Run 4

a. To eliminate noise caused by the operation of the mercury switch, the following parts were added:

Condenser, .01 x .01 mf., 600v, 3903-ODG.
Stand-off post, 56-3091.
Washer, 1W52353FA3.

Models incorporating this addition are identified by the letter "C", following the run number.

b. Modification of the connector-block assembly, as described under BINDING OF SPINDLE CONNECTOR BLOCK, was incorporated in production, starting with this run.

Run 5C

a. Needle 45-1535 (card of 12 needles, 45-1531), was changed to offset needle, 45-1534 (card of 12 needles, 45-1530).

b. IMPROVED SPINDLE-AND-BEARING BRACKET AND TONE ARM

The spindle-and-bearing-bracket assembly, 76-2097, was redesigned to provide more trouble-free trip action. The part number of the new spindle-and-bearing bracket is 76-2613. The tone arm, 56-3131, was also revised to accommodate the new spindle-and-bearing bracket. The part number of the tone arm is unchanged.

The new spindle-and-bearing bracket is designed to be used with either the old or the revised tone arm, 56-3131. When replacing the tone arm on a record player having the old spindle-and-bearing bracket, be sure to also order the new-type spindle-and-bearing-bracket assembly, 76-2613.

NOTE: The bearing, 56-3132, and the hairpins, grommets, and washers, used with assembly 76-2097, are not required for assembly 76-2613.

GENERAL INFORMATION ON MODEL M-7

SWITCH AND CLAMP ASSEMBLY 76-2098

The mercury switch, clamp, and trip assembly is not available as a complete assembly; the individual parts are obtainable, as follows:

45-1488 ..... clamp and trip pawl
76-2140-1 ..... mercury switch
56-3205 ..... trip-switch spacer
1W12901FA3 ..... slotted-hex-head screw
1W20248FA3 ..... square nut
56-3200 ..... trip-switch lever
56-3138 ..... spring
56-3135FA3 ..... trip-switch bracket

MOTORS AND TURNTABLES

Three types of motors are used. A different type of turntable is used with each motor. These turntables are not interchangeable.

Motor 35-1309-1 is used in domestic and export models (no other type is used in export models). Turntable 35-2655, also idler wheel and tire 76-2374, are used with this motor.

Motor 35-1309-2 is used with turntable 35-2656 and idler wheel and tire 76-2375.

Motor 35-1329 is used with turntable 35-2662 and idler wheel and tire 76-3059.

BINDING OF SPINDLE CONNECTOR BLOCK

Binding of the spindle connector block (shown in figure 15) can cause the following conditions:

1. Sticking door
2. Breaking of door link
3. Bending of the bracket on the slide-lever assembly, to which the door is fastened.
4. Slow turntable speed (caused by binding of the spindle within the spindle sleeve)

The binding can often be relieved by removing, with a small file, any burrs or sharp edges on the cam slot and the spindle block. Also, make certain that the slide-lever assembly has a dimple or a spring clip (see drawing below), to eliminate vertical play. The clip is of the same type as those used on auto radio covers.

In those cases where the binding is not relieved after the above suggestions have been followed, a new spring and block arrangement may be substituted for the spindle connector block. The parts required are: one 56-3877 spindle spring; one 76-2537 spindle block; one 1W19828FA3 self-tapping screw. To install, remove the original spindle block, and replace it with the new 76-2537 spindle block. Install the spring as shown in the drawing. To locate the spindle-spring mounting screw, two rivets near the mercury-switch assembly are used as centers for arcs; drill a hole with a #29 (.136″) drill at the intersection of the arcs of the radii given in the drawing. Clearance of approximately ⅛″ at the point indicated in the drawing may be obtained by bending the spindle spring slightly, in the required direction, at the point of contact with the chassis. Make certain that the spring does not engage the hole in the end of the cam slot. When the modification is com-

pleted, make the spindle-height adjustment according to the instructions in the manual.

Beginning with run 4, the change described above was incorporated in production.

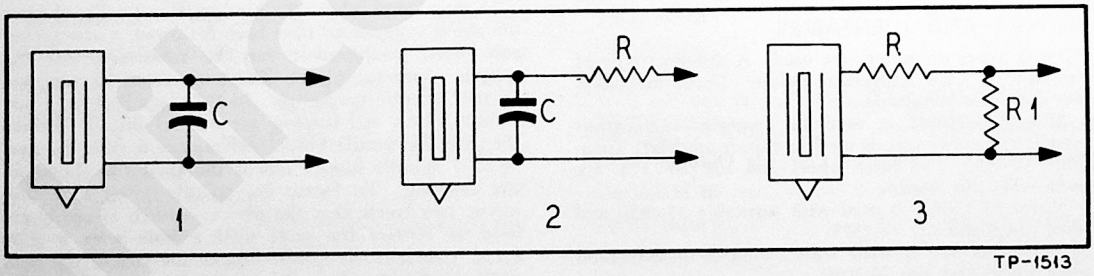
12", RECORD EJECTION

Do not bend the rollers inward to prevent the occasional ejection of 12" records when the door is opened. To correct this trouble, install spring washer 4W56294 and "C" washer 56-2793FA3 on the right-hand (viewed from front) roller; these parts add tension to the roller.

CRYSTAL PICKUPS AND COMPENSATING NETWORKS

All Philco Radios of Model 46-1201 are equipped with the M-7 Automatic Record Player. However, because of the differences between climatic conditions in the various localities into which these models are shipped, the record players employ various combinations of crystal pickups and crystal compensating networks. The chart and diagrams below show the crystal and crystal compensating network for each model and code of the 46-1201.

MODEL	CRYSTAL PICKUP PART NO.	DRAWING	NETWORK VALUES
46-1201, Code 121	35-2643	3	R, 330,000 ohms, Part No. 66-4333340* R1, 68,000 ohms, Part No. 66-3683340*
46-1201-T, Code 121	35-2658	2	C, 820 mf., Part No. 60-10825401* R, 330,000 ohms, Part No. 66-4333340*
46-1201-5, Code 121	35-2643	3	R, 330,000 ohms, Part No. 66-4333340* R1, 68,000 ohms, Part No. 66-3683340*
46-1201-5, Code 122	35-2643	3	R, 470,000 ohms, Part No. 66-4473340* R1, 120,000 ohms, Part No. 66-4123340*
46-1201, Code 122	35-2643	3	R, 470,000 ohms, Part No. 66-4473340* R1, 120,000 ohms, Part No. 66-4123340*
46-1201, Code 125	35-2643	3	R, 330,000 ohms, Part No. 66-4333340* R1, 68,000 ohms, Part No. 66-3683340*
46-1201-T, Code 125	35-2658	2	R, 330,000 ohms, Part No. 66-4333340* C, 820 mmf., Part No. 60-10825401*
46-1201, Code 127	35-2643	3	R, 220,000 ohms, Part No. 66-4223340* R1, 150,000 ohms, Part No. 66-4153340*
46-1201-T, Code 127	35-2658	1	C, 330 mmf., Part No. 60-10335407*
46-1201, Code 128	35-2643	3	R, 220,000 ohms, Part No. 66-4223340* R1, 150,000 ohms, Part No. 66-4153340*
46-1201, Code 130	35-2643	3	R, 220,000 ohms, Part No. 66-4223340* R1, 150,000 ohms, Part No. 66-4153340*



TP-1513