

**General Description :** Fifteen-valve (including rectifier and voltage stabiliser), five-waveband communications receiver with two stages of R.F. amplification, crystal filter, "S"-meter and noise limiter. Released 1949.

**Power Supplies :** A.C. mains, 110 and 200-250 volts.

**Intermediate Frequency :** 450 kc/s.  $\pm$  1 kc/s. I.F. circuits should be peaked to exact frequency of crystal. The I.F. transformer cores, however, are sealed, and should not be disturbed unless there is good reason to believe that they require re-alignment.

**Valves :** (V<sub>1</sub>) 6BA6; (V<sub>2</sub>) 6BA6; (V<sub>3</sub>) 7S7, X81M or 6BE6; (V<sub>4</sub>) 8D3 (local oscillator); V<sub>5</sub> 6BA6; (V<sub>6</sub>) 6BA6; (V<sub>7</sub>) 6AL5 or D77; (V<sub>8</sub>) 6AU6; (V<sub>9</sub>) 6AU6; (V<sub>10</sub>) 7D9; (V<sub>11</sub>) 7D9; (V<sub>12</sub>) 6BA6 (B.F.O.); (V<sub>13</sub>) 6AL5 or D77 (noise limiter); (V<sub>14</sub>) 5Z4G; (V<sub>15</sub>) VR150/30 (voltage stabiliser). Type 8D3 (V<sub>4</sub>) is now re-classified as type 6AM6, occasionally type Z77 is used in this position. Type 6BR7 (8D5) replaces type 6AU6 in the 1952 model, known as the 680X.

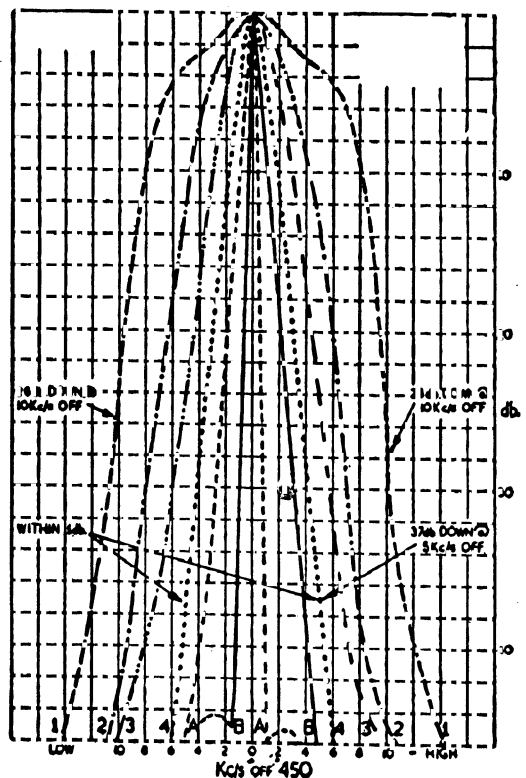
**Modifications :** Minor modifications may be found in later models, particularly in arrangement adopted for gain compensation with varying selectivity. Circuit Diagrams for the 680 and 680X are given.

**Notes :** Aerial input impedance 400 ohms (nominal). Output impedance 2.5 ohms. The pre-set controls at the back of the cabinet are for "S"-meter zero adjustment and for dial-illumination control (R61). The heater circuits are balanced to earth, the noise-limiter valve being supplied by a separate winding on the mains transformer. Fuse rating 1 amp.

**Alignment Procedure :** Trimmer lay-out and alignment frequencies are given on pages 196-7. Alignment of the I.F. stages should be made with the selectivity control in the position of maximum selectivity (curve 4 in the accompanying illustration). Alignment of the R.F. circuits follows normal procedure: the oscillator circuits are first adjusted to correct any calibration errors, then the F.C., second R.F. and first R.F. stages (in that order) are aligned for maximum response.

SELECTIVITY CURVES FOR THE "680" RECEIVER

- (1) ——— minimum position.
- (2) - - - - - first intermediate position.
- (3) . . . . . second intermediate position.
- (4) . . . . . maximum selectivity.
- (A) - - - - - maximum selectivity, with crystal filter in, and phased to reject signal on one side.
- B) ——— as "A", but with crystal phased on other side.



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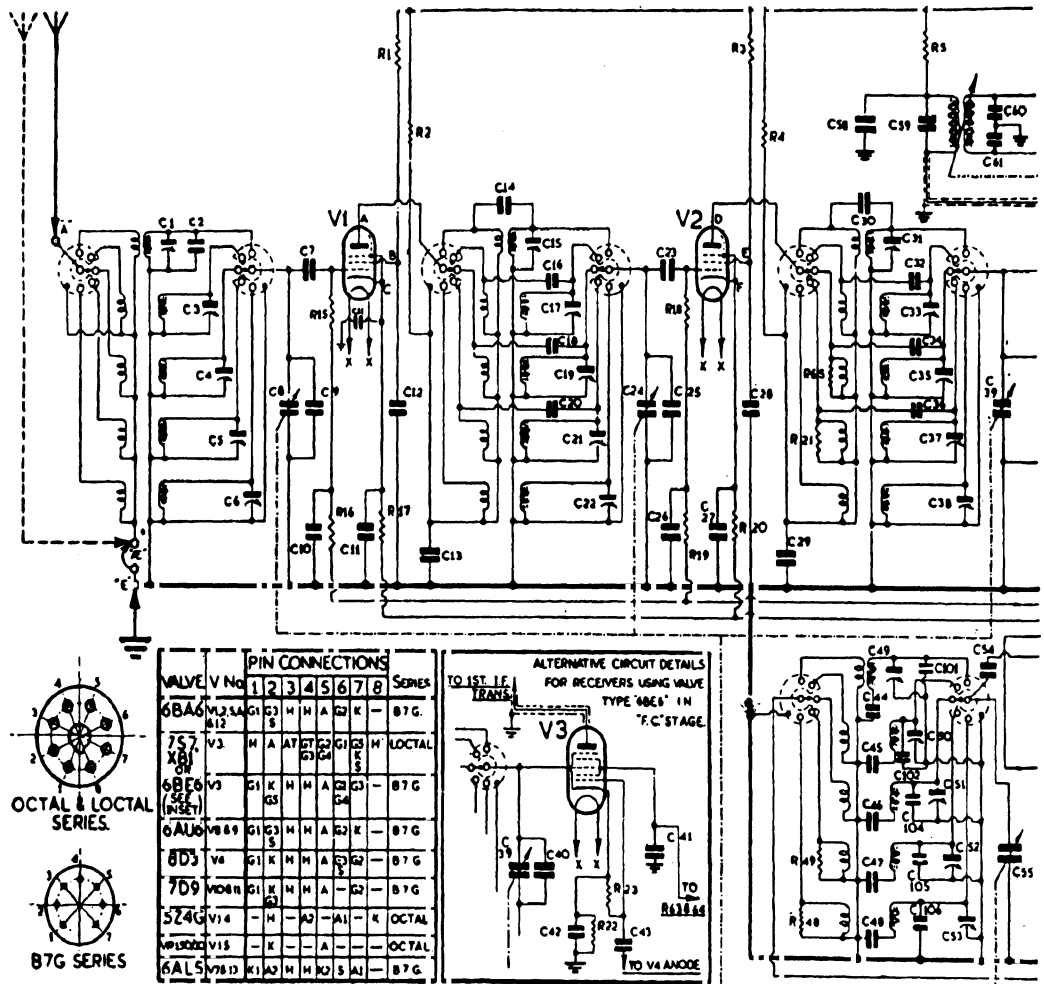
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**Voltage Values :** Voltages given below are between the points indicated and chassis. Voltage indicated depends on the internal resistance of the particular meter employed. A tolerance of plus or minus 10 per cent should be allowed. Total H.T. current 115 mA.

Circuit Reference	1000 ohms/volt Testmeter	333 ohms/volt Testmeter	Circuit Reference	1000 ohms/volt Testmeter	333 ohms/volt Testmeter
A	218 v.	210 v.	Q	1.0 v.	1.0 v.
B	90 v.	82 v.	R	10.2 v.	9.5 v.
C	0.8 v.	0.8 v.	S	60 v.	35 v.
D	210 v.	208 v.	T	40 v.	30 v.
E	90 v.	85 v.	U	0.9 v.	0.7 v.
F	1.2 v.	1 v.	V	62 v.	38 v.
G	218 v.	215 v.	W	0.9 v.	0.7 v.
H	104 v.	100 v.	X	220 v.	220 v.
J	1.3 v.	1.3 v.	Y	222 v.	222 v.
K	104 v.	100 v.	Z	10.2 v.	9.5 v.
L	212 v.	210 v.	A-	85 v.	80 v.
M	90 v.	82 v.	B-	150 v.	150 v.
N	1.0 v.	0.9 v.	C-	260 v.	260 v.
O	200 v.	200 v.	D-	250 v. (A.C.)	250 v. (A.C.)
P	90 v.	82 v.	E-	150 v.	150 v.



CIRCUIT DIAGRAM—

**Capacitors.**  
3/20 pF. (air)

- 3 pF.
- 6 pF.
- 8 pF.
- 10 pF.
- 20 pF.
- 25 pF.
- 50 pF.
- 100 pF.
- 200 pF.
- 2400 pF.
- 2500 pF.
- 1625 pF.
- 900 pF.
- 400 pF.
- 500 pF.
- 800 pF.
- 0.0005 (mica)
- 0.002 (mica)
- 0.01 (mica)
- 0.01 (paper)
- 0.1
- 8 (350 v.)
- 25 (25 v.)
- 4 (350 v.)
- 16 (450 v.)
- 40 (350 v.)

C8, C24, C39, C55 4 Gang capacitor. 10-368 pF. per section.

C62 Crystal phasing capacitor. C91 BFO pitch condenser.

C44, C45, C46, C47, C48 ± 1% tolerance.

\* One each, 0.01 and 0.1 in parallel.

- C1, C3, C4, C5, C6, C15, C17, C19, C21, C22, C31, C33, C35, C37, C38, C49, C50, C51, C52, C53
- C18, C20, C34, C36
- C16, C32, C89
- C72
- C2, C43, C104, C105, C106
- C14, C30, C63
- C9, C25, C40
- C56
- C7, C23, C82, C83, C90, C92, C103
- C54
- C44
- C45
- C46
- C47
- C48, C59, C65, C67, C70, C71
- C64
- C60, C61
- C96, C97, C107
- C73
- C75, C86, C88, C98
- C11, \* C26, C68, C76, C84, C93, C99, C100
- C10, C11, \* C12, C13, C27, C28, C29, C41, C42, C57, C58, C66, C69, C77, C79, C80, C81
- C74
- C87
- C85
- C94
- C95

C59, C60, C61, C64, C65, C67, C70, C71, C72 ± 2% tolerance.

C9, C25, C40 ± 5% tolerance.

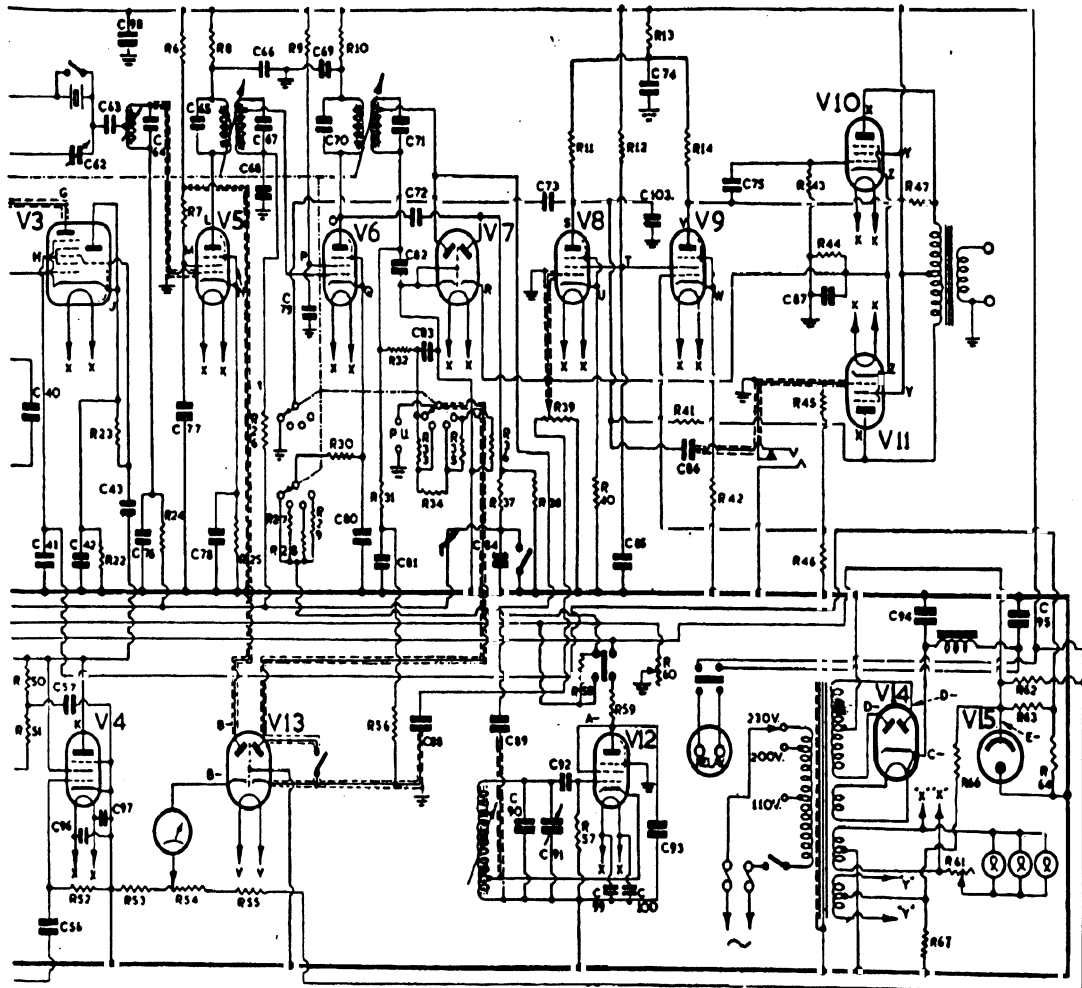
**Resistors.**

- 68 R17, R20, R25, R30
- 150 R21
- 200 R22
- 560 R40, R42, R58
- 620 R44
- 750 R27
- 1k R2, R4, R5, R8, R51
- 1.5k R65
- 2.2k R48, R49
- 2.7k R10, R62
- 4.7k R28, R63
- 6.8k R67
- 7.5k R35, R46
- 8.2k R29
- 10k R13, R50, R59
- 12.5k R55 \*
- 13k R36
- 15k R6, R7, R64
- 22k R34, R52
- 27k R53
- 33k R1, R3, R9
- 47k R33, R57
- 0.1M R11, R14, R23, R32, R66
- 0.18M R12
- 0.47M R15, R16, R18, R19, R24, R26 R37, R43, R45
- 1M R31, R38
- 2.2M R56
- 3M R41, R47

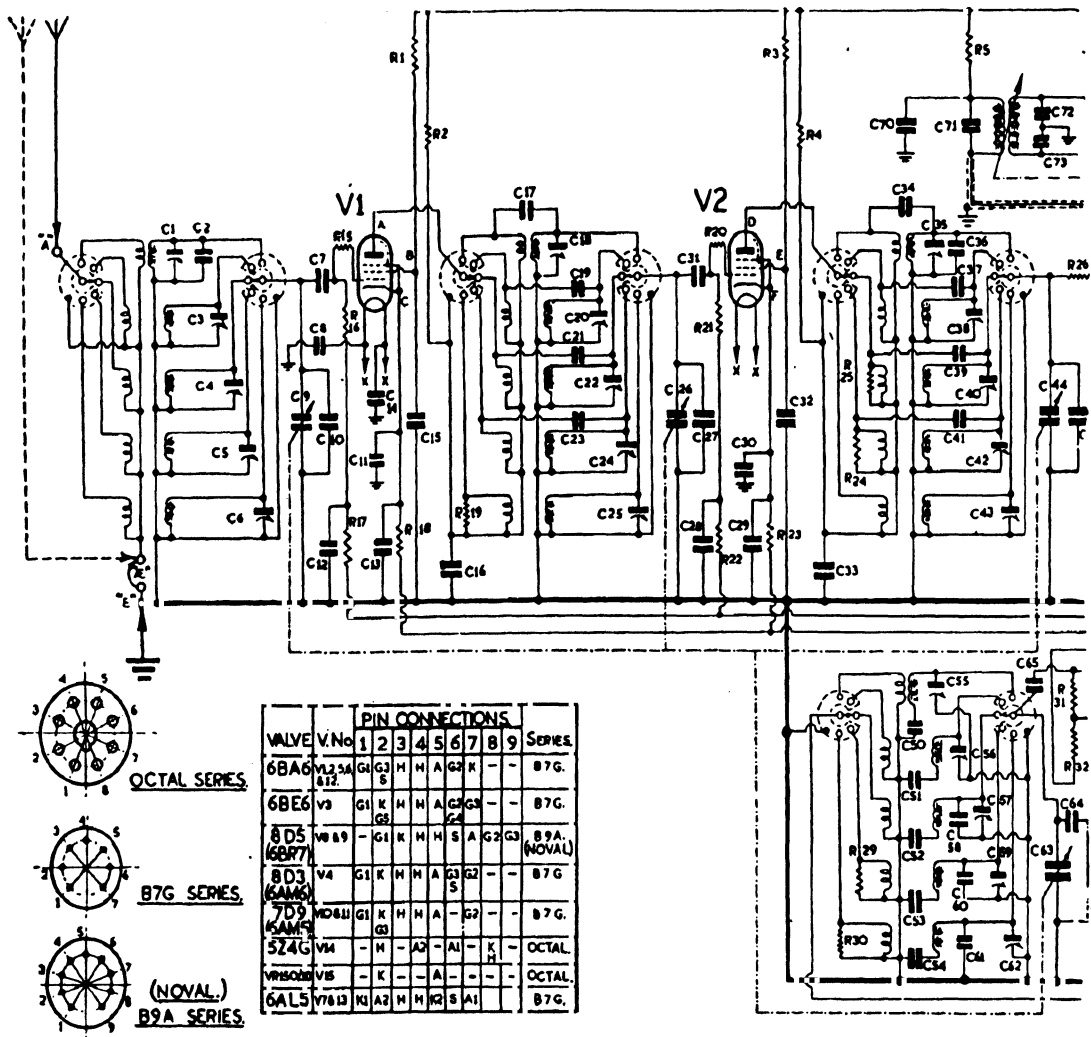
R1, R3, R9, R53, R64 1-watt. R62 5-watt. Remainder 1/2-watt.

Potentiometers: R60 10,000 ohms; R61 5 ohms; R39 0.5M; R54 5,000 ohms.

\* Two 25,000-ohm resistors in parallel.



EDDYSTONE MODEL 680



CIRCUIT DIAGRAM-

Capacitors.

C1	3-23 pF.	C30	0.01	C59	3-23 pF.	C88	0.01
C2	10 pF.	C31	100 pF.	C60	20 pF.	C89	0.1
C3	3-23 pF.	C32	0.1	C61	20 pF.	C90	0.1
C4	3-23 pF.	C33	0.1	C62	3-23 pF.	C91	0.1
C5	3-23 pF.	C34	20 pF.	C63	10-367.75 pF.	C92	0.1
C6	3-23 pF.	C35	3-23 pF.	C64	12 pF.	C93	0.1
C7	100 pF.	C36	3 pF.	C65	200 pF.	C94	100 pF.
C8	0.0005	C37	6 pF.	C66	50 pF.	C95	100 pF.
C9	10-367.75 pF.	C38	3-23 pF.	C67	0.0005	C96	0.5
C10	25 pF.	C39	3 pF.	C68	0.0005	C97	0.01
C11	0.01	C40	3-23 pF.	C69	0.1	C98	30
C12	0.01	C41	3 pF.	C70	0.1	C99	30
C13	0.1	C42	3-23 pF.	C71	400 pF.	C100	0.01
C14	0.0005	C43	3-23 pF.	C72	800 pF.	C101	0.5
C15	0.1	C44	10-367.75 pF.	C73	800 pF.	C102	30
C16	0.1	C45	25 pF.	C74		C103	0.002
C17	20 pF.	C46	0.1	C75	20 pF.	C104	0.01
C18	3-23 pF.	C47	0.1	C76	0.01	C105	0.002
C19	6 pF.	C48	0.01	C77	500 pF.	C106	0.01
C20	3-23 pF.	C49	10 pF.	C78	400 pF.	C107	8 pF.
C21	3 pF.	C50	7000 pF.	C79	0.1	C108	100 pF.
C22	3-23 pF.	C51	3625 pF.	C80	400 pF.	C109	100 pF.
C23	3 pF.	C52	1625 pF.	C81	0.01	C110	
C24	3-23 pF.	C53	900 pF.	C82	400 pF.	C111	0.01
C25	3-23 pF.	C54	440 pF.	C83	0.1	C112	0.01
C26	10-367.75 pF.	C55	3-23 pF.	C84	400 pF.	C113	0.01
C27	25 pF.	C56	3-23 pF.	C85	10 pF.	C114	16
C28	0.01	C57	3-23 pF.	C86	8	C115	40
C29	0.1	C58	10 pF.	C87	0.01		

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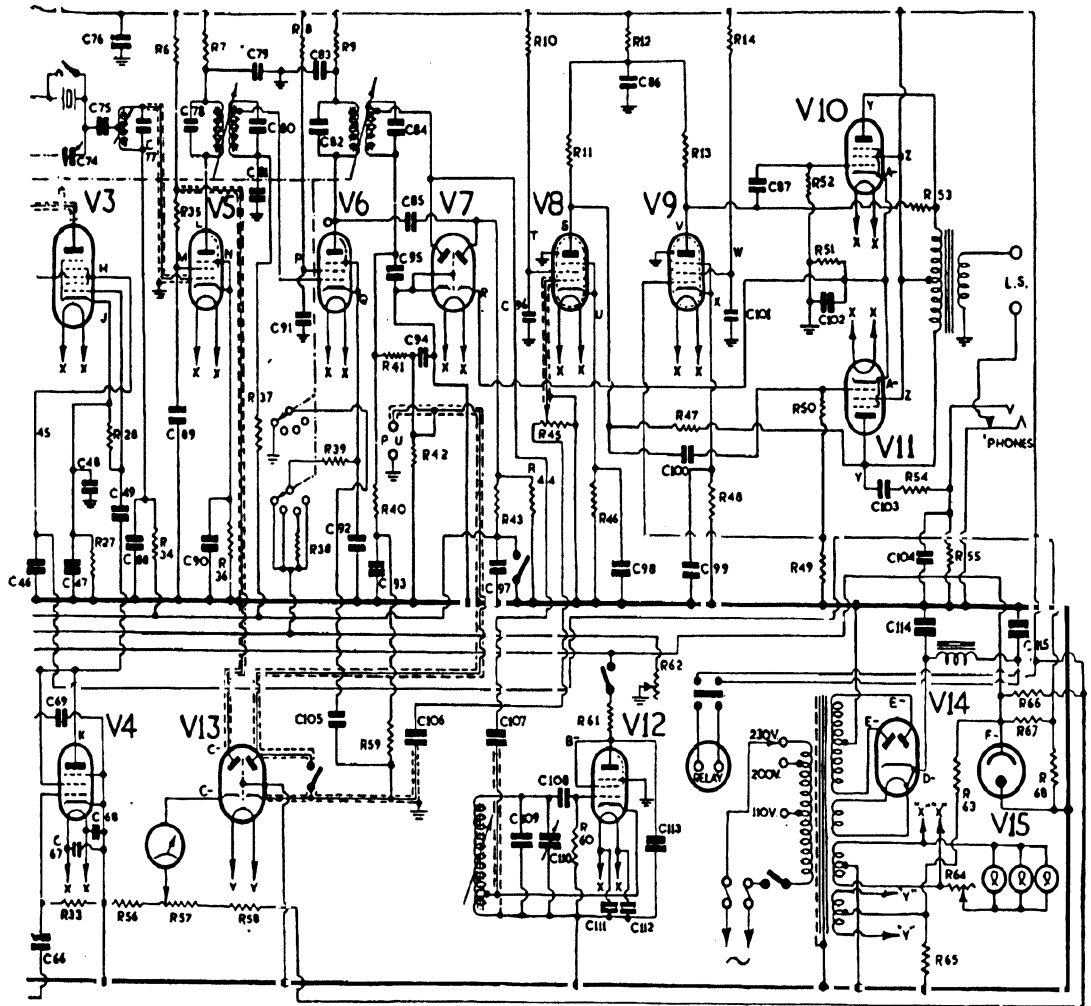
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### EDDYSTONE MODEL 680X

#### Resistors.

R1	33,000 (1 W.)	R36	68
R2	1,000	R37	0.47M
R3	33,000 (1 W.)	R38	560
R4	1,000	R39	68
R5	1,000	R40	1M
R6	15,000	R41	100,000
R7	1,000	R42	100,000
R8	33,000	R43	0.47M
R9	1,000	R44	1M
R10	1M	R45	0.5M (Pot.)
R11	0.27M	R46	1,500
R12	10,000	R47	3M
R13	0.27M	R48	1,500
R14	1M	R49	6,800
R15	12	R50	0.47M
R16	0.47M	R51	620
R17	0.47M	R52	0.47M
R18	68	R53	3M
R19	150	R54	100,000
R20	12	R55	2,200
R21	0.47M	R56	27,000
R22	0.47M	R57	5,000 (Pot.)
R23	68	R58	10,000
R24	150	R59	2M
R25	1,500	R60	47,000
R26	12	R61	10,000
R27	150	R62	10,000 (Pot.)
R28	100,000	R63	0.27M
R29	2,200	R64	5 (Pot.)
R30	2,200	R65	6,800
R31	10,000	R66	2,700 (W.W.)
R32	1,000	R67	4,700
R33	22,000	R68	22,000 (1 W.)
R34	0.47M		
R35	15,000		

#### VOLTAGE VALUES.

The voltages are between the point indicated and the chassis. Set the receiver at 1000 kc/s with the aerial shorted out, R.F. control set at maximum. A.F. gain control set at minimum with B.F.O. on. Two sets of values are given using different meters as shown. It will be evident that the actual voltage indicated depends on the meter employed. A tolerance of plus or minus 5 per cent should be allowed on the values given.

Point	333 o.p.v.	1000 o.p.v.	Point	333 o.p.v.	1000 o.p.v.
A	205 v.	218 v.	R	11.5 v.	11.5 v.
B	80 v.	84 v.	S	20 v.	25 v.
C	0.8 v.	1 v.	T	18 v.	25 v.
D	210 v.	218 v.	U	0.7 v.	0.8 v.
E	80 v.	83 v.	V	18 v.	22 v.
F	1 v.	1.9 v.	W	15 v.	22 v.
G	212 v.	220 v.	X	0.8 v.	0.8 v.
H	100 v.	100 v.	Y	218 v.	220 v.
J	1.1 v.	1.2 v.	Z	220 v.	225 v.
K	85 v.	100 v.	A	11.5 v.	11.5 v.
L	206 v.	210 v.	B	85 v.	85 v.
M	88 v.	93 v.	C	142 v.	150 v.
N	1 v.	1 v.	D	252 v.	260 v.
O	206 v.	210 v.	E	240 v. (A.C.)	245 v. (A.C.)
P	75 v.	80 v.	F	150 v.	150 v.
Q	1 v.	1 v.			

Total H.T. current: 110 mA. Heater-to-heater voltage: 6.3 A.C.