

LISSEN

SERVICE MANUAL FOR FOUR VALVE A.C. MAINS RECEIVER MODEL 8301.

TECHNICAL SPECIFICATION

The Model 8301 is a two-band superhet receiver for mains operation (200-250 volts, 40-100 cycles).

Valves are as follows :-

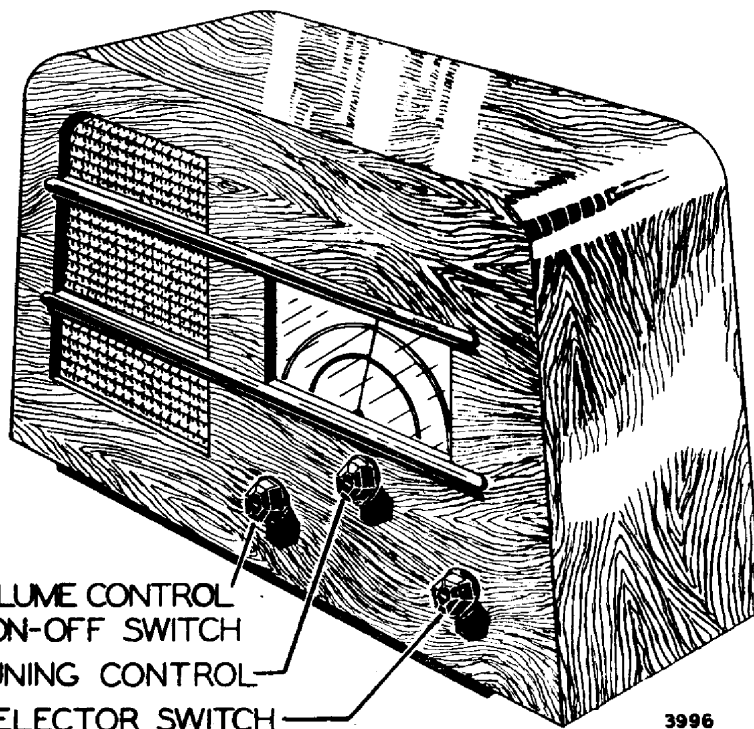
Frequency changer,
Ever Ready A80A (Octode).

I.F. amplifier,
Ever Ready A50P (Variable-mu H.F.
pentode).

Detector, A.V.C. and output valve,
Ever Ready A27D (Double-diode-
pentode).

Rectifier Ever Ready A11D (Double diode).

An inductively coupled band-pass filter precedes the frequency changer (V1). The oscillator circuits are conventional, the grid coils being tuned and coupled to the oscillator anode by the coils L8 and L9. The I.F. frequency employed is 455 Kc/s. and the I.F. transformers



are tuned to a single peak. The output from the I.F. amplifier valve is applied via the second I.F. transformer direct to the signal diode, and through a condenser (C21) to the A.V.C. diode. The A.V.C. potential is applied to the grids of the frequency changer and I.F. amplifier valves via decoupled circuits (R1, C26 and R7, C17). The volume control (R6) is provided for regulating the magnitude of the audio frequency voltage applied to the grid of the output pentode (V3), the anode circuit of which includes the primary of the output transformer. The maximum undistorted output from the Model 8301 is two watts.

The rectifier circuit is conventional, the speaker field being used as a smoothing choke.

Wavelength coverage is 200-550 metres on medium waves, and 850-2,200 metres on long waves. The wavechange switches are open on long waves and closed on medium waves.

SERVICE DATA FOR A.C. MAINS RECEIVER MODEL 8301.

OPERATING CONDITIONS OF VALVES
IN 8301 RECEIVER

Electrode	V1 (A80A)		V2 (A50P)	
	Volts	mA.	Volts	mA.
Anode ..	255-265	1.75-2.25	255-265	8.5-9.5
Screen ..	70-80	4.0-5.0	170-180	3.0-3.5
Osc. anode ..	55-65	1.5-2.5	—	—
Cathode ..	1.5-2.0	7.25-9.25	1.75-2.25	11.5-13.0

Electrode	V3 (A27D)		V4 (A11D)	
	Volts	mA.	Volts	mA.
Anode ..	250-260	32-37	310+310	A.C.
Screen ..	255-265	6-7	—	—
Osc. anode ..	—	—	—	—
Cathode ..	6.0-6.5	38-45	355-370	56 70

Transformer primary current about 0.28 amp. at 230-volt A.C.

NOTE.—All voltages over 50 volt measured with Universal Avometer on 1,200-volt range.

VALVES

Code	Description	Part No.	Values
V1	Frequency Changer ..	4,061	A80A Ever Ready
V2	I.F. Amplifier ..	4,083	A50P Ever Ready
V3	Double Diode Output Pentode ..	4,095	A27D Ever Ready
V4	H.T. Rectifier ..	4,084	A11D Ever Ready

SWITCHES

Code	Description	Part No.
S1	B.P.1	83,505
S2	B.P.2	
S3	Oscillator Circuit	
S4	On-Off Switch Ganged to Volume Control ..	—

RESISTANCES

Code	Description	Part No.	Value
R1	A.V.C. Decoupling ..	71,962	110,000 ohm. ½ watt
R2	V1 Bias	71,943	200 ohm. ½ watt
R3	V1 Grid Leak	71,968	51,000 ohm. ½ watt
R4	V1 Screen Feed .. .	71,929	25,000 ohm. ½ watt
R5	V2 Bias	89,502	75 ohm. ½ watt
R6	Volume Control .. .	81,505	500,000 ohm
R7	A.V.C. Decoupling ..	71,944	510,000 ohm. ½ watt
R8	Signal Diode Load ..	71,944	510,000 ohm. ½ watt
R9	V3 Bias	71,969	150 ohm. ½ watt
R10	A.V.C. Diode Load ..	71,945	260,000 ohm. ½ watt
R11	A.V.C. Diode Load ..	71,945	260,000 ohm. ½ watt
R12	V2 Screen Feed .. .	24,756	25,000 ohm. ½ watt

CONDENSERS

Code	Description	Part No.	Value
C1	Triple Gang ..	80,504	
C2			
C3			
C4	L.W. Trimmer ..	66,036	50 mmfd.
C5	L.W. Trimmer ..	66,036	50 mmfd.
C6	L.W. Trimmer ..	82,501	40/100 mmfd.
C7	Frequency Changer Neutralising		
C8	Oscillator Grid Condenser	66,035	100 mmfd.
C9	V1 Cathode By-pass ..	68,020	.1 mfd.
C10	Double Padder	82,502	300/600 mmfd.
C11			200/400 mmfd.
C12	V1 Screen By-pass ..	67,009	2 mfd. 300 v. Elect.
C13	I.F. Trimmers	—	
C14			
C15			
C16			
C17	A.V.C. Decoupling ..	68,020	.1 mfd.
C18	V2 Cathode By-pass ..	68,020	.1 mfd.
C19	L.F. Coupling ..	68,014	.05 mfd.
C20	Signal Diode Load By-pass	66,038	.0002 mfd.
C21	A.V.C. Coupling ..	71,262	10 mmfd.
C22	V3 Cathode By-pass ..	67,005	50 mfd. 12v. Elect.
C23	Tone Control ..	68,503	.01 mfd.
C24	H.T. Smoothing	67,505	8+8 mfd.
C25			
C26	A.V.C. Decoupling ..	68,020	.1 mfd.
C27	V2 Screen By-pass ..	68,020	.1 mfd.

INDUCTANCES

Code	Description	Part No.	Value
L1	M. and L.W. Primary Coil	78,513	Signal Frequency Coil
L2	M.W. B.P.1		
L3	L.W. B.P.1		
L4	M.W. B.P.2		
L5	L.W. B.P.2	78,514	Oscillator Coil
L6	M.W. Tuned Coil .. .		
L7	L.W. Tuned Coil .. .		
L8	M.W. Tickler Coil ..		
L9	L.W. Tickler Coil ..	77,508	
L10	1st I.F. Primary Coil ..		
L11	1st I.F. Secondary Coil ..		
L12	2nd I.F. Primary Coil ..	77,503	
L13	2nd I.F. Secondary Coil ..		
L14	Speaker Field, 1,500 ohm ..	85,508	
T1	Output transformer on Speaker	—	
T2	Mains Transformer .. .	77,505	

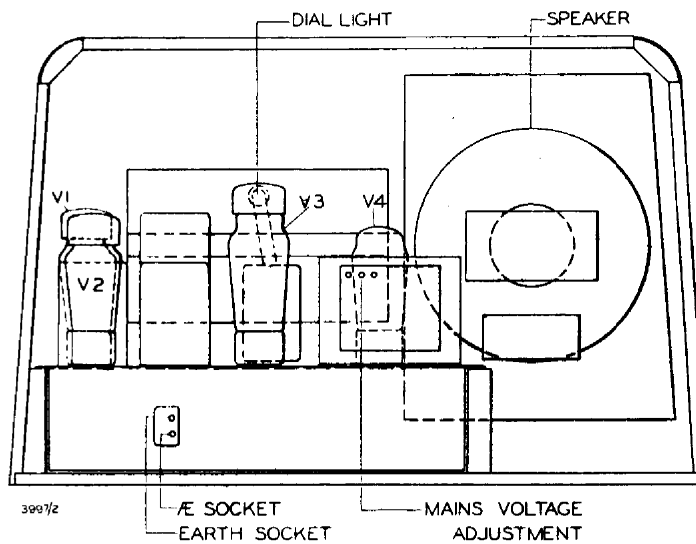
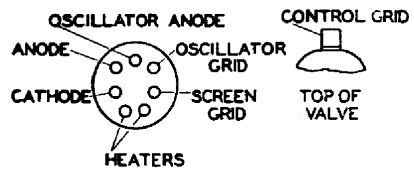
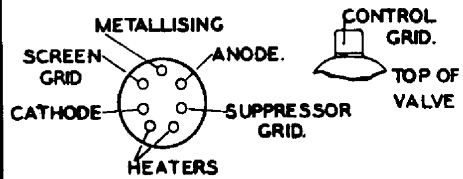


Fig. 8.



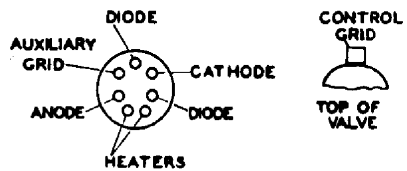
UNDERSIDE OF HOLDER
FOR 80A VALVE

Fig 1



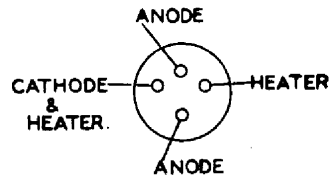
UNDERSIDE OF HOLDER
FOR A.50.P. VALVE

Fig. 2



UNDERSIDE OF HOLDER
FOR A27D VALVE

Fig. 3



UNDERSIDE OF HOLDER
FOR A.11.D. VALVE.

Fig. 4

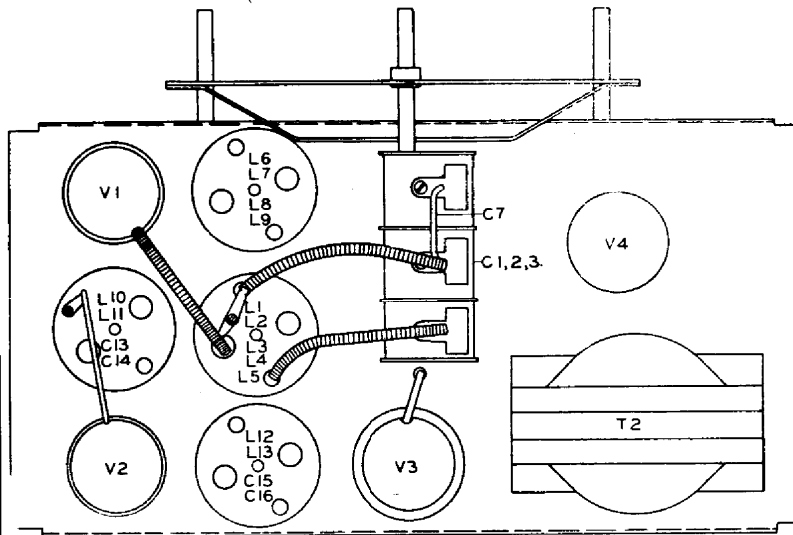


Fig. 5

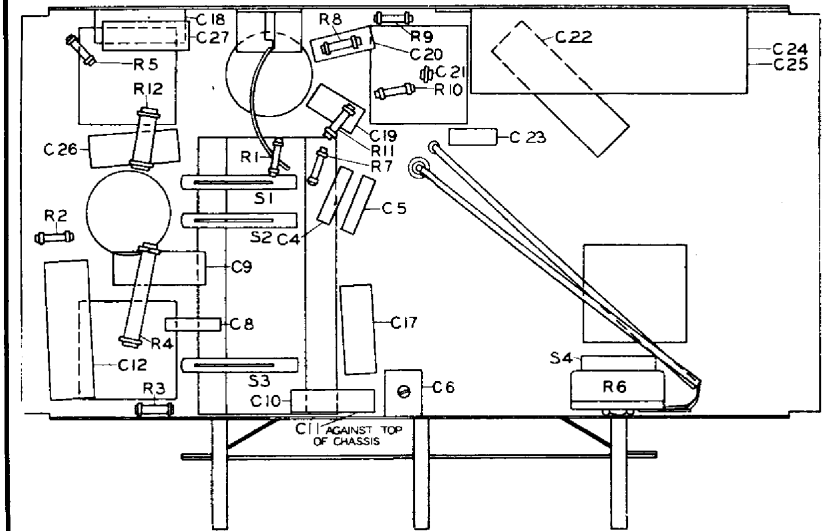
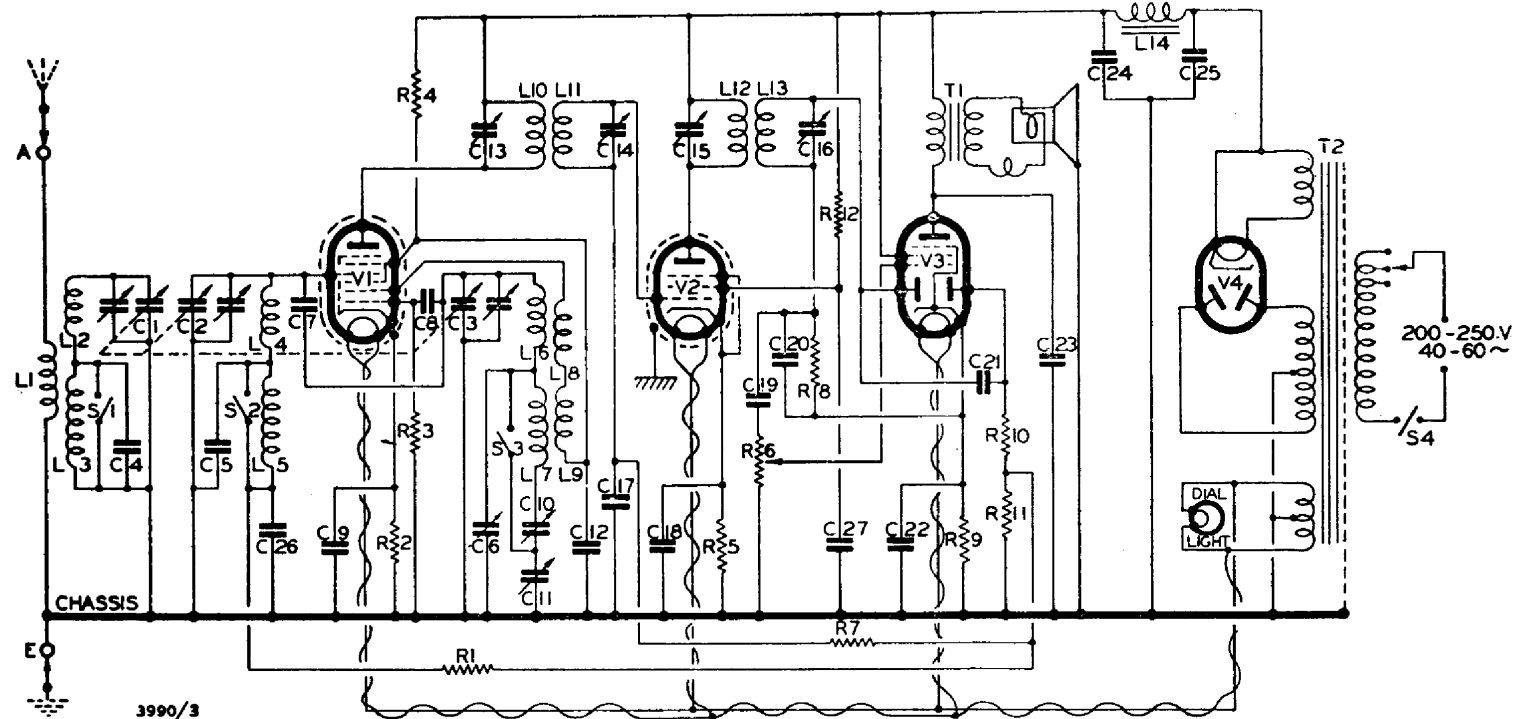


Fig. 6



CIRCUIT DIAGRAM

Fig. 7



SPARE PARTS PRICE LIST FOR MODEL 8301.

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

Part No.	Description and Circuit Indication	List Price
63528	Cabinet, complete with Baffle, etc.	27/6
73604	Card Back for Cabinet	1/6
78513	Coil, Aerial (L1, L2, L3, L4, L5)	6/-
78514	„ Anode (L7, L8, L9, L10)	3/-
67005	Condenser, Tubular 50 mfd. (C21)	2/3
68014	„ „ .05 mfd. (C19)	1/-
68020	„ „ .1 mfd. (C17) (C18) (C9) (C26) (C27)	1/4
66036	„ „ .00005 mfd. (C4) (C5)	8d.
68503	„ „ .01 mfd. (C23)	1/-
71262	„ „ 10 mmfd. (C21)	1/6
67009	„ „ 2 mfd., 300 volt Elect. (C12)	2/6
66969	„ Mica .0005 mfd. (C16)	8d.
66035	„ „ .0001 mfd. (C8)	8d.
66038	„ „ .0002 mfd. (C20)	8d.
67505	„ Block 8+8 mfd. (C24, C25)	5/6
80504	Gang Condenser, 3-stage (C1, C2, C3)	15/6
55007	Knob, Tuning	3d.
55127	„ L.M.	3d.
55024	„ Volume and Off	3d.
60504	Mains Lead	9d.
201	Plug for Earth	2d.
532	„ „ Aerial	2d.
71944	Resistor, 510,000 ohms, 1/2 watt (R7) (R8)	1/-
71945	„ 260,000 ohms, 1/2 watt (R10) (R11)	1/-
77508	Transformer, 1st I.F. (L10, L11)	9/-
77503	„ 2nd I.F. (L12, L13)	7/-
71943	Resistor, 200 ohms, 1/2 watt (R2)	1/-
89502	„ 75 ohms, 1/2 watt (R5)	1/-
71962	„ 110,000 ohms, 1/2 watt (R1)	1/-
71968	„ 51,000 ohms, 1/2 watt (R3)	1/-
24756	„ 25,000 ohms, 1/2 watt (R12)	1/-
71929	„ 25,000 ohms, 1 watt (R4)	1/-
71969	„ 150 ohms, 1/2 watt (R9)	1/-
50035	Scale Pointer	3d.
73622	„ Lamp, 4.5 volt, .3 amp.	6d.
71245	„ „ Holder	6d.
71347	„ „ Window (Glass)	3d.
75544	Socket Plate Aerial	3d.
85508	Speaker, including Transformer	22/6
83505	Switch, Wavechange... ..	4/6
77505	Transformer, Mains	25/-
75505	Valve Holder, 4-pin	3d.
75507	„ 7-pin	6d.
4083	Valve (V2) Ever Ready A50P	12/6
4061	„ (V1) „ „ A80A	15/-
4095	„ (V3) „ „ A27D	16/-
4084	„ (V4) „ „ A11D	10/6
81505	Volume Control (R6)	4/6
69524/5	Carton and Liner	5/-
74003	Instruction Booklet	1/-
82501	Trimmer, 40/100 mmfd. (C6)	1/-
82502	Padder, 300/600, 200/400 mmfd. (C10) (C11)	3/-

Circuit Alignment Procedure for Lissen 8301.

NOTE.—C1 and C2, etc., refer to trimmers as indicated in Service Manual, Figs. No. 5 and 6.

I.F. Circuit Alignment.

- (1) Short circuit the oscillator by clip lead across front section of gang condenser C3.
- (2) Apply a signal of 455 Kc/s. between frequency changer (V1) control grid and chassis. Trim each I.F. circuit to peak in the following order:—
C16, C15, C14, C13.
- (3) Check each circuit by going over the trimmers in the same order again.
- (4) Remove shorting clip from gang.

Medium Waveband Alignment.

- (1) See that the scale pointer registers with the 180° line on the scale with the gang at maximum capacity.
- (2) Set condenser C11 (nearest top of chassis) approximately two-thirds in.
- (3) Set the pointer against 214-metre mark on scale.
- (4) Apply a signal of 214 metres to A and E sockets of the receiver and adjust trimmer on front section of gang condenser C3, to receive the signal. Then adjust trimmers on remaining two sections of gang condensers, C1 and C2, to give maximum output.
- (5) Set the pointer against 500-metre mark on scale.
- (6) Apply a signal of 500 metres and adjust condenser C11 (nearest top of chassis) to give maximum output on that signal.
- (7) Re-set pointer against 214-metre mark on scale and adjust trimmers on gang condenser sections C3, C1 and C2 to give maximum output on the 214-metre signal.
- (8) 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 C11.
- (9) Check calibration at 214 metres, 300 metres and 500 metres, and see that the receiver tunes down to 200 metres.

Long Waveband Alignment.

- (1) See that the scale pointer registers with 180° line on scale with the gang at maximum capacity.
- (2) Set condenser C10 approximately one-half in.
- (3) Set pointer against 1,200-metre mark on scale.
- (4) Apply a signal of 1,200 metres to A and E sockets of the receiver and adjust condenser C6 (on under side of chassis) for maximum output.
- (5) Set pointer against 1,700-metre mark on scale.
- (6) Apply a signal of 1,700 metres and adjust condenser C10 to give maximum output on that signal.
- (7) Re-set pointer against 1,200-metre mark on scale and re-adjust condenser C6 to give maximum output on the 1,200-metre signal.
- (8) 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 condenser C10.
- (9) Check calibration at 1,200 metres and 1,700 metres.

NOTE.—After aligning on long waveband, the medium waveband alignment should be finally checked.