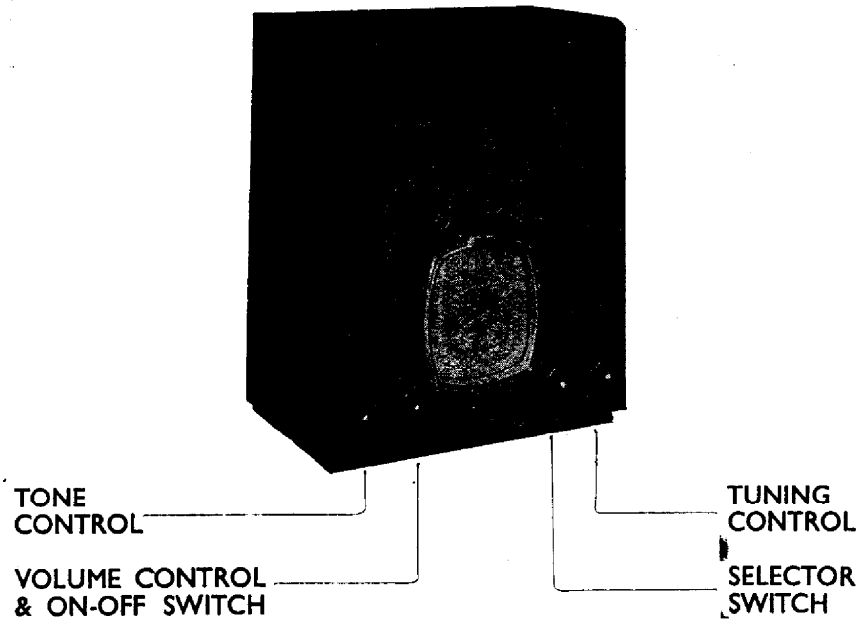


LISSEN

SERVICE MANUAL FOR FOUR VALVE THREE-BAND BATTERY SUPERHET RECEIVER MODEL 8418



SERVICE DATA FOR BATTERY RECEIVER MODEL 8418.

CONDENSERS

Code	Description	Part No.	Values
C1	M.W. Bandpass Primary Trimmer	82,500	40 mmfd. Max.
C2	L.W. Bandpass Primary Trimmer	82,501	90 mmfd. Max.
C3	S.W. Signal Trimmer	82,500	40 mmfd. Max.
C4	M.W. Bandpass Secondary Trimmer	82,500	40 mmfd. Max.
C5	L.W. Bandpass Secondary Trimmer	82,501	90 mmfd. Max.
C6	S.W. Oscillator Trimmer	82,503	20 mmfd. Max.
C7	M.W. Oscillator Trimmer	80,000	100 mmfd. Max.
C8	L.W. Oscillator Trimmer	80,000	100 mmfd. Max.
C9			
C10	Triple Gang	80,509	
C11			
C12	S.W. Aerial Coupling	71,262	10 mmfd. Cera.
C13	S.W. Tracking	68,005	.01 mfd.
C14	A.V.C. Decoupling	68,020	.1 mfd.
C15	V1 Screen Bypass	68,020	.1 mfd.
C16	Oscillator Grid	66,035	100 mmfd. Mica
C17	M.W. Padder, Fixed	66,521	500 mmfd. Mica
C18	M.W. Padder, Variable	82,505	250 mmfd. Max.
C19	L.W. Padder, Variable	82,505	250 mmfd. Max.
C20	M. and L.W. Oscillator Anode Decoupling	68,020	.1 mfd.
C21	S.W. Oscillator Anode Decoupling	67,009	2 mfd. 300V. Peak Elec.
C22	A.V.C. Decoupling	68,020	.1 mfd.
C23		80,001	300 mmfd. Max.
C24	I.F. Trimmers	80,001	300 mmfd. Max.
C25		80,001	300 mmfd. Max.
C26		80,001	300 mmfd. Max.
C27	V2 Screen Bypass	68,020	.1 mfd.
C28	Signal Diode Load Bypass	66,035	100 mmfd. Mica
C29	L.F. Coupling	68,014	.05 mfd.
C30	A.V.C. Decoupling	68,020	.1 mfd.
C31	V3 H.F. Bypass	66,035	100 mmfd. Mica
C32	L.F. Coupling	68,014	.05 mfd.
C33	A.V.C. Coupling	71,262	10 mmfd. Cera.
C34	Tone Correction	66,521	500 mmfd. Mica
C35	H.T. Bypass	67,009	2 mfd. 300V. Peak Elec.
C36	V3 Grid Circuit Decoupling	67,005	50 mfd. 12v. Peak Elec.
C37	Bias Potentiometer Bypass	67,005	50 mfd. 12v. Peak Elec.
C38	Tone Control	68,014	.05 mfd.
C39	S.W. Neutralising Condenser	—	Twisted Wire

RECEIVER TYPE 8418.

D.C. Resistance of Inductances.

Radio Frequency Circuits.

M.W. and L.W. Primary	(L1)	11.4 ohms
M.W., B.P. Primary	(L2)	2.5 ohms
L.W., B.P. Primary	(L3)	11.1 ohms
S.W. Signal Frequency Coil	(L4)	Very Low
M.W. B.P. Secondary	(L5)	2.5 ohms
L.W., B.P. Secondary	(L6)	11.0 ohms
S.W. Oscillator Grid	(L7)	Very Low
M.W. Oscillator Grid	(L8)	1.8 ohms
L.W. Oscillator Grid	(L9)	5.0 ohms
S.W. Tickler	(L10)	Very Low
M.W. Tickler	(L11)	7.3 ohms
L.W. Tickler	(L12)	16.6 ohms

Intermediate Frequency Circuits.

Primary and Secondary Coils of each I.F.T. (L13, L14, L15, L16) 6-8 ohms

Low Frequency Circuits.

Output Transformer, Primary (L17) 650 ohms
Output Transformer, Secondary (L18) Very Low

VALVES

Code	Description	Part No.	
V1	Frequency Changer	4,094	Ever Ready K80B
V2	I.F. Amplifier	4,091	Ever Ready K50N
V3	2nd Det., L.F. Amplifier and A.V.C. Rect.	4,048	Ever Ready K23B
V4	Output Pentode	4,058	Ever Ready K70B

SWITCHES

Code	Description	Part No.
S1	Wave Change Switch ..	83,502
S2		
S3		
S4		
S5		
S6		

L.T. } Ganged to Volume Control
H.T. }

RESISTANCES

Code	Description	Part No.	Values
R1	Aerial Potentiometer, Part	71,962	110,000 ohm, 1/2 watt
R2	Aerial Potentiometer, Part	71,963	11,000 ohm, 1/2 watt
R3	A.V.C. Decoupling	71,962	110,000 ohm, 1/2 watt
R4	A.V.C. Decoupling	71,962	110,000 ohm, 1/2 watt
R5	Oscillator Grid Leak	71,974	26,000 ohm, 1/2 watt
R6	V1 Screen Feed	71,968	51,000 ohm, 1/2 watt
R7	Tone Control	81,500	50,000 ohm, Varia.
R8	S.W. Oscillator Circuit Anode Feed	71,963	11,000 ohm, 1/2 watt
R9	M. and L.W. Oscillator Circuit Anode Feed	71,962	110,000 ohm, 1/2 watt
R10	A.V.C. Decoupling	71,962	110,000 ohm, 1/2 watt
R11	V2 Screen Feed	71,945	260,000 ohm, 1/2 watt
R12	Signal Diode Load	71,944	510,000 ohm, 1/2 watt
R13	I.F. Stopper	71,962	110,000 ohm, 1/2 watt
R14	Volume Control	81,501	500,000 ohm, Varia.
R15	V3 Anode Load	71,968	51,000 ohm, 1/2 watt
R16	A.V.C. Diode Load, Part	71,944	510,000 ohm, 1/2 watt
R17	A.V.C. Diode Load, Part	71,945	260,000 ohm, 1/2 watt
R18	A.V.C. Decoupling	71,944	510,000 ohm, 1/2 watt
R19	V4 Grid Leak	71,944	510,000 ohm, 1/2 watt
R20	V4 Grid Leak	71,962	110,000 ohm, 1/2 watt
R21	V3 Grid Stopper	71,968	51,000 ohm, 1/2 watt
R22	Bias Potentiometer, Part	71,957	100 ohm, 1/2 watt
R23	Bias Potentiometer, Part	71,959	50 ohm, 1/2 watt
R24	Bias Potentiometer, Part	89,509	350 ohm, 1/2 watt

INDUCTANCES

Code	Description	Part No.
L1	Signal Frequency Coil	78,505
L2		
L3		
L4		
L5		
L6	Oscillator Coil	78,522
L7		
L8		
L9	1st I.F. Transformer	77,511
L10		
L11	2nd I.F. Transformer	77,512
L12		
L13	Output Transformer on Speaker	
L14		
L15		
L16		
L17		
L18		

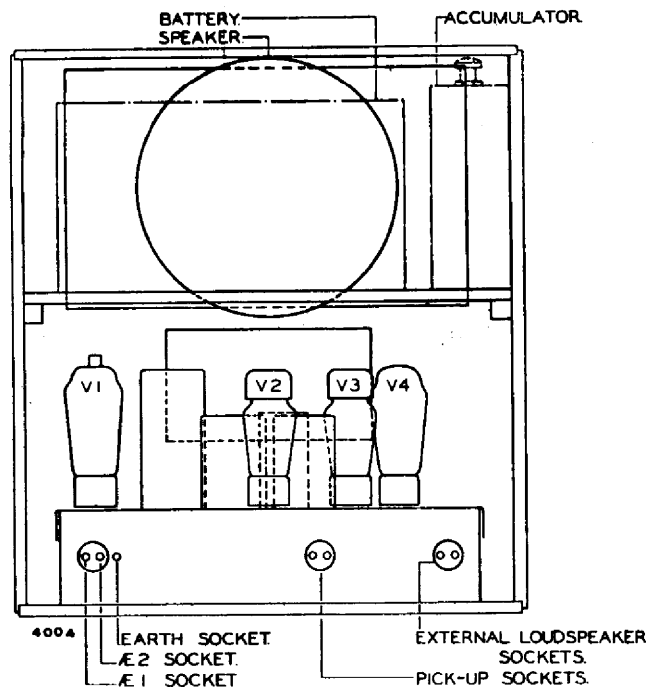


Fig. 8.

Voltage and Current Measurements for Receiver Type 8418

Measurements made with a Model 7 Avometer on the 1,000v. range for voltages above 10 volts, and on the 10-volt range for voltages below 10 volts.

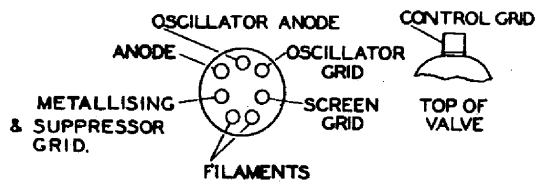
Measurements made with the receiver tuned to 300 metres, volume and tone controls at maximum but no signal applied.

Frequency Changer K80B	Ea	139v.	Ia	0.7 mA.
	Es	45v.	Is	1.7 mA.
	Eoa	32v.	Ioa	0.9 mA.
	Eg	0.9v.		—
I.F. Amplifier K50N	Ea	139v.	Ia	0.8 mA.
	Es	38v.	Is	0.4 mA.
	Eg	0.9v.		—
L.F. Amplifier K23B	Ea	92v.	Ia	0.8 mA.
	Eg	1.5v.		—
Output Pentode K70B	Ea	136v.	Ia	4.5 mA.
	Es	139v.	Is	0.6 mA.
	Eg	5.0v.		—

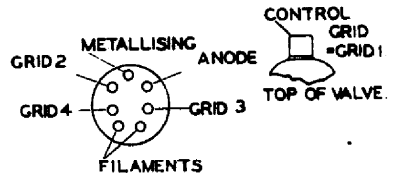
Main H.T. Line-Chassis, 139v.

H.T. Current, 10.2 mA.

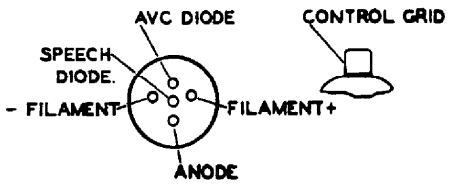
L.T. Current, 0.5 amp.



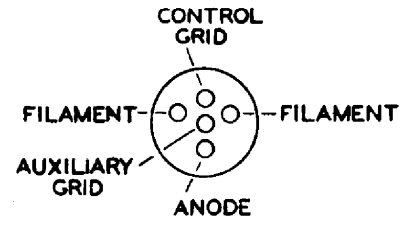
UNDERSIDE OF HOLDER
FOR K80B VALVE
Fig. 1



UNDERSIDE OF HOLDER
FOR K50N VALVE
Fig. 2



UNDERSIDE OF HOLDER
FOR K23B VALVE.
Fig. 3



UNDERSIDE OF HOLDER
FOR K70B VALVE.
Fig. 4

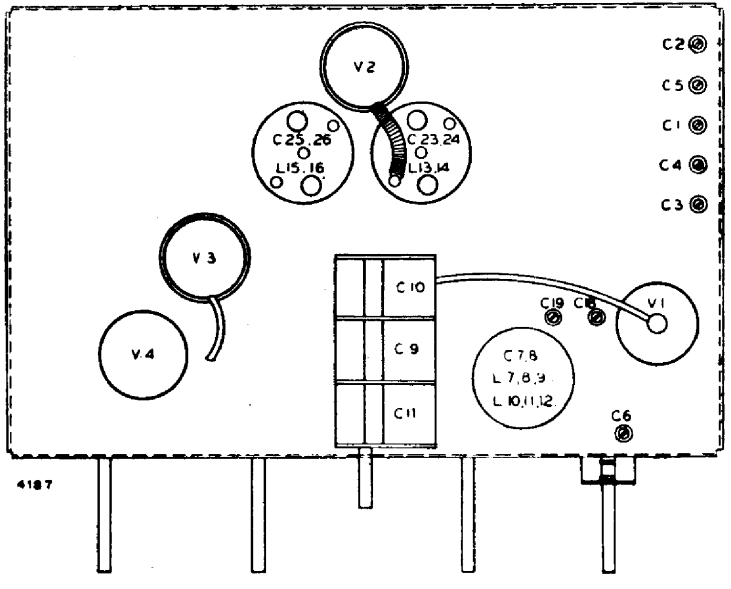


Fig. 5.

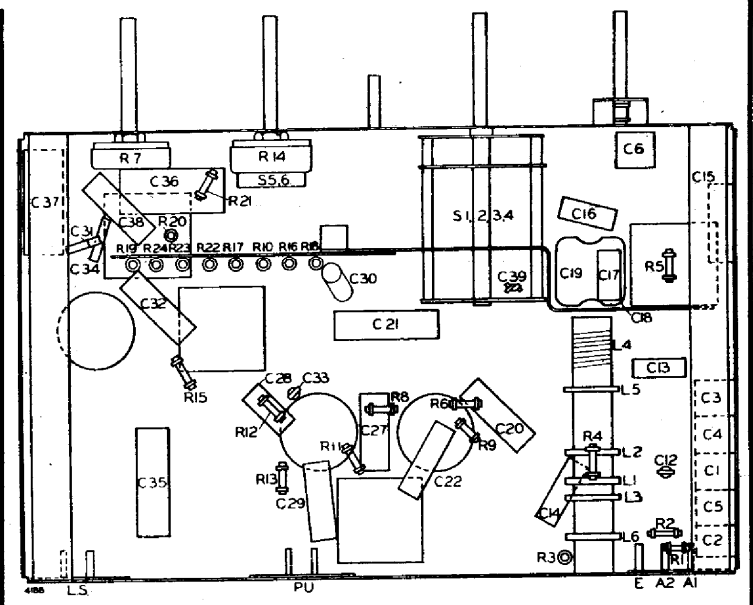
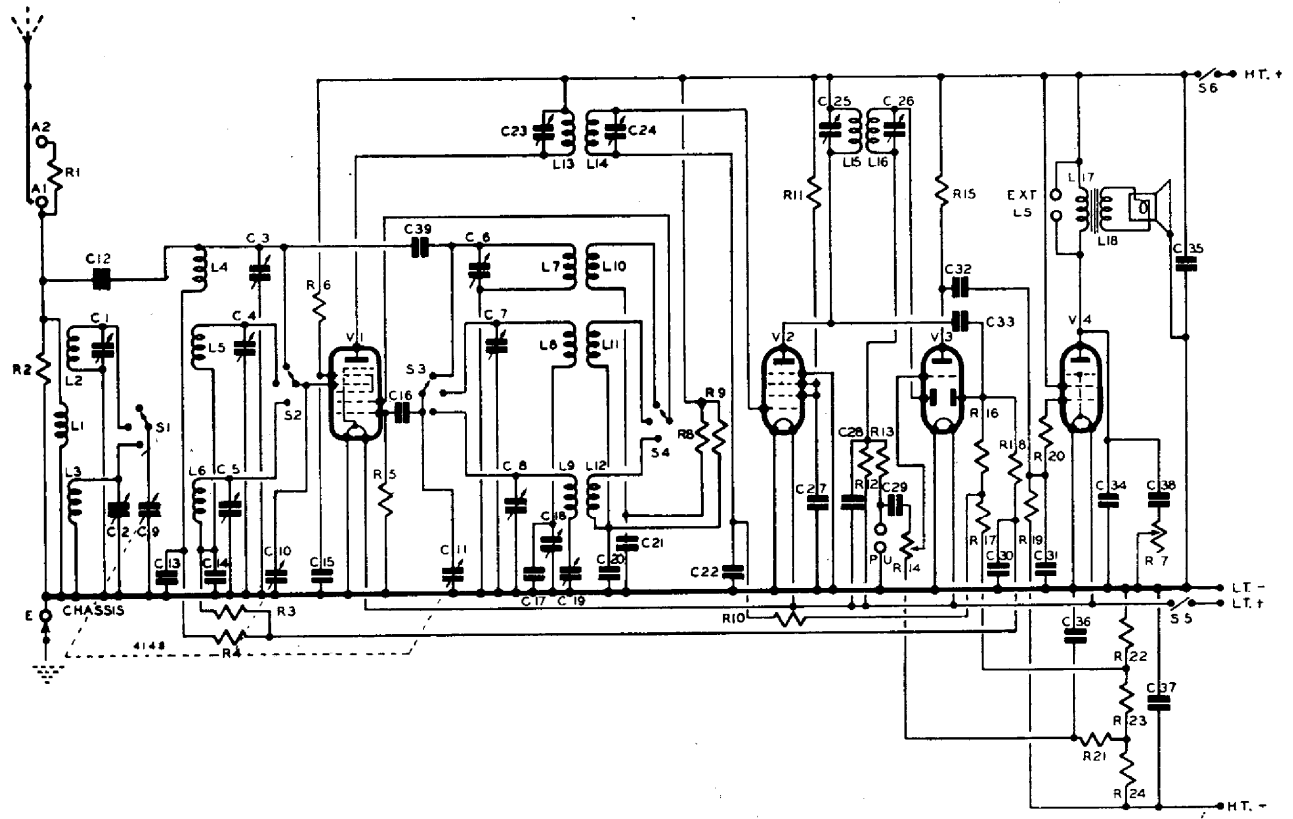


Fig. 6.



CIRCUIT DIAGRAM.

Fig. 7.



SPARE PARTS PRICE LIST FOR MODEL 8418

Prices are subject to alteration without notice. Postage and Packing extra.

Part No.	Description and Circuit Indication	List Price
2002	Accumulator, L.T.	10/5
3054	Battery, H.T.	9/-
63611	Cabinet	45/-
73747	Card Back	2/-
69570	Carton	6/6
78505	Coil, Aerial (L1, L2, L3, L4, L5, L6)	6/6
78522	Coil, Anode (L7, L8, L9, L10, L11, L12)	6/6
71262	Condenser, Mica, 10 mmfd. (C12, C33)	1/6
66035	" " .0001 mfd. (C16, C28, C31)	8d.
66521	" " .0005 mfd. (C17, C34)	1/-
68005	" Tubular, .01 mfd. (C13)	1/-
68020	" " .1 mfd. (C14, C15, C20, C22, C27, C30)	1/-
67009	" " 2 mfd. (C21, C35)	1/4
67005	" " Elec. 50 mfd. (C36, C37)	2/3
68014	" " .05 mfd. (C29, C32, C38)	1/-
80509	" Gang, 3-stage (C9, C10, C11)	18/9
73724	Escutcheon	7/6
73710	Drive	1/6
73702	Drive Disc	1/6
---	Grille	2/-
74164	Instruction Book	1/-
57072	Knob	3d.
57097	Knob, L.M.S.	4d.
50101	Knob Spring	3d.
71012	Plug for Earth	3d.
71013	Plug for Aerial	3d.
71962	Resistor, 110,000 ohms, 1/4 watt (R1, R3, R4, R9, R10, R13, R20)	1/-
71963	" 11,000 ohms, 1/4 watt (R2, R8)	1/-
71974	" 26,000 ohms, 1/4 watt (R5)	1/-
71968	" 51,000 ohms, 1/4 watt (R6, R15, R21)	1/-
71945	" 260,000 ohms, 1/4 watt (R11, R17)	1/-
71944	" 510,000 ohms, 1/4 watt (R12, R16, R18, R19)	1/-
71957	" 100 ohms, 1/4 watt (R22)	1/-
71959	" 50 ohms, 1/4 watt (R23)	1/-
89509	" 350 ohms, 1/4 watt (R24)	1/-
84524	Scale	2/6
73725	Scale Pointer	2/-
75516	Socket Plate, Aerial	3d.
90002	Socket Plate, L.S.	3d.
90006	Socket Plate, P.U.	3d.
85515	Speaker, including Output Transformer	27/6
71610	Spring	3d.
83502	Switch, Wavechange (S1, S2, S3, S4)	6/-
77511	Transformer 1st I.F. (L13, L14)	7/-
77512	" 2nd I.F. (L15, L16)	7/-
81500	Tone Control (R7)	4/6
4094	Valve (V1) Ever Ready K80B	10/6
4091	" (V2) " " K50N	9/-
4048	" (V3) " " K23B	7/6
4058	" (V4) " " K70B	9/-
75506	Valve Holder, 5-Pin	4d.
75507	Valve Holder, 7-Pin	6d.
71126	Valve Clip	3d.
81501	Volume Control (R14)	5/-

Circuit Alignment Procedure for Receiver Type 8418.

Intermediate Frequency Circuit Alignment.

- (1) Short circuit the gang condenser across the oscillator section (front section).
- (2) Adjust the wave switch to the M.W. position.
- (3) Apply a signal of 452 Kc/s. modulated 30 per cent., 400 c.p.s., through a condenser of 0.1 mfd. capacity across the signal grid and chassis of the frequency changer valve V1. Trim each I.F. circuit in the following order:—
2nd I.F.T. Secondary trimmer (C26), 2nd I.F.T. Primary trimmer (C25), 1st I.F.T. Secondary trimmer (C24), 1st I.F.T. Primary trimmer (C23). The circuits should be trimmed to a single peak.
- (4) Check each circuit by going over the trimmers in the same order again.
- (5) Remove the short circuit from the gang condenser.

Note.—As the circuits are brought into line the level of the 452 Kc/s. signal should be reduced to prevent the A.V.C. from coming into action and giving misleading results.

Radio Frequency Circuit Alignment.

The three wavebands long, medium and short waves are quite independent of each other and any adjustment to the trimmers or padders of any one band affects only that particular band.

Long Waveband Alignment.

- (1) See that the pointer registers with the 180° line on the scale with the gang at maximum capacity.
- (2) Set the long wave padder (C19) approximately three-quarters in.
- (3) Set the pointer against the 1,200-metre mark on the scale.
- (4) Apply a modulated signal of 1,200 metres to the A and E sockets of the receiver.
- (5) Adjust the long wave oscillator trimmer (C8) to receive this signal. Then adjust the L.W. bandpass trimmers (C5, C2) to give maximum output.
- (6) Set the pointer to the 1,700-metre mark on the scale.
- (7) Apply a signal of 1,700 metres and adjust the L.W. padder (C19) to give maximum output on that signal.
- (8) Re-set the pointer to the 1,200-metre mark on the scale, and re-adjust the L.W. oscillator and bandpass trimmers (C8, C5, C2) to give maximum output on the 1,200-metre signal.
- (9) Check again at 1,700 metres and see that the pointer is at the 1,700-metre mark when receiving the 1,700-metre signal. If it is not, make slight adjustment to the L.W. padder (C19).

Medium Waveband Alignment.

- (1) See that the pointer registers with the 180° line on the scale with the gang at maximum capacity.
- (2) Set the medium wave padder (C18) approximately two-thirds in.
- (3) Set the pointer against the 214-metre mark on the scale.
- (4) Apply a signal of 214 metres to the A and E sockets of the receiver.
- (5) Adjust the M.W. oscillator trimmer (C7) to receive this signal. Then adjust the M.W. bandpass trimmers (C4, C1) to give maximum output.
- (6) Set the pointer to the 500-metre mark on the scale.
- (7) Apply a signal of 500 metres and adjust the M.W. padder (C18) to give maximum output on that signal.
- (8) Re-set the pointer to the 214-metre mark on the scale and re-adjust the M.W. oscillator and bandpass trimmers (C7, C4, C1) to give maximum output on the 214-metre signal.
- (9) Check again at 500 metres and see that the pointer is at the 500-metre mark when receiving the 500-metre signal. If it is not, make slight adjustment to the M.W. padder (C18).

Short Waveband Alignment.

- (1) See that the pointer registers with the 180° line with the gang at maximum capacity.
- (2) Set the pointer against the 15 Mc/s. mark on the scale.
- (3) Screw in fully the S.W. oscillator trimmer (C6). Apply a signal of 15 Mc/s. to the A and E sockets. Slowly unscrew the S.W. oscillator trimmer (C6) until this signal is heard. Care should be taken that the right peak is selected. Two peaks will be found on this trimmer; the correct one is the one with the trimmer at the higher capacity, that is the first one heard when unscrewing the trimmer. Having selected the correct peak adjust the S.W. signal circuit trimmer (C3) to give maximum output.
- (4) Apply a signal of 7.5 Mc/s. and tune the receiver to this signal. Adjust the top turn of the S.W. oscillator coil (L7) and the gang simultaneously to give maximum output on this signal.
- (5) Re-set the pointer to the 15 Mc/s. mark and re-adjust the S.W. oscillator and signal circuit trimmers (C6, C3) to give maximum output.