

RCA Victor M-32

Automobile Radiola

Superheterodyne

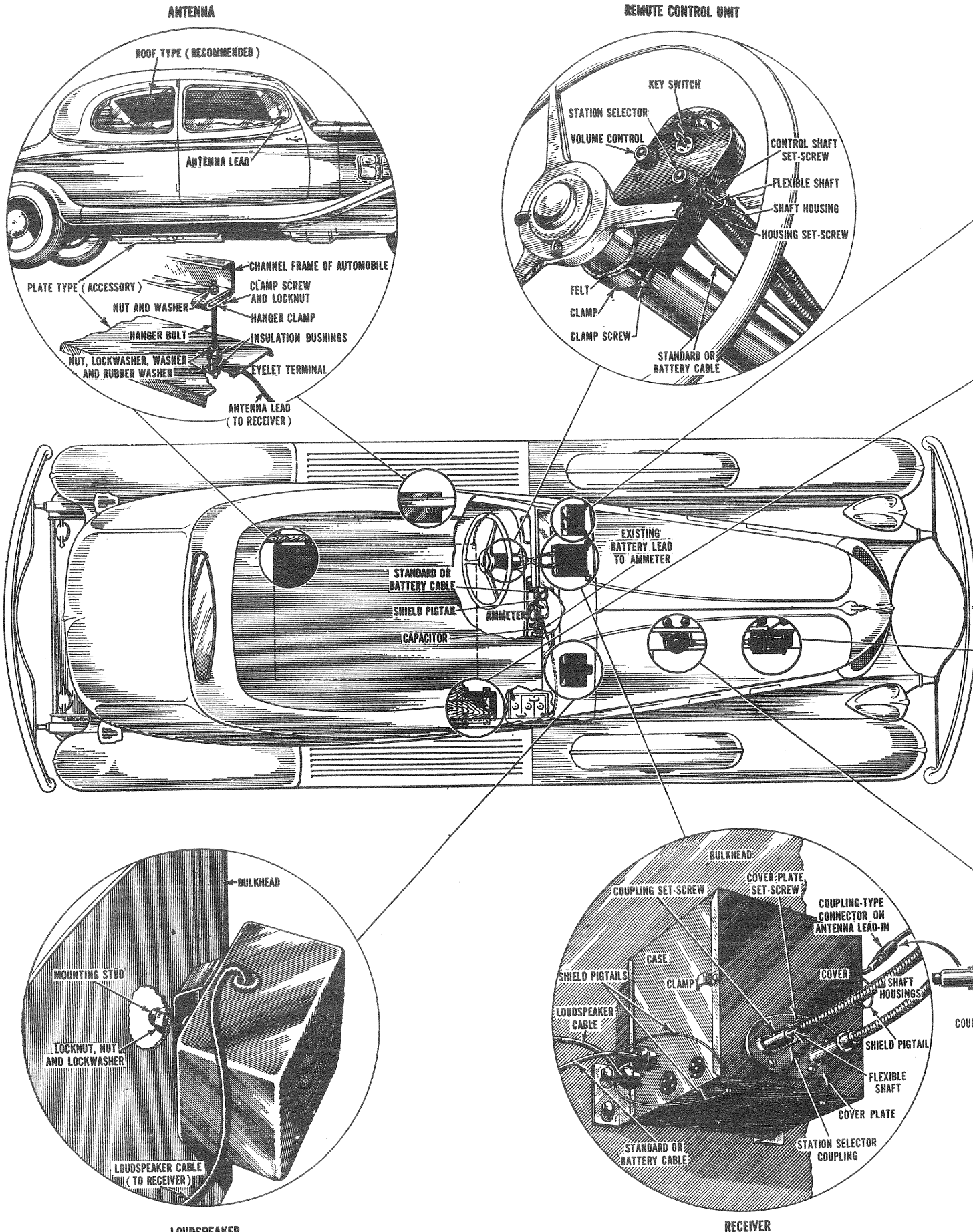


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MARCAS REGISTRADAS

INSTRUCTIONS

RCA Victor Company, Inc.

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

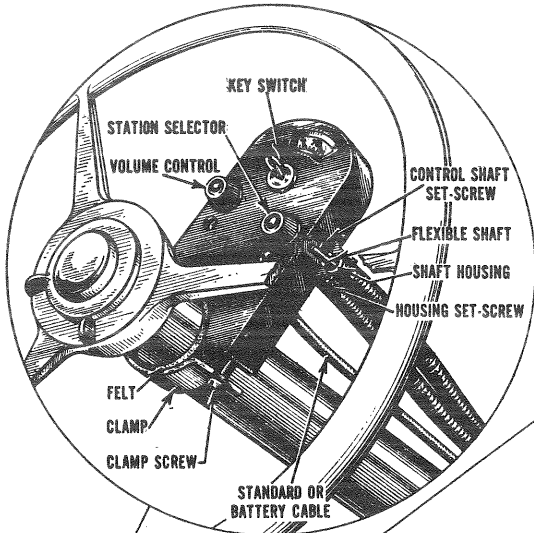


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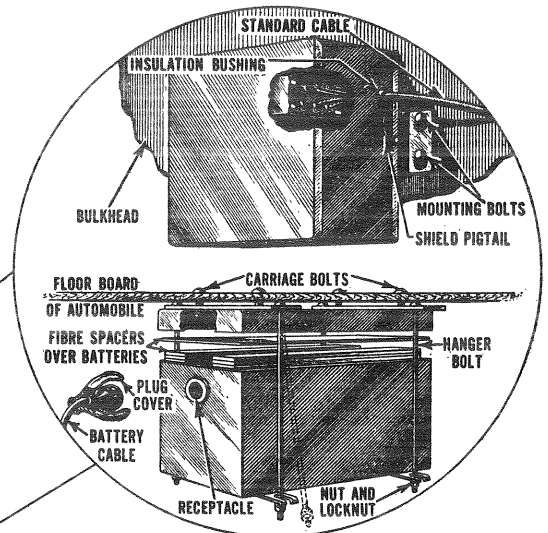
LOUDSPEAKER

RECEIVER
Figure 1

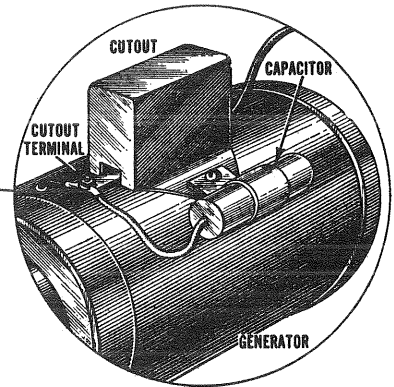
REMOTE CONTROL UNIT



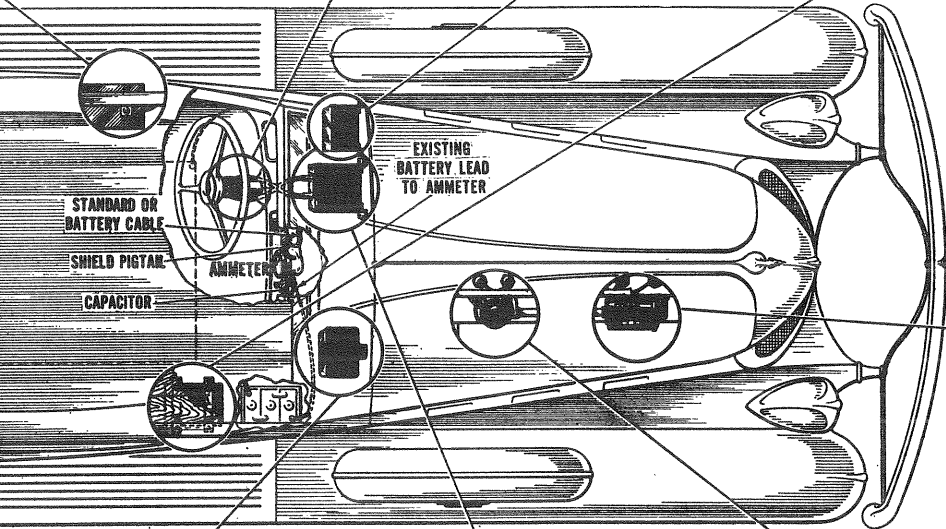
"B" BATTERY ELIMINATOR



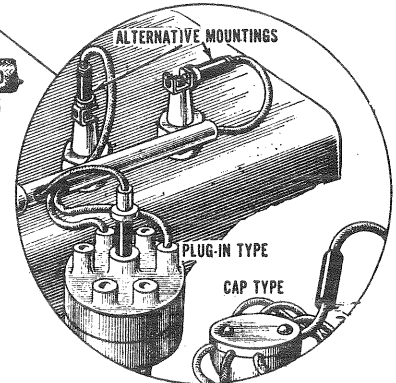
BATTERY BOX



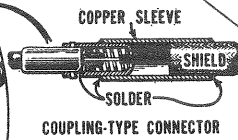
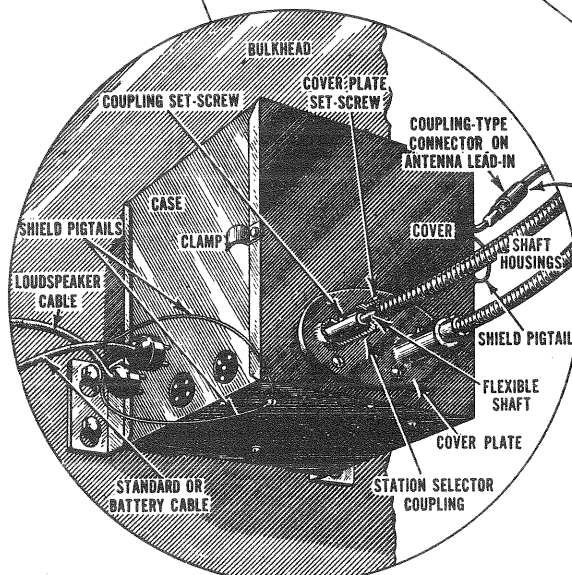
GENERATOR CAPACITOR



SPARK PLUG SUPPRESSORS



DISTRIBUTOR SUPPRESSORS



RECEIVER

Figure 1

Instructions for
RCA Victor M-32
Automobile Radiola
INTRODUCTION

This automobile radio receiver utilizes a highly-efficient six-tube Superheterodyne circuit, a remote control unit, and a newly-designed electrodynamic loudspeaker. Because of the inherently adverse conditions to which an instrument of this type is subjected, more attention should be given to its installation than is required by a modern radio for the home. Comparable performance, however, will be obtained if these instructions are carefully followed, both with respect to installation and operation.

Three new-type Radiotrons are used: (1) the "r-f exponential pentode" RCA-39, (2) the "duodiode triode" RCA-85, and (3) the "a-f power pentode" RCA-89. These tubes incorporate the most recent engineering features and contribute materially to the outstanding performance of this receiver. An innovation in design is found in the use of Radiotron RCA-85 which combines automatic volume control with the normal function of the second detector in a single stage.

The receiver unit is extremely compact and is enclosed by a metallic shield case. The case may be quickly detached from its mounting bolts, thereby affording maximum convenience in replacing Radiotrons or other servicing. The remote control unit

is arranged for clamping to the steering column and thus places the volume and tuning controls and the key-operated power switch readily accessible to the driver. The dial scale, located only slightly below the normal driving line of vision, is glare-proof illuminated and is calibrated to facilitate frequency selection.

High-quality reproduction is obtained by use of the new electrodynamic loudspeaker. This unit is protected against mechanical injury by enclosure in an acoustically correct and attractive metallic container equipped with tone equalizers.

Plate voltage supply for the Radiotrons is obtained from an economical "B" battery eliminator unit which is furnished as a part of the standard equipment. (A special companion model of this receiver without the eliminator and suitable for operation from external "B" batteries, is available if preferred. See Appendix I.) Equipment for the suppression of ignition interference is included with the instrument.

The use of a roof antenna in all installations is recommended. Satisfactory results in many cases, however, may be obtained with a plate-type antenna mounted beneath the floor of the car.

PART I—INSTALLATION

Equipment

A. Equipment Furnished:

1. Receiver Unit—complete with the following Radiotrons:
 - (a) Three RCA-39.
 - (b) One RCA-37.
 - (c) One RCA-85.
 - (d) One RCA-89.
2. Loudspeaker—with cable and connector plug, washer, and nuts (2).
3. "B" Battery Eliminator Unit.
4. Outfit Package—containing:
 - (a) Remote Control Unit—with bracket, felt, screws, and interconnecting cable.
 - (b) Switch Keys (2) and Fuse—packed in Instruction envelope (attached to control knob of item a).
 - (c) Flexible Shafts (2) and Set Screws (6).
 - (d) Antenna Coupling Connector Sleeve.
 - (e) Mounting Brackets (4) (for receiver and "B" battery eliminator units)—complete with screws (8), bolts (8), nuts (16), washers (8), and lockwashers (8).
 - (f) Insulation Bushing (for cable entrance slot in "B" battery eliminator unit).
 - (g) Wiring Clamp (for loudspeaker cable).
 - (h) Ignition Interference Suppression Equipment:
 - 6 Sparkplug type suppressors (additional obtainable from your Dealer).
 - 1 Distributor type suppressor.
 - 2 Capacitors.
 - (i) Instruction Book

B. Additional Equipment Required:

1. Antenna—

- (a) Roof (built-in) type recommended.
- (b) Plate (sub-mounted) type—alternative. A special plate antenna complete with mounting clamps, studs, and lead-in wire is obtainable from your Dealer, if required.

Location of Units

The arrangement of units shown in Figure 1 is applicable to the majority of automobiles. In certain installations, however, such locations may be considered impractical or not in accordance with personal preference, thereby necessitating a slight change in layout. The following suggestions will be of assistance in determining the most suitable position for each unit in any given case.

Receiver and Loudspeaker—In mounting these units, the adaptability of both to bulkhead (the partition between the engine and driving compartments) suspension should be determined initially. Consideration should be given to the space available and to the possibility of interference of the units with other equipment beneath the instrument panel or of the mounting bolts with apparatus on the engine side of the bulkhead.

Remote Control Unit—The control unit should be mounted on the steering column in a position chosen to afford greatest accessibility.

Antenna—

Roof Type: Best results will be obtained by use of a roof antenna. The majority of modern automobiles (closed body types only) are already equipped with such an antenna installed at the factory, the lead-in wire from which will usually be found coiled up beneath the instrument panel. Many other earlier cars employ a piece of metallic screen—for top material support—which, if ungrounded (not in electrical contact with the metallic frame), may be readily utilized as an antenna.

NOTE—The presence of a top support screen and of grounds in that screen may be determined without removing any portion of the top fabric. Consult your Dealer as to the proper procedure for making this test.

In order to use an ungrounded support screen, one corner only of the head-lining need be removed. A shielded lead should be first soldered to the screen and then carried down the front pillar post nearest the receiver unit. Its shield covering must be soldered or bonded to the car frame prior to replacement of the head lining.

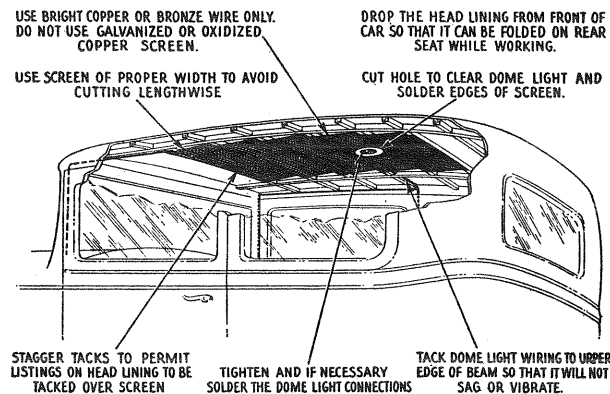


Figure 2

If the top support screen is grounded, or if no screen is present, it will be necessary to remove the entire head-lining (see Figure 2). In the former case, the screen may be insulated by removal of a strip several inches from all edges and from the dome light fixture. The possibility of subsequent shifting may be eliminated by tacking the screen to one of the ribs and by lacing the sides with cord. Where no support screen is used, a copper screen having a total area of at least ten square feet should be inserted. It should be located as far to the rear as possible and insulated from all metallic parts grounded to the frame of the car. The lead-in wire may then be attached as noted above and the head-lining replaced.

NOTE—Since a degree of skill—only acquired by experience—is necessary in removing and replacing the top fabric material, such work should be allotted to a competent "trim" man.

Plate Type: For those cases where the installation of a roof antenna is considered impractical or too costly, satisfactory reception from local or semi-

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distant powerful stations may be obtained by use of the special, plate-type antenna. This unit should be clamped to the frame of the chassis as far to the rear as possible. It is adjustable in length and may be mounted either lengthwise or crosswise of the chassis which position should be selected with due regard to the prevention of overcrowding. The plate must be placed as close to the ground as possible, but not below the lowest portion of the chassis at the desired location as sufficient road clearance must be retained. It is also important to avoid any position in which the plate will impede free motion of chassis parts such as springs, drive shaft, or axles in order to prevent antenna damage.

"B" Battery Eliminator—The "B" battery eliminator may be mounted at any convenient position in the car. It is preferable, however, to place this unit near the receiver and to use bulkhead suspension when sufficient space is available. To conserve mounting space, the eliminator may be fastened to the engine side of the bulkhead but, in such cases, it is important that the unit be located as far as possible from the exhaust manifold.

Mounting the Units

Details of mounting the various units are shown in Figure 1. The following procedures are recommended:

Receiver Unit—Assemble the mounting brackets (packed in receiver carton) to the rear of the shield case by means of the machine screws furnished. Support the unit in the proper location, allowing a clearance of at least one inch above the top surface to permit ready removal for servicing. On the proposed mounting surface mark the outlines of the four key-hole shaped, bracket slots. Then drill four $\frac{5}{16}$ inch holes, coinciding with the top of the slot markings, and insert the receiver mounting bolts loosely.

The front cover of the receiver unit case (held in place by four screws) must now be removed and all packing material—inserted for protection of the Radiotrons during shipment—withdrawn. Make certain that all tubes are in position and that the control grid clips are pressed down firmly over the respective dome terminals as shown by the diagram printed on the label affixed to the top of the case. Rotate the tuning control shaft until the plates of the variable capacitor are fully meshed and adjust both shafts to positions wherein the flattened portions face upward. Then replace the front cover and tighten the cover screws in place.

NOTE—In order to further examine the radio chassis, that unit may be withdrawn from the body of the case subsequent to the removal of three screws from the lower surface. The antenna lead and the associated shield pigtail, however, must first be passed through the case side—which operation may be facilitated by detaching the small rubber bushing secured in the entrance opening.

Remote Control Unit—Detach the cover of the remote control unit by removing the push-on knobs, the knurled switch-retaining nut and the two front screws. Then insert the free end (without small coupling) of each flexible shaft housing through the rear bushings, making certain that each flexible shaft enters and extends the full depth in the drilled hole in the end of the corresponding control shaft. Tighten the control shaft set screws against the flexible shafts and finally secure the rear bushing set screws against each flexible shaft housing. The cover may now be replaced and the assembly rested in an upright position near the receiver unit.

Remove the set screws from the small couplings attached to the opposite ends of the flexible shafts and insert the shaft housings through the openings in the metallic cover plate encasing the tuning and volume control shafts of the receiver unit. *These shafts must be so inserted as to be crossed in the final assembly as indicated by Figure 1.* Make certain that the couplings are fully engaged over the receiver control shafts and then tighten the cover plate screws against each flexible shaft housing. Turn the control knobs on the remote control unit until the threaded openings for the coupling set screws (visible through slots in cover plate bushings) are at the top and line up with the flatted portions of the receiver unit control shafts. Finally, insert and tighten both coupling set screws.

Receiver and Remote Control Assembly—Hang the receiver unit in position over the mounting bolts and tighten those bolts in place. Then attach the remote control unit to the steering column by means of the clamp and screws provided. In order to prevent damage to the finish, the felt provided should first be wrapped around the column at the desired location and fastened with tape. After completing these operations, slowly rotate the Station Selector to each extremity of the dial, in turn, to insure use of the complete range.

NOTE—In some installations it will be found necessary or desirable to shorten the flexible shafts. This may be accomplished as follows: (1) Remove the shafts from the housings; (2) cut the housings to the proper length with a hack-saw; (3) re-insert the shafts in the housings as far as possible, so that the couplings at the receiver end of the shafts are in contact with the housings; (4) solder the protruding end of each shaft, to prevent unwinding when cut, at a point $27/32$ inch beyond the end of its housing (*Important—A large soldering iron must be used to insure thorough penetration of the solder through the shaft for a distance of about one quarter inch on either side of the cutting point—use only non-corrosive soldering flux*); (5) cut each soldered shaft with a hack-saw or pliers at the point mentioned—namely, $27/32$ inch (as accurately as possible) from the end of the housing; (6) remove all burrs from cut ends.

Loudspeaker—Place the loudspeaker with its cone opening against the proposed mounting surface

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and mark an outline of the rectangular container. Determine the exact center of this area by drawing in the diagonals and mark that position with a center-punch. Next drill a $1/2$ inch hole at the center-punch mark and mount the loudspeaker by means of the threaded stud attached to its rear bracket. In hanging this unit, choose that position wherein the cable entrance opening is at the top.

Plate Antenna—The plate antenna, if used, should be bolted to the channel members of the automobile chassis by means of the clamps provided (see Figure 1 and notes under "Location of Units"). A shielded lead-in wire is provided with this assembly which should be brought into the driving compartment of the car through a $1/2$ inch hole drilled in the toe-board if no other opening is available. The fully-shielded end of this wire is to be connected to the receiver unit antenna lead by means of the coupling type connector, as described under "Connections—Antenna to Receiver." Cut off the opposite (unshielded) end as required for connection to the plate and to eliminate excessive slack. The pig-tail extension from the end of the shield should be soldered or securely bonded to the frame of the car.

"B" Battery Eliminator—The "B" battery eliminator is arranged for mounting in a manner similar to that employed for the receiver unit. It is important that this machine be mounted so that the internal rotating shaft will be horizontal in assembly.

Connections

Refer to Figure 1 and make connections as follows:

Main Wiring Cable—The main wiring cable for connection between the independent units of this instrument (attached to the remote control unit during shipment) should be connected as indicated graphically. If necessary, make a loop in this cable to eliminate excessive slack and tape securely.

The power input lead contained in this cable (single shielded conductor with lug) must be connected electrically to the ungrounded side of the car storage battery, preferably at the battery terminal of the ammeter. The shield pigtail of the power input lead should be soldered or securely bonded to the instrument panel or frame of the car.

Electrical connections to the "B" battery eliminator unit are accomplished by means of the five-conductor group extending from the main wiring cable. The individual (color coded) leads are to be connected to the internal screw type terminals of the eliminator unit (rendered accessible by removal of the sheet metal case) as shown in Figure C. Appendix II. *Prior to making these connections determine which side of the car storage battery is grounded. If the positive terminal is grounded, reverse the two leads—both from same end of dynamotor—connected to terminals 1 and 3 of filter*, as indicated in Figure C.

NOTE—The insulation bushing (contained in Outfit Package) should first be slipped over

the five leads and, when replacing the cover, secured in the cable entrance slot. The shield pigtail should be brought out through the bushing and fastened beneath the nearest cover mounting screw.

The *special* four prong plug attached to the main wiring cable must be inserted in the corresponding socket located on the left side of the receiver unit and the shield pigtail should be secured beneath a convenient screw in the lower surface of the container.

Loudspeaker to Receiver—The *standard* four-prong plug attached to the loudspeaker cable must be inserted in the remaining socket located on the left side of the receiver unit. The pigtail extending from the cable shield should be secured beneath that container screw to which the shield extension from the adjacent main wiring cable is attached.

Antenna to Receiver—The shielded lead-in wire extending from the roof or plate antenna should be cut to a length sufficient to facilitate attachment to the coupling type connector (secured to the receiver antenna lead) and to eliminate excessive slack. Refer to the detailed view of this coupling connector in Figure 1, which shows clearly the connections to be made as follows:

The small copper sleeve (packed in Outfit Package) should be slipped over the shield braid of the lead-in wire and the small internal insulated conductor passed through the female portion of the coupling type connector. Solder this conductor securely to the end of the internal eyelet. Then slip the sleeve forward to a position wherein the adjacent ends of the connector and the shield braid are covered. Finally solder the sleeve both to the coupling and to the shield and connect the assembly to that portion secured to the receiver antenna lead. Make certain that the shield pigtail extending from the antenna entrance bushing in the receiver container is securely fastened beneath one of the cover screws.

Suppression of Ignition Interference

(1) Disconnect all wires from the spark plugs. Fasten one spark plug suppressor to the top of each plug and re-attach the wires to the free ends of the suppressors.

(2) If the distributor is of the plug-in type, disconnect the center wire from the head. Plug the distributor suppressor into the distributor head and insert the wire in the free end of the suppressor.

For cap-type distributors, proceed as follows: Exchange the distributor suppressor at your Dealer's for one of a special type. Cut the wire leading from the distributor to the coil and screw the suppressor into the end attached to the distributor. Screw the other end of the wire (leading to the coil) into the opposite end of the suppressor.

(3) Clamp one of the by-pass capacitors against the generator frame. The screw holding the cut-out ordinarily may also be utilized for securing this unit. Connect the capacitor lead to the terminal on the generator side of the cut-out switch. (In some cases, interference will be reduced by connecting the capacitor lead to the opposite side of the cut-out. The most suitable position for this lead must be determined by trial.)

(4) Clamp the other by-pass capacitor securely to the instrument panel (if metallic) or to a convenient portion of the metal frame of the car, and connect the capacitor lead to the battery side of the ammeter (usually the terminal with only one lead). In certain cases, interference will be reduced by connecting the lead of this capacitor to the battery side of the ignition coil instead of to the ammeter.

(5) It may be found necessary to secure the loudspeaker cable beneath the grounding clamp (packed in Outfit Package) in order to minimize ignition interference. This clamp (as shown in Figure 1) may be attached conveniently to the left side of the receiver container.

PART II—OPERATION

The instrument should be operated as follows:

1. Insert the key in the lock on the Control Unit and turn it to the "on" position clockwise.
2. Set the Volume Control (left-hand knob) at or near the extreme clockwise position. Then turn the Station Selector (right-hand knob) in either direction until a station is heard. (Note—The dial scale is calibrated in channels to aid in station identification. Add one cipher to the scale marking to obtain the actual frequency in kilocycles.)
3. After receiving a signal, turn the Volume Control counter-clockwise until the volume is reduced to a low level. Now, re-adjust the Station Selector to the position midway be-

tween the points where the quality becomes poor or the signal disappears. *This operation insures the best quality of reproduction.*

4. Finally, advance the Volume Control (clockwise) until the desired level is obtained. Except on weak signals, the automatic volume control will maintain the volume substantially at the latter level, thereby precluding further manual adjustments. (Fading of the signal may be experienced in extreme cases, as when passing under bridges or other metallic structures, since such structures almost completely shield the antenna.)
5. When through operating, turn the key to the "off" position, counter-clockwise. The instrument is then locked by removing the key.

PART III—MAINTENANCE

Noisy or weak reception may be due to one of the following causes:

Radiotrons—The Radiotrons should be tested periodically and replaced if necessary in order to maintain best performance. The efficiency of each Radiotron may be checked by comparison with a new one of the same type in its place. Spare Radiotrons of each type should be kept on hand.

Fuses—This installation is protected by one fuse (rated: 10 amperes) which is mounted in clips accessible from the rear of the control box. If the set fails to operate and the dial lamp does not light, this fuse should be removed for examination. If found to be burned out, the wiring should be inspected for short-circuits or grounds and all tubes tested prior to insertion of a new fuse. *The replacement fuse must be of the same ampere rating.*

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"B" Battery Eliminator—This unit should operate satisfactorily with little or no attention. *Under no condition should this machine be oiled.* Any adjustments or servicing required should be undertaken only by a competent technician—preferably by your Dealer's Service Man.

Antenna—A properly installed roof antenna should require no attention. When the plate antenna is employed, the insulator bushings should be cleaned occasionally to prevent grounding.

Ignition System of Automobile—The ignition system of the car must be kept in good condition. Fouled plugs or plugs with improperly adjusted gaps will affect the operation of the receiver as well as the automobile. Burned or improperly adjusted breaker points will also impair the performance. It will be advisable to advance the generator charging rate in order to compensate for the additional drain on the car storage battery imposed by this instrument.

APPENDIX I—"B" BATTERY OPERATED MODEL

As noted in the Introductory section, a special instrument is available for "B" battery operation. This receiver is identical to the standard model except that the "B" Battery Eliminator Unit is omitted and a specially designed interconnecting cable is used. For such operation, four 45 volt "B" batteries are required and may be obtained from your Dealer.

The following parts are furnished as standard equipment with the battery operated receiver:

- 1 Fuse (rated 0.50 amp.)
- 2 Fuse Leads (with clips)
- 1 Fuse Insulation Sleeve
- 3 Battery Jumper Wires

Certain body types, such as coupes or sedans, afford sufficient space to permit internal mounting of the batteries. In these cases, it is necessary only to clamp the units in a manner to prevent injury or grounding through undue motion while the car is in operation. In such installations, the batteries will probably be most conveniently stacked "end to end" as shown in Figure 3.

For other installations, a special battery box for external mounting (also available from your Dealer) will probably be found necessary or desirable. This box (as shown in Figure 1) may be located at any position under the floorboards of the vehicle except near the exhaust line or where interference with free-moving parts of the chassis will be encountered. If placed in close proximity to the exhaust pipe or muffler, the heat radiation therefrom will cause rapid

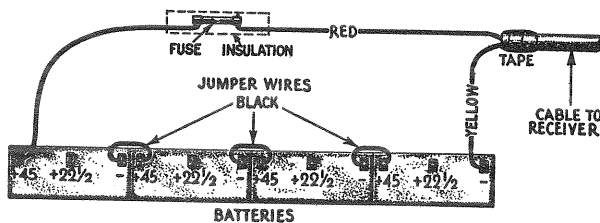


Figure 3

deterioration of the batteries. The box is of suitable dimensions to accommodate the following types of "B" batteries:

- Eveready—No. 485, No. 772, No. 796
- Burgess—No. 2305, No. 2308, D-308
- General—"Flying Squad" V 30 DX

If the battery box is used, it may be mounted most conveniently by drilling the required four (4) three-eighths inch holes in the floorboard with the box cover serving as a template. Insert the four

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carriage bolts from above and fasten the box cover (with the hanger bolts inserted) in position beneath the floorboard with the nuts and lockwashers provided. Place the "B" batteries in the box and make all necessary internal connections (see Figure 4). With the fibre spacers in position above the batteries and the nuts on the hanger bolts unscrewed to the ends, lift the battery box into place, swing the hanger bolts into the case brackets and tighten all nuts. Make certain that both nuts are on each bolt and locked tightly. These operations, naturally, will be facilitated by placing the car on a lift.

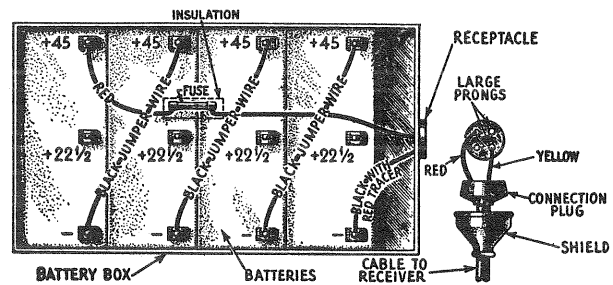


Figure 4

With the battery operated receiver, it will be noted that a plate circuit fuse must be employed. If the cable is to be connected directly to the batteries, the metal braid on the outside of the cable must be pushed back for a short distance in order to obtain leads of suitable length. As indicated in Figure 3, one fuse lead must be soldered to the cable wire and taped and the other connected to the end battery. The leads are equipped with clips (to permit ready replacement of the fuse) which in assembly are protected by an insulation sleeve. The end of the cable should be wrapped with tape for a short distance in order to prevent fraying and grounding to the battery terminals.

If the battery box is used, slip the rubber cover and the plug cap over the cable and solder the leads into the connection plug as indicated in Figure 4. Then fasten the cap to the plug, push the rubber cover forward and insert in the receptacle. One of the fuse leads must be connected to the proper terminal of the receptacle and the other to the end battery.

Worn out "B" batteries cause noisy and weak reception. Renew the batteries when they fail to give a reading of at least 35 volts per block as indicated by a high resistance voltmeter with the set turned "on."

APPENDIX II—SERVICE DATA

Electrical Specifications

Radiotrons Required

1 RCA-237, 3 RCA-239, 1 RCA-85, 1 RCA-89, Total—6

"A" Battery Consumption—Loudspeaker.....1.35 Amperes
Receiver.....2.15 Amperes
Converter.....3.0 Amperes

Plate Power Consumption.....35 M. A.
Undistorted Output.....1.25 Watts
Intermediate Frequency.....175 K. C.
R. F. Line-up Frequency.....1400 K. C.
Oscillator Line-Up Frequency.....1400 Only

This six tube automobile receiver gives excellent performance in respect to sensitivity, selectivity and tone quality. When used with the converter unit, operation entirely from the car battery is obtained.

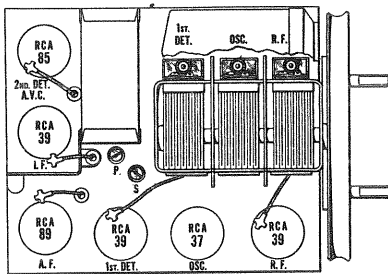


Figure A—Location of Radiotrons and Line-up Capacitors

Line-up Capacitor Adjustments

The receiver must be removed from its metal case to permit correct adjustment of the line-up capacitors. After being removed, a grounded metal plate must be provided for the receiver to rest upon, otherwise the adjustments will be found to be incorrect when the assembly is returned to its metal case. After removal from its case and placing upon the metal plate, proceed as follows:

I. F. Line-up Capacitor Adjustment—The I. F. Amplifier uses two transformers, one being of the untuned variety and one having each of its windings tuned by means of two adjustable capacitors. Figure A shows the location of these capacitors.

- Procure a modulated oscillator giving a signal at 175 K. C. and having its output adjustable. A non-metallic screwdriver such as Stock No. 7065 is necessary together with an output meter.
- Remove the receiver from its case, place it in operation and connect the output of the oscillator between the control grid and ground of the first detector. Remove the oscillator tube and connect the output meter—preferably a thermo-galvanometer—across the voice

coil of the loudspeaker. Then with the volume control at maximum, reduce the oscillator output until a small indication is obtained. Unless this is done, the action of the A. V. C. will make it impossible to obtain correct adjustments.

- Adjust the secondary and then the primary of the I. F. transformer until a maximum deflection is obtained in the output meter. This is the correct adjustment.

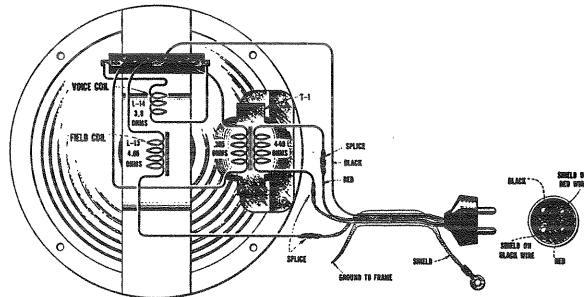


Figure B—Loudspeaker Wiring Diagram

R. F. Line-up Capacitor Adjustment—The R. F., 1st detector and oscillator stages are aligned at 1400 K. C. A modulated oscillator giving a signal at 1400 K. C. a socket wrench and an output meter are necessary for correctly making these adjustments.

- Remove the receiver from its metal case and place on a grounded metal plate. Connect the tuning control and plate in operation. Connect the output of the oscillator between antenna and ground. Connect the output meter across the voice coil of the loudspeaker.
- Place the oscillator in operation at 1400 K. C. and adjust its output so that a small deflection is obtained when the receiver volume control is at maximum and the dial set at 1400. Then adjust the three line-up capacitors until a maximum deflection is obtained. This is done by means of a socket wrench.

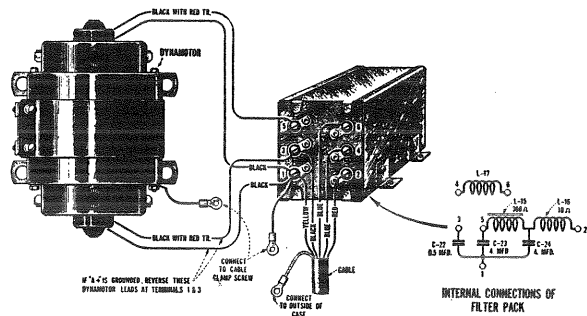


Figure C—Plate Supply Unit Wiring

RADIOTRON SOCKET VOLTAGES

Radiotron No.	Cathode or Filament to Control Grid Volts	Cathode or Filament to Screen Grid Volts	Cathode or Filament to Plate Volts	Plate Current M. A.	Filament or Heater Volts
1. R.F. RCA-39	0.9	71	177	4.5	5.2
2. 1st Det. RCA-39	6.0	67	172	1.35	5.2
3. Osc. RCA-37	—	—	72	5.5	5.2
4. I.F. RCA-39	0.9	71	177	4.5	5.2
5. 2nd Det. and A.V.C. RCA-85	—	—	175	4.5	5.2
6. P.W.R. RCA-89	18	178	160	18.0	5.2

Voltages are those at which Radiotrons are operating and with no signal impressed on input.

OTHER IMPORTANT VOLTAGES

Battery Voltage.....6.0 Volts
Input to Dynamotor.....5.75 Volts
Battery Drain.....6.5 Amperes
Output from Dynamotor.....178 Volts at 34.5 M.A.
Loudspeaker Field Drain.....1.35 Amperes

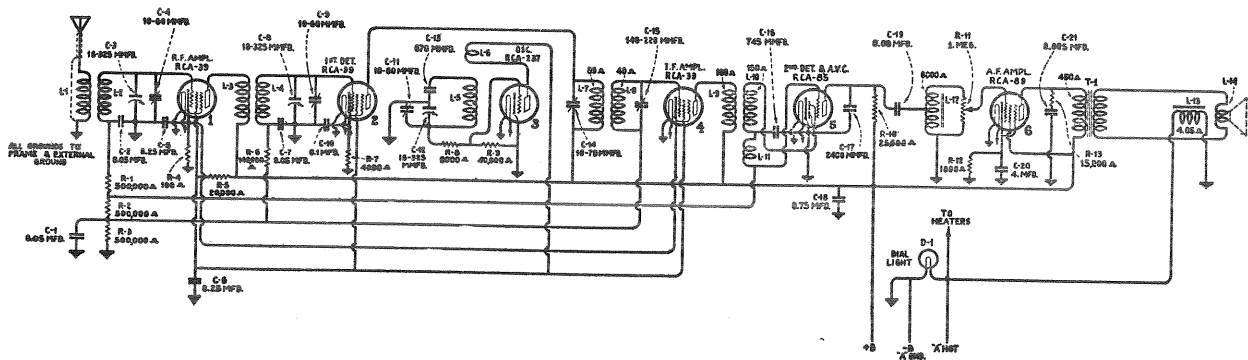


Figure D—Schematic Wiring Diagram

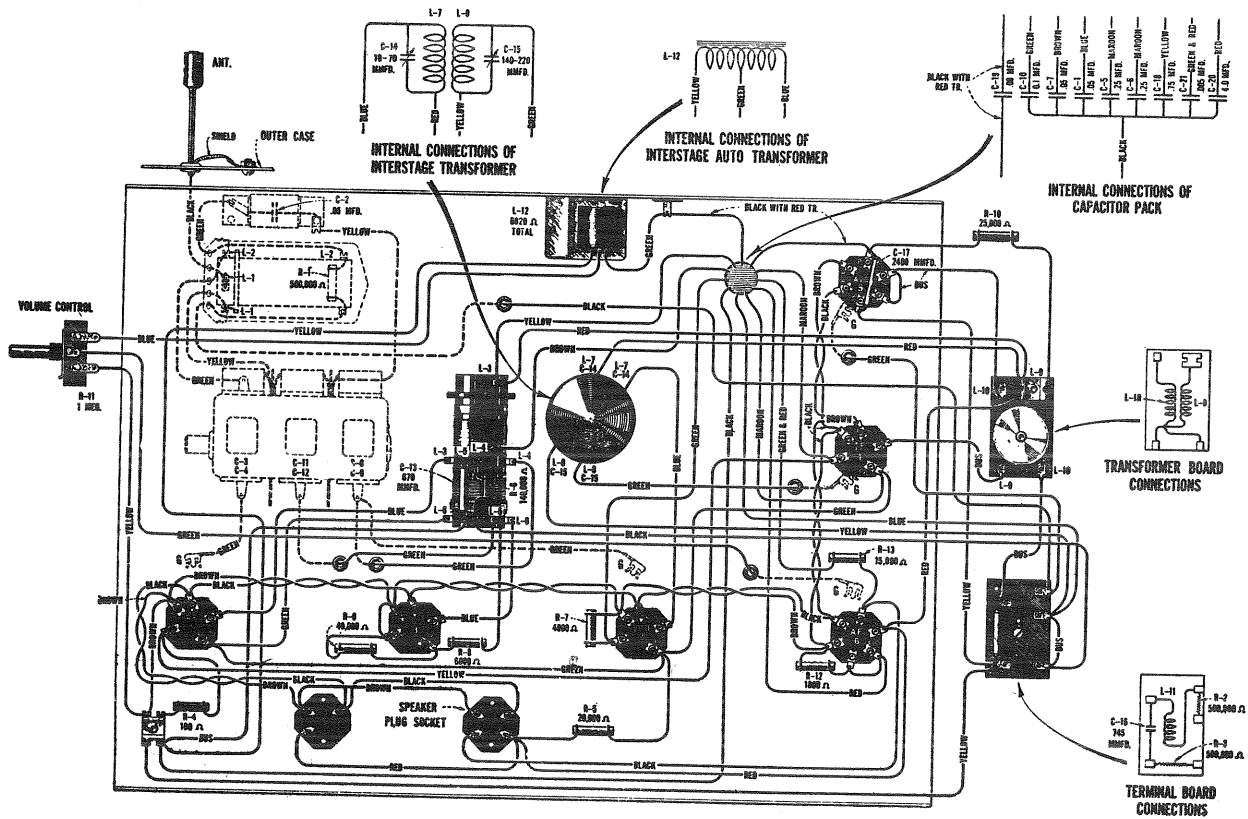


Figure E—Receiver Wiring Diagram

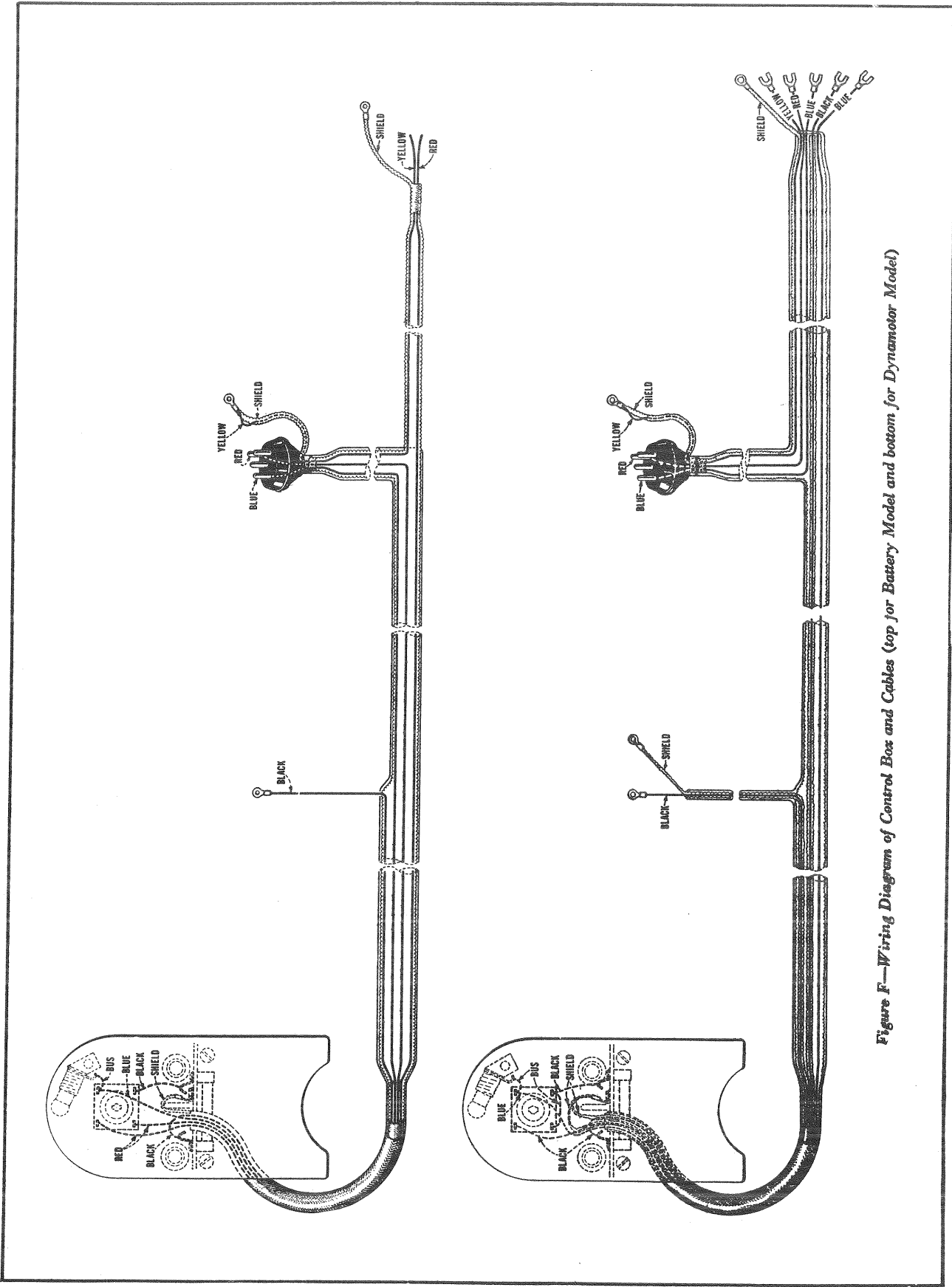


Figure F—Wiring Diagram of Control Box and Cables (top for Battery Model and bottom for Dynamotor Model)

REPLACEMENT PARTS

(Replacement parts may be purchased from authorized Distributors or Dealers Only)

Stock No.	DESCRIPTION	List Price	Stock No.	DESCRIPTION	List Price
RECEIVER ASSEMBLIES					
2734	Capacitor—745 mmfd.—Package of 5.....	\$2.20	3465	Cable—Antenna lead-in shielded cable.....	\$0.35
2747	Contact cap—Package of 5.....	.50	3466	Connector—Antenna lead-in connector.....	.60
2749	Capacitor—2,400 mmfd.....	1.50	3491	Washer—Rubber insulating washer—Used with insulator No. 6131—Package of 4....	.25
2816	Resistor — 1,000 ohm — Carbon type — ½ watt—Package of 5.....	2.50	6129	Staple—Insulated staple—Package of 100...	.75
3264	Resistor—25,000 ohms—Carbon type—½ watt—Package of 5.....	2.00	6130	Screw and nut—U bracket set screw—¼—16 x 1—Complete with lock nut—Pkg. of 10.	.50
3442	Resistor—100 ohms—Carbon type—¼ watt—Package of 5.....	1.00	6131	Insulator—Insulator bushing for No. 7420—Package of 10.....	.70
3443	Resistor—140 ohms—Carbon type—¼ watt—Package of 5.....	1.00	6381	Cable—Shielded antenna cable—For use with antenna plate.....	2.94
3447	Coil—Automatic volume control coupling coil.....	.66	7419	Bracket—U bracket for mounting antenna plates—Package of 2.....	1.60
3448	Cord—3 gang tuning capacitor drive cord....	.50	7420	Stud—Antenna plate stud—¼—16 x 8"—Complete with 5 mounting nuts—Pkg. of 5.	1.90
3454	Scale—Dial Scale.....	.54	8819	Plate—Single antenna plate.....	1.75
6114	Resistor — 20,000 ohms — Carbon type — 1 watt—Package of 5.....	2.00	MISCELLANEOUS PARTS		
6143	Resistor—40,000 ohms—Carbon type—¼ watt—Package of 5.....	2.00	6148	Fuse—10 amperes—Package of 5.....	.50
6186	Resistor—500,000 ohms—Carbon type—¼ watt—Package of 5.....	2.00	6151	Suppressor—Spark plug suppressor.....	.65
6192	Spring—3 gang tuning capacitor drive cord tension spring—Package of 10.....	.50	6152	Suppressor—Distributor suppressor.....	.65
6241	Resistor—140,000 ohms—Carbon type—¼ watt—Package of 5.....	2.00	6169	Felt—Felt strip for steering column—Pk. of 10.	.50
6243	Resistor — 6,000 ohms — Carbon type — ¼ watt—Package of 5.....	2.00	7065	Screwdriver—Non metallic Screwdriver—For line-up adjustments.....	1.10
6250	Resistor — 4,000 ohms — Carbon type — ½ watt—Package of 5.....	2.00	7429	Capacitor—0.625 mfd. capacitor in metal casing with mounting bracket.....	2.20
6300	Socket—4 contact Radiotron socket.....	.55	7553	Cable—Inter-connecting cable complete with male section of connector plug—For eliminator operation.....	2.66
6317	Capacitor—0.05 mfd. capacitor.....	.70	7561	Cable—Inter-connecting cable complete with male section of connector plug—For battery operation.....	2.12
6320	Capacitor—670 mmfd.—Oscillator series capacitor—Package of 5.....	2.50	REPRODUCER ASSEMBLIES		
6358	Socket—3 contact socket.....	.38	6182	Terminal board—Reproducer terminal board with 3 terminals—Package of 5.....	.50
6359	Shield—Radiotron tube shield.....	.36	6364	Transformer—Output transformer.....	2.00
6360	Transformer—First intermediate frequency transformer.....	2.14	8702	Ring—Cone retaining ring.....	.80
6361	Transformer — Second intermediate frequency transformer.....	2.28	8961	Coil assembly—Comprising field coil, magnet and cone support.....	3.34
6362	Shaft—Tuning capacitor drive shaft with two "C" washers.....	.40	8962	Cone—Reproducer cone.....	1.12
6363	Volume control—Complete with mounting nut.....	1.38	8963	Bracket — Reproducer mounting bracket complete with washer and nuts.....	.98
6365	Coil—Detector and oscillator coil.....	2.32	8964	Housing—Reproducer housing.....	2.08
6366	Coil—R. F. coil assembly.....	1.60	8965	Screen—Dust screen.....	.40
7484	Socket—UY type Radiotron socket.....	.65	BATTERY BOX ASSEMBLY		
7485	Socket—Radiotron 6 contact socket.....	.70	2968	Receptacle—Four prong receptacle complete.....	.50
7545	Transformer—Interstage auto transformer....	2.48	6122	Clamp—Cable clamp—Package of 15.....	.50
7546	Capacitor pack—Comprising one 0.08 mfd., one 0.1 mfd., two 0.05 mfd., two 0.25 mfd., one 0.75 mfd., one 0.005 mfd., and one 4.0 mfd. capacitors in metal container.....	3.58	6123	Plug—Four prong male plug.....	.50
7547	Drum—For 3 gang tuning capacitor.....	.70	6124	Cap—Plug cover rubber cap for #6123—Pk. of 5.	1.50
7548	Capacitor—3 gang variable tuning capacitor assembly.....	3.50	6125	Fuse—¼ ampere—Package of 5.....	.50
			6126	Clip—Fuse clip—Package of 12.....	.50
			6127	Bolt—Carriage bolt for mounting top of box to car—¼—18 x 1¼"—Complete with lock nut—Package of 5.....	.50
			7418	Bolt—Hanger bolt ¼—18 x 9½"—Complete with two lock nuts—Package of 5.....	.50
CONTROL BOX ASSEMBLIES					
3444	Socket—Dial lamp socket.....	.38	8817	Box body assembly—Comprising bottom plate, 2 side plates, 2 bottom strips and receptacle—Assembled.....	3.45
3445	Shaft—Volume control shaft with "C" washer.....	.48	8818	Box cover assembly—Comprising cover plate, 2 strips and 2 rubber strips—Assembled....	1.70
3446	Shaft—Station selector shaft with "C" washer.....	.38	8820	Plate and strip assembly—Carboard plate and strip assembly comprising six strips and one plate—Package of 5 sets.....	.75
3454	Scale—Dial scale.....	.54	"B" ELIMINATOR ASSEMBLIES		
6158	Nut—Knurled nut for lock switch—Pkg. of 10.....	.50	3473	Brushes—One set of 2—For low voltage end of dynamotor.....	1.04
6161	Knob—Station selector knob—Package of 5.....	1.50	3474	Brushes—One set of 2—For high voltage end of dynamotor.....	.82
6163	Knob—Volume control knob—Package of 5.....	1.50	7554	Filter pack—Comprising one 0.5 mfd., two 4.0 mfd. capacitors, one reactor and two choke coils.....	4.87
6164	Key—For lock switch—Package of 10.....	.50	7555	Dynamotor complete.....	23.52
6357	Switch—Lock switch complete.....	1.46			
7543	Shaft—Flexible shaft—Volume control or station selector shaft—Approx. 27" long.....	1.92			
7544	Cover—Control box cover assembly comprising cover, cover mounting screws, mounting clamp and clamp mounting screws.....	.76			
7562	Shaft—Volume control or station selector flexible shaft—Approximately 39" long....	1.62			
7563	Shaft—Volume control or station selector flexible shaft—Approximately 51" long....	1.94			