

LISSEN

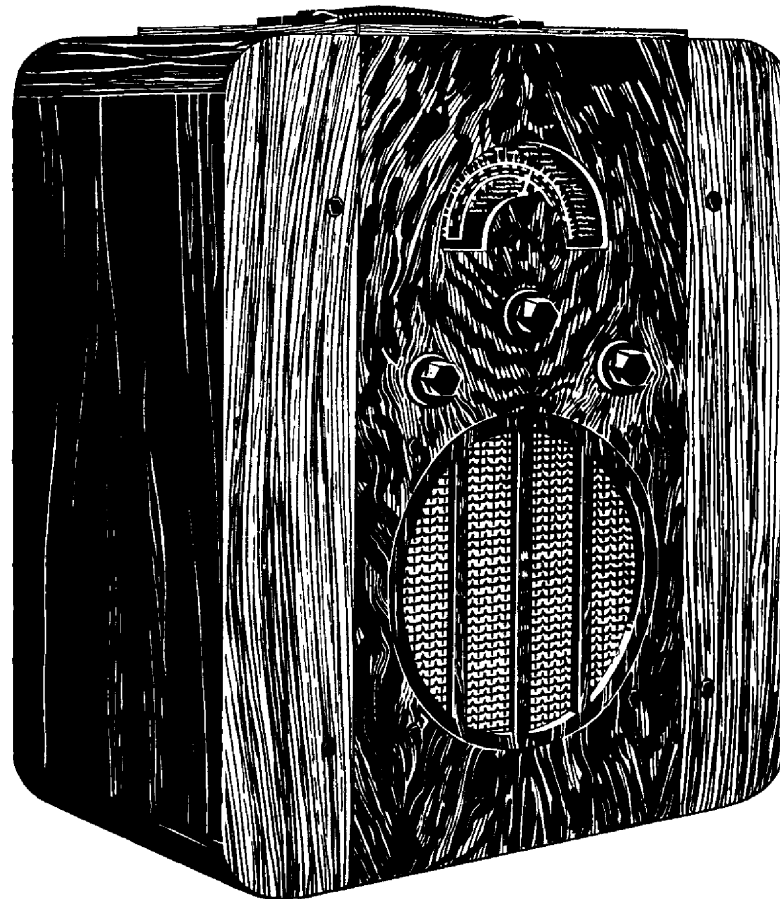
SERVICE MANUAL FOR BATTERY OPERATED PORTABLE RECEIVER MODEL 8118

TECHNICAL SPECIFICATION

THE Lissen "8118" is a battery operated receiver with a self contained aerial.

The aerial is tuned and is followed by the R.F. amplifier, a variable-mu screened grid valve (V1). Volume control is effected by R5 which varies the bias on this valve.

Coupling to the detector valve, a triode (V2) is by another tuned circuit. Reaction is obtained by feed back from L7 on medium waves and L7 and L8 on long waves; this is con-



trolled by the reaction condenser C5.

The detector is coupled by a shunt fed transformer to the driver valve V3, which in turn is coupled to the "class B" output valve V4, by a series fed A.F. transformer.

Another transformer is employed as a coupling to the permanent magnet moving coil speaker.

Tone correction is effected by means of the plug and sockets on the back of the chassis, providing two fixed positions, the one giving normal response and the other an attenuated high note response.

SERVICE DATA FOR BATTERY OPERATED PORTABLE RECEIVER MODEL 8118

GENERAL REMARKS

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

1. Batteries: L.T. and H.T. (including G.B.) 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, detector stage and R.F. stage, including alignment of the tuned circuits.

4. Locate faulty component by testing with a suitable meter, or by substitution, as the case may be.

5. Check the alignment of the tuned circuits if not attended to under 3(b).

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 (100 volts) H.T. batteries respectively.

The position of the battery plugs should give voltage readings as follows:

Battery Leads	Measured Volts (Column A)	Measured Volts (Column B)
Pink lead ..	120 volts	100 volts
Mauve lead ..	90 volts	80 volts
Black lead ..	9 volts	7½ volts
White lead ..	8 volts	5 volts
Yellow lead ..	H.T.	H.T.

OPERATING CONDITIONS OF THE VALVES

All readings are taken with volume control at maximum, and with no reaction. (All voltages are measured from chassis.)

Valve	Circuit	Column A (New H.T.)	Column B (Partially discharged H.T.)
R.F. valve, Ever Ready K40N (Metalized)	Anode voltage	110 volts	91 volts
	Anode current	1.2 m.a.	1.0 m.a.
	Screen voltage	51 volts	42 volts
	Screen current	0.3 m.a.	0.3 m.a.
Detector valve, Ever Ready K30C (Metalized)	Anode voltage	66 volts	52 volts
	Anode current	0.9 m.a.	0.8 m.a.
Driver valve, Ever Ready K30E	Anode voltage	105 volts	87 volts
	Anode current	2.1 m.a.	1.8 m.a.
Output valve, Ever Ready K33A	Anode voltages	100 volts each anode	90 volts each anode
	Anode current	1.1 m.a. (quiescent) each anode	0.9 m.a. (quiescent) each anode
Total quiescent anode current		6.7 m.a.	5.7 m.a.

The voltage readings above are measured with an instrument having a resistance of 1,000 ohms per volt.

CIRCUIT ANALYSIS

Valve	Circuit	Associated Components
R.F. valve (V1)	Anode circuit	L4, C8, C16. Pink H.T. lead and plug.
	Screen circuit	C7. Mauve H.T. lead and plug.
	Grid circuit	L2, L3, C1, C3, C6, R4, R5 and R6, S1, S3. Yellow lead and plug.
Detector valve (V2)	Anode circuit	L7, L8, L9, C5, C10, C11, C12, C16, R2, R3. Pink H.T. lead and plug.
	Grid circuit	L5, L6, C2, C4, C9, R1, S2. Pick-up sockets.
Driver valve (V3)	Anode circuit	T2. Pink H.T. lead and plug and C16.
	Grid circuit	T1, R7. White lead and plug.
Output valve (V4)	Anode circuit	T3, C13, C14, C15, C16, C17. Tone adjuster. Pink H.T. lead and plug.
	Grid circuits	T2.

SWITCH POSITIONS

Circuit Indication	Medium Waves	Long Waves
S1 ..	Closed	Open
S2 ..	Closed	Open
S3 ..	Closed when set is "on"	Open when set is "off"
S4 ..	Closed when set is "on"	Open when set is "off"

INDUCTANCES AND TRANSFORMERS

Circuit Indication	Specification	Location	Component Number
L1 ..	Aerial coupling coil, 1.4 ohms	Fig. 6	75,103
L2 ..	Frame aerial medium wave winding, 1.3 ohms	Fig. 6	75,103
L2, L3	Frame aerial, long wave winding, 13.7 ohms	Fig. 6	75,103
L4 ..	R.F. anode choke, 500 ohms	Fig. 5	SA13,894
L5 ..	Medium wave grid coil, 1.4 ohms	Fig. 4	SA14,807
L5, L6	Long wave grid coil, 21 ohms	Fig. 4	SA14,807
L7 ..	Medium wave reaction coil, 2.2 ohms	Fig. 4	SA14,807
L7, L8	Long wave reaction coil, 6.8 ohms	Fig. 4	SA14,807
L9 ..	Detector anode choke, 500 ohms	Fig. 5	SA13,894
L10	Speaker speech coil, 2.4 ohms	Fig. 6	85,012
T1 ..	A.F. transformer, primary, 1,100 ohms; secondary, 10,000 ohms	Fig. 5	SA14,805
T2 ..	Driver transformer, primary, 480 ohms; secondary, 890 ohms	Fig. 5	SA14,105
T3 ..	Output transformer, primary, 550 ohms; secondary, 0.6 ohms	Fig. 6	85,012

CONDENSERS

Circuit Indication	Specification	Location	Component Number
C1 ..	Aerial tuning condenser	Fig. 4	80,015
C2 ..	Grid circuit tuning condenser	Fig. 4	80,015
C3 ..	Aerial condenser trimmer	Fig. 4	80,015
C4 ..	Grid circuit trimmer	Fig. 4	80,015
C5 ..	Reaction condenser, .0005 mfd. max.	Fig. 5	75,104
C6 ..	0.1 mfd. tubular 500 volts A.C. test	Fig. 5	P24,721
C7 ..	0.1 mfd. tubular 500 volts A.C. test	Fig. 5	P24,721
C8 ..	.0001 mfd. mica type	Fig. 5	SA14,224
C9 ..	.00005 mfd. mica type	Fig. 5	SA14,231
C10	0.5 mfd. tubular 500 volts A.C. test	Fig. 5	P24,723
C11	.0003 mfd. mica type	Fig. 5	SA14,228
C12	0.1 mfd. tubular 500 volts A.C. test	Fig. 5	P24,721
C13	.002 mfd. tubular, 400 volts D.C. working	Fig. 5	P25,656
C14	.005 mfd. tubular, 400 volts D.C. working	Fig. 5	P24,727
C15	.002 mfd. tubular, 400 volts D.C. working	Fig. 5	P25,656
C16	1 mfd. block type	Fig. 5	SA13,512
C17	.002 mfd. tubular, 400 volts D.C. working	Fig. 5	P25,656

Now unsolder the three connections to the primary of the transformer T3, and the five connections on the frame aerial marked C in Fig. 6. (When replacing these aerial leads it should be remembered that the lead nearest the front of the chassis is connected to the top connection on the frame, and that they continue in order until finally the lead nearest the back of the chassis is connected to the lowest contact on the frame.)

The chassis may now be removed by taking out the fixing bolts marked A and B in Fig. 6.

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

To remove the frame aerial undo the four fixing nuts located at the four corners of the frame.

ADJUSTING THE GANG CONDENSER AND DIAL POINTER

Rotate the gang until the pointer is at the higher wavelength end of the scale. Push a flat-ended rod through the hole in the side of the gang cover and against the vanes. Now rock the vanes by means of the rotor drive until it is felt that the rotors are fully in mesh.

If the pointer does not coincide with the mark at the top of the scale, release the centre fixing screw and move the pointer into this position.

ADJUSTING THE RADIO FREQUENCY CIRCUITS

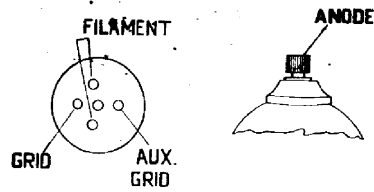
Rotate the gang till the pointer is at the lower wavelength end of the dial and switch the receiver to the medium waves. Apply a modulated signal of 202 metres to the aerial terminal and adjust the trimming condensers C3 and C4 in turn for maximum output. Finally check this adjustment to make sure that no error has been made.

RESISTANCES

Circuit Indication	Specification	Colour Code			Location	Component Number
		Body	Tip	Dot		
R1	2 megohms (½ watt)	Red	Blk.	Grn.	Fig. 5	P24,768
R2	20,000 ohms (½ watt)	Red	Blk.	Org.	Fig. 5	P24,755
R3	30,000 ohms (½ watt)	Org.	Blk.	Org.	Fig. 5	P24,757
R4	100,000 ohms (½ watt)	Bru.	Blk.	Yel.	Fig. 5	P24,762
R5	5,000 ohms volume control	—	—	—	Fig. 5	75,104
R6	2,000 ohms (½ watt)	Red	Blk.	Red	Fig. 5	P24,749
R7	100,000 ohms (½ watt)	Bru.	Blk.	Yel.	Fig. 5	P24,762

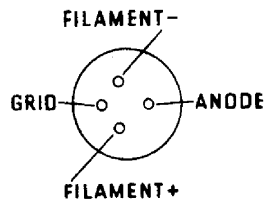
REMOVING THE CHASSIS FROM THE CABINET

First the batteries should be disconnected and removed from the cabinet. Now the knobs should be removed by a direct forward pull.



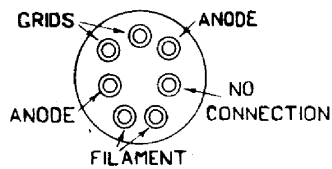
PLAN OF VALVE HOLDER V1
S.G. VALVE.

Fig. 1



PLAN OF VALVE HOLDERS V2 AND V3
DETECTOR AND 1ST L.F. VALVES

Fig. 2



CLASS B HOLDER.
V4

Fig. 3

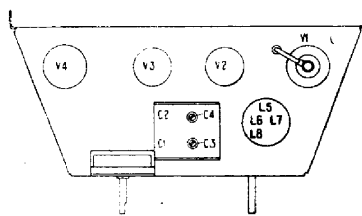


Fig. 4

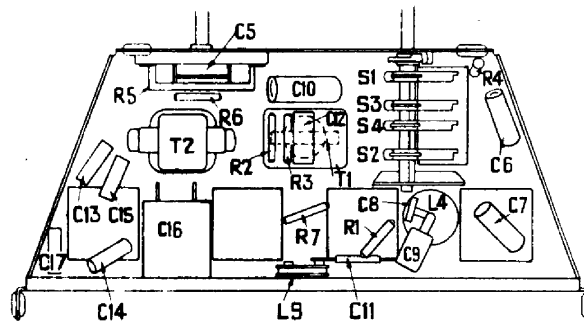


Fig. 5

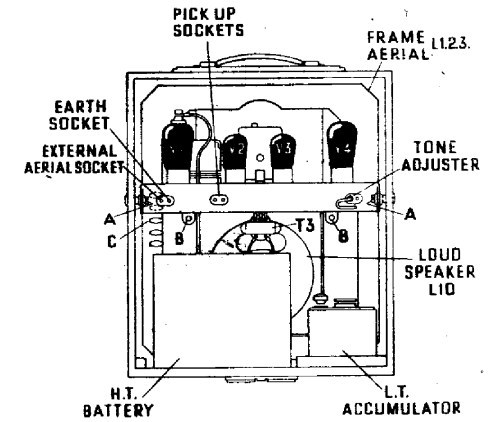
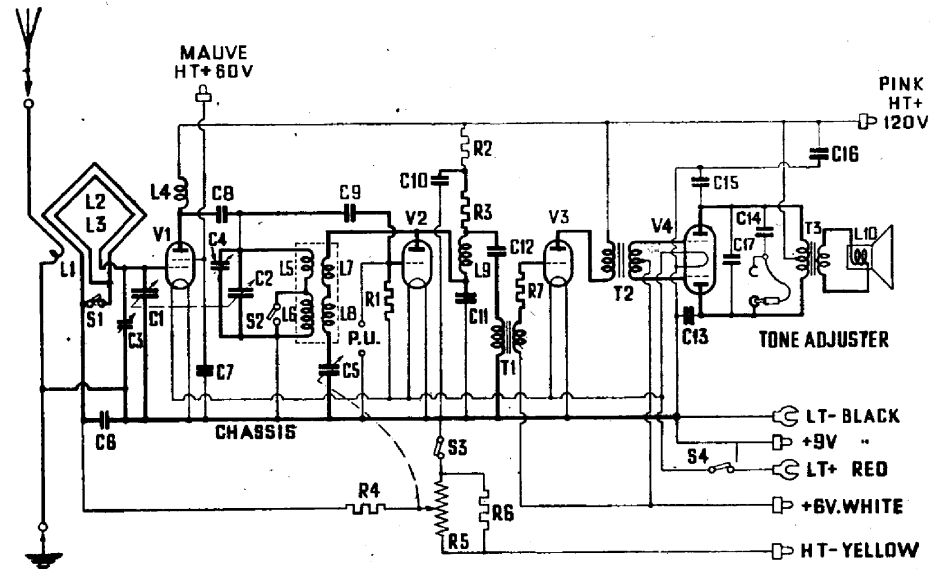


Fig. 6



— WIRE WOUND RESISTANCES
— COMPOSITE RESISTANCES
- - - SCREENING

CIRCUIT DIAGRAM