

LISSEN

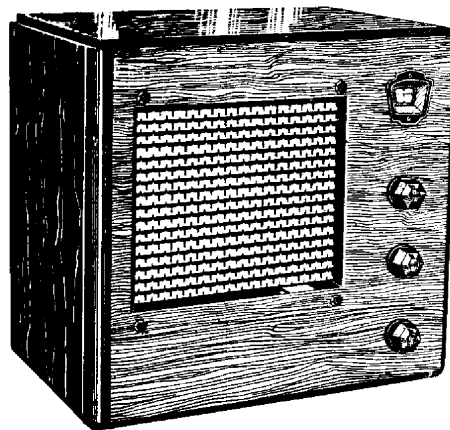
SERVICE MANUAL FOR BATTERY OPERATED RECEIVERS

TECHNICAL SPECIFICATION

THE Lissen models "8112 and 8119" are battery operated receivers for operation with an external elevated aerial. The aerial is inductively coupled to the tuned grid circuit of the triode detector valve (V1). Reaction is provided by the inductive coupling of the coil L5 with the tuned grid circuit, and is controlled by the reaction condenser C2.

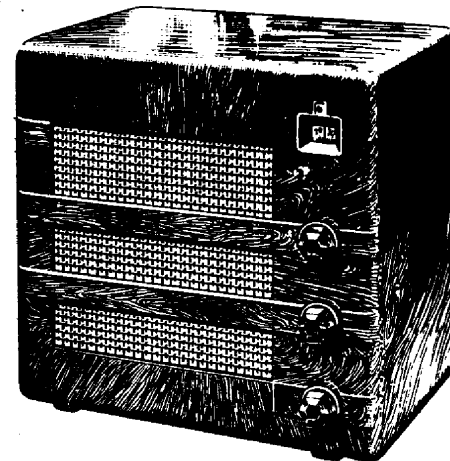
The detector stage is resistance capacity coupled to the first L.F. amplifier, a triode valve (V2). This in turn is resistance capacity coupled to the pentode output valve (V3). Suitable tone correction is employed for this valve, which is transformer coupled to the permanent magnet moving coil speaker, which has a low impedance voice coil.

Bias for the output valve is developed across the resistance R5.



Model 8112
(Walnut Cabinet)

Model 8119
(Bakelite Case)



GENERAL REMARKS

In the event of trouble, check the following details:—

1. Batteries: L.T. and H.T., and confirm that the leads are correctly connected.
2. Valves:
 - (a) Check characteristics, or
 - (b) Substitute valves known to be good.
3. Locate trouble to a particular stage by:
 - (a) Checking valve operating conditions, or
 - (b) Stage by stage test with oscillator, *i.e.*, output stage, L.F. stage, and detector stage.
4. Locate faulty component by testing with a suitable meter or by substitution, as the case may be.

The following charts are given in the order they will usually be required.

Those readings given in columns A and B are obtained with new (120 volts) and partially discharged (90 volts) H.T. batteries, respectively.

The black H.T. lead should be inserted into the H.T.— socket on the H.T. battery, and the red lead into the 120 volts socket.

OPERATING CONDITIONS OF THE VALVES

(Voltages measured from the chassis.)

Valve	Circuit	Column A (New H.T.)	Column B (Partially discharged H.T.)
Detector valve, Ever Ready K30C (Metallized)	Anode voltage	38 volts	28.5 volts
	Anode current	1.0 m.a.	0.8 m.a.
First L.F. valve, Ever Ready K30C (Metallized)	Anode voltage	34 volts	25.5 volts
	Anode current	0.6 m.a.	0.45 m.a.
Output valve, Ever Ready K70B	Anode voltage	115 volts	86 volts
	Anode current	4.8 m.a.	3.6 m.a.
	Screen voltage	120 volts	90 volts
	Screen current	1.1 m.a.	0.8 m.a.

CIRCUIT ANALYSIS

Valve	Circuit	Associated Components
Detector valve (V1).	Anode circuit	H.F. choke L6. Resistances R2, R3. Condensers C2, C6, C7, C8. Reaction coil L5. Red H.T. lead and plug.
	Grid circuit	Coils L3, L4. Resistance R1. Condensers C1, C5. Switch S2.
L.F. valve (V2).	Anode circuit	Resistance R6. Condenser C9. Red H.T. lead and plug.
	Grid circuit	Resistance R4. Condenser C8.
Pentode valve (V3).	Anode circuit	T1 primary. Condenser C11. Red H.T. lead and plug.
	Screen circuit	Red H.T. Lead and plug.
	Grid circuit	Resistances R5, R7. Condensers C9, C10.

SWITCH POSITIONS

Circuit Indication	Medium Wave		Long Wave	
	Position	State	Position	State
S1	Closed	Open	Open	Open
S2	Closed	Open	Open	Open
S3	Closed when set is "on," open when set is "off"			

INDUCTANCES AND TRANSFORMERS

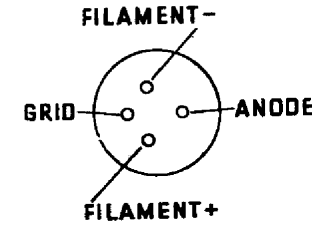
Circuit Indication	Specification	Location	Component Number
L1 ..	Medium wave aerial coupling coil, 1.8 ohms .. Long wave aerial coupling coil, 12.5 ohms .. Medium wave grid coil, 1.9 ohms .. Long wave grid coil, 12.5 ohms ..	Fig. 3	78,007
L1, L2			
L3 ..			
L3, L4			
L5 ..	Reaction coil, 3.1 ohms ..	Fig. 3	79,000
L6 ..	Detector anode choke, 375 ohms ..		
L7 ..	Speaker voice coil, 1.7 ohms ..	Fig. 4	85,011
T1 ..	Output transformer, primary, 840 ohms; secondary, 0.3 ohms ..	Fig. 4	77,025

CONDENSERS

Circuit Indication	Specification	Location	Component Number
C1 ..	Grid tuning condenser ..	Fig. 3	80,009
C2 ..	Reaction condenser ..	Fig. 3	80,010
C3 ..	.00005 mfd. mica, 350 volts D.C. working ..	Fig. 3	66,972
C4 ..	.00001 mfd. approx. (twisted wire) ..	Fig. 3	—
C5 ..	.00005 mfd. mica, 350 volts D.C. working ..	Fig. 3	66,972
C6 ..	.0001 mfd. mica, 350 volts D.C. working ..	Fig. 3	66,966
C7 ..	0.5 mfd. tubular, 350 volts D.C. working ..	Fig. 3	68,019
C8 ..	.01 mfd. tubular, 450 volts D.C. working ..	Fig. 3	68,005
C9 ..	.01 mfd. tubular, 450 volts D.C. working ..	Fig. 3	68,005
C10 ..	50 mfd. dry electrolytic, 12 volts D.C. working ..	Fig. 3	67,005
C11 ..	.005 mfd. tubular, 450 volts D.C. working ..	Fig. 3	68,003

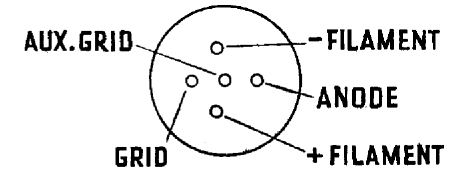
RESISTANCES

Circuit Indication	Specification	Colour Code			Location	Component Number
		Body	Tip	Dot		
R1	1.1 megohms (½ watt) ..	Brn.	Brn.	Grn.	Fig. 3	71,900
R2	30,000 ohms (½ watt) ..	Org.	Blk.	Org.	Fig. 3	71,949
R3	30,000 ohms (½ watt) ..	Org.	Blk.	Org.	Fig. 3	71,949
R4	280,000 ohms (½ watt) ..	Red	Blue	Yel.	Fig. 3	71,945
R5	500 ohms (½ watt) ..	Grn.	Blk.	Brn.	Fig. 3	71,809
R6	100,000 ohms (½ watt) ..	Brn.	Blk.	Yel.	Fig. 3	71,910
R7	280,000 ohms (½ watt) ..	Red	Blue	Yel.	Fig. 3	71,945



PLAN OF VALVE HOLDERS V1 AND V2
DETECTOR AND 1ST L.F. VALVES

Fig. 1



PLAN OF VALVE HOLDER V3
BATTERY PENTODE OUTPUT VALVE

Fig. 2

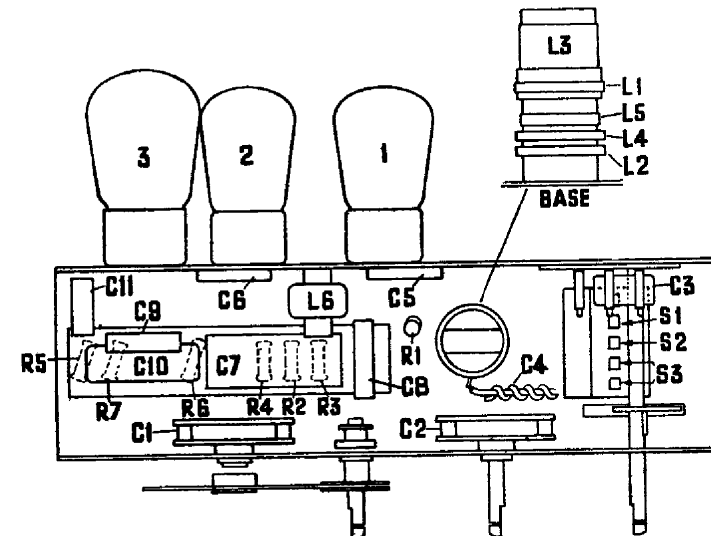


Fig. 3

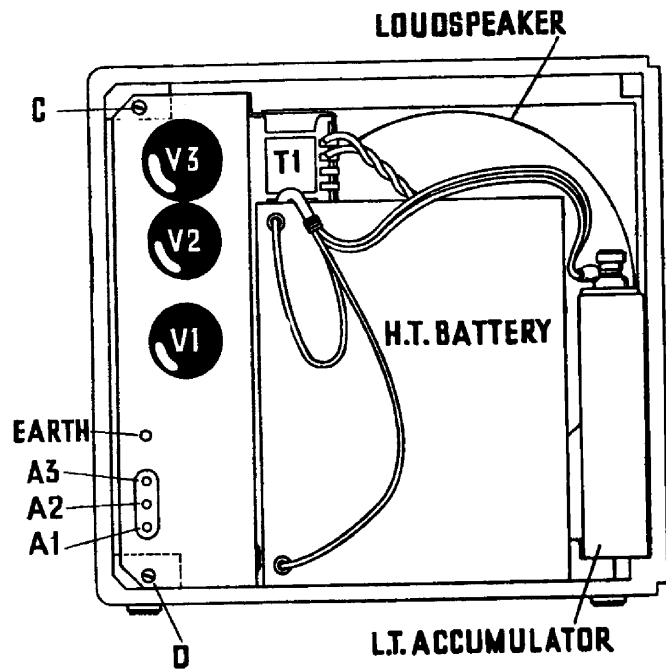


Fig. 4

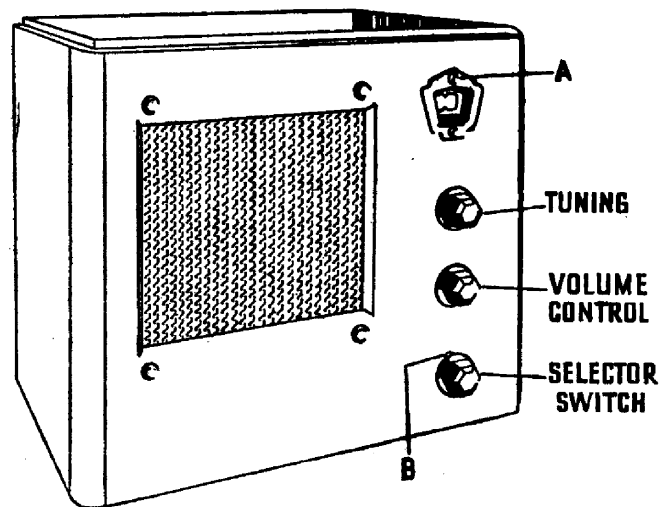
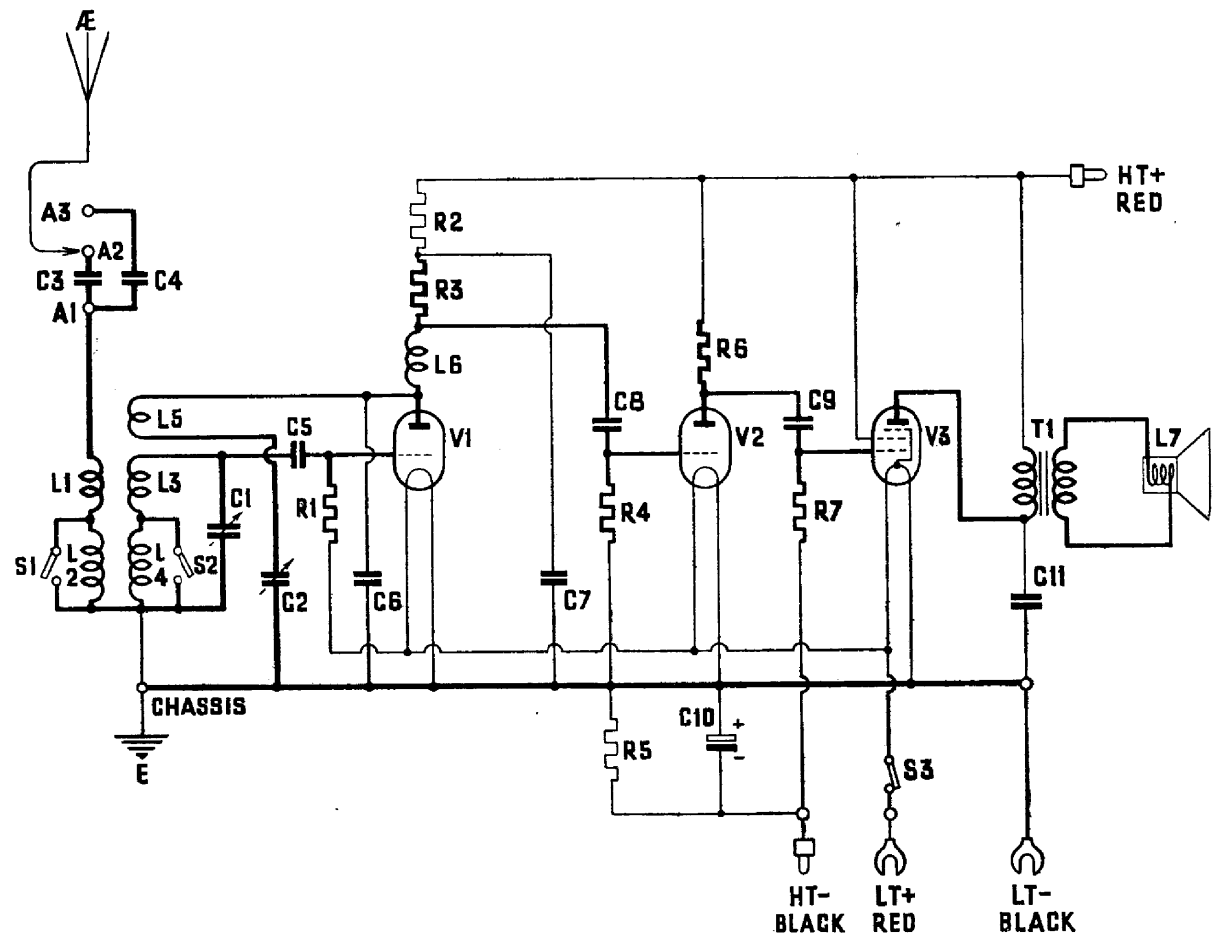


Fig. 5



CIRCUIT DIAGRAM

REMOVING THE CHASSIS FROM THE CABINET

First remove the three control knobs by a direct forward pull, and then take out the two screws A and B shown in Fig. 5.

Now disconnect the H.T. and L.T. batteries, and unsolder the loudspeaker leads from the transformer T1 (Fig. 4). Finally on removing the screws C and D (Fig. 4) the chassis may be withdrawn from the cabinet.

The loudspeaker may also be removed by taking out its four fixing bolts.

TESTING THE ELECTROLYTIC CONDENSER C10

The leakage of this condenser should be tested with a 12 volt battery, a milliammeter, and a safety resistance of 10,000 ohms.

The milliammeter, safety resistance, battery and condenser should be connected in series, observing the correct polarity of the condenser. The leakage current should be measured after the condenser is fully charged, and the safety resistance short-circuited.

If the current exceeds 5 m.a. the condenser should be replaced.

NOTES

This space is reserved for recording any further information you may find useful. If advice is required at any time the Lissen Service Dept. will be pleased to help you.