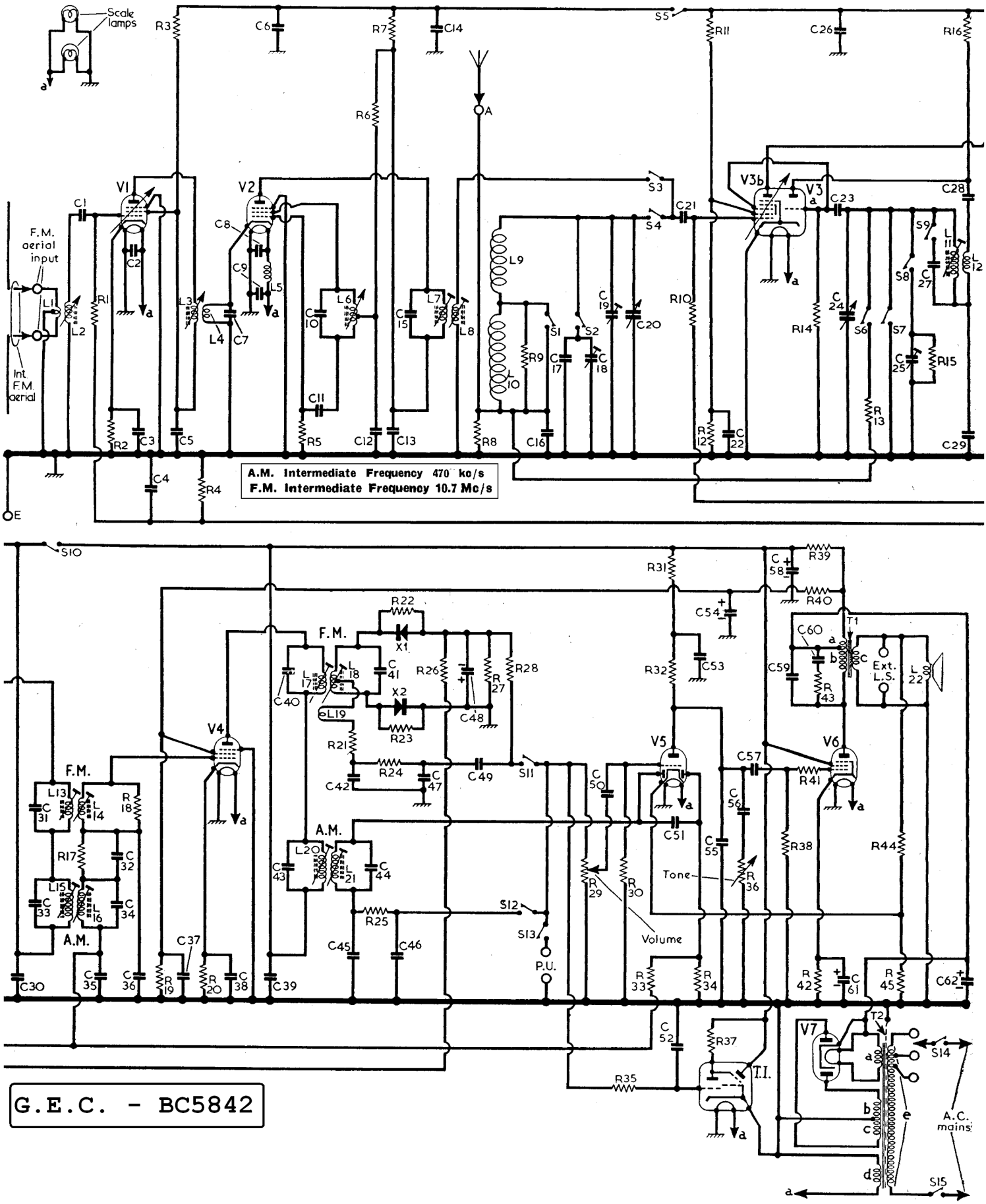
Scale lamps
F.M. aerial input
Int. F.M. aerial
A
E
V1
V2
V3
V3b
V4
V5
V6
V7
F.M.
A.M.
A.M. Intermediate Frequency 470 kc/s
F.M. Intermediate Frequency 10.7 Mc/s
Tone
Volume
P.U.
T.I.
Ext. L.S.
A.C. mains

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COMPONENTS AND VALUES

	RESISTORS	Values	Locations
R1	V1 C.G.	2·2MΩ	G2
R2	V1 G.B.	220Ω	G2
R3	H.T. feed	2·2kΩ	G2
R4	A.G.C. pot. divider	100kΩ	G2
R5	F.M. osc. C.G. ...	33kΩ	G2
R6	H.T. feeds ...	220kΩ	G2
R7		2·2kΩ	F2
R8	A.M. aerial shunt...	10kΩ	F3
R9	L.W. frame shunt...	100kΩ	A1
R10	V3b C.G.	2·2MΩ	F2
R11	V3b S.G. pot.	47kΩ	F3
R12	divider ...	33kΩ	F3
R13	A.M. osc. mute ...	150Ω	F2
R14	A.M. osc. C.G. ...	10kΩ	F3
R15	M.W. osc. shunt ...	22kΩ	F2
R16	H.T. feed	100kΩ	F3
R17	V4 C.G.	220kΩ	F3
R18	F.M. I.F.T. shunt	47kΩ	F3
R19	V4 S.G.	47kΩ	E3
R20	V4 G.B.	150Ω	F3
R21	F.M. balancing ...	220Ω	E3
R22	Discriminator	470kΩ	E3
R23	shunts ...	470kΩ	E3
R24	Part de-emphasis...	220kΩ	E2
R25	A.M. I.F. stopper ..	220kΩ	E3
R26	F.M. A.G.C. decoup.	220kΩ	E3
R27	D.C. load ...	10kΩ	E3
R28	T.I. feed	1MΩ	E3
R29	Volume control ...	1MΩ	D2
R30	V5 C.G.	10MΩ	E3
R31	H.T. feed	100kΩ	D3
R32	V5 anode load ...	220kΩ	E3
R33	A.G.C. decoup. ...	1MΩ	E3
R34	A.G.C. diode load...	470kΩ	E3
R35	T.I. decoupling ...	2·2MΩ	D2
R36	Tone control ...	500kΩ	E2

(*Continued next col.*)

	RESISTORS (*continued*)	Values	Locations
R37	T.I. load	470kΩ	A1
R38	V6 C.G.	470kΩ	D3
R39	H.T. smoothing ...	3·9kΩ	D3
R40	V4 S.G. feed ...	47kΩ	B1
R41	V6 C.G. stopper ...	15kΩ	D3
R42	V6 G.B.	150Ω	D3
R43	Tone correction ...	10kΩ	D3
R44	Negative feed-back	1kΩ	E3
R45		22Ω	E3

	CAPACITORS	Values	Locations
C1	V1 C.G.	22pF	G2
C2	Heater by-pass ...	0·001μF	A1
C3	V1 cath. by-pass ...	0·003μF	G2
C4	A.G.C. decoupling	0·001μF	G2
C5	H.T. by-passes ...	0·003μF	G2
C6		0·001μF	A1
C7	V2 cath. shunt ...	39pF	G2
C8	Heater by-passes ...	0·003μF	G2
C9		0·001μF	A1
C10	F.M. osc. trim. ...	5·6pF	G2
C11	F.M. osc. C.G. ...	47pF	G2
C12	H.T. by-passes ...	1·0μF	G2
C13		0·01μF	F2
C14		0·001μF	A1
C15	1st F.M. I.F.T. tun	3·3pF	A1
C16	A.M. aerial coup. ...	3,950pF	F3
C17	L.W. aerial	100pF	F2
C18	trimmers ...	30pF	F2
C19	M.W. aerial trim....	30pF	F2
C20	Aerial tuning ...	540pF	B1
C21	V3b C.G.	470pF	F2
C22	V3b S.G. decoup....	0·01μF	F3
C23	V3a C.G.	470pF	F3

(*Continued next col.*)

	CAPACITORS (*continued*)	Values	Locations
C24	A.M. osc. tuning ...	540pF	B1
C25	M.W. osc. trim. ...	30pF	F2
C26	H.T. by-pass ...	0·01μF	F2
C27	L.W. osc. trim. ...	460pF	F2
C28	A.M. osc. coupling	0·002μF	F3
C29	A.M. osc. tracker ...	420pF	G3
C30	H.T. decoupling ...	0·01μF	F3
C31	2nd F.M. I.F.T. tun.	10pF	B1
C32	V4 C.G.	39pF	F3
C33	1st A.M. I.F.T. tun.	120pF	B1
C34		120pF	B1
C35	A.G.C. decoupling	0·05μF	F2
C36	V4 C.G.	47pF	F3
C37	V4 S.G. decoup. ...	0·01μF	E3
C38	V4 cath. by-pass ...	0·01μF	F3
C39	H.T. decoupling ...	0·01μF	F3
C40	3rd F.M. I.F.T.	10pF	B1
C41	tuning	95pF	B1
C42	A.F. load	0·002μF	E2
C43	2nd A.M. I.F.T.	120pF	B1
C44	tuning	120pF	B1
C45	A.M. I.F. by-passes	47pF	E3
C46		150pF	E3
C47*	Part de-emphasis...	135pF	E2
C48	D.C. reservoir ...	10μF	E3
C49	A.F. couplings ...	0·01μF	E2
C50		0·01μF	E2
C51	A.M. A.G.C. coup.	68pF	E3
C52	T.I. decoupling ...	0·01μF	E2
C53	H.T. decoupling ...	0·25μF	E2
C54	H.T. smoothing ...	8μF	C1
C55	I.F. by-pass ...	270pF	E3
C56	Part tone control ...	0·01μF	E2
C57	A.F. coupling ...	0·01μF	D3
C58	H.T. smoothing ...	32μF	G3
C59	Tone correctors ...	0·01μF	B1
C60		0·005μF	D3
C61	V6 cath. by-pass ...	100μF	D2
C62	H.T. smoothing ...	16μF	C1

* Two 270pF capacitors in series.

	OTHER COMPONENTS	Approx. Values (ohms)	Locations
L1	F.M. aerial coupling coils ...	—	G2
L2		—	G2
L3	F.M. R.F. coupling coils ...	—	G2
L4		—	G2
L5	Heater choke ...	—	G2
L6	F.M. osc. coil ...	—	G2
L7	1st F.M. I.F.T. Pri.	1·5	A1
L8	1st F.M. I.F.T. Sec.	1·0	A1
L9	Frame aerial coils...	1·0	A1
L10		13·0	A1
L11	A.M. oscillator coils	2·5	F3
L12		1·0	F3
L13	2nd F.M. I.F.T. Pri.	1·0	B1
L14	2nd F.M. I.F.T. Sec.	1·5	B1
L15	1st A.M. I.F.T. Pri.	8·0	B1
L16	1st A.M. I.F.T. Sec.	8·0	B1
L17	Discriminator trans. Pri.	1·0	B1
L18	Discriminator trans. Sec.	—	B1
L19	Discriminator trans. Tert.	—	B1
L20	2nd A.M. I.F.T. Pri.	9·5	B1
L21	2nd A.M. I.F.T. Sec.	9·5	B1
L22	Speech coil ...	2·5	—
X1, X2	Discriminator diodes GEX 34...	—	E3
T1	O.P. trans. a ...	50·0	B1
	O.P. trans. b ...	500·0	
	O.P. trans. c ...	—	
T2	Mains trans. a ...	—	C1
	Mains trans. b ...	300·0	
	Mains trans. c ...	300·0	
	Mains trans. d ...	—	
	Mains trans. e, total ...	31·0	
S1-S13	Waveband switches	—	F2
S14, S15	Mains sw., g'd R29	—	D2

GENERAL NOTES

Switches.—S1-S13 are the A.M./F.M. and radio/gram changeover switches ganged in a single rotary unit beneath the chassis. This unit is indicated in the underside illustration of the chassis (location reference F2), and is shown in detail in the diagram in column 6, where it is viewed in the direction of the arrow in the underchassis illustration. The associated switch table, which is on the left of the diagram, gives the switch operations in the four control settings starting with the control in the fully anti-clockwise position. **A dash indicates open, and C closed.**

Drive Cord Replacement.—About 4ft. of nylon braided glass yarn is required for a new drive cord, which should be run as shown in the sketch at the foot of columns 1 and 2.

Modifications.—The following differences may be found in earlier versions. An 0.01 μF capacitor was connected between chassis and the junction of **C14, S5**; an 0.01 μF capacitor was connected across **C58**; **C12** was 0.003 μF; **C47** was 150 pF; a 1 μF capacitor was connected in series with the top end of **R44.**

Models BC9442, BC9640 are radiogram versions of the BC5842. They employ a 3-speed Collaro record changer and a modified BC5842 chassis incorporating the following differences.

C59 and **R43** are omitted and **C60** is connected directly across winding **b** of **T1.** A 680 kΩ resistor is connected in series betwen **S13** and the live P.U. socket. A 150 kΩ resistor is shunted to chassis from the junction of **S13** and the 680 kΩ resistor. A 1 μF capacitor, shunted with a 5 kΩ bass tone control, is connected in series with the top end of **R44.** **C46** becomes 47 pF. **C57** becomes 0.002 μF. **R44** becomes 680 Ω. **C26** is omitted.

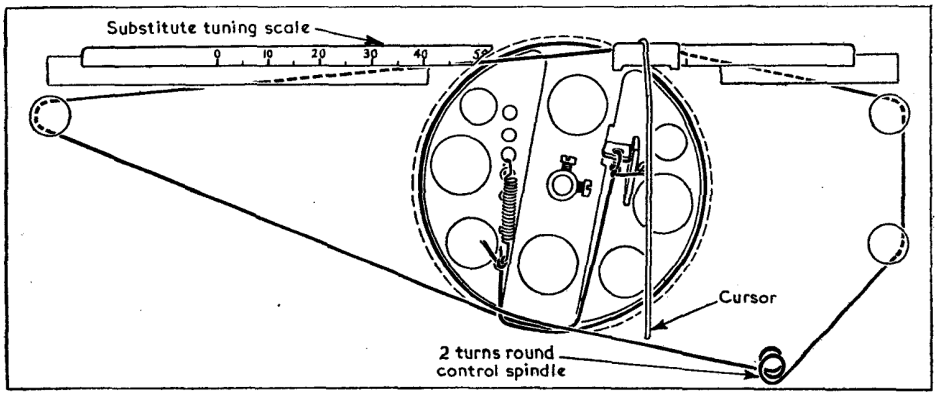
Valve	Anode V	Screen V	Cath. V
V1 Z77 ...	160	160	1·4
V2 Z77 ...	170	50	—
V3 X719 a	30	—	—
V3 X719 b	200	45	—
V4 W719 ...	200	100	1·8
V5 DH77 ...	67	—	—
V6 N709 ...	264	200	5·4
V7 U78 ...	270*	—	282·0†
T.I. *EM80* ...	*100‡*	—	—

*A.C. reading. †Cathode current 70mA.
‡Target 200 V.

CIRCUIT ALIGNMENT

Remove chassis from cabinet and support it on its mains transformer end on the bench. As the tuning scale remains fixed in the cabinet, a substitute scale, printed along the top edge of the scale backing plate, is used during the following alignment adjustments. This scale is read off against the right-hand edge of the cursor carriage. Check that with the gang at *maximum, the edge of the cursor carriage coincides* with 90 on the substitute tuning scale.

Equipment Required.—An accurately calibrated A.M. signal generator covering the



Sketch of the drive cord system as seen from the front of an upright chassis with the gang turned to maximum capacitance.

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ranges 200-1,500 kc/s, 90-100 Mc/s and the F.M. intermediate frequency of 10.7 Mc/s; a 0-5v A.C. voltmeter; a high-resistance 0-10v D.C. voltmeter; an 0.002μF capacitor; a dummy aerial; a 3Ω dummy load.

A.M. I.F. Stages

1.—Switch receiver to L.W. and turn gang to maximum. Connect output of signal generator, via 0.002μF capacitor, to control grid (pin 2) of **V3b** and to chassis. Connect A.C. voltmeter, shunted by 3Ω dummy load, across **T1** secondary winding in place of speaker.
2.—Feed in a 470 kc/s signal and adjust the cores of **L21** (location reference B1), **L20** (E3), **L16** (B1) and **L15** (F3) for maximum output. Repeat these adjustments until no further improvement results.

A.M. R.F. and Oscillator Stages

3.—Transfer signal generator leads, via dummy aerial, to **A** and **E** sockets. Switch receiver to M.W. and tune it to 76 on substitute tuning scale. Feed in a 600 kc/s signal and adjust the core of **L11** (A1) for maximum output.
4.—Tune receiver to 7.9 on substitute scale, feed in a 1.5 Mc/s signal and adjust **C25** (F2) for maximum output.
5.—Adjust **C19** (F2) for maximum output while "rocking" the gang for optimum results.
6.—Re-tune receiver to 76 on substitute scale, feed in a 600 kc/s signal and adjust the position of the inner turn on **L9** (A1) for maximum output while rocking gang for optimum results.
7.—Repeat adjustment to **C19** in operation 5.
8.—Switch receiver to L.W. Feed in and tune 230 kc/s. Adjust **C18** (F2) for maximum output while rocking gang for optimum results. Check that the subtitute scale reading is within the limits of ± 1 of 31. Disconnect A.C. voltmeter and dummy load.

F.M. I.F. Stages

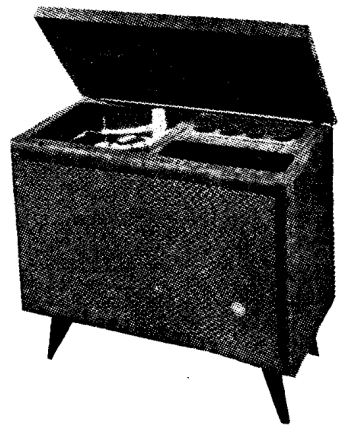
9.—Switch receiver to F.M. and turn gang to maximum capacitance. Connect D.C. voltmeter across **R27** (E3). Connect output of signal generator to the cathode (pin 1) of **V2** and chassis.
10.—Feed in an unmodulated 10.7 Mc/s signal and adjust the cores of **L17** (B1), **L14** (B1), **L13** (F3), **L8** (A1) and **L7** (F2) for maximum output.
11.—Adjust output of signal generator to give a 4 V reading on output meter. Transfer meter leads across **C42** (E2), and without altering output of signal generator adjust the core of **L18** for a 2 V reading on the meter.
12.—Reconnect meter across **R27** and repeat operation 10.
13.—Reconnect meter across **C42**. Tune the core of **L18** through its range and note the maximum and minimum output readings. Finally, adjust the core of **L18** for an output exactly halfway between these two readings.
14.—Check that the difference between the outputs at 10.6 Mc/s and 10.7 Mc/s is the same as the difference between the outputs at 10.7 Mc/s and 10.8 Mc/s.

F.M. R.F. and Oscillator Stages

15.—Transfer signal generator leads to F.M. aerial sockets. Connect D.C. voltmeter across **R27**.
16.—Tune receiver to 48.5 on substitute scale. Feed in a 94 Mc/s signal and adjust the cores of **L6** (A1), **L3** (A1) and **L2** (A1) for maximum output.
17.—Tune receiver to 8 on substitute scale turning control in a clockwise direction to minimize backlash error, and readjust the core of **L6** for maximum output.
18.—Feed in a 94 Mc/s signal and tune it in on receiver, turning the control in a clockwise direction. Check that the substitute scale reading is within the limits ± 1 of 48.5.
19.—Feed in a 99 Mc/s signal and tune it in on receiver, turning the control in a clockwise direction. Check that the substitute scale reading is within the limits of $+4$, -2 of 79.

Switch Table

Switches	F.M.	M.W.	L.W.	Gram
S1	C	C	—	—
S2	—	—	C	—
S3	C	—	—	—
S4	—	C	C	—
S5	C	—	—	—
S6	C	—	—	—
S7	—	—	—	C
S8	—	C	—	—
S9	—	—	C	—
S10	C	C	C	—
S11	C	—	—	—
S12	—	C	C	—
S13	—	—	—	C



Appearance of the G.E.C. BC9640 auto-radiogram.

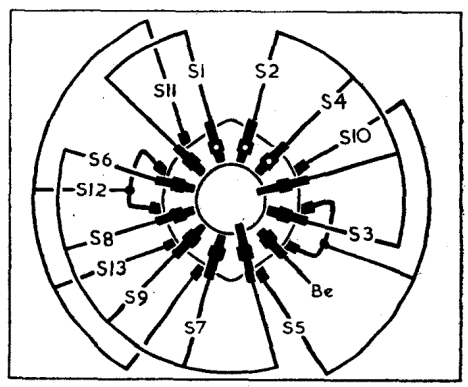


Diagram of the A.M./F.M. and radio/gram change-over switches as seen from the rear of an inverted chassis. The associated switch table is on the left.

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