

Eddystone Radio

COMMUNICATION RECEIVER MODEL 730/4

Eddystone User Group



EDDYSTONE RECEIVER MODEL 730/4

INSTALLATION AND OPERATION

The receiver has been carefully calibrated, aligned and thoroughly tested and the only adjustment that may be necessary before putting the receiver into operation is to the mains input voltage tapping. The selector panel on the top of the mains transformer (easily accessible when the receiver lid is open) is normally connected for 240 volt operation. For other input voltages, reference should be made to the instruction label, attached to the top of this transformer.

Unless specially ordered, the transformer is unsuitable for 25 cycle mains. D.C. mains are entirely unsuitable, and if connected will cause serious damage to the receiver.

A loudspeaker — preferably the Cat. No. 814 — having an impedance of 2.5/3 ohms is connected to the terminals marked "L.S." at the rear or, alternatively, a pair of telephones plugged into the jack on the front panel. The brilliance of the dial lights is adjustable by manipulation of the knob at the rear.

At the rear also are terminals, suitably marked, for feeding the output into a 600 ohm line.

AERIAL CONNECTIONS.

The input impedance at the aerial terminals is nominally 70/80 ohms. Two coaxial sockets, connected in parallel, are fitted at the rear to take the feeder coming in from the aerial system.

RECEPTION OF CW TELEGRAPHY.

The panel controls should be set as follows:-

AGC	.. ..	" off "
Crystal Phasing Knob		White mark at " off."
BFO Pitch Control	..	White mark to one side of centre (" on ").
RF Gain	.. ..	Adjust as necessary.
AF Gain	.. ..	Adjust as necessary.
Selectivity	.. ..	Maximum or intermediate.

The settings of the controls depend on a number of factors including the strength of the incoming signals, amount of interference present and the efficiency of the aerial. If the latter is poor, it will be advisable to use maximum RF gain, but often the RF gain can be reduced with advantage. It should always be reduced when signals are strong.

The BFO on/off switch forms part of the pitch control capacitor. The latter permits a swing of about 3,000 cycles each side of zero beat and will normally be set to give a pitch of 1,000 c.p.s. or near. Careful handling of this control will sometimes enable a desired signal to be separated from an interfering signal and one side of zero beat may be better than the other side.

USE OF CRYSTAL FILTER.

It is advantageous to employ a high degree of selectivity because the noise output from the receiver is partly dependent on the IF bandwidth and the narrower this is made, the less the noise for the same amount of gain. It will therefore generally be desirable when receiving CW telegraphy, to operate with selectivity at maximum.

A further increase in selectivity is obtained when the crystal filter is switched in. Moving the phasing knob away from the indicated " off " position brings the crystal into circuit. The slope of the selectivity curve (with crystal in) can be varied by movement of the phasing control to give extremely high attenuation one side or the other of the centre frequency. This feature is invaluable when interfering signals are objectionable.

AUDIO FILTER.

The highly efficient tuned audio filter will be found very useful when receiving telegraphic signals. It is tuned to approximately 1,000 cycles, has steep slopes giving a pass-band of about 100 cycles at 6 db points, and has a low insertion loss at 1,000 cycles. The switch on the front panel brings the filter into operation, the effect being to reduce drastically both background noise and interfering signals whilst leaving the desired signal clear and sharp.

RECEPTION OF TELEPHONY.

The panel controls should be set as follows :

AGC	..	..	" on."
BFO	..	..	" off" (mark against " off" position).
RF Gain	..	..	maximum.
Crystal Phasing Knob			Mark against " off" position.
AF Gain	..	..	adjusted to give requisite volume.
AF Filter	..	..	" off."

For best possible audio quality, the variable selectivity control should be set at 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 may overload the first stage of the receiver, necessitating a reduction of RF gain.

The tuning scales are calibrated directly 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 comes into operation only with the selectivity control in the maximum position, where the peaked response assists in tuning a signal accurately. The sensitive meter movement is protected by one half of a double diode valve in series with it, to prevent current flowing in the reverse direction. The RF gain should be fully advanced when using the " S " Meter.

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 rear adjuster.

CRYSTAL CALIBRATOR.

A crystal calibrator is fitted and gives check points (oscillator beats) 500 kc/s apart, audible over the entire frequency range. The accuracy of the oscillator has been checked during factory alignment but a small trimmer is provided for adjustment, should this be found necessary at any time.

The calibrator is brought into use by pressing the switch on the front panel, and a check can then be made against any calibration mark which is an exact multiple of 500 kc/s. Incoming signals are muted to avoid confusion.

Any error in calibration is corrected by rotation of the small knurled knob on the right hand side above the dial, until the hair-line on the cursor agrees exactly with the appropriate mark on the scale.

AUDIO INPUT TERMINALS.

The two terminals situated below the "L.S." terminals at the rear are useful for feeding in any external audio voltage when it is desired to use only the AF section of the receiver. The input impedance is approximately 100,000 ohms.

I.F. OUTPUT.

At the rear of the receiver is fitted a coaxial socket from which an output at the intermediate frequency of 450 kc/s. may be taken. The socket connects to a cathode follower stage and the output impedance is 70 to 80 ohms.

OPERATION WITHOUT MAINS.

Facilities are provided for operating the receiver from external sources of power, when desired. At the rear are plug and socket connections, details being provided in the circuit diagram. The requirements are 6 or 6.3 volts at 5 amperes and 250 volts at 120 mA.

GENERAL SERVICING

The "730/4" receiver operates from A.C. mains of 40/60 cycles or external power supplies, the consumption being approximately 80 watts. The fuse is in series with the A.C. supply and is rated at 1 ampere standard type or 750 mA Magnickel type.

Two types of lamps are fitted behind the scale. Those for general illumination are small bayonet cap types, rated at 6.5 volts 0.3 amperes. To change a lamp it is only necessary to press the sides of the holder (accessible when the lid is lifted) and pull the lamp out.

Miniature lamps are used to indicate the range selected. These are fitted to an insulating strip, which can be drawn away complete after removing the knurled nut at the top of the strip. The cabinet has to be removed for this operation.

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 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 operating voltages given in the table and any serious discrepancy will indicate at which stage in the circuit a fault has developed.

RE-ALIGNMENT.

The tuned circuits in the "730/4" 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 this 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. Essential items are :— A Signal Generator covering from 450 kc/s to 32 Mc/s, provided with internal audio modulation (30%) and with a calibrated attenuator; 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, which is supplied with the receiver.

IF AMPLIFIER.

The alignment of a modern variable selectivity IF amplifier as in the "730/4" 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 adjustments 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. The intermediate frequency is 450 kc/s (± 1.5 kc/s = crystal tolerance).

The following conditions apply when taking measurements :

Receiver	{	Wavechange Switch Range 5. AGC and NL off. Pitch control knob at "off". Crystal phasing knob at "off." Selectivity maximum. RF Gain maximum.
Signal Generator	{	30% Modulation. Direct output.

Output Meter across and matched to speaker terminals.

Input for 50 mW output (approximate) :

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

To measure the overall sensitivity of the IF amplifier at the signal grid of the frequency changer (V3), it will be necessary to unsolder a lead in the frequency changer compartment of the coil box. This lead is identified in Fig. 4 by an arrow and cross. The Signal Generator leads are connected between this lead and chassis. The sensitivity at this point should be in the region of 20 microvolts.

BFO ADJUSTMENT.

With the BFO pitch control knob in the "off" position, the modulated signal (at IF) applied to the receiver should be tuned in accurately with the aid of the "S" Meter, selectivity remaining at maximum. Then the modulation is switched off, the pitch control knob adjusted to bring the white mark to the top (12 o'clock), and if necessary, the core in the BFO unit (position is indicated in Fig. 4) adjusted to bring about zero beat with 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 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 1,000/100 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%. To allow for subsequent calibration adjustments against the Internal oscillator, care should be taken to ensure the vernier pointer adjuster is set at the mid point of its travel.

The location of the various trimmers and cores are shown in Fig. 4. Connect the crystal oscillator in shunt with the dummy aerial, set the pitch control with white mark at the top, 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 Range 1 oscillator coil CORE. The 28 Mc/s harmonic is corrected by means of the TRIMMER. With these two points accurately fixed, the remainder of the calibrations 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 14 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	—	1,000 kc/s and 500 kc/s.

ALIGNMENT OF RF. AND MIXER SECTIONS.

Remove the crystal oscillator leads and use only the signal generator with the 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 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	5.4 Mc/s	2.6 Mc/s
4	2.3 Mc/s	1.2 Mc/s
5	1,000 kc/s	520 kc/s

Always 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 in the alignment of all the signal frequency and oscillator coils.

CIRCUIT No. BP. 934.

VOLTAGE VALUES.

The voltages are between the point indicated and the chassis. Set the receiver at 1,000 kc/s on Range 5 with the aerial shorted out, R.F. control set at maximum, A.F. control set at minimum. B.F.O. and Calibrator on only for D- and B- respectively. 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.	WESTON (20,000 ohms/volt.)	AVO (Model 40).
A.	218	215
B.	90	85
C.	1	1
D.	218	215
E.	95	88
F.	1	1
G.	226	224
H.	100	100
J.	1	1
K.	100	92
L.	218	216
M.	96	90
N.	1	1
O.	218	216
P.	90	85
Q.	1	1
R.	14	14
S.	80	21
T.	80	32
U.	225	206
V.	4.2	1.5
W.	4	2
X.	242	246
Y.	235	241
Z.	242	246
A.-	10	9.4
B.-	25	15
C.-	160	150
D.-	20	7
E.-	255 A.C.	252 A.C.
F.-	275	272
G.-	148	148
H.-	140	125
J.-	90	50

VALVES.

VALVE No.	TYPE	SERIES
1.	6BA6	B7G
2.	6BA6	B7G
3.	6BE6	B7G
4.	6AM6 (8D3)	B7G
5.	6BA6	B7G
6.	6BA6	B7G
7.	6AL5	B7G
8.	12AU7	B9A (Noval)
9.	6AL5	B7G
10.	6AM6 (8D3)	B7G
11.	6AU6	B7G
12.	6BA6	B7G
13.	5Z4G	Octal
14.	VR150/30	Octal
15.	6AM5 (7D9)	B7G

CIRCUIT No. BP. 934.

COMPONENT VALUES.

RESISTORS.

R1.	12 ohms		R42.	.47 Megohm	
R2.	.47 Megohm		R43.	6,800 ohms	
R3.	.47 Megohm		R44.	2,200 ohms	
R4.	68 ohms		R45.	1 Megohm	
R5.	33,000 ohms	1W	R46.	1 Megohm	
R6.	1,000 ohms		R47.	.47 Megohm	
R7.	150 ohms		R48.	680 ohms	
R8.	12 ohms		R49.	47,000 ohms	
R9.	.47 Megohm		R50.	4,700 ohms	
R11.	68 ohms		R51.	1 Megohm	
R12.	33,000 ohms	1W	R52.	.1 Megohm	
R13.	1,000 ohms		R53.	22,000 ohms	
R14.	1,000 ohms		R54.	2,200 ohms	
R15.	150 ohms		R55.	2,200 ohms	
R16.	1,000 ohms		R56.	10,000 ohms	
R17.	12 ohms		R57.	1,000 ohms	
R18.	12 ohms		R58.	22,000 ohms	
R19.	.1 Megohm		R59.	10,000 ohms	
R20.	.47 Megohm		R60.	5,000 ohms	Potentiometer
R21.	150 ohms		R61.	27,000 ohms	1W
R22.	.47 Megohm		R62.	2 Megohm	
R23.	15,000 ohms		R63.	22,000 ohms	
R24.	1,000 ohms		R64.	68,000 ohms	
R25.	33,000 ohms	1W	R65.	10,000 ohms	Potentiometer
R26.	1,000 ohms		R66.	2,700 ohms	Wire Wound
R27.	15,000 ohms		R67.	4,700 ohms	
R28.	.47 Megohm		R68.	22,000 ohms	1W
R29.	820 ohms		R69.	.27 Megohm	
R30.	3,300 ohms		R70.	5 ohms	Potentiometer
R31.	1,200 ohms		R71.	6,800 ohms	
R32.	68 ohms		R72.	.1 Megohm	
R33.	1 Megohm		R73.	6,800 ohms	
R34.	68 ohms		R74.	.1 Megohm	
R35.	.1 Megohm		R75.	47 ohms	
R36.	.1 Megohm		R76.	3 Megohms	
R37.	10,000 ohms		R77.	22,000 ohms	
R38.	.22 Megohm		R78.	.47 Megohm	
R39.	.1 Megohm		R79.	68 ohms	
R40.	.5 Megohm	Potentiometer	R80.	10,000 ohms	
R41.	1 Megohm		R81.	68,000 ohms	

CAPACITORS

C1.	3-23 pF Air Trimmer	C64.	400 pF Silvered Mica $\pm 2\%$
C2.	10 pF Silvered Mica	C65.	.01 mfd Tub. paper
C3.	3-23 pF Air Trimmer	C66.	.1 mfd Tub. paper
C4.	3-23 pF Air Trimmer	C67.	.1 mfd Tub. paper
C5.	3-23 pF Air Trimmer	C68.	400 pF Silvered Mica $\pm 2\%$
C6.	3-23 pF Air Trimmer	C69.	400 pF Silvered Mica $\pm 2\%$
C7.	100 pF Silvered Mica	C70.	20 pF Silvered Mica
C8.	.0005 mfd Moulded Mica	C71.	.1 mfd Tub. paper
C9.	10-367.75 pF 1st R.F. Sect. 4 Gang	C72.	100 pF Silvered Mica
C10.	25 pF Silvered Mica	C73.	100 pF Silvered Mica
C11.	.01 mfd Tub. paper	C74.	.1 mfd Tub. paper
C12.	.01 mfd Tub. paper	C75.	.1 mfd Tub. paper
C13.	.1 mfd Tub. paper	C76.	.01 mfd Tub. paper
C14.	.0005 mfd Moulded Mica	C77.	30 mfd Tub. Elect. 15V. D.C. Wkg.
C15.	.1 mfd Tub. paper	C78.	8 mfd Tub. Elect.
C16.	.1 mfd Tub. paper	C79.	.01 mfd Moulded Mica
C17.	20 pF Silvered Mica	C80.	.01 mfd Moulded Mica
C18.	3-23 pF Air Trimmer	C81.	7,000 pF Silvered Mica $\pm 1\%$
C19.	6 pF Silvered Mica	C82.	7,000 pF Silvered Mica $\pm 1\%$
C20.	3-23 pF Air Trimmer	C83.	30 mfd Tub. Elect. 15V. D.C. Wkg.
C21.	3 pF Silvered Mica	C84.	.01 mfd Moulded Mica
C22.	3-23 pF Air Trimmer	C85.	3-23 pF Air Trimmer
C23.	3 pF Silvered Mica	C86.	20 pF Silvered Mica
C24.	3-23 pF Air Trimmer	C87.	.01 mfd Moulded Mica
C25.	3-23 pF Air Trimmer	C88.	7,000 pF Silvered Mica $\pm 1\%$
C26.	10-367.75 pF 2nd. R.F. Sect. 4 Gang	C89.	3-23 pF Air Trimmer
C27.	25 pF Silvered Mica	C90.	3-23 pF Air Trimmer
C29.	.1 mfd Tub. paper	C91.	3,625 pF Silvered Mica $\pm 1\%$
C30.	.01 mfd Tub. paper	C92.	1,625 pF Silvered Mica $\pm 1\%$
C31.	100 pF Silvered Mica	C93.	10 pF Silvered Mica
C32.	.1 mfd Tub. paper	C94.	3-23 pF Air Trimmer
C33.	.1 mfd Tub. paper	C95.	900 pF Silvered Mica $\pm 1\%$
C34.	20 pF Silvered Mica	C96.	20 pF Silvered Mica $\pm 1\%$
C35.	3-23 pF Air Trimmer	C97.	3-23 pF Air Trimmer
C36.	20 pF Silvered Mica	C98.	440 pF Silvered Mica $\pm 1\%$
C37.	6 pF Silvered Mica	C99.	20 pF Silvered Mica $\pm 1\%$
C38.	3-23 pF Air Trimmer	C100.	3-23 pF Air Trimmer
C39.	3 pF Silvered Mica	C101.	200 pF Ceramic
C40.	3-23 pF Air Trimmer	C102.	10-367.75 pF Osc. Sect. 4 Gang
C41.	3 pF Silvered Mica	C103.	12 pF Ceramic
C42.	3-23 pF Air Trimmer	C104.	.1 mfd Tub. paper
C43.	3-23 pF Air Trimmer	C105.	.0005 mfd Moulded Mica
C44.	.1 mfd Tub. paper	C106.	.0005 mfd Moulded Mica
C45.	400 pF Silvered Mica $\pm 2\%$	C107.	50 pF Ceramic
C46.	800 pF Silvered Mica $\pm 2\%$	C108.	.002 mfd Moulded Mica
C47.	800 pF Silvered Mica $\pm 2\%$	C109.	.01 mfd Moulded Mica
C48.	Crystal Phasing Cond.	C110.	8 pF Silvered Mica
C50.	10-367.75 pF Frq. change sect. 4 Gang	C111.	100 pF Silvered Mica
C51.	25 pF Silvered Mica	C112.	B.F.O. Pitch Cond.
C52.	.01 mfd Tub. Paper	C113.	100 pF Silvered Mica
C53.	.01 mfd Tub. paper	C114.	.5 mfd Tub. paper
C54.	.1 mfd Tub. paper	C115.	.5 mfd Tub. paper
C55.	.1 mfd Tub. paper	C116.	.01 mfd Tub. paper
C56.	10 pF Ceramic	C117.	16 mfd Tub. Elect. 450V. D.C. Wkg.
C57.	.01 mfd Tub. paper	C118.	40 mfd Tub. Elect. 350V. D.C. Wkg.
C58.	.01 mfd Moulded Mica	C119.	.01 mfd Tub. paper
C59.	20 pF Silvered Mica	C120.	.01 mfd Tub. paper
C60.	500 pF Silvered Mica $\pm 2\%$	C121.	6pF Ceramic
C61.	.1 mfd Tub. paper	C122.	.04 mfd Tub. paper
C62.	.1 mfd Tub. paper	C123.	.01 mfd Tub. paper
C63.	400 pF Silvered Mica $\pm 2\%$	C124.	.01 mfd Tub. paper
		C125.	.01 mfd Tub. paper

PERFORMANCE FIGURES

SENSITIVITY

For signal-to-noise ratio of 15 db, output power 50 milliwatts :

A.M. signal, modulated 30% at 400 cycles	..	better than 5 μ V
C.W. signal, ranges 1, 2, 3, 4	.. ..	better than 1 μ V
C.W. signal, range 5	.. ..	better than 2 μ V

AUDIO OUTPUT AND HARMONIC DISTORTION.

At 1,000 cycles, output impedance 2.5 ohms

	Typical performance	Production limit
1 watt	18%	20%
500 milliwatts	6.2%	7%
100 milliwatts	2.5%	3%

AUTOMATIC GAIN CONTROL.

Typical performance figures taken at 8 Mc/s. :

Selectivity position	Change of input	Change of output	Zero level
Narrow	100db	6db	1 μ V
Inter 1	100db	8db	3 μ V
Inter 2	100db	12db	3 μ V
Wide	100db	11db	3 μ V

Figures taken at 750 kc/s.

Narrow	100db	7db	1 μ V
Inter 1	100db	8db	3 μ V
Inter 2	100db	10db	3 μ V
Wide	100db	10db	3 μ V

Production limits :— at any frequency and any bandwidth, a 100db change of input will not change the output power by more than 14db (zero level 3 μ V).

OSCILLATOR STABILITY (Production limits)

BFO note stability with AGC — for an input change of 60db from a level of 10db above 1 μ V, the beat note does not change by more than 50 cycles.

BFO thermal stability — after a 30 minute warming-up period, the total drift in one hour does not exceed 225 parts in one million.

BFO voltage co-efficient — for a $\pm 10\%$ change in supply voltage, the frequency of the BFO does not change by more than ± 80 cycles (equal to 3.4 cycles per volt).

Local oscillator thermal stability — after two hours warm-up, the total drift does not exceed 150 parts in one million over a period of one hour, under steady ambient temperature conditions and with stable mains supply.

Local oscillator voltage co-efficient — for a $\pm 10\%$ change in supply voltage, the frequency of the local oscillator does not change by more than the following :—

at 2.4 Mc/s. ± 200 cycles (4.2 cycles per volt)
at 20 Mc/s. ± 2 kilocycles (86 cycles per volt).

NOISE FACTOR.

750 kc/s.	12db	}	noise measurements at these frequencies not normally reliable.
2 Mc/s.	5db		
4 Mc/s.	10.5db	}	± 3 db
9 Mc/s.	6.5db		
20 Mc/s.	9.5db		

CATHODE FOLLOWER.

Output approximately 300 millivolts..

Output impedance approximately 68 ohms.

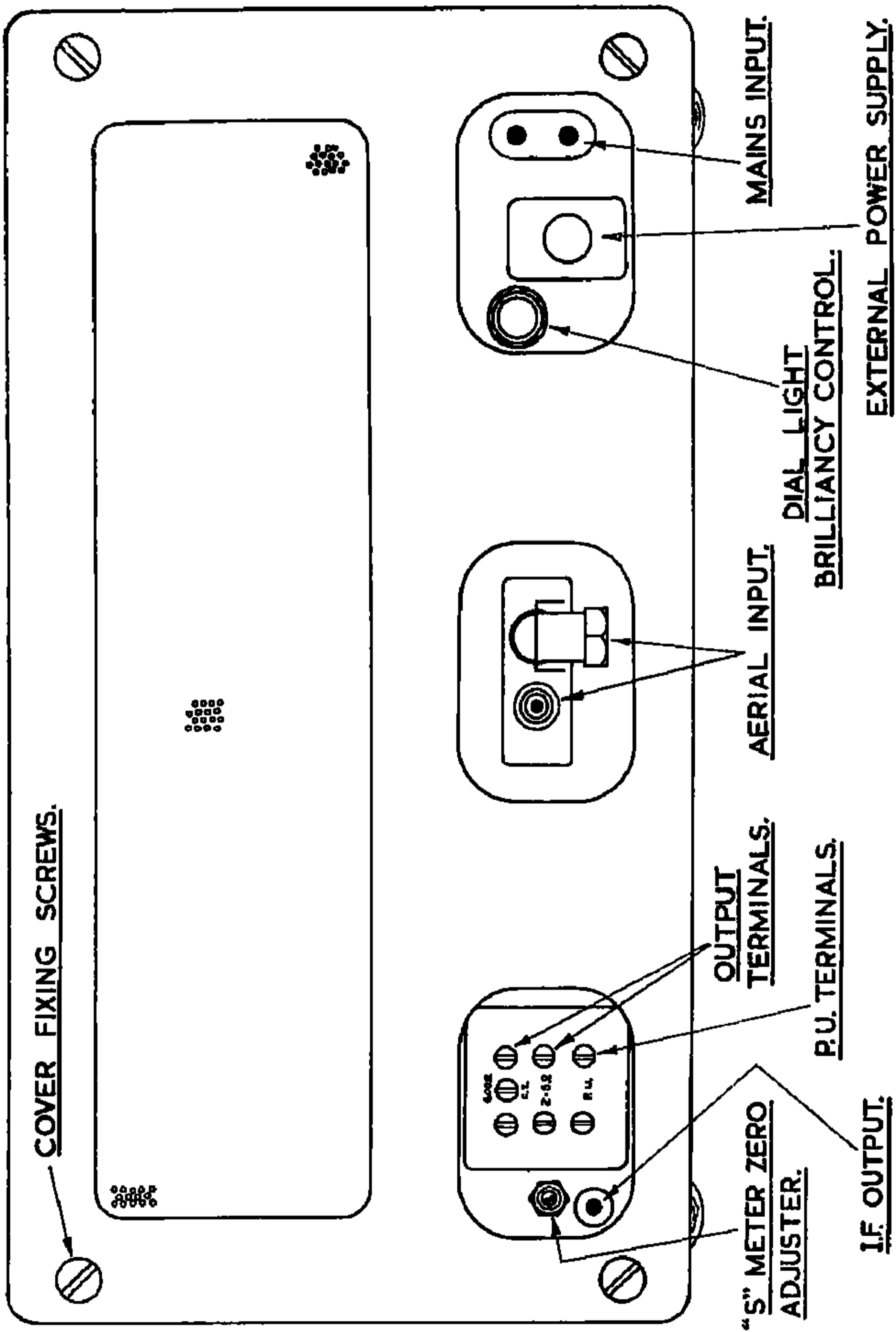


Fig. 2. Rear view of the "730/4" Receiver, in outline

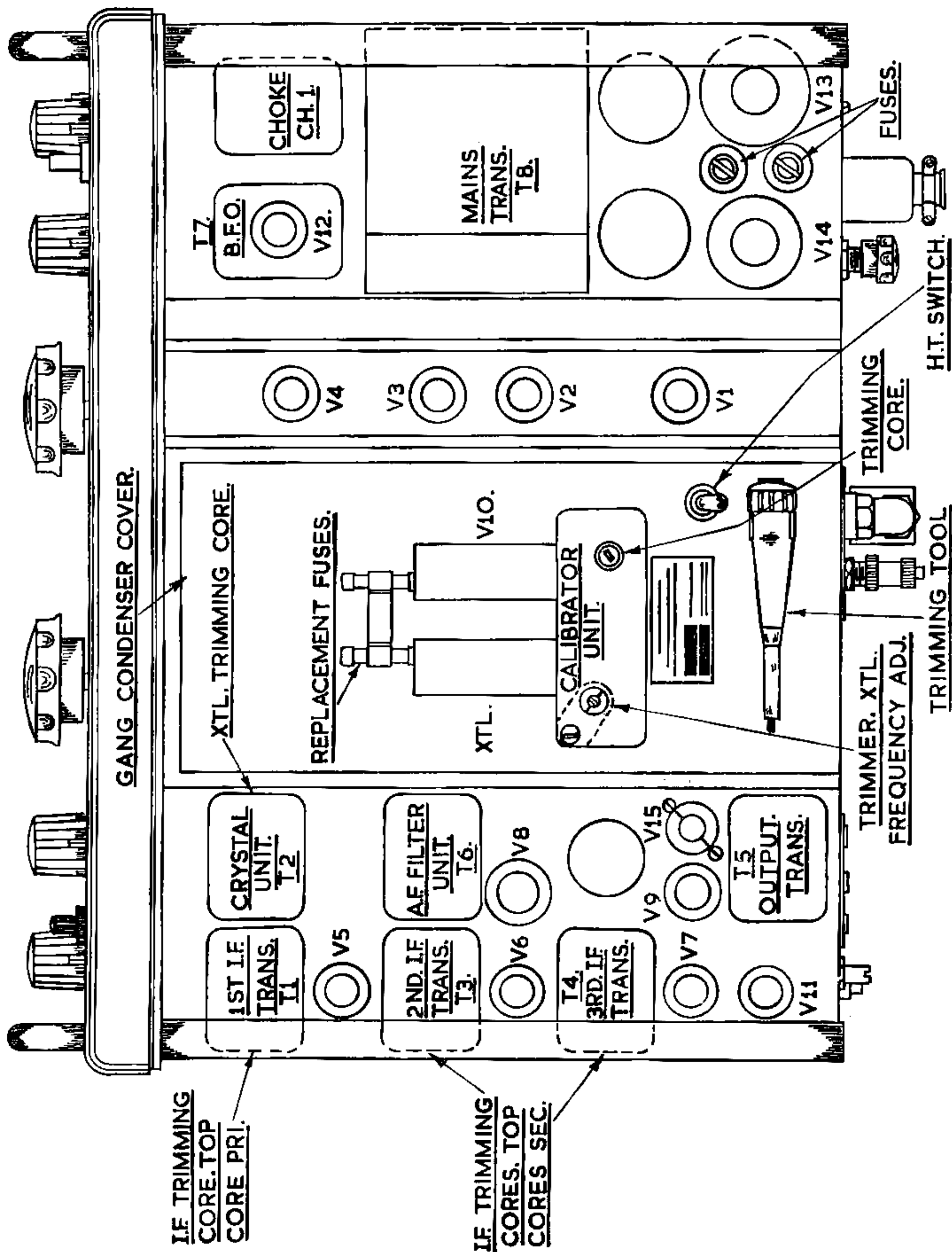


Fig. 3. Plan view of the "730/4" Receiver, in outline

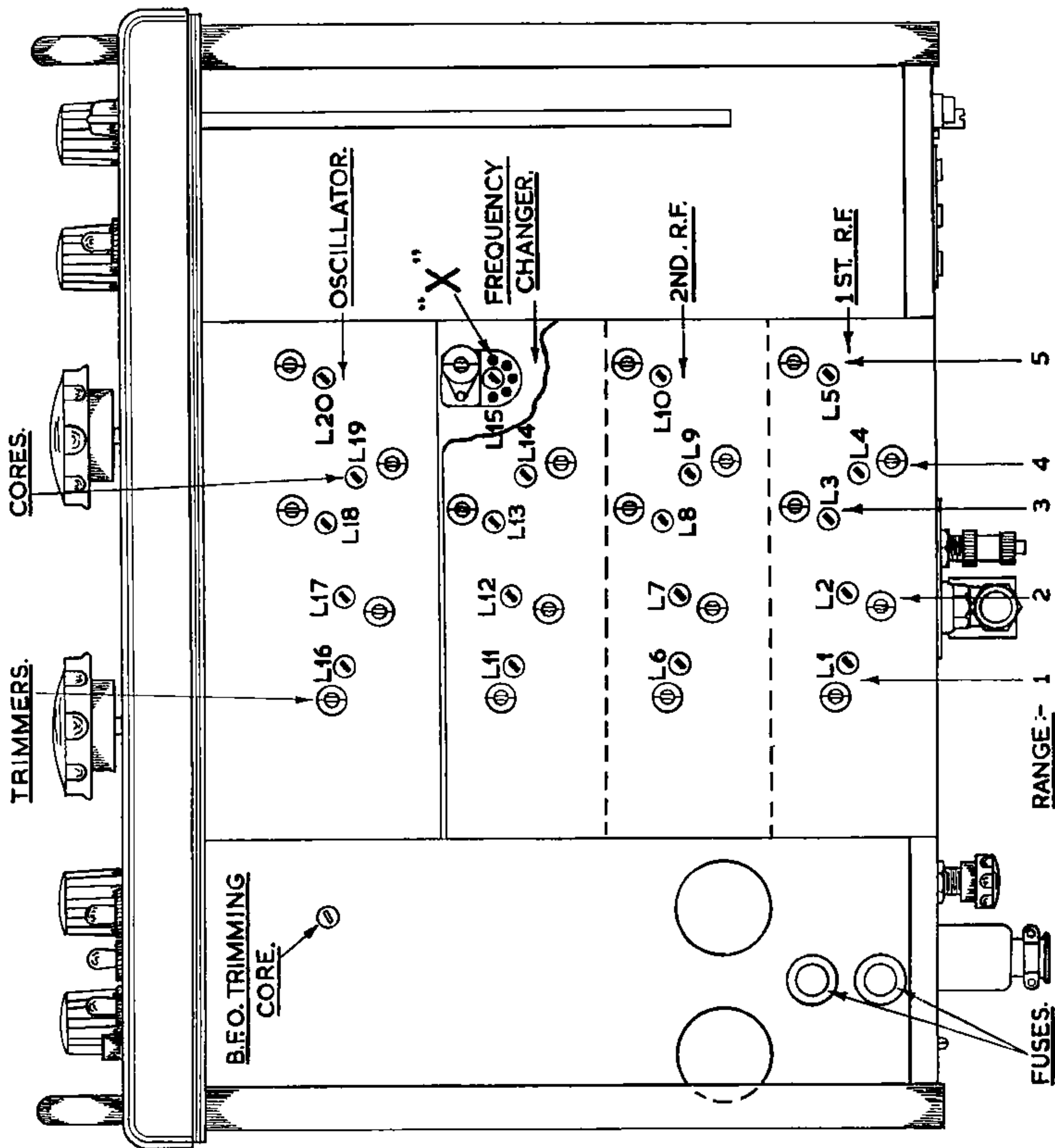
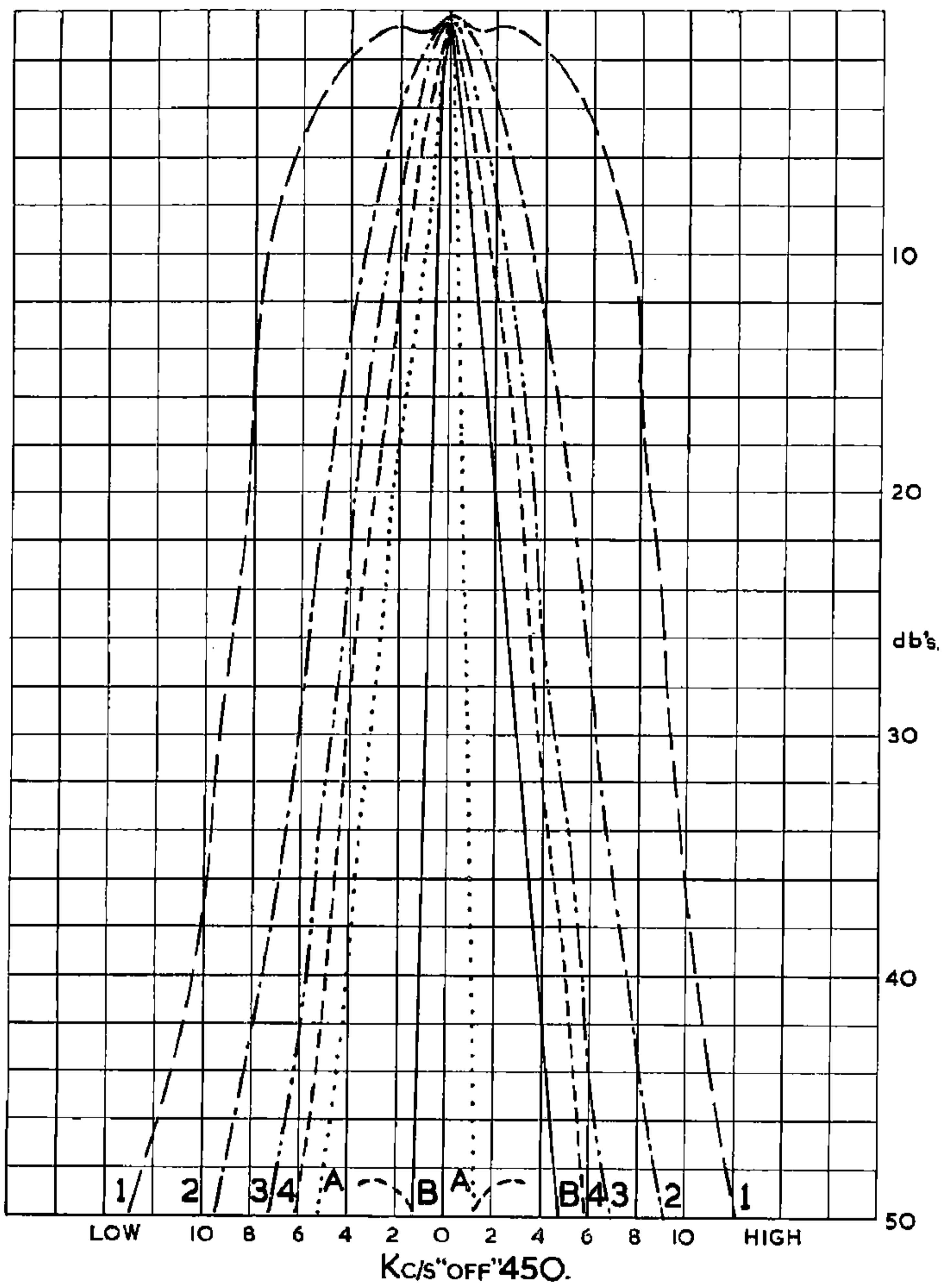


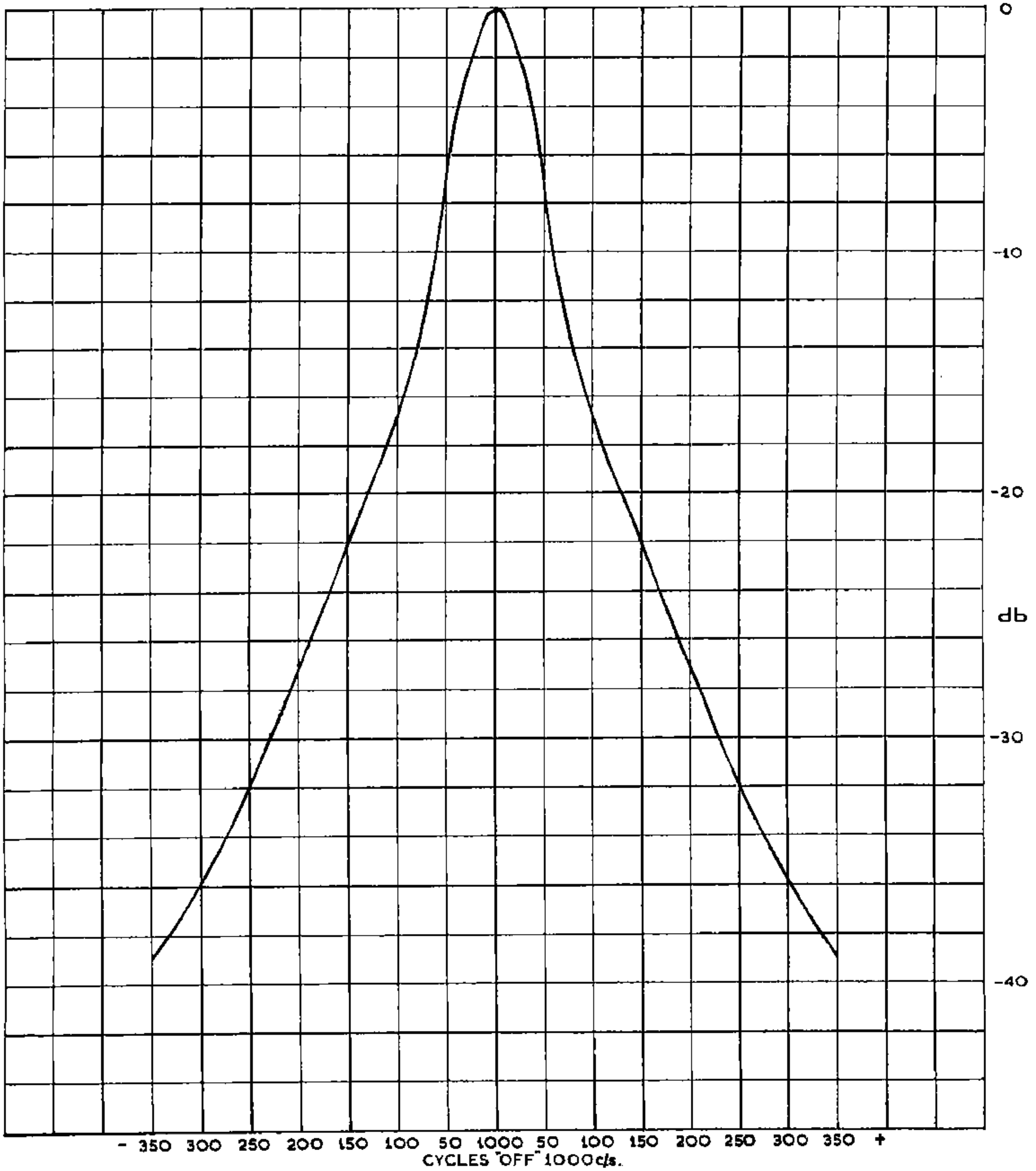
Fig. 4. Underside view, in outline, of the "730/4" Receiver

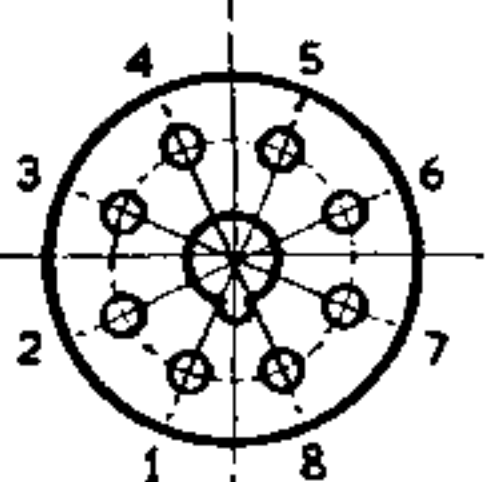
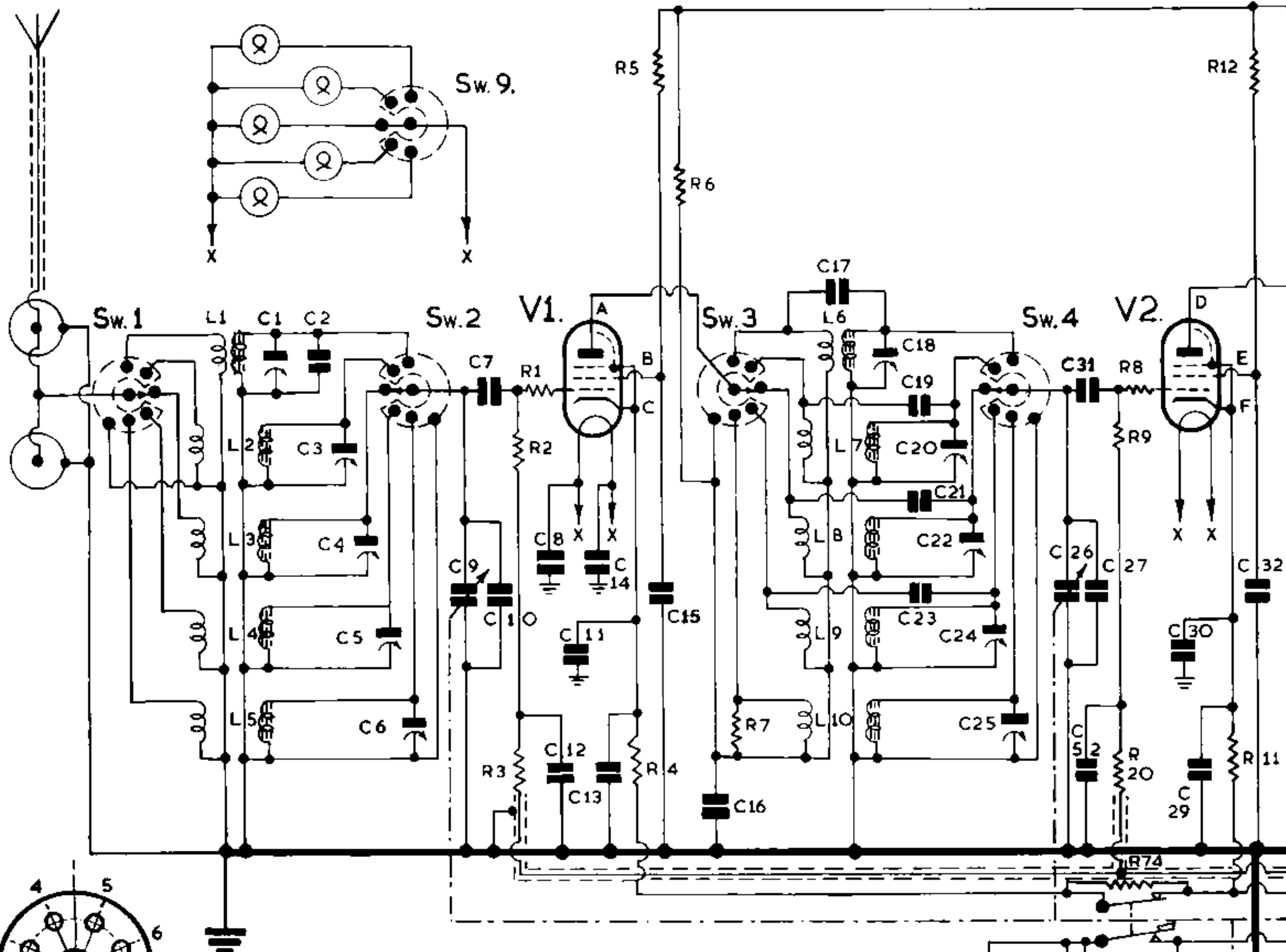
Fig. 5. Average selectivity curves of the "730/4" Receiver



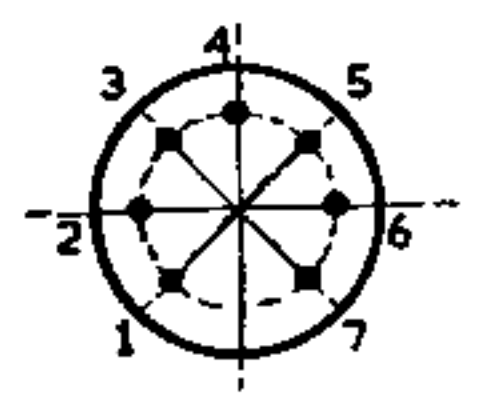
- (1) _____ MINIMUM POSITION.
- (2) -.-.-.-.- FIRST INTERMEDIATE POSITION.
- (3) SECOND INTERMEDIATE POSITION.
- (4) - - - - - MAXIMUM SELECTIVITY.
- (A) MAXIMUM SELECTIVITY WITH CRYSTAL FILTER IN, & PHASED TO REJECT SIGNAL ON ONE SIDE.
- (B) _____ AS A BUT WITH CRYSTAL PHASED ON OTHER SIDE

A.F. FILTER UNIT.
RESPONSE CURVE.

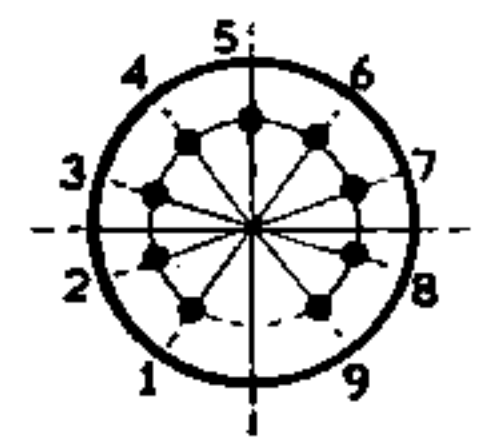




OCTAL SERIES.

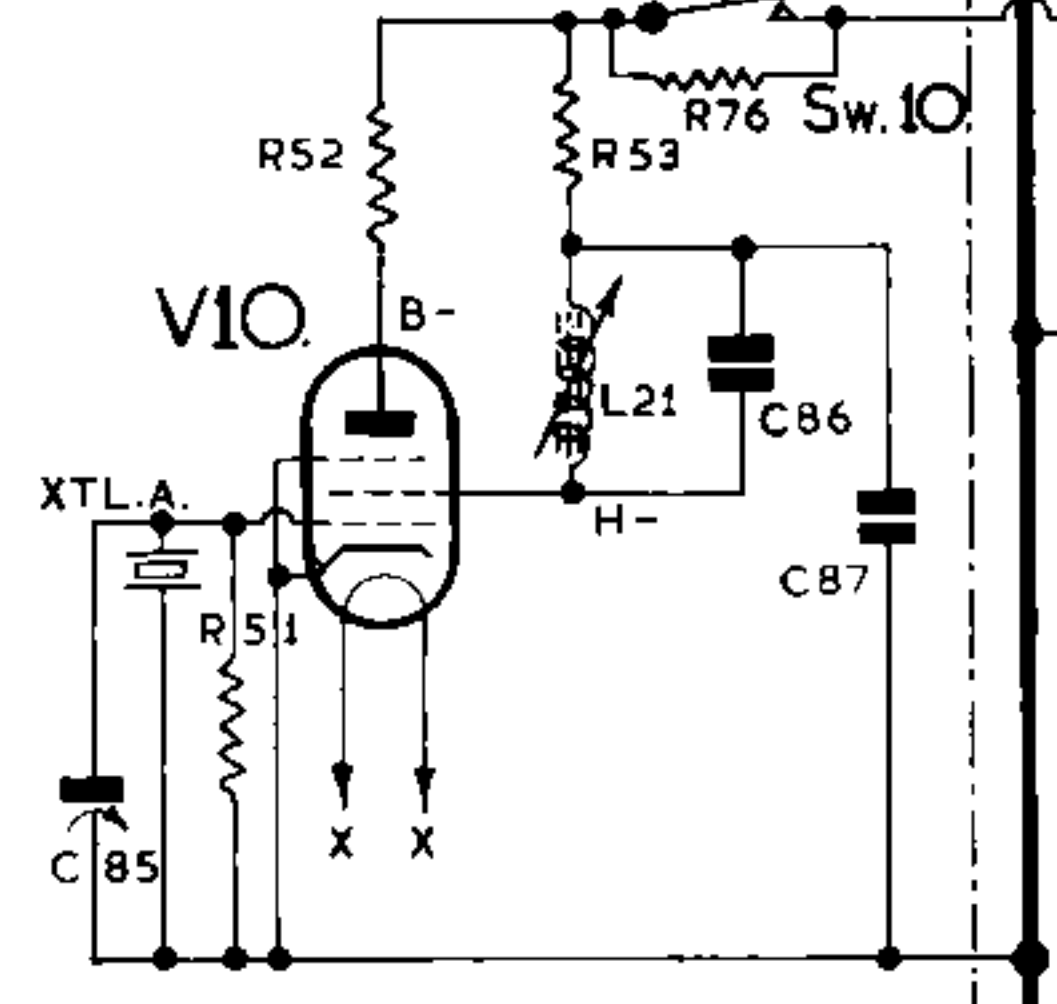


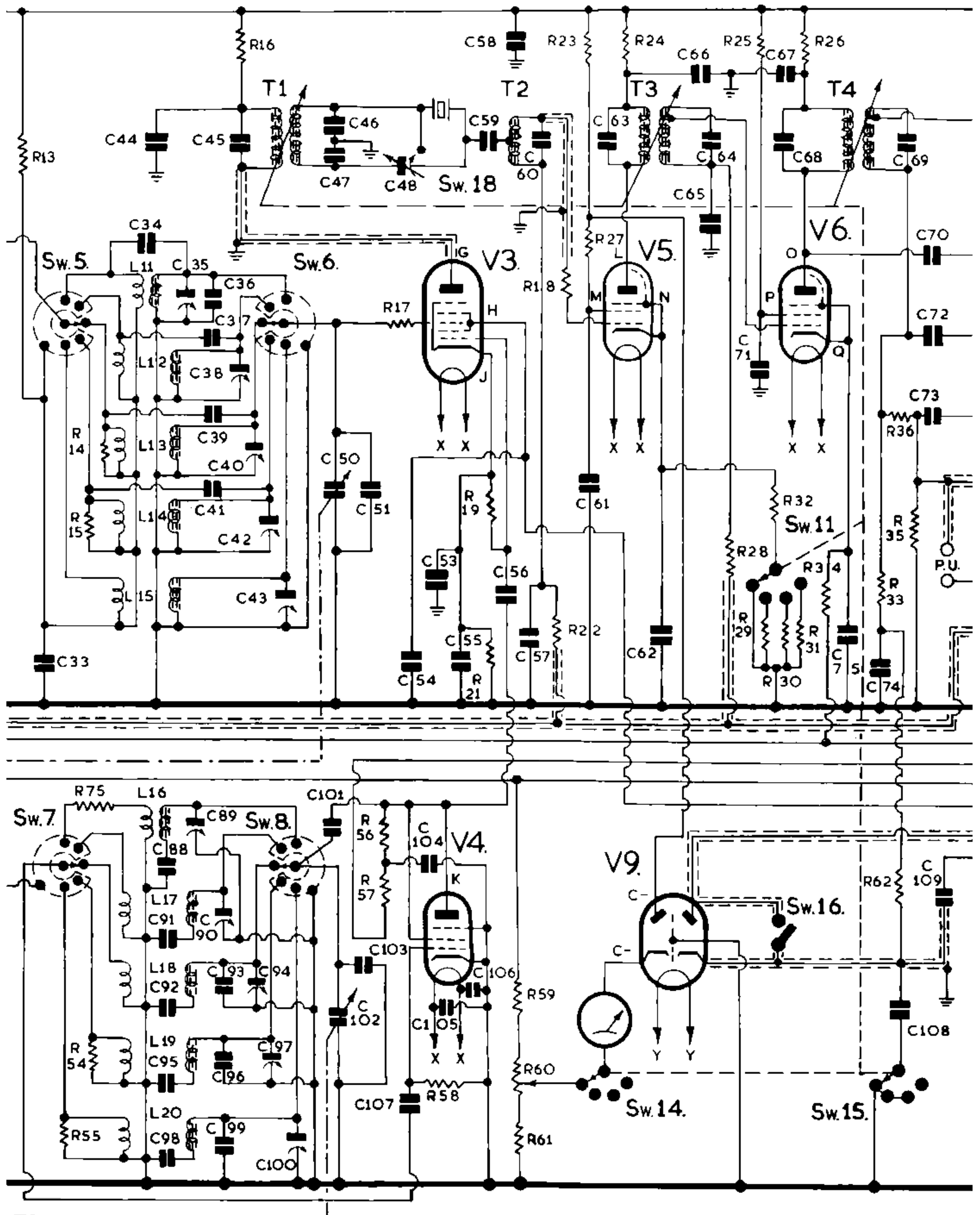
B7G SERIES.



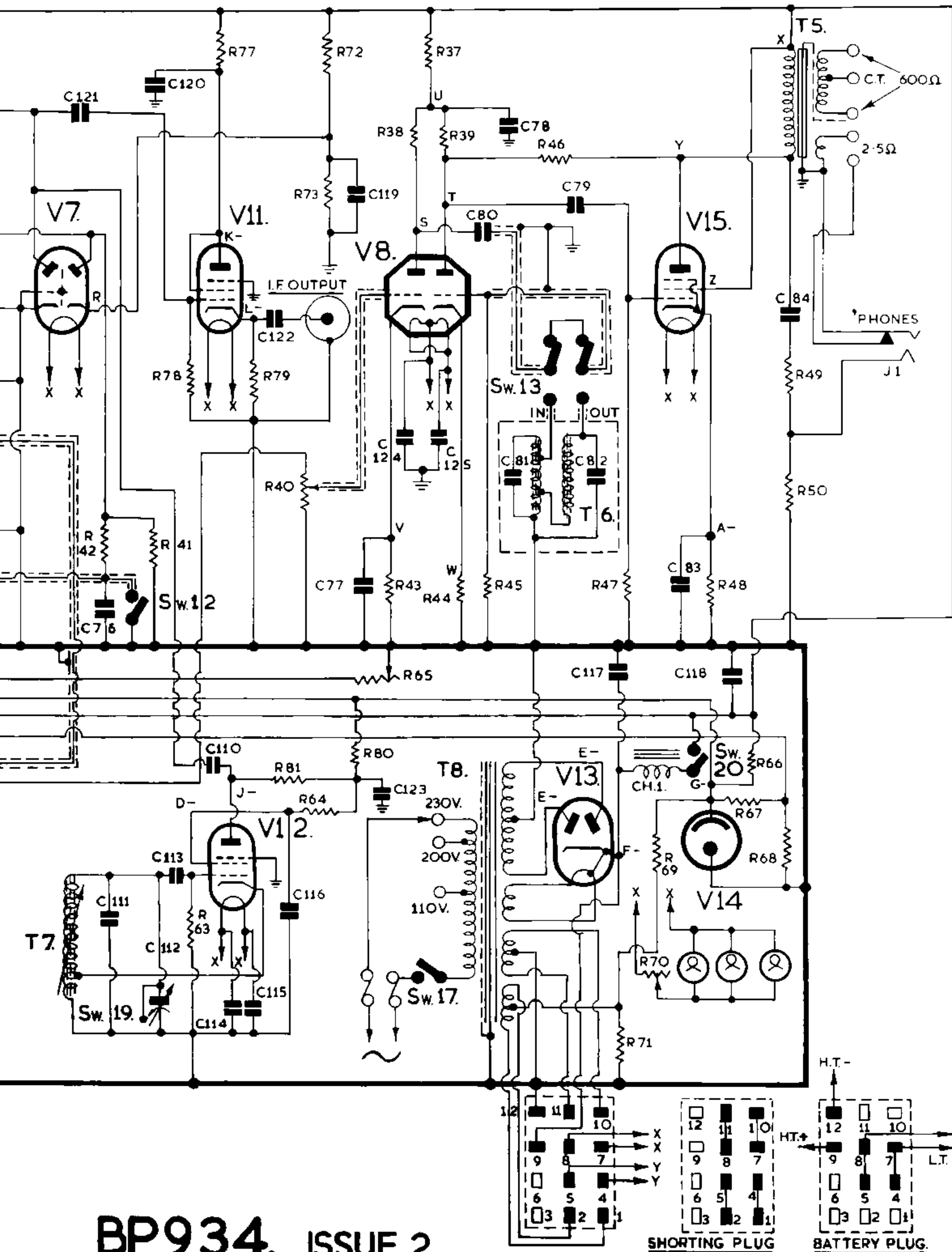
(NOVAL.) B9A SERIES.

VALVE	V.No.	PIN CONNECTIONS.									SERIES	SERVICE NUMBERS
		1	2	3	4	5	6	7	8	9		
6BA6	V1,2,5, 6 & 12	G1	G3	H	H	A	G2	K	-	-	B7G	CV 454.
6BE6	V3	G1	K	H	H	A	G2	G3	-	-	B7G	CV 453.
12AU7	V8	A2	G2	K2	H	H	A1	G1	K1	H TAP	B9A (NOVAL)	CV 491.
8D3 (6AM6)	V4 & 10	G1	K	H	H	A	G3	G2	-	-	B7G	CV 138.
7D9 (6AM5)	V15	G1	K	H	H	A	-	G2	-	-	B7G	CV 136.
5Z4G	V13	-	H	-	A2	-	A1	-	K	-	OCTAL	CV 1863
VR150/30	V14	-	K	-	-	A	-	-	-	-	OCTAL	CV 216
6AL5	V7 & 9	K1	A2	H	H	K2	S	A1	-	-	B7G.	CV 140.
XTLA.	-	G1	G1	G1	-	E	E	E	-	-	B7G.	
6AU6	V11	G1	G3	H	H	A	G2	K	-	-	B7G.	CV 2524





NS RECEIVER TYPE 730/4.





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