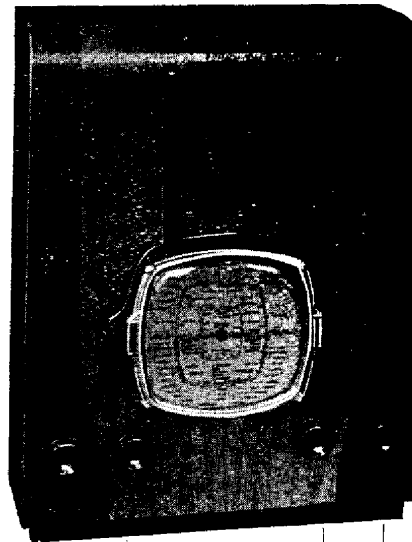


LISSEN

SERVICE MANUAL FOR FOUR VALVE A.C. MAINS RECEIVER MODEL 8401



TONE CONTROL
VOLUME CONTROL
& ON-OFF SWITCH

TUNING CONTROL
SELECTOR SWITCH

SERVICE DATA FOR A.C. MAINS RECEIVER MODEL 8401.

CONDENSERS

Code	Description	Part No.	Value
C1	Triple Gang	80,504	
C2			
C3			
C4			
C5	Trimmers on Gang ..		
C6			
C7	A.V.C. Decoupling ..	68,020	.1 mfd.
C8	V1 Screen By-pass ..	68,020	.1 mfd.
C9	V1 Cathode By-pass ..	68,020	.1 mfd.
C10	Oscillator Grid Coupling	66,513	100 mmfd. Mica
C11	Oscillator Anode Coupling	66,515	300 mmfd. Mica
C12	L.W. Oscillator Trimmer	80,000	100 mmfd. Max.
C13	M.W. Padder, Fixed ..	66,515	300 mmfd. Mica
C14	M.W. Padder, Variable	80,511	300 mmfd. Max.
C15	L.W. Padder, Variable	80,001	300 mmfd. Max.
C16	I.F. Trimmers ..	80,001	300 mmfd. Max.
C17			
C18			
C19			
C20	A.V.C. Decoupling ..	68,020	.1 mfd.
C21	V2 Screen By-pass ..	68,020	.1 mfd.
C22	V2 Cathode By-pass ..	68,020	.1 mfd.
C23	L.F. Coupling ..	68,014	.05 mfd.
C24	Signal Diode ..	66,513	100 mmfd.
C25	A.V.C. Coupling ..	71,262	10 mmfd.
C26	V3 Cathode By-pass ..	67,005	50 mfd. 12v. p.Elec
C27	Tone Correction ..	68,502	.005 mfd. 3,000 v. Test
C28	Tone Control ..	68,505	.04 mfd. 3,000 v. Test
C29	H.T. Smoothing ..	67,505	8 mfd. 350 v. Elec.
C30	Reservoir ..	67,505	8 mfd. 350 v. Elec.
C31	L.W. B.P.1. Trimmer, Fixed	66,036	50 mmfd. Mica
C32	L.W. B.P.2. Trimmer, Fixed	66,036	50 mmfd. Mica

RESISTANCES

Code	Description	Part No.	Value
R1	V1 Screen Feed ..	71,979	41,000 ohm, ½ watt
R2	V1 Oscillator Anode Feed	71,928	20,000 ohm, 1 watt
R3	A.V.C. Decoupling ..	71,900	1-1 megohm ½ watt
R4	V1 Bias ..	71,969	150 ohm, ½ watt
R5	Oscillator Grid Leak ..	71,968	51,000 ohm, ½ watt
R6	M.W. Het. Voltage Control	71,914	1,000 ohm, ½ watt
R7	L.W. Het. Voltage Control	71,982	2,100 ohm, ½ watt
R8	V2 Screen Feed ..	24,756	25,000 ohm, ½ watt
R9	V2 Bias ..	71,969	150 ohm, ½ watt
R10	V3 Grid Stopper ..	71,962	110,000 ohm, ½ watt
R11	Signal Diode Load ..	71,944	510,000 ohm, ½ watt
R12	Volume Control ..	81,505	500,000 ohm, Vari.
R13	V3 Bias ..	71,969	150 ohm, ½ watt
R14	A.V.C. Diode Load Part	71,945	260,000 ohm, ½ watt
R15	A.V.C. Diode Load Part	71,945	260,000 ohm, ½ watt
R16	Tone Control ..	81,512	50,000 ohm, Vari.

SWITCHES

Code	Description	Part No.	Value
S1	Wave-change Switch	83,505	
S2			
S3			
S4			
	On-off Q.M.B. Ganged to Volume Control	—	

VOLTAGE AND CURRENT MEASUREMENTS FOR RECEIVER TYPE B.1

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 A36B ..	Ea	246 v.	Ia	1.7 mA.
	Es	79 v.	Is	4.7 mA.
	Eoa	108 v.	Io	6.0 mA.
I.F. Amplifier A50P ..	Ec	1.9 v.	Ic	12.4 mA.
	Ea	246 v.	Ia	8.3 mA.
	Es	172 v.	Is	2.9 mA.
Double Diode Output A27D	Ec	1.7 v.	Ic	11.2 mA.
	Ea	238 v.	Ia	35.0 mA.
	Es	246 v.	Is	5.4 mA.
Rectifier A11D	Ec	5.8 v.	Ic	40.4 mA.
	Ea1-Ea2			622 v. R.M.S.
	Ec	346 v.	Ic	64.0 mA.

Main H.T. line 246 v.

Main H.T. current 64 mA.

Normal Input current 0.28 Amp. R.M.S.

INDUCTANCES

Code	Description	Part No.	Value
L1	Signal Frequency Coil	78,520	—
L2			
L3			
L4			
L5			
L6	Oscillator Coil ..	78,521	—
L7			
L8			
L9	1st I.F. Transformer	77,501	—
L10			
L11	2nd I.F. Transformer	77,503	—
L12			
L13	Output Transformer (On Speaker)	85,516	—
L14			
L15			
L16	Speaker Field 1,500ohm		
L17	Mains Transformer ..	77,505	—
L18			
L19			
L20			

VALVES

Code	Description	Part No.	Value
V1	Frequency Changer ..	4,093	Ever Ready A36B
V2	I.F. Amplifier ..	4,083	Ever Ready A50P
V3	Det., A.V.C. Rect., and Output	4,095	Ever Ready A27D
V4	Rectifier ..	4,084	Ever Ready A11D

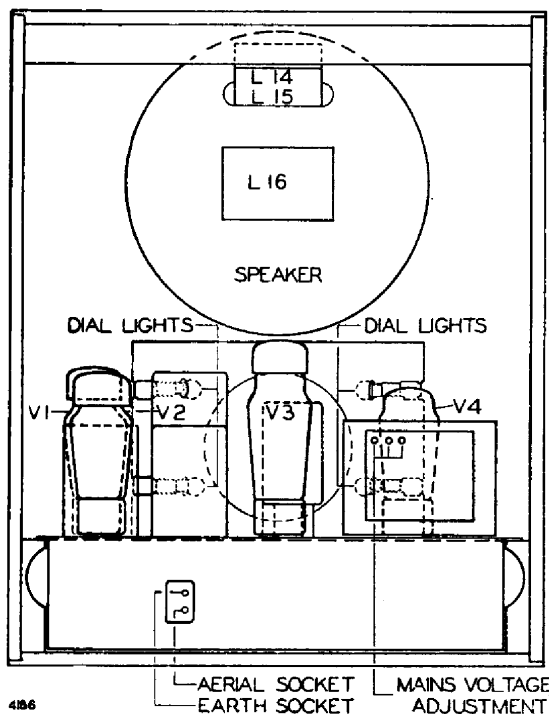


Fig. 8.

RECEIVER TYPE B.1

D.C. Resistance of Inductances.

Radio Frequency Circuits.

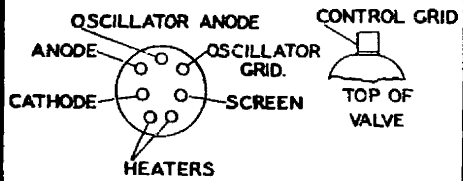
Primary	(L1)	11.8 ohms
M.W. B.P. Primary	(L2)	2.7 ohms
L.W. B.P. Primary	(L3)	13.4 ohms
M.W. B.P. Secondary	(L4)	2.7 ohms
L.W. B.P. Secondary	(L5)	13.4 ohms
M.W. Oscillator Grid	(L6)	2.0 ohms
L.W. Oscillator Grid	(L7)	6.4 ohms
M.W. Tickler	(L8)	3.8 ohms
L.W. Tickler	(L9)	11.7 ohms

Intermediate Frequency Circuits.

Primary and Secondary coils of each I.F.T. (L10, L11, L12, L13)	6.7 ohms
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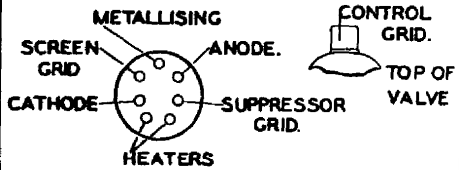
Low Frequency Circuits.

Output Transformer, Primary ..	(L14)	220 ohms
Output Transformer, Secondary ..	(L15)	Very Low
Smoothing Choke, Speaker Field ..	(L16)	1,500 ohms
Mains Transformer Rectifier Heater Winding (L17)		Very Low
Mains Transformer H.T. Secondary ..	(L18)	530 ohms
Mains Transformer Valve Heater Winding (L19)		Very Low
Mains Transformer Primary, 250 v. tap (L20)		36 ohms



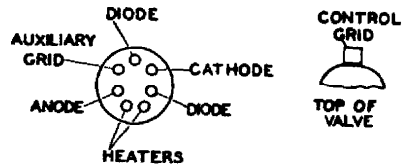
UNDERSIDE OF HOLDER
FOR A36B VALVE

Fig. 1.



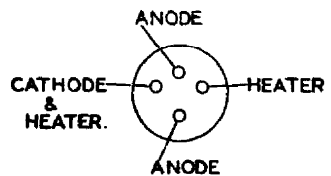
UNDERSIDE OF HOLDER
FOR A50P VALVE

Fig. 2.



UNDERSIDE OF HOLDER
FOR A27D VALVE

Fig. 3.



UNDERSIDE OF HOLDER
FOR A11D VALVE.

Fig. 4.

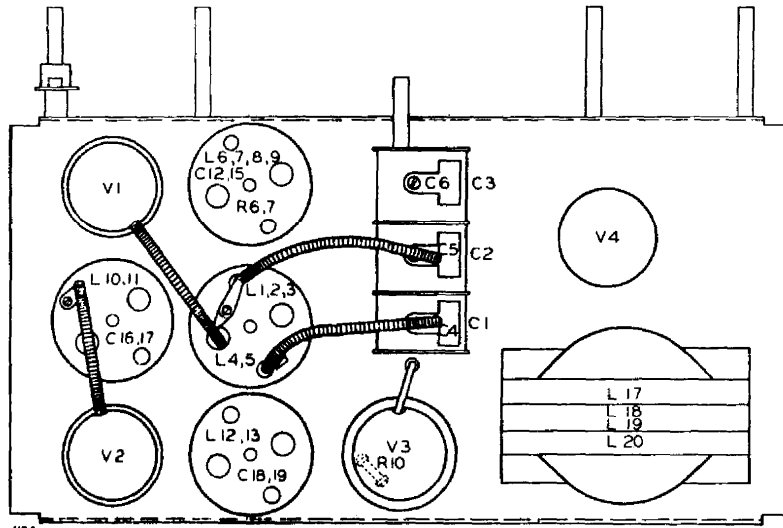


Fig. 5.

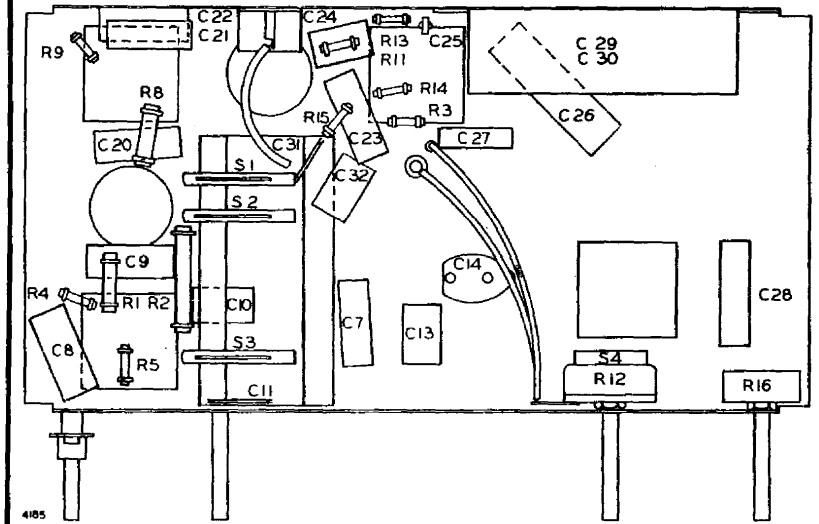
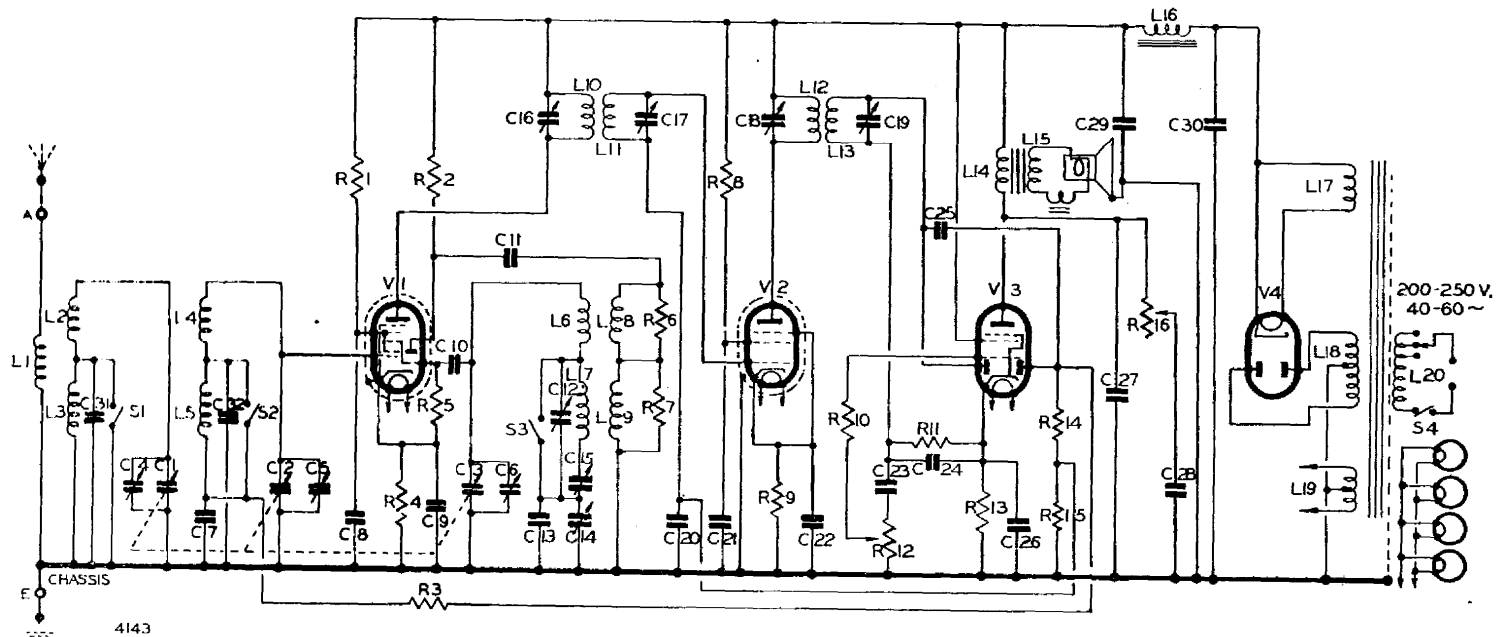


Fig. 6.



CIRCUIT DIAGRAM

Fig. 7.

SPARE PARTS PRICE LIST FOR MODEL 8401.

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

Part No.	Description and Circuit Indication	List Price
63600	Cabinet, complete with Baffle, etc.	35/-
73736	Card Back for Cabinet	2/6
69563	Carton	6/-
78520	Coil, Aerial (L1, L2, L3, L4, L5)	6/6
78521	" Anode (L6, L7, L8, L9)	6/6
68020	Condenser, Tubular, .1 mfd. (C7, C8, C9, C20, C21, C22)	1/4
68014	" " .05 mfd. (C23)	1/-
71262	" " 10 mmfd. (C25)	1/6
67005	" " 50 mfd. (C26)	2/3
68502	" " .005 mfd. (C27)	1/4
68505	" " .04 mfd. (C28)	1/-
66513	" Mica .0001 mfd. (C10, C24)	8d.
66515	" " .0003 mfd. (C11, C13)	8d.
66036	" " .00005 mfd. (C31, C32)	8d.
67505	" Block, 8 + 8 mfd. (C29, C30)	5/6
80504	" Gang, 3-stage (C1, C2, C3)	15/6
73724	Escutcheon	7/6
73738	Drive	1/-
73702	" Disc	1/6
74160	Grille	—
57095	Instruction Booklet	1/-
57072	Knob, L.M.	6d.
50101	" Spring	3d.
69575	Liner	3d.
60504	Mains Lead	9d.
201	Plug for Earth	3d.
532	" Aerial	3d.
71979	Resistor, 41,000 ohms, 1/2 watt (R1)	1/-
71928	" 20,000 ohms, 1/2 watt (R2)	1/-
71900	" 1.1 megohms, 1/2 watt (R3)	1/-
71969	" 150 ohms, 1/2 watt (R4, R9, R13)	1/-
71968	" 51,000 ohms, 1/2 watt (R5)	1/-
71914	" 1,000 ohms, 1/2 watt (R6)	1/-
71982	" 2,100 ohms, 1/2 watt (R7)	1/-
24756	" 25,000 ohms, 1/2 watt (R8)	1/-
71962	" 110,000 ohms, 1/2 watt (R10)	1/-
71944	" 510,000 ohms, 1/2 watt (R11)	1/-
71945	" 260,000 ohms, 1/2 watt (R14, R15)	1/-
84529	Scale	2/6
73725	" Pointer	6d.
73657	" Lamp 12 m/m, 5.5 volt, .3 amp.	6d.
73633	" Lamp Holder	6d.
75544	Socket Plate, Aerial	3d.
85516	Speaker, including Output Transformer	27/6
71610	Spring	3d.
83505	Switch, Wave-change	4/6
77501	Transformer, 1st I.F. (L10, L11)	7/-
77503	" 2nd I.F. (L12, L13)	7/-
77505	" Mains	25/-
80511	Trimmer, 300 mmfd. (C14)	8d.
81512	Tone Control (R16)	4/6
4093	Valve, (V1) Ever Ready A36B	11/6
4083	" (V2) " " A50P	12/6
4095	" (V3) " " A27D	16/-
4084	" (V4) " " A11D	10/6
75505	" Holder, 4-pin...	3d.
75507	" " 7-pin...	6d.
81505	Volume Control (R12)	4/6

Circuit Alignment Procedure for Receiver 8401.

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 μ F. capacity across middle section of gang condenser C2 (*i.e.*, across signal grid and chassis of the frequency changer V1). Trim each I.F. circuit to peak in the following order:—

2nd I.F.T. Secondary trimmer (C19), 2nd I.F.T. Primary trimmer (C18), 1st I.F.T. Secondary trimmer (C17), 1st I.F.T. Primary trimmer (C16).

(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 two wave bands are not independent and the M.W. band should be aligned first.

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 (C14) 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 oscillating trimmer on front section of gang condenser (C6) to receive the signal. Then adjust trimmers on remaining two sections of gang condenser (C5 and C4) 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 medium wave padder (C14) to give maximum output on that signal.

(8) Re-set pointer to the 214-metre mark on the scale and re-adjust trimmer^s on gang condenser (C6, C5, C4) 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 a slight adjustment to M.W. padder (C14).

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 (C15) approximately three-quarters in.

(3) Set the pointer against the 1,200-metre mark on the scale.

(4) Apply a signal of 1,200 metres to the A and E sockets of the receiver.

(5) Adjust the long wave oscillating trimmer (C12) for 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 (C15) 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 long wave oscillating trimmer (C12) 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 a slight adjustment to the long wave padder (C15).