



RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

BULLETIN GC-1.

File:-Receivers
Portable.

Date: 17/3/47.

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SUBJECT-

Model "GC" (Porta)

5 Tube Superheterodyne Portable

Receiver.

For operation from:-

1.5 Volts "A" Battery }
and } Combined Block Battery
90 Volts "B" Battery }

This Bulletin Contains:-

1. Technical Specifications
2. General Description
3. Alignment Procedure
4. Circuit Diagrams
5. Voltage Table
6. Component Parts List
7. Coil and IF. Transformer Connections
8. Instructions for Removing Chassis from Cabinet.

This Receiver is NOT in Production

Information is for Service Purposes ONLY

SUBJECT-Technical Specifications-Receiver Type "GC"

Tube Complement:-

Type 1N5G, 1N5GT or 1P5GT	RF. Amplifier
Type 1A7G or 1A7GT	Converter
Type 1N5G, 1N5GT or 1P5GT	IF. Amplifier
Type 1H5G or 1H5GT	Diode Detector, AVC. and 1st Audio
Type 1A5G or 1A5GT	Output Amplifier

Intermediate Frequency:-

455 Kc.

Tuning Range:-

535 1650 Kc.

Operating Voltages:-

"B" voltage 90 volts } "A" and "B" Batteries combined in a
"A" voltage 1.5 volts } Block Battery.

Battery Consumption:-

"B" Battery 6.5 milliamps (no signal).
"A" Battery 250 milliamps.

Power Output:-

100 milliwatts (maximum).
75 milliwatts (undistorted).

General Description:-

The Model "GC" is a 5 tube superheterodyne portable receiver having a sensitivity of 10 microvolts for an output of 25 milliwatts with a load impedance of 25,000 ohms. The receiver operates from dry batteries which are fitted into the bottom of the carrying case. Signal pick-up is from an adjustable telescopic aerial fitted to the cabinet. The aerial when fully retracted automatically switches off the receiver.



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SUBJECT—Alignment Procedure—Receiver Type "GC"

Equipment:—

Signal Generator.
Dummy Capacitor:—
.01MFD. Mica Capacitor.
Output Meter.
Alignment Tool—Part Number PM581.

Alignment Conditions:—

Load Impedance—25,000 Ohms.
Output Level—25 Milliwatts.
Volume Control—Maximum Volume (Fully clockwise).
"B" Battery—90 Volts.
"A" Battery—1.5 Volts.

Alignment:—

Intermediate Frequency 455 Kcs.
Tuning Range 535—1650 Kcs.

Remove battery, chassis and aerial from cabinet as described in the section "Instructions for Removing Chassis" then place chassis on its battery in a working position, fasten aerial in correct position in aerial guide bush (screw "G" Fig. 3).

Fully mesh the two gang varb. cond. plates and set dial reading so that 100° mark is at right angles to the speaker frame and then proceed with alignment as on page 4.

SUBJECT--Alignment Procedure--Receiver Type "GC"

Opera- tion	Generator Frequency	Generator Connection	Dummy Capacitor	Instructions
1.	455 Kc.	To grid of 1N5G IF. tube.	.01MFD. mica capacitor in series with generator.	Leave grid clip on tube. Gang plates full out. Peak 2nd IF. trans. primary and secondary.
2.	455 Kc.	To grid of 1A7G tube.	.01MFD. mica capacitor in series with generator.	Leave grid clip on tube. Gang plates full out. Peak 1st IF. trans. primary and secondary.
3.	1650 Kc.	Radiate signal by connecting 2 feet of wire (in a vertical position) to the generator output.		Turn gang plates full out. Place receiver vertical aerial fully extended 6 inches away and parallel to the two feet of wire attached vertically to generator output. Peak os- cillator coil trimmer.
4.	1400 Kc.	Radiate signal by connecting 2 feet of wire (in a vertical position) to the generator output.		With the receiver aerial in the same position for opera- tion No. 3 tune to 1400KC. and peak the aerial coil trimmer for maximum output.
5.	600 Kc.	Radiate signal by connecting 2 feet of wire (in a vertical position) to the generator output.		With the receiver aerial in the same position as for operation No. 3 tune to 600KC. and peak series padder, rock- ing gang to and fro through the signal while adjusting.
6.	Repeat operations Nos. 3, 4, and 5.			
7.	Refit chassis to cabinet.			



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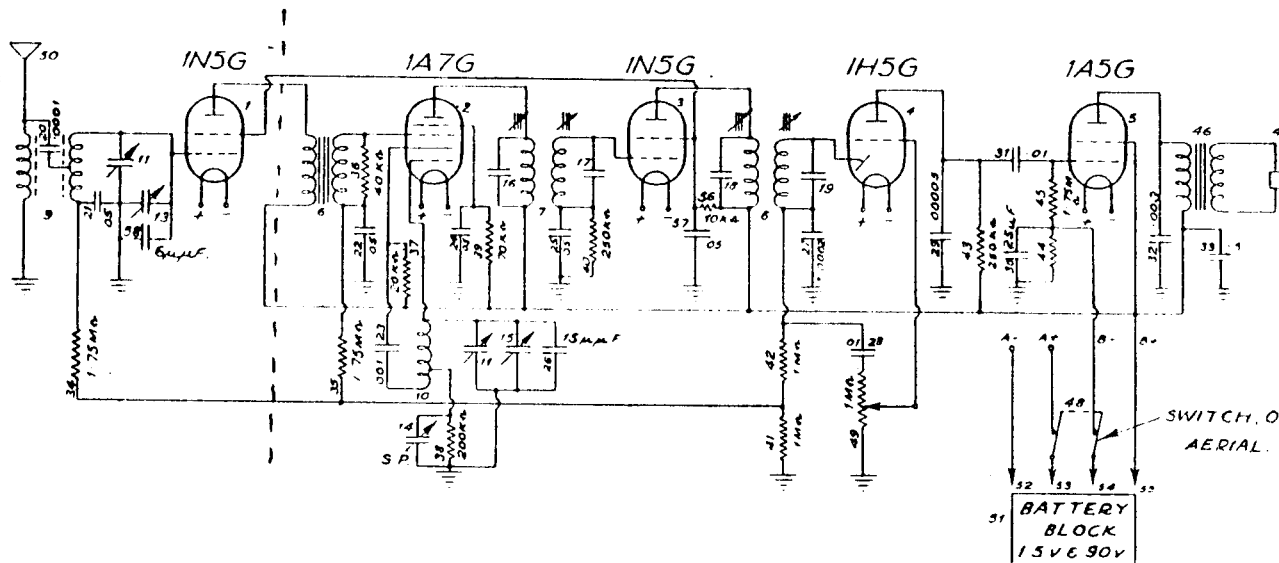
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SUBJECT—Schematic Circuit Diagram—Receiver Type "GC"



MODEL GC.

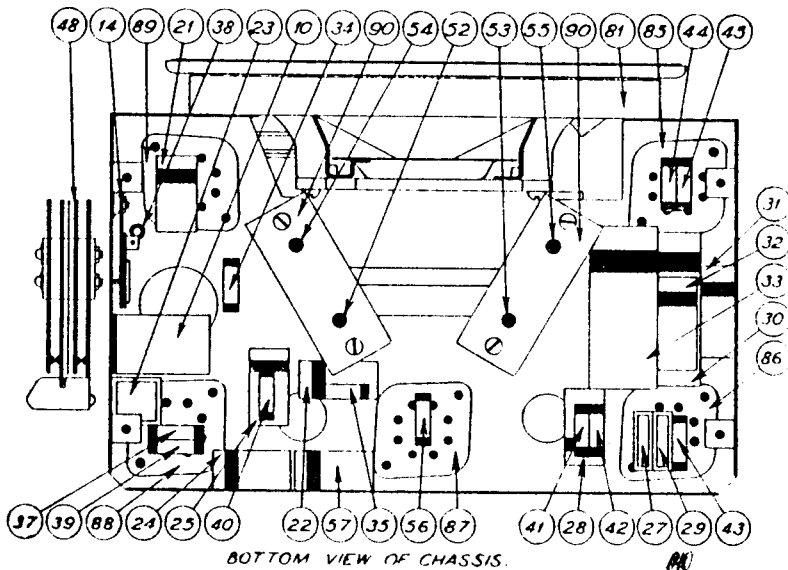
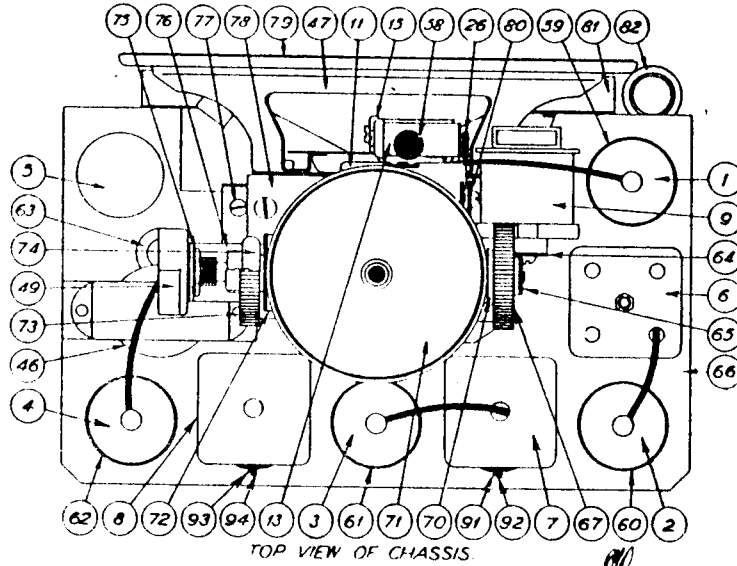
3V BATTERY OPERATED BROADCAST PORTABLE RECEIVER.

INTERMEDIATE FREQUENCY 455 KCS.

ALL VOLTAGES TAKEN, WITH 1000Ω PER VOLT METER, TO EARTH. NO SIGNAL.

NUMBERS REFER TO PARTS LIST.

SUBJECT-Top View of Chassis-Receiver Type "GC"





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SUBJECT Voltage Table Model "46"

Equipment:--

DC. Volt Meter: 1,000 ohm per volt meter with 0-10 and 0-250 volt scales.

DC. Milliamp Meter: 0-50 and 0-500 milliamps scales.

Conditions of Test:--

All voltages measured from tube socket contacts to chassis. Set tuned to 1,000 Kc. (no signal) volume control full on (clockwise).
"B" Battery 90 Volts. "A" Battery 1.5 volts.

Tube	Fil.	Plate	Screen	Grid	Oscillator Plate
1N5G	1.4V.	84	75	-	-
1A7G	1.4V.	84	29	-	57
1N5G	1.4V.	84	75	-	-
1H5G	1.4V.	22	-	-	-
1A5G	1.4V.	82	84	5.9	-

"A" Battery Consumption 250 milliamps.

"B" Battery Consumption 6.5 milliamps (no signal).

SUBJECT-Components Parts List-Receiver Type "GC"

NOTE:-Some of the parts used approximately eight years ago on the first production runs of this model are now not obtainable. It is therefore necessary to use the parts quoted on the list below which are in accordance with the last production run.

<u>Circuit No.</u>	<u>Part Name</u>	<u>Tol.</u>	<u>Rating</u>	<u>Part No.</u>
1.	Tube Type 1H5G, 1H5GT or 1P5GT			
2.	Tube Type 1A7G or 1A7GT			
3.	Tube Type 1H5G, 1H5GT or 1P5GT			
4.	Tube Type 1H5G or 1H5GT			
5.	Tube Type 1A5G or 1A5GT			
6.	RF. Transformer			PT202
7.	1st IF. Transformer			PT203
8.	2nd IF. Transformer			PT209
9.	Antenna Transformer			PT239
10.	Oscillator Coil			PT104
11.	2 Gang Condenser			PC253
12.				
13.	Trimmer Condenser-antenna trans. 1.5-18MMFD.			PC250
14.	Series Padder Condenser 150-500MMFD.			PC164
15.	Trimmer Condenser-oscillator coil 0-30MMFD.			PC663
16.	Tuning Condenser-1st IF. Trans. Primary $2\frac{1}{2}\%$		1000VT.	PC294
17.	Tuning Condenser-1st IF. Trans. Secondary $2\frac{1}{2}\%$		1000VT.	PC294
18.	Tuning Condenser-2nd IF. Trans. Primary $2\frac{1}{2}\%$		1000VT.	PC294
19.	Tuning Condenser-2nd IF. Trans. Secondary $2\frac{1}{2}\%$		1000VT.	PC294
20.	.0001MFD. Mica Condenser	10%	1000VT.	PC110
21.	.05MFD. Paper Condenser	20%	200V. DCW	PC102
22.	.05MFD. Paper Condenser	20%	200V. DCW	PC102
23.	.001MFD. Mica Condenser	10%	1000VT.	PC108
24.	.05MFD. Paper Condenser	20%	200V. DCW	PC102
25.	.05MFD. Paper Condenser	20%	200V. DCW	PC102
26.	15MMFD. Wire Wound Condenser	20%	200V. DCW	PC196
27.	.0002MFD. Mica Condenser	10%	1000VT.	PC124
28.	.01MFD. Paper Condenser	20%	600V. DCW	PC140
29.	.00005MFD. Mica Condenser	10%	1000VT.	PC141
30.	25MFD. Electrolytic Condenser	20%	25VP.	PC318
31.	.01MFD. Paper Condenser	20%	600V. DCW	PC140
32.	.003MFD. Paper Condenser	20%	600V. DCW	PC274
33.	.5MFD. Paper Condenser	20%	200V. DCW	PC121
34.	1.75 Megohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR248
35.	1.75 Megohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR248
36.	40,000 Ohm Carbon Resistor (Part. of 6)	10%	$\frac{1}{2}$ Watt	PR251
37.	20,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR166
38.	200,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR255
39.	70,000 Ohm Carbon Resistor	10%	$\frac{1}{2}$ Watt	PR256



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SUBJECT--Component Parts List--Receiver Type "GC"

<u>Circuit No.</u>	<u>Part Name</u>	<u>Tol.±</u>	<u>Rating</u>	<u>Part No.</u>
40.	250,000 Ohm Carbon Resistor	10%	1/2 Watt	PR249
41.	1 Megohm Carbon Resistor	10%	1/2 Watt	PR246
42.	1 Megohm Carbon Resistor	10%	1/2 Watt	PR246
43.	250,000 Ohm Carbon Resistor	10%	1/2 Watt	PR249
44.	1,000 Ohm Carbon Resistor	10%	1/2 Watt	PR252
45.	1.75 Megohm Carbon Resistor	10%	1/2 Watt	PR248
46.	Input Transformer--25,000 ohms imped.			PT178
47.	Speaker--Permag 6"			FM294
48.	Battery Switch Assembly			A109/89
49.	1 Megohm Carbon Volume Control			PR205
50.	Telescopic Rod Aerial Assembly			A104/89
51.	1.5V./90V. Combination Block Battery (Type RC304)			FM304
52.	Spring Battery Contact Assembly A--			A107/89 two off per set.
53.	Spring Battery Contact Assembly A+			
54.	Spring Battery Contact Assembly B--			
55.	Spring Battery Contact Assembly B+			
56.	10,000 Ohm Carbon Resistor	10%	1/2 Watt	PR164
57.	.05MFD. Paper Condenser	20%	200V. DCW	PC102
58.	6MMFD. Wire Wound Condenser			PC240
59.	Valve Shield			FM313
60.	Valve Shield			FM313
61.	Valve Shield			FM313
62.	Valve Shield			FM313
63.	Rubber Grommet 1/2"			40/300
64.	Coil Mount Bracket			40/89
65.	Condenser Control Mount Bracket--part of 78			
66.	Chassis Base			
67.	Drive Disc (Knob)--condenser (Part of 78)			
68.				
69.				
70.	Rubber Grommet 1/8"			40/300
71.	Dial Drum and Reading Ass'y.			A101/89
72.	Bracket--volume control (part of 78)			
73.	Drive Disc--Volume Control (part of 78)			
74.	Friction Drive Ring			44/89
75.	Spacing Washer--volume control			
76.	Mount Bracket--volume control (part of 78)			
77.	Mount Bracket--speaker			23/89
78.	Condenser Platform Ass'y.			A115/89
79.	Speaker Gasket			
80.	Mount Bracket--condenser--part of 78			
81.	Speaker Cone Shield			
82.	Aerial Guide Bush (on top of cabinet)			29/89

SUBJECT-Component Parts List-Receiver Type "GC"

<u>Circuit</u> <u>No.</u>	<u>Part Name</u>	<u>Tol.</u>	<u>Rating</u>	<u>Part No.</u>
83.				
84.				
85.	Socket 8 pin			PM532
86.	Socket 8 pin			PM532
87.	Socket 8 pin			PM532
88.	Socket 8 pin			PM532
89.	Socket 8 pin			PM532
90.	Battery Contacts assembled to Bakelite Strip (2)			A107/89
91.	1st IF. Trans. Pri. Adj. Screw			
92.	1st IF. Trans. Sec. Adj. Screw			
93.	1st IF. Trans. Pri. Adj. Screw			
94.	1st IF. Trans. Sec. Adj. Screw			
95.	Speaker Grille (Bakelite)			7/89
96.				
97.	{ Cabinet, Covered-Walnut			6/89-1
	{ Cabinet, Covered-Red			6/89-2
98.	Cabinet Base (Rubber)			38/89
99.	Battery Base Plate (Metal)			A120/89
100.	Escutcheon aerial guide			37D/89
101.	Cabinet Grommet (Rubber)			67/89
102.	Aerial Bracket (Bush and Bakelite Strip)			A111/89
103.	Chassis Cover Ass'y. (Includes 102)			A112/89
104.	Earth Contact-valve shield			22/30C
105.	Escutcheon (Moulded Bakelite)			5/89
106.	Handle (2)			3/89
107.	Handle Pin (2)			35/89



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SUBJECT--Coil and IF. Transformer Connections--Receiver Type "GC"

Grey Lead - Aerial
Green Lead - Grid
Black Lead - Grid Return (AVC.)
Blue Lead - Earth (Chassis)

Antenna Trans.

Red Lead - B₁
Blue Lead - Plate
Green Lead - Grid
Black Lead - Grid Return (AVC.)

RF. Trans.

Green Lead - Grid
Black Lead - Series Pad
Red Lead - Oscl. Plate Cond.

Oscillator Coil.

Red Lead - B₁
Blue Lead - Plate
Green Lead - Grid
Black Lead - Grid Return

1st IF. Trans.

Red Lead - B₁
Blue Lead - Plate
Green Lead - Diode
Black Lead - Diode Return

2nd IF. Trans.

SUBJECT-Instructions for Removing Chassis from Cabinet-Receiver Type "GC"

1. Remove rubber base by taking the turned up edge and pulling it down from the cabinet, as shown in Fig. 1.

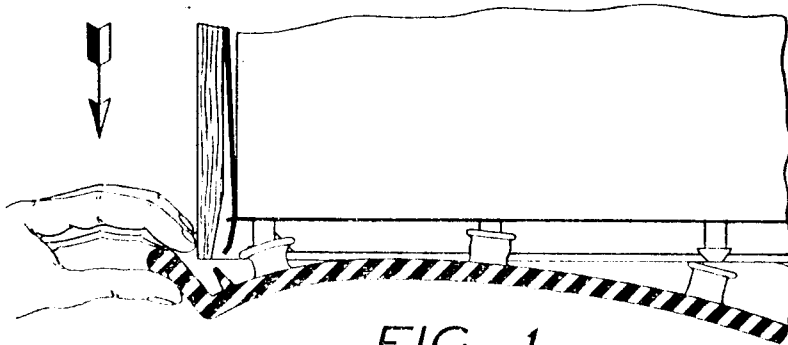


FIG. 1.

2. Place the set in an upright position, speaker grille forward, with base resting upon a book or several match boxes or some such article that is somewhat smaller than the base and is sufficiently high to allow the fingers of both hands to be placed on the underneath edges of the cabinet (with palms of hands upward) as in Fig. 2.

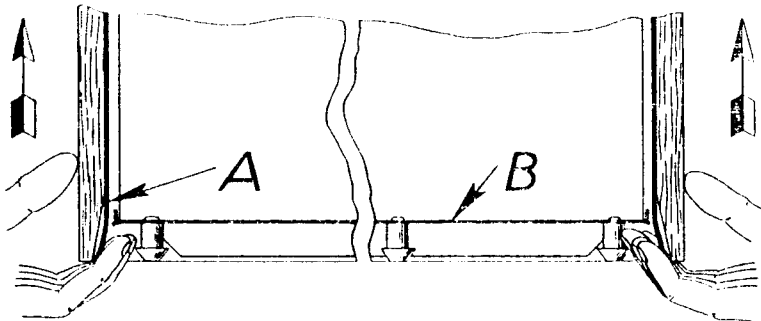


FIG. 2.

Just inside the edge of cabinet two projecting clips "A" will be felt with the tips of the fingers--spring these clips out towards outside of cabinet as far as they will go (flat against inside of cabinet). This will release tongue on base plate allowing cabinet to be lifted up. This will leave the metal base plate "B" with the battery resting on the objects placed beneath it.



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SUBJECT—Instructions for Removing Chassis from Cabinet—Receiver Type, "GC"

3. Remove two self tapping screws "A", Fig. 3 and lift out metal wedge plate "B".

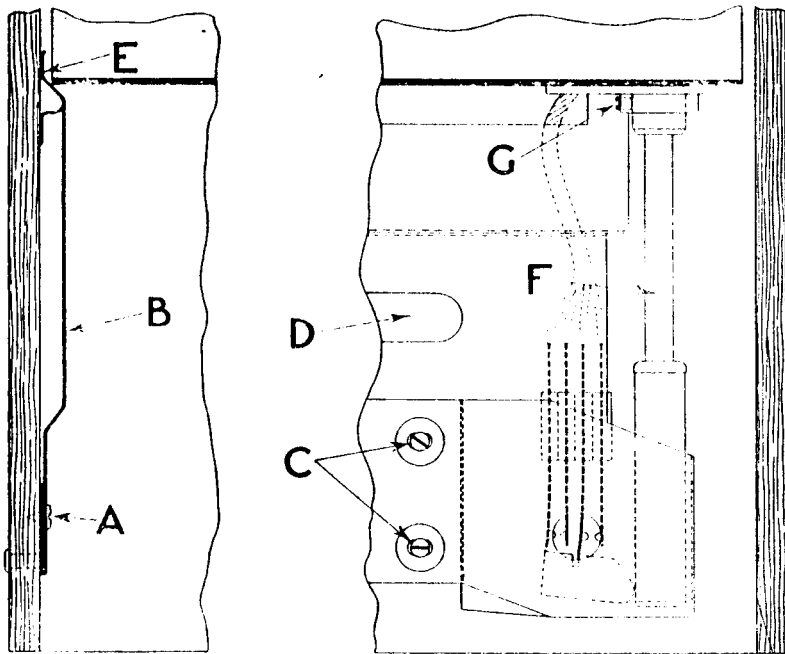


FIG. 3.

4. Remove two self tapping screws "C" holding switch cover plate to cabinet, Fig. 3.
5. Loosen grub screw "G" in bushing projecting from base of chassis holding aerial.
6. Chassis is then ready to remove by sliding out of cabinet by putting fingers in slot "D" and carefully drawing chassis out.
7. Before inserting chassis into cabinet again, make sure that all valves and valve shields, also grid clips on top of valves, are firmly in position.

SUBJECT-Instructions for Removing Chassis from Cabinet-Receiver Type "GC"

8. Replace chassis in cabinet with speaker facing toward grille and push chassis all the way up until it stops against the brackets provided for locating the chassis. Replace two self tapping screws "C" and tighten. Then insert wedge "B" on opposite side by inserting tongue between cabinet and back of chassis "E" and push down as far as it will go, this will push chassis and speaker tight against front of cabinet and hold chassis firmly into position. Then replace two self tapping screws, "A", Fig. 3, and tighten.
9. Next push outer tube of aerial "F" upward as far as it will go and tighten grub screw "G".
10. Replace battery.
11. The rubber base should then be replaced on to bottom of set and is held firmly in position by 10 rubber knobs on inside of base which are pressed firmly over 10 studs provided on bottom of metal base plate. Bring edges up tight around cabinet on all sides-see Fig. 1.
12. The above directions also apply to the Model "BM" power pack when used in place of the battery. The side of the pack with cord lining up with the slot in back of cabinet.



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SUBJECT--Microphonic 1N5G Tubes--Model "GC"

To remedy the above complaint, the following alterations to the circuit are necessary:--

1. Circuit No. 41: 1 meg. $\frac{1}{2}$ watt resistor PR246 is changed to a 500,000 ohm $\frac{1}{2}$ watt resistor PR245.
2. Circuit No. 25: .05MFD. paper condenser 200V. PC102 and 250,000 ohm Circuit No. 40: $\frac{1}{2}$ watt resistor PR249 are deleted.
3. The grid return of the 1st IF. transformer (circuit No. 7) is taken to the junction of the .05MFD. condenser (circuit No. 22) and the 1.75 meg. $\frac{1}{2}$ watt resistor (circuit No. 35).