

MODELS G-51 & G-57

Five-Tube, Keyboard Touch Tuning, Two Band,
A-C Superheterodyne Receiver

Electrical Specifications

FREQUENCY RANGES

"Standard Broadcast" (A)..... 540-1,720 kc
"Short Wave" (C)..... 5.6-18.0 mc

R-F ALIGNMENT FREQUENCIES

"Short Wave" (C).....15.2 mc (osc., ant.)
"Standard Broadcast" (A)..... 1,500 kc (osc.)

Six Keyboard Tuning Positions.....550 to 1,500 kc

Two stations between approximately 550- 950 kc

Two stations between approximately 680-1,180 kc

Two stations between approximately 890-1,500 kc

Intermediate Frequency..... 455 kc

TUBE COMPLEMENT (Model G-57)

(1) Type 6K8.....First Detector-Oscillator
(2) Type 6K7.... Intermediate-Frequency Amplifier
(3) Type 6Q7G.....Second Detector, A.V.C. and
Audio Voltage Amplifier

(4) Type 6F6-G.....Audio Power Output

(5) Type 5Y4-G..... Full-Wave Rectifier

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Pilot Lamps (2)..... Mazda No. 47, 6.3 volts, 0.15 amp.

POWER SUPPLY RATINGS

Rating A..... 105-125 volts, 50-60 cycles, 75 watts

Rating B..... 105-125 volts, 25-60 cycles, 75 watts

POWER OUTPUT

Undistorted 2.5 watts

Maximum 4.5 watts

LOUDSPEAKER

Model

G-51

G-57

Type..... 6½ inch, electrodynamic 12 inch, electrodynamic

Voice Coil Impedance at 400 cycles..... 2.6 ohms 2.2 ohms

Mechanical Specifications

G-51

G-57

Height (inches)..... 11½ 38½

Width (inches)..... 21 25½

Depth (inches)..... 9¼ 11½

Net Weight (pounds)..... 17 39

Shipping Weight (pounds)..... 21 49

Chassis Base Dimensions..... 13 inches x 6½ inches x 2½ inches

Overall Chassis Height..... 6 inches 6 inches

Operating Controls..... (1) Volume (large knob); Power Switch-Tone (small knob); (2) Manual Tuning (large knob), Band Switch (small knob) left to right, "A" and "C"; (3) Eight Keys, left to right: Switch for Record Player Attachment, six Station Keys, Manual-Tuning Key.

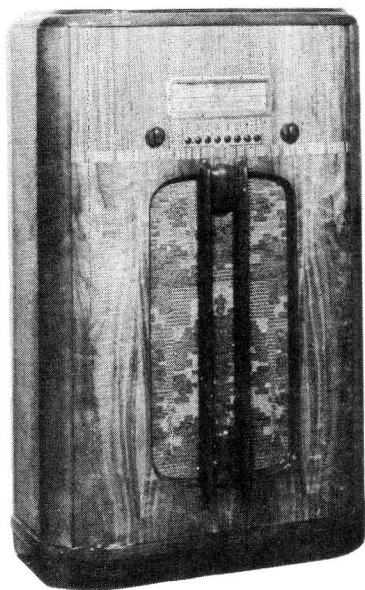
Tuning Drive Ratio..... 12:1

General Description

These receivers employ a two-band superheterodyne circuit which is operated either manually or by electric tuning on standard broadcast, and includes foreign short-wave, aircraft, police, and amateur stations on the short-wave band. Model G-51 is a table model, and uses a 6-inch electro-dynamic loudspeaker. Model G-57 is a console, using the same

chassis with a 12-inch electrodynamic loudspeaker.

Features of design include magnetite-core adjusted i-f transformers and "Electric Tuning" oscillator coils; jack and switch for Record Player attachment; aural-compensated volume control; continuously variable tone-control; automatic volume control; dust-proof electrodynamic speaker; and straight-line dial.



Model G-57

Service Data

Loudspeaker.—Centering of the loudspeaker voice coil is made in the usual manner with three narrow celluloid or paper feelers after first removing the front dust cover. This may be removed by softening its cement with a light application of acetone, using care not to allow the acetone to flow into the air gap. A dust cover should be cemented in place with ambroid upon completion of adjustment.

Precautionary Lead Dress.—(1) Dress 110-volt leads to power transformer away from audio wiring. (2) The 12,000 ohm resistor (R14) should be dressed clear of wiring and parts, since it becomes heated during operation. (3) The leads across back of chassis must be dressed under the electrolytic capacitor to prevent approaching the Record Player jack. (4) All leads in vicinity of antenna coil must be dressed away from the coil windings.

Record Player Attachment.—A jack is provided on the rear of the chassis for connection to a Record Player Attachment. The cable from the Record Player Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

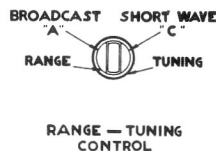
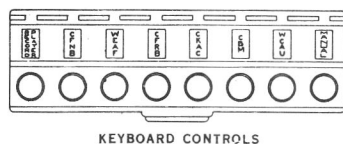
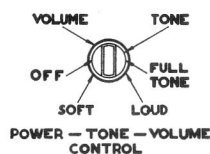
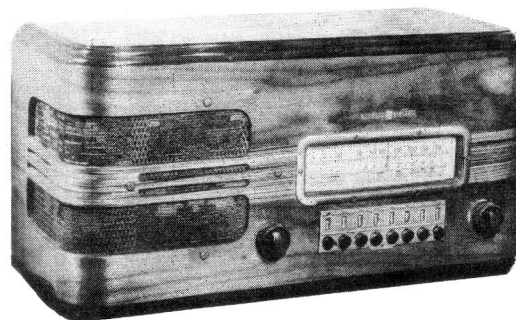


Figure 1—Location of Controls



Model G-51

Calibration Scale

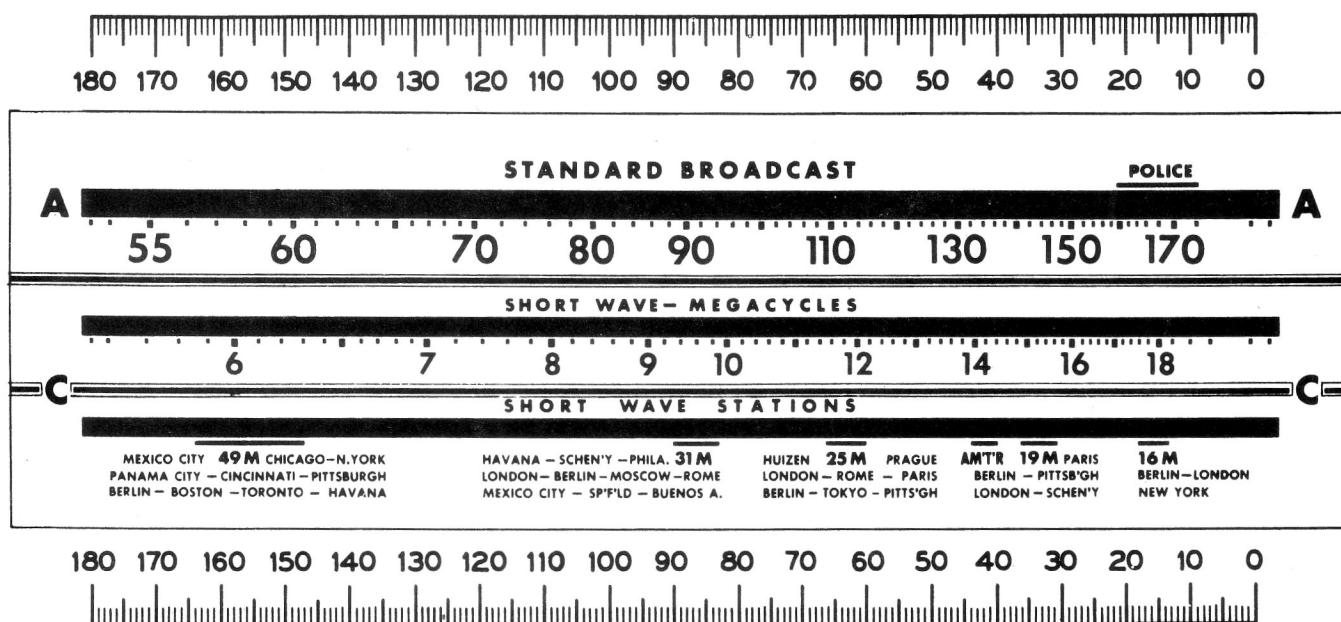


Figure 2—Reduced Reproduction of Receiver Dial, and Corresponding 0-180° Calibration Scales

The corresponding position of the dial indicator for any setting of the calibration scale can be determined by drawing a line from this point on the bottom calibration scale to the same point on the top calibration scale. For example; 28° on the calibration scale corresponds to 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

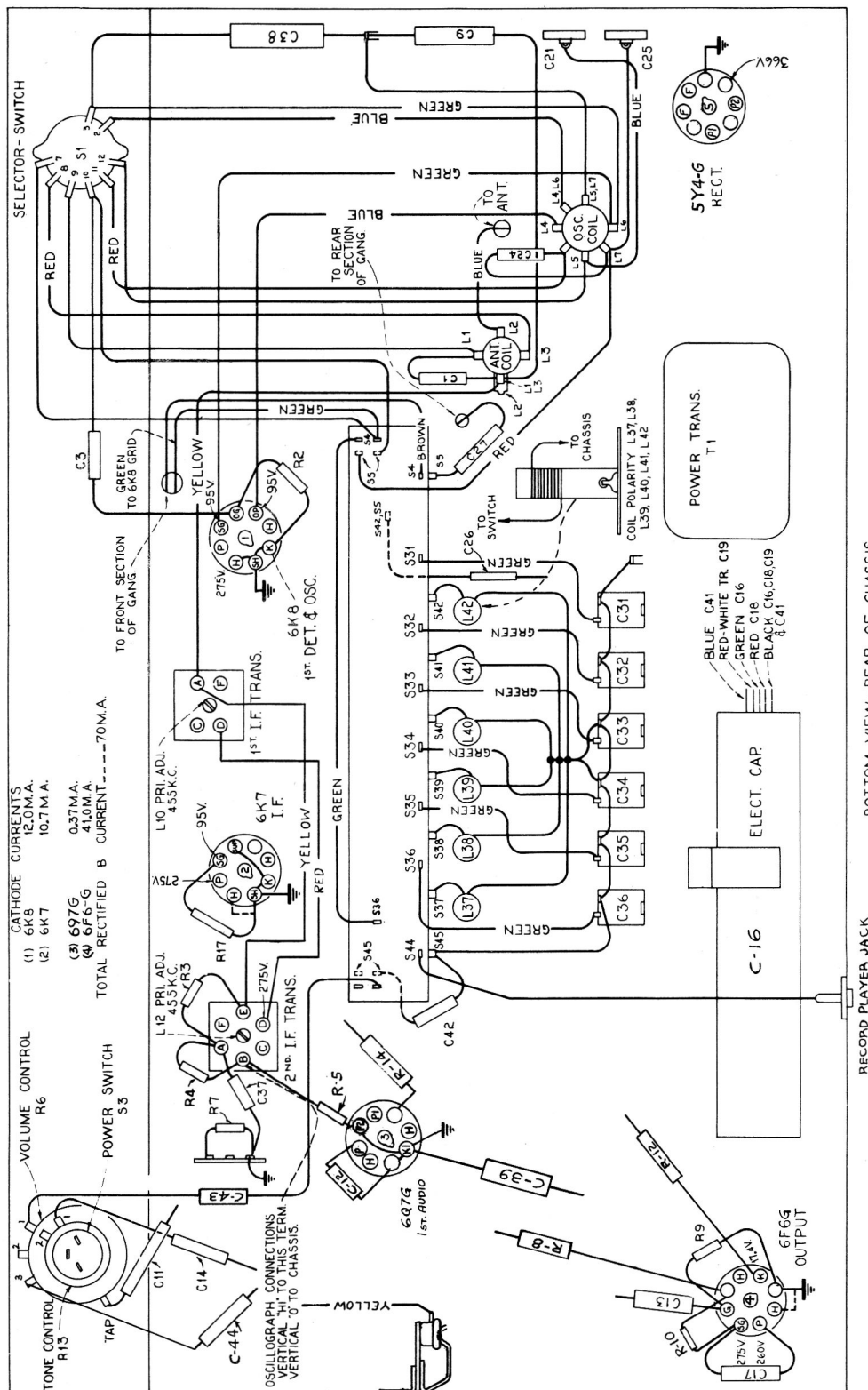
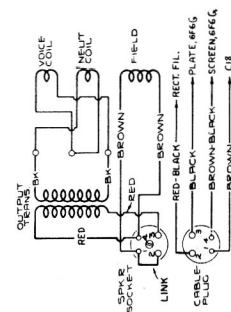


Figure 5—R-F Wiring Diagram and Socket Voltages

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point and volume control at minimum. Values should hold within $\pm 20\%$ with 117-volt a-c supply.

NOTE: Values with star () are operating voltages in circuits with high series resistance. The actual measured voltages will be lower, depending on the voltmeter loading.



Above—Connections and Colors of Loudspeaker and Cable.

ALIGNMENT PROCEDURE

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment; therefore, a calibration scale is attached to the rear of the drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The 180° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The distance from the front of the chassis to the drum must not exceed 3/8-inch. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-

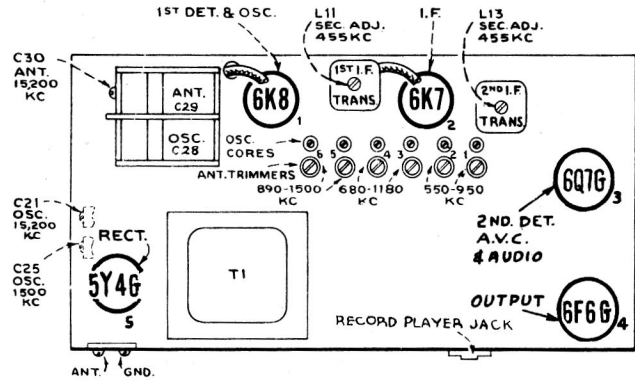


Figure 3—Tube and Trimmer Locations

condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 530 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable. This should be cemented in place to the indicator cable with household cement.

After completion of alignment, seal the i-f core-adjusting screws with household cement.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	6K7 I-F grid cap, in series with .01 mfd.	455 kc	"A" band, Quiet Point between 550-750 kc	L12 and L13 (2nd I-F Trans.)
2	6K8 det. grid cap, in series with .01 mfd.	455 kc		L10 and L11 (1st I-F Trans.)
3	Antenna Terminal, in series with 400 ohms	15.2 mc	15.2 mc (33.5°) "C" band	C21* (osc.) C30** (ant.)
4	Antenna Terminal in series with 200 mmf.	1,500 kc	1,500 kc (28°) "A" band	C25 (osc.)
5	Follow "Adjustments for Electric Tuning."			

* Use minimum capacity peak if two peaks can be obtained.

** Rock gang slightly while adjusting C30. Check to determine that C21 has been adjusted to the correct peak by tuning to approximately 40.5° (14.29 mc), where a weaker signal should be received.

Note: Oscillator tracks 455 kc above signal on both bands.

ADJUSTMENTS FOR KEYBOARD TOUCH TUNING

These models have eight keys. The left-hand key is a Record Player switch. The right-hand key connects the gang condenser for manual tuning. The other six keys are for Keyboard Touch Tuning of six different stations in the standard broadcast range. The station keys connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as Stock No. S-2051. Allow at least five minutes warm-up period before making adjustments.

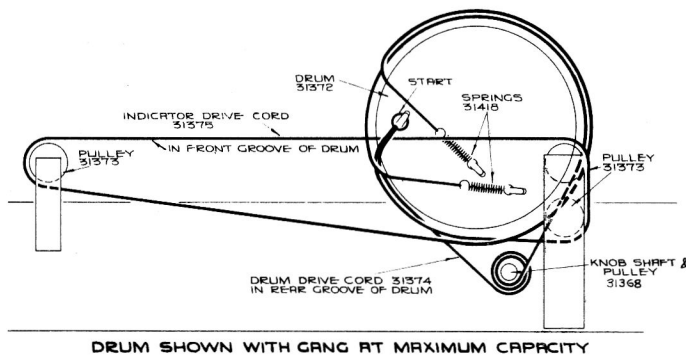
The procedure is as follows:

1. Make a list of the desired six stations, arranged in order from low to high frequencies.
2. Use one or two feet of wire as an antenna to ensure sharp peaking.

3. Push in the manual-tuning key, and manually tune in the first station on the list.
4. Push in station key No. 1 (second from left) and adjust No. 1 oscillator core (L37) to receive this station. Screw the core all the way in, to lowest frequency, and then unscrew slowly until station is received.
5. Adjust No. 1 antenna trimmer (C36) for maximum output on this station.

Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

6. Adjust for each of the remaining five stations in the same manner.
7. Make a final readjustment of the magnetite-cores.



DRUM SHOWN WITH GANG AT MAXIMUM CAPACITY

Figure 6—Arrangement of Drive Cords for Tuning Condenser and Dial Indicator

REPLACEMENT PARTS MODELS G-51 and G-57

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
RECEIVER ASSEMBLIES			
14517	Board-Antenna-ground terminal board...	31418	Spring-Indicator, or drum drive cord tension spring (Pkg. of 10).....
31379	Capacitor-Dual trimmer 2-10 Mmfd. and 3-30 Mmfd. (C21,C25).....	31364	Socket-Dial lamp socket.....
14079	Capacitor-6.8 Mmfd. (C1).....	14278	Socket-Pick-up socket.....
31387	Capacitor-Antenna coil trimmer capacitor bank 20-470 Mmfd. (C31,C32, C33,C34,C35,C36).....	31251	Socket-Radiotron socket.....
12948	Capacitor-33 Mmfd. (C3).....	31367	Switch-Range switch (S1).....
12720	Capacitor-100 Mmfd. (C42).....	S-2150	Switch-Station selector key switch (S4,S5,S31,S32,S33,S34,S35,S36,S37, S38,S39,S40,S41,S42,S43,S44,S45)....
30904	Capacitor-100 Mmfd. (C5,C6,C7,C8).....	30957	Transformer-First I.F. transformer (L10,L11,C5,C6).....
12724	Capacitor-120 Mmfd. (C12).....	30903	Transformer-Second I.F. transformer (L12,L13,C7,C8).....
13003	Capacitor-180 Mmfd. (C37).....	31445	Transformer-Power transformer 100-120 volts, 25-60 cycle (T1).....
31381	Capacitor-620 Mmfd. (C24).....	31380	Transformer-Power transformer 100-120 volts, 50-60 cycle (T1).....
31435	Capacitor-750 Mmfd. (C26).....	S-2153	Trap-Wave Trap (used on 25 cycle models only).....
31399	Capacitor-4,700 Mmfd. (C27).....	SPEAKER ASSEMBLIES	
4858	Capacitor-.01 Mfd. (C13).....	TABLE MODEL	
14393	Capacitor-.01 Mfd. (C43).....	Speaker No. 101069-502	
4838	Capacitor-.005 Mfd. (C14,C17).....	S-2044	Cap-Dust cap for reproducer cone-Pkg. of 5.....
11315	Capacitor-.015 Mfd. (C11).....	S-2019	Coil-Field Coil.....
4839	Capacitor-0.1 Mfd. (C9,C38,C39).....	S-2020	Cone-Reproducer cone.....
12484	Capacitor-0.25 Mfd. (C44).....	S-2187	Reproducer-Complete.....
31371	Capacitor-Comprising two 10 Mfd., one 20 Mfd., and one 5 Mfd. sections (C18,C19,C16,C41).....	14355	Transformer-Output Transformer.....
S-2145	Cell-Bias Cell.....	SPEAKER ASSEMBLIES	
31382	Clip-Oscillator coil and core mounting clip Pkg. of 2.....	CONSOLE MODEL	
31378	Coil-Antenna coil - "A" and "C" bands (L1,L2,L3).....	Speaker No. RL70H-1	
31377	Coil-Oscillator coil - "A" and "C" bands (L4,L5,L6,L7).....	13866	Cap-Dust cap for cone center (Pkg. of 5)
31383	Coil-Oscillator coil - "A" band (L41, L42).....	12012	Coil-Field coil (L16).....
31384	Coil-Oscillator coil - "A" band (L39, L40).....	11469	Coil-Hum Neutralizing coil (L15).....
31385	Coil-Oscillator coil - "A" band (L37, L38).....	31275	Cone-Speaker cone and voice coil (L14).
31369	Condenser - 2 gang variable tuning condenser (C28,C29,C30).....	31302	Plug-4-contact male plug.....
31366	Control-Volume control, tone control and on-off switch (R6,R13,S3).....	31592	Speaker-Speaker complete.....
31375	Cord-Indicator pointer drive cord.....	14358	Screw-Screw, washer, and lockwasher to hold core in yoke (Pkg. of 2).....
31374	Cord-Variable condenser drum drive cord.....	31301	Transformer-Output transformer (T2)...
30905	Core-Adjustable core and stud for I.F. transformer.....	14357	Washer-Spring washer to hold field coil (Pkg. of 2).....
31386	Core-Adjustable core and stud for oscillator coil, Stock Nos. 31383, 31384 and 31385.....	MISCELLANEOUS ASSEMBLIES	
31372	Drum-Variable condenser drive cord drum and calibrator dial.....	31456	Cover-Protective covers for key markers.....
S-2144	Holder-Bias cell holder.....	S-2151	Dial-Station selector dial scale.....
11891	Lamp-Dial Lamp.....	S-2146	Escutcheon-Station selector escutcheon.....
5040	Plug-4-contact female plug for speaker cable.....	S-2147	Escutcheon-Key Board Assembly escutcheon.....
31373	Pulley-Drive cord pulley.....	S-2152	Indicator-Station Selector Indicator Pointer.....
31388	Resistor-390 ohms, 1 watt (R12).....	S-2148	Key-Station selector key.....
31389	Resistor-12,000 ohms, wire wound, 5 watts (R14).....	S-2155	Knob-Range switch knob.....
30151	Resistor-18,000 ohms, 1 watt (R17)...	14359	Knob-Station selector knob.....
14284	Resistor-22,000 ohms, 1/10 watt (R4)...	S-2154	Knob-Tone control knob.....
12738	Resistor-27,000 ohms, 1/4 watt (R7)....	30773	Knob-Volume control knob.....
12454	Resistor-32,000 ohms, 1/4 watt (R2)....	S-2183	Marker-Station call letter markers...
14560	Resistor-100,000 ohms, 1/4 watt (R10)...	S-2185	Marker-Record-Player marker for Key (Pkg. of 10).....
12264	Resistor-220,000 ohms, 1/4 watt (R5)....	S-2186	Marker-"Manual Tuning" marker for Key (Pkg. of 10).....
12199	Resistor-270,000 ohms, 1/4 watt (R8)....	S-2051	Screw driver-aligning screw driver.....
12285	Resistor-470,000 ohms, 1/4 watt (R9)....	31394	Stop-Indicator pointer slide stop.....
12679	Resistor-2.2 meg., 1/4 watt (R3).....		
14343	Retainer-Retaining spring for station selector knob shaft (Pkg. of 10).....		
14887	Retainer-Drive cord pulley retainer (Pkg. of 20).....		
4669	Screw-No. 8-32 square head set screw for drum Stock No. 31372 (Pkg. of 10)...		
31368	Shaft-Station selector knob shaft and pulley.....		