RCA Victor
Model 341 "Duo"

Eight-Tube, Four-Band A. C. Radio-Phonograph

SERVICE NOTES

SERVICE DIVISION

RCA Victor Company, Inc.

Camden, N. J., U. S. A.

A RADIO CORPORATION OF AMERICA SUBSIDIARY

REPRESENTATIVES IN PRINCIPAL CITIES

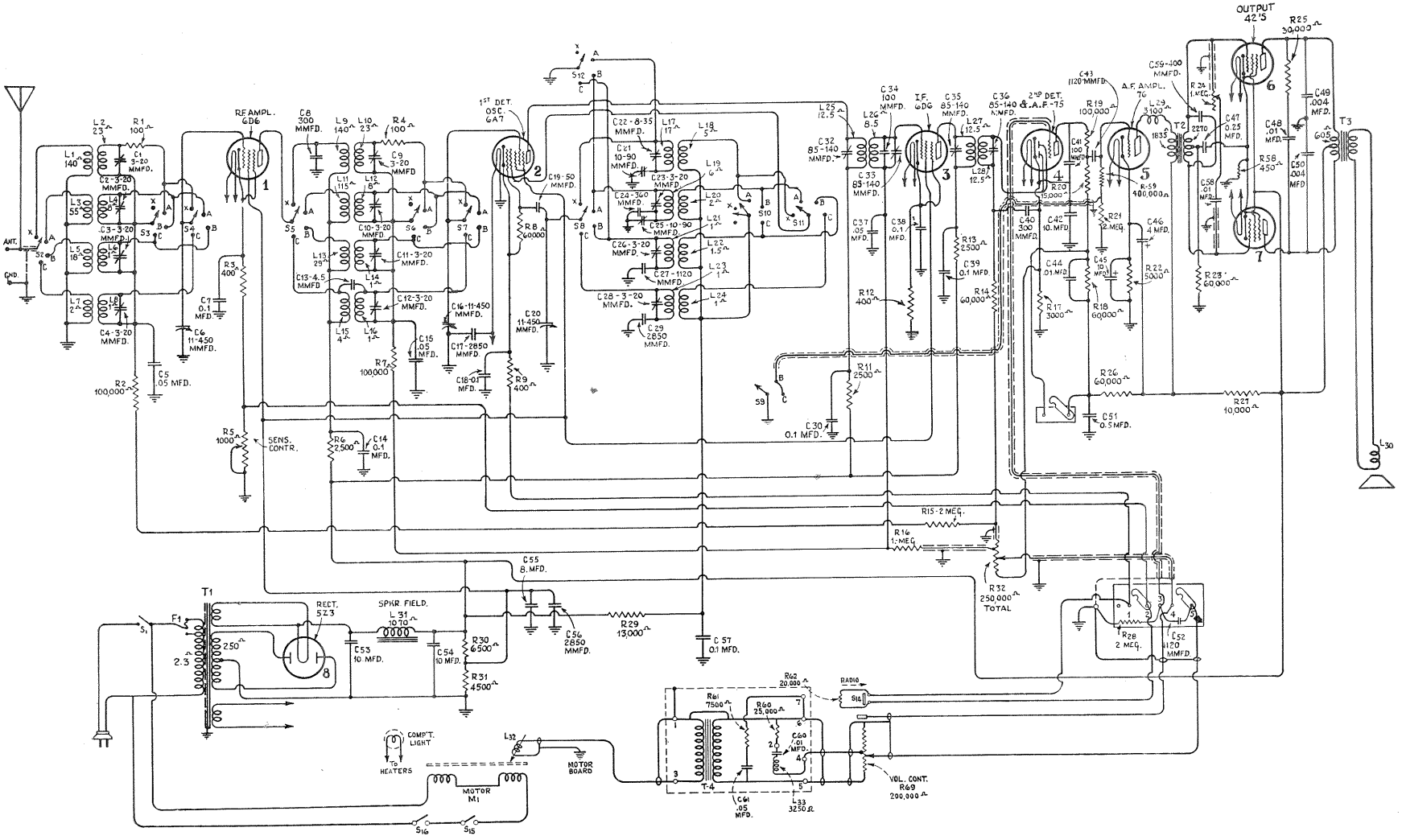


Figure 1—Schematic Circuit Diagram

RCA VICTOR MODEL 341

Eight-tube, Four-band A. C. Radio-Phonograph

SERVICE NOTES

ELECTRICAL SPECIFICATIONS

Voltage Rating ..... 105–125 Volts and 105–130/200–250 Volts (Double Range)
Frequency Rating ..... 25, 30, 50 and 60 Cycles
Power Consumption ..... 170 Watts, 60 Cycles
Type and Number of Radiotrons
2 RCA-6D6, 1 RCA-6A7, 1 RCA-75, 1 RCA-76, 2 RCA-42, 1 RCA-5Z3—Total, 8
Tuning Frequency Range ..... Band X— 140 K. C.– 410 K. C.; Band A— 540 K. C.– 1720 K. C.; Band B—1720 K. C.– 5400 K. C.; Band C—5400 K. C.–18,000 K. C.
Line-up Frequencies ..... 175 K. C., 410 K. C., 460 K. C., 600 K. C., 1720 K. C., 5160 K. C., 18,000 K. C.
Maximum Undistorted Output ..... 4.0 Watts
Maximum Output ..... 5.0 Watts
Type of Magnetic Pickup ..... Low Impedance, Viscoloid
Type of Record Changer ..... Record Ejector Type
Capacity of Record Changer ..... Eight 10" or seven 12" Records
Turntable Speed ..... 33⅓ R. P. M. and 78 R. P. M.

PHYSICAL SPECIFICATIONS

Height ..... 40 Inches
Width ..... 31 3/16 Inches
Depth ..... 19 5/16 Inches

This eight-tube, four-band all-wave combination radio-phonograph instrument provides entertainment either from the perfected all-wave radio receiver or from records of all types. Record or radio reproduction is characterized by unusual tone quality. The perfected phonograph enables one to play a number of selections without any attention whatever, due to its automatic record-changing feature.

The eight-tube, four-band Superheterodyne receiver is of the "all-wave" type, having a continuous tuning range extending from 140 K. C. to 18,000 K. C., except for one break between 410 K. C. and 540 K. C. Such a tuning range permits the listener to receive all of the important broadcasting, police, aircraft and amateur call bands throughout the world.

Excellent sensitivity, selectivity and tone quality, together with a high output (4 watts undistorted), Class A amplifier gives the receiver outstanding performance. Operating features include an "airplane" type dial, a double-ratio vernier drive, a visual band indicator, and a special "second hand" on the dial for logging short-wave stations. Other important features include automatic volume control, sensitivity control and a large loudspeaker unit.

DESCRIPTION OF ELECTRICAL CIRCUIT

RADIO

The general circuit arrangement consists of an R. F. stage, a combined oscillator and first detector, an I. F. stage, a combined second detector, A. F. amplifier and automatic volume control, a driver audio stage and a push-pull Pentode output stage. An RCA-5Z3 rectifier, together with a suitable filtering system, provides plate and grid voltages for all tubes and field excitation for the loudspeaker. Figure 1 shows the schematic diagram, Figure 2 the chassis wiring, Figure 3 the loudspeaker wiring and Figure 4 the assembly wiring.

The signal enters the receiver through a shielded antenna lead and is applied to the grid of the R. F. tube through the antenna coupling transformer. The secondary of this transformer is tuned to the signal frequency by means of one unit of the gang capacitor. The output of this stage is transformer coupled to the grid circuit of the first detector, which is also tuned to the signal frequency by a unit of the gang capacitor.

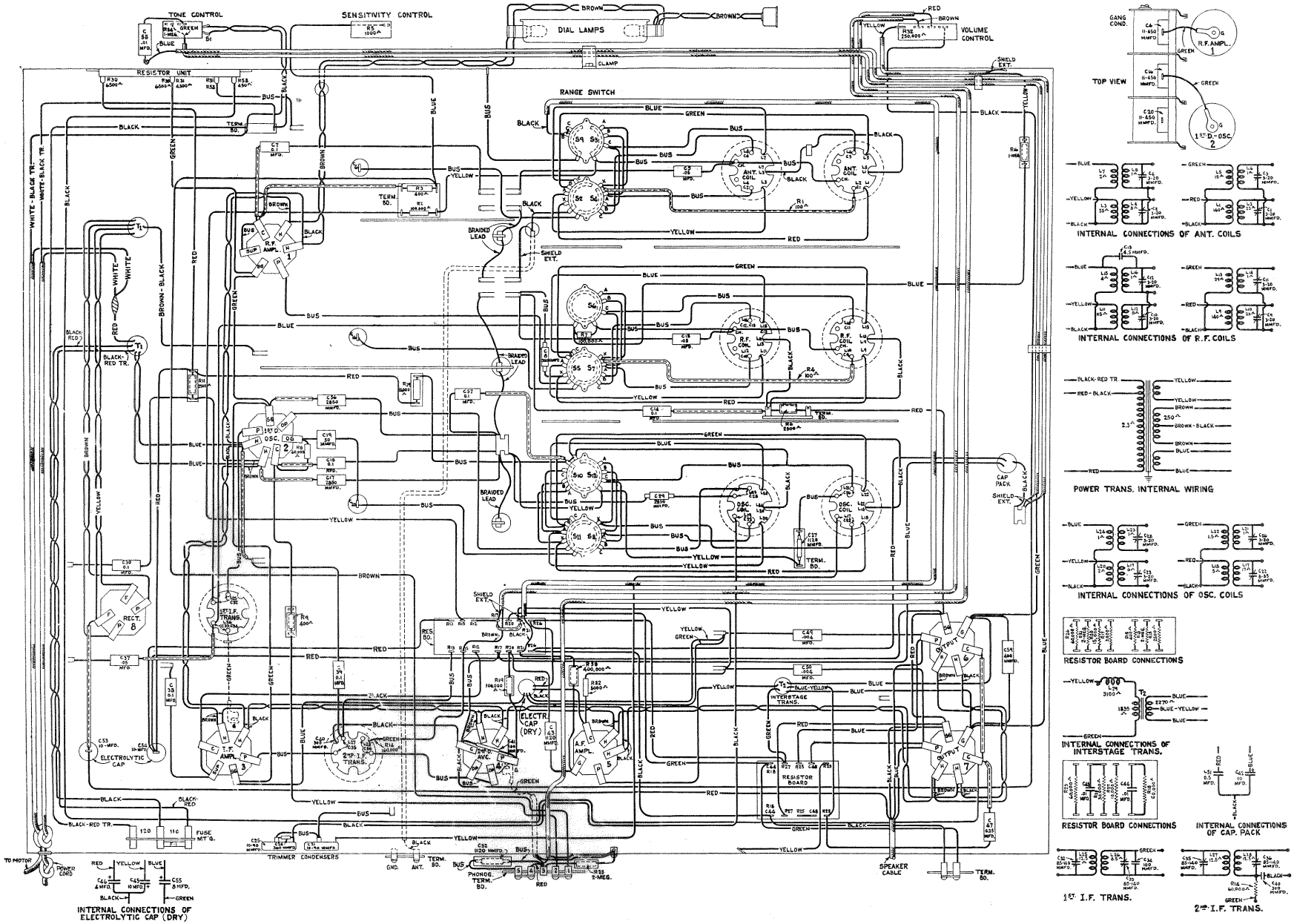


Figure 2—Wiring Diagram

Combined with the signal in the first detector is the local oscillator, which is always at a 460 K. C. frequency difference (higher) from the signal frequency. A separate coil system and the third unit of the gang capacitor are used in this circuit.

In conjunction with these three tuned circuits, it is well to point out that four different groups of tuned circuits are used, one for each tuning band. A four-position selector switch is provided for selecting the band in which the desired signal is located. In addition to selecting the desired coil system, additional groups of contacts are provided for short-circuiting the preceding lower frequency R. F. and detector coils and the two preceding oscillator coils. This is to prevent "dead" spots due to the absorption effects caused by the coils, the natural period of which, with the tuning capacitor disconnected, falls in the next higher frequency band.

The output of the first detector, which is the I. F. signal (460 K. C.), is fed directly through two tuned circuits to the grid of the I. F. amplifier stage. The I. F. stage, which utilizes Radiotron RCA-6D6, uses two transformers, which consist of four tuned circuits, all of which are tuned to 460 K. C.

The output of the I. F. amplifier is then applied to the input electrodes of the RCA-75, which is a combined second detector, A. F. amplifier and automatic volume control. The direct current component of the rectified signal produces a voltage drop across resistor R-32. The full voltage drop constitutes the automatic bias voltage for the R. F. while a tap is provided for the first detector and I. F. voltage. These automatic bias voltages for the R. F., first detector and I. F. give the automatic volume-control action of the receiver. The volume control selects the amount of audio voltage that is applied to the grid of the RCA-75 and thereby regulates the audio output of the entire receiver.

The output of the A. F. section of the RCA-75 is resistance coupled to the grid of the RCA-76, first audio stage, which is transformer coupled to the push-pull output stage.

The output stage uses two RCA-42's, which give a low distortion, high audio output to the loudspeaker. A high-frequency tone control, which consists of a variable resistor and capacitor, is connected across the grids of the output stage. At the minimum resistance position of the variable resistor, maximum attenuation of the high audio frequencies is obtained.

The plate circuit of the output stage is matched to the cone coil of the reproducer by means of a step-down transformer.

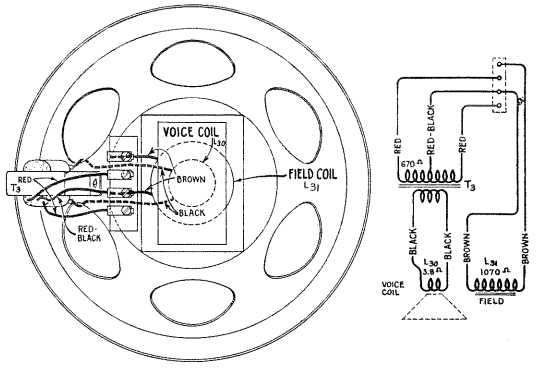


Figure 3—Loudspeaker Wiring

Plate and grid voltages for all tubes are supplied from the output of the rectifier-filter system. An RCA-5Z3 is used as a rectifier and a suitable network of capacitors and resistors gives the necessary filtering and voltages. The loudspeaker field is used as a filter reactor.

PHONOGRAPH

The record reproducing facilities consist of a low impedance magnetic pickup with its associated inertia type tone arm, a compensated volume control, the audio amplifier of the receiver and the loudspeaker of the receiver. The radio receiver is made inoperative by the switch used for changing from radio to record reproduction. The turntable assembly consists of the perfected automatic record changer, which is simple and fool-proof in operation.

SERVICE DATA

(1) LINE-UP PROCEDURE

The line-up procedure of this receiver is somewhat involved and it is important that these instructions be carefully followed when making adjustments. Properly aligned, this receiver has outstanding performance; improperly aligned, it may be impossible to receive signals on all bands.

Equipment

To properly align this receiver, proper test equipment must be used. This consists of a modulated R. F. oscillator having proper frequency range, an output indicator, an alignment tool and a tuning wand. These parts have been developed by the manufacturer of this receiver for use by service men to duplicate the original factory adjustments.

Checking with Tuning Wand

Before making any R. F., oscillator or first detector adjustments, the accuracy of the present adjustments may be checked by means of the tuning wand (Stock No. 6679). The tuning wand consists of a bakelite rod having a brass cylinder at one end and a special finely divided iron insert at the other end. Inserting the cylinder into the center of a coil lowers its inductance, while inserting the iron end increases its

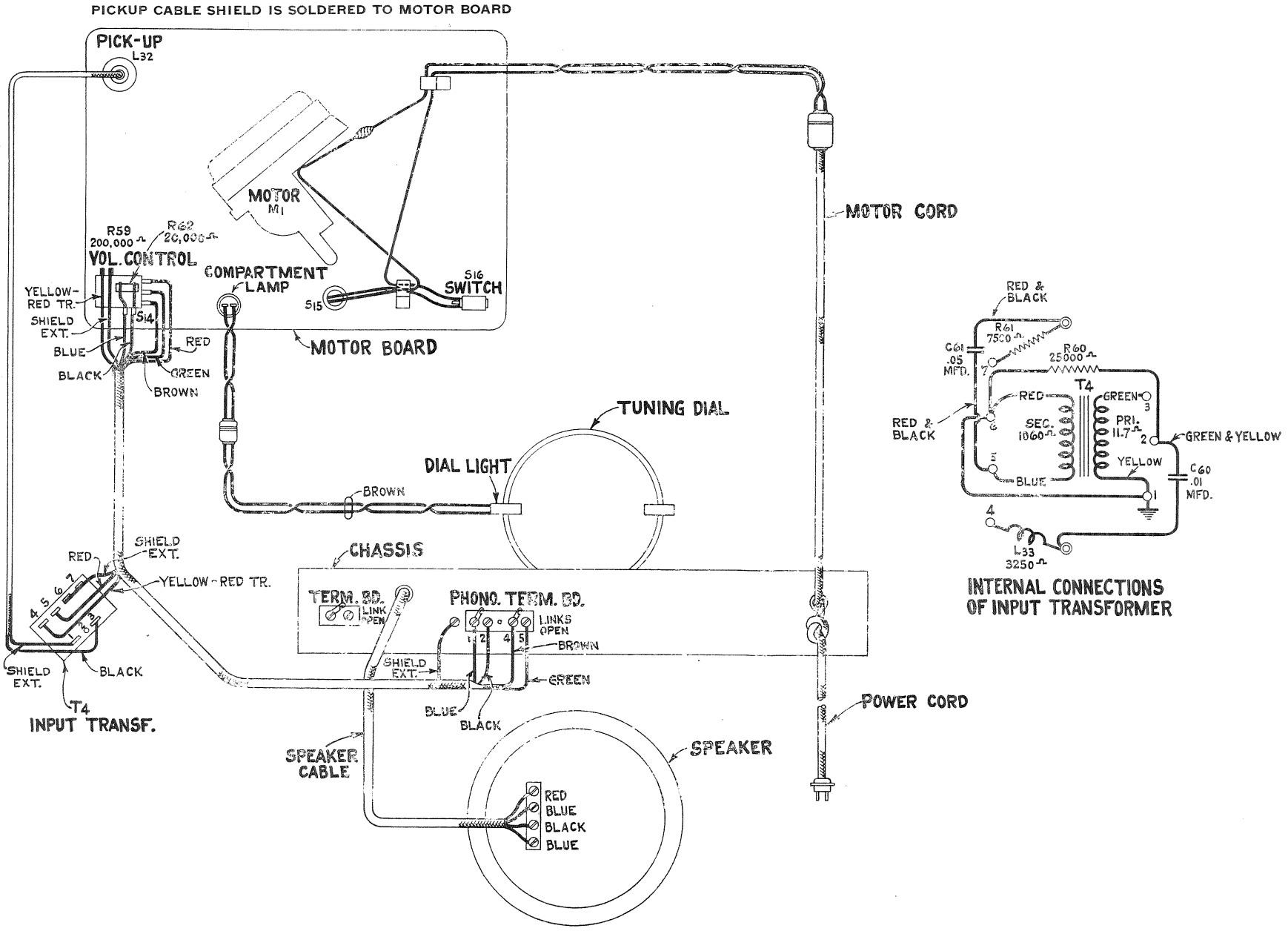


Figure 4—Assembly Wiring

inductance. From this, it is seen that unless the trimmer adjustment for a particular coil is perfect at alignment frequencies, inserting one end of the wand may increase the output of a particular signal. A perfect adjustment is evidenced by a lowering of output when either end of the wand is inserted into a coil.

The shields over the R. F. coil assembly have a hole at their top for entrance of the tuning wand. The location of the various coils inside of the shield is shown in Figure 5. An example of the proper manner of using the tuning wand would be to assume the external oscillator were set at 1720 K. C. and the signal tuned in, and the output indicator connected across the voice coil of the loudspeaker. Then the tuning wand should be inserted, first one end and then the other end, into the top of the three transformers at the left of the R. F. assembly, facing the front of the chassis. A perfect adjustment of the trimmer would be evidenced by a reduction in output when each end of the wand is inserted in each of the three transformers. If one end—for example, the iron end —when inserted in one coil caused an increase in output, then that circuit is low. An increase in the trimmer capacitance would be the proper remedy.

(2) I. F. TUNING CAPACITOR ADJUSTMENTS

This receiver has one I. F. stage with two transformers having four adjustable capacitors that may require adjustment. The transformers are all peaked at 460 K. C.

A detailed procedure for making this adjustment follows:

(a) Connect the output of an external oscillator tuned to 460 K. C. between the first detector grid and ground. Connect the output indicator across the voice coil of the loudspeaker.

(b) Place the oscillator in operation at 460 K. C. Place the receiver in operation and adjust the station selector until a point is reached (Band A) where no signals are heard and turn the volume control to its maximum position. Reduce the oscillator input until a slight indication is obtained in the output indicator.

(c) Refer to Figure 6. Adjust each trimmer of the I. F. transformers until maximum output is obtained. Go over the adjustments a second time.

This completes the I. F. adjustments. However, it is good practice to follow the I. F. adjustments with the R. F. and oscillator adjustments due to to interlocking which always occurs.

(3) R. F. OSCILLATOR AND FIRST DETECTOR ADJUSTMENTS

Four R. F., oscillator and first detector adjustments are required in Bands "A" and "X." Three are required in Bands "B" and "C."

To properly align the various bands, each band must be aligned individually. The preliminary set-up requires the external oscillator to be connected between the antenna and ground terminals of the receiver and the output indicator across the voice coil of the loudspeaker. The volume and sensitivity controls must be at the maximum position and the input from the oscillator at the minimum value

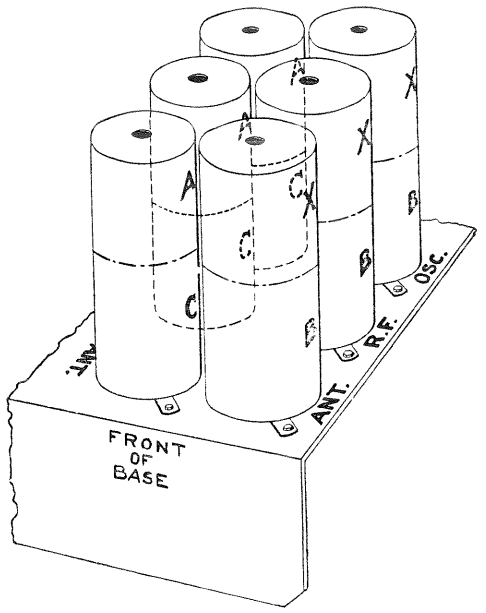


Figure 5—Location of Coils in Shields

possible to get an output indication under these conditions. In the high frequency bands, it may be necessary to disconnect the oscillator from the receiver and place it at a distance in order to get a sufficiently low input to the receiver.

The dial pointer must be properly set before starting any actual adjustments. This is done by turning the variable capacitor until it is at its maximum capacity position. One end of the pointer should point exactly at the horizontal line at the lowest frequency end of Band "A," while the other end should point to within 1/64 inch of the horizontal line at the highest frequency end of Band "A."

Figure 6 shows the location of the trimmers for each band. Care must be exercised to only adjust the trimmers in the band under test.

Band "X"

(a) Set the band switch at "X."

(b) Tune the external oscillator to 410 K. C., set the dial pointer at 410 K. C. and adjust the oscillator, detector and R. F. trimmers for maximum output.

(c) Shift the external oscillator frequency to 175 K. C. Tune in the 175 K. C. signal irrespective of scale calibration and adjust the series trimmer, marked 175 K. C. on Figure 6, for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 410 K. C. as described in (b).

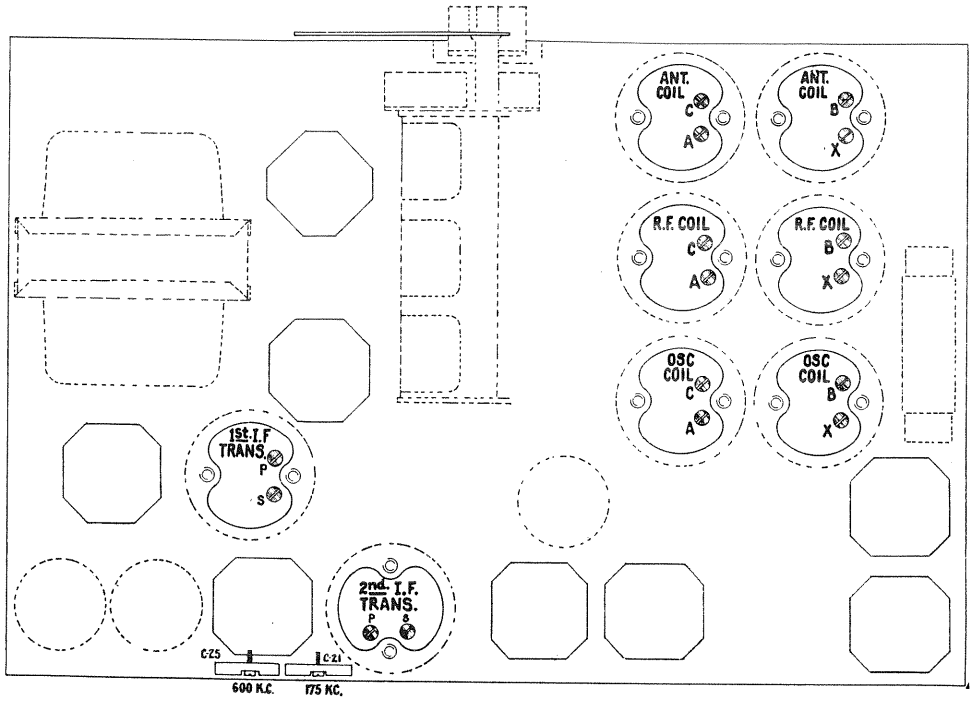


Figure 6—Location of Trimmer Capacitors

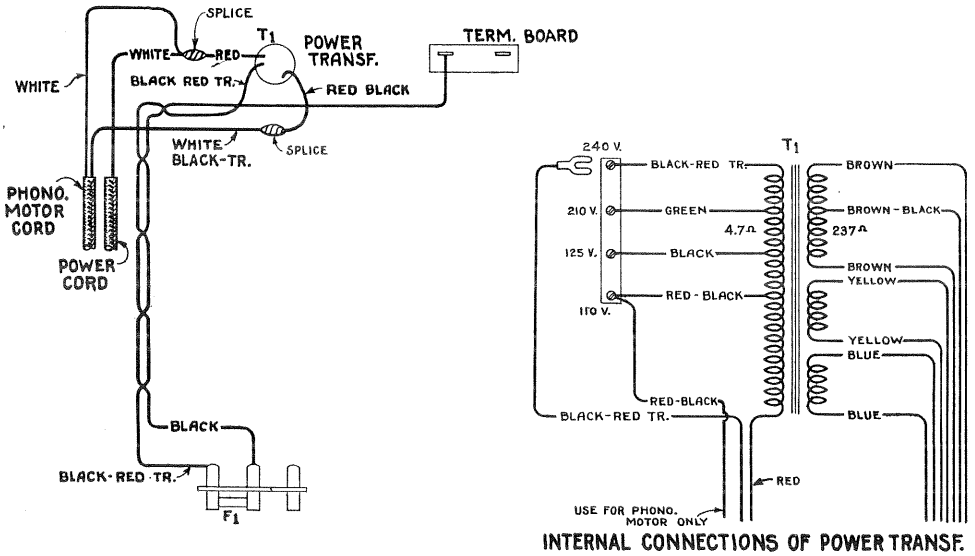


Figure 7—Universal Power Transformer Connections

Band "A"

(a) Set the band switch at "A."

(b) Tune the external oscillator to 1,720 K. C., set the pointer at 1,720 K. C. and adjust the oscillator, detector and R. F. trimmers for maximum output.

(c) Shift the external oscillator frequency to 600 K. C. Tune in the 600 K. C. signal, irrespective of scale calibration, and adjust the series trimmers, marked 600 K. C., Figure 6, for maximum output, at the same time rocking the variable tuning capacitor. Then readjust at 1,720 K. C. as described in (b).

Band "B"

(a) Set the band switch at "B."

(b) Tune the external oscillator to 5,160 K. C. and set the pointer at 5,160 K. C. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

(c) Check for the image signal, which should be received at approximately 4,240 K. C. on the dial. It will be necessary to increase the external oscillator output for this check.

(d) The antenna and detector trimmers should now be peaked for maximum output.

Band "C"

(a) Set the band switch at "C."

(b) Tune the external oscillator to 18,000 K. C. and set the pointer at 18 M. C. Adjust the oscillator trimmer for maximum output. The trimmer should be set at the first peak obtained when increasing the trimmer capacitor from minimum to maximum.

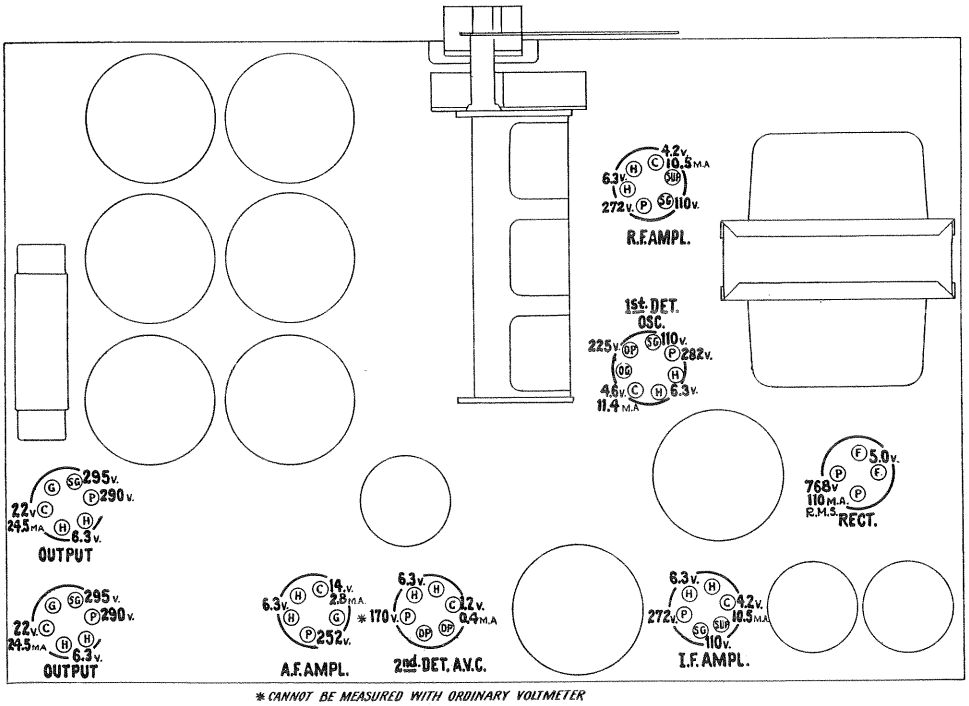
(c) Check for the image signal, which should be received at approximately 17,080 on the dial. It may be necessary to increase the external oscillator output for this check.

(d) Reduce the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal disappears. The first detector circuit is then at the oscillator frequency and the RCA-6A7 tube is blocked. Then increase the capacity of the detector trimmer, while rocking the tuning capacitor, until the signal is peaked for maximum output.

(e) The antenna trimmer should now be peaked for maximum output. It is not necessary to rock the main tuning capacitor while making this adjustment.

(4) POWER TRANSFORMER CONNECTIONS

The 220-volt power transformer furnished with some instruments includes taps for operating on 110-volt lines. Figure 7 shows the schematic circuit of the transformer and the proper voltage to be applied to the various taps. The taps are located on the power transformer assembly and are accessible without removing the chassis from the cabinet.



*CANNOT BE MEASURED WITH ORDINARY VOLTMETER

ALL D. C. VOLTAGES ARE TO GROUND

Figure 8—Radiotron Socket Voltages

(5) FIDELITY LINK

It will be noted that a small link is mounted on the rear apron of the chassis which is open. Closing the link reduces the low frequency output of the receiver.

(6) VOLTAGE READINGS

The following voltages are those at the various tube sockets while the receiver is in operating condition. No allowance has been made for currents drawn by the meter, and if low-resistance meters are used, such allowances must be made. Figure 8 shows the voltages at each individual socket contact.

(7) SERVICE DATA ON MAGNETIC PICKUP

The Magnetic Pickup used in this combination instrument is of a new design with an improved frequency range. While in physical appearance it is similar to that of the older type, details of construction are considerably different. It consists essentially of a chromium steel magnet, two thin pole pieces, a mechanism support and bracket, a coil, and an armature that is damped by means of an anchored damping block.

The use of the anchored damping block eliminates any bad peaks in the frequency range. The frequency-response characteristic is substantially flat from 50 to 5,000 cycles.

(8) REPLACING MAGNET COIL, PIVOT RUBBERS, ARMATURE OR DAMPING BLOCK

In order to replace a defective coil or the hardened pivot rubbers (see Figure 10), it is necessary to proceed as follows:

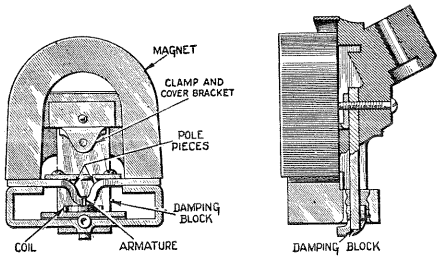


Figure 9—Details of Pickup

(a) Remove the pickup cover by removing the center holding screw and needle screw.

(b) Remove the pickup magnet and the magnet clamp by pulling them forward.

(c) Unsolder the coil leads and remove the mechanism assembly from the back plate by releasing the two mounting screws and the damping block clamping screw.

(d) Remove screws A and B, Figure 10, and then remove the mechanism assembly from the pole pieces.

RADIOTRON SOCKET VOLTAGES

120-Volt A. C. Line—Maximum Volume and Sensitivity—No Signal

Radiotron No.		Cathode to Ground Volts, D. C.	Screen Grid to Ground Volts, D. C.	Plate to Ground Volts, D. C.	Cathode Current, M. A.	Heater Volts, A. C.
RCA-6D6 R. F.		4.2	110	272	10.5	6.3
RCA-6A7	Oscillator	—	—	225	11.4	6.3
	1st Detector	4.6	110	282		
RCA-6D6 I. F.		4.2	110	272	10.5	6.3
RCA-75 2nd Detector		1.2	—	170*	0.4	6.3
RCA-76 A. F.		14.0	—	252	2.8	6.3
RCA-42 Power		22.0	295	290	24.5	6.3
RCA-42 Power		22.0	295	290	24.5	6.3
RCA-5Z3 Rectifier		—	—	768/384 R. M. S.	110.0	5.0

*Cannot be measured with ordinary voltmeter.

(e) The coil or the front pivot rubber may now be removed and replaced. If it is desired to replace the rear pivot rubber, then the end of the armature soldered to the mechanism support must be unsoldered and the damping block removed. The rear pivot rubber now may be replaced. After putting the pivot rubbers in place a new damping block should be fastened to the armature as outlined in instructions on replacing the damping block.

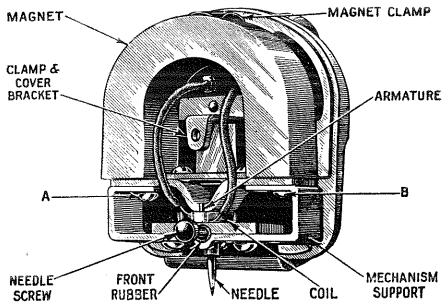


Figure 10—Pickup Nomenclature

(f) The mechanism should now be reassembled, except for the magnet, which must be magnetized. After being magnetized, the mechanism—with the pole pieces upward—should be placed so that the magnet may be slid from the magnetizer onto the pole pieces without breaking physical contact. After placing the pole pieces on the magnet, the entire assembly should be remagnetized thoroughly, being careful not to change the polarity obtained by the initial magnetization. Stock No. 9549 Magnetizer is useful for magnetizing pickups.

(g) After assembling to the mechanism, the entire assembly should be fastened to the back plate by means of the screws provided, making sure the damping block is securely clamped. At the same time, the metal dust cover must be placed in position.

(h) After remagnetizing, it is necessary to correctly center the armature. This may be done quite accurately by feeling its play after the needle is inserted. A little practice will quickly show which way an adjustment is necessary to have the armature centered properly. The adjustment is made by loosening screws A and B (Figure 10), and sliding the mechanism slightly in relation to the pole pieces.

(i) The cover may be now replaced over the entire assembly, and the pickup returned to the tone arm.

In assembling, it may be desirable to check the armature air gap by means of a small Feeler Gauge. This air gap should be .009" on each side of the armature. However, a little practice with the needle in place will quickly disclose whether or not the armature is centered.

(9) REPLACING THE DAMPING BLOCK

If it is desired to replace the damping block, it may be done in the following manner:

(a) Disassemble the pickup as described under the preceding section.

(b) Remove the armature entirely by unsoldering it at its joint with the mechanism support.

(c) Remove the damping block from the armature and clean the bushing for holding the damping block with emery paper.

(d) Insert the armature through the new block so that it occupies the same position as that of the old. Also ascertain that the block is in correct vertical alignment with the armature. It will be noted that the hole in the damping block is somewhat smaller than the diameter of the armature. This is done so that a snug fit will be obtained.

(e) After properly locating the damping block, a soldering iron should be applied to the armature so that the block will melt slightly at its point of contact with the armature. A special tip, constructed as shown in Figure 11, will prove desirable for fusing the block in place. The iron should be applied long enough to slightly melt the block and cause a small bulge on both sides, but should not be applied long enough to cause any bubbling. The pickup should then be reassembled as described in the preceding section.

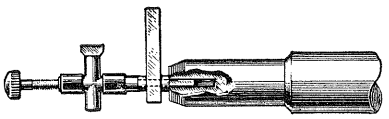


Figure 11—Special Soldering-Iron Tip

Only rosin core solder should be used for soldering the coil leads in the pickup. Also rosin core solder should be satisfactory for resoldering the end of the spring in the hole in the mechanism, since both these parts have been previously tinned. In case the parts are not well tinned, it will be necessary to scrape the end of the spring and the hole in the mechanism until bright. These parts may now be tinned by using as a flux a water solution of zinc chloride (commonly called acid flux). After tinning, dip the parts in water to wash off the acid flux and thereby prevent serious subsequent corrosion. After making sure that the pivot rubbers and damping block are properly in place, as described under (e) above, the armature may now be soldered in place in the mechanism by using rosin core solder, since the parts are now tinned. Care must be exercised to get the needle hole perfectly square with respect to the mechanism, or otherwise it will be difficult if not impossible to center the armature in the air gap as explained under (h), section (8).

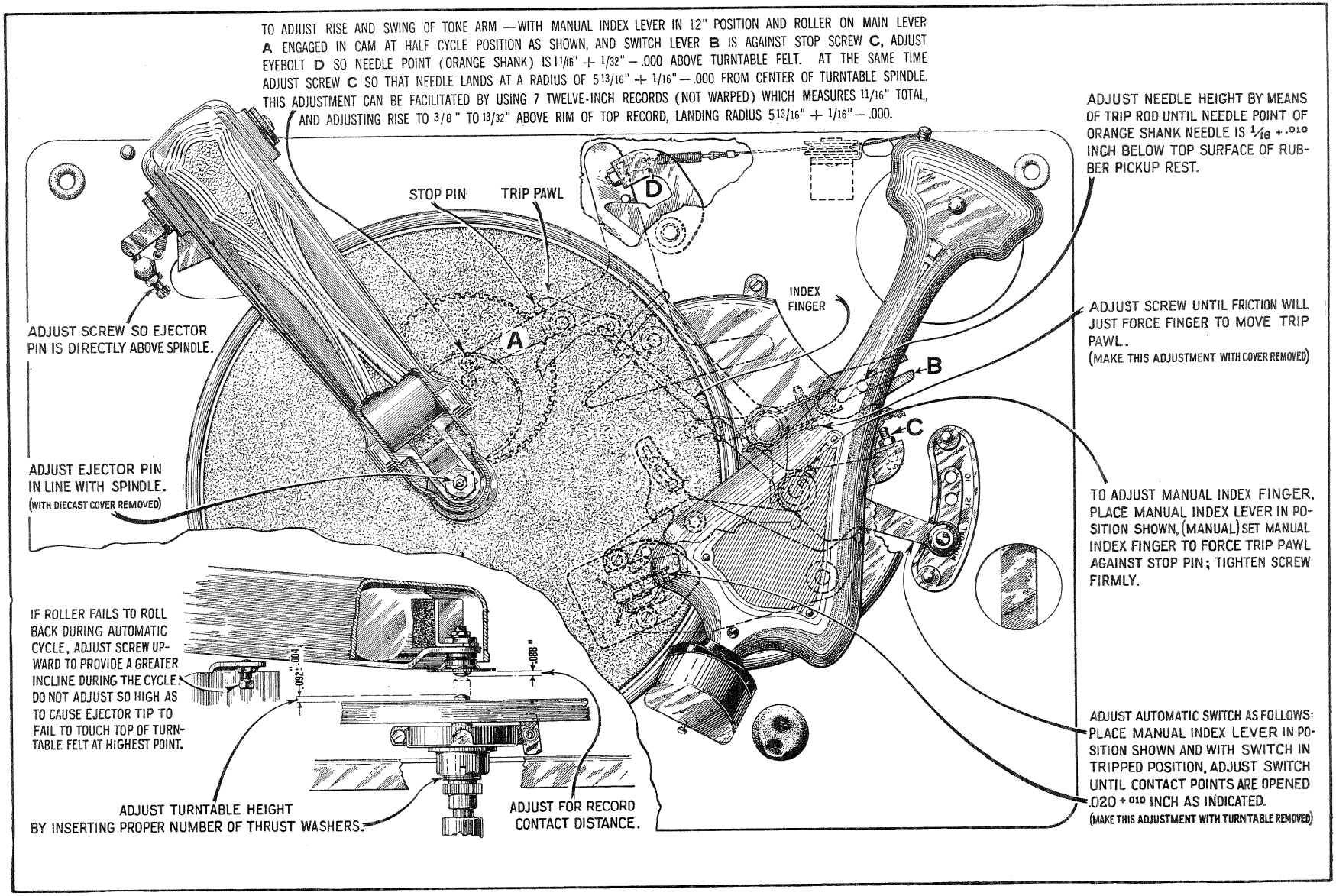


Figure 12—Automatic Record Changer Adjustments

(10) AUTOMATIC RECORD CHANGER

The automatic record changer used in this instrument is of simple design and fool-proof construction. Under normal operating conditions service difficulties should be negligible. However, in event adjustments are required, a reference to Figure 12 will disclose the proper method of making all adjustments.

(11) ADJUSTMENT OF DIAL VERNIER MECHANISM

A small vernier indicator is provided for giving a simple means of band spread. Under normal conditions, adjustment of this mechanism will not be required. However, in event the initial adjustment is not satisfactory or adjustment is required because of replacement, the following procedure should be used:

(a) Remove the chassis from the cabinet to a place convenient for work.

(b) Check the tension on the vernier hand by pushing it in a clockwise direction. There should be considerable tension against such a push. If this tension does not exist, the action of the hand may be erratic and possibly fail to return to the same position for a particular station.

(c) Pull off the long hand with a pair of long-nose pliers.

(d) Straighten the lugs that hold the dial in place. Then remove the dial "vernier" hand and stem gear together.

(e) Then remove the "vernier" hand from the stem gear.

(f) Turn the dial to each extreme and to its center position and check the backlash of the back gear (closest to reflector). There should be definite backlash in each direction at each of these three positions.

(g) If this backlash is not obtained, loosen the nut on the back of the reflector which holds the shaft of these gears and slide the shaft toward the outer edge of the reflector. The hole is elongated to permit this adjustment.

(h) After making sure there is backlash at the three check points mentioned, turn the outside gear in a clockwise direction 1½ turns. Hold it at this position and replace the stem gear.

(i) Turn the dial throughout its range. If the gears become noisy, move the gear further toward the reflector edges described in (g).

(j) Replace the dial scale, making sure the hole clears the spindle.

(k) Replace the vernier hand. It should point at zero when the tuning capacitor is fully meshed.

(l) Replace the large hand. One end of the pointer should point exactly at the horizontal line at the lowest frequency end of Band "A" when the tuning capacitor is fully meshed.

The above covers the proper manner of making adjustments, assuming all parts are in normal condition. Of course, if any part is defective, it must be replaced. The spring gear may be checked by turning it until the spring is tight and unwinding it slowly. It should unwind 4¼ turns.

REPLACEMENT PARTS

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

Stock No.	Description	List Price
	RECEIVER ASSEMBLIES	
4632	Board—Terminal board—Two terminals and link—For changing fidelity	$0.25
4379	Board—Antenna terminal board	.20
4427	Bracket—Volume control, tone control or noise suppressor mounting bracket	.18
4244	Cap—Contact cap—Package of 5	.20
3861	Capacitor — Oscillator trimmer capacitor (C21, C25)	.78
4633	Capacitor—50 mmfd. (C19)	.25
4635	Capacitor—100 mmfd. (C41)	.25
3937	Capacitor—300 mmfd. (C8)	.34
4413	Capacitor—360 mmfd. (C24)	.22
4183	Capacitor—400 mmfd. (C59)	.26
4412	Capacitor—1120 mmfd. (C27)	.25
4409	Capacitor—1120 mmfd. (C43)	.35
4634	Capacitor—1120 mmfd. (C52)	.35
4524	Capacitor—2850 mmfd. (C29)	.35
4615	Capacitor—2850 mmfd. (C17, C56)	.34
4628	Capacitor—0.004 mfd. (C49, C50)	.28
3787	Capacitor—0.01 mfd. (C48)	.30
4212	Capacitor—0.01 mfd. (C44)	.30
4624	Capacitor—0.01 mfd. (C58)	.54
3888	Capacitor—0.05 mfd. (C37)	.25
4417	Capacitor—0.05 mfd. (C5, C15)	.25
3877	Capacitor—0.1 mfd. (C38)	.32
4415	Capacitor—0.1 mfd. (C18)	.30
4645	Capacitor—0.1 mfd. (C7, C14, C30, C39, C57)	.25
3750	Capacitor—0.25 mfd. (C47)	.36
7790	Capacitor—10 mfd. (C53, C54)	1.05
4619	Capacitor pack—Comprising one 0.5 mfd., one 10 mfd. capacitor (C42, C51)	1.44
4626	Capacitor pack—Comprising one 4 mfd., one 10 mfd. and one 8 mfd. capacitor (C45, C46, C55)	2.82
4358	Clamp—Electrolytic capacitor clamp—For capacitor stock No. 7790	.15
4693	Clamp—Electrolytic capacitor clamp—For capacitor stock No. 4626	.15
7810	Coil—Antenna coil "PB-LW" (L1, L2, L5, L6, C1, C3)	2.10
7803	Coil—Antenna coil "B.S.W." (L3, L4, L7, L8, C2, C4)	1.82
7808	Coil—Detector coil "P.B.-L.W." (L9, L10, L13, L14, C9, C11)	2.05
7805	Coil—Detector coil "B.-S.W." (L11, L12, L15, L16, C10, C12, C13)	2.15
7807	Coil—Oscillator coil "B.S.W." (L19, L20, L23, L24, C23, C28)	1.62
7809	Coil—Oscillator coil "P.B.-L.W." (L17, L18, L21, L22, C22, C26)	1.70
7801	Condenser—3-gang variable tuning condenser (C6, C16, C20)	4.42
4371	Cover—Fuse mount cover	.15
4631	Cover—Terminal strip cover	.15
10907	Fuse—3-ampere—Package of 5	.40
3376	Mount — Fuse mount — 105–125-volt instrument	$0.40
4604	Mount—Fuse mount for 200–250-volt instrument	.35
4625	Resistor—Wire wound resistor—Comprising one 6500-ohm–4500-ohm and 450 section (R30, R31, R58)	.70
3704	Resistor—400 ohms—Carbon type—¼ watt (R9, R3, R12)—Package of 5	1.00
4338	Resistor — 2500 ohms — Carbon type — ¼ watt (R6, R11, R13)—Package of 10	2.00
4242	Resistor — 3000 ohms — Carbon type — ¼ watt (R17)—Package of 5	1.00
4436	Resistor — 5000 ohms — Carbon type — ¼ watt (R22)—Package of 10	2.00
3998	Resistor—15,000 ohms—Carbon type—¼ watt (R20)—Package of 5	1.00
3602	Resistor—60,000 ohms—Carbon type—¼ watt (R8, R18, R23, R26)—Package of 5	1.00
3118	Resistor—100,000 ohms—Carbon type—¼ watt (R2, R7, R19)—Package of 5	1.00
3619	Resistor—400,000 ohms—Carbon type—¼ watt (R59)—Package of 5	1.00
3033	Resistor — 1 megohm — Carbon type — ¼ watt (R16)—Package of 5	1.00
6242	Resistor — 2 megohms — Carbon type — ¼ watt (R15, R21, R28)—Package of 5	1.00
3078	Resistor—10,000 ohms—Carbon type—½ watt (R27)—Package of 5	1.00
4623	Resistor—13,000 ohms—Carbon type—½ watt (R29)—Package of 10	2.00
2240	Resistor—30,000 ohms—Carbon type—1 watt (R25)	.22
4418	Resistor—100 ohms—Flexible type (R1, R4) —Package of 10	1.50
4618	Rheostat—Sensitivity control (R5)	1.25
7800	Shield—Antenna, detector or oscillator coil shield	.45
4627	Shield—First detector—Oscillator Radiotron shield	.36
7488	Shield—First detector—Oscillator Radiotron shield top	.20
4452	Shield—I. F. amplifier Radiotron shield	.35
4629	Shield—I. F. amplifier Radiotron shield top	.15
4663	Shield—Oscillator coil wiring shield—Shields oscillator coil wiring from R. F. coil—Complete with terminal board, clamp and resistor	.32
4664	Shield—Oscillator wiring shield—Shields oscillator coil wiring from R. F. coil—Complete with terminal strip and resistor	.36
4630	Shield—R. F. amplifier—Radiotron shield	.36
4665	Shield—R. F. coil wiring shield with two resistors and terminal board	.50
3529	Socket—Dial lamp socket	.32
3859	Socket—4-contact Radiotron socket	.30
7484	Socket—5-contact Radiotron socket	.35

REPLACEMENT PARTS—(Continued)

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Stock No.	Description	List Price
7485	Socket—6-contact Radiotron socket	$0.40
3572	Socket—7-contact Radiotron socket	.38
4617	Switch—Range switch (S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12)	3.32
4616	Tone control (R24, S1)	1.28
4431	Transformer—First intermediate frequency transformer (L25, L26, C32, C33, C34)	2.28
9505	Transformer—Power transformer—105–125 volts—50–60 cycles (T1)	6.35
9506	Transformer—Power transformer—105–125 volts—25–40 cycles	8.90
9507	Transformer—Power transformer—105–250 volts—40–60 cycles	6.40
4433	Transformer—Second intermediate frequency transformer (L27, L28, C35, C36, C40, R14)	2.15
4620	Transformer and reactor—Interstage transformer and reactor (T2, L29)	2.98
4519	Volume control (R32)	1.25
	DRIVE ASSEMBLIES	
4362	Arm—Band indicator operating arm	.28
10194	Ball—Steel ball for variable condenser drive assembly—Package of 20	.25
4422	Clutch—Tuning condenser drive clutch assembly—Comprising drive shaft, balls, ring, spring and washers assembled	.88
4621	Dial—Station selector dial	.65
7799	Drive—Variable tuning condenser drive complete	2.45
4364	Gear—Spring gear assembly complete with hub, pinion, gear, cover and spring	.96
4704	Indicator—Band indicator—Celluloid	.12
4367	Indicator—Station selector vernier pointer—Small	.15
4520	Indicator—Station selector main pointer—Large	.18
3943	Screen—Translucent screen for dial light—Package of 2	.18
3993	Screw—No. 6–32–5/32" square head set screw for band indicator operating arm or condenser drive—Package of 10	.25
4377	Spring — Band indicator and arm tension spring—Package of 5	.25
4360	Stem—Station selector pointer stem	.35
4378	Stud—Band indicator operating arm stud—Package of 5	.25
	EJECT ARM ASSEMBLIES	
4713	Arm—Eject arm complete	7.74
3658	Ball—Steel ball bearing—Package of 20	.30
3656	Bearing—Ejector tip bearing	.48
4054	Bracket—Eject arm bracket assembly	1.35
4058	Collar—Eject arm shaft collar and set screw	.18
4714	Cover—Eject arm cover	1.38
3930	Cushion—Counter balance cushion and bracket—Located inside of eject arm	.18
3662	Plate—Ejector plate—Package of 5	.95
4055	Post—Vertical adjustment post—Located on eject arm bracket	$0 30
3655	Retainer—Ball retainer with three balls	.45
3729	Roller—Counterbalance roller — Located inside of eject arm	.45
3665	Screw—Eject arm horizontal adjustment screw and nut—Package of 5	.25
4057	Shaft and collar—For eject arm	.24
4067	Spring—Eject arm bracket spring—Package of 10	.30
4125	Spring—Eject arm horizontal action tension spring—60-cycle operation—Package of 10	.42
4126	Spring—Eject arm—Horizontal action tension spring—For 25-cycle operation—Package of 10	.60
3657	Tip—Ejector tip	.30
4056	Yoke—Eject arm yoke assembly	1.04
	MOTOR ASSEMBLIES	
9011	Motor—105–125 volts—60 cycles	19.72
9014	Motor—105–125 volts—50 cycles	19.72
9012	Motor—105–125 volts—25 cycles	24.16
4562	Motor mounting spring, washer and stud assembly—Comprising six springs, six cup washers, three spring washers and three studs	.58
	MOTOR BOARD ASSEMBLIES	
4060	Escutcheon — Index escutcheon engraved "Manual 12-10"	.28
3764	Nut—Cap nut for motor board—Package of 4	.40
3672	Pin—Manual index pin	.42
4066	Rest—Pickup rest	.14
3654	Roller—Pickup arm guide roller assembly—Comprising bracket and guide pin	.34
3763	Suspension spring, washer and bolt assembly for motor board—Comprising one bolt, two cup washers, two springs, one "C" washer and one cap nut	.42
	OPERATING MECHANISM ASSEMBLIES	
6502	Cam—Cam and gear assembly	1.18
6808	Clutch—Trip lever friction clutch	.30
4719	Cover—Metal cover for trip lever and friction finger assembly	.28
3670	Finger—Friction finger assembly	.32
6809	Finger—Manual index lever finger assembly	.25
6846	Lever—Main lever and link assembly	1.45
6810	Lever—Main spring lever	.44
6806	Lever—Manual control index lever—Less pin	.55
3677	Lever—Pickup arm cable lever assembly complete—Comprising lever with cable screw spring and nut	.40
6807	Lever—Trip lever and friction clutch assembly	1.16
6503	Pawl—Trip pawl assembly	.40
4124	Plate—Eject arm actuating plate assembly	.50
4563	Screw—Cable lever cable screw and nut—Package of 10	.60

REPLACEMENT PARTS—(Continued)

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Stock No.	Description	List Price
4564	Screw—Manual index lever finger set screw—Package of 10	$0.20
4567	Screw—Manual index lever assembly—Adjustment screw and nut—Package of 10	.32
4566	Screw—Special screw used to fasten main lever and link assembly bushing—Package of 10	.30
4059	Screw—Trip lever clutch tension adjustment screw—Package of 10	.22
4127	Spring—Actuating plate tension spring—Package of 10	.24
3666	Spring—Cable lever tension spring—Package of 10	.44
3676	Spring—Cam and gear, pawl carrier tension spring—Package of 10	.52
4061	Spring—Main spring	.38
4565	Spring—Manual index lever finger tension spring—Package of 10	.30
2893	Spring—Trip lever latch plate tension spring—Package of 10	.30
2917	Washer—Spring washer "U" type—Package of 10	.25
	PICKUP AND ARM ASSEMBLIES	
7839	Arm—Pickup arm complete less escutcheon and pickup unit	4.90
3417	Armature—Pickup armature	.72
6813	Back—Pickup housing back	.68
4064	Cable—Pickup arm cable—Package of 5	1.00
4676	Coil—Pickup coil (L32)	.65
4711	Cover—Pickup cover	.34
4709	Cover—Pickup back cover with two mounting screws	.34
3737	Damper—Pickup damper—Package of 5	.65
6815	Escutcheon—Pickup arm escutcheon	.64
4675	Pickup unit complete	5.22
4062	Rod—Automatic brake trip rod	.20
4063	Screw assembly—Pickup mounting screw assembly—Comprising one screw, one washer and one nut—Package of 10	.54
3388	Screw—Needle holding screw—Package of 10	.60
3419	Screw—Pickup cover holding screw—Package of 10	.40
	SWITCH ASSEMBLIES	
3994	Cover—Motor switch cover	.26
10184	Plate—Automatic brake latch plate—Package of 5	.40
10174	Springs—Automatic brake springs—Package of 4	.50
6805	Switch assembly—Automatic switch complete	1.90
3322	Switch—Motor switch (S15)	.75
	TURNTABLE ASSEMBLIES	
4065	Bushing—Speed shifter lever bushing—Package of 4	.82
3344	Cover—Grease retainer cover—Package of 2	.70
6818	Lever—Speed shifter lever	.38
3341	Pin—Groov pin—Package of 2	.56
6816	Ring—Clamp ring assembly—Comprising spring, latch lever and stud	$0.42
4708	Turntable complete	5.10
6817	Sleeve—Sleeve complete with ball race	2.25
3342	Spring—Latch spring—Located on clamping ring—Package of 2	.56
3347	Spring—Speed shifter lever spring—Package of 2	.30
3340	Washer—Thrust washer—Package of 2	.56
	REPRODUCER ASSEMBLY	
4636	Cable—4-conductor—Reproducer cable	.50
9537	Coil—Field coil magnet and cone support (L31)	3.85
8969	Cone—Reproducer cone—Package of 5 (L30)	6.35
9536	Reproducer complete	8.40
4637	Transformer—Output transformer (T3)	1.50
	MISCELLANEOUS ASSEMBLY	
4556	Base—Phonograph compartment lamp base	.55
4677	Bezel—Station selector (escutcheon) bezel	.56
4555	Box—Needle box complete with lid	.40
4673	Cable—From volume control to transformer pack and terminal board	1.90
4573	Connector—2-contact female section of motor connecting plug	.30
4577	Connector—2-prong male section of connector plug—Motor plug	.30
4674	Connector—2-prong male section of connector plug	.25
4696	Cord—Motor power cord—2-conductor with female section of connector	.95
6614	Glass—Station selector dial glass	.30
4449	Knob—Station selector, sensitivity, volume control, tone control, range switch or phonograph volume control knob—Package of 5	.60
4340	Lamp—Phonograph compartment lamp—Package of 5	.60
4710	Receptacle—Needle receptacle	.35
6303	Resistor—20,000 ohms—Carbon type—½ watt (R62)—Package of 5	1.00
4678	Ring—Dial retaining ring—Package of 5	.34
4613	Screw—8-32-7/16" headless set screw for knob	.25
4557	Shade—Phonograph compartment lamp shade	.35
4671	Switch—Toggle type—Motor starting switch (S16)	.72
4672	Transformer—Input transformer pack comprising one transformer, one reactor, one 0.01 mfd., one 0.05 mfd. capacitor, one 7500-ohm and one 25,000-ohm resistor (T4, L33, C60, C61, R60, R61)	5.42
6766	Volume control—Phonograph volume control (R69, S14)	2.28