

SERVICE ENGINEER

LISSEN 8169 BATTERY FOUR SUPERHET

CIRCUIT.—A four-valve battery superhet for operation on the usual medium and long wavelengths.

Aerial signals are fed through an inductively coupled band-pass filter to the grid of V1, an octode frequency changer.

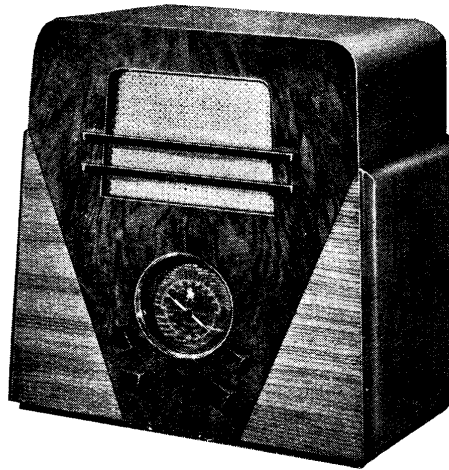
Coupling to V2, an H.F. pentode, is through an I.F. transformer tuned to

127 kc., and to V3, a double diode triode, through a second I.F. transformer.

One diode of V3 is used for demodulation and the other to supply A.V.C. bias to the preceding valves in the orthodox manner.

The L.F. output of V3 is passed to the

(Continued on next page.)



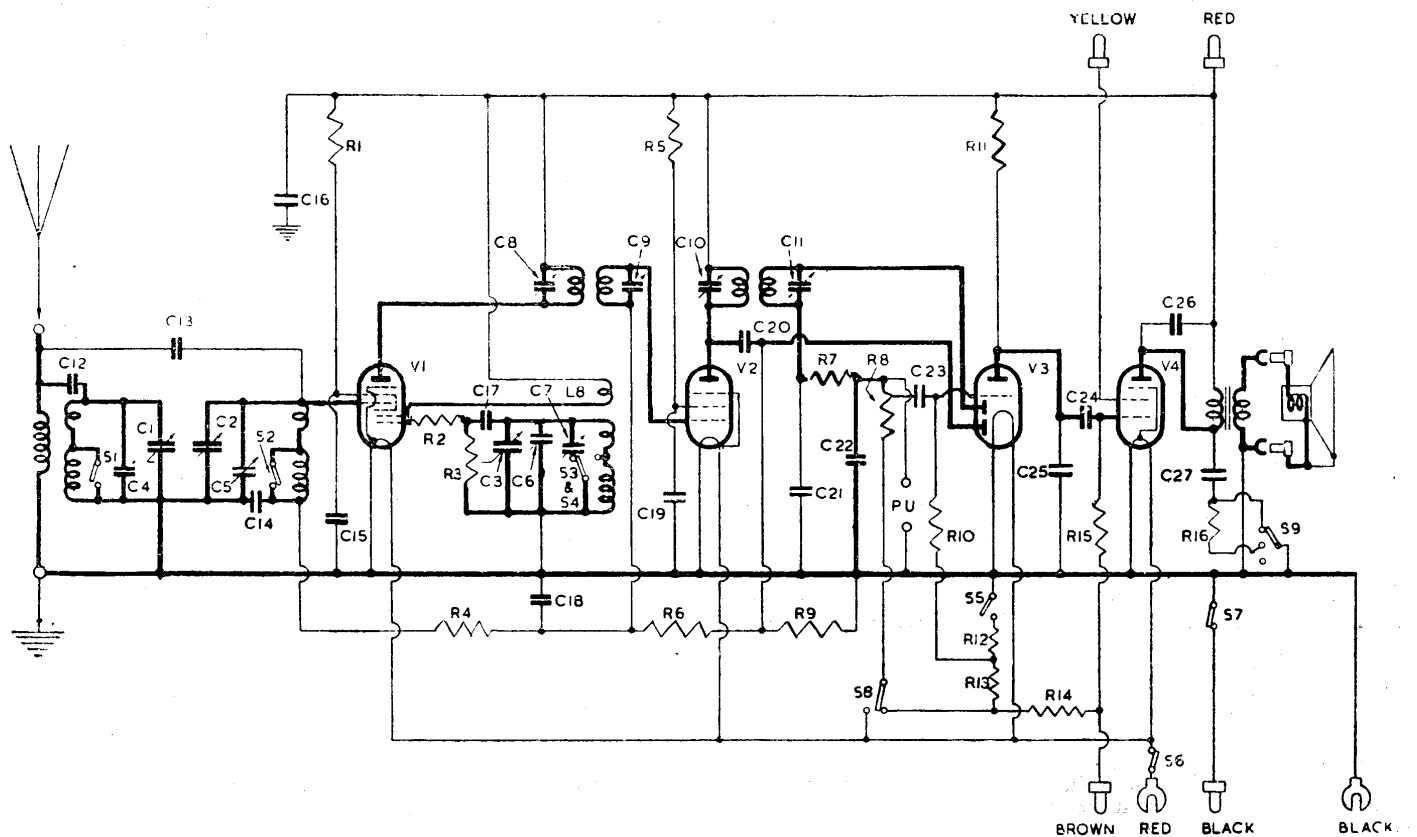
The Lissen Model 8169 four-valve battery superhet.

RESISTANCES

| R. | Purpose. | Ohms. |
|----|----------------------|---------|
| 1 | V1 screen decoupling | 110,000 |
| 2 | V1 osc. grid pot. | 1,100 |
| 3 | V1 A.V.C. decoupling | 110,000 |
| 4 | V1 A.V.C. decoupling | 1,100 |
| 5 | V2 screen decoupling | 110,000 |
| 6 | V2 A.V.C. decoupling | 1.1 meg |
| 7 | H.F. filter | 100,000 |
| 8 | Volume control | .5 meg |
| 9 | A.V.C. diode load | 1.1 meg |
| 10 | V3 grid leak | 1.1 meg |
| 11 | V3 anode load | 51,000 |
| 12 | Bias pot. | 100 |
| 13 | Bias pot. | 150 |
| 14 | Bias pot. | 250 |
| 15 | V4 grid leak | 510,000 |
| 16 | Tone control | 21,000 |

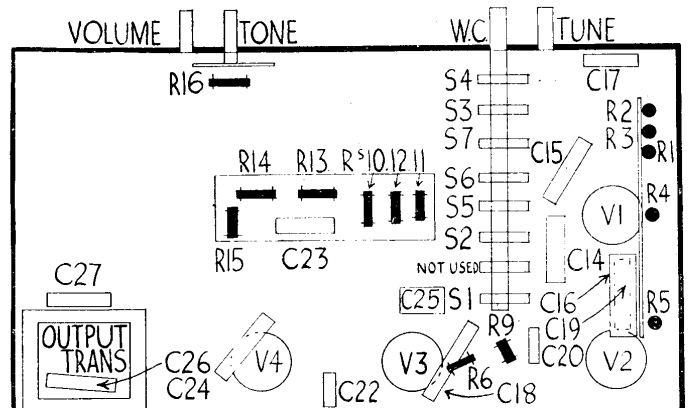
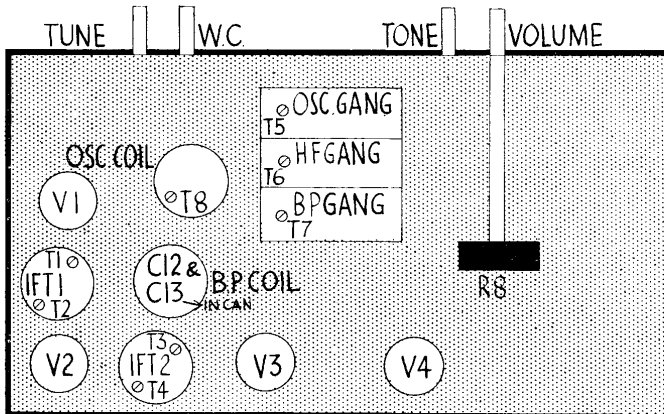
CONDENSERS

| C. | Purpose. | Mfd. |
|----|----------------------|-------|
| 12 | Aerial coupling | — |
| 13 | Second channel | — |
| 14 | V1 A.V.C. decoupling | .1 |
| 15 | V1 screen decoupling | .1 |
| 16 | H.F. shunt | .25 |
| 17 | V1 osc. grid | .0001 |
| 18 | V2 A.V.C. decoupling | .1 |
| 19 | V2 screen decoupling | .1 |
| 20 | H.F. coupling | .0001 |
| 21 | H.F. by-pass | .0001 |
| 22 | H.F. by-pass | .0001 |
| 23 | V3 grid | .01 |
| 24 | L.F. coupling | .01 |
| 25 | H.F. by-pass | .0005 |
| 26 | Pentode compensating | .001 |
| 27 | Tone control | .01 |



An octode frequency changer, an I.F. amplifier, a double diode triode and an output pentode are utilised in the 8169. A quieting bias may be applied to the demodulation diode of V3 and is switch-controlled.

LISSEN 8169 BATTERY SUPERHET FOUR (Cont.)



Resistors are in solid black and condensers in outline in these chassis diagrams of the 8169. That on the left shows the top and that on the right the underside.

output pentode, V4, through a coupling condenser, C24, and to the permanent-magnet speaker through a matching transformer. V4 is tone controlled by C27 and R16.

A quieting bias is applied to the demodulator diode of V3, and this may be removed by means of a switch situated on the back of the chassis.

H.T. and grid bias are obtained from a combined 136.5-volt battery, and L.T. from an accumulator.

Special Notes.—The speaker supplied with the receiver has a speech coil impedance of 1.2 ohms, so that if it is desired to operate an extension speaker, this should have a similar speech coil impedance and should be connected on the secondary of the output transformer.

Exposing Chassis.—A false bottom is fitted to this cabinet, held in place by four wood screws, so that to obtain access to the underside of the chassis it is only necessary to remove the plate.

This plate is of metal and forms part of the screening, so that when replacing it care should be taken to see that the bare

metal corners are uppermost and make good contact with the copper strip at one corner of the cabinet base.

To completely remove the chassis, procedure is as follows. Remove the four knobs from the front of the cabinet (spring clips), four bolts from underneath the cabinet, and free the speaker leads from the sockets on the back of the chassis; the chassis will then be free.

ALIGNMENT NOTES

I.F. Circuits.—Connect a modulated oscillator tuned to 127 kc. to the grid of V1 through a .002-mfd. condenser and to the chassis; the grid lead is first removed and in its place a .5-meg. resistance is connected, the free end of the resistor going to the chassis. Connect an output meter across the speaker terminals and trim T4, T3 T2 and T1 for maximum reading.

During these adjustments a 2-mfd. condenser should be connected between the

oscillator anode and the chassis to stop the valve from oscillating. While adjusting the one winding of either transformers a 50,000-ohm resistance should be connected across the other winding.

Medium Waves.—Inject and tune in a signal of 196 metres and trim T5, T6 and T7 for maximum reading on meter.

Long Waves.—Inject and tune in a signal of 1,300 metres and trim T8 for maximum reading.

VALVE READINGS

No signal. Noise suppressor switch in. New batteries.

| V. | Type. | Electrode | Volts. | M/a. |
|----|-------------------------------|---------------|--------|------|
| 1 | All Ever Ready, K80A (7) Met. | Anode .. | 132 | .3 |
| | | Screen .. | 55 | .6 |
| | | Osc. anode .. | 132 | 1. |
| 2 | K50M (7) Met. | Anode .. | 132 | 1. |
| | | Screen .. | 95 | .3 |
| 3 | K23B (5) Met. | Anode .. | 92 | .8 |
| | | Screen .. | 132 | 4. |
| 4 | K70B (5) .. | Anode .. | 132 | 1.2 |
| | | Screen .. | 132 | 1.2 |