

LISSEN

SERVICE MANUAL FOR 4 VALVE, 3 BAND SUPERHET MAINS RECEIVER MODEL 8302.

TECHNICAL SPECIFICATION.

The Lissen Model 8302 is a three-band superhet receiver for A.C. mains operation (200-250 volts, 40-60 cycles).

Valves are as follows :-

Frequency Changer, E.R. A36B (Triode-hexode).

I.F. Amplifier, E.R. A50P (Variable-mu pentode).

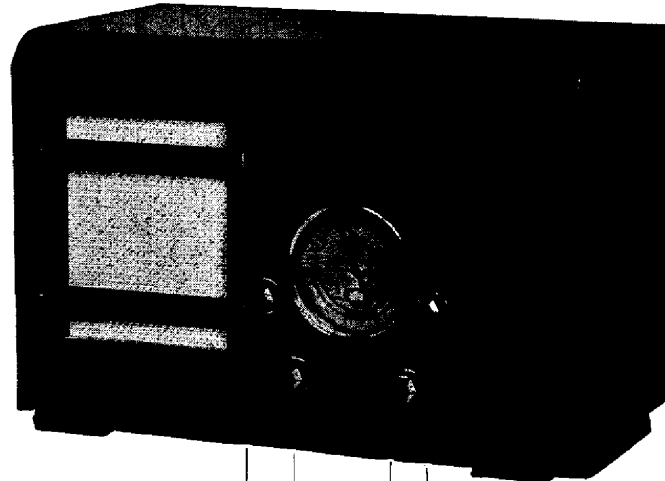
Detector A.V.C. and L.F. amplifier, E.R. A23A (Duo-diode-triode).

Output Valve, E.R. A70D (High slope L.F. pentode).

Rectifier, E.R. A11D (Double diode).

An inductively coupled band-pass filter precedes the frequency changer on long and medium waves; on short waves the aerial is coupled direct to the aerial coil through a condenser (C14).

The grid coils in the oscillator circuits are tuned, and the oscillator frequency is higher than the signal frequency on medium and long waves, and lower on short waves.



VOLUME CONTROL AND ON-OFF SWITCH. TONE CONTROL. TUNING CONTROL. SELECTOR SWITCH.

The primary of the 1st I.F. transformer forms the anode load of the frequency changer, and this winding, in common with the other I.F. coils, is tuned to 455 Kc/s. The anode circuit of the I.F. amplifier includes the primary of the second I.F. transformer, the secondary of which is connected direct to the signal diode and through a small condenser to the A.V.C. diode. The latter applies the A.V.C. potential via decoupled circuits to the grids of the frequency changer and I.F. amplifier valves. L.F. coupling between the triode amplifier in the duo-diode triode valve and the output pentode is by a high fidelity resistance-capacitance combination, and the output valve operates with negative feedback, enabling a large, undistorted output to be obtained. The maximum undistorted output is 2 watts.

The H.T. rectifier circuit is conventional, and the speaker field is used as a smoothing choke.

Wavelengths covered by the 8302 are as follows :-

Long waves	...	850—1,920 metres.
Medium waves	...	198—580 metres.
Short waves	...	19—50 metres.

The wavechange switches are in position "A" on short waves, "B" on medium waves, and "C" on long waves.

SERVICE DATA FOR MODEL No. 8302.

CONDENSERS.				
Code	Description	Part No.		
C1	M.W. B.P.1 Trimmer ..	82,500	5/40 mmfd.	
C2	L.W. B.P.1 Trimmer ..	82,501	40/100 mmfd.	
C3	M.W. B.P.2 Trimmer ..	82,500	5/40 mmfd.	
C4	L.W. B.P.2 Trimmer ..	82,501	40/100 mmfd.	
C5	S.W. Aerial Trimmer ..	82,500	5/40 mmfd.	
C6	S.W. Oscillator Trimmer ..	82,500	5/40 mmfd.	
C7	M.W. Oscillator Trimmer ..	82,500	5/40 mmfd.	
C8	L.W. Oscillator Trimmer ..	82,501	40/100 mmfd.	
C9	M.W. Padder } Double	82,502	300/600 mmfd.	
C10	L.W. Padder } Padder			
C11				
C12				
C13	Triple Gang ..	80,502	540 mmfd. Max.	
C14	S.W. Aerial Coupling ..	71,262	10 mmfd.	
C15	S.W. Tracking ..	68,005	.01 mfd.	
C16	A.V.C. Decoupling ..	68,020	.1 mfd.	
C17	V1 Screen Decoupling ..	68,020	.1 mfd.	
C18	V1 Cathode By-pass ..	68,020	.1 mfd.	
C19	V1 Oscillator Grid ..	66,035	.0001 mfd.	
C20	V1 Oscillator Anode			
	Decoupling	68,020	.1 mfd.	
C21	A.V.C. Decoupling ..	68,020	.1 mfd.	
C22				
C23	I.F. Trimmers on I.F.T.			
C24	Assembly			
C25				
C26	V2 Screen By-pass ..	68,020	.1 mfd.	
C27	V2 Cathode By-pass ..	68,020	.1 mfd.	
C28	I.F. Filter ..	66,038	.0002 mfd.	
C29	L.F. Coupling ..	68,008	.05 mfd.	
C30	Signal Diode Load By-pass ..	66,038	.0002 mfd.	
C31	V3 Cathode By-pass ..	67,005	50 mfd.	
			P.V.12	
C32	A.V.C. Coupling ..	71,262	10 mmfd.	
C33	L.F. Coupling ..	68,008	.05 mfd.	
C34	Tone Control ..	68,008	.05 mfd.	
C35	V4 Screen Cathode By-pass			
C36	H.T. Smoothing ..	67,500	8 x 8.8 mfd.,	
C37	Rectifier Reservoir ..			
			540 Peak.	

RESISTANCES.				
Code	Description	Part No.	Values	
R1	A.V.C. Decoupling ..	71,962	110,000 ohm,	1/2 watt
R2	A.V.C. Decoupling ..	71,962	110,000 ohm,	1/2 watt
R3	V1 Screen Potentiometer	71,928	20,000 ohm,	1 watt
R4	V1 Screen Potentiometer	71,935	5,000 ohm,	1/2 watt
R5	V1 Oscillator Grid Leak	71,974	26,000 ohm,	1/2 watt
R6	V1 Bias ..	71,969	150 ohm,	1/2 watt
R7	M.W. Oscillator Volts			
	Modifier ..	71,914	1,000 ohm,	1/2 watt
R8	L.W. Oscillator Volts			
	Modifier ..	71,907	2,000 ohm,	1/2 watt
R9	V1 Decoupling ..	72,011	10,000 ohm,	2 watt
R10	A.V.C. Decoupling ..	71,962	110,000 ohm,	1/2 watt
R11	V2 Bias ..	71,957	100 ohm,	1/2 watt
R12	V2 Screen Feed ..	24,756	25,000 ohm,	1/2 watt
R13	I.F. Stopper ..	71,962	110,000 ohm,	1/2 watt
R14	Signal Diode Load ..	71,944	510,000 ohm,	1/2 watt
R15	Volume Control ..	81,502	500,000 ohm	
R16	V3 Bias ..	71,942	300 ohm,	1/2 watt
R17	A.V.C. Diode Load ..	71,944	510,000 ohm,	1/2 watt
R18	V3 Anode Load ..	71,928	20,000 ohm,	1 watt
R19	V4 Grid Leak ..	71,945	260,000 ohm,	1/2 watt
R20	V4 Grid Stopper ..	71,978	21,000 ohm,	1/2 watt
R21	V4 Screen Feed ..	71,936	2,500 ohm,	1/2 watt
R22	Tone Control ..	81,500	50,000 ohm	
R23	V4 Bias and Negative			
	Feed Back ..	71,969	150 ohm,	1/2 watt
R24	V4 Negative Feed Back	71,803	250 ohm,	1/2 watt
R25	A2 Potentiometer ..	71,963	11,000 ohm,	1 watt
R26	A2 Potentiometer ..	71,962	110,000 ohm,	1/2 watt
R27	Oscillator Grid Modifier	71,943	200 ohm,	1 watt

INDUCTANCES.						
Code	Description	Part No.	Values			
L1	M. and L.W. Primary					
L2	M.W. B.P.1 ..	78,505		Signal		
L3	L.W. B.P.1 ..				Frequency	
L4	S.W. Aerial ..					Coil
L5	M.W. B.P.2 ..					
L6	L.W. B.P.2 ..					
L7	S.W. Grid ..					
L8	M.W. Grid ..	78,509	Oscillator			
L9	L.W. Grid ..			Frequency		
L10	S.W. Tickler ..				Coil	
L11	M.W. Tickler ..					
L12	L.W. Tickler ..					
L13	1st I.F. Primary Coil	77,501	1st I.F.			
L14	1st I.F. Secondary Coil			77,503		Transformer
L15	2nd I.F. Primary Coil					
L16	2nd I.F. Secondary Coil					
L17	Speaker Field, 2,000 ohm					
	cold					
T1	Output Transformer on					
	Speaker					
T2	Mains Transformer ..	77,054				

SWITCHES.				
Code	Description	Part No.		
S1	B.P.1 ..	83,502	Wave Range	Switch
S2	B.P.2 ..			
S3	Oscillator Grid ..			
S4	Oscillator Anode ..			
S5	Mains Switch Ganged to			
	Volume Control ..			

VALVES.				
Code	Description	Part No.		
V1	Frequency Changer ..	4,093	Ever Ready A36B	
V2	Pentode I.F. Amplifier ..	4,083	Ever Ready A50P	
V3	Double Diode Triode ..	4,067	Ever Ready A23A	
V4	Output Pentode ..	4,085	Ever Ready A70D	
V5	Rectifier ..	4,084	Ever Ready A11D	

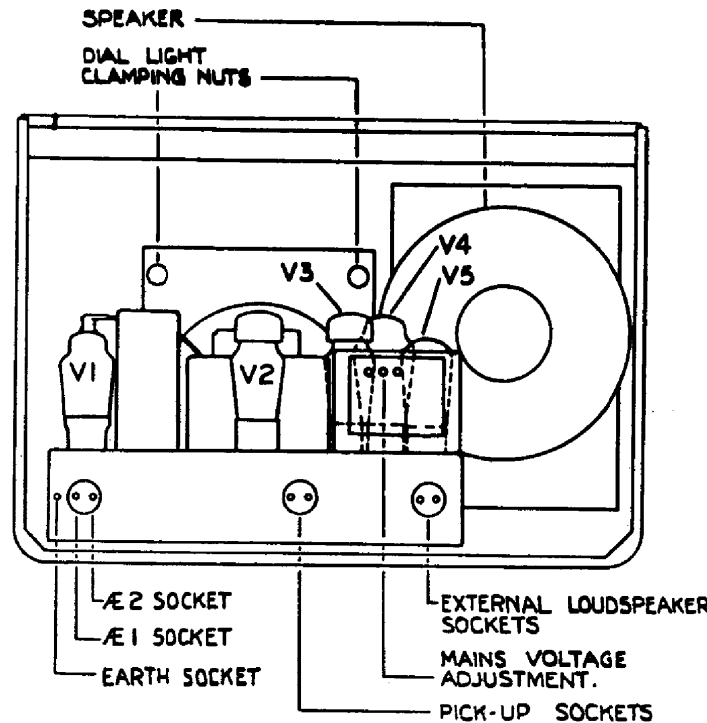
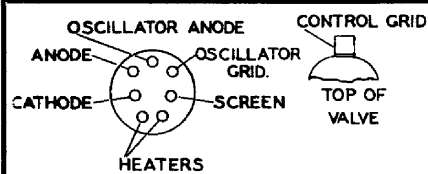


Fig. 9.

OPERATING CONDITIONS OF VALVES IN TYPE A2 RECEIVER.				
Valve	Electrode	Voltage	Current	
Frequency changer	Anode ..	245-260	1.0- 2.0 mA.	
Ever Ready A36B	Screen ..	55- 75	5.0- 7.0 mA.	
(Triode-hexode)	Oscillator			
	Anode ..	85-105	—	
	Cathode ..	1.5-2.0	12.0-14.0 mA.	
I.F. Amplifier	Anode ..	245-260	8.5-10.5 mA.	
Ever Ready A50P	Screen ..	155-175	3.0- 4.0 mA.	
(H.F. Pentode)	Cathode ..	1.0-1.5	11.5-14.5 mA.	
Detector A.V.C.	Anode ..	105-125	5.5- 7.0 mA.	
and L.F. Amplifier.	Cathode ..	1.5-2.0	—	
Ever Ready A23A.				
(Duo-diode-triode)				
Output Pentode	Anode ..	235-255	28.0-38.0 mA.	
Ever Ready A70D	Screen ..	235-255	4.0- 6.0 mA.	
(L.F. Pentode)	Cathode ..	12.0-16.0	32.0-44.0 mA.	
Rectifier	Anode to			
	Anode ..	650-750	—	
Ever Ready A11D	Cathode to	375-420	—	
	Chassis			
	Total H.T.			
	current ..	—	65.0-75.0 mA.	
	Mains current	—	0.25-0.35 amp.	
	(A.C.)			

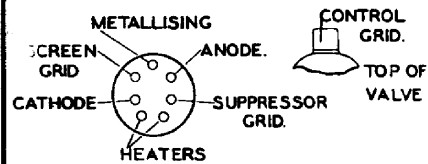
All voltage measurements made with a Universal Avometer (on 1,200 volts range for voltages above 50-volt) are to CHASSIS.

Switch in M.W. position for all measurements.



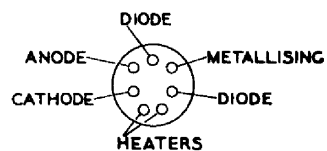
UNDERSIDE OF HOLDER
FOR A.36.B. VALVE

Fig. 1.



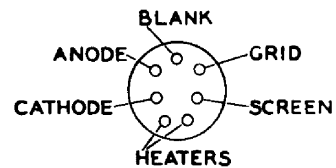
UNDERSIDE OF HOLDER
FOR A.50.P. VALVE

Fig. 2.



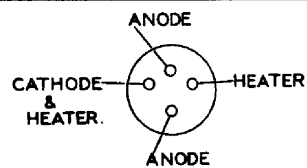
UNDERSIDE OF HOLDER
FOR A.23.A. VALVE

Fig. 3.



UNDERSIDE OF HOLDER
FOR A.70.D. VALVE

Fig. 4.



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

Fig. 5.

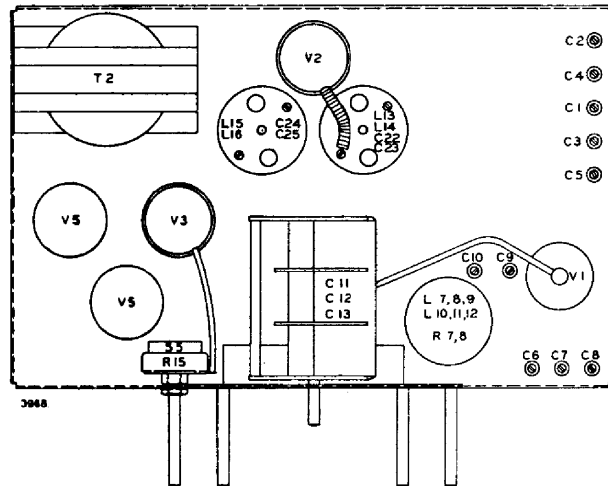


Fig. 6.

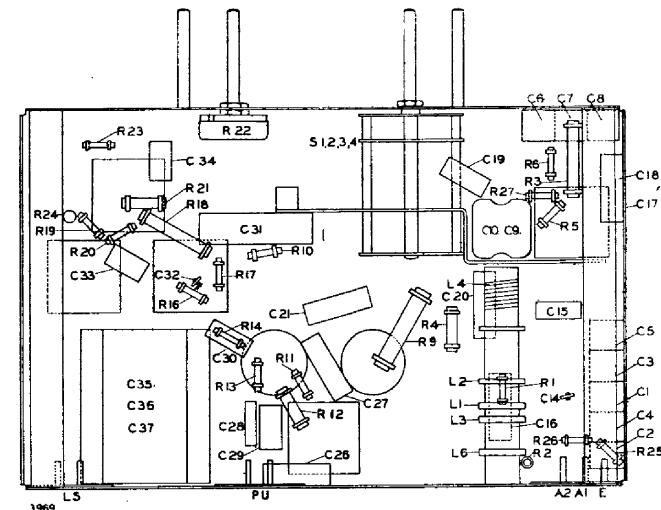
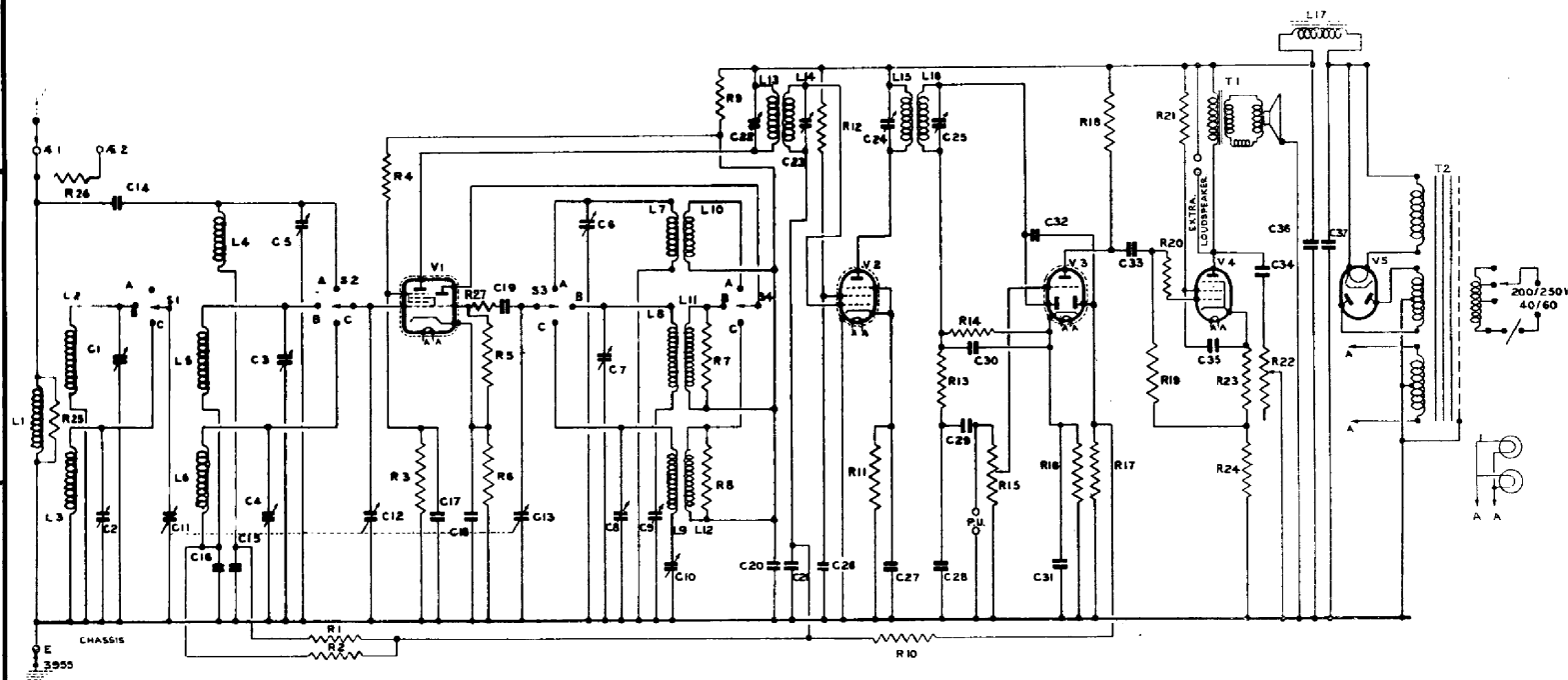


Fig. 7.



CIRCUIT DIAGRAM.

Fig. 8.