# MODEL B-52 AUTO RADIO

Power Requirements.....105–125 volt, 25 and 50–60 Cycle A.C. or 6-volt Storage Battery
Power Consumption..115 Volts, 60 Cycles A.C.—40 Watts, Battery—5.7 Amperes at 6.3 Volts
Number and Types of Radiotrons.....1 G.E.-78, 1 G.E.-6A7, 1 G.E.-6B7, 1 G.E.-41, 1 G.E.-1-V—Total 5
Maxiumu Undistorted Power Output.....1.8 Watts
Maximum Output.....3.5 Watts
Type of Rectifier.....A. C.—Radiotron G.E.-1-V Battery—Vibrator Invertor-Rectifier
Tuning Frequency Range.....540 K. C.–1500 K. C.

This automobile receiver is of unique design and construction. Among its many features is its adaptability to either battery or 110-volt alternating current operation. This is accomplished by having a separate power transformer and a

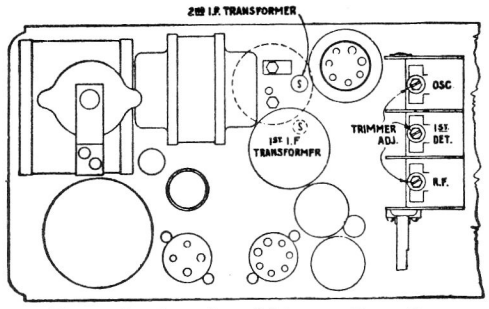



*Figure A—Location of Line-up Capacitors*

tube rectifier for alternating current, while the conventional vibrator inverter-rectifier with its associated transformer is used for battery operation.

Other important features include its compact portable size, full vision "airplane" type dial, tone control, sensitivity switch, electro-dynamic loudspeaker and the inherent sensitivity, selectivity and tone quality characteristic of the superheterodyne.

Figure A shows the location of line-up capacitors, Figure B the wiring of the battery cable, Figure C the schematic diagram and Figure D the wiring diagram. A brief description of the circuit follows:

**Radio Circuit**—The radio circuit consists of four Radiotrons; namely, G.E.-78 R. F. stage, G.E.-6A7 first detector-oscillator G.E.-6B7 intermediate frequency amplifier, second detector and A. V. C. and G.E.-41 output amplifier.

**Power Circuit**—The power circuit for battery operation consists of a vibrator inverter-rectifier with its associated transformer and filter circuits. The heaters of the various Radiotrons are powered direct from the car storage battery. The operating switch is so arranged that at one position battery operation is obtained, while at the other position, proper connections are made for A. C. operation.

When the switch is at the A. C. position, the A. C. input current is connected to the primary of the A. C. transformer. Two secondaries are provided, one for furnishing power to the Radiotron heaters and the dial lamp, the other for plate supply to Rectifier G.E.-1-V. The output of the rectifier is then filtered by the same filtering system as that used for battery operation. The loudspeaker field is used as a filter reactor.

## Inverter-Rectifier Adjustments

This receiver uses a vibrator inverter-rectifier for supplying all plate and grid voltages when operated from a battery source. *This unit is accurately adjusted and sealed at the factory and service adjustment should not be attempted.*

## Line-up Capacitor Adjustments

The three R. F. line-up capacitors and two I. F. tuning capacitors are accessible and may require adjustments. The R. F. adjustments are made at 1400 K. C. and the I. F. adjustments at 175 K. C. In order to make these adjustments, it is first necessary to remove the cover of the instrument. The following procedure should be used:

**R. F. Adjustment:**

(a) Check the position of the dial pointer. It should be aligned with the low-frequency end graduation, as indicated by the small arrow marked "Max. Cap." when the tuning capacitor rotor is fully meshed with the stator.

(b) Procure a modulated oscillator giving a signal at 1400 K. C. (Stock No. 9050), a non-metallic screw driver (Stock No. A-6000) and an output meter. Connect the output meter across the cone coil of the loudspeaker.

(c) Connect the output of the oscillator from antenna to ground, set the dial at 140, and the oscillator at 1400 K. C.

(d) Place the oscillator and receiver in operation and adjust the oscillator output so that a small deflection is obtained in the output meter when the volume control is at its maximum position.

(e) Then adjust the three line-up capacitors until a maximum deflection in the output meter is obtained. Readjust these capacitors a second time, as there is a slight interlocking of adjustments.

**I. F. Adjustments:**

(a) Procure a modulated oscillator giving a signal at 175 K. C. (Stock No. 9050), a non-metallic screw driver (Stock No. A-6000) and an output meter.

(b) Connect the oscillator between the control grid of the first detector and ground.

(c) Connect the output meter across the voice coil of the loudspeaker. Then connect the antenna lead to ground and adjust the tuning capacitor so that no signal except the I. F. oscillator is heard at maximum volume. With the volume control at maximum, reduce the external oscillator output until a small deflection is obtained. Unless this is done, the action of the A. V. C. will make it impossible to obtain correct adjustments.

(d) Each transformer has but one winding that is tuned by means of an adjustable capacitor, the other windings being untuned. The capacitors should be adjusted for maximum output. At the time I. F. adjustments are made it is good practice to follow this adjustment with the R. F. adjustments, due to the interlocking that always occurs. The reverse of this, however, is not always true.

## RADIOTRON SOCKET VOLTAGES

**115 Volts A. C. or 6.3 Volt Battery—No Signal—Max. Sensitivity**

| Radiotron No. | | Cathode to Ground | Cathode to Screen Grid Volts | Cathode to Plate Volts | Cathode Current M. A. | Heater Volts |
|---|---|---|---|---|---|---|
| G.E.-78 R. F. | | 4.2 | 86 | 216 | 5.5 | 5.9 |
| G.E. 6A7 | First Detector | 4.2 | 86 | 216 | 10.0 Total | 5.9 |
| | Oscillator | | — | 216 | | |
| G.E -6B7 Second Det. | | 2.7 | 87 | 207 | 4.5 | 5.9 |
| G.E.-41 Power | | 15.0 | 255 | 235 | 30.0 | 5.9 |
| G.E.-1-V | | — | — | 325 RMS | 50.0 | 5.9 |

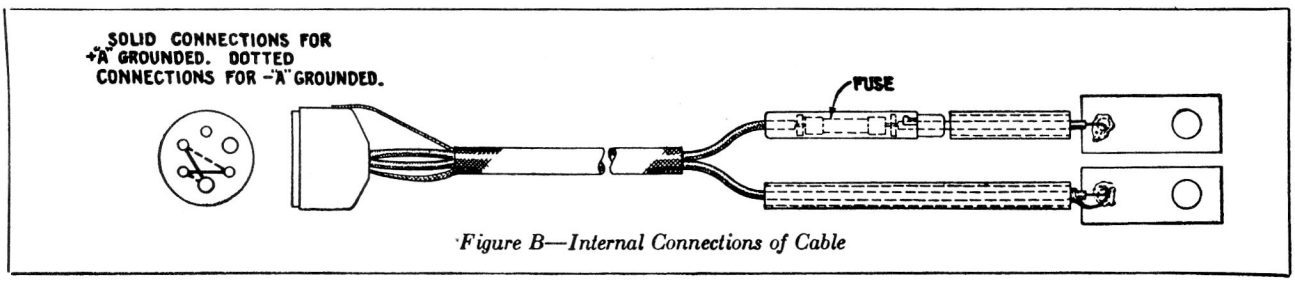



*Figure B—Internal Connections of Cable*

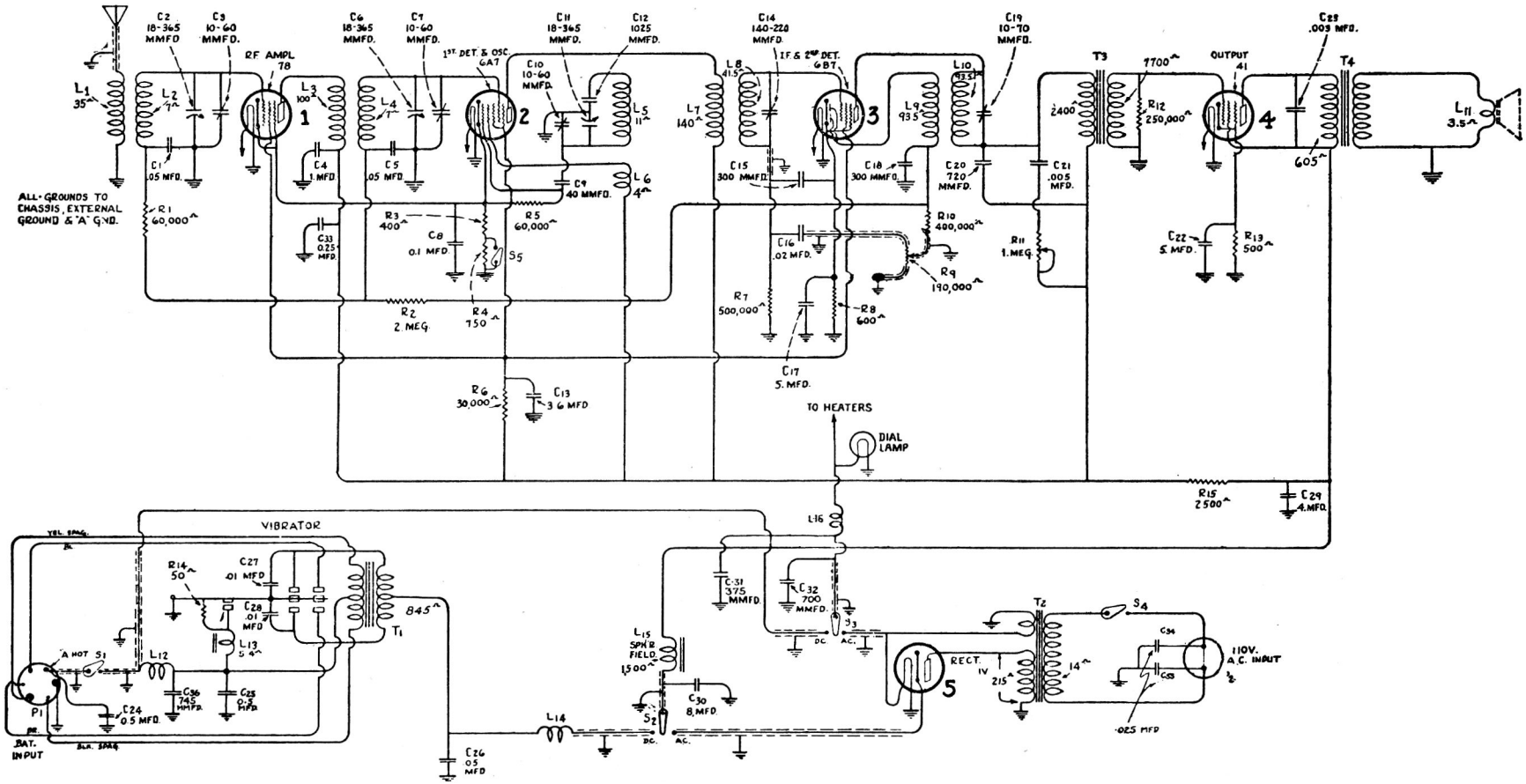
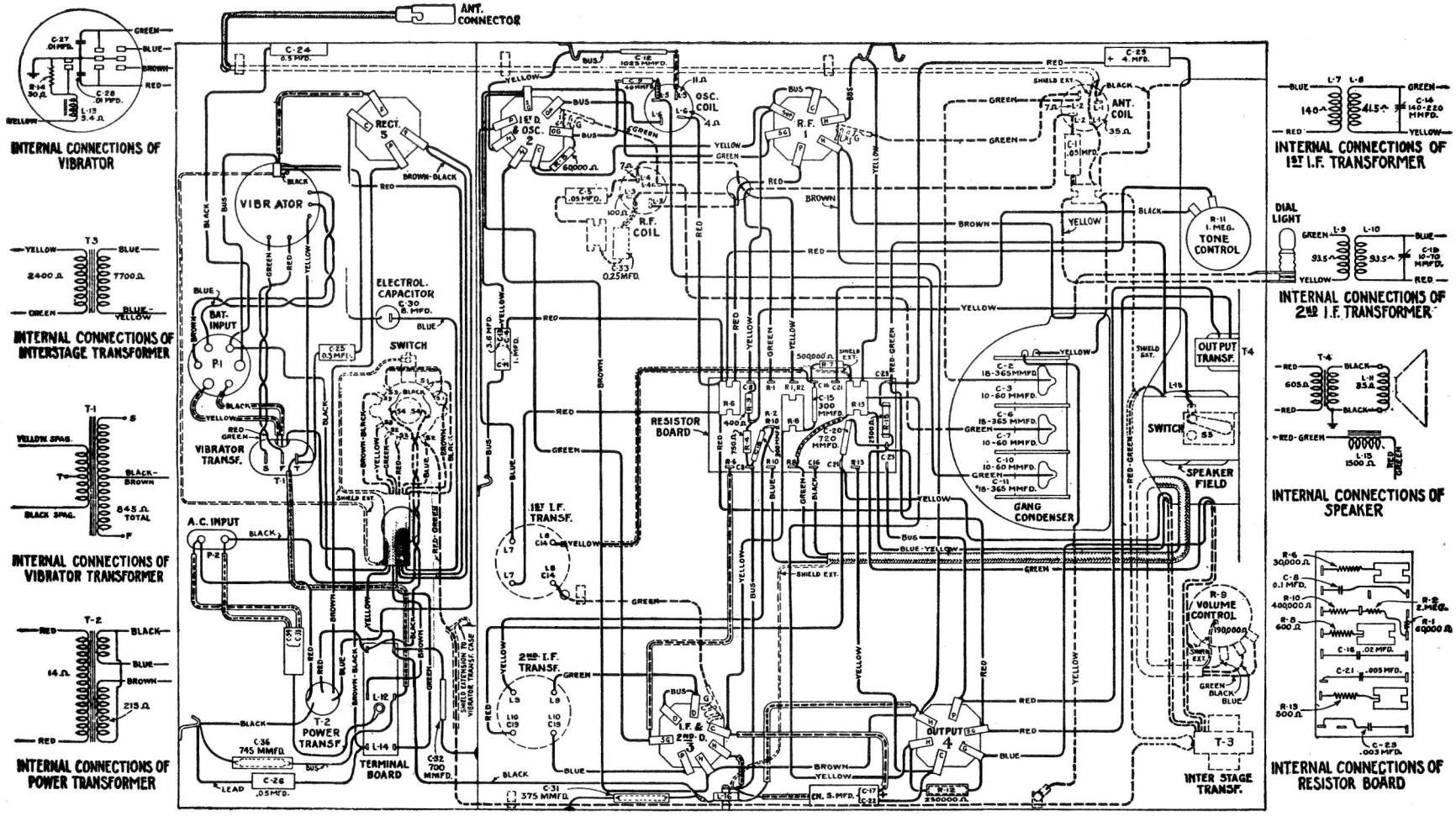



*Figure C—Schematic Diagram*




NOTE:—C-34 & C-35 .025 Mfd.

*Figure D—Wiring Diagram*

# REPLACEMENT PARTS—MODEL B-52

| Key No. | Stock No. | DESCRIPTION |
|---|---|---|
| | | **RECEIVER ASSEMBLIES** |
| R-7 | S-1067 | Resistor—500,000 ohms—¼ Watt |
| R-5 | S-1121 | Resistor—60,000 ohms—Carbon Type—½ Watt |
| | S-1151 | Socket—6 Contact Tube Socket |
| | S-1225 | Lamp—Station Selector Dial Lamp |
| C-16 | S-1382 | Capacitor—0.02 mfd. Capacitor |
| | S-1404 | Cap—Contact Cap |
| R-6 | 2240 | Resistor—30,000 ohms—Carbon Type—1 Watt |
| C-36 | 2734 | Capacitor—745 mmfds. Capacitor |
| | 2917 | Washer—"C" washer for Condenser drum and shaft assembly |
| R-8 | 3218 | Resistor—600 ohms—Carbon Type—¼ Watt. |
| R-15 | 3469 | Resistor—2,500 ohms—Carbon Type—1 watt. |
| C-17, C-22 | 3536 | Capacitor—Comprising two 5.0 mfd. sections. |
| | 3572 | Socket—Seven contact radiotron tube socket |
| | 3584 | Ring—Antenna, R.F. or Oscillator coil retaining ring |
| C-33 | 3597 | Capacitor—0.25 mfd. Capacitor |
| R-1 | 3602 | Resistor—60,000 ohms—Carbon Type—¼ Watt |
| R-10 | 3619 | Resistor—400,000 ohms—Carbon Type—¼ Watt |
| L-14 | 3621 | Coil—Choke coil—Located on Terminal Board |
| | 3623 | Shield—Antenna, R.F., or Oscillator coil shield |
| R-13 | 3632 | Resistor—500 ohms—Carbon Type |
| C-9 | 3696 | Capacitor—40 mmfds. Capacitor |
| C-20 | 3699 | Capacitor—720 mmfds |
| R-12 | 3744 | Resistor—250,000 ohms—Carbon Type—¼ Watt |
| C-25 | 3751 | Capacitor—0.5 mfd. Capacitor |
| | 3768 | Screw—Set screw for tuning condenser drive drum |
| C-8 | 3877 | Capacitor—0.1 mfd. Capacitor |
| C-1, C-5 | 3888 | Capacitor—0.05 mfd. Capacitor |
| C-23 | 3920 | Capacitor—0.003 mfd. Capacitor |
| | 3954 | Chassis mounting screw and washer assembly |
| L-12 | 3955 | Coil—Choke coil—located on terminal board |
| | 3956 | Clamp—Capacitor mounting clamp |
| | 3957 | Indicator—Station selector indicator pointer |
| | 3958 | Plug—2 Contact "AC" Connection plug |
| | 3959 | Plug—6 Contact "DC" Connection Plug |
| | 3968 | Spring—Tuning Condenser Drive Cord Tension Spring |
| | 3969 | Cord—Tuning condenser drive cord |
| | 3970 | Drum and Shaft assembly—Small—for tuning condenser drive |
| | 3971 | Escutcheon—Switch escutcheon engraved "Auto—AC" |
| | 3972 | Drum and Bushing assembly—Large—for tuning condenser drive |
| C-12 | 4001 | Capacitor—1,025 mmfds. capacitor |
| C-31 | 4002 | Capacitor—375 mmfds. capacitor |
| R-4 | 4020 | Resistor—750 ohms—Carbon Type—¼ Watt. |
| C-34, C-35 | 4089 | Capacitor—Two .025 mfd. capacitors |
| | 4104 | Shield—Radiotron tube shield |
| R-2 | 6242 | Resistor—2 megohms—Carbon Type—¼ watt |
| | 6300 | Socket—4 Contact Tube Socket |
| C-21 | 6512 | Capacitor—.005 mfds |
| C-30 | 6738 | Capacitor—8 mfds |
| | 6739 | Condenser—3 Gang Tuning Condenser |
| | 6740 | Transformer—First I. F. Transformer |
| | 6741 | Transformer—Second I. F. Transformer |
| | 6742 | Coil—Antenna Coil Assembly |
| | 6743 | Coil—R. F. Coil Assembly |
| C-26 | 6744 | Capacitor—.05 mfd |
| | 6745 | Coil—Oscillator Coil Assembly |
| R-9 | 6746 | Control—Volume Control |
| R-11 | 6747 | Control—Tone Control |
| S-5 | 6748 | Switch—Noise Suppressor Switch |
| S-1, S-2, S-3, S-4 | 6749 | Switch—A.C.—D.C. Switch |
| T-3 | 6759 | Transformer—Interstage transformer |
| C-4, C-13 | 6781 | Capacitor—Comprising one 3.6 mfd. and one 1.0 mfd. capacitor |
| C-29 | 6782 | Capacitor—4.0 mfd. capacitor |
| T-2 | 9456 | Power transformer—105–125 Volt 50–60 cycles |
| T-1 | 9457 | Transformer—Power Transformer—9 Volts |
| T-2 | S-1426 | Power Transformer—105-125 Volt–25 Cycles |
| | | **CABLE ASSEMBLIES** |
| | 3466 | Antenna Lead-in Connector |
| | 3646 | Fuse—20 amperes |
| | 4008 | Shield—Metal shield for Cable Plug |
| | 4009 | Terminal—Metal terminal (plain) for battery connection |
| | 4010 | Terminal—Metal terminal engraved "Batt.—Ground" for Battery connection |
| | 6150 | Plug—Battery Cable Plug |
| | 6516 | Connector—Fuse Connector |
| | 6760 | Cable—7 Conductor shielded switch cable |
| | 6761 | Cable—2 Conductor shielded—approximately 10½ inches long, from resistor board to volume control |
| | 6762 | Lead—Antenna lead-in—Approximately 15¾ Inches long—with connector |
| | 6773 | Cable—Battery cable—Overall length approximately 61 inches—Complete with plug—fuse—fuse connector and terminals |
| | 6775 | Cable—Battery Cable—Overall length approximately 105 inches—Complete with plug, fuse, fuse connector and terminals |
| | 6777 | Cable—Antenna lead-in cable—Shielded approximately 98 inches long with connector |
| | | **MISCELLANEOUS PARTS** |
| | S-1182 | Suppressor—Distributor Suppressor |
| | S-1201 | Suppressor—Spark plug suppressor |
| | S-1202 | Suppressor—Distributor suppressor—splice in Type |
| | 3960 | Handle—Carrying handle |
| | 3961 | Knob—Tone control—volume control or suppressor switch knob |
| | 3962 | Knob—Station selector knob |
| | 3963 | Knob—"AC—Auto" switch knob |
| | 3964 | Bezel—Metal Bezel for station selector dial glass |
| | 3965 | Glass—Station selector dial glass |
| | 3966 | Spring—Contact Spring—Grounds vibrator shield to case |
| C-24 | 4011 | Capacitor—.05 mfd |
| | 4017 | Scale Station selector dial scale |
| | 6494 | Capacitor—.05 mfd. Ammeter capacitor |
| | 6495 | Capacitor—.05 mfd.—Generator capacitor |
| | 6670 | Suppressor—Spark plug suppressor—"Elbow" type |
| | 6763 | Cord—Power Cord with Connectors |
| | 7694 | Vibrator—Complete |
| | 7696 | Housing—Metal housing—Top section |
| | 7697 | Base—Housing Base |
| | 9050 | Oscillator—Test Oscillator 150–25,000 K.C. |
| | | **REPRODUCER ASSEMBLIES** |
| | 6750 | Screen—Dust Screen |
| | 6751 | Screen—Metal Screen |
| T-4 | 6764 | Transformer—Output transformer |
| | 6772 | Ring—Felt Ring—Used between speaker and metal housing |
| | 8987 | Cone—Reproducer cone |
| | 9458 | Reproducer Complete |
| | 9459 | Coil—Comprising field coil, magnet and cone support |