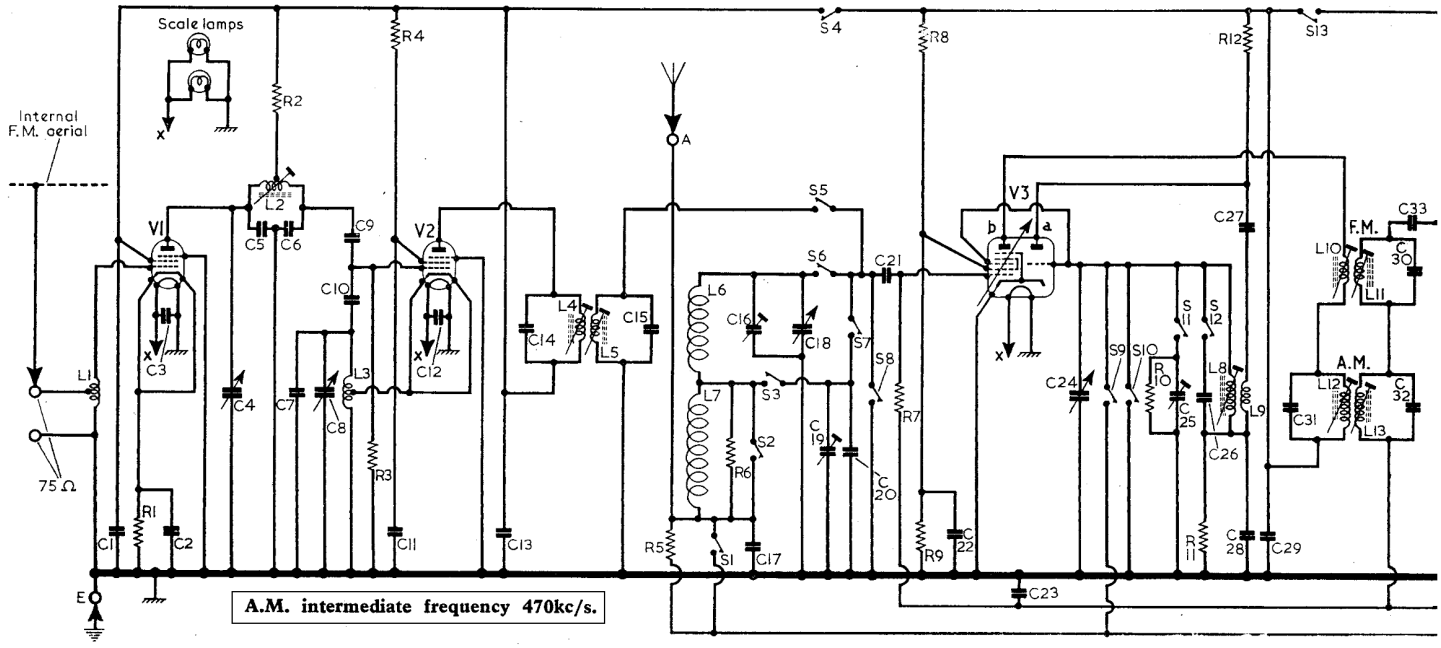
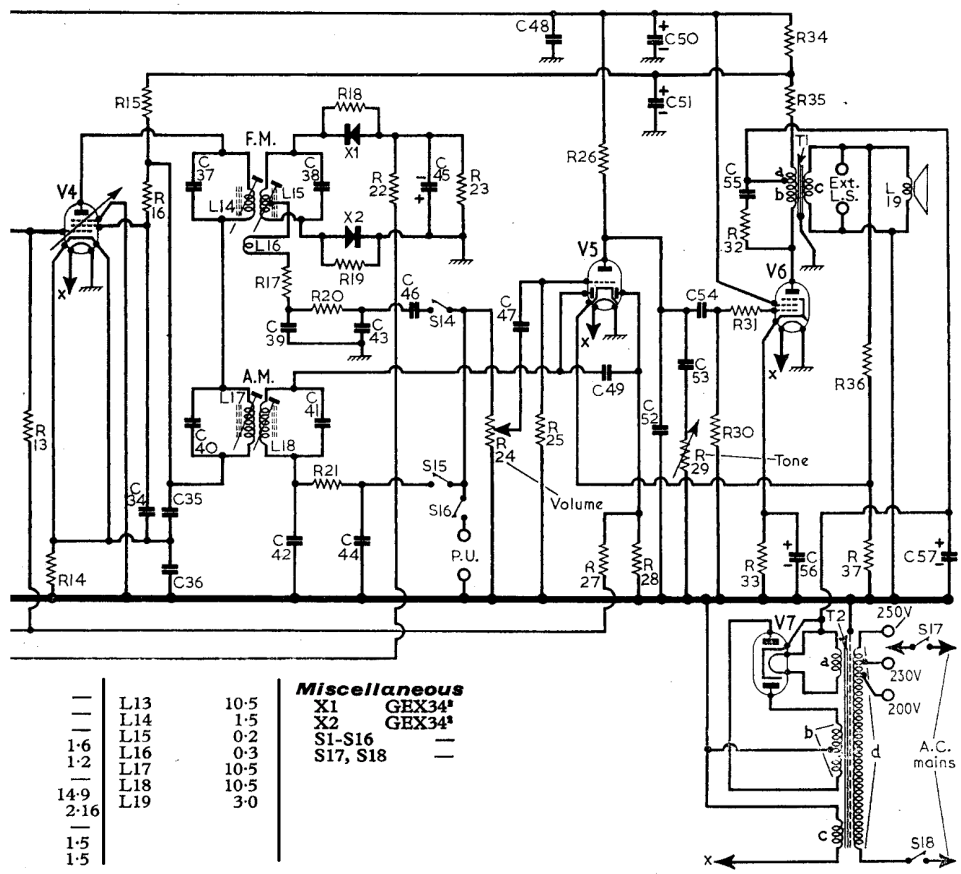


A.M. intermediate frequency 470kc/s.



Capacitors

C1	0·003μF	C45	5μF
C2	0·003μF	C46	0·01μF
C3	0·003μF	C47	0·01μF
C4	17·4pF[3]	C48	0·01μF
C5	2·2pF	C49	47pF
C6	14pF	C50	32μF
C7	20·1pF[1]	C51	32μF
C8	17·4pF[3]	C52	330pF
C9	5·6pF	C53	0·01μF
C10	47pF	C54	0·01μF
C11	0·003μF	C55	0·005μF
C12	0·003μF	C56	100μF
C13	0·001μF	C57	32μF
C14	10pF		
C15	12pF		
C16	—		
C17	0·005μF		
C18	528pF[3]		
C19	—		
C20	110pF		
C21	22pF		
C22	0·01μF		
C23	0·04μF		
C24	528pF[3]		
C25	—		
C26	460pF		
C27	0·002μF		
C28	420pF		
C29	0·01μF		
C30	5·6pF		
C31	250pF		
C32	250pF		
C33	10pF		
C34	0·01μF		
C35	0·01μF		
C36	0·01μF		
C37	10pF		
C38	100pF		
C39	330pF		
C40	250pF		
C41	250pF		
C42	470pF		
C43	200pF		
C44	47pF		

Resistors

R1	390Ω
R2	1kΩ
R3	47kΩ
R4	470kΩ
R5	150Ω
R6	100kΩ
R7	1·5MΩ
R8	68kΩ
R9	100kΩ
R10	22kΩ
R11	22kΩ
R12	100kΩ
R13	1·5MΩ
R14	220Ω
R15	4·7kΩ
R16	47kΩ
R17	150Ω
R18	220kΩ
R19	220kΩ
R20	220kΩ
R21	220kΩ
R22	10kΩ
R23	10kΩ
R24	1MΩ
R25	10MΩ
R26	220kΩ
R27	1MΩ
R28	470kΩ
R29	500kΩ
R30	470kΩ
R31	22kΩ
R32	10kΩ
R33	150Ω
R34	1kΩ
R35	1kΩ
R36	1kΩ
R37	22Ω

Coils*

L1	—	L13	10·5
L2	—	L14	1·5
L3	—	L15	0·2
L4	1·6	L16	0·3
L5	1·2	L17	10·5
L6	—	L18	10·5
L7	14·9	L19	3·0
L8	2·16		
L9	—		
L10	1·5		
L11	1·5		

Miscellaneous

X1	GEX34[3]
X2	GEX34[3]
S1-S16	—
S17, S18	—

*Approx. D.C. resistance in ohms. [1] 15pF + 5.1pF. [2]G.E.C. manufacture. [3]Swing value.

G.E.C.
BC5645, BC7445

CIRCUIT ALIGNMENT

Equipment Required.—A spot frequency signal generator covering the range of 200-1,700kc/s and an F.M. signal generator covering the frequency of 10.7Mc/s and the frequency range of 87-100Mc/s. A special hexagonal trimming tool (issued by the manufacturers) and a non-metallic trimming tool. A high-resistance 20,000 ohms-per-volt (0-10V) D.C. voltmeter; a 0.002μF and a 0.001μF capacitor. An A.C. voltmeter for A.M. alignment.

General.—For A.M. alignment feed in a signal modulatd 30% at 400c/s, and for F.M. alignment feed in an unmodulated signal. For F.M. aerial circuits feed the signal via an unbalanced 75Ω coupling into the aerial sockets.

Connect the F.M. output meter across **R23** and the A.M. output meter across the secondary of **T1**. The reading on the F.M. meter should not be allowed to exceed 4V.

A.M. alignment must be carried out first after allowing the receiver to be warmed up for 5-10 minutes. If difficulty is met with in obtaining coverage of the complete F.M. range the relative physical positions of **C7** and **C10** to the tuning coil **L3** should be adjusted.

Connect the signal generator as indicated, and, using a 30% 400c/s modulated signal, carry out the following sequence of operations.

A.M. Alignment

1.—Connect live lead of the signal generator via a 0.001μF capacitor to the control grid of **V3**; switch receiver to L.W.; turn tuning gang to maximum capacitance, and while feeding in a 470kc/s signal, adjust the cores of **L18** (C2), **L17** (G4), **L13** (B2) and **L12** (G4) for maximum output on the A.M. meter. Repeat adjustments for optimum results. When adjusted correctly, the average signal level required to produce 50mW (0.387V) across a 3Ω resistive load connected to the secondary of **T1** is approximately 110μV.

2.—Transfer the "live" lead of the signal

generator to the A.M. aerial socket (via suitable dummy aerial). Switch receiver to M.W., set tuning gang to 500m, feed in a 600kc/s signal, and adjust the core of **L8** (G3) for maximum A.M. output. Average sensitivity figure for 50mW output is 75μV.

3.—Turn tuning gang to 200m, feed in a 1,500kc/s signal and adjust **C25** (G3) for maximum A.M. output. Repeat operations 2 and 3 for optimum results.

4.—Feed in a 1,500kc/s signal, tune receiver to the signal in, and adjust **C16** (F3) for maximum A.M. output. Average sensitivity figure for 50mW output is 50μV.

5.—Switch receiver to L.W., turn tuning gang to 1,304m, feed in 230kc/s signal, and adjust **C19** (G3) for maximum A.M. output. Average sensitivity figure for 50mW output 175μV.

F.M. Alignment

6.—Switch receiver to F.M., and turn tuning gang to minimum capacitance. Connect live lead of signal generator via a 2,000pF ceramic capacitor (using as short leads as possible) to junction of **L2** with **C6, C9.** Feed in a 10.7Mc/s modulated signal, and adjust the cores of **L14** (C2), **L11** (B2), **L10** (G4), **L5** (B1) and **L4** (G3) for maximum output on the F.M. meter. Finally, adjust output of signal generator to give a reading of 4V. Disconnect output meter.

7.—Connect F.M. output meter across **C39** (F4) and, without altering signal generator output, adjust the core of **L15** (G4) for a reading of 2V on the meter.

8.—Re-connect the output meter across **R23** (F4) and repeat the adjustments given in operation 6, but for maximum output.

9.—Re-connect the output meter across **C39** and adjust the core of **L15** (G4) to obtain a maximum and minimum figure for output reading. Add the two figures together, divide by two, and set the core of **L15** to give this reading on the output meter. Average sensitivity figure for an output reading of 4V across **R23** should be 2mV.

10.—Transfer "live" signal generator lead to F.M. aerial sockets (via unbalanced 75Ω coupling), turn tuning gang to 94Mc/s, feed in a 94Mc/s signal, and adjust **L3** (H4) by spacing or closing in the end turn adjacent to **C10** for maximum output on F.M. meter, while adjusting output of generator to maintain a 4V reading.

11.—With input signal of 94Mc/s, adjust the core of **L2** (G4), while rocking tuning gang for optimum results, for maximum output on F.M. meter. If on completion of this adjustment the scale cursor calibration is appreciably affected, readjust **L3** to correct it.

12.—Check that scale cursor and tuning system covers the full waveband on the tuning scale. If it does not, adjust relative positions of the fixed tuning capacitor **C7** to the tuning coil **L3** and the oscillator grid capacitor **C10** until full coverage is obtained, then check calibration by repeating operation 11. Average sensitivity figure for 4V reading across **R23** on completion of operation 11 should be 2.5μV.

GENERAL NOTES

Switches S1-S16.—These are the waveband/gram switches, ganged in a single rotary unit located beneath the chassis in location reference H3. A detailed diagram of the unit in Col. 3 is drawn as seen when viewed from the rear of an inverted chassis. In the associated table below, the switch operations for the four control settings are given, starting with the control knob in the fully anti-clockwise position. A dash indicates open, and **C** closed.

Drive Cord Replacement.—45in of nylon braided glass yarn is required for a new drive cord, and all the necessary details for fitting it are given in the sketch in cols. 5, 6, which is drawn as seen when viewed from the front of the chassis. With the gang turned to maximum, one end of the cord should be tied to form a loop, and the cord should then be run clockwise from the start position indicated in the drawing.

Waveband Switch Table

Switch	F.M.	M.W.	L.W.	Gram.
S1	—	C	C	—
S2	—	C	—	—
S3	—	—	C	—
S4	C	—	—	—
S5	C	—	—	—
S6	—	C	—	—
S7	—	—	C	—
S8	—	—	—	C
S9	C	—	—	—
S10	—	—	—	C
S11	—	C	—	—
S12	—	—	C	—
S13	C	C	C	—
S14	C	—	—	—
S15	—	C	C	—
S16	—	—	—	C

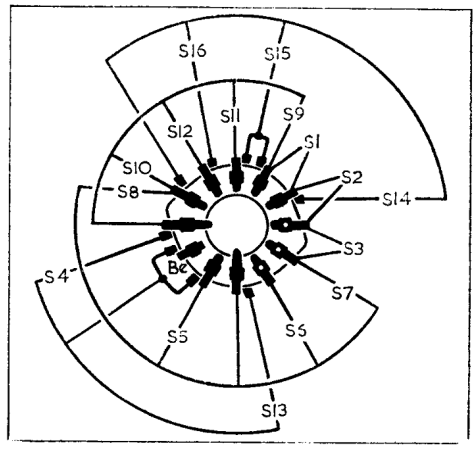


Diagram of the ganged waveband switch unit seen when viewed from the rear of an inverted chassis.

VALVE ANALYSIS

Valve	Receiver Switched to	Anode (V)	Screen (V)	Cath. (V)
V1 Z719 ..	F.M.	205	210	3·3
V2 Z719 ..	F.M.	210	45	—
V3a X719	F.M.	25	—	—
	A.M.	40	—	—
V3b X719	F.M.	210	50	—
	A.M.	240	46	—
V4 W719	F.M.	190	100	2·1
	A.M.	200	110	2·2
	Gram.	210	110	2·2
V5 DH77[1]	F.M.	80	—	—
	A.M.	85	—	—
	Gram.	85	—	—
V6 N709	F.M.	250	210	6·0
	A.M.	250	240	6·9
	Gram.	250	255	7·4
V7 U78	F.M.	*	—	265·0
	A.M.	*	—	270·0
	Gram.	*	—	275·0

**No readings quoted.*

[1]*Readings are for triode section only.*

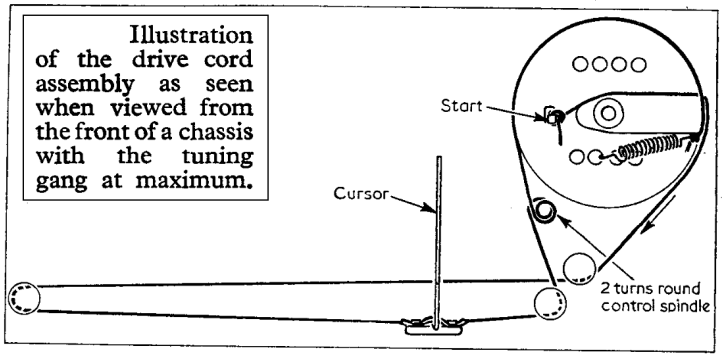


Illustration of the drive cord assembly as seen when viewed from the front of a chassis with the tuning gang at maximum.

MODIFICATIONS

Drive Cord Bracket.—In early models, removal of the tuning control knob may cause damage to the drive cord owing to the spindle sleeve being free to move. A special bracket (part number RP124889) is provided which may be fitted over the collar and held by the control shaft locking nut. This bracket is fitted to all later models.

Instability.—In some early receivers instability occurs when using the internal F.M. plate aerial. A short lead connected from pin 6 of **V2** to chassis immediately below the valve pin will cure this instability.

G.E.C.
BC5645, BC7445