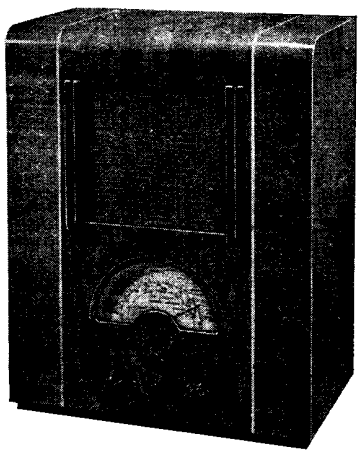
LISSEN 8214 SUPERHET THREE FOR A.C. MAINS

CIRCUIT.—A three-valve A.C. mains superhet, covering the normal medium and long wavebands.

Input to V1, a frequency changer, is through a series coupling condenser and an inductively coupled aerial coil. There are two aerial tappings, one being direct to the series coupling condenser, C10, and the other through a small condenser, C9.

Coupling to V2, a triode, is by means of an I.F. transformer tuned to 465 kcs. Reaction is fed back from the anode of the valve to the I.F. transformer by means or a separate wind. A.V.C. is obtained from the rectified grid current of V2 and applied to the grid of V1.



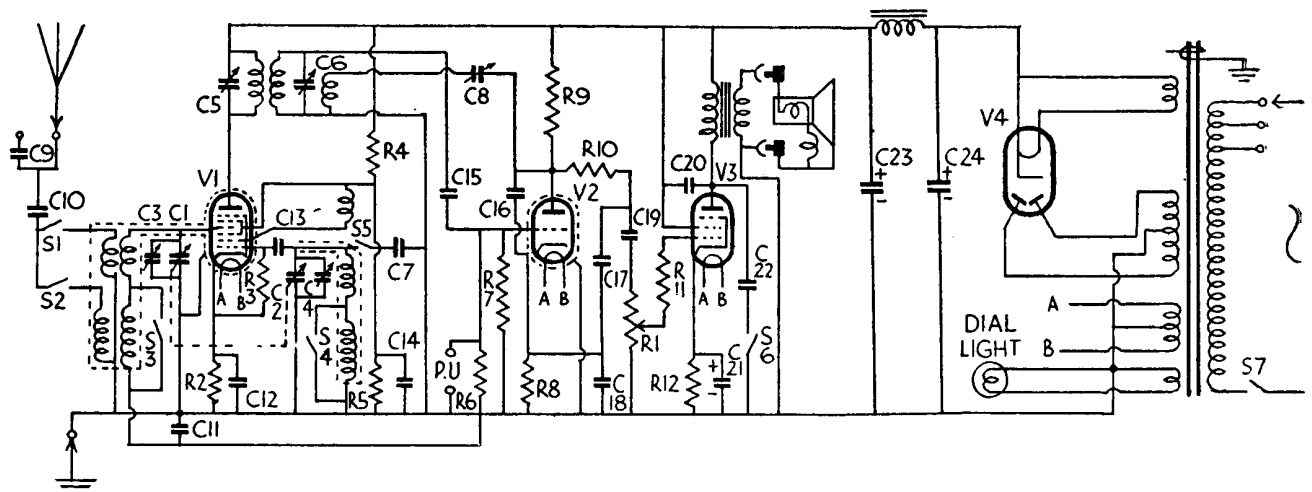
The Lissen 8214, above, is a three-valve A.C. superhet covering medium and long wave-ranges. Below is the theoretical circuit diagram.

RESISTANCES

R.	Purpose.	Ohms.
1	Volume control	250,000
2	V1 cathode bias	250
3	V1 osc. grid leak	100,000
4	V1 screen and osc. anode de-coup. potr.	20,000
5	Do. do.	40,000
6	V1 A.V.C. decoupling ...	2.1 meg.
7	V2 grid leak	510,000
8	V2 cathode bias	100
9	V2 anode load	40,000
10	H.F. stopper	15,000
11	V3 grid stopper	26,000
12	V3 cathode bias	150

CONDENSERS

C.	Purpose.	Mfd.
8	Reaction adjuster	—
9	Series aerial	.0001
10	Aerial coupling	.002
11	V1 A.V.C. decoupling ...	.1
12	V1 cathode bias shunt ...	.1
13	V1 osc. grid	.0 001
14	V1 screen and osc. anode de-coupling.	.1
15	V2 grid	.0001
16	H.F. filter	.002
17	Do.	.001
18	V2 cathode bias shunt ...	.1
19	L.F. coupling	.05
20	Pentode compensating ...	.0025
21	V3 cathode bias shunt ...	50
22	Tone control	.01
23	H.T. smoothing	8
24	Do.	8



LISSEN 8214 A.C. THREE SUPERHET

The output of V2 is passed to V3, the output pentode, *via* a resistance and capacity stage incorporating the volume control.

Tone is varied by a fixed condenser, C22, which is put in and out of circuit by means of a switch.

Mains equipment consists of transformer, full wave rectifier, electrolytic condensers, and the speaker field.

Special Notes.—External speaker connections are on the secondary of the output transformer; any extension speaker should have a speech coil impedance of 1.8 ohms. It should be noted that should it be required to leave the internal speaker in circuit, the external speaker can be plugged into the ends of the internal speaker plugs, which are specially constructed for the purpose.

The dial lamp is rated at 3.5 volts .3 amp. The holder is secured to the dial assembly by means of a bolt, which cannot be reached without removing the chassis. However, the lamp itself is readily accessible without removing the chassis.

Removing Chassis.—To get at the underside of the chassis, simply take off the false bottom from the cabinet, which is secured by wood screws.

Should it be necessary to remove the chassis, procedure is as follows:—First remove the control knobs, secured by spring clips, unplug the speaker leads from the back of the chassis, and disconnect the speaker field leads from the terminal strip on the back of the speaker. Then remove four fixing bolts from underneath the cabinet, and the chassis can be completely removed.

QUICK TESTS

Quick tests available on this receiver are on the terminal strip at the back of the speaker.

Volts measured between this and the chassis should be:—

Red lead 250 volts Smoothed H.T.
Black lead 430 volts Unsmoothed H.T.

ALIGNMENT NOTES

I.F. Circuits.—Inject a signal of 465 kcs. to the grid of V1 and the chassis, *via* a .002 mfd. condenser. A ½-meg. resistance is connected between the grid and the chassis, and a .25 mfd. condenser between the oscillator anode and the chassis to stop the valve from oscillating. Connect an output meter across the external speaker terminals and adjust T1 and T2 for maximum reading.

Medium Waves.—Inject a signal of 200 metres to the A2 aerial terminal and the chassis, and tune it in. Adjust T3 and T4 for maximum reading on the output meter.

Long Waves.—Inject and tune in a signal of 1,300 metres, and while rocking the gang condenser, adjust T5 for maximum reading on the output meter.

Preset Reaction Condenser Note.—Alterations in the setting of C8, the preset reaction condenser, should be unnecessary; however, should it be thought that improvement would result from an adjustment, it will be noted that slightly screwing in the trimmer will increase the sensitivity to weak stations, but may cut down the output from a stronger transmission, so that a compromise must be made between sensitivity and output.

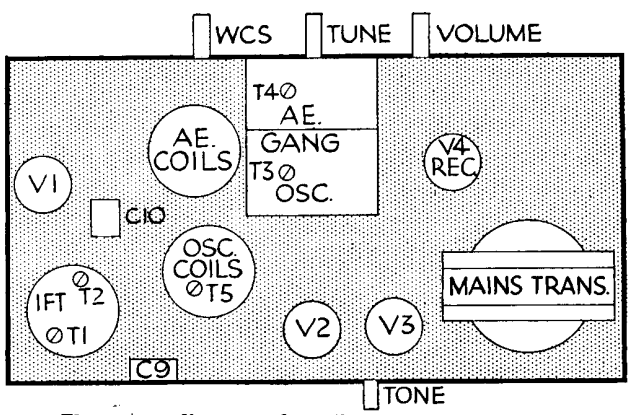
It is essential that, after any adjustment of C8, the I.F. circuits be readjusted.

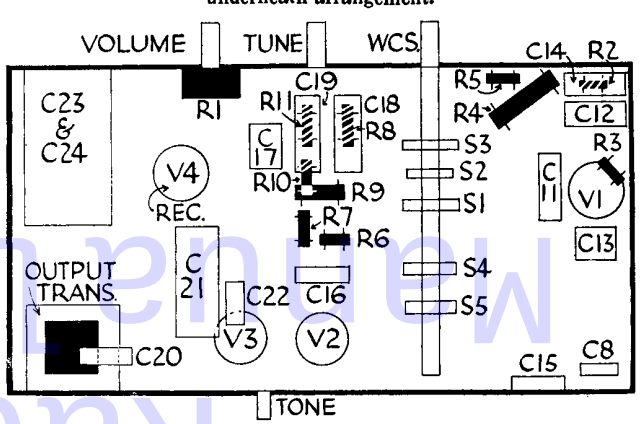
Calibration.—With the gang condenser fully meshed, the scale pointer should coincide with the two horizontal lines on the scale; if this is not so, release the centre fixing screw and adjust it to the correct setting.

VALVE READINGS

No signal. Volume maximum. 200 volt A.C. mains.

V.	Type.	Electrode.	Volts.	M/a.
1	All Ever-Ready. A80A (7) Met.	Anode ...	250	1.2
		Screen ...	72	3.8
		Osc. anode	72	1.6
2	A30D (5) Met.	Anode ...	76	4
3	A70C (7) ...	Anode ...	220	36
		Screen ...	240	4.3
4	A11B (4) ...	Filament ...	420	—





These two diagrams show the chassis layout of the Lissen 8214. Above is the top view; below is the underneath arrangement.