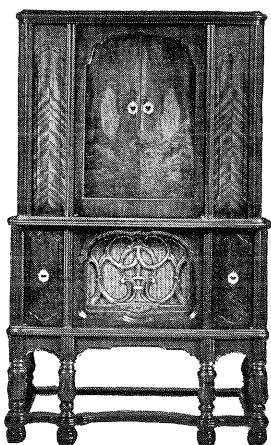


RCA Victor Duo 380-HR

Twelve-Tube Superheterodyne Receiver with Automatic Phonograph

Equipped for Home Recording

INSTRUCTIONS



RCA Victor Company, Inc.

CAMDEN, N. J., U. S. A.

INTRODUCTION

This distinctive radio-phonograph combination embodies the latest developments and improvements in home entertainment from broadcasts and recordings. Splendid voice and musical reproduction with abundant reserve volume from either radio programs or phonograph records is realized through the use of aural (automatic tone) compensation, Class B power amplification, and a large electro-dynamic loudspeaker. The latter member is contained in a specially-designed internal compartment which renders the cabinet acoustically correct, preventing sound distortion from resonance effects commonly known as "boominess."

In addition to a refined superheterodyne circuit using twelve tubes, the radio receiver incorporates the following features: (1) "secondary tuning range" for reception of police calls, amateur and other phone communications between 1500 and 2800 kilocycles as a diversion from the accustomed broadcasts, (2) "automatic volume control" to minimize fading and prevent blasting, (3) "silent-tuning control" to permit adjustment for quiet tuning between station settings, and (4) "dual tone control" to afford alteration of the bass or treble response independently as desired. Colored illuminated indicators on the front panel of the cabinet show at a glance just where the volume, silent-tuning and tone controls are set. An illuminated tuning meter is mounted directly above the station selector dial to facilitate *exact* adjustments of that dial and thus insure most pleasing reproduction.

INSTALLATION

Preliminary—After withdrawing the instrument from its shipping container and removing the packing framework bolted to the underside of the cabinet, extract the interior wooden brace fastened by screws to the radio chassis shelf and to the lower edge of the back-panel rail. Also remove the two red hex-head bolts which pass through the mounting rails and withdraw the two wooden blocks from between those rails and the motor-board, which should then float freely on its spring suspension.

Tubes—This instrument is equipped and tested at the factory with RCA Radiotrons and is shipped with these tubes installed. Remove the packing material inserted to protect the tubes against damage in transit, then refer to the chassis diagram printed on the license label inside the cabinet and *make certain*:

- (a) That all tubes are in the proper sockets and pressed down firmly. *Never apply power to the instrument unless all tubes are in place.*
- (b) That the shields are rigidly in place over those tubes represented by double circles on the diagram.
- (c) That the spring connectors of the short flexible (grid) leads, shown on the diagram, are securely attached to the dome terminals of the proper tubes. It is important that the adjacent green and black leads shall be connected as indicated—that is, not reversed.

NOTE—The grid lead for the RCA-55 must be enclosed by the cylindrical tube shield. A slot is provided at the bottom of this shield for entrance of the lead.

- (d) That the lids are securely in place on the shields of the two tubes designated by a heavy outer circle on the diagram.

Phonograph Compartment—Open the large doors on the front of the cabinet and remove all packing material from the playing compartment. Withdraw the turntable, microphone, used-needle cup, record and needle kits, recording weight, recording pad, compartment lamp and associated lamp shade from the Outfit Package. Referring to Figure 2, lift the record ejector to its upright position (see paragraph 3 (c) under "Procedure—Automatic Operation—Phonograph") and, with the speed shifter set in the outward or 78 R. P. M. position, mount the turntable on the motor spindle. Make certain that the spindle drive key engages the slot in the turntable hub.

Hang the microphone on the hook located at the upper left-hand rear corner of the playing compartment and push its connector plug into the receptacle directly above the rear edge of the record eject pocket. Do not permit any part of

The electrical phonograph is fully automatic, capable of playing in sequence without attention one side of several ten- or twelve-inch records of the standard-speed (78 R. P. M.—revolutions per minute) or long-playing (33 $\frac{1}{3}$ R. P. M.) variety. In addition, the mechanism may be quickly converted to function as an ordinary non-automatic phonograph, thus permitting individual playing at either speed, records of any diameter up to 12 inches. It is sturdily constructed and simple to operate, all controls being accessible from the front of the instrument. Record changing is accomplished in a minimum interval of four seconds. Two enclosed compartments are provided at the bottom of the cabinet for the storage of records.

Facilities for recording of either radio broadcasts or voice and musical entertainment originating in the home are contained in this instrument. Such recordings, however, must be made on special grooved blank records using special blunt-pointed needles, a few samples of these accessories being provided for the first trial operations. The microphone supplied is necessary when recording other than radio programs and is of the double-button carbon type, insuring excellent results under normal operation. The correct radio volume setting or microphone distance from the sound source may be quickly pre-determined by merely observing the flashing action of two small neon-lamp indicators located at the front of the playing compartment.

The cord to dangle in the eject pocket; wind all excess length of this cord around the microphone pedestal. Insert the used-needle cup in the opening provided in the motor-board and install the compartment lamp and lamp shade. The socket for this lamp is located at the top of the compartment directly above the front doors, which doors conceal and actuate the lamp switch. The shade should be turned to a position which does not afford direct illumination of the recording indicators.

Location—The instrument should be located close to the antenna lead-in and ground connections and near an electrical outlet. To insure proper operation of the automatic mechanism, the instrument must be level. If the floor is uneven at the location selected, therefore, one or more of the cabinet legs should be blocked up to attain the required level position. This is very important; for further details, see note 2 of paragraph 8 under "Procedure—Automatic Operation—Phonograph."

Antenna and Ground—A well-insulated outdoor antenna having a length of from 50 to 100 feet including the lead-in wire is recommended. It should be erected as high as conveniently possible and sufficiently remote from power lines and street railways to prevent excessive local interference. If the instrument is installed in a building of non-metallic construction, an indoor antenna ordinarily will afford satisfactory reception and may be considered the most practical. Buildings in which the roof or framework is of metal, however, form an effective shield which greatly impedes the passage of radio waves; to insure best results in such installations, therefore, an outdoor antenna is essential.

A *good* ground connection also is essential for best performance. The ground lead should be as short as possible and attached preferably to a cold-water pipe. An approved ground clamp should be used to insure a tight and permanent connection.

A terminal board containing three terminals is provided on the receiver chassis at the rear to facilitate connection to the antenna and ground. Connect the antenna lead to the middle terminal (marked "2") and the ground lead to the right-hand terminal (marked "3"). Tighten the terminals with a screw driver to insure permanent electrical connections.

NOTE—The left-hand terminal (marked "1") is provided for use only with *shielded lead-in* equipment (designed especially for this receiver) which can be purchased from and installed by the dealer who sold this instrument. Such an installation is effective in eliminating or greatly reducing noise interference caused by local electrical disturbances ("man-made static").

Power Supply—Connect the power cord to an electrical outlet supplying alternating current at the voltage and frequency (cycles) specified on the license label (see remarks pertaining to instrument fuse under concluding section "General"). During the subsequent Operating Test, the most satisfactory position for the connector plug in the outlet (that which provides least hum on record reproduction) should be determined.

Operating Test—At installation, a thorough trial operation—both radio and phonograph—should be made in accordance with the instructions which follow. The instru-

ment was, of course, in perfect operating condition when shipped from the factory. After transit, however, minor adjustments sometimes may be necessary, particularly on the automatic record-changing mechanism. It is the dealer's responsibility to make sure that the instrument functions perfectly when installed.

A diagrammatic chart giving complete instructions for ordinary adjustments of the automatic mechanism is included in the Service Data section of this booklet. Whenever possible, these adjustments should be made by the dealer from whom the instrument was purchased.

OPERATION—RADIO

All of the radio operating controls are located on the front panel as shown in Figure 1. Proceed as follows:

1. Set the Transfer Switch for "Radio Reception" and the Frequency Range Switch as indicated below for reception in either band:

- (a) *Counter-clockwise*—540–1500 kilocycles (broadcast band). Using the large numerals, the dial scale reads directly in kilocycles for this band.

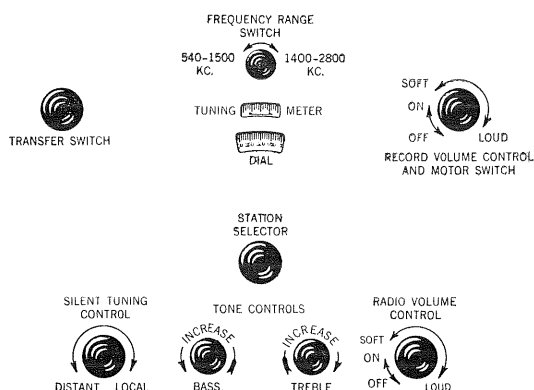


Figure 1

- (b) *Clockwise*—1400–2800 kilocycles. Frequencies in this band are indicated approximately by the positions of the small numerals at the bottom of the dial (add two ciphers to obtain kilocycles). Available services therein include the following:

- (1) **Police Calls**—Stations operating at 1574 and 1712 kilocycles and between 2400 and 2500 kilocycles.
- (2) **Amateur Radio "Phone"**—Assigned band 1800–2000 kilocycles.
- (3) **Aviation Communications "Phone"**—Between 2500 and 2800 kilocycles.

NOTE—The majority of stations in this range do not offer continuous programs. Police calls are usually intermittent, at regular or irregular intervals. Strong local stations in the broadcast band may be audible (sometimes at more than one point on the dial) when the Frequency Range Switch is set for 1400–2800 kilocycles.

2. Apply power by turning the Radio Volume Control knob clockwise from the "off" position. Set this control near the middle of its range by observing the illuminated colored indicator associated with its control knob. Wait a few seconds for the tubes to heat before attempting further operation.

3. With the Silent-Tuning Control set in the extreme counter-clockwise position, turn the Station Selector to a point, near the middle of the dial range, at which no station is heard within several scale divisions. Then turn the Silent-Tuning Control clockwise until the background noise (static) disappears.

NOTE—The adjustment just described provides quiet tuning (that is, *suppression of background noise between station settings*) and permits reception of all stations whose signals are above the existing noise level.

4. Tune the receiver by rotating the Station Selector either at random until a desirable program is heard or in an endeavor to locate any particular station whose assigned frequency is known. In the latter case, turn the selector slowly throughout a narrow range on each side of that dial setting corresponding to the station frequency.

NOTE—In the event that any particular station cannot be reached in this manner, its signal intensity probably is below the prevailing level of background noise. If especially desired, however, weak signals often may be received by turning the Silent-Tuning Control gradually counter-clockwise, thus calling upon the reserve sensitivity of the instrument. Under such conditions, background noise reproduction naturally will be appreciably greater.

5. After locating a station, turn the Radio Volume Control counter-clockwise (if necessary) until the sound level is fairly low and then adjust the Station Selector accurately to that position at which the indicator of the tuning meter travels furthest to the right (as designated by the arrow on the meter scale). At this setting only will the fine quality of reproduction provided in this instrument be realized and least background noise interference be obtained.

NOTE—When receiving a powerful local station, the Station Selector dial should be set at the *center* of the scale range for which the meter deflection is maximum (this range may be narrowed somewhat by turning the Silent-Tuning Control clockwise).

6. Set the Radio Volume Control for the desired sound level.

7. Adjust the two Tone Controls to obtain the tone shading preferred. The full range of musical reproduction is obtained with the right-hand knob turned fully clockwise and the left-hand knob turned to its counter-clockwise extremity, being represented by full illumination of the tone color indicator which extends between the two knobs. Modifications of the tone range may be obtained as follows:

- (a) To reduce the high-frequency (treble) response, or to decrease the background noise (static) interference on *station settings*, turn the right-hand tone control knob counter-clockwise. The extent of high-frequency cut-off thus obtained is indicated by shading of the *yellow* illumination at the right-hand side of the tone color indicator.
- (b) To reduce the low-frequency (bass) response, or to decrease low-pitched hum present on the signals of some stations, turn the left-hand tone control knob clockwise. The extent of low-frequency cut-off thus obtained is indicated by shading of the *blue* illumination at the left-hand side of the tone color indicator.
- (c) The *red* illumination at the center of the tone color indicator represents the middle range of musical response. This illumination is not cut off by rotation of either of the tone control knobs as described in the preceding paragraphs (a) and (b).

8. When through operating, turn the Radio Volume Control fully counter-clockwise, thus switching the power "off."

OPERATION—PHONOGRAPH

Automatic Operation

Important Precautions—The following precautions must be observed during operation:

1. In loading the turntable, make certain that the first record inserted (last to be played) is flat—that is, essentially free from warpage.

2. Before starting the turntable, make certain that the reject pocket (at the left of the phonograph compartment) is either empty or sufficiently clear to permit proper disposal of records by the automatic mechanism.

3. Never restrain by force the normal motion of any part of the automatic mechanism while it is changing records.

Procedure—The phonograph operating controls are located on the front panel and in the playing compartment as shown in Figures 1 and 2. Proceed as follows:

1. Set the Transfer Switch for "Record Reproduction."
2. Apply power by turning the Radio Volume Control clockwise from the "off" position. Set the two Tone Controls for full-range reproduction (see paragraph 7 under "Operation—Radio").
3. With the Motor Switch in the "off" position (Record Volume Control fully counter-clockwise), load the turntable with records, as follows:

- (a) Set the Index Lever at "Manual." Always do this before loading or unloading records.
- (b) Place the electric pickup on the rubber rest.
- (c) Raise the Record Ejector arm (very slowly, at first, until the internal weight has rolled to the rear of the arm, then as rapidly as desired) to its upper position of rest. Always raise the ejector arm in this manner.
- (d) Select the records to be played. All records for one loading must be of the same diameter (either ten or twelve inches), close to standard thickness and operable at the same speed (either 78 or $33\frac{1}{3}$ R. P. M.).

CAUTION—Do not use thin flexible-type records for automatic operation.

- (e) Place the records, one at a time, on the turntable (see paragraph 1 under "Important Precautions"). The spindle should resume its normal height after each record is added. The turntable is fully loaded when the top surface of the uppermost record is nearly flush with the top of the spindle. (It should not be possible to slide off the top record without lifting its edge or depressing the spindle.)
- (f) Lower the Record Ejector arm gently onto the spindle.

4. Insert a new needle in the pickup as far as it will go and tighten the needle screw. For long-playing ($33\frac{1}{3}$ R. P. M.) records, use only the orange Chromium needle. For standard (78 R. P. M.) records, use the latter needle or, if preferred, either the green Chromium or the full volume (full tone) Tungstone needle. Transparent-faced (illustrated) records, however, should not be reproduced with Tungstone needles.

NOTE—With care, the orange Chromium needle should play 75, the green Chromium 100, and the Tungstone 100 to 150 records. Never re-insert in the pickup a Chromium needle which has been used (however slightly) as damage to the record grooves would result.

5. Place the pickup needle on the smooth outer rim of the record, near the first groove. Then move the Index Lever to the position (12 or 10) corresponding to the diameter (inches)

of the records on the turntable. Be careful not to move the lever beyond the proper index hole. Push the index pin firmly into the hole.

CAUTION—Never attempt to move the Index Lever from the Manual position when the pickup is on the rubber rest.

6. Start the turntable by turning the Motor Switch clockwise; then set the Speed Shifter for the speed (78 or $33\frac{1}{3}$ R. P. M.) corresponding to the records on the turntable.

NOTE—The speed shifter should not be moved inward (from the 78 to the $33\frac{1}{3}$ R. P. M. position) while the turntable is at rest.

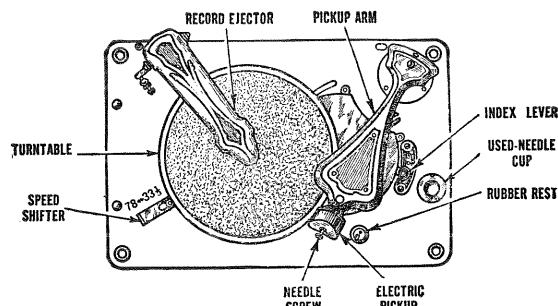


Figure 2

7. Adjust the Record Volume Control to obtain the desired volume.

8. Close the cabinet doors to extinguish the compartment lamp and to render less prominent the mechanical noises incident to record playing and changing. If needle scratch reproduction (particularly noticeable with old records) is considered excessive, turn the treble Tone Control slightly counter-clockwise. For most faithful reproduction, however, both Tone Controls should be left in the positions which provide full illumination of the tone color indicator.

NOTE 1—When a record has been played, the ejector arm slides it off into the record pocket and the pickup moves to the outside of the next record. The records on the turntable are thus played consecutively until only one record remains on the turntable. This record will be played repeatedly until the motor is stopped by means of the Motor Switch.

NOTE 2—After a record has been played and changed, the needle is lowered automatically onto the smooth rim of the next record and is fed by gravity into the starting groove. After the instrument has been leveled with reference to the top of the cabinet, further slight compensation may be necessary, thus: (1) If the needle fails to enter the playing groove, the right-hand side of the instrument must be raised by inserting thin blocks under the front and rear legs on that side; or (2) If the needle slides over several grooves, thus failing to reproduce the beginning of the selection, the left-hand side of the instrument must be similarly raised.

9. To reject a record while playing, lift the pickup arm and move it to the extreme left. Hold the pickup lightly until it is moved by the mechanism.

10. Before reloading or when through operating, turn the Motor Switch to the "off" position, set the Index Lever at "Manual" and place the pickup on the rubber rest. Never leave the pickup resting on a record (or on the turntable) when not in use. Turn the power switch "off" and close the cabinet doors when discontinuing operation of the instrument.

Manual Operation

Records may be played individually as follows:

1. Set the Transfer Switch for "Record Reproduction" and apply the power with the Radio Volume Control as directed for automatic operation. Adjust the two Tone Controls for full-range reproduction.
2. Make sure that the Index Lever is at "Manual," that the electric pickup is on its rubber rest, and that the Motor Switch is in the "off" position.
3. Raise the Record Ejector arm to the upper rest position (see paragraph 3 (c) under "Automatic Operation").
4. Place the record on the turntable and insert a needle in the pickup. For needle information, see paragraph 4 under "Automatic Operation."

NOTE—Ordinary steel needles (full volume or full tone) can be used with standard (78 R. P. M.) records,

provided a new needle is inserted for each selection. Do not use *Tungstone* needles with either thin flexible type or transparent-faced (illustrated) records.

5. Start the turntable by turning the Motor Switch clockwise, then set the Speed Shifter for the speed corresponding to the record on the turntable. Lower the needle gently onto the smooth outer rim of the record.
6. Adjust the Record Volume Control and close the cabinet doors (see paragraph 8 under "Automatic Operation").
7. After the record has been played, stop the turntable by turning the Motor Switch to the "off" position (motor stops automatically at the end of any record having the *eccentric* final groove). Lift the electric pickup from the record and place it on the rubber rest.
8. When through operating, turn the power "off" and close the cabinet doors.

OPERATION—RECORDING

Recording Precautions

When using the home-recording facilities of this instrument, the following precautions must be observed:

1. Always place a flat (unwarped) 10- or 12-inch record of the commercial variety beneath the home-recording record when recording.
2. To prevent surface slippage, always record with the cork recording pad inserted between the home-recording and standard records. This pad need not be removed for "playing-back" purposes but must never be left on the turntable when automatic operation is intended.
3. Use only the special *home-recording* needle (identified by its yellow shank and blunt-point) for both recording and reproducing. Such needles, however, must not be used for playing other than home-recorded records.
4. For *recording*, the needle pressure on the record must be increased by placing the recording weight on the electric pickup. This weight must be removed for *reproducing* either the home-recorded or any other record.

Radio Recording

To record radio programs, refer to Figures 1 and 2, and proceed as follows:

1. Tune the receiver for the desired radio program as described under "Operation—Radio." Make sure that the Index Lever is at "Manual," that the electric pickup is on its rubber rest, and that the Motor Switch is in the "off" position.
2. Raise the Record Ejector arm to its upper position of rest (see paragraph 3 (c) under "Procedure—Automatic Operation—Phonograph").
3. Place a blank home-recording record on the turntable (see paragraphs 1 and 2 of preceding section "Recording Precautions") and lower the Record Ejector arm.
4. Insert a *home-recording* needle in the electric pickup and place the recording weight on the pickup head.
5. Set the Transfer Switch for "Radio Recording." In this position, the radio program should be heard at reduced volume.
6. Adjust the Radio Volume Control to obtain the correct recording volume as determined by observing the flashing of the two neon-lamp indicators located at the front of the playing compartment. The setting is correct when the left-hand lamp is at or near fixed illumination and the right-hand lamp is either "off" or flashing only at intervals. When both lamps are "off," the volume is too low and when both are flashing continuously, the volume is too high.

7. Start the turntable by turning the Motor Switch "on," then set the Speed Shifter for the desired turntable speed.

NOTE—For best results, always record at 78 R. P. M. If a record of longer duration is desired, recording may be done at 33½ R. P. M. Such records should be so marked, and must of course be reproduced at the same speed.

8. Place the needle in the outer groove of the blank record and recording will proceed automatically. During this process, however, watch the volume indicators and adjust the Radio Volume Control (if necessary) to compensate for changes in the program level.
9. Recording may be interrupted at any time by simply lifting the pickup from the record. It may be resumed on the same record if desired, provided care is taken to enter the needle in a *new* groove—that is, one slightly nearer the center than the last recorded groove.
10. Upon completing a recording, lift the electric pickup from the record, turn the Motor Switch "off" and place the pickup on the rubber rest.

Microphone Recording

To record voice or musical entertainment originating in the home, the procedure is essentially the same as for the recording of radio programs except that the microphone is employed. Remove this unit from the cabinet (leaving the cord connected) and place it in an *upright* position on a table or any other horizontal surface conveniently near the sound source.

For best results, special attention must be given to the location and arrangement of the person or persons presenting the program. All sounds to be recorded must be directed toward the *front* of the microphone, never toward the *rear* which is designated by the word "BACK" cast on the pedestal. Further, the microphone should be located at a height approximately the same distance from the floor as the sound source. Such conditions may be fulfilled easily in the case of the average adult (speaker or singer) by placing the microphone on the top of the cabinet.

When recording speech, the microphone should be spaced from three to six inches from the speaker's mouth; the speaker should talk in a normal even tone and enunciate clearly. The microphone should be at a somewhat greater distance (one to two feet) when recording musical vocal selections, the proper spacing naturally being dependent upon the number of singers present. For instrumental music, the most desirable distance between the artists and the microphone will depend upon the type (wind or string), as well as the number of instruments and may be from three to ten feet. In the case of a small

orchestra, it would be preferable to group the members in a semi-circle with the stringed instruments nearest the microphone and the horns at the rear.

Adjustment of Recording Volume—Before the actual recording is undertaken, it will be advisable to test for the proper volume as follows:

1. Set the Transfer Switch for "Home Recording."
2. Turn the power "on" (Radio Volume Control rotated slightly clockwise). As for radio recording, make certain that the Index Lever is at "Manual," that the electric pickup is on its rubber rest and that the Motor Switch is "off."
3. Raise the Record Ejector arm and load the turntable with a blank home-recording record, first inserting a standard record and the cork recording pad, then lower the Record Ejector arm.
4. Set the Record Volume Control fully clockwise (turntable now should be rotating) and commence the program which is to be recorded.
5. Regulate the distance between the sound source and the microphone, while observing the flashing action of the neon-lamp indicators at the front of the playing compartment, until both lamps are illuminated continuously or at approximately the same intervals.
6. Turn the Record Volume Control counter-clockwise until the right-hand lamp is either "off" or flashing infrequently; however, do not reduce the setting sufficiently to

Fuse—This instrument is protected by a fuse located at the rear of the chassis, under the metal cover marked "Caution: Remove Power Supply Before Removing Cover." If the fuse burns out, check the power supply connections and rating, and have all tubes tested by your dealer before installing a new fuse. This is a special fuse—obtain replacement fuses from your dealer—*do not use any substitute for this fuse.*

In districts where the line voltage is always below 115 (225 for 200-250 volt models), the fuse should be

change the action of the left-hand lamp. The instrument is now properly adjusted and the test program may be discontinued while making final preparations for recording.

Procedure—After the recording volume is adjusted, leave the Record Volume Control setting intact permitting the turntable to remain in rotation, and proceed as follows:

1. Insert a *home-recording* needle in the electric pickup and place the recording weight on the pickup head.
2. Set the Speed-Shifter for the desired turntable speed (see note in paragraph 7 under "Radio Recording").
3. Place the needle in the outer groove of the blank record and commence without delay the program to be recorded.
4. When the recording is complete (see paragraph 9 under "Radio Recording"), lift the electric pickup from the record, turn the Motor Switch "off" and place the pickup on its rubber rest.

Reproduction of Home Recordings

Home-recorded records (either radio or microphone recordings) may be reproduced in the manner described for manual operation of standard records under "Operation—Phonograph." Such records, however, must not be employed with the automatic record changer and always must be reproduced with the special *home-recording* needle. Always make certain to remove the recording weight from the electric pickup when "playing-back" recordings.

GENERAL

set in the "110" position ("213" position for 200-250 volt models). Always disconnect the power cord from the a-c outlet before removing the fuse cover.

Maintenance—With normal use and handling, trouble-free service is to be expected. The automatic phonograph mechanism and associated parts, however, should be kept clean and well-lubricated. To insure continued efficient operation, it is recommended that the entire instrument be thoroughly inspected and adjusted by an experienced service man once each year.

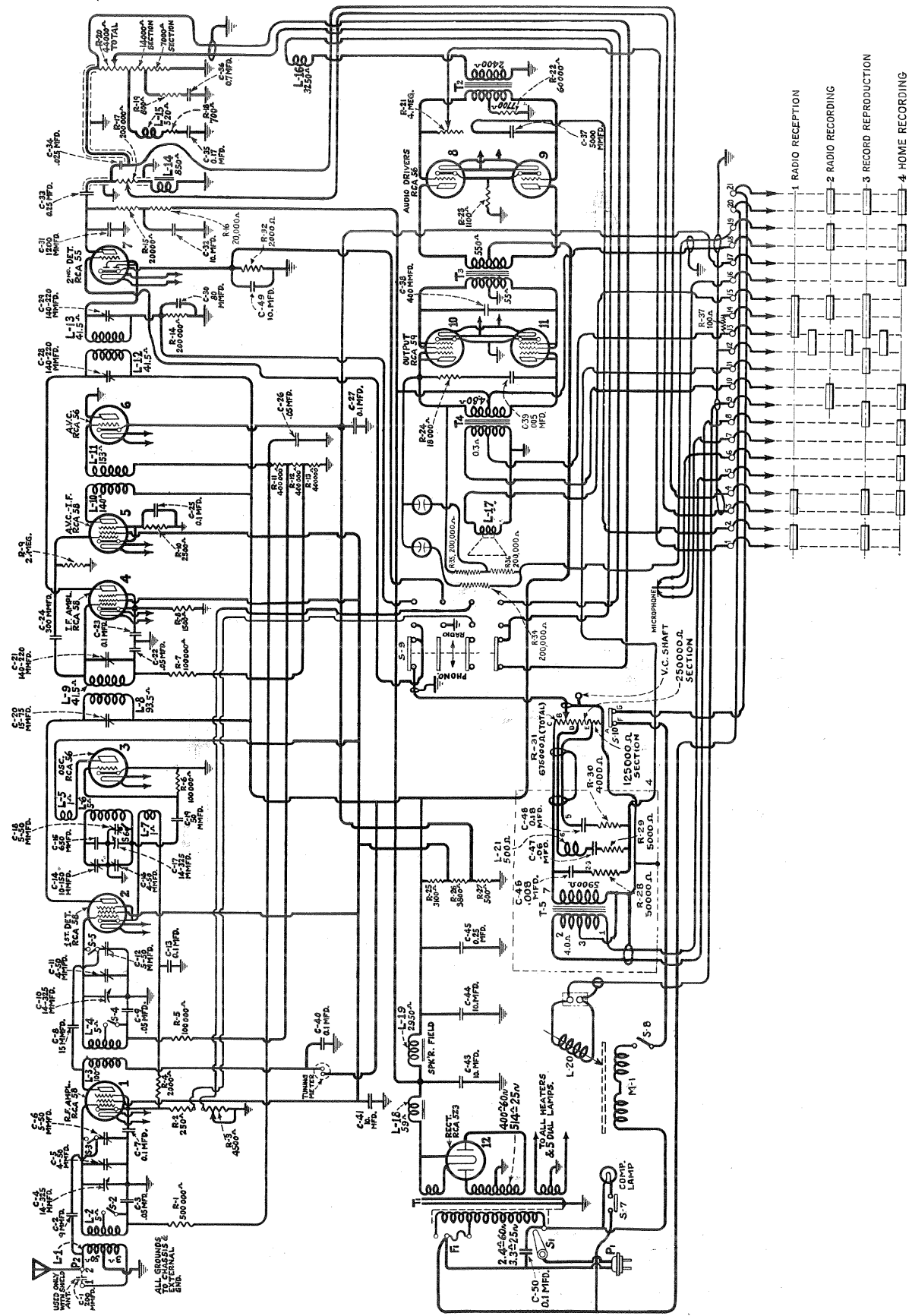


Figure A—Schematic Circuit Diagram

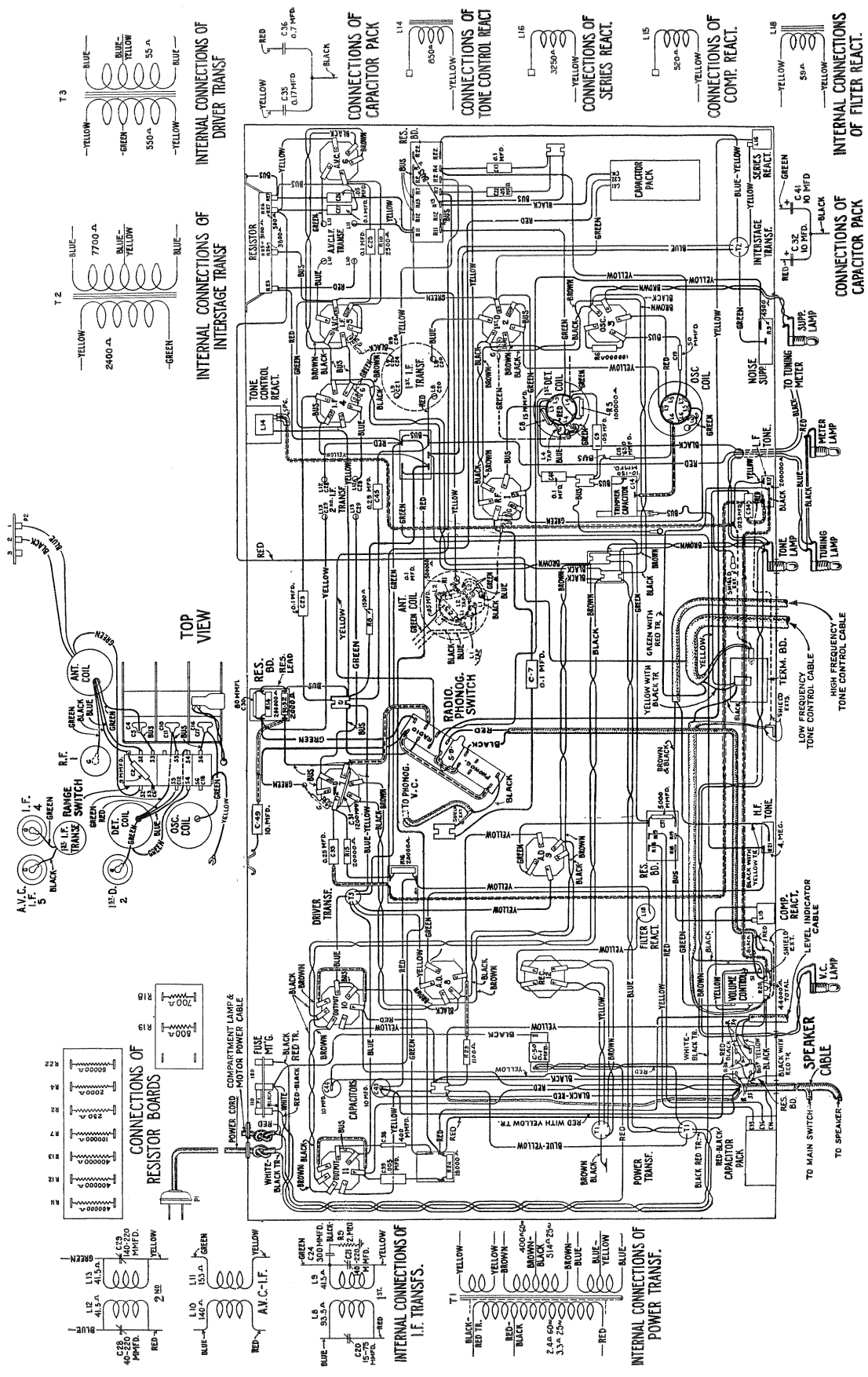


Figure B—Chassis Wiring Diagram

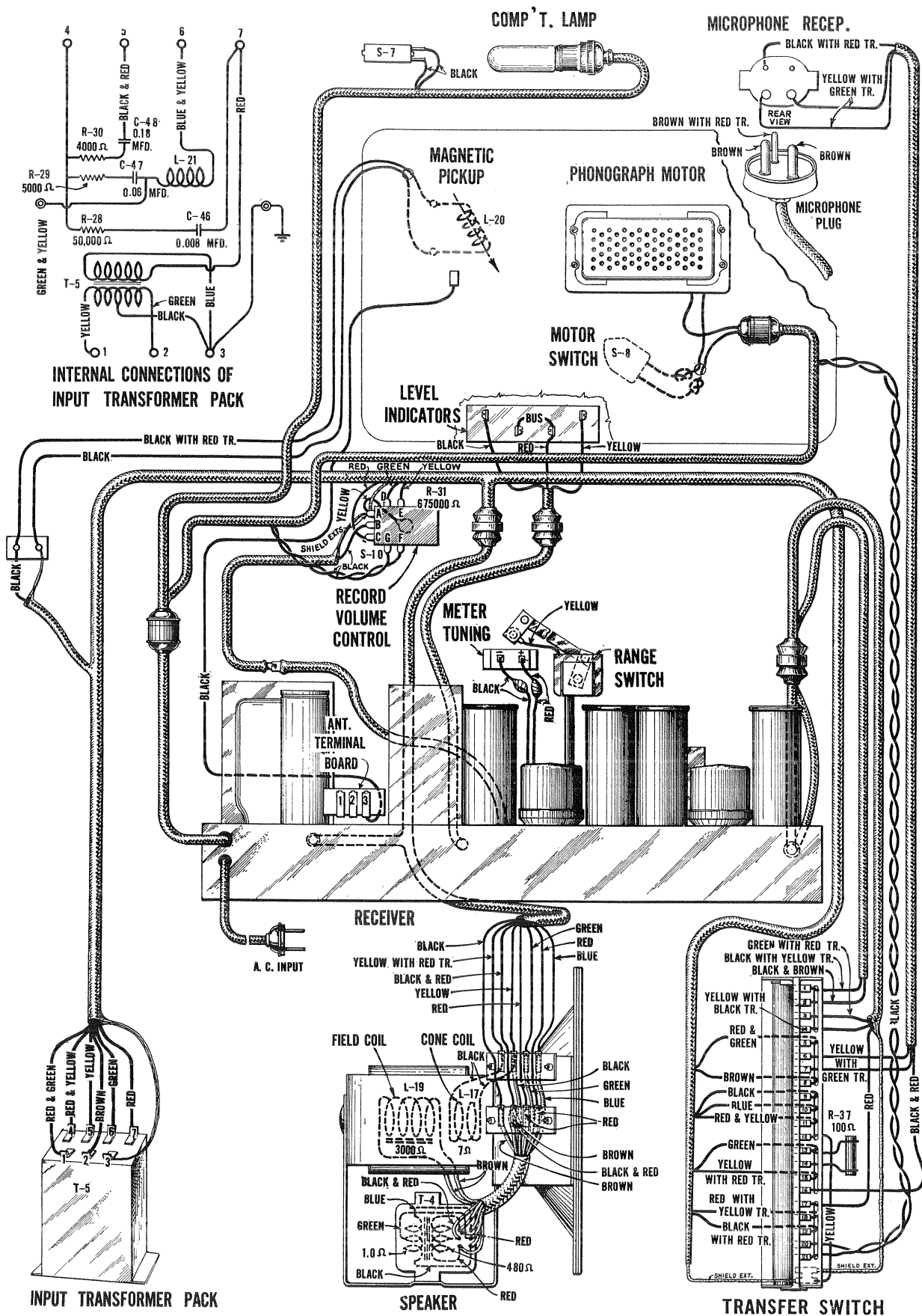


Figure C—Assembly Wiring Diagram

SERVICE DATA

Electrical Specifications

Voltage Rating	105-125 Volts
Power Consumption (60 Cycle)	175 Watts
Type and Number of Radiotrons	4 RCA-56, 4 RCA-58, 1 RCA-55, 2 RCA-59, 1 RCA-5Z3—Total 12
Frequency Range	.540 K.C.—1500 K.C.—1400 K.C.—2800 K.C.
Undistorted Output	10.0 Watts

This combination home recording instrument utilizes the new perfected automatic record changing mechanism and the twelve-tube Deluxe Super-Heterodyne receiver. Excellent fidelity on both radio and record reproduction, together with facilities for recording either programs or voice are inherent features of this instrument. Other features include double tuning range (540 K. C.—1500 K. C. and 1400 K. C.—2800 K. C.), high and low frequency tone control, compensated volume control and the inherent sensitivity, selectivity and tone quality of the Super-Heterodyne.

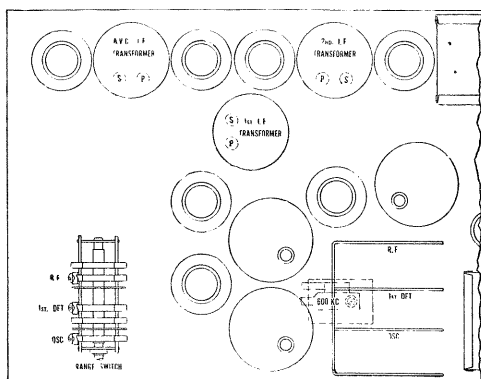


Figure D—Location of Line-Up Capacitors

Figure A shows the schematic circuit, Figure B the chassis wiring, and Figure C the assembly wiring diagram. The Radiotron socket voltages, the line-up procedure, special service hints and the replacement parts are given on the following pages.

R. F. and Oscillator Line-up Capacitor Adjustments

Four adjustable capacitors are provided for aligning the R. F. circuits and adjusting the oscillator frequency so that the oscillator will maintain a constant frequency—175 K. C.—difference from that of the incoming signal. Poor quality, insensitivity, poor A. V. C. action and possible inoperation of the receiver may be caused by these capacitors being out of adjustment.

If the other adjustments have not been tampered with—the intermediate transformer tuning capacitors—the following procedure may be used for aligning these capacitors:

- Procure an R. F. Oscillator, such as Stock No. 9050, giving a modulated signal at 600 K. C., 1400 K. C., and 2440 K. C. Also procure a non-metallic screw driver such as Stock No. 7065.
- An output meter is necessary. This should be a 0-10 milliammeter connected in series with the plate supply to the second detector.
- A dummy Radiotron RCA-56 is necessary to substitute for the one normally used in the A. V. C. socket. This should be a tube that is otherwise normal in all respects, but having one heater prong removed. Insert this tube in the A. V. C. socket.
- First check the chassis and carefully ascertain that the dial pointer reads exactly at the first line on the scale when the tuning capacitor rotor plates are fully meshed with the stator plates.
- Place the oscillator in operation at exactly 1400 K. C. and couple its output to the antenna. Set the Range Switch counter-clockwise and the dial scale at exactly 1400. Connect the output meter to the set and place the volume control and suppressor control, if

noise level will permit, at its maximum position. Adjust the oscillator input so that only a slight reduction in current is obtained in the output meter.

- With a suitable socket wrench—the nuts are at ground potential—adjust the oscillator, first detector and R. F. line-up capacitors, until a minimum deflection is obtained in the output meter.
- The high frequency band is adjusted at 2440 K. C. This is done in a similar manner to the R. F. adjustments except that the oscillator is set at 2440 K. C., the dial at 1250 and the Range Switch in the clockwise position. The line-up capacitors on the Range Switch are adjusted for minimum output at this frequency.
- Set the oscillator at 600 K. C. Tune in the signal with the receiver until a slight deflection is obtained in the output meter. Now adjust the 600 K. C. series capacitor, Figure D, until a minimum deflection is obtained in the output meter. Rock the tuning capacitor back and forth while making this adjustment, as the tuning capacitor and oscillator series capacitor adjustments interlock.
- Change the frequency of the oscillator to 1400 K. C. and set the dial at 1400. Again make the adjustments given under (f), (g), and then (h).

So adjusted, the R. F. circuits are properly aligned and the oscillator will maintain a constant frequency difference from the incoming R. F. signal.

I. F. Tuning Capacitor Adjustments

Although this receiver has two I. F. stages, one for the second detector and one for the A. V. C., only two of the three I. F. transformers are tuned by adjustable capacitors and require adjustment. The stage used for the A. V. C. is broadly tuned and does not require any adjustment.

The transformers are all tuned to 175 K. C. and the circuits broadly peaked.

A detailed procedure for making this adjustment follows:

- Procure a modulated R. F. Oscillator, such as Stock No. 9050, that gives a modulated 175 K. C. signal. Also procure a non-metallic screw driver such as Stock No. 7065.
- An output meter is necessary. This should be a 0-10 milliammeter connected in series with the plate supply to the second detector.
- A dummy Radiotron RCA-56 is necessary to substitute for the one normally used in the A. V. C. socket.
- Remove the oscillator tube and make a good ground connection to the chassis. Place the oscillator in operation and couple its output from the control grid of the first detector to ground. Adjust the oscillator output, with the receiver volume control at maximum, until a slightly reduced deflection is obtained in the output meter.
- Refer to Figure D. Adjust the secondary and primary of the second and then the first I. F. transformer until a minimum deflection is obtained in the output meter. Go through these adjustments a second time, as a slight readjustment may be necessary.

When these adjustments are made, the set should perform at its maximum efficiency. However, due to the interlocking of adjustments, it is good practice to repeat the R. F. and oscillator line-up capacitor adjustments after completing alignment of the I. F. system. The correct method of doing this is given in the preceding section.

Antenna Connections—It will be noted that three antenna terminals are provided at the rear of the receiver chassis. Two of these are used for the normal antenna and ground connections, while the third one is for use in connection with a shielded antenna system. The tap eliminates the need for the transformer usually used for coupling the shielded line to the radio receiver.

Stock No. 7717 shield kit, which comprises a lightning arrester, transformer assembly, a 200 mmfd. capacitor, and 100 feet of shielded wire, is recommended. When such an antenna system is used, it is necessary to connect the 200 mmfd. capacitor between terminals 1 and 2. This prevents the first R. F. circuit from being detuned and results in maximum gain from the antenna. This capacitor is included with the Stock No. 7717 Kit.

Automatic Record Changer—The automatic record changer used in this instrument is of simple design and excellent construction. The various adjustments that may be required are shown in Figure G. A point to remember with this instrument is that it must always be level, otherwise proper operation will not be obtained.

RADIOTRON SOCKET VOLTAGES (RADIO OPERATION)

120 Volt A. C. Line—Volume Control and Sensitivity Control at Maximum—No signal being received

Radiotron No.	Cathode to Control Grid, Volts	Cathode to Screen Grid, Volts	Cathode to Plate, Volts	Plate Current, M. A.	Heater Volts
RCA-58 R. F.	3.1	97	212	7.5	2.5
RCA-56 Osc.	—	—	100	6.0	2.5
RCA-58 1st Det.	9.5	91	206	2.8	2.5
RCA-58 I. F.	7.5	93	208	4.0	2.5
RCA-58 A. V. C.—I. F.	8.5	92	207	3.0	2.5
RCA-56 A. V. C.	12.0	—	—	0	2.5
RCA-55 2nd Det.	0	—	74	8.0	2.5
RCA-56 A. F. Driver	11.0	—	205	5.0	2.5
RCA-56 A. F. Driver	11.0	—	205	5.0	2.5
RCA-59 Power	0	—	394	13.0	2.5
RCA-59 Power	0	—	394	13.0	2.5
RCA-5Z3 Rect.	990-495 R. M. S.	—	—	92 Total	5.0

Testing Neon Level Indicating Lamps

Two Neon Level Indicating Lamps are provided so that a visual indication of the recording level may be obtained at all times. These lamps normally give long service without attention. However, if failure occurs, and all circuits have been checked and eliminated as possible source of failure, the

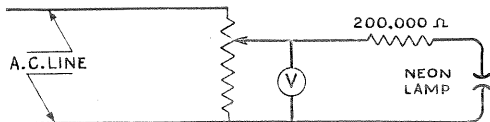


Figure E—Testing Circuit

lamps may be easily checked as indicated in the circuit shown in Figure E. The method for checking involves testing for lighting between certain voltages. The lamps must not light before 52 volts have been applied and must not require a voltage greater than 64 volts to cause them to light. Lamps requiring different voltages from these are defective and must not be used.

Transfer Switch Mechanism

The transfer switch used in this model is a special four-position rotary switch located on the front panel and operated in conjunction with a two-position switch located in the chassis. The switches are coupled mechanically by means of a flexible shaft and operate as a single unit.

In event that any part of the switching system is removed, in order to replace or reconnect the assembly, the following procedure should be observed. Refer to Figure F.

- Set the two-position switch located in the chassis to its extreme clockwise position, and attach the transfer switch to front panel of the cabinet in proper position as shown. Set the transfer switch at position 1.
- Assemble the transfer switch end of the flexible shaft into the switch bracket. Place the "V" link loosely on end of shaft and tighten the pilot screw into its groove.
- Assemble the other end of the flexible shaft to the two-position switch (on chassis) so that one set screw points directly back, when facing the chassis from the rear, and the other to the left. Then tighten one set screw.

- Set the "V" link, at rear of large switch, so that the lower corner is approximately flush with the lower side of the switch. Tighten one set screw.
- Note the position of the pin as it approaches the "V" link when turning transfer switch clockwise toward position 2 and also when the pin approaches the "V" link when turning the transfer switch counter clockwise toward position 3 from position 4. In these positions the pin must contact the "V" at approximately the same points.
- Tighten all remaining set screws at each end of the shaft.

It will now be found that the transfer switch turns with maximum smoothness and the two-position chassis switch operates midway between positions 2 and 3 in either direction.

Audio Circuits

Figure G shows the schematic diagrams of the audio circuits that occur at each position of the transfer switch. A reference to these diagrams will enable the serviceman to quickly diagnose trouble in these circuits.

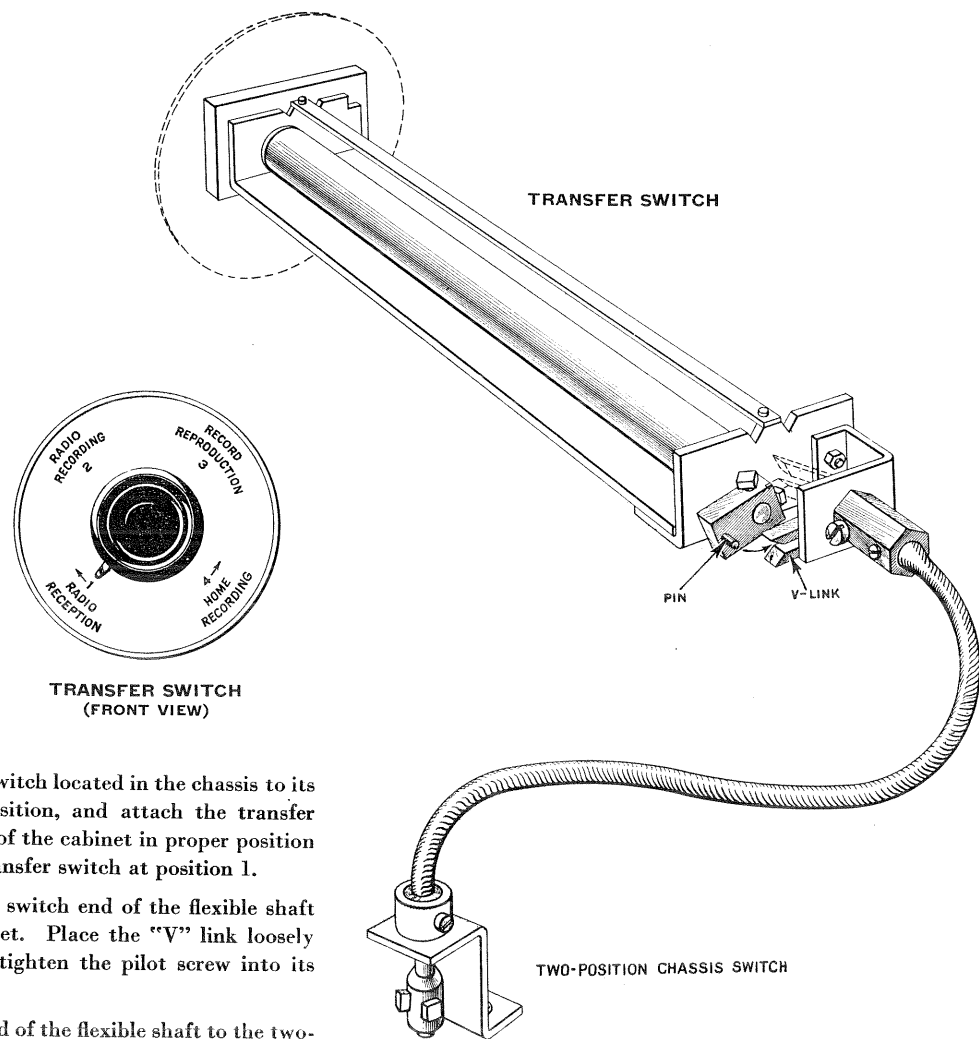
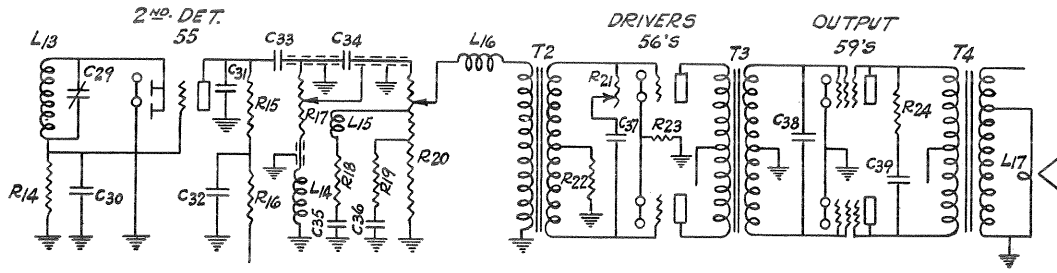
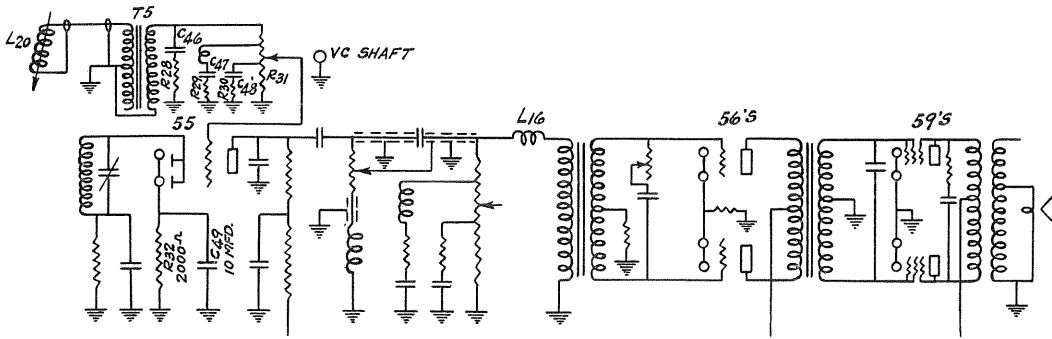


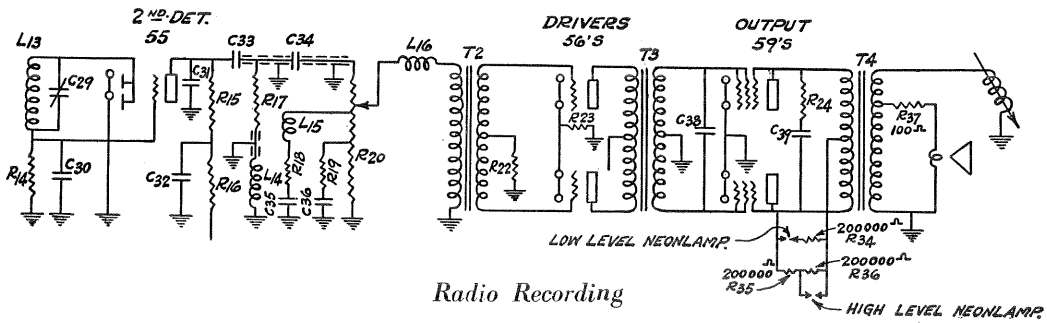
Figure F—Transfer Switch Mechanism



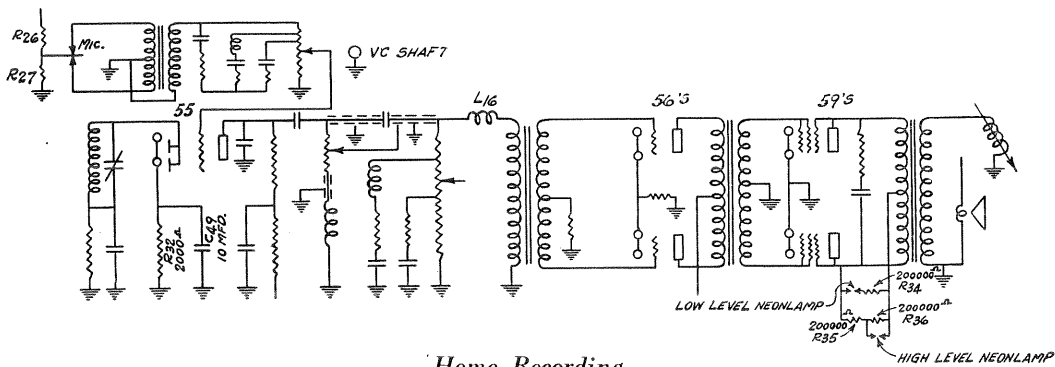
Radio Reproduction



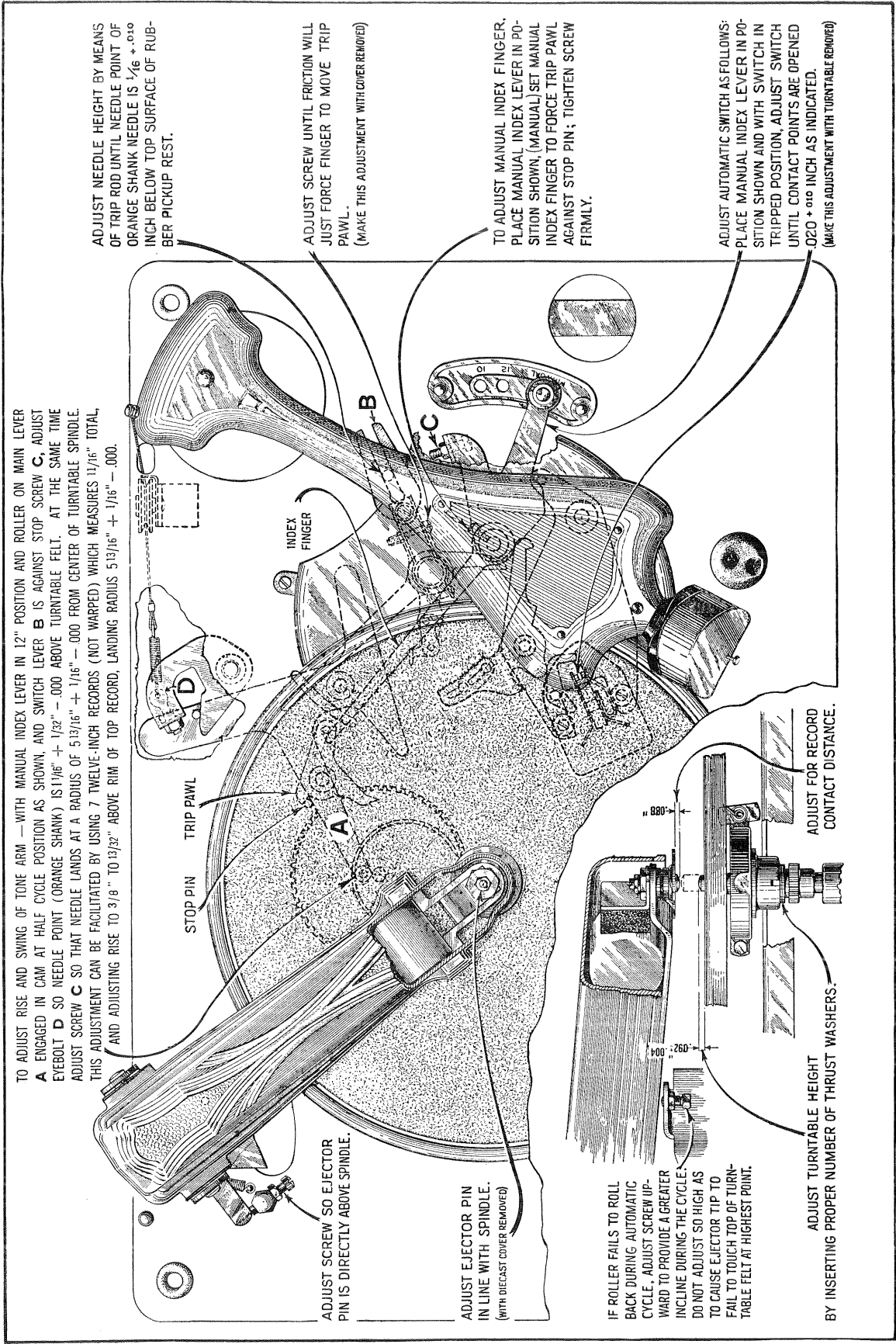
Record Reproduction



Radio Recording



Home Recording



TO ADJUST RISE AND SWING OF TONE ARM — WITH MANUAL INDEX LEVER IN 12" POSITION AND ROLLER ON MAIN LEVER A ENGAGED IN CAM AT HALF CYCLE POSITION AS SHOWN, AND SWITCH LEVER B IS AGAINST STOP SCREW C, ADJUST EYEBOLT D SO NEEDLE POINT (ORANGE SHANK) IS $1/16" + 1/32" - .000$ ABOVE TURNABLE FELT. AT THE SAME TIME ADJUST SCREW C SO THAT NEEDLE LANDS AT A RADIUS OF $5.13/16" + 1/16" - .000$ FROM CENTER OF TURNABLE SPINDLE. THIS ADJUSTMENT CAN BE FACILITATED BY USING 7 TWELVE-INCH RECORDS (NOT WARPED) WHICH MEASURES $11/16"$ TOTAL, AND ADJUSTING RISE TO $3/8"$ TO $13/32"$ ABOVE RIM OF TOP RECORD, LANDING RADIUS $5.13/16" + 1/16" - .000$.

ADJUST NEEDLE HEIGHT BY MEANS OF TRIP ROD UNTIL NEEDLE POINT OF ORANGE SHANK NEEDLE IS $1/16" + .010$ INCH BELOW TOP SURFACE OF RUBBER PICKUP REST.

ADJUST SCREW UNTIL FRICTION WILL JUST FORCE FINGER TO MOVE TRIP PAWL. (MAKE THIS ADJUSTMENT WITH COVER REMOVED)

TO ADJUST MANUAL INDEX FINGER, PLACE MANUAL INDEX LEVER IN POSITION SHOWN, (MANUAL) SET MANUAL INDEX FINGER TO FORCE TRIP PAWL AGAINST STOP PIN; TIGHTEN SCREW FIRMLY.

ADJUST AUTOMATIC SWITCH AS FOLLOWS: PLACE MANUAL INDEX LEVER IN POSITION SHOWN AND WITH SWITCH IN TRIPPED POSITION, ADJUST SWITCH UNTIL CONTACT POINTS ARE OPENED $.020 + .010$ INCH AS INDICATED. (MAKE THIS ADJUSTMENT WITH TURNABLE REMOVED)

ADJUST SCREW SO EJECTOR PIN IS DIRECTLY ABOVE SPINDLE.

ADJUST EJECTOR PIN IN LINE WITH SPINDLE. (WITH DIECAST COVER REMOVED)

IF ROLLER FAILS TO ROLL BACK DURING AUTOMATIC CYCLE, ADJUST SCREW UPWARD TO PROVIDE A GREATER INCLINE DURING THE CYCLE. DO NOT ADJUST SO HIGH AS TO CAUSE EJECTOR TIP TO FAIL TO TOUCH TOP OF TURNABLE FELT AT HIGHEST POINT.

ADJUST TURNABLE HEIGHT BY INSERTING PROPER NUMBER OF THRUST WASHERS.

ADJUST FOR RECORD CONTACT DISTANCE.

Figure H—Automatic Record Changer Adjustments

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.

Replacing Magnet Coil, Pivot Rubbers, Armature or Damping Block

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

- (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.

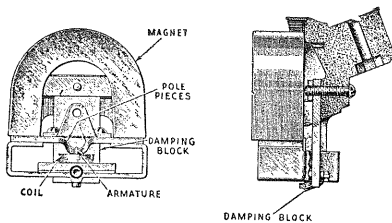


Figure I

- (d) Remove screws A and B, Figure J, and then remove the mechanism assembly from the pole pieces.
- (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.
- (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.
- (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 J), 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 nine mils 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.

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.

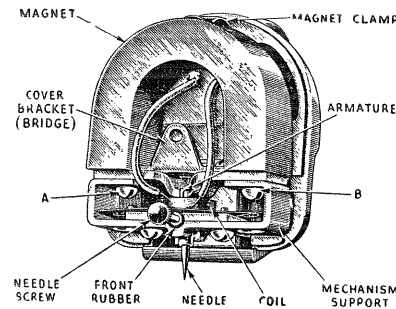


Figure J

- (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 K, 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.

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

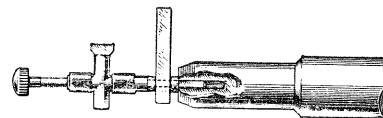


Figure K

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).

REPLACEMENT PARTS

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

Stock No.	DESCRIPTION	List Price	Stock No.	DESCRIPTION	List Price
RECEIVER ASSEMBLIES					
2730	Resistor—18,000 ohms—Carbon type—1 watt (R24)— Package of 5	\$1.10	6447	Volume control (R20, S1)	\$1.92
2747	Cap—Contact cap—Package of 5	.50	6448	Tone control—Low frequency (R17)	1.04
3024	Capacitor—9 mmfd. (C2)—Package of 2	.50	6449	Tone control—High frequency (R21)	1.06
3047	Resistor—1,500 ohms—Carbon type— $\frac{1}{2}$ watt (R8)— Package of 5	1.00	6450	Rheostat—Noise suppressor rheostat (R3)	1.24
3085	Capacitor—400 mmfd. (C38)	.30	6512	Capacitor—0.005 mfd. (C37)	.28
3118	Resistor—100,000 ohms—Carbon type— $\frac{1}{4}$ watt (R5)— Package of 5	1.00	6537	Switch—Range switch	1.30
3252	Resistor—100,000 ohms—Carbon type— $\frac{1}{2}$ watt (R6, R7)— Package of 5	1.00	6539	Coil—Detector coil (L3, L4)	1.44
3376	Mount—Fuse mount	.40	6541	Dial—Tuning condenser dial and scale	.75
3435	Resistor—250 ohms—Carbon type— $\frac{1}{2}$ watt (R2)—Pack- age of 5	1.00	6561	Coil—Antenna coil (L1, L2, R1, C3)	1.65
3460	Capacitor—1,200 mmfd. (C31)	.30	6562	Transformer—Audio driver transformer (T3)	3.04
3526	Resistor—2,000 ohms—Carbon type— $\frac{1}{2}$ watt (R4, R32)— Package of 5	1.00	6564	Transformer—First intermediate frequency transformer (L8, L9, R9, C20, C21, C24)	2.30
3527	Resistor—800 ohms—Carbon type— $\frac{1}{2}$ watt (R19)— Package of 5	1.00	6565	Transformer—A. V. C. intermediate frequency transformer (L12, L13, C28, C29)	2.10
3528	Bracket—Noise suppressor or volume control lamp bracket	.18	6566	Transformer—Second intermediate frequency transformer (L10, L11)	1.72
3529	Socket—Noise suppressor, volume control lamp socket or tuning meter	.32	6567	Capacitor pack—Comprising one 0.17 mfd., and one 0.7 mfd. capacitors (C35, C36)	.95
3533	Shutter—High frequency tone control shutter	.50	6568	Transformer—Interstage audio transformer (T2)	3.10
3534	Shutter—Low frequency tone control shutter	.50	6571	Capacitor—10 mfd. (C43, C44)	1.20
3535	Socket—High or low frequency tone control lamp socket	.32	6572	Reactor—Tone control reactor (L14)	.90
3556	Capacitor—0.05 mfd.—Located on antenna coil (C3)	.34	6574	Capacitor pack—Comprising two 10.0 mfd. capacitors (C32, C41)	1.80
3558	Capacitor—50 mmfd. (C19)	.36	6578	Reactor—Filter reactor (L18)	3.22
3564	Bracket—Station selector dial lamp—Mounting bracket	.25	6797	Capacitor—10.0 mfd. (C49)	1.04
3565	Socket—Station selector dial lamp socket	.50	6847	Shield—Rectifier socket shield and capacitor	.65
3597	Capacitor—0.25 mfd. (C33, C45)	.40	7062	Capacitor—Adjustable capacitor (C14)	.50
3640	Capacitor—0.05 mfd. (C9, C22, C26)	.25	7439	Drum—Dial drum with set screw and three dial mounting nuts	.35
3641	Capacitor—0.1 mfd. (C7, C13, C23, C25, C27)	.35	7484	Socket—5-contact Radiotron socket	.35
3643	Capacitor—0.005 mfd. (C39)	.25	7485	Socket—6-contact Radiotron socket	.40
3652	Screw—No. 10-32- $\frac{1}{4}$ set screw for bracket and bushing assembly—Package of 10	.32	7700	Condenser—3-gang variable tuning condenser (C4, C5, C6, C10, C11, C12, C16, C17, C18, S2, S3, S4, S5, S6)	7.44
3719	Socket—7-contact Radiotron socket	.30	9468	Transformer—Power transformer—105-125 volts—50-60 cycles (T1)	7.75
3726	Arm—Range switch operating arm assembly—Comprising arm, link, studs and set screws	.45	9469	Transformer—Power transformer—105-125 volts—25-40 cycles	11.75
3727	Shaft—Shaft and bushing assembly for range switch operat- ing arm—Comprising two washers, shaft, bushing and nut	.30	MOTOR BOARD ASSEMBLIES		
3747	Capacitor—15 mmfd. (C8)	.36	2893	Spring—Trip lever latch tension spring—Package of 10	.30
3749	Capacitor—0.1 mfd. (C40)	.30	2917	Washer—Spring washer, "U" type—Package of 10	.25
3765	Capacitor—0.025 mfd. (C34)	.34	3654	Roller—Guide roller assembly—Comprising bracket roller and guide pin	.34
3774	Resistor—7,400 ohms—Tapped at 3,800 and 500 ohms (R25, R26, R27)	.80	3666	Spring—Cable lever tension spring—Package of 10	.44
3797	Reactor—Volume control compensating reactor (L15)	.64	3670	Finger—Friction finger	.32
3798	Resistor—700 ohms—Carbon type— $\frac{1}{2}$ watt (R18)— Package of 5	1.00	3672	Pin—Manual index lever pin	.42
3799	Capacitor—80 mmfd. (C30)	.70	3673	Screw—Manual index lever adjustment screw and nut— Package of 5	.20
3883	Fuse—2-ampere (F1)—Package of 5	.40	3676	Spring—Cam and gear pawl carrier tension spring—Pack- age of 10	.52
4013	Capacitor—200 mmfd (C1)	.30	4059	Lever—Cable lever assembly	.40
4035	Switch—Radio-Phonograph switch (S9)	2.10	4060	Screw—Trip lever clutch tension adjustment screw—Pack- age of 10	.22
4036	Shield—Low or high frequency tone control light shield	.30	4061	Escutcheon—Manual—12-10	.28
4037	Shield—Antenna, detector or oscillator shield	.55	4124	Spring—Main spring—Package of 10	.38
4038	Shield—Radiotron shield	.30	4124	Plate—Actuating plate assembly	.50
4039	Shield—Radiotron shield—Second detector shield	.30	4127	Spring—Actuating plate spring—Package of 10	.24
4040	Shield—Radiotron tube shield top	.25	6502	Cam—Cam and gear assembly	1.18
4041	Cover—Fuse cover	.25	6503	Pawl—Trip pawl assembly	.40
4042	Reactor—Volume control series reactor (L16)	1.20	6806	Lever—Manual index lever—Less pin	.55
4129	Bracket—Bracket and bushing assembly for radio-phono- graph switch shaft—Located on receiver chassis	.28	6807	Lever—Trip lever assembly	1.16
4130	Shield—R. F. Radiotron shield	.30	6808	Clutch—Trip lever friction clutch	.30
5817	Resistor—20,000 ohms—Carbon type—3 watt (R15, R16)	.25	6809	Finger—Manual index finger assembly	.25
6186	Resistor—500,000 ohms—Carbon type— $\frac{1}{4}$ watt—Located on antenna coil (R1)—Package of 5	1.00	6810	Lever—Main spring lever	.44
6192	Spring—3-gang tuning condenser drive cord tension spring —Package of 10	.30	6846	Lever—Main lever and link assembly	1.45
6228	Resistor—200,000 ohms—Carbon type— $\frac{1}{2}$ watt (R14, R34, R35, R36)—Package of 5	1.00	7710	Cover—Metal cover for trip lever and friction finger as- semblies	.28
6277	Capacitor—0.1 mfd.—Located on rectifier socket shield (C50)	.35	MOTOR ASSEMBLIES		
6280	Resistor—400,000 ohms—Carbon type— $\frac{1}{2}$ watt (R11, R12, R13)—Package of 5	1.00	3777	Motor mounting spring washers and stud assembly—Com- prising three upper and three lower springs, six cup wash- ers, three spring washers, and three studs	.62
6281	Resistor—1,100 ohms—Carbon type— $\frac{1}{2}$ watt (R23)— Package of 5	1.00	9477	Motor—Motor complete—105-125 volts—60 cycles	25.88
6282	Resistor—60,000 ohms—Carbon type— $\frac{1}{2}$ watt (R22)— Package of 5	1.00	9479	Motor—Motor complete—105-125 volts—25 cycles	36.48
6298	Cord—3-gang tuning condenser drive cord—Package of 5	.60	9478	Motor—Motor complete—105-125 volts—50 cycles	25.88
6300	Socket—4-contact Radiotron socket	.35	EJECT ARM ASSEMBLIES		
6312	Capacitor—650 mmfd. (C15)—Package of 5	1.50	3655	Retainer—Ball retainer with three ball bearings	.45
6316	Resistor—2,500 ohms—Carbon type— $\frac{1}{2}$ watt (R10)— Package of 5	1.00	3656	Bearing—Ejector tip bearing	.48
6437	Coil—Oscillator coil (L5, L6, L7)	1.24	3657	Tip—Ejector tip	.30
			3658	Ball—Ball bearing—Package of 20	.30
			3662	Plate—Ejector plate—Package of 5	.95
			3665	Screw—Eject arm horizontal adjustment screw and nut— Package of 5	.25
			3729	Roller—Counter balance roller—Located inside of eject arm	.45

REPLACEMENT PARTS—Continued

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

Stock No.	DESCRIPTION	List Price	Stock No.	DESCRIPTION	List Price
3930	Cushion—Counter balance cushion and bracket—Located inside of eject arm	\$0.18	4159	Cable—Microphone cable—3-conductor from selector switch to microphone socket	\$0.34
4054	Bracket—Eject arm bracket assembly	1.35	6794	Cable—Single conductor shielded cable—From radio-phonograph switch (S9) to phonograph volume control (R31) . . . . .	.38
4055	Post—Vertical adjustment post—Located on eject arm . . . . .	.30	6795	Cable—Power cable—Phonograph motor cable—3-conductor with female section of connector plug	1.10
4056	Yoke—Eject arm yoke assembly	1.04	6796	Cable—2-conductor—Compartment lamp and operating switch cable . . . . .	.80
4057	Shaft and collar—For eject arm . . . . .	.24	6849	Cable—Single conductor shielded cable with female section of connector—From phonograph volume control to receiver cable . . . . .	.38
4058	Collar—Eject arm shaft collar . . . . .	.18	6872	Cable—Reproducer cable—8-conductor—Tapped and shielded with female section of connector	2.16
4067	Spring—Eject arm bracket spring—Package of 10 . . . . .	.30	6873	Cable—Tone control cable—Two sections with female section of connector	1.14
4125	Spring—Eject arm horizontal action tension spring—60 cycle operation—Package of 10 . . . . .	.42	6878	Cable—Main cable—From selector switch to receiver chassis cable, to speaker cable, and input transformer	2.30
4126	Spring—Eject arm horizontal action tension spring—For 25 cycle operation—Package of 10 . . . . .	.60	6879	Cable—Neon lamp cable—3-conductor with male section of connector—From chassis cable to neon indicator . . . . .	.72
7708	Arm—Eject arm complete	7.74	6880	Cable—2-conductor—Motor cable from receiver cable to motor connector . . . . .	.75
7709	Cover—Eject arm cover	1.38	6881	Cable—Tone control cable—2 sections with male section of connector—From receiver cable to selector switch	1.20
SWITCH ASSEMBLIES					
3322	Switch—Motor switch (S8) . . . . .	.75			
3994	Cover—Motor switch cover . . . . .	.26			
6805	Switch assembly—Automatic switch complete	1.90			
10174	Springs—Automatic brake springs—Package of 4 . . . . .	.50			
10184	Plate—Automatic brake latch plate—Package of 5 . . . . .	.40			
PICKUP AND ARM ASSEMBLIES					
3388	Screw—Pickup needle holding screw—Package of 10 . . . . .	.60			
3728	Coil—Pickup coil (L20) . . . . .	.50			
3737	Damper—Package of 5 . . . . .	.65			
4062	Rod—Automatic brake trip rod . . . . .	.20			
4063	Screw—Pickup mounting screw assembly—Comprising one screw, one nut, and one washer—Package of 10 . . . . .	.54			
4064	Cable—Pickup arm cable—Package of 5	1.00			
4128	Armature—Pickup armature . . . . .	.96			
6811	Pickup—Pickup unit complete	4.30			
6812	Cover—Pickup cover . . . . .	.34			
6813	Back—Pickup housing back . . . . .	.68			
6814	Cover—Pickup back cover . . . . .	.34			
6815	Escutcheon—Pickup arm escutcheon with mounting rivets . . . . .	.64			
7707	Arm—Pickup arm complete, less escutcheon, pickup, pickup mounting screw, nut and washer	4.12			
TURNTABLE ASSEMBLIES					
3340	Washer—Thrust washer—Package of 2 . . . . .	.56			
3341	Pin—Groov-pin—Package of 2 . . . . .	.56			
3342	Spring—Latch spring—Located on clamping ring—Package of 2 . . . . .	.56			
3344	Cover—Grease retainer cover—Package of 2 . . . . .	.70			
3347	Spring—Speed shifter lever spring—Package of 2 . . . . .	.30			
4065	Bushing—Speed shifter lever bushing—Package of 4 . . . . .	.82			
6816	Ring—Clamp ring assembly—Comprising spring, latch lever, and stud . . . . .	.42			
6817	Sleeve—Sleeve complete with ball race	2.25			
6818	Lever—Speed shifter lever . . . . .	.38			
7711	Turntable—Complete	5.10			
REPRODUCER ASSEMBLIES					
4131	Mounting assembly for reproducer—Comprising two plate, two bolts, two nuts, and two lockwashers . . . . .	.44			
4193	Board—Terminal Board . . . . .	.32			
6887	Transformer—Output transformer (T4)	2.35			
9480	Reproducer complete	15.44			
9481	Cone—Reproducer cone (L17)—Package of 5	8.80			
9490	Coil—Field coil magnet and cone support (L19)	11.70			
RECORDING INDICATOR ASSEMBLY					
4161	Lamp—Neon lamp . . . . .	.56			
4162	Escutcheon—Recording indicator escutcheon . . . . .	.34			
4163	Screw—Screen, escutcheon, and terminal board mounting screw assembly—Comprising two screws, two spacers, two nuts and two lockwashers . . . . .	.20			
4164	Screen—Recording indicator lamp screen . . . . .	.18			
MICROPHONE ASSEMBLIES					
3216	Cushion—Microphone rubber cushions—Package of 6 . . . . .	.24			
4158	Socket—Microphone socket . . . . .	.40			
4171	Plug—3-contact microphone plug . . . . .	.30			
6882	Microphone complete	7.50			
6883	Cover—Microphone cover	1.96			
6884	Frame—Microphone frame	1.19			
7533	Mechanism—Microphone mechanism	6.80			
7534	Cord—Microphone cord . . . . .	.70			
CABLE ASSEMBLIES					
4151	Plug—Tone control or reproducer cable connector . . . . .	.60			
4152	Cable—Neon lamp cable—3-conductor with female section of connector . . . . .	.65			
4153	Plug—Neon lamp connector plug . . . . .	.48			
4154	Cord—Single conductor shielded—From volume control (R20) to terminal board . . . . .	.25			
4155	Cord—Single conductor shielded—From low frequency tone control (R17) to tone control reactor (L14) . . . . .	.25			
4156	Cable—2-conductor shielded—From radio-phonograph switch (S9) to volume control (R20) . . . . .	.25			
MISCELLANEOUS ASSEMBLIES					
3638	Scale—Tuning meter scale—Package of 5 . . . . .	.60			
3651	Screw—No. 10-32, 3/8"—Self locking set screw for flexible shaft—Package of 10 . . . . .	.32			
3763	Motor mounting board spring, washer and stud assembly—Comprising one bolt, two "C" washers, one bottom spring, one top spring, two cup washers, one shakeproof washer, and one nut—Package of 1 set . . . . .	.42			
3780	Shutter—Noise suppressor shutter . . . . .	.30			
3781	Shutter—Volume control shutter . . . . .	.30			
4043	Switch—Compartment lamp switch (S7) . . . . .	.80			
4044	Socket—Compartment lamp socket	1.28			
4045	Shade—Compartment lamp shade . . . . .	.50			
4047	Receptacle—Needle receptacle . . . . .	.55			
4066	Rest—Pickup rest . . . . .	.14			
4157	Weight—Recording weight	1.72			
4160	Wrench—Trimmer adjustment wrench and screwdriver	1.00			
4165	Radio-phonograph operating arm and pin—Fastened to switch arm . . . . .	.58			
4166	Arm—Slotted arm for radio-phonograph switch—Fastened to end of flexible shaft . . . . .	.58			
4167	Bracket—Bracket and bearing assembly for radio-phonograph flexible shaft—Located on selector switch . . . . .	.54			
4168	Escutcheon—Selector switch escutcheon—Package of 5	3.46			
4169	Escutcheon—Phonograph volume control escutcheon—Package of 5	3.46			
4170	Resistor—100 ohms—Carbon type—1/2 watt (R37)—Package of 5	1.00			
4190	Pointer—Selector switch pointer—Package of 5 . . . . .	.72			
4191	Screw—No. 10-32 dog point fillister head set screw for flexible shaft—Package of 5 . . . . .	.50			
4192	Hook—Microphone hook . . . . .	.28			
6456	Escutcheon—Volume control escutcheon and color screen . . . . .	.50			
6457	Escutcheon—Noise suppressor escutcheon and color screen . . . . .	.50			
6458	Escutcheon—High and low frequency escutcheon and color screen . . . . .	.92			
6547	Bezel—Tuning meter bezel . . . . .	.45			
6799	Volume control—Phonograph volume control (R31, S10)	3.00			
6802	Bearing and plate assembly—For radio-phonograph switch shaft—Located on cabinet . . . . .	.34			
6874	Transformer pack—Phonograph input transformer pack—Comprising one transformer, one reactor, one 0.008 mfd., one 0.06 mfd., one 0.18 mfd. capacitors, one 5,000 ohm, one 4,000 ohm and one 50,000 ohm resistors (T5, L21, C46, C47, C48, R28, R29, R30)	5.66			
6875	Switch—Radio-phonograph or recording selector switch (S11)	6.34			
6876	Cover—Radio-phonograph or recording selector switch cover . . . . .	.15			
6877	Shaft—Flexible drive shaft for radio-phonograph switch	1.20			
6886	Meter—Tuning meter	2.14			
9050	Oscillator—Test oscillator—90 to 25000 K. C.	29.50†			
SPECIAL PARTS					
To be furnished on Special Order only. Delivery six to eight weeks. Prices quoted at time order is placed.					
	Lid—Cabinet lid		X-226		
	Doors—Cabinet doors—Top—1 pair matched finish		X-227		
	Doors—Record pocket doors—1 pair matched finish		X-228		
	Cabinet complete		X-231		
	Leg—Front leg		X-232		
	Grille and grille cloth assembly		X-233		
	Leg—Back leg		X-234		
	Panel—Control panel		X-235		
	Hinge—Door hinge—4 complete hinges		6294		
	Pull—Door pull—Package of 2		6959		
	Receiver Chassis complete—105-125 volts—50-60 cycles		57523-5		
	Receiver Chassis complete—105-125 volts—25-40 cycles		57523-6		
	Record Changer complete—105-125 volts—60 cycles		65155-6		
	Record Changer complete—105-125 volts—25 cycles		65155-12		
	Record Changer complete—105-125 volts—50 cycles		65155-13		
			65155-14		

.0863 † Full Discount Not Allowed.

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