EDDYSTONE RECEIVER MODEL 'S730/6'

INTRODUCTION

The Model 'S730/6' is a standard Model 'S730/4' with facilities for crystal control of the Local Oscillator Stage. Details of the wiring changes in the Local Oscillator Stage are given in Drawing BP. 973, while Drawing D. 2426 shows the Crystal Selector Switch mechanism together with the crystal holders. This assembly is located behind the front panel to the left hand side of the gang cover.

No range indicator lamps are fitted to the Model 'S730/6' since the space previously occupied by the Range Lamp Switch (Sw9 'S730/4') is now taken up by part of the Crystal Selector Switch mechanism.

The following components, which appear in Drawing BP. 973, should be added to the list on Page 7 of this manual.

C126 - C129 1 - 22 pF Ceramic Tube Trimmers

All 'S730/4' receivers modified for crystal control are now fitted with IF crystals having a tolerance of 0.05%.

CALCULATION OF CRYSTAL FREQUENCIES

The following formula should be applied in calculating the crystal frequency for reception on any desired signal frequency.

CRYSTAL FREQ = REQUIRED SIGNAL FREQ + 450 kc/s

The crystal holders fitted in the 'S730/6' are suitable for 'Inter-Services Type D' or 'American Style HC - 6/U' crystals, and these are available for all frequencies in the range 2-20 Mc/s. Crystals for frequencies outside this range can be supplied to special order.

Up to four crystals may be fitted in the holders provided, selection being by means of the Crystal Selector Switch on the front panel. This switch has five positions - four for crystal selection and one (M) for manual tuning. The crystal cover bears the numbering of the crystal holders, and this numbering corresponds with the positions of the Crystal Selector Switch on the front panel.

When setting up the receiver for crystal controlled working on more than one frequency, a note should be made of the signal frequency obtaining in each position of the Crystal Selector Switch. It is

suggested that a small card bearing this information be affixed to the inside of the receiver lid for the convenience of the operator, or in rack mounted equipments, attached to the side of the rack.

TUNING INSTRUCTIONS FOR CRYSTAL CONTROLLED WORKING

1. Set Crystal Selector Switch to Manual Tuning (M).
2. Tune receiver to required signal frequency.
3. Set Crystal Selector Switch to appropriate position, i.e. to bring in a crystal of frequency 450 kc/s higher than the required signal frequency.
4. Move tuning slightly HF to 'fire' crystal.
5. Tune back towards correct frequency (as per scale calibration) to align signal frequency circuits.
   NOTE: Tuning too far LF will cause the crystal to stop oscillating.
6. Switch OFF the receiver for a few seconds and check that on switching ON again, the crystal oscillates immediately. If the crystal fails to oscillate, repeat 4 and 5 above, tuning slightly less LF to ensure oscillation.

When using extreme selectivity, it may be necessary to 'trim' the crystal slightly for best results. C126-C129 are provided for this purpose, and are mounted alongside the crystal holders.

EDDYSTONE RECEIVER MODEL 'S730/7'

INTRODUCTION

The Model 'S730/7' is a standard Model 'S730/4' embodying certain modifications necessary to provide coverage of the band 200 - 420 kc/s in lieu of the existing Range 5 (480 - 1100 kc/s).

In addition to changes in component values required to cover the modified range, the 2nd RF Stage (V2) operates as an untuned amplifier with resistance-capacity coupling from the previous stage (V1). The original Range 5 inductance (L10) , together with its associated trimmer has been removed. On all other ranges, V2 functions normally as a tuned amplifier.

AGC is applied to the Mixer Stage (V3) on Range 5 to ensure efficient AGC action on this range. On all other ranges V3 operates without AGC.

To cover the modifications mentioned above, the following changes and additions should be made to the list of components given on Pages 6 and 7 of this manual.

RESISTORS

Change	R7	to read 5,600 ohms
Change	R55	to read 560 ohms
Add	R82	.47 Megohm

CAPACITORS

Change	C25	to read 100 pF Silvered Mica ± 10%
Change	C98	to read 190 pF Silvered Mica ± 1%
Change	C99	to read 40 pF Silvered Mica ± 1%
Add	C126	.25 mfd Tubular Paper

Further alterations necessary in the text are given below:

Page 2. CRYSTAL CALIBRATOR - No check point available on Range 5.

Page 3. RE-ALIGNMENT - Signal Generator must cover from 200 kc/s to 32 Mc/s.

Page 4. Change alignment points for Range 5 to read 400 kc/s and 200 kc/s, and add note that only one RF coil is fitted on Range 5.

Page 5. Voltage checks should be carried out at 2 Mc/s on Range 4.

Page 8. The AGC figures taken at 750 kc/s should be deleted and the following figures taken at 300 kc/s substituted.

SELECTIVITY POSITION	CHANGE OF INPUT	CHANGE OF OUTPUT	ZERO LEVEL
Narrow	100db	6db	5uV
Inter 1.	100db	8db	5uV
Inter 2.	100db	9db	5uV
Wide	100db	13db	5uV

The noise factor for 750 kc/s should be deleted.

EDDYSTONE RECEIVER MODEL 'S730/8'

INTRODUCTION

The Model 'S730/8' is a standard Model 'S730/4' with facilities for crystal control of the Local Oscillator Stage, and coverage of the band 200 - 420 kc/s in lieu of the existing Range 5 (480 -1100 kc/s) .

The circuit diagram at the rear of this manual is of the Model 'S730/7' which differs from the Model 'S730/8' only in that no facilities are provided for crystal control. Full details of the wiring changes applicable to the Local Oscillator Stage ('S730/8') are given in Drawing BP. 984.

Drawing D. 2426 shows the Crystal Selector Switch mechanism together with the crystal holders, and this assembly is located behind the front panel to the left hand side of the 'gang' cover.

No range indicator lamps are fitted to the Model 'S730/8' since the space previously occupied by the Range Lamp Switch (Sw9 'S730/7') is now taken up by part of the Crystal Selector Switch mechanism.

The circuit differences between the Models 'S730/7' and 'S730/4' are as follows:

In addition to changes in component values required to cover the modified range, the 2nd RF Stage (V2) operates as an untuned amplifier with resistance-capacity coupling from the previous stage (V1). The original Range 5 inductance (L10), together with its associated trimmer, has been removed. On all other ranges , V2 functions normally as a tuned amplifier.

AGC is applied to the Mixer Stage (V3) on Range 5 to ensure efficient AGC action on this range. On all other ranges, V3 operates without AGC.

To cover the modifications mentioned above, the following changes and additions should be made to the list of components given on Pages 6 and 7 of this manual.

RESISTORS

Change	R7	to read 5,600 ohms
Change	R55	to read 560 ohms
Add	R82	.47 Megohm

CAPACITORS

Change C25 to read 100 pF Silvered Mica ± 10%
Change C98 to read 190 pF Silvered Mica ± 1%
Change C99 to read 40 pF Silvered Mica ± 1%
Add C126 .25 mfd Tubular Paper

Further alterations necessary in the text are given below:

Page 2. CRYSTAL CALIBRATOR - No check point available on Range 5.
Page 3. RE-ALIGNMENT - Signal Generator must cover from 200 kc/s to 32 Mc/s.
Page 4. Change alignment points for Range 5 to read 400 kc/s and 200 kc/s, and add note that only one RF coil is fitted on Range 5.
Page 5. Voltage checks should be carried out at 2 Mc/s on Range 4.
Page 8. The AGC figures taken at 750 kc/s should be deleted and the following figures taken at 300 kc/s substituted.

SELECTIVITY POSITION	CHANGE OF INPUT	CHANGE OF OUTPUT	ZERO LEVEL
Narrow	100db	6db	5uV
Inter 1.	100db	8db	5uV
Inter 2.	100db	9db	5uV
Wide	100db	13db	5uV

The noise factor for 750 kc/s should be deleted.

The following components which appear in Drawing BP. 984 should be added to the list on Page 7.

C127 - C130 1 - 22 pF Ceramic Tube Trimmers.

All 'S730/4' receivers modified for crystal control are now fitted with IF crystals having a tolerance of 0.05%.

CALCULATION OF CRYSTAL FREQUENCIES

The following formula should be applied in calculating the crystal frequency for reception on any desired signal frequency.

CRYSTAL FREQ = REQUIRED SIGNAL FREQ + 450 kc/s

The crystal holders fitted in the 'S730/8' are suitable for 'Inter-Services Type D' or 'American Style HC - 6/U' crystals and these are available for all frequencies in the range 2-20 Mc/s. Crystals for frequencies outside this range can be supplied to special order.

Up to four crystals may be fitted in the holders provided, selection being by means of the Crystal Selector Switch on the front panel. This switch has five positions - four for crystal selection and one (M) for manual tuning. The crystal cover bears the numbering of the crystal holders and this numbering corresponds with the positions of the Crystal Selector Switch on the front panel.

When setting up the receiver for crystal controlled working on more than one frequency, a note should be made of the signal frequency obtaining in each position of the Crystal Selector Switch. It is suggested that a small card bearing this information be affixed to the inside of the receiver lid for the convenience of the operator, or in the case of rack mounted equipments, attached to the side of the rack.

TUNING INSTRUCTIONS FOR CRYSTAL CONTROLLED WORKING

1. Set Crystal Selector Switch to Manual Tuning (M).
2. Tune receiver to required signal frequency.
3. Set Crystal Selector Switch to appropriate position, i.e. to bring in a crystal of frequency 450 kc/s higher than the required signal frequency.
4. Move tuning slightly HF to 'fire' crystal.
5. Tune back towards correct frequency (as per dial calibration) to align signal frequency circuits.
   NOTE: Tuning too far LF will cause the crystal to stop oscillating.
6. Switch OFF the receiver for a few seconds and check that on switching ON again, the crystal oscillates immediately. If the crystal fails to oscillate, repeat 4 and 5 above, tuning slightly less LF to ensure oscillation.

When using extreme selectivity, it may be necessary to 'trim' the crystal slightly for best results. C127 - C130 are provided for this purpose and are mounted alongside the crystal holders.

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 'S730/6' 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.

Scale illumination is provided by three small bayonet cap type lamps 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.

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 'S730/6' 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 'S730/6' 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 and the I.F. crystal has a tolerance of 0.05%.

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 the 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.

Sole Manufacturers: STRATTON & CO. LTD., BIRMINGHAM 31

Cables: Stratnoid, Birmingham

Printed in England H.E.J. October 1957

CIRCUIT NO. BP. 984.

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

COMPONENT VALUES.

RESISTORS.

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

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 5uV
C.W. signal, ranges 1, 2, 3, 4	better than 1uV
C.W. signal, range 5	better than 2uV

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 uV
Inter 1	100db	8db	3 uV
Inter 2	100db	12db	3 uV
Wide	100db	11db	3 uV

Figures taken at 750 kc/s.

Narrow	100db	7db	1 uV
Inter 1	100db	8db	3 uV
Inter 2	100db	10db	3 uV
Wide	100db	10db	3 uV

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 uV).

OSCILLATOR STABILITY (Production limits)

BFO note stability with AGC — for an input change of 60db from a level of 10db above 1 uV, 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 ± 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 ± 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
2 Mc/s.	5db	frequencies not normally reliable.
4 Mc/s.	10·5db	± 3db
9 Mc/s.	6·5db	
20 Mc/s.	9·5db	

CATHODE FOLLOWER.

Output approximately 300 millivolts.
Output impedance approximately 68 ohms.

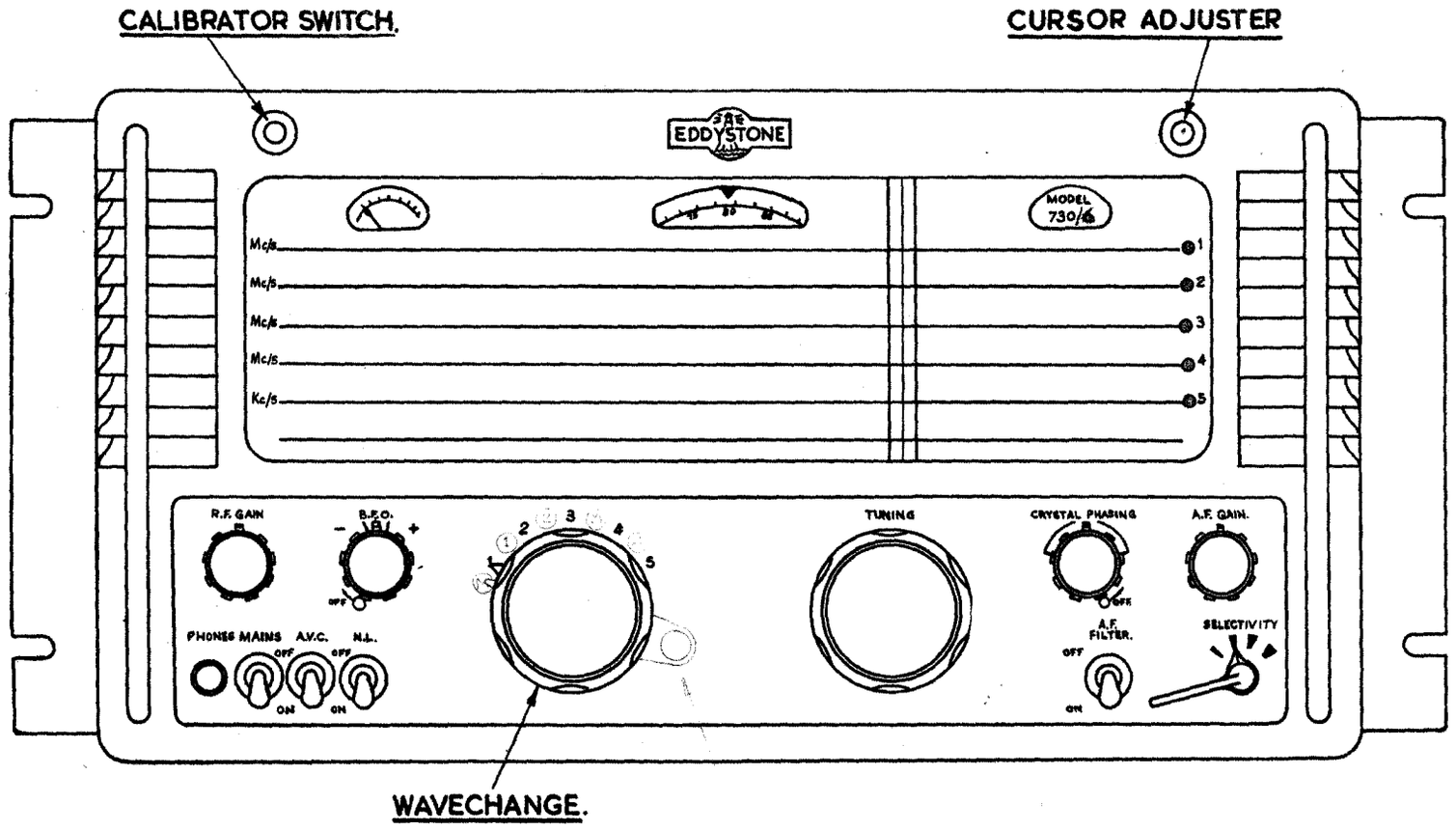


Fig. 1. Front view, in outline, of the S730/6 Receiver

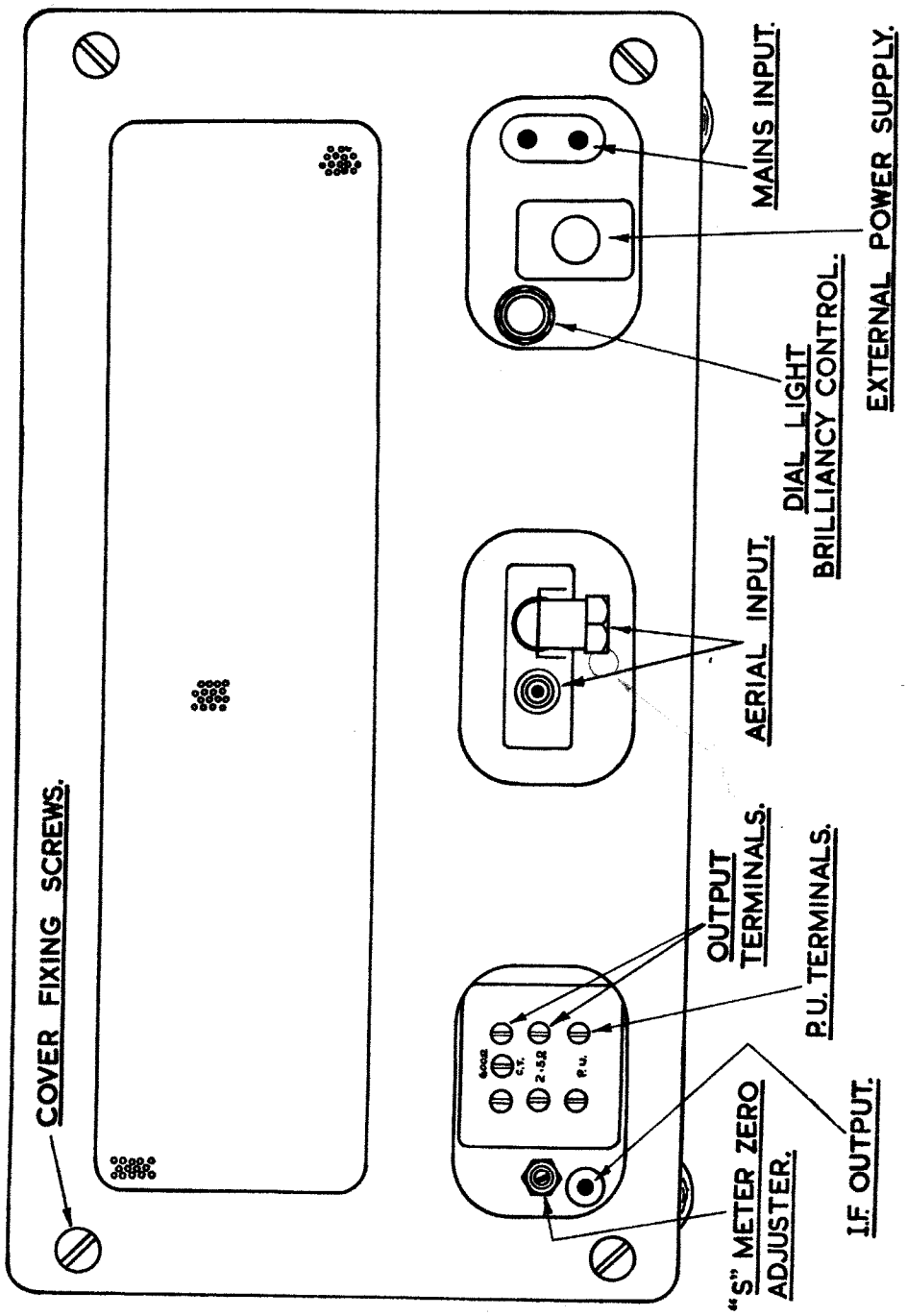


Fig. 2. Rear view of the B730/6 Receiver, in outline

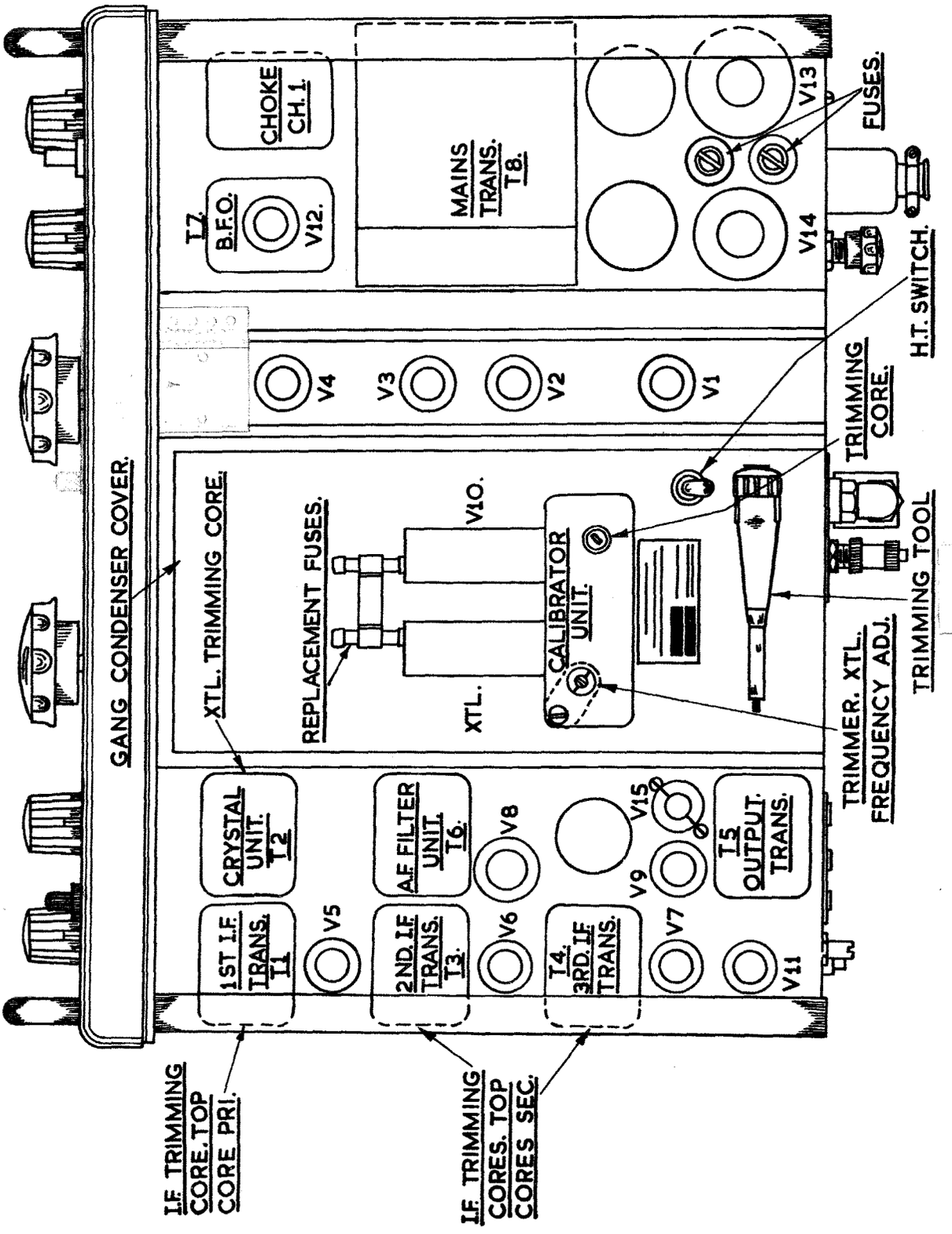


Fig. 3. Plan view of the 873/6 Receiver, in outline

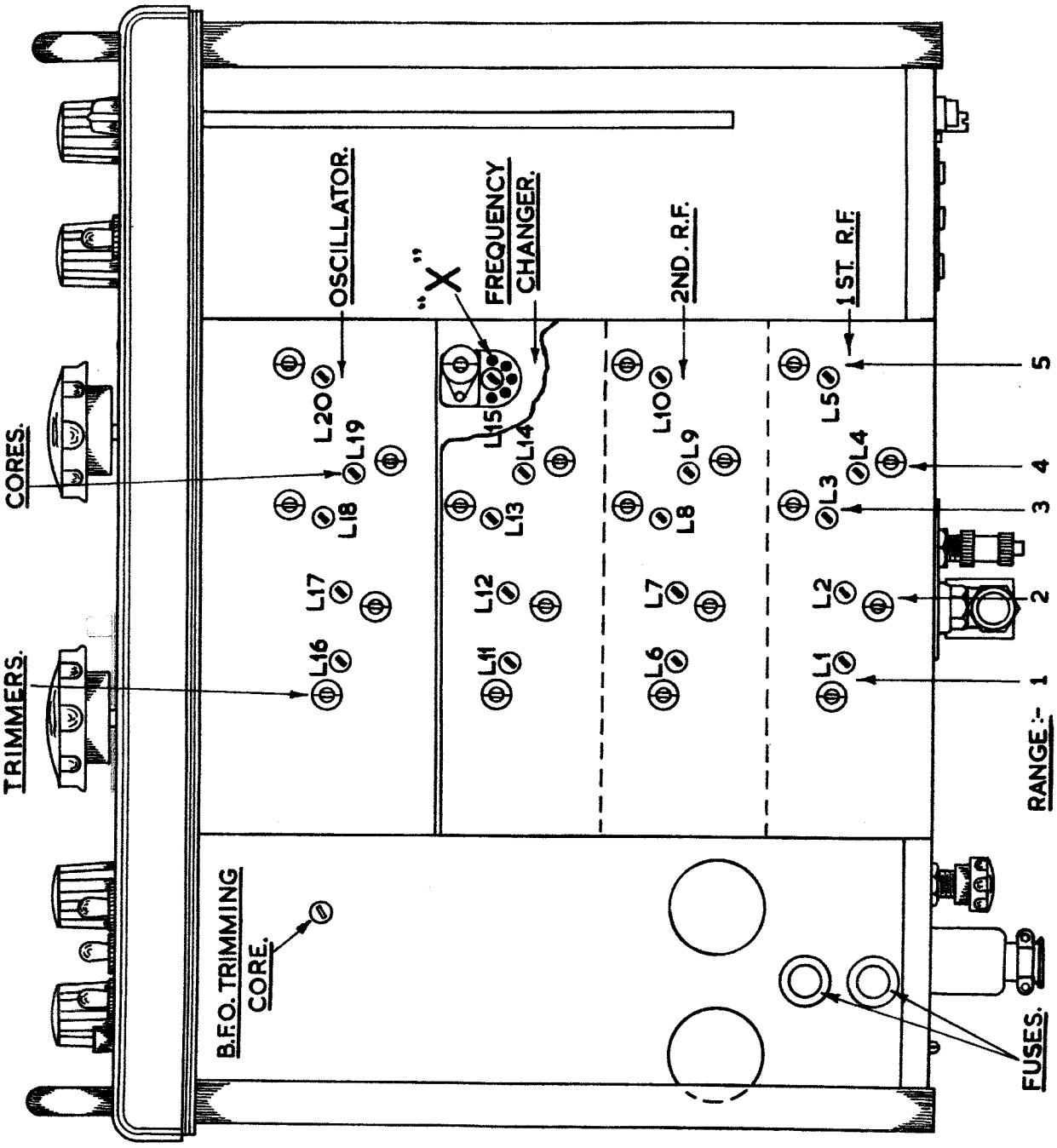


Fig. 4. Underside view, in outline, of the 8730/6 *Receiver*

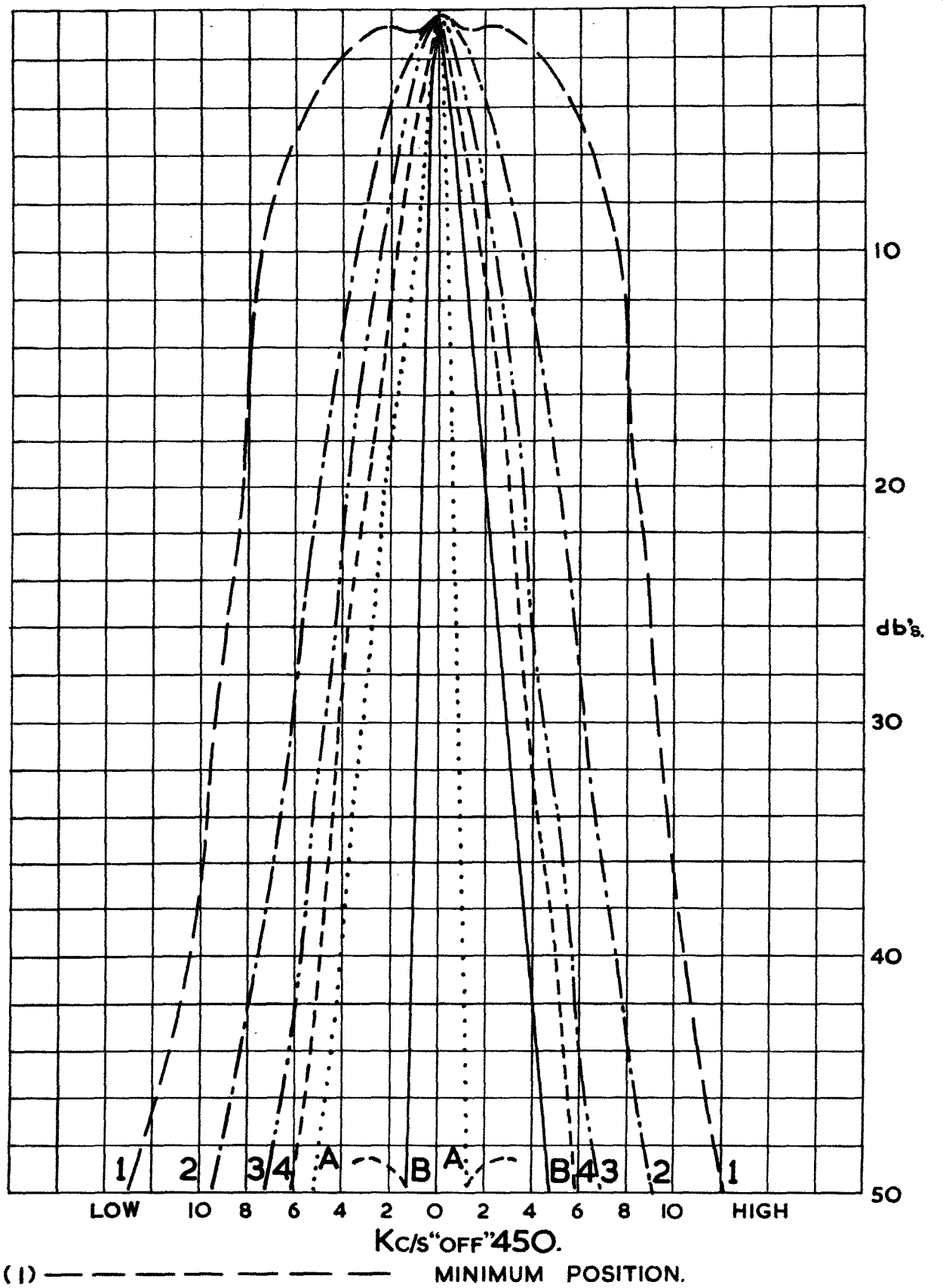
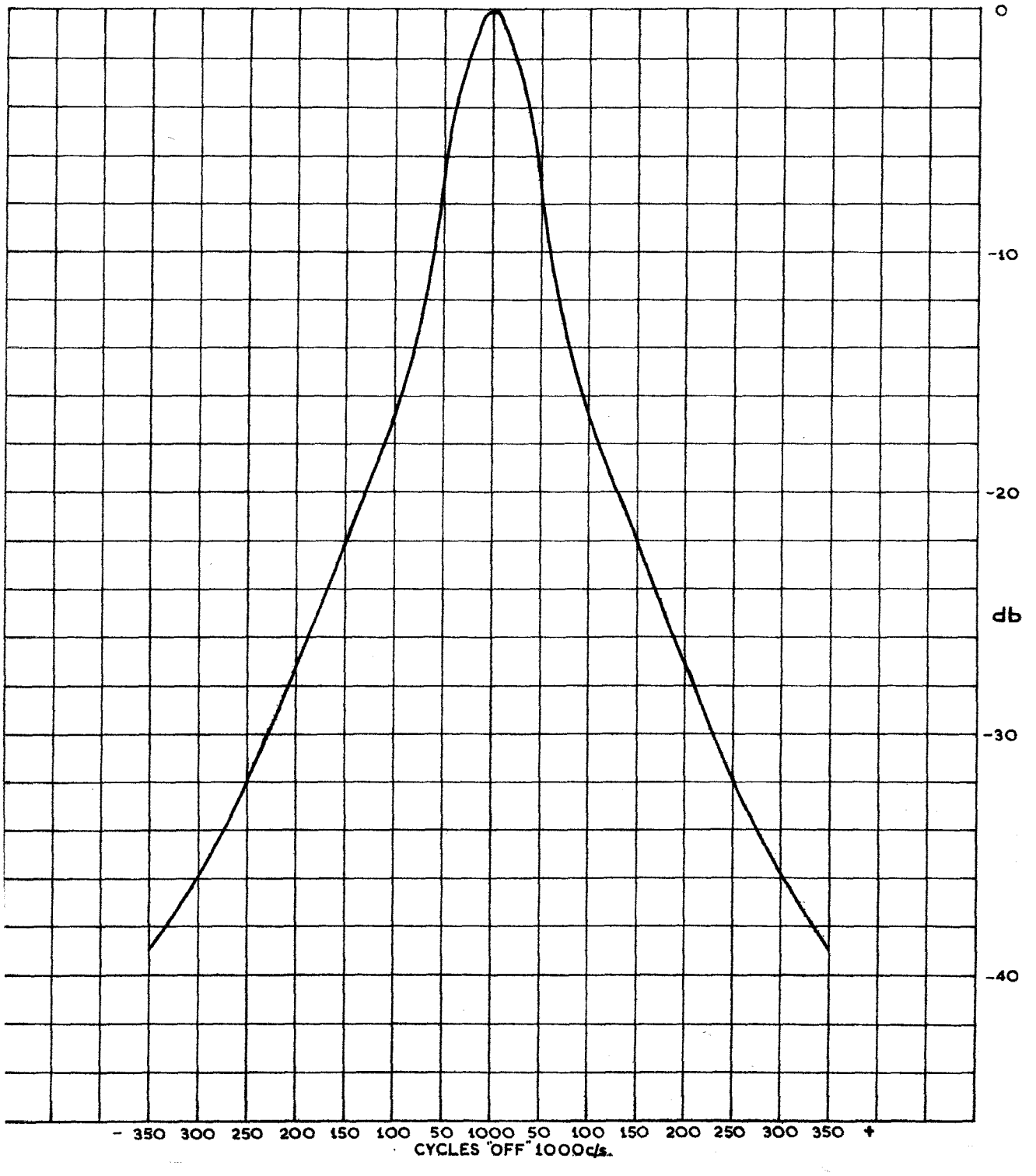
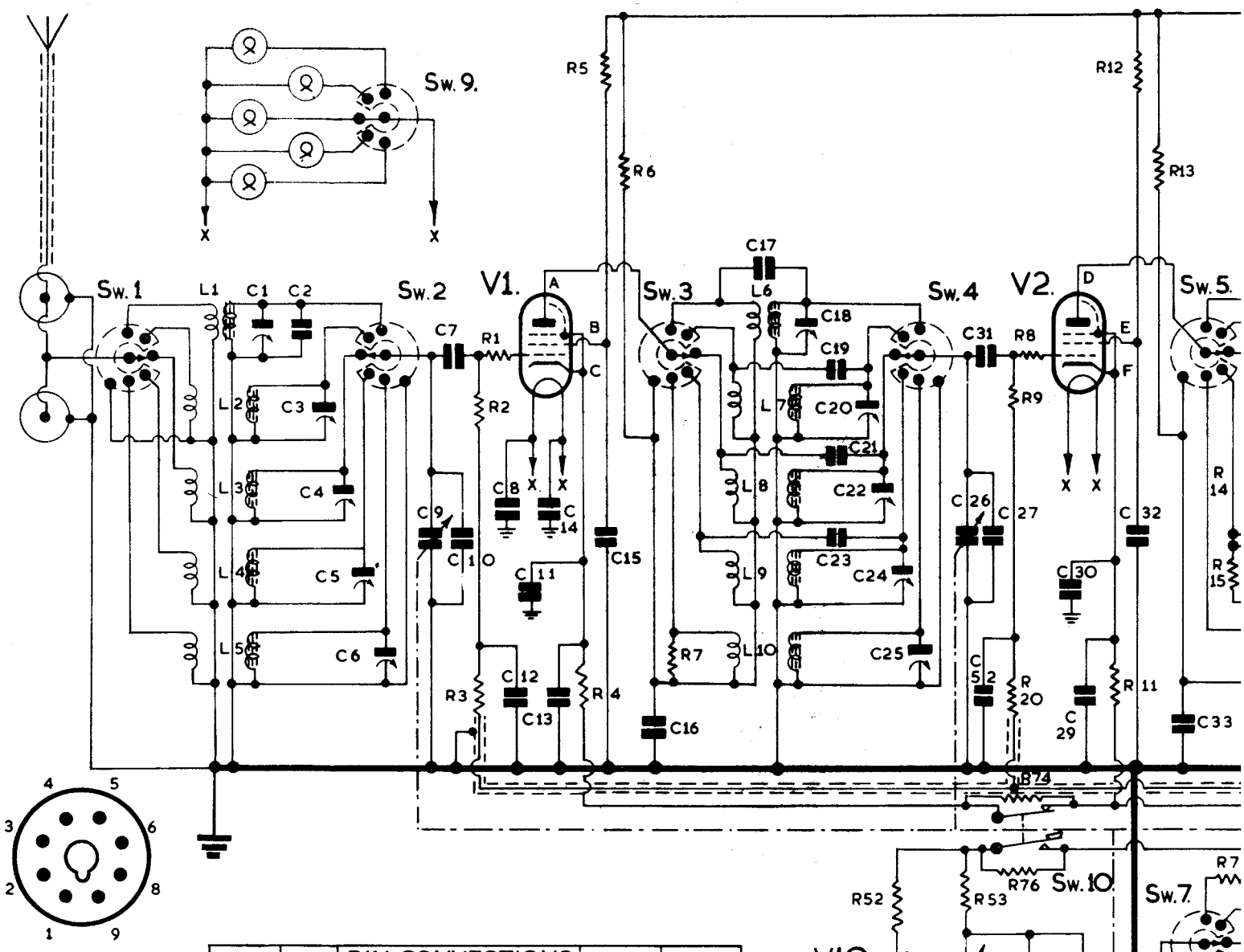


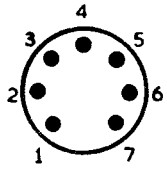
Fig. 5. Average selectivity curves of the 'S730/6' Receiver

A.F. FILTER UNIT.
RESPONSE CURVE.

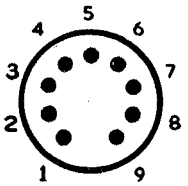




OCTAL SERIES



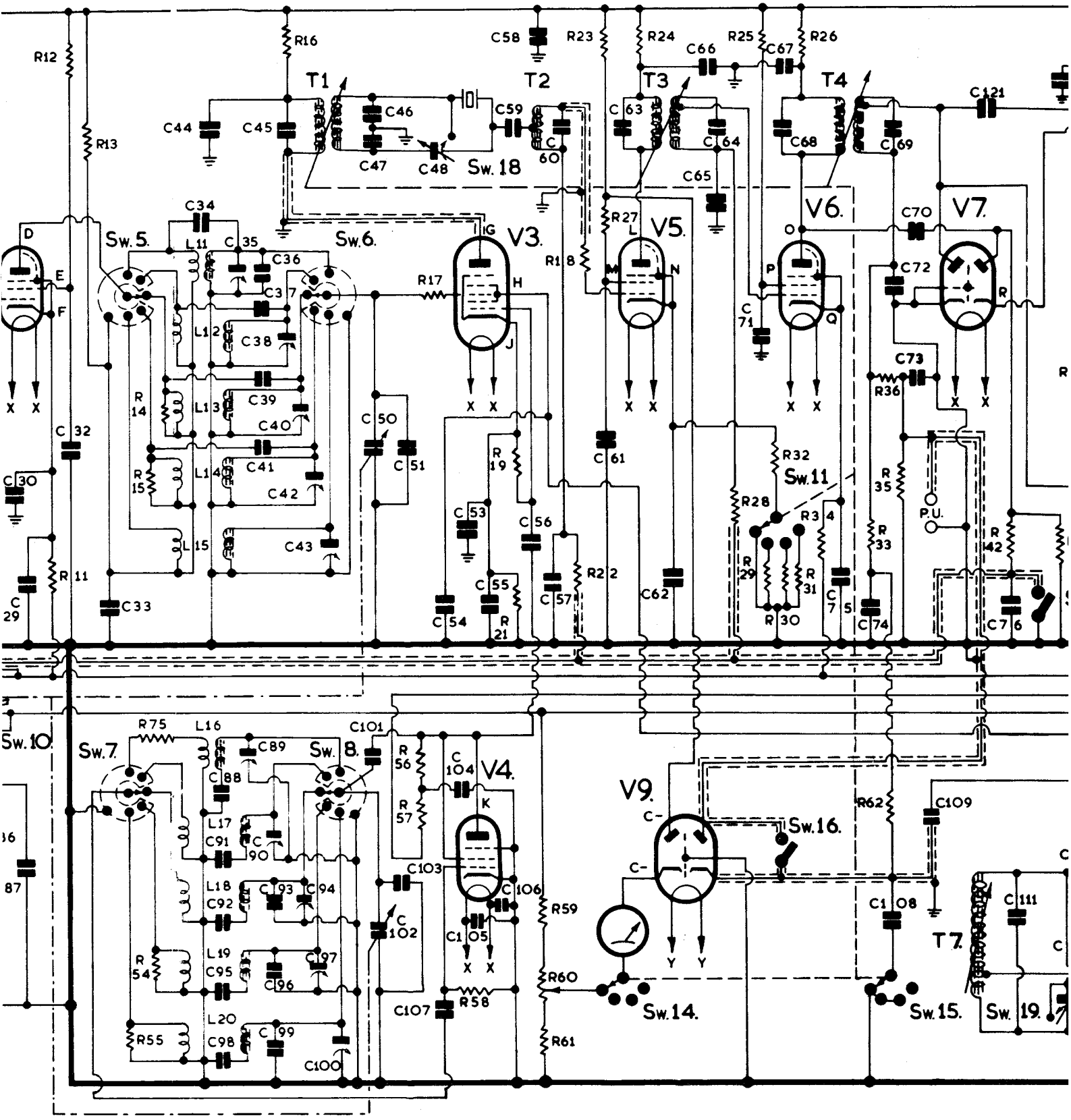
B7G SERIES



B9A SERIES.

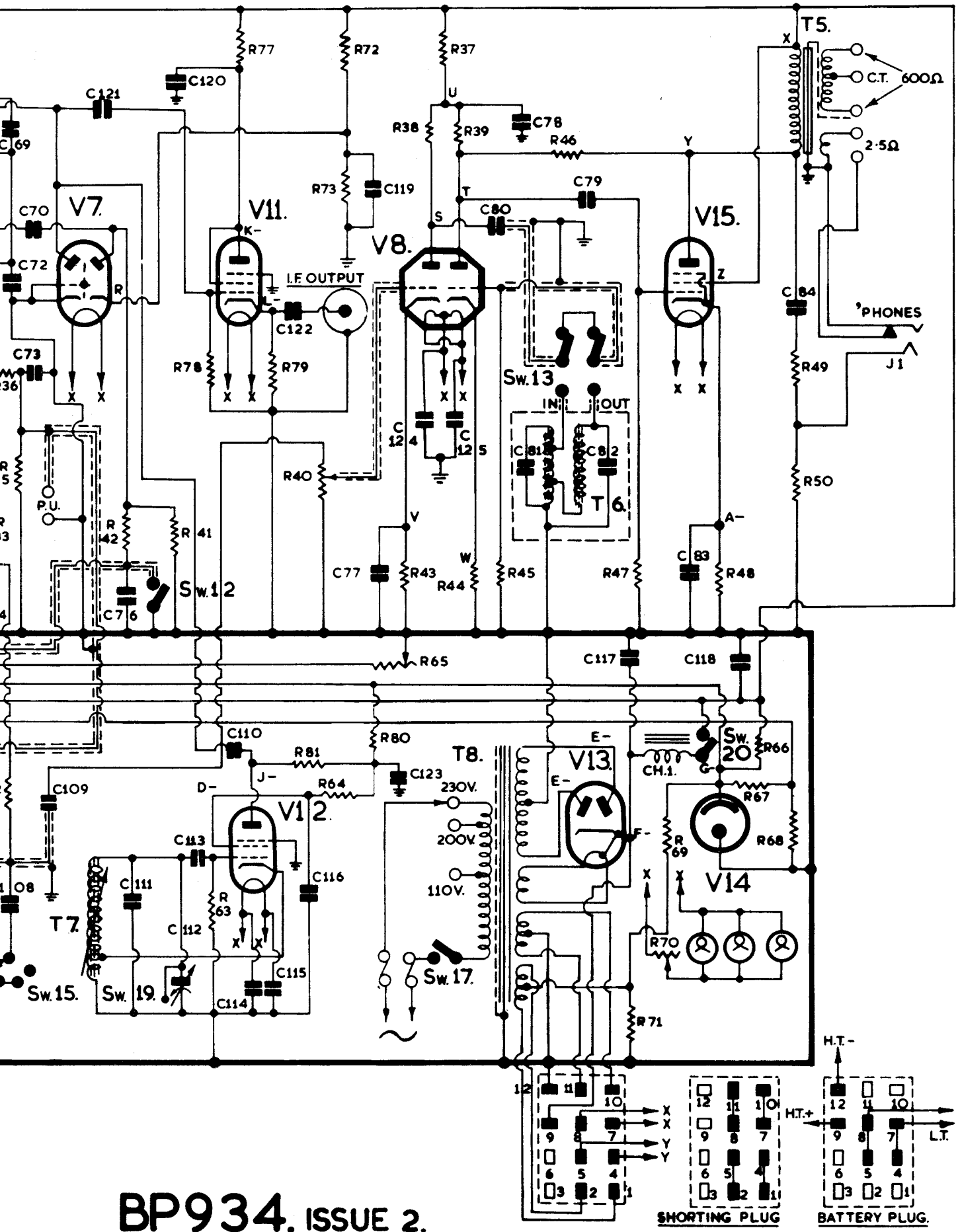
VALVE	V. No.	PIN CONNECTIONS. 1	2	3	4	5	6	7	8	9	SERIES	SERVICE NUMBERS
6BA6	V1,2,5, 6&12	G1	G3 S	H	H	A	G2	K	–	–	B7G	CV454.
6BE6	V3	G1	K G5	H	H	A	G2 G4	G3	–	–	B7G	CV453.
12AU7	V8	A2	G2	K2	H	H	A1	G1	K1	H TAP	B9A (NOVAL)	CV491.
8D3 (6AM6)	V4&10	G1	K	H	H	A	G3 S	G2	–	–	B7G	CV138.
7D9 (6AM5)	V15	G1	K G3	H	H	A	–	G2	–	–	B7G	CV136.
5Z4G	V13	–	H	–	A2	–	A1	–	K	–	OCTAL	CV1863
VR150/30	V14	–	K	–	–	A	–	–	–	–	OCTAL	CV216
6AL5	V7&9	K1	A2	H	H	K2	S	A1	–	–	B7G.	CV140.
XTL.A.	—	G1	G1	G1	–	E	E	E	–	–	B7G.	
6AU6	V11	G1	G3 S	H	H	A	G2	K	–	–	B7G.	CV2524

COMMUNICATIONS

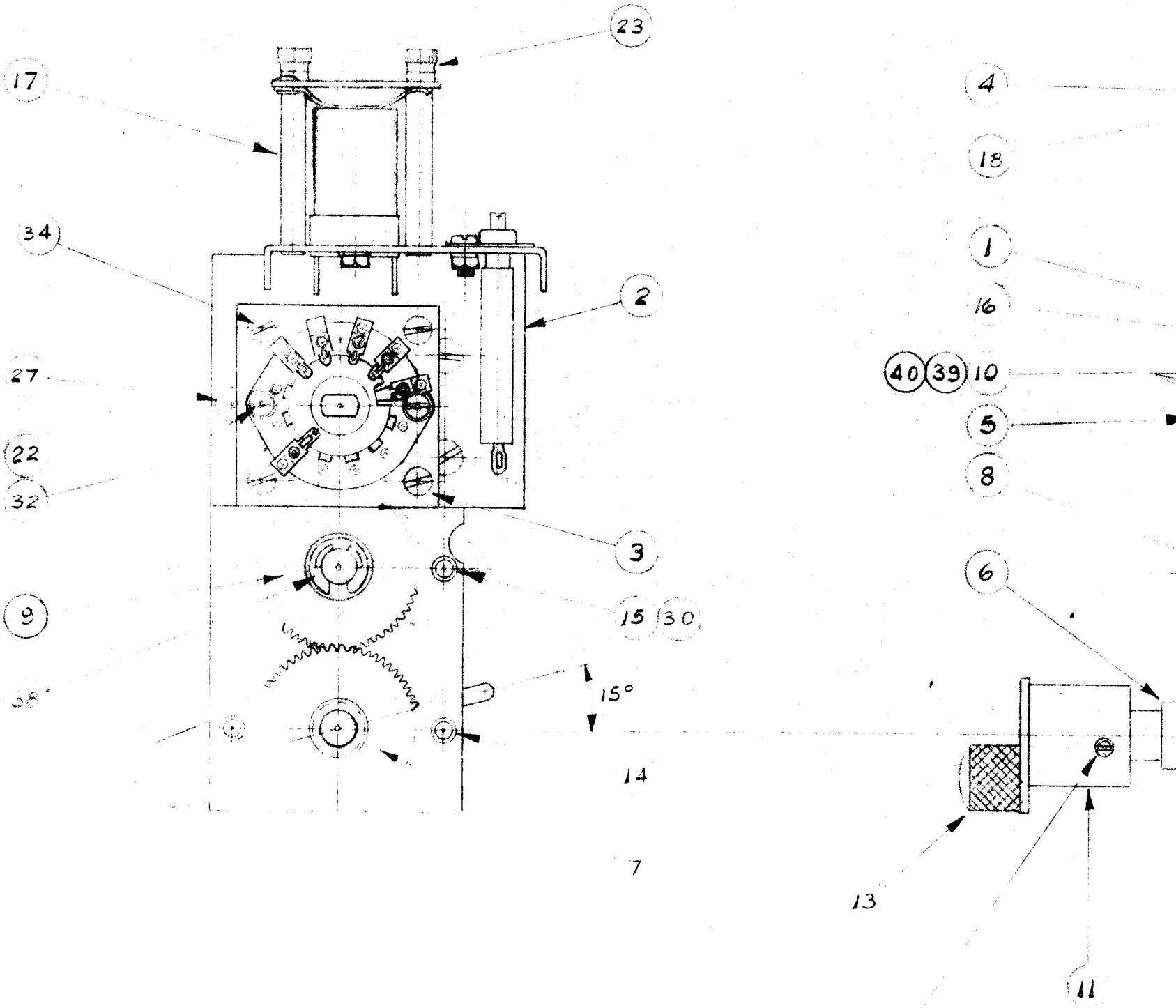


TIONS RECEIVER TYPE 730/4.

BP

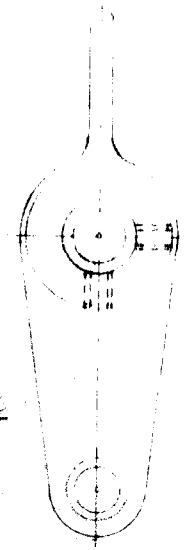


BP934. ISSUE 2.

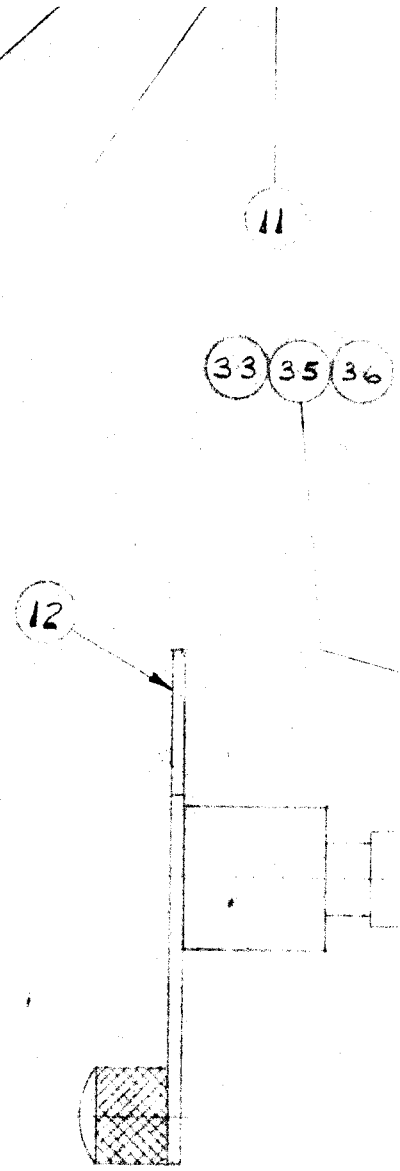


CRYSTAL SWITCH - Shown In "Mute" Position

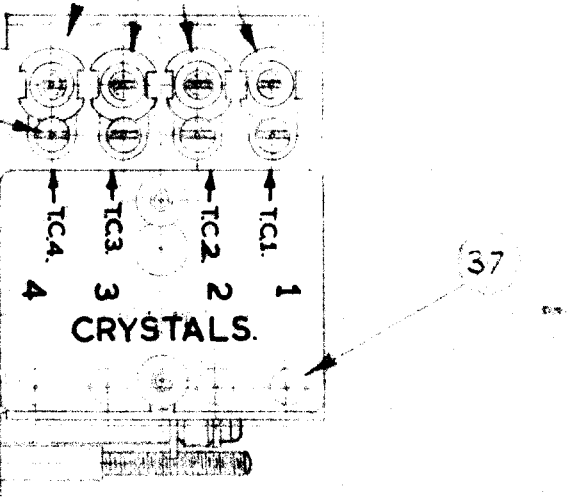
CRYSTAL SWITCH SHOWN IN "MARCH" POSITION.



REAR VIEW OF SWITCH ARM ASSEMBLY SHOWING POSITIONS OF TAPPED HOLES IN HUB RELATIVE TO SWITCH ARM.

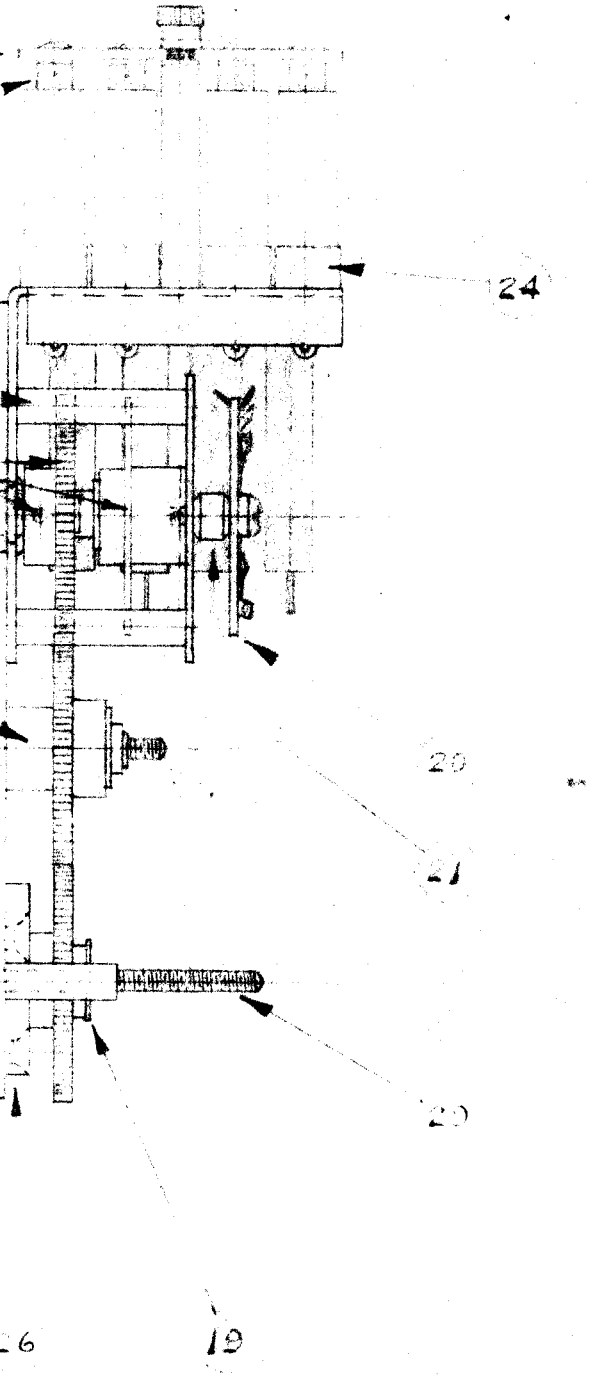


CRYSTAL SWITCH ASSEMBL



22	2	[illegible] Washers	54071
[illegible]	–	Locking Nut (Cover Plate)	
24	4	Crystal Sockets	–
25	4	Trimmer Cond.	–
26	3	4 B.A. x 3/16" C'sk Hd Screws	–
27	3	4 B.A. x 1/8" Binder Hd Screws	–
28	2	4 B.A. x 3/16" Cup Pointed Grub Screws	–
29	2	6 B.A. x 1 3/8" C'sk Hd Screws	–
30	1	6 B.A. x 7/8" C'sk Hd Screw	–
31	4	6 B.A. x 5/16" Ch Hd Screw (For Item 24)	–
32	2	6 B.A. x 7/16" Binder Hd Screws	–
33	4	6 B.A. x 1/4" Binder Hd Screws	–
34	7	6 B.A. x 3/16" C'sk Hd Screws	–
35	8	6 B.A. Hex Nuts	–
36	8	6 B.A. Single Coil Tangle Prf. Washers	
37	4	Rivets No. 13 x 3/32"	–
38	1	"E" Retainer	–
39	1	Thiex [illegible]	
40	1	5 Position Switch	5379P.

D2426.



FOR FULL DETAILS REFER TO WORKS ORDER PARTS LIST

ITEM No.	QTY	DESCRIPTION	PART No.
1	1	MTG. PLATE.	5376P.
2	1	MTG. BRACKET (CHASSIS)	5371P
3	1	MTG. PLATE (CHICKEN)	5376P.
4	1	COVER PLATE.	5395P.
5	1	BUSH.	5227P.
6	1	BEARING	5364P
7	1	SPINDLE & DRIVING GEAR	D2359
8	1	SPINDLE (IDLER GEAR)	5382P
9	1	IDLER GEAR	5381P
10	1	DRIVEN GEAR.	5425P.
11	1	HUB SWITCH ARM.	5385P
12	1	SWITCH ARM.	5385P
13	1	Knob. SWITCH ARM.	5387P.
14	2	MTG. PILLARS	5388P
15	1	MTG. PILLAR	5388/1P.
16	4	PILLARS	5389P
17	2	PILLARS	5411P.
18	4	EARTHING WIPERS	4569P.
19	1	SPACING WASHER	5057P
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
24	4	CRYSTAL SOCKETS	—
25	4	TRIMMER COND.	—
26	3	4 B.A. x 3/16" C'SK HD SCREWS	—
27	3	4 B.A. x 1/8" BINDER HD. SCREWS	—