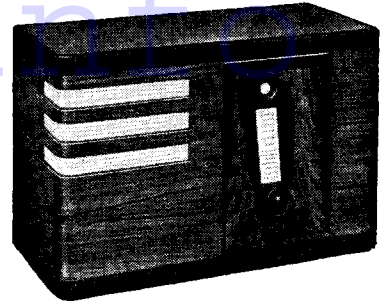


LISSEN 8319 A.C. THREE BAND



The model 8319 receiver by Lissen Ltd. is a four-valve plus rectifier superhet receiver covering one short-wave band of 19-50 metres in addition to the usual medium and long bands. An electronic tuning indicator is fitted.

CIRCUIT.—The aerial coupling to the grid of V1, a triode hexode frequency changer, is a set of inductively coupled band-pass coils on the medium and long bands. On the short band C14 couples the aerial direct to the short wave aerial coil. Two sockets are provided for the aerial connection, one of which places a resistance in series.

The signal, converted to the I.F., then passes by an I.F. transformer tuned to 455 kc. to the grid of V2, the I.F. amplifier. A further transformer leads to the demodulating diode of V3, a double diode triode valve. The other diode provides A.V.C.

A manual volume control is included in the coupling arrangements between the demodulating diode load R14 and the grid of the triode section of V3.

V3 is resistance capacity coupled to the grid of V4, a triode output valve in the anode circuit of which is connected the speaker matching transformer. A variable resistance and condenser in series between the grid of V3 and chassis provide a tone control.

Mains equipment consists of a full wave rectifying valve V5, a mains transformer, electrolytic smoothing condensers, and a smoothing choke consisting of the speaker field coil.

Chassis Removal.—The back of the cabi-

net is secured by five bolts. Remove these and also the four control knobs, which are spring fixed. Remove the four chassis bolts and washers from the base of the cabinet, and the two wood screws securing the wavelength dial assembly to the front (inside) of the cabinet.

The chassis is then free to the extent of the speaker cable and the leads to the visual tuning indicator. For complete removal the leads to the speaker panel must be unsoldered, or alternatively the speaker can be removed. The visual tuning indicator can be removed, complete with holder, by detaching the two bolts securing it to the fixing bracket.

When replacing the speaker the colours of the leads (from left to right) soldered to the speaker are pink, blue and red. The green lead goes to the frame of the speaker.

Special Notes.—There are four dial lights. The holders are surrounded by rubber insulators to prevent crackle. The bulbs are nominally rated at 6.2 volts

RESISTANCES

| R. | Purposes. | Ohms. |
|----|----------------------------------|----------|
| 1 | S.W. A.V.C. decoupling .. | 110,000 |
| 2 | M.W. & L.W. A.V.C. decoupling .. | 110,000 |
| 3 | V1—screen potr (part) .. | 23,000 |
| 4 | V1—screen potr (part) .. | 5,000 |
| 5 | Oscillator grid leak .. | 26,000 |
| 6 | V1—cathode bias .. | 150 |
| 7 | M.W. regeneration modifier .. | 1,000 |
| 8 | L.W. regeneration modifier .. | 2,000 |
| 9 | Oscillator anode decoupling .. | 10,000 |
| 10 | V2—A.V.C. decoupling .. | 110,000 |
| 11 | V2—cathode bias .. | 100 |
| 12 | V2—screen decoupling .. | 25,000 |
| 13 | H.F. stopper .. | 110,000 |
| 14 | Demodulating diode load .. | 510,000 |
| 15 | Volume control .. | 500,000 |
| 16 | V3—cathode bias .. | 2,100 |
| 17 | V3—anode decoupling .. | 5,100 |
| 18 | V3—anode load .. | 50,000 |
| 19 | A.V.C. diode load (part) .. | 110,000 |
| 20 | A.V.C. diode load (part) .. | 510,000 |
| 21 | T.I. grid feed .. | 510,000 |
| 22 | T.I. anode feed .. | 2.1 meg. |
| 23 | V4—grid leak .. | 260,000 |
| 24 | Tone control .. | 250,000 |
| 25 | V4—bias resistor .. | 600 |
| 26 | Series aerial .. | 110,000 |
| 27 | Oscillator series grid .. | 200 |
| 28 | M.W. & L.W. aerial shunt .. | 11,000 |

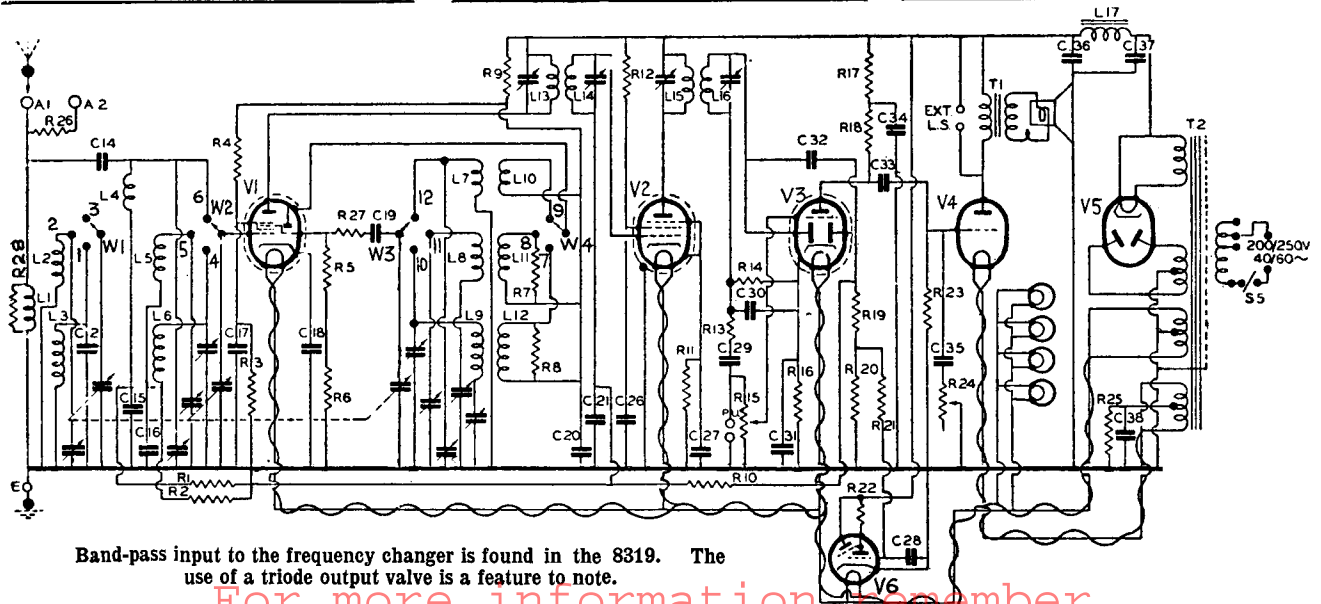
CONDENSERS

| C. | Purpose. | Mfds. |
|----|--------------------------------|--------|
| 14 | S.W. aerial coupling .. | .00001 |
| 15 | S.W. V1 A.V.C. decoupling .. | .01 |
| 16 | V1—A.V.C. decoupling .. | .1 |
| 17 | V1—screen decoupling .. | .1 |
| 18 | V1—cathode bias shunt .. | .1 |
| 19 | Oscillator grid .. | .0001 |
| 20 | Oscillator anode decoupling .. | .1 |
| 21 | V2—A.V.C. decoupling .. | .1 |
| 26 | V2—screen decoupling .. | .1 |
| 27 | V2—cathode bias shunt .. | .1 |
| 28 | T.I. grid .. | .1 |
| 29 | L.F. coupling .. | .05 |
| 30 | H.F. bypass .. | .0001 |
| 31 | V3—cathode bias shunt .. | 50 |
| 32 | A.V.C. diode coupling .. | .00001 |
| 33 | L.F. coupling .. | .05 |
| 34 | V3—anode decoupling .. | 2 |
| 35 | Tone control .. | .025 |
| 36 | H.T. smoothing .. | 8 |
| 37 | H.T. smoothing .. | 8 |
| 38 | V4—bias shunt .. | 20 |

VALVE READINGS

No Signal. Volume Maximum. Tuned to 1000 kc. 224 volts A.C.

| V. | Type. | Electrode. | Volts. | Ma. |
|----|-----------------|---------------|--------|-----|
| 1 | All Ever Ready. | | | |
| | A36B (7) .. | Anode .. | 268 | 1.4 |
| | | Screen .. | 68 | 3.4 |
| | | Osc. anode .. | 102 | 8.2 |
| 2 | A50P (7) .. | Anode .. | 268 | 9.7 |
| | | Screen .. | 167 | 3.5 |
| 3 | A23A (7) .. | Anode .. | 128 | 2.2 |
| 4 | S30D (4) .. | Anode .. | 247 | 44 |
| 5 | A11D (4) .. | Cathode .. | 403 | 77 |



Band-pass input to the frequency changer is found in the 8319. The use of a triode output valve is a feature to note.

For more information remember

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.3 amp. In our particular chassis they were found to be 4.5 volts .3 amp.

Sockets at the rear of the chassis provide for pick-up and also for an external speaker. This should have a matching transformer with an impedance of not less than 3,000 ohms.

R22 is located on the tuning indicator valvholder, and R7 and R8 are located inside the can enclosing the oscillator coils.

Circuit Alignment Notes

I.F. Circuits.—Connect an output meter across the primary of the speaker transformer. Switch set to M.W., gang condenser and volume to maximum and tune to "high." Short out the oscillator section of the gang. Connect a service oscillator between the top grid cap of V1 and chassis.

Tune service oscillator to 455 kc., and adjust first the trimmers of I.F.T.2 and then I.F.T.1 for maximum, reducing the input from the oscillator as the circuits come into line to prevent the A.V.C. working.

Signal Circuits.—Remove short from gang. Connect oscillator to A and E sockets, preferably via a dummy aerial or fixed condenser. See that the scale

pointer registers with the 180 deg. line on the scale with the gang at maximum. Only feed sufficient input to obtain definite peaks in the output meter.

Medium Waves.—Set P1 approximately two-thirds in, tune set and oscillator to 214 metres (1,400 kc.), and adjust T1, T2 and T3 in that order for maximum response.

Tune set and oscillator to 500 metres (600 kc.), and adjust P1 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Long Waves.—Set P2 approximately two-thirds in, tune set and oscillator to 1,200 metres (250 kc.), and adjust T4, T5 and T6 in that order for maximum response.

Tune set and oscillator to 1,700 metres (177 kc.), and adjust P2 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement is noticed.

Short Waves.—Tune set and oscillator to 20 metres (15 mc.), screw T7 right up, then unscrew slowly until the first peak is heard. Having obtained the peak with T7 at the higher capacity, adjust T8 for maximum.

Apply a signal of 7.5 mc., tune receiver to this signal, and adjust the end turn of L4 for maximum.

Repeat both operations until further improvements result.

Replacement Condensers

Condensers made by A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18, are used in the 8319. Replacements are available at the following retail figures: Unit 2915, 1s. 9d.; 2964, 1s. 10d.; 3624, 7s. 3d.; and 2935, 1s. 9d.

Lissen 8319 on Test

MODEL 8319.—Standard model for A.C. mains operation, 200-250 volts, 40-100 cycles. Price, 13 gns.

DESCRIPTION.—Three-band, five-valve, including rectifier, super-het table receiver.

FEATURES.—Full-vision scale with separate wavelength scales for each band, the wave selection switch bringing into view the appropriate scale. Other controls for tone, tuning and combined volume and master switch. Visual tuning indicator.

LOADING.—76 watts.

Sensitivity and Selectivity
SHORT WAVES (19-50 metres).—Good gain and selectivity. Very easy handling.
MEDIUM WAVES (198-580 metres).—High gain with lower selectivity than usual. Tuning indicator sensitive to strong stations.
LONG WAVES (850-1,920 metres).—Good gain for the valve combination. All main stations easily received.

Acoustic Output
 Tone definitely on the deep side with very good low-note radiation and also noticeable upper frequencies. Slight coloration on speech and very full tone on orchestral music. Ample output without overloading for a large room.

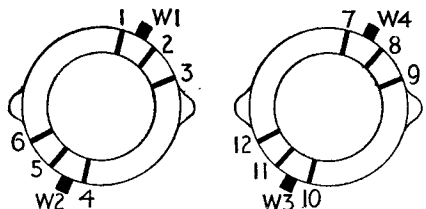
QUICK TESTS

Quick tests are available on this receiver at the leads to the mains transformer. Voltages measured between these and the chassis should be:—

- Pink lead, 403 volts, unsmoothed H.T.
- Blue lead, 275 volts, smoothed H.T.
- Red lead, 282 volts, smoothed H.T.

WINDINGS

| Winding. | Ohms. | Winding. | Ohms. |
|-------------|-------|------------------------|-------|
| L1 | 11 | L12 + R8 | 5.8 |
| L2 | 11.4 | L13 | 6.5 |
| L3 | 2.5 | L14 | 6.5 |
| L4 | .1 | L15 | 6.5 |
| L5 | 2.1 | L16 | 6.5 |
| L6 | 10.6 | L17 | 1,650 |
| L7 | .1 | Speaker trans. primary | 198 |
| L8 | 1.8 | Mains trans. primary | 19.5 |
| L9 | 5.1 | Mains trans. secondary | 338 |
| L10 | 5.8 | | |
| L11 + R7 .. | 5.8 | | |



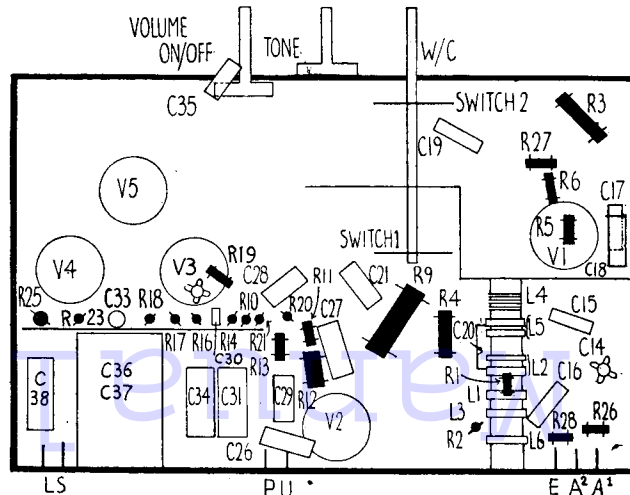
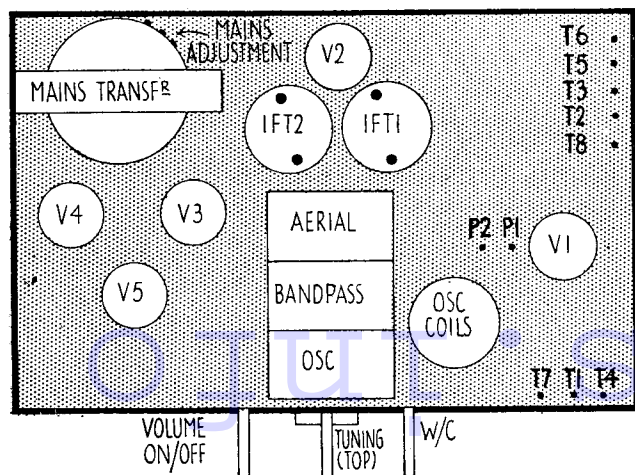
Left, Switch 1 in the Lissen chassis (see layout diagram below) and right, Switch 2.

A.F.C. RECEIVERS

LATEST addition to range of service books available from Holiday and Hemmerdinger, Ltd., 74-78, Hardman Street, Deansgate, Manchester, is "Automatic Frequency Control Systems," by J. F. Rider, the American writer.

The book deals fully with the basic operation of discriminator and control circuits. Later chapters consider various types of automatic and semi-automatic tuning systems. Service problems are dealt with, including notes on the alignment of A.F.C. receivers.

The American "boom" in A.F.C. and automatic tuning sets will undoubtedly be echoed over here and service men will find this book excellent preparation. It is available at 5s. 5d. post free.



Orderly arrangement is found in the 8319 chassis with a component assembly strip used underneath (right). Trimmers are accessible from above.