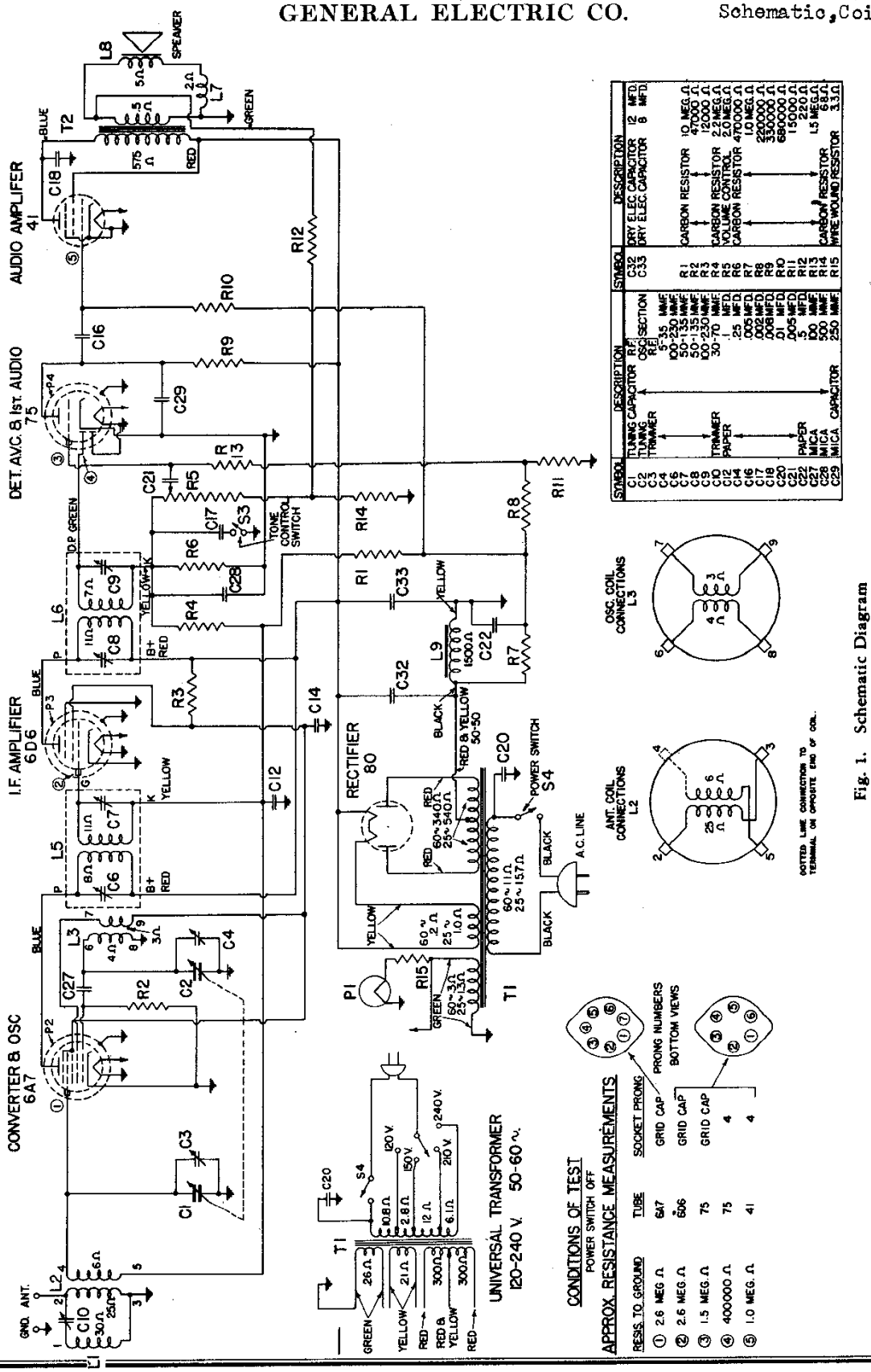
General Electric Co.

	Model: G50	**Chassis:**	**Year:** Pre October 1938
	Power:	**Circuit:**	**IF:**
	Tubes:		
	Bands:		

Resources
Riders Volume 9 - GE 9-3
Riders Volume 9 - GE 9-4
Riders Volume 9 - GE 9-5

MODELS G-50, G-55
Schematic, Coils

GENERAL ELECTRIC CO.



SYMBOL	DESCRIPTION		SYMBOL	DESCRIPTION
C1	TUNING CAPACITOR	R.F. SECTION 5-35 MMF	C32	DRY ELEC. CAPACITOR .2 MFD.
C2	TUNING CAPACITOR	OSC. SECTION 50-135 MMF	C33	DRY ELEC. CAPACITOR .8 MFD.
C3	TRIMMER	R.F. 100-230 MMF		
C4		OSC. 50-135 MMF	R1	CARBON RESISTOR 10 MEG. Ω
C6		100-230 MMF	R2	47000 Ω
C7		30-70 MMF	R3	12000 Ω
C8	TRIMMER PAPER	.1 MFD.	R4	CARBON RESISTOR 2.2 MEG. Ω
C9		.25 MFD.	R5	VOLUME CONTROL 2.0 MEG. Ω
C10		.005 MFD.	R6	CARBON RESISTOR 470000 Ω
C12		.002 MFD.	R7	1.0 MEG. Ω
C14		.008 MFD.	R8	220000 Ω
C16		.01 MFD.	R9	330000 Ω
C17		.005 MFD.	R10	680000 Ω
C18		.1 MFD.	R11	15000 Ω
C20		.5 MFD.	R12	220 Ω
C21	PAPER	500 MMF.	R13	
C22	MICA	500 MMF.	R14	
C27	MICA	250 MMF.	R15	CARBON RESISTOR 1.5 MEG. Ω
C29	MICA CAPACITOR			WIRE WOUND RESISTOR 3.3 Ω

Fig. 1. Schematic Diagram

SERVICE DATA

Physical Specifications

Model	G-50	G-55
Height	10⅛ in.	38 inches
Width	14¼ in.	24 inches
Depth	7⅜ in.	10⅝ inches
Weight Packed	22 lbs	46 lbs.

Tuning Control Drive Ratio.....2 to 1

Electrical Specifications

Rating Label	Power Supply (Volts)	Frequency (Cycles)	Power Consumption Watts
A	115–125	60	60
C	115–125	25–60	65
V	115–125 140–155 190–220 220–250	60	65

NOTE: Rating "V" receivers may be used on 40-cycle circuits provided the voltage does not exceed 110 volts on 110–125 volt tap or 200 volts on the 190–220 volt tap.

Tuning Frequency Range

Band "B".....540 to 1800 kc.

Intermediate Frequency.....465 kc.

Electrical Power Output

Undistorted.....2.3 watts
Maximum.....3.5 watts

Tone Control.....Two Position —Bass and Normal

Loud-speaker—Electrodynamic

Cone: Model G-50.....6½ inches
Model G-55.....8.0 inches
Speaker Impedance.....5 ohms at 400 cycles

Tubes

Oscillator & Converter....6A7 Pentagrid converter
I.F. Amplifier.....6D6 Triple-grid Super-control amplifier
Detector, AVC, 1st audio..75 Duplex Diode and high-gain Triode
Audio Amplifier.....41 Power Amplifier Pentode
Rectifier.....80 Full-wave rectifier
Indicator Lamp.....MAZDA No. 46 Green

SOCKET VOLTAGES

Tube No.		Plate to Ground Volts D.C.	Screen Grid to Ground Volts D.C.	Cathode to Ground Volts D.C.	Cathode Current M.A.	Heater Volts A.C.
6A7	Oscillator	105	105	0	14.8	6.3
	Converter	230				
6D6	1st I.F. Amp.	230	105	0	10	6.3
75	Det A.V.C.			0	.16	6.3
	1st audio	100 *				
41	Output	215	230	0	29	6.3
80	Rectifier	300/600 RMS		315 to B—	54	

A-c line voltage 120. No signal input 1000 ohms per-voltmeter.
Dial pointer at 530 kc.
* Measured on 500-volt scale.

GENERAL INFORMATION

The Models G-50 and G-55 employ five General Electric Pre-Tested Tubes as described above in a highly efficient superheterodyne circuit. A unique arrangement of push buttons mechanically connected to the dial drive mechanism allows instantaneous and accurate selection of eight different stations automatically.

Description of Electrical Circuit

A signal from the antenna is applied to the control grid of the 6A7 tube through the R.F. transformer, the secondary of which is tuned to the incoming signal by the rear section of the main tuning condenser. In the 6A7 tube the incoming signal is combined with the local oscillator signal which is 465 kc higher in frequency. A local signal is generated by the oscillator section of this tube and the proper frequency difference is maintained throughout the tuning range by the front section of the tuning condenser used in conjunction with the oscillator coil. The special cut rotor of the front condenser section makes the use of a padding capacitor unnecessary.

The combination of the oscillator and incoming signal frequencies produces an intermediate frequency of 465 kc. This signal is applied to an I.F. amplifier consisting of a 6D6 tube and two transformers, the primary and secondaries of each being tuned to 465 kc. The amplified I.F. frequency is applied to the diode section of the 75 and rectification causes a current to flow through resistor R-6. This in turn causes a voltage to be built up across R-6 and this voltage is applied to the 6A7 and 6D6 control grids and produces the right amount of AVC action. A variable resistor R-5 is shunted across R-6 and by varying the slider of R-5 the desired amount of audio voltage is impressed on the control grid of the 75 which in turn amplifies the audio frequency. The output of the 75 is resistance coupled to the grid of the 41 output tube. A transformer is used in the output of the 41 to properly match the speaker to the tube.

Tone control action is obtained by inserting or removing capacitor C-17 by means of switch S-3. Part of the output voltage is fed back through resistor R-12 to a point between R-5 and R-14 to improve the frequency response and reduce distortion.

Plate and grid voltages for all tubes are supplied by the power supply system employing an 80 full-wave rectifier tube. A suitable resistor network across the speaker field provides the proper bias for the tubes.

TOUCH TUNING MECHANISM

Automatic tuning of the receiver is accomplished by the mechanism as shown in Fig. 4. By pressing in a station button and rotating it to the lower part of the assembly, the button arm (B) will engage between the two gates (A) allowing the set to be mechanically tuned to a pre-set station at this point. When the station button is not depressed, the arm (B) should clear the gates by ☆ in. To adjust this clearance, merely loosen the two set screws (D) and slide the assembly (F) in the proper direction on the gang condenser drive shaft; then tighten set screws.

The red dot (C) indicates the position of the pointer and is an aid in locating the desired station when the pointer is removed.

Station Set-up

The buttons are easily set up for the station as follows: Use the wrench provided with the receiver to press in a button. Bring the button down until it locks into position, then loosen button lock nut. While still holding the button pressed in, tune in a station and then tighten the button lock nut.

To check the button tuning accuracy, merely press in the button and bring it down until it locks in position. The station should be correctly tuned. Each button will tune the following range of frequencies.

Button No.	Frequency range (Kilocycles)
1	540–590
2	570–670
3	630–780
4	710–940
5	830–1150
6	1020–1400
7	1220–1700
8	1580–1800

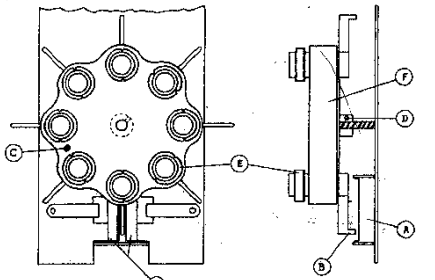


Fig. 4. Dial Mechanism

GENERAL ELECTRIC CO.

MODELS G-50, G-55
Socket, Trimmers
Chassis Layout
Alignment, Parts

REPLACEMENT PARTS LIST

MODELS G-50 AND G-55

Insist on genuine factory-tested parts which may be purchased from authorized dealers

Stock No.	Description	List Price
*RB-041	BOARD—Terminal Board (2 terminals)	$0.10
*RB-066	BOARD—Terminal Board (4 terminals)	.10
*RB-078	BOARD—Terminal Board (7 terminals)	.10
*RC-011	CAPACITOR—.002 Mfd., 600 V. paper (C-17)	.25
*RC-023	CAPACITOR—.005 Mfd., 600 V. paper (C-16, 21)	.25
*RC-042	CAPACITOR—.01 Mfd., 1000 V. paper Capacitor (C-20)	.30
*RC-104	CAPACITOR—.1 Mfd., 600 V. paper (C-12)	.30
*RC-152	CAPACITOR—.25 Mfd., 400 V. paper (C-14)	.40
*RC-156	CAPACITOR—.5 Mfd., 100 V. paper (C-22)	.45
*RC-193	CAPACITOR—.008 Mfd., 600 V. paper (C-18)	.25
RL-259	COIL—Oscillator Coil (L-3)	.75
*RQ-685	RESISTOR—12,000 ohm, 2 w. carbon (R-3)	.25
*RQ-1231	RESISTOR—68 ohm, ½ w. carbon (R-14) (Pkg. of 5)	.70
*RQ-1243	RESISTOR—220 ohm, ½ w. carbon (R-12) (Pkg. of 5)	.70
*RQ-1287	RESISTOR—15,000 ohm, ½ w. carbon (R-11) (Pkg. of 5)	.70
*RQ-1299	RESISTOR—47,000 ohm, ½ w. carbon (R-2) (Pkg. of 5)	.70
*RQ-1315	RESISTOR—220,000 ohm, ½ w. carbon (R-8) (Pkg. of 5)	.70
*RQ-1319	RESISTOR—330,000 ohm, ½ w. carbon (R-9) (Pkg. of 5)	.70
*RQ-1323	RESISTOR—470,000 ohm, ½ w. carbon (R-6) (Pkg. of 5)	.70
*RQ-1327	RESISTOR—680,000 ohm, ½ w. carbon (R-10) (Pkg. of 5)	.70
*RQ-1331	RESISTOR—1 megohm, ½ w. carbon (R-7) (Pkg. of 5)	.70
*RQ-1335	RESISTOR—1.5 megohm, ½ w. carbon (R-13) (Pkg. of 5)	.70
*RQ-1339	RESISTOR—2.2 megohm, ½ w. carbon (R-4) (Pkg. of 5)	.70
*RQ-1355	RESISTOR—10 megohm, ½ w. carbon (R-1) (Pkg. of 5)	.70
*RR-350	RESISTOR—3.3 ohms, 2 w. wire wound (R-15)	.35
*RS-179	SHIELD—Tube Shield for 6A7 or 75	.15
*RS-181	SHIELD—1st. or 2nd I.F. Transformer Shield	.20
*RS-183	SHIELD—Tube Shield for 6D6	.15
*RS-215	SOCKET—6-prong Tube Socket (Pkg. of 5)	.60
*RS-217	SOCKET—4-prong Tube Socket (Pkg. of 5)	.50
*RS-219	SOCKET—7-prong Tube Socket (Pkg. of 5)	.60
RS-375	SWITCH—Tone Control Switch (S-3)	.35
RT-253	TRANSFORMER—1st I.F. Transformer (complete)	1.25
RT-254	TRANSFORMER—2nd I.F. Transformer (complete)	1.25
*RT-0510	TRANSFORMER—Power Transformer 115-125 V., 50-60 Cycles (T-1)	3.95
*RT-0512	TRANSFORMER—Power Transformer 115-125 V., 25-60 Cycles (T-1)	6.50
*RT-0513	TRANSFORMER—Universal Power Transformer (T-1)	7.65

Stock No.	Description	List Price
*RC-235	CAPACITOR—100 Mmf., mica (C-27)	$0.25
*RC-259	CAPACITOR—250 Mmf., Mica (C-22)	.30
*RC-296	CAPACITOR—500 Mmf., Mica (C-28)	.25
*RC-587	CAPACITOR—Dry Electrolytic 12 Mfd., 450 V.; 8 Mfd., 450 V. (C-32, 33)	1.15
RC-671	CAPACITOR—Double Trimmer 1st or 2nd I.F. Transformer (C-6, 7, 8, 9)	.40
RC-672	CAPACITOR—Oscillator Trimmer (C-4)	.15
RC-724	CONDENSER—2-gang Tuning Condenser (C-1, -2, -3)	3.00
RC-865	CORD—Power Cord with Plug	.45
RC-8024	CABLE—Speaker Cable with Female Plug	.55
RG-013	GRID CLIP—Control Grid Clip (Pkg. of 5)	.10
RK-025	KNOB—Control Knob (Pkg. of 5)	.40
RL-055	COIL—Antenna Coil (L-2)	.80
RV-038	VOLUME CONTROL—Volume Control and Power-Switch (R-5, S-4)	$0.95
*RW-101	WASHER—Felt Washer for Knobs (Pkg. of 10)	.45
*RW-406	WAVE TRAP—Wave Trap Assembly (L-1, C-10)	.85
RX-039	ASSEMBLY—Gang Condenser Mounting Cushions, Washer and Screws	.05
	SPEAKER ASSEMBLY G-50	
RB-074	BOARD—Terminal Board (2 terminals)	.10
*RC-923	CONE—6½-inch Cone and Voice Coil Assembly	.90
*RC-1950	CLAMP—Voice Coil Spider Clamp	.05
*RP-015	PLUG—Male Speaker Plug	.20
RS-068	SPEAKER—6½-inch Speaker (complete)	5.90
*RT-428	TRANSFORMER—Output Transformer (T-2)	1.20
	SPEAKER ASSEMBLY G-55	
*RC-924	CONE—8-inch Cone and Voice Coil Assembly	.90
*RC-990	CLAMP—Voice Coil Spider Clamp	.05
*RP-015	PLUG—Male Speaker Plug	.20
RS-069	SPEAKER—8-inch Speaker (complete)	6.10
*RS-416	SPRING—Voice Coil Leads Spring (Pkg. of 2)	.10
RT-433	TRANSFORMER—Output Transformer (T-2)	1.20
	DIAL MECHANISM	
RC-1971	CAP—Brass Push Button Cap and Window (Pkg. of 5)	.25
RC-8055	CARD—Station Letter Cards (Set of 5)	.25
RD-063	DIAL—Dial Scale	.95
RL-921	LEVER—Push Button Lever	.75
RN-003	NUT—Nut for Dial Pointer Disc	.15
RN-004	NUT—Lock Nut for Push Button	.20
RP-092	POINTER—Pointer Disc and Nut	.75
RR-921	REFLECTOR—Reflector Jewel and Holder	.10
RS-230	SOCKET—Lamp Socket Assembly	.10
RS-507	SLEEVE—Push Button Sleeve, Spring and Ring	.50
RW-500	WRENCH—Dial Nut and Push Button Wrench	.10
RX-040	ASSEMBLY—Push Button Dial Mechanism (complete)	7.35

* Used on previous receivers.

(Prices subject to change without notice)

ALIGNMENT PROCEDURE

I.F.	Broadcast	Broadcast
465 kc.	1500 kc.	1830 kc.

In order to align these receivers properly, it is necessary to have the following test equipment.

1. A modulated test oscillator.
2. An output indicator such as an a-c voltmeter with a range of from 3 to 5 volts.
3. A screwdriver type aligning tool.

The trimmer locations are shown in Fig. 3.

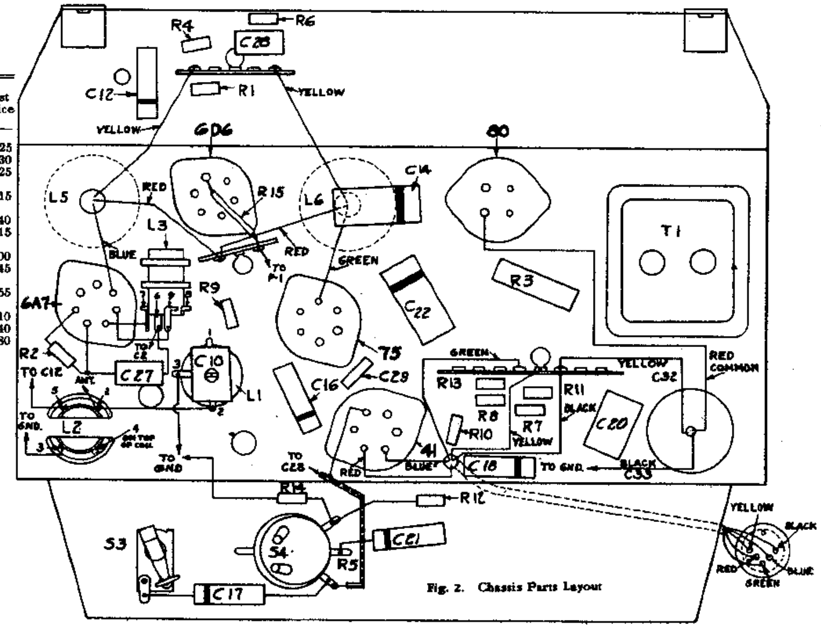


Fig. 2. Chassis Parts Layout

I.F. Alignment

Turn the volume control to maximum (extreme clockwise position). Tune the receiver to a point where no signal comes in and short circuit the antenna and ground leads.

Connect the test oscillator output between the chassis and through a .05 Mfd. capacitor to the control grid of the 6A7 tube. Connect the output meter across the voice coil of the speaker. Set the test oscillator to 465 kc. and adjust the output until a small deflection is obtained on the output meter.

The four I.F. trimmers (see Fig. 3) are adjusted in the following sequence:

1. Secondary trimmer on second I.F. transformer
2. Primary trimmer on second I.F. transformer
3. Secondary trimmer on first I.F. transformer
4. Primary trimmer on first I.F. transformer

Throughout all adjustments the output should be maintained at a low level by decreasing the test oscillator output as various stages are aligned. After these adjustments have been made the same procedure should be repeated as a final check.

I.F. Wave Trap Alignment

Leave the test oscillator set at 465 kc. and connect one output lead to the receiver chassis and the other through a 250 mmf. condenser in series with 400 ohms to the receiver antenna lead. Adjust C-10 for minimum output.

R.F. Alignment

Connect the signal generator to the antenna and ground leads of the chassis through a dummy antenna consisting of a 400 ohm resistor in series with a 250 mmf. capacitor. Connect the output indicator across the voice coil of the speaker. With the gang condenser set to the minimum capacity position, i.e., plates fully open, peak the oscillator trimmer C-4 (front section) for maximum output with the signal generator set at the 1830 kc. point. Now reduce the signal generator frequency to 1500 kc. and tune in carefully this new frequency by means of the gang condenser. Now peak the antenna trimmer (C-3) (rear section) for a maximum output.

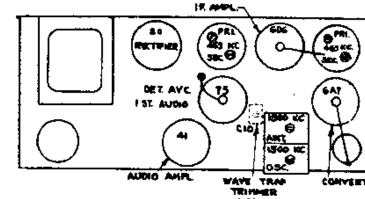


Fig. 3. Chassis Layout and Trimmer Location