EDDYSTONE MODEL 680X

COMMUNICATIONS RECEIVER

*Replacement Instruction Manual

Great care has been exercised in the design of the "680X" receiver. The modern circuitry, thorough screening, selective choice of components, first-class workmanship and sturdy construction are all factors which add up to an outstanding performance, with a high degree of reliability under any climatic conditions.

A total of fifteen valves is employed. Thirteen are of the miniature type, the two remaining (rectifier and stabiliser) having octal bases. Details of the base connections are included with the circuit diagram.

The specification includes variable selectivity, the four position switch providing also a measure of gain compensation. Where not otherwise stated, technical figures should be taken from the series of graphs provided.

The five frequency ranges are as follows:-

Band 1	30.0 - 12.3 Mc/s.	Band 4	2.5 - 1.11 Mc/s.
Band 2	12.5 - 5.3 Mc/s.	Band 5	1110 - 480 kc/s.
Band 3	5.7 - 2.5 Mc/s.		

INSTALLATION & OPERATION

The receiver has been carefully calibrated, aligned and thoroughly tested before despatch, and the only adjustment that may be necessary before putting the receiver into operation is to the mains input voltage tapping. The plug in the selector panel on the mains transformer (easily accessible with the lid open) is fitted normally in the 230 volt position, where it should remain when the mains voltage is between 220 and 250 volts. If the mains voltage lies between 195 and 215 volts, the plug should be changed to the 200 volt marking. The 110 volt tap applies when the mains supply is between 100 and 120 volts. Unless specially ordered, the transformer is unsuitable for 25 cycle mains. DC mains supplies are entirely unsuitable and if connected will cause serious damage to the mains transformer

A loudspeaker of 2.5 to 3 ohms impedance should be connected to the two upper terminals (marked "L.S.") at the rear - the Eddystone Cat. No. 811 Diecast Speaker is especially recommended, since it represents a perfect match to the receiver, physically and electrically. As an alternative to the use of a speaker, high resistance telephones (2,000 to 4,000 ohms) may be plugged into the jack on the left-hand side of the receiver. The brilliance of the dial lights can be adjusted by the small knob at the rear.

Aerial Connections.

The input impedance at the aerial terminals is nominally 400 ohms, but good results are obtainable with aerials of widely varying impedance. If a single wire is used (or an aerial with a single wire feeder), connection is made to the rear terminal marked "A", the other "AE" terminal remaining strapped to the chassis terminal. A good earth connected by a short lead to this chassis terminal will improve results, particularly on the lower frequencies, but if there is any doubt about the effectiveness of the earth, it may be better to leave it off. When using a twin feeder, the shorting strap is removed and the ends of the feeder attached to "A" and "AE" (an earth is still desirable). For optimum performance, both as regards bringing in weak signals and for keeping noise down to a minimum, an aerial cut to resonate over the frequency band in which the user is mainly interested is strongly recommended. The lengths for dipole aerials to give optimum results at certain frequencies are tabulated below.

For details of other types of aerials and feeder systems, the reader is advised to consult the various Handbooks which deal with these specialised subjects.

	Broadcast							Amateur		
Wavelength (Metres)	49	31	25	19	16	13	11	40	20	10
Frequency (Megacycles)	6.1	9.6	11.8	15.1	17.8	21.5	26	7	14	28
Length of each arm (feet)	40	26	20	15.5	13	10.5	9	33	16.5	8.25

*Original publication is now out of print.

Reception of Telephony.

The panel controls should be set as follows:-

AGC	"on"
BFO	"of"
RF Gain	maximum
Crystal Phasing Knob	spot against "off" position
AF Gain	adjusted to give requisite volume.

For the best possible audio quality, the variable selectivity control should be set to minimum. When heterodyne interference is experienced, the selectivity should be increased by moving the switch to one of the intermediate positions. A certain amount of gain compensation is automatically provided with movement of the switch. It may be mentioned that a very strong signal, say from a local broadcasting station, may overload the first stage of the receiver, necessitating a reduction of RF gain.

The tuning scales are calibrated direct in frequency to a high degree of accuracy and the flywheel controlled drive permits fine tuning on all ranges.

The mechanical bandspread device assists in the logging of particular stations. One complete revolution of the rotating scale (at the top of the dial) corresponds to a movement of the main pointer over one marked division of the lowest scale on the main dial, the length of the latter being opened out to the equivalent of 360 inches. The settings of a given station can be recorded for future use.

Use of Signal Strength Meter.

The Signal Strength Meter fitted is a useful adjunct towards tuning in a signal accurately. It also enables comparative readings to be taken on the strength of signals. The sensitive meter movement is protected by placing in series with the winding one half of a double-diode valve, thereby preventing current flowing in the reverse direction. For this reason the meter will only give readings when the RF gain control is fully advanced, as in any case it should be to give maximum automatic gain control action.

To adjust the meter initially, the aerial and earth terminals should temporarily be shorted and the needle of the instrument made to coincide with zero by movement of the adjuster at the rear (see Fig. 2). On removing the aerial short, the meter will indicate the strength of the carrier wave. The tuning is correct when the meter reading is at maximum.

Reception of C.W. Telegraphy.

The panel controls should be set as follows:-

AGC	"off"
BFO	"on"
Crystal Phasing	white spot on knob to coincide with "off" marking
BFO Pitch	white spot on knob slightly to one side of centre
Selectivity	maximum position
AF Gain	towards maximum
RF Gain	adjust according to strength of signal and desired output level.

The BFO pitch control has a range of approximately 3,000 cycles each side of zero beat, and normally it will be set to give a note of near 1,000 cycles. When an unwanted signal is causing interference with the desired one, the crystal filter should be brought into operation. Moving the crystal filter phasing knob away from the "off" position automatically brings the filter into circuit and a point will be found where the desired signal peaks in strength. It is generally better, however, to use the filter as a "notching" device, selecting the point where an interfering signal is greatly attenuated. This calls for critical adjustment and it will be desirable also to make use of the BFO pitch control, peaking the desired signal to maximum intensity. It may also help in some cases if the BFO pitch is changed from one side of zero beat to the other.

It will rarely be found necessary to employ a high degree of RF gain. So doing may result in such a high signal voltage at the last IF valve as to cause blocking, with apparently too little BFO injection. Correct operation will enable a given signal to be tuned in against a very quiet background, so leading to maximum intelligibility.

Noise Limiter.

In a quiet situation, it will not be necessary to make use of the noise limiter but when electrical interference of a staccato nature is experienced (on telephony or CW), switching on the noise limiter will effectively remove a high percentage of the interfering noise, with little effect on the strength of the signal and without introducing distortion. The noise limiter must not be expected to act effectively with noise of a mushy type, as generated by vacuum cleaners and other electrical equipment incorporating motors - these should be filtered with suppressors at the source.

In a noisy location, it is well to erect an aerial well in the clear and as far as possible from electric light wiring. The stronger the incoming signal, the more the gain of the receiver can be reduced (automatically on telephony, manually on CW) thereby reducing also the effect of any interference being picked up.

Standby Switch.

The standby switch on the front panel (easily identified by virtue of the long "dolly") breaks the HT supply when moved to "off" (send position) and is for use when an associated transmitter is in actual operation. Additional contacts in this switch are taken to the terminals marked "Ext. Relay" at the rear and control of the transmitter is thus possible with the one switch.

Audio Input Terminals.

At the rear are terminals marked "P.U." which enable any external audio voltage (e.g. from a pick-up or a tape recorder) to be fed into the AF section of the receiver. The nominal input impedance is 100,000 ohms. The selectivity control should be set to the "minimum" position.

GENERAL SERVICING

The standard "680X" receiver operates from AC mains of 40/60 cycles, the consumption being approximately 80 watts. The fuse is in series with the AC supply and is rated at 1 ampere standard type, or 750 mA Magnickel type.

The holders for the lamps which illuminate the dial are sprung into place. To change a lamp, it is only necessary to press the side of the holder and pull out. The lamp is rated at 6.5 volts 0.3 amperes (M.B.C. Round radio panel type).

Should the performance fall off or perhaps fail completely, it will be well in the first place to inspect the valves for the normal heater glow. Where a metal screening can is fitted to a valve, it is easily removable with a twist and a pull. The VR150/30 stabiliser valve normally exhibits a violet glow.

If it becomes necessary to obtain access to the interior, the cabinet can be completely removed after withdrawal of the four large screws at the rear. A check should be made against the normal operating voltages given in the table and any serious discrepancy will indicate at which stage in the circuit a fault has developed.

Valve Types and Functions.

Position	Function	Type	Make
V1 and V2	RF Amplifier	6BA6	Brimar
V3	Frequency Changer	6BE6	Brimar
V4	H.F. Oscillator	6AM6/Z77	Brimar Osram
V5 and V6	I.F. Amplifier	6BA6	Brimar
V7	Demodulator and A.G.C.	6AL5/D77	Brimar Osram

Valve types and Functions (cont'd):

Position	Function	Type	Make
V8	Audio Amplifier	8D5/6BR7	Brimar
V9	Phase-splitter	8D5/6BR7	Brimar
V10 and V11	Push-pull Output	6AM5/EL91	Brimar Mullard
V12	Beat Frequency Oscillator	6BA6	Brimar
V13	Noise Limiter/"S" Meter	6AL5/D77	Brimar Osram
V14	Power Rectifier	5Z4G	Brimar
V15	Voltage Stabiliser	VR150/30	Brimar

Re-Alignment.

The tuned circuits in the "680X" receiver will hold their proper alignment over a long period of time and it is inadvisable to make adjustments unless the need thereof is justified. The alignment of a receiver of the "680X" type is a skilled operation and it is most unwise to judge the effect of adjustments by ear alone. It is therefore assumed test instruments are available - in particular, a Signal Generator covering from 450 kc/s. to 32 Mc/s., provided with internal audio modulation (30%) and with a calibrated attenuator; and an Audio Output Meter, scaled in milliwatts and decibels and adjustable to match the receiver output impedance of 2.5 ohms. Trimming should be carried out with a non-metallic tool such as the Eddystone Cat. No. 122T.

IF Amplifier.

The alignment of a modern variable selectivity IF amplifier as in the "680X" requires the use of a frequency modulated signal generator ("Wobbulator") and an oscilloscope, presenting a visual display to the operator.

It is unlikely that a fault will develop in one of the IF transformers and the adjustment of these should not be disturbed unless absolutely necessary. For check purposes, however, the following information and sensitivity figures may occasionally be useful. To obviate unsoldering the grid leads to the IF valves, the figures have been taken with these wires connected and are therefore not strictly true ones. Nevertheless, they are quite adequate for comparison purposes. Reference should be made to Fig. 3 and Fig. 5 for locations of IF valves and transformers.

The intermediate frequency is 450 kc/s. (± 1.5 kc/s. = crystal tolerance).

The following conditions apply when taking measurements:-

Receiver	(Wavechange Switch Range 1 (AGC, BFO, NL off (Crystal Phasing Knob at "OFF" (Selectivity maximum (RF Gain maximum
Sig. Gen.	(30% Modulation (Director output

Output Meter across and matched to speaker terminals.

Input for 50mW output (approximate :-

Between grid V6 and chassis	11 millivolts.
" " V5 " "	220 microvolts.

To measure the overall sensitivity of the IF amplifier at the mixer valve signal grid (V3), the oscillator valve V4 is removed from its socket and the signal generator leads connected to the point marked "X" in Fig. 4 and to chassis. The sensitivity at this point should be in the region of 20 microvolts. After completion of the test, V4 should be re-inserted.

BFO Adjustment.

With the BFO switch off, the modulated (IF) signal applied to the receiver should be tuned accurately with the aid of the "S" Meter, selectivity remaining at maximum. The modulation is switched off, the BFO switched on, and with the pitch control condenser at half mesh, indicated by the white spot being central at the top, the core in the BFO unit (see Fig.4) is adjusted (if found necessary) to give zero beat against the applied signal.

Alignment of RF Section.

All receiver controls are left as for IF check. The dummy aerial of the signal generator is connected between aerial and earth terminals at the rear of the coil box. It will be found helpful to connect the speaker as well as the output meter for the first stage of the following procedure, which is calibration. For this, a 1000/100 kc/s. crystal oscillator, with harmonics usable up to 30 Mc/s., is essential, since the desired maximum calibration error on the dial of the receiver is 0.5%. As only the most expensive signal generators give an accuracy greater than some 1%. it is futile to use one as a calibration master.

The locations of the various trimmers and cores are shown in Fig.4. Connect the crystal oscillator in shunt with the dummy aerial, switch on the BFO with the white spot at "12 o'clock," and using the RF gain only as volume control, check on Range 1. Should the 28 Mc/s, and 14 Mc/s. harmonics be appreciably off their marks when tuned to zero beat, proceed to correct the 14 Mc/s. harmonic by means of the the Range 1 oscillator coil CORE. The 28 Mc/s. harmonic is corrected by means of the TRIMMER. With these two points accurately fixed, the other calibration marks will automatically conform to the desired 0.5% accuracy. The same procedure is used on all other ranges, the two setting points on each range being as follows:-

Range 1.	28 Mc/s. and 13 Mc/s.
Range 2.	12 Mc/s. and 6 Mc/s.
Range 3.	5.6 Mc/s. and 2.5 Mc/s.
Range 4.	2.5 Mc/s and 1.2 Mc/s.
Range 5.	1000 kc/s. and 500 kc/s.

Always, as on Range 1, adjust the TRIMMERS at the high frequency ends of the bands and the CORES at the low frequency ends. This hard and fast rule applies also in the alignment of the RF and FC coils.

Remove the crystal oscillator leads and use only the signal generator with its attenuator set to give about 10 microvolts. Switch off BFO. Then proceed as follows:-

Inject a 13.3 Mc/s. modulated signal into the receiver and tune in on Range 1 for maximum deflection on the output meter, using the RF gain to keep the needle on the scale. Now proceed to adjust the CORES only of the two RF coils and the one FC coil for highest output as indicated on the output meter. Next, inject a 28 Mc/s. signal and peak this by means of the three appropriate trimmers. Repeat the whole procedure until no improvement is possible. Use the same procedure on all other ranges. The high and low frequency alignment points on each range are as follows:-

Range	Trimmer Frequency	Core Frequency
1	28 Mc/s.	13.3 Mc/s.
2	12 Mc/s.	6.0 Mc/s.
3	5.4Mc/s.	2.6 Mc/s.
4	2.3Mc/s.	1.2 Mc/s.
5	1000 kc/s.	520 kc/s.

Graphs.

The average sensitivity of each range in a standard "680X" receiver is indicated in the curves shown in Fig. 6. Also given are typical sensitivity curves for each position of the selectivity control switch, including (at maximum selectivity) crystal rejection curves. Further graphs show the audio frequency response and the AGC characteristic.

Voltage Values.

The voltages are between the point indicated and the chassis. Set the receiver at 1000 kc/s. on Range 5 with the aerial shorted out, RF control set at maximum. AF gain control set at minimum with BFO 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% should be allowed on the values given.

Point	Avo	Weston (1000 o.p.v.)
A	205 volts	218 volts
B	80 "	84 "
C	.8 "	1 "
D	210 "	218 "
E	80 "	83 "
F	1 "	1.9 "
G	212 "	220 "
H	100 "	100 "
J	1.1 "	1.2 "
K	85 "	100 "
L	206 "	210 "
M	88 "	93 "
N	1 "	1 "
O	206 "	210 "
P	75 "	80 "
Q	1 "	1 "
R	11.5 "	11.5 "
S	20 "	25 "
T	18 "	25 "
U	.7 "	.8 "
V	18 "	22 "
W	15 "	22 "
X	.8 "	.8 "
Y	218 "	220 "
Z	220 "	225 "
A -	11.5 "	11.5 "
B -	85 "	85 "
C -	142 "	150 "
D -	252 "	260 "
E -	240 " (AC)	245 " (AC)
F -	150 "	150 "

Total HT Current: 110 mA.

Heater to Heater voltage: 6.3 AC.

EDDYSTONE "680X" COMPONENT VALUES

Capacitors

C1	3-23 pF.	Air Trimmer
C2	10 pF.	Silvered Mica
C3	3-23 pF.	Air Trimmer
C4	3-23 pF.	Air Trimmer
C5	3-23 pF.	Air Trimmer
C6	3-23 pF.	Air Trimmer
C7	100 pF.	Silvered Mica
C8	.0005 mfd.	Moulded Mica
C9	10-367-75 pF.	1st RF Tuning
C10	25 pF.	Silvered Mica ± 5%
C11	.01 mfd.	Tub. Paper
C12	.01 mfd.	Tub. Paper
C13	.1 mfd.	Tub. Paper
C14	.0005 mfd.	Moulded Mica
C15	.1 mfd.	Tub. Paper
C16	.1 mfd.	Tub. Paper
C17	20 pF.	Silvered Mica
C18	3-23 pF.	Air Trimmer
C19	6 pF.	Silvered Mica
C20	3-23 pF.	Air Trimmer
C21	3 pF.	Silvered Mica
C22	3-23 pF.	Air Trimmer
C23	3 pF.	Silvered Mica
C24	3-23 pF.	Air Trimmer
C25	3-23 pF.	Air Trimmer
C26	10-367.75 pF.	2nd RF Tuning
C27	25 pF.	Silvered Mica ± 5%
C28	.01 mfd.	Tub. Paper
C29	.1 mfd.	Tub. Paper
C30	.01 mfd.	Tub. Paper
C31	100 pF.	Silvered Mica
C32	.1 mfd.	Tub. Paper
C33	.1 mfd.	Tub. Paper
C34	20 pF.	Silvered Mica
C35	3-23 pF.	Air Trimmer
C36	3 pF.	Silvered Mica
C37	6 pF.	Silvered Mica
C38	3-23 pF.	Air Trimmer
C39	3 pF.	Silvered Mica
C40	3-23 pF.	Air Trimmer
C41	3 pF.	Silvered Mica
C42	3-23 pF.	Air Trimmer
C43	3-23 pF.	Air Trimmer
C44	10-367.75 pF.	FC Tuning
C45	25 pF.	Silvered Mica ± 5%
C46	.1 mfd.	Tub. Paper
C47	.1 mfd.	Tub. Paper
C48	.01 mfd.	Tub. Paper
C49	10 pF.	Ceramic
C50	7000 pF.	Silvered Mica ± 1%
C51	3625 pF.	Silvered Mica ± 1%
C52	1625 pF.	Silvered Mica ± 1%
C53	900 pF.	Silvered Mica ± 1%
C54	440 pF.	Silvered Mica ± 1%
C55	3-23 pF.	Air Trimmer
C56	3-23 pF.	Air Trimmer
C57	3-23 pF.	Air Trimmer
C58	10 pF.	Silvered Mica
C59	3-23 pF.	Air Trimmer
C60	20 pF.	Silvered Mica
C61	20 pF.	Silvered Mica
C62	3-23 pF.	Air Trimmer
C63	10-367.75pF.	Osc. Tuning
C64	12 pF.	Ceramic
C65	200 pF.	Ceramic
C66	50 pF.	Silvered Mica
C67	.0005 mfd.	Moulded Mica
C68	.0005 mfd.	Moulded Mica
C69	.1 mfd.	Tub. Paper
C70	.1 mfd.	Tub. Paper
C71	400 pF.	Silvered Mica ± 2%
C72	800 pF.	Silvered Mica ± 2%
C73	800 pF.	Silvered Mica ± 2%
C74		Crystal Phasing Condenser
C75	20 pF.	Silvered Mica
C76	.01 mfd.	Moulded Mica
C77	500 pF.	Silvered Mica ± 2%
C78	400 pF.	Silvered Mica ± 2%
C79	.1 mfd.	Tub. Paper
C80	400 pF.	Silvered Mica ± 2%
C81	.01 mfd.	Tub. Paper
C82	400 pF.	Silvered Mica ±2%
C83	.1 mfd.	Tub. Paper
C84	400 pF.	Silvered Mica ± 2%
C85	10 pF.	Silvered Mica
C86	8 mfd.	Tub. elect. 350v Dc. Wkg.
C87	.01 mfd.	Moulded Mica
C88	.01 mfd.	Tub. Paper
C89	.1 mfd.	Tub. Paper
C90	.1 mfd.	Tub. Paper
C91	.1 mfd.	Tub. Paper
C92	.1 mfd.	Tub. Paper
C93	.1 mfd.	Tub. Paper
C94	100 pF.	Silvered Mica
C95	100 pF.	Silvered Mica
C96	.5 mfd.	Tub. Paper 200v DC Wkg.

EDDYSTONE "680X" COMPONENT VALUES (Cont'd)

C97	.01 mfd.	Tub. Paper
C98	30 mfd.	Tub. elect. 15v DC Wkg.
C99	30 mfd.	Tub. elect. 15v DC Wkg.
C100	.01 mfd.	Moulded Mica
C101	.5 mfd.	Tub. Paper 200v. DC Wkg.
C102	30 mfd.	Tub. Paper 15v DC Wkg.
C103	.002 mfd.	Moulded Mica
C104	.01 mfd.	Tub. Paper
C105	.002 mfd.	Moulded Mica
C106	.01 mfd.	Moulded Mica
C107	8 pF.	Silvered Mica
C108	100 pF.	Silvered Mica
C109	100 pF.	Silvered Mica
C110		B.FO. Pitch Condenser
C111	.01 mfd.	Tub. Paper
C112	.01 mfd.	Tub. Paper
C113	.01 mfd.	Tub. Paper
C114	16 mfd.	Tub. elect. 450v DC Wkg.
C115	40 mfd.	Tub. elect. 350v DC Wkg.

<u>Resistors</u>

R1	33,000 ohms	1W
R2	1,000 ohms	
R3	33,000 ohms	1W
R4	1,000 ohms	
R5	1,000 ohms	
R6	15,000 ohms	
R7	1,000 ohms	
R8	33,000 ohms	1W
R9	1,000 ohms	
R10	1 megohm	
R11	.27 megohm	
R12	10,000 ohms	
R13	.27 megohm	
R14	1 megohm	
R15	12 ohms	
R16	.47 megohm	
R17	.47 megohm	
R18	48 ohms ± 5%	
R19	150 ohms	
R20	12 ohms	
R21	.47 megohm	
R22	.47 megohm	
R23	68 ohms ± 5%	
R24	150 ohms	
R25	1,500 ohms	
R26	12 ohms	
R27	150 ohms	
R28	100,000 ohms	
R29	2,200 ohms	
R30	2,200 ohms	
R31	10,000 ohms	
R32	1,000 ohms	
R33	22,000 ohms	
R34	.47 megohm	
R35	15,000 ohms	
R36	68 ohms ± 5%	
R37	.47 megohm	
R38	560 ohms	
R39	68 ohms ± 5%	
R40	1 megohm	
R41	100,000 ohms ± 5%	
R42	100,000 ohms ± 5%	
R43	.47 megohm	
R44	1 megohm	
R45	.5 megohm Potentiometer	
R46	1,500 ohms	
R47	3 megohms ± 5%	
R48	1,500 ohms	
R49	6,800 ohms ± 5%	
R50	.47 megohm	
R51	620 ohms ± 5%	1 watt (1W)
R52	.47 megohm	
R53	3 megohm ± 5%	
R54	100,000 ohms	
R55	2,200 ohms	
R56	27,000 ohms	1 watt (1W)
R57	5,000 ohms	Potentiometer
R58	10,000 ohms	
R59	2 megohms	
R60	47,000 ohms	
R61	10,000 ohms	
R62	10,000 ohms	Potentiometer
R63	.27 megohm	
R64	5 ohms	Potentiometer
R65	6,800 ohms	
R66	2,700 ohms	Wire Wound
R67	4,700 ohms	
R68	22,000 ohms	1W
R69	12 ohms	

All fixed resistors (except R66) of unspecified wattage are ½ watt or less.

MANUFACTURERS' PART NUMBERS

Transformers

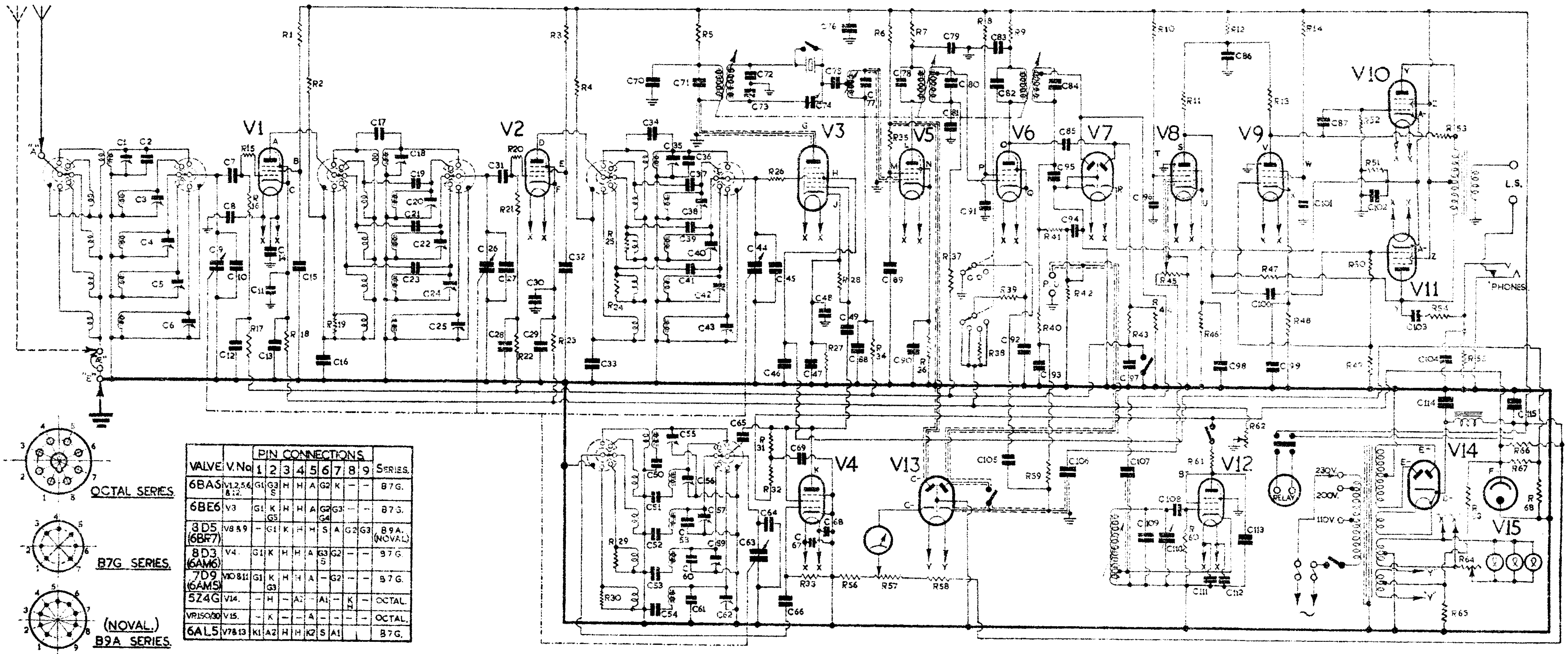
T1	1st I.F. Transformer (Complete)		D1453
T2	Crystal Unit "		D1160A
T3	2nd I.F. Transformer "		D1454
T4	3rd I.F. Transformer "		D1545
T5	Output Transformer		D1791A
T6	B.F.O. (Coil only)		D920/1
T7	Mains Transformer		3937P
Ch.1	Smoothing Choke		D2001

Switches

Sw.1	Primary 1st R.F.		3135P
Sw.2	Secondary 1st R.F.		"
Sw.3	Primary 2nd R.F.		"
Sw.4	Secondary 2nd R.F.		"
Sw.5	Primary Freq. changer		"
Sw.6	Secondary Freq. changer		"
Sw.7	Primary Oscillator		"
Sw.8	Secondary Oscillator		"
Sw.9	Crystal phasing		forms part of C74
Sw.10	Selectivity Max - Min)	Combined	D1487
Sw.11	Selectivity Max - Min)		
Sw.12	A.G.C. Off/On		4771P
Sw.13	Noise Limiter Off/On		4771P
Sw.14	B.F.O. Off/On		4772P
Sw.15	Mains Off/On		4771P
Sw.16	Standby		4772/1PA

Coil Assemblies

L1	Range 1	1st R.F. Coil	D1434
L2	Range 2	1st R.F. Coil	D1422
L3	Range 3	1st R.F. Coil	D1425
L4	Range 4	1st R.F. Coil	D1428
L5	Range 5	1st R.F. Coil	D1377
L6	Range 1	2nd R.F. Coil	D1435
L7	Range 2	2nd R.F. Coil	D1423
L8	Range 3	2nd R.F. Coil	D1426
L9	Range 4	2nd R.F. Coil	D1429
L10	Range 5	2nd R.F. Coil	D1377/1
L11	Range 1	Freq. changer Coil	D1435/1
L12	Range 2	Freq. changer Coil	D1423
L13	Range 3	Freq. changer Coil	D1426
L14	Range 4	Freq. changer Coil	D1429
L15	Range 5	Freq. changer Coil	D1432
L16	Range 1	Oscillator Coil	D1436
L17	Range 2	Oscillator Coil	D1424
L18	Range 3	Oscillator Coil	D1427
L19	Range 4	Oscillator Coil	D1430
L20	Range 5	Oscillator Coil	D1433



VALVE	V. No	PIN CONNECTIONS 1	2	3	4	5	6	7	8	9	SERIES.
6BA6	V1,2,5,6, & 12.	G1	G3 S	H	H	A	G2	K	–	–	B7G.
6BE6	V3	G1	K G5	H	H	A	G2 G4	G3	–	–	B7G.
3D5 (6BR7)	V8 & 9	–	G1	K	H	H	S	A	G2	G3	B9A. (NOVAL)
8D3 (6AM6)	V4.	G1	K	H	H	A	G3 S	G2	–	–	B7G.
7D9 (6AM5)	V10 & 11	G1	K G3	H	H	A	–	G2	–	–	B7G.
5Z4G	V14.	–	H	–	A2	–	A1	–	K H	–	OCTAL.
VR150/30	V15.	–	K	–	–	A	–	–	–	–	OCTAL.
6AL5	V7 & 13	K1	A2	H	H	K2	S	A1			B7G.

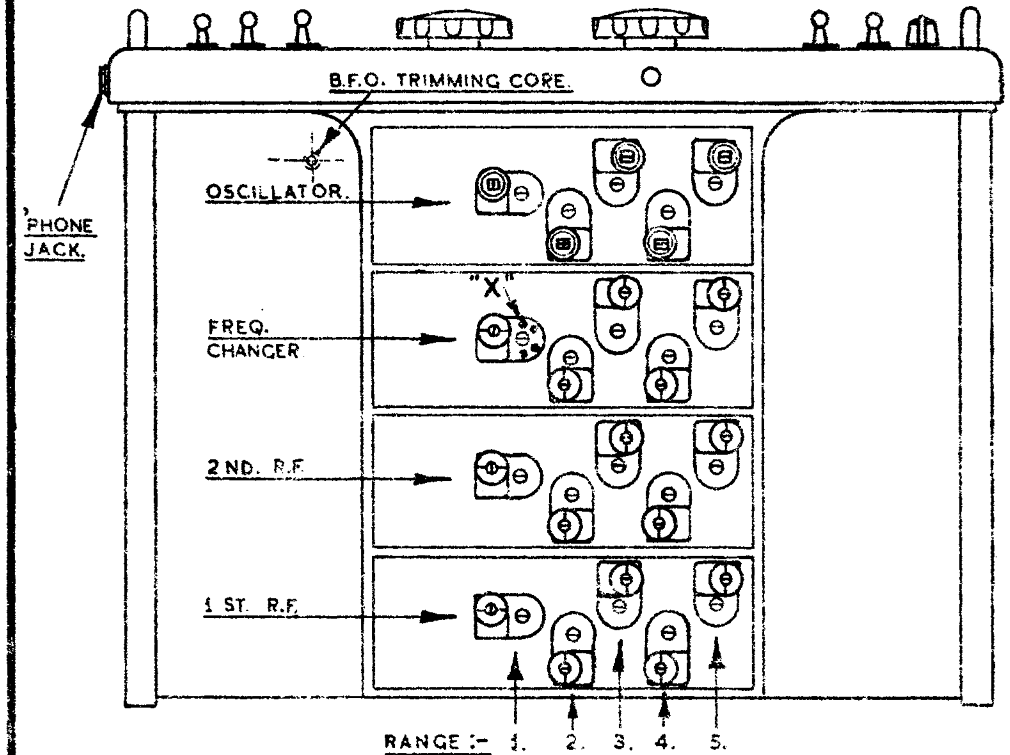


FIG. 4.

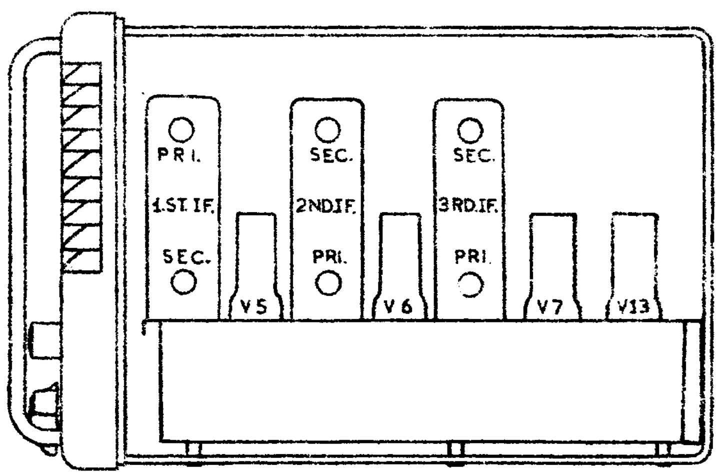


FIG. 5.

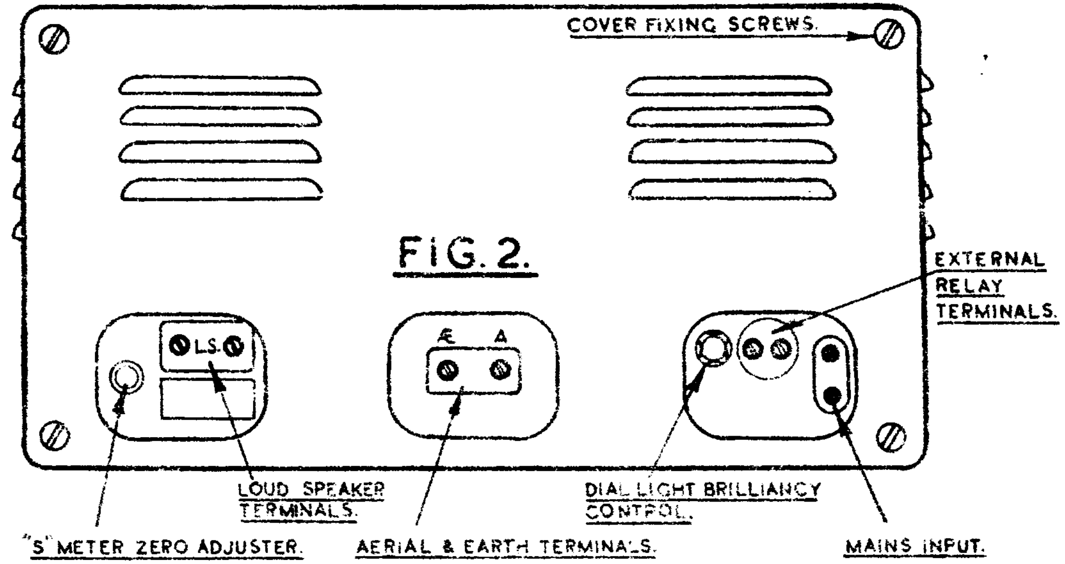
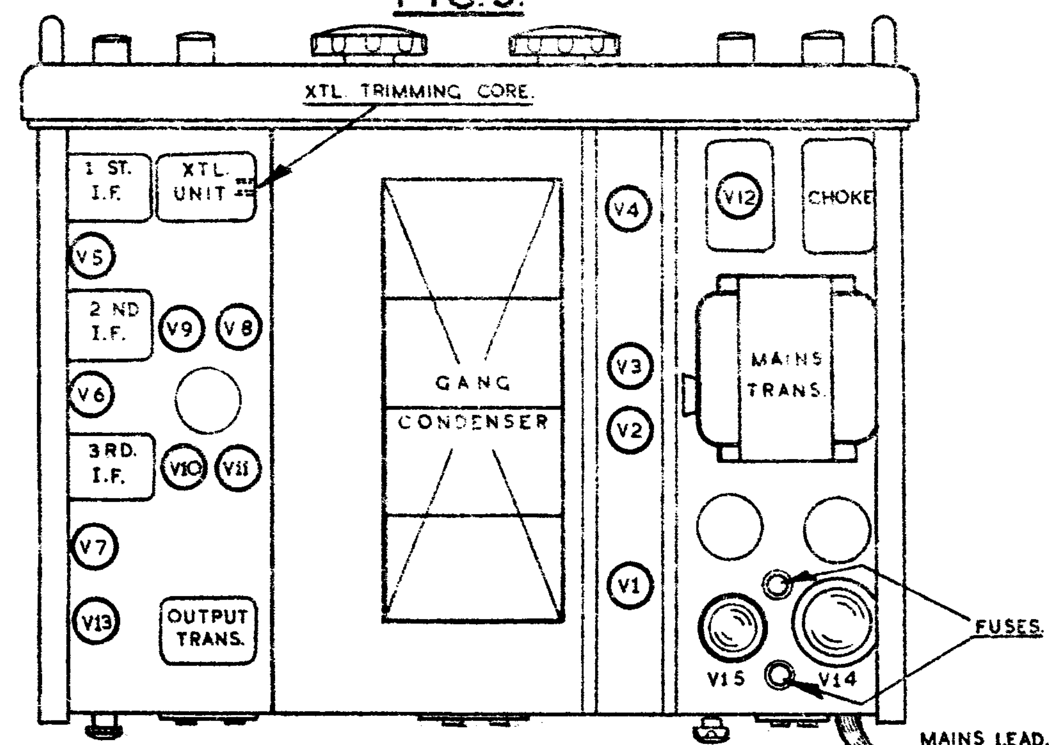
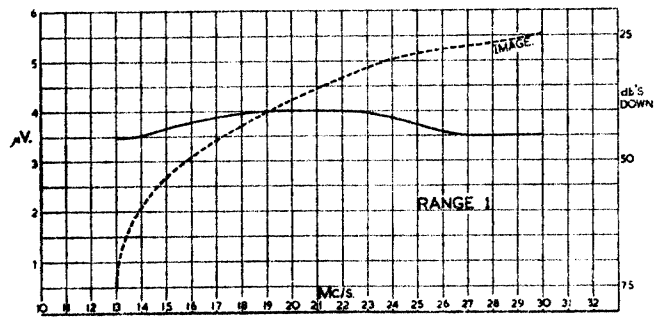


FIG. 2.

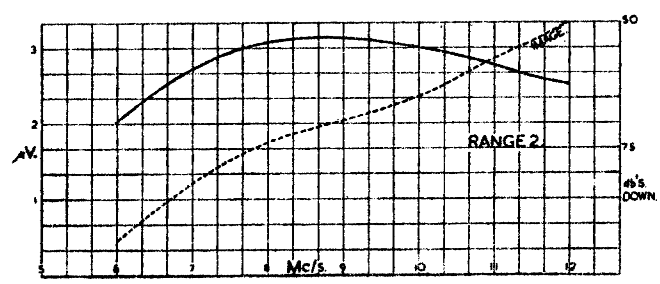
FIG. 3.



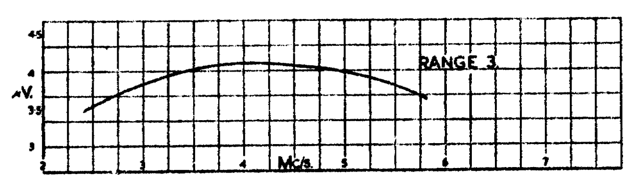
PERFORMANCE CURVES FOR THE EDDYSTONE '680X' RECEIVER



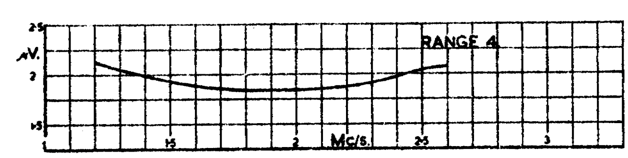
RANGE 1



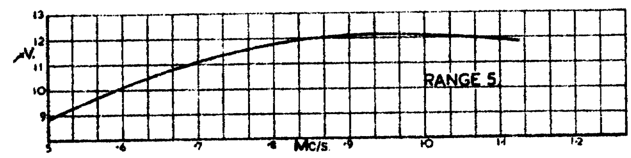
RANGE 2



RANGE 3

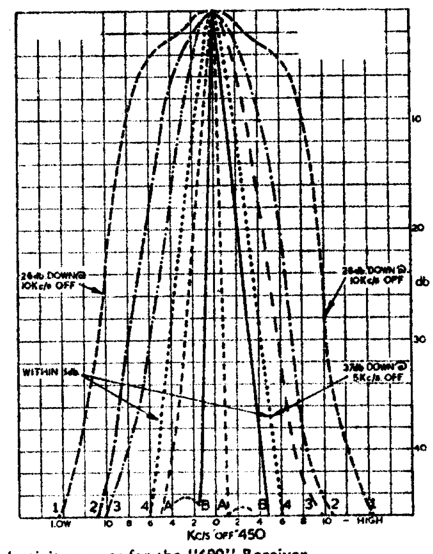


RANGE 4



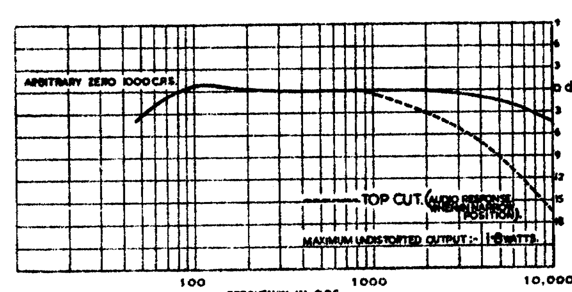
RANGE 5

Above are sensitivity curves for an average "680" Receiver. They are based on a 15 db signal-to-noise ratio and an audio output of 50 milliwatts.



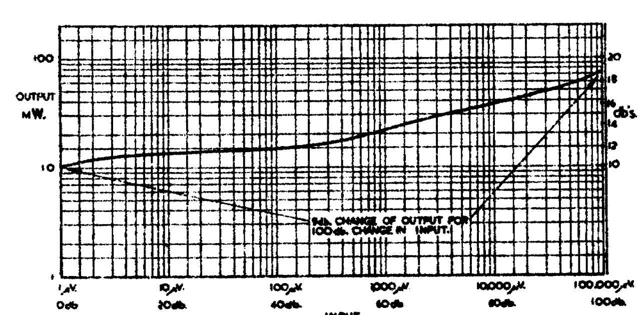
Selectivity curves for the "680" Receiver.

- (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.



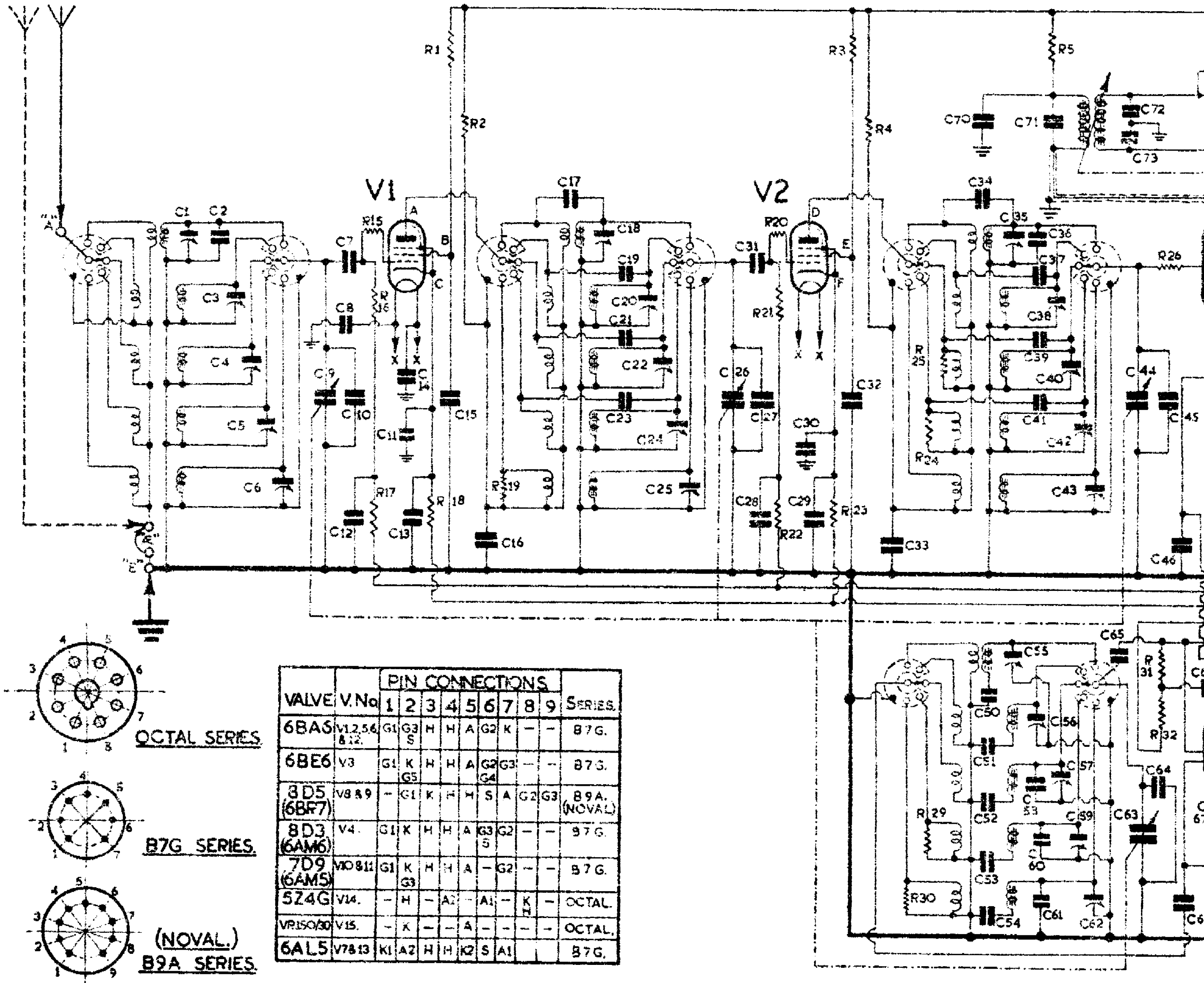
Response curve of the Audio Amplifier stages of the "680" Receiver. When the selectivity switch is at maximum, an additional top cut is introduced, the effect being indicated above by the dotted line curve.

The figure of 1·8 watts represents distortionless output, over a wide range of frequencies. Considerably more output power is actually available, without appreciable distortion.

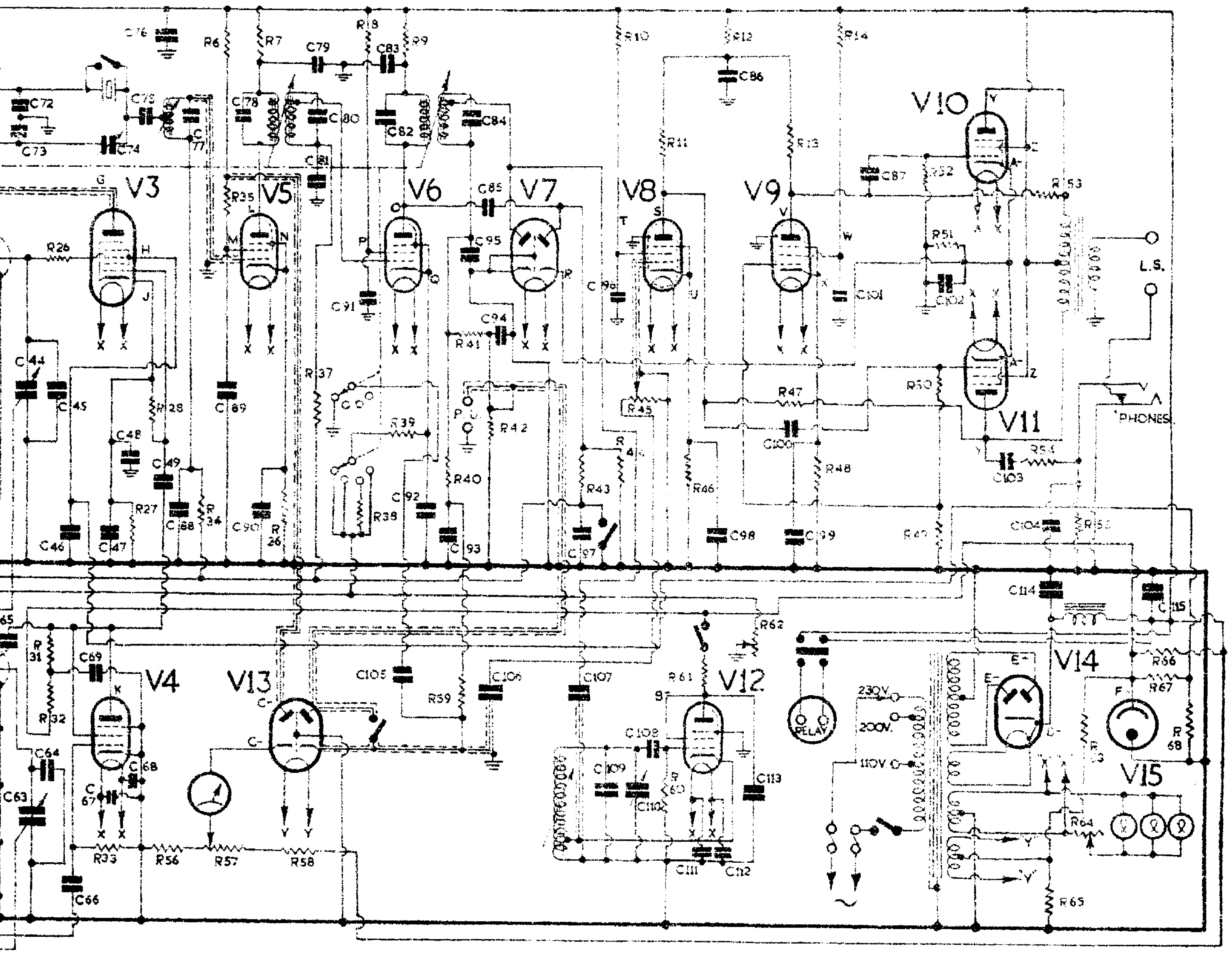


A.V.C. Characteristic of the "680" Receiver (taken at 9 Mc/s).

FIG. 6.



VALVE	V. No.	PIN CONNECTIONS 1	2	3	4	5	6	7	8	9	SERIES.
6BA6	V1,2,5,6, & 12.	G1	G3 S	H	H	A	G2	K	—	—	B7G.
6BE6	V3	G1	K G5	H	H	A	G2 G4	G3	—	—	B7G.
8D5 (6BR7)	V8 & 9	—	G1	K	H	H	S	A	G2	G3	B9A. (NOVAL)
8D3 (6AM6)	V4.	G1	K	H	H	A	G3 S	G2	—	—	B7G.
7D9 (6AM5)	V10 & 11	G1	K G3	H	H	A	—	G2	—	—	B7G.
5Z4G	V14.	—	H	—	A2	—	A1	—	K H	—	OCTAL.
VR150/30	V15.	—	K	—	—	A	—	—	—	—	OCTAL.
6AL5	V7 & 13	K1	A2	H	H	K2	S	A1			B7G.


V3
V4
V5
V6
V7
V8
V9
V10
V11
V12
V13
V14
V15
L.S.
PHONES
RELAY
230V
200V
110V