

LISSEN

SERVICE MANUAL FOR 4-VALVE 3-BAND PRESS BUTTON SUPERHET BATTERY RECEIVER MODEL 8468

Circuit Alignment Procedure for Receiver Type 8468.

Intermediate Frequency Circuit Alignment.

- (1) Short circuit the gang condenser across the oscillator section (front section).
- (2) Adjust the wave switch to the medium wave 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 wave bands long, medium and short waves, and also the automatic position, 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 long wave band pass 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 long wave padder (C19) to give maximum output on that signal.
- (8) Re-set the pointer to the 1,200-metre mark on the scale, and readjust the long wave oscillator and band-pass 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 long wave 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 medium wave oscillator trimmer (C7) to receive this signal. Then adjust the medium wave band pass 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 medium wave 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 medium wave oscillator and band-pass 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 medium wave 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 short wave oscillator trimmer (C6). Apply a signal of 15 Mc/s. to the A and E sockets. Slowly unscrew the short wave 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 short wave 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 short wave oscillator coil (L7) and the gang simultaneously to give maximum output on this signal.

(5) Reset the pointer to the 15 Mc/s. mark and re-adjust the short wave oscillator and signal circuit trimmers (C6, C3) to give maximum output.

Push Button Alignment.

The wavelength of each of the seven push buttons is adjustable within certain limits, by means of the pairs of trimmers which may be reached by removing the small panel from the right-hand side of the receiver.

The adjustment range of each button, as shown on the trimmer board, is as follows:—

Button 1	...	...	...	200- 300 metres.
" 2	...	...	...	200- 300 metres.
" 3	...	...	...	290- 445 metres.
" 4	...	...	...	350- 480 metres.
" 5	...	...	...	470- 535 metres.
" 6	...	...	...	850-1,460 metres.
" 7	...	...	...	1,300-1,665 metres.
" 8	...	...	...	On-Off switch.

To receive a certain wavelength on push button apply that signal to the A and E sockets of the receiver. With the appropriate button pressed, adjust the corresponding oscillator trimmer, which is on the left of the panel, till the signal is heard. Then adjust the signal circuit trimmer for maximum output. Check each circuit by going over the trimmers in the same order again.

SERVICE DATA FOR BATTERY RECEIVER MODEL 8468.

CONDENSERS

Code	Description	Part No.	Values
C1	M.W. Band-pass Primary Trimmer	82,500	40 mmfd. Max.
C2	L.W. Band-pass Primary Trimmer	82,501	90 mmfd. Max.
C3	S.W. Signal Trimmer	82,500	40 mmfd. Max.
C4	M.W. Band-pass Secondary Trimmer	82,500	40 mmfd. Max.
C5	L.W. Band-pass 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	Triple Gang	80,509	
C10			
C11			
C12	S.W. Aerial Coupling	71,262	10 mmfd. Ceramic
C13	S.W. Tracking	68,005	.01 mfd.
C14	A.V.C. Decoupling	68,020	.1 mfd.
C15	V1 Screen By-pass	68,020	.1 mfd.
C16	Oscillator Grid	66,035	.0001 mfd. Mica
C17	M.W. Padder, Fixed	66,521	.0005 mfd. 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. Elec.
C22	A.V.C. Decoupling	68,020	.1 mfd.
C23			
C24	I.F. Trimmers	80,001	300 mmfd. Max.
C25			
C26			
C27	V2 Screen By-pass	68,020	.1 mfd.
C28	Signal Diode Load By-pass	66,035	.0001 mfd. Mica
C29	L.F. Coupling	68,014	.05 mfd.
C30	A.V.C. Decoupling	68,020	.1 mfd.
C31	V3 H.F. By-pass	66,035	100 mmfd. Mica
C32	L.F. Coupling	68,014	.05 mfd.
C33	A.V.C. Coupling	71,262	10 mmfd. Ceramic
C34	Tone Correction	66,521	.0005 mfd. Mica
C35	H.T. By-pass	67,009	2 mfd. Elec.
C36	V3 Grid Circuit Decoupling	67,005	50 mfd. Elec.
C37	Bias Potentiometer By-pass	67,005	50 mfd. Elec.
C38	Push Button Oscillator Circuit Coupling	66,544	.0002 mfd. S.M.
C39	Button 1, Signal Frequency Trimmer	80,512	100 mmfd. Max.
C40	Button 2, Signal Frequency Trimmer	80,512	100 mmfd. Max.
C41	Button 3, Signal Frequency Trimmer	80,514	300 mmfd. Max.
C42	Button 4, Signal Frequency Trimmer	80,514	300 mmfd. Max.
C43	Button 5, Signal Frequency Trimmer	80,514	300 mmfd. Max.
C44	Button 6, Signal Frequency Trimmer	80,514	300 mmfd. Max.
C45	Button 7, Signal Frequency Trimmer	80,514	300 mmfd. Max.
C46	Button 1, Oscillator Frequency Trimmer	80,512	100 mmfd. Max.
C47	Button 2, Oscillator Frequency Trimmer	80,512	100 mmfd. Max.
C48	Button 3, Oscillator Frequency Trimmer	80,514	300 mmfd. Max.
C49	Button 4, Oscillator Frequency Trimmer	80,514	300 mmfd. Max.
C50	Button 5, Oscillator Frequency Trimmer	80,514	300 mmfd. Max.
C51	Button 6, Oscillator Frequency Trimmer	80,512	100 mmfd. Max.
C52	Button 7, Oscillator Frequency Trimmer	80,512	100 mmfd. Max.
C53	M.W. Aerial Coupling to Push Button Circuits	71,262	10 mmfd.
C54	L.W. Aerial Coupling to Push Button Circuits	71,262	10 mmfd.
C55	Tone Control	68,014	.05 mfd.
C56	Button 3, Signal Frequency Trimmer, Fixed	66,541	50 mmfd. S.M.
C57	Button 4, Signal Frequency Trimmer, Fixed	66,542	100 mmfd. S.M.
C58	Button 5, Signal Frequency Trimmer, Fixed	66,544	200 mmfd. S.M.
C59	Button 7, Signal Frequency Trimmer, Fixed	66,544	200 mmfd. S.M.
C60	Button 4, Oscillator Frequency Trimmer, Fixed	66,541	50 mmfd. S.M.
C61	Button 5, Oscillator Frequency Trimmer, Fixed	66,546	300 mmfd. S.M.
C62	Condenser	Twisted Wire	

S.M. denotes Silvered Mica type.

SWITCHES

Code	Description	Part No.	Value
S1	4 Position Switch 1. Automatic 2. S.W. Manual 3. M.W. Manual 4. L.W. Manual	83,509	—
S2			
S3			
S4			
S5			
S6	Station Selecting Push Buttons	73,712	—
B1-7			
B8	On-off Switch (Push-Off)		

VOLTAGE AND CURRENT MEASUREMENTS FOR RECEIVER TYPE 8468

Measurements made with a Model 7 Avometer on the 1,000 v. range for voltages above 10 v., and on the 10 v. range for voltages below 10 v.
Measurements made with the receiver tuned to 300 metres, volume and tone controls at maximum, but no signal applied.

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

Main H.T. line/chassis 139 v.
H.T. current 10.2 mA.
L.T. current 0.5 Amp.

VALVES

Code	Description	Part No.	Value
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	4,058	Ever Ready K70B

RESISTANCES

Code	Description	Part No.	Value
R1	Aerial Potentiometer, Part	71,262	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	Push Button Oscillator Circuit Anode Feed	71,979	41,000 ohm, 1/2 watt
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	81,504	100,000 ohm, Var.
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 Stopper	71,962	110,000 ohm, 1/2 watt
R21	V3 Grid Decoupling	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
R25	Tone Control	81,500	50,000 ohm, Var.

RECEIVER TYPE 8468

D.C. Resistance of Inductances.

Radio Frequency Circuits.

M. & 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
M.W. Push Button Signal Circuit Coil	(L19)	2.5 ohms
L.W. Push Button Signal Circuit Coil	(L20)	11.2 ohms
M.W. Push Button Oscillator Circuit Coil	(L22)	2.5 ohms
L.W. Push Button Oscillator Circuit Coil	(L21)	7.4 ohms

Intermediate Frequency Circuits.

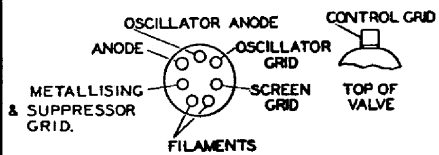
Primary and Secondary coils of each I.F.T.
(L13, L14, L15, L16) 6.8 ohms

Low Frequency Circuits.

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

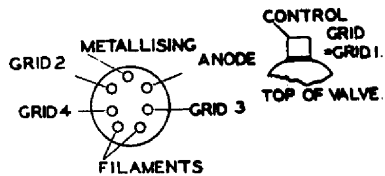
INDUCTANCES

Code	Description	Part No.	Value
L1	Signal Circuit Coils	78,505	—
L2			
L3			
L4			
L5			
L6			
L7			
L8			
L9			
L10			
L11	Oscillator Circuit Coils	78,522	—
L12			
L13	1st I.F. Transformer	77,511	—
L14	2nd I.F. Transformer	77,512	—
L15			
L16	Output Transformer on Speaker	78,518	—
L17			
L18			
L19			
L20			
L21			
L22			



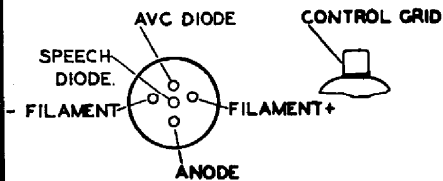
UNDERSIDE OF HOLDER
FOR K80B VALVE

Fig. 1



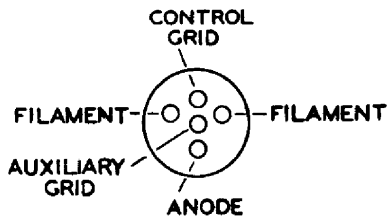
UNDERSIDE OF HOLDER
FOR K.50.N VALVE

Fig. 2



UNDERSIDE OF HOLDER
FOR K23.B VALVE.

Fig. 3



UNDERSIDE OF HOLDER
FOR K70B VALVE.

Fig. 4

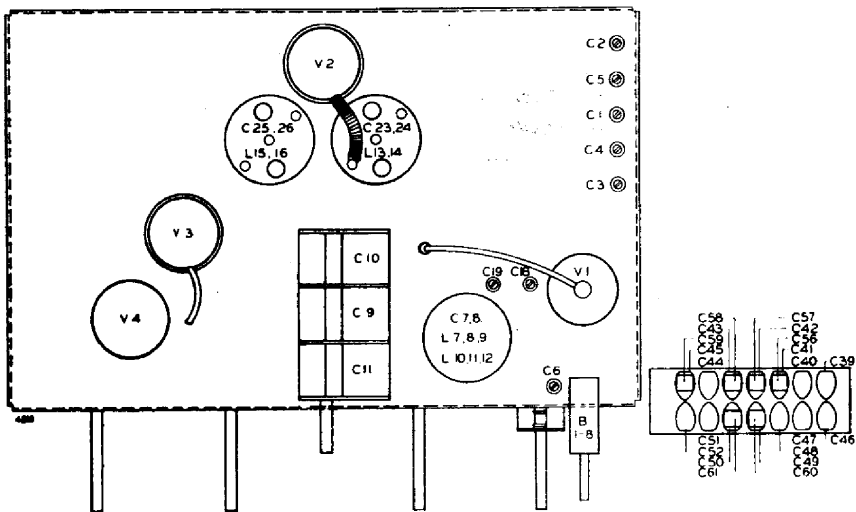


Fig. 5.

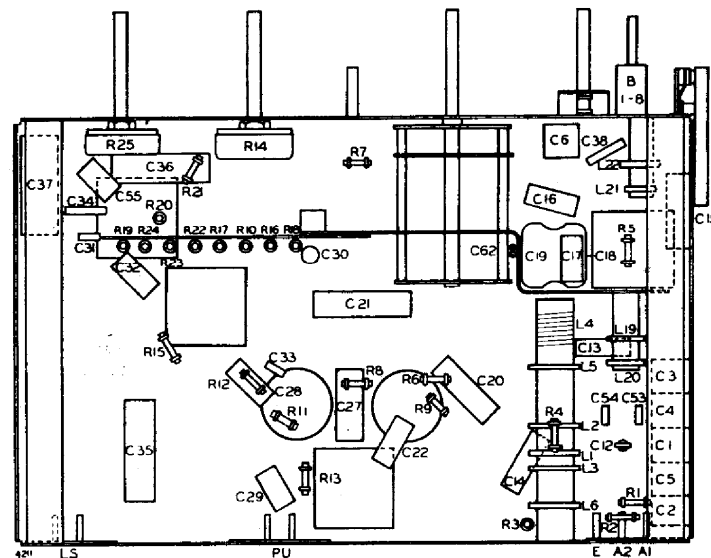
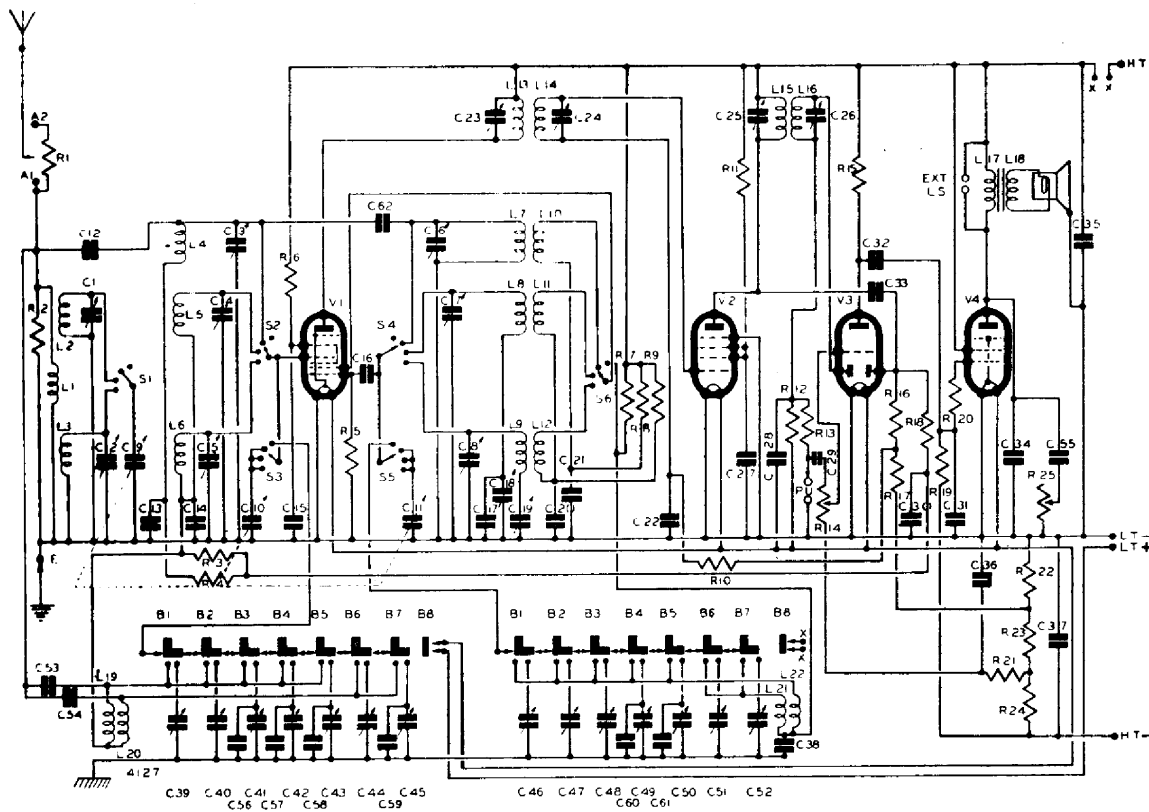


Fig. 6.



CIRCUIT DIAGRAM

Fig. 7.