Radio Manuals Info

'TRADER' SERVICE SHEET 260

LISSEN 8306

BAND-PASS BATTERY MODEL

A BAND-PASS input filter is employed in the Lissen 8306 3-valve battery 2-band receiver, the valve arrangement comprising a variable-mu hexode R.F. amplifier, a triode detector and a pentode output valve. Two alternative aerial sockets are provided, one being for use when the receiver is situated close to a local station.

CIRCUIT DESCRIPTION

Aerial input from **A1** socket via series condenser **C1** and coupling coil **L1** to mutually inductively coupled band-pass filter. Primary coils **L2, L3** are tuned by **C12**; secondary coils **L4, L5** by **C14**. From **A2** socket signal is fed to **A1** via low value additional series condenser **C2**.

First valve (**V1, Ever Ready metallised K50N**) is a variable-mu hexode operating as pentode R.F. amplifier with gain control by potentiometer **R3** which varies G.B. applied.

Choke-fed tuned-grid coupling by **L6, C5, L9, L10, C17** between **V1** and triode detector valve (**V2, Ever Ready metallised K30K**), which operates on grid leak system with **C6** and **R5**. Reaction is applied from anode by coils **L7, L8,** and controlled by variable condenser **C16**.

Parallel-fed transformer coupling by **R7, C9** and **T1** via grid stopper **R8** between **V2** and pentode output valve (**V3,** Ever Ready **K70B**). Fixed tone correction in anode circuit by condenser **C10**. G.B. potential is obtained from drop along **R10** which, with **R9,** forms an automatic G.B. circuit in series with H.T. negative lead to chassis.

DISMANTLING THE SET

Removing Chassis.—If it is desired to remove the chassis from the cabinet, remove the four control knobs (pull off) and the four round-head wood screws holding the chassis to the wooden supports in the cabinet. The chassis can now be withdrawn to the extent of the speaker leads, which is sufficient for normal purposes. *When replacing,* note that the control knobs are marked with their purpose so that they must be placed on the correct spindles.

To free the chassis entirely, unsolder the speaker leads and *when replacing,* note that the black lead goes to the soldering tag on the bottom right-hand speaker fixing screw.

Removing Speaker.—Should it be necessary to remove the speaker from the cabinet, remove the nuts, lock washers and washers from the four screws holding it to the sub-baffle. *When replacing,* see that the transformer is at the bottom.

Alternatively, the speaker and sub-baffle may be removed together by removing the nuts from the four screws holding the sub-baffle to the front of the cabinet. *When replacing,* note that one side of the sub-baffle is cut to fit the slope of the side of the cabinet and see that this is on the right.

COMPONENTS AND VALUES

	CONDENSERS	Values (μF)
C1	Aerial series condenser	0·0001
C2	A2 series condenser	0·00001
C3	V1 C.G. decoupling	0·1
C4	V1 S.G. decoupling	0·1
C5	V1 to V2 R.F. coupling condenser	0·00005
C6	V2 C.G. condenser	0·00005
C7	V2 anode decoupling	0·5
C8	V2 anode R.F. by-pass	0·0005
C9	A.F. coupling to T1	0·01
C10	Fixed tone corrector	0·005
C11*	V1 and V3 G.B. pots. by-pass	20·0
C12†	Band-pass pri. tuning	—
C13‡	Band-pass pri. M.W. trimmer	—
C14†	Band-pass sec. tuning	—
C15‡	Band-pass sec. M.W. trimmer	—
C16†	Reaction control	0·0005
C17†	V2 grid circuit tuning	—
C18‡	V2 grid circuit M.W. trimmer	—

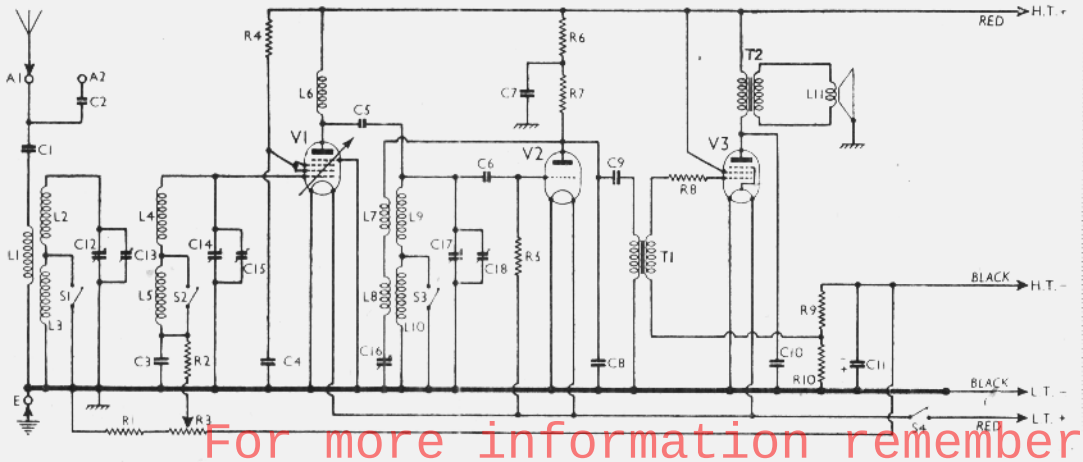
* Electrolytic. † Variable. ‡ Pre-set.

	RESISTANCES	Values (ohms)
R1	V1 fixed G.B. resistance	250
R2	V1 C.G. decoupling	510,000
R3	V1 gain control	5,000
R4	V1 S.G. H.T. feed	110,000
R5	V2 grid leak	2,100,000
R6	V2 anode decoupling	26,000
R7	V2 anode load	110,000
R8	V3 grid stopper	110,000
R9	V3 automatic G.B. potential divider	1,500
R10		800

	OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial coupling coil		11·5
L2	Band-pass primary coils		2·8
L3			11·0
L4	Band-pass secondary coils		2·6
L5			11·0
L6	V1 anode R.F. choke		430·0
L7	M.W. reaction coil		3·5
L8	L.W. reaction coil		8·75
L9	V2 grid tuning coils		2·6
L10			11·0
L11	Speaker speech coil		2·25
T1	Intervalve trans.	Pri.	1,200·0
		Sec.	5,000·0
T2	Speaker input trans	Pri.	570·0
		Sec.	0·3
S1-S3	Waveband switches		—
S4	L.T. circuit switches		—

VALVE ANALYSIS

Valve voltages and currents given in the table (p. VII) are those measured in our receiver when it was operating with a new H.T. battery reading 122 V, on load. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum,



Circuit diagram of the Lissen 8306 3-valve battery receiver. No grid bias battery is used, bias being obtained by **R1, R3** and **R9, R10.**

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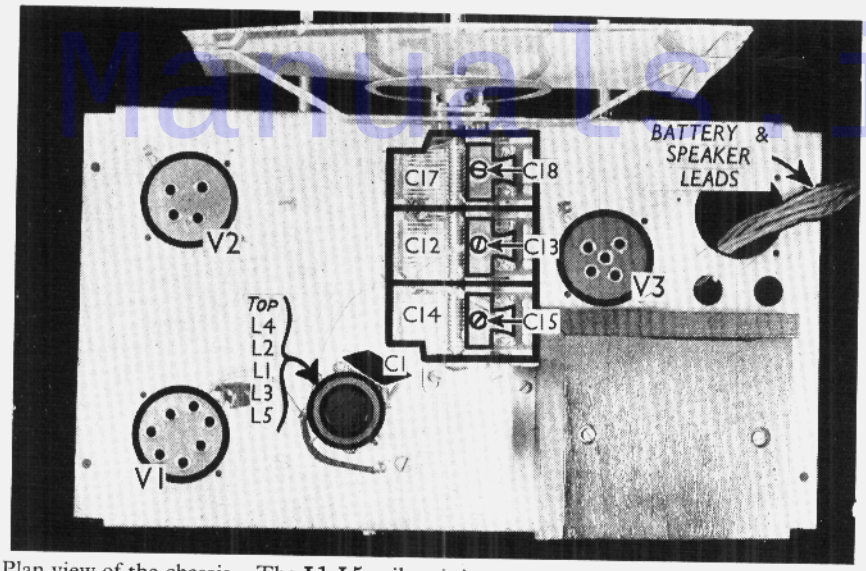


Plan view of the chassis. The **L1-L5** coil unit is not screened, and is mounted vertically. The gang condenser trimmers are the only ones used in the set.

the reaction control was at minimum. There was no signal input.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 K50N	110	1·3	37	0·4
V2 K30K	35	0·5	—	—
V3 K70B	108	4·0	110	0·6

GENERAL NOTES

Switches.—**S1-S3** are the waveband switches, and **S4** the L.T. circuit switch, ganged together in a single unit beneath the chassis. All the switches are indicated in our under-chassis view. In the M.W. position, all the switches are closed, and in the L.W. position all except **S4** are open. **S4** opens in the "off" position.

Coils.—**L1-L5** are on an unscreened tubular former mounted vertically on the chassis deck. **L7-L10** are also in an unscreened unit, beneath the chassis. **L6** is an R.F. choke mounted on the rear member of the chassis.

External Speaker.—No provision is made for this, but a high impedance type could be connected across the two tags on **T2** to which the brown leads from the set are connected.

Condenser C2.—This is a small condenser formed by the lead from **A2** twisted round that from **A1**.

Chassis Divergencies. — **C10** in our chassis is 0·005 μF, but is shown as 0·01 μF by the makers. **C11** is 20 μF (30 V peak), not 50 μF (12 V peak) as shown by the makers.

Batteries.—L.T., 2 V 20 AH mass type glass-cased cell, type LN 2008. H.T., 120 V Lissen H.T. battery, type LN 530. Grid bias is automatic.

Battery Leads and Voltages.—Black lead, spade tag, L.T. negative; red lead, spade tag, L.T. positive, 2 V; black lead and plug, H.T. negative; red lead and plug, H.T. positive, 120 V.

HINTS REQUIRED

Service engineers who come across unusual faults are invited to send a brief description of them to the Technical Editor for publication.

Descriptions of more or less standard faults which are commonly encountered are not required, unless it so happens that a particular receiver is found to be prone to a certain fault.

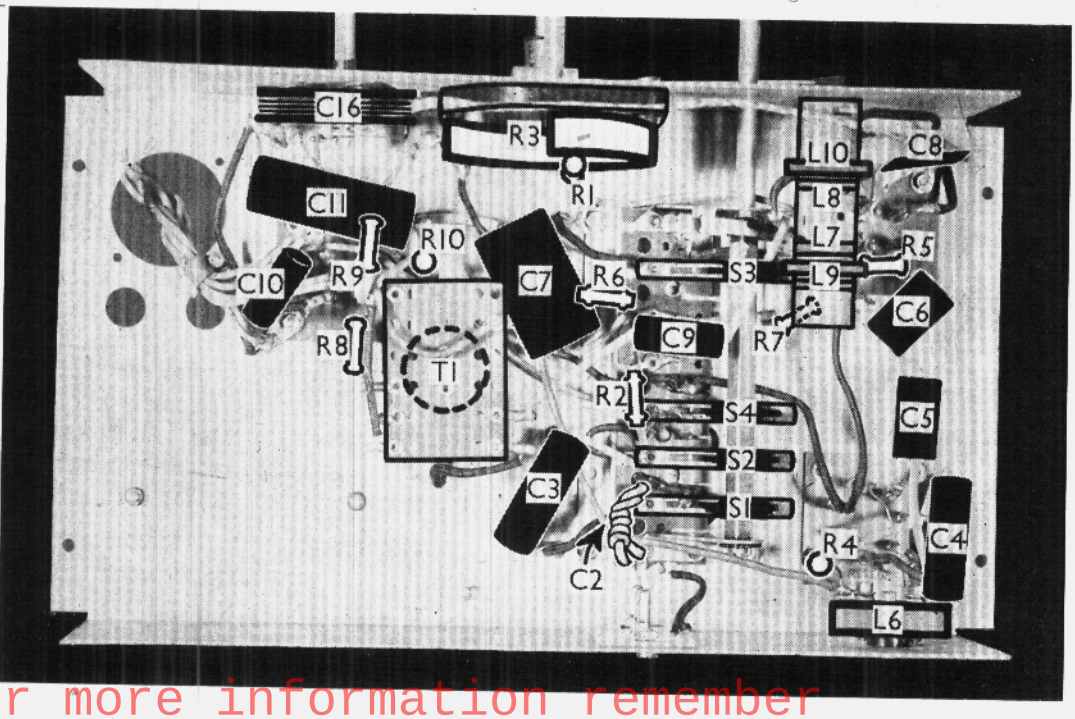
Payment will be made for all hints used. Please write on one side of the paper only, with spacing between lines.

CIRCUIT ALIGNMENT

With gang at maximum, pointer should register with the horizontal line at the right of the scale.

Switch set to M.W., tune to 214 m. on scale, and feed a 214 m. (1,400 KC/S) signal into the **A1** and **E** sockets. Adjust **C18, C15** and **C13** for maximum output, keeping the set just below the oscillation point by means of **C16.** Check calibration at 300 and 500 m., with critical reaction, and see that the set tunes down to 200 m.

On L.W., check calibration at 1,200 m. and 1,700 m. by feeding in signals of these wavelengths.



Under-chassis view. The coil unit **L7-L10** is unscreened. **L6** is an R.F. choke. The four switches are all indicated. **C2** is a very small condenser formed by twisting the lead from **A2** round that from **A1**.

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