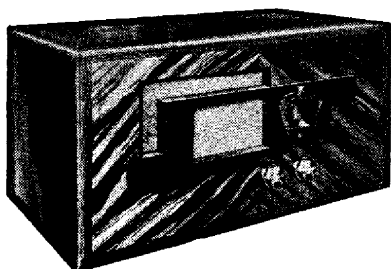


## LISSEN SEVEN-VALVE SKYSCRAPER



First issued as a kit, the Skyscraper was afterwards produced in assembled form by Lissen, Ltd.

**Circuit.**—The first detector valve, SG215 (V1), is preceded by a band-pass aerial coupling and its bias is controlled by the A.V.C.

The oscillator valve, HL2 (V2), operates with a tuned anode coil. The anodes of V1 and V2 are coupled by the primary of the first intermediate frequency transformer (I.F. 126 kc., fixed).

The I.F. valve, SG215 (V3), is also controlled by A.V.C. and is coupled to the second detector by a second I.F. transformer.

A single diode H.F. pentode forms the second detector valve, AVC2 (V4). The grid of the pentode section is used for detection

and the amplified I.F. frequency is fed back from the anode to the single diode-anode, from which the rectified D.C. potential is applied to the controlled valves through de-coupling resistances with by-pass condensers.

Coupling to the driver valve is by transformer connected in the normal manner, and volume is controlled by a variable resistance across the primary. The anode circuit is de-coupled from H.T.

The driver valve, L2 (V5), is followed by a Lissen driver transformer.

The output stage consists of two separate valves working in class B push-pull. The

(Continued on next page.)

## LISSEN SKYSCRAPER SEVEN (Cont.)

anode circuits are stabilised by condensers between the anodes and H.T.—

A permanent magnet speaker with class B transformer completes the set.

**Special Notes.**—This set was originally marketed as a kit but is now obtainable as a complete receiver. Standard Lissen components are used, including the valves.

The A.V.C.2 (V4) valve has peculiar connections which are:—Top of bulb—pentode grid; usual grid pin, diode anode; anode pin, pentode anode. Looking from underneath valve on the grid side, the terminal on the right side is the auxiliary grid and that on the left is the suppressor grid.

In the set the pentode anode is towards the front and the auxiliary grid is on the inside (black lead) while the suppressor grid is on the outside (yellow lead) and is connected to H.T.—

**Quick Tests.**—In this set these are best

### CONDENSERS

| C. | Purpose.                                  | Mfd.  |
|----|---|-------|
| 1  | Series aerial ...                         | .0004 |
| 2  | Band pass coupling ...                    | .02   |
| 3  | Decoupling screening grids ...            | .1    |
| 4  | Decoupling A.V.C. to V1 ...               | .1    |
| 5  | Decoupling V1 and V2 anodes from H.T. ... | .1    |
| 6  | Decoupling V2 grid ...                    | .001  |
| 7  | Across H.T. battery +2 lead ...           | 1     |
| 8  | V4 grid lead ...                          | .0003 |
| 9  | IF feed to A.V.C. diode anode ...         | .0001 |
| 10 | V4 anode by-pass ...                      | .002  |
| 11 | Decoupling V4 anode ...                   | .1    |
| 12 | Stabilising anode of V5 ...               | .003  |
| 13 | Stabilising anode of V6 ...               | .003  |

### RESISTANCES

| R. | Purpose.                                | Ohms.   |
|----|---|---------|
| 1  | Decoupling A.V.C. to V1 ...             | 30,000  |
| 2  | V2 grid return ...                      | 15,000  |
| 3  | Decoupling V1 and V2 from HT ...        | 5,000   |
| 4  | Decoupling A.V.C. to V1 and V3 ...      | 1 meg.  |
| 5  | A.V.C. diode anode load ...             | 1 meg.  |
| 6  | V4 grid return ...                      | 1 meg.  |
| 7  | Var. volume control ...                 | 40,000  |
| 8  | Decoupling V4 anode ...                 | 10,000  |
| —  | LF transformer 1 primary ...            | 1,200   |
| —  | LF transformer 1 secondary ...          | 11,000  |
| —  | LF transformer 2 (driver) primary ...   | 475     |
| —  | LF transformer 2 (driver) secondary ... | 190+190 |
| —  | Output transformer primary* ...         | 660     |

\* A universal transformer is used. Connections for class "B" are: Black, anode; Red, HT+; Blue, anode. Reading is taken between black and blue.

performed by noting the responses in the speaker when testing the valves.

**Removing Chassis.**—Remove control knobs (grub screw) and switch knob. Remove four holding screws underneath and lift the chassis out by sliding backwards for about an inch and then to the right to allow the switch spindle to clear the cabinet. Release speaker earthing lead from IFT 2.

**General Notes.**—The band-pass I.F. transformers are not provided with trimmers. Leads to them are kept short and should not be disturbed more than is necessary. The only adjustments possible are on the ganged condenser and the long-wave pad situated on the back of the chassis under V5.

**Replacing Chassis.**—Lay chassis inside cabinet, connect L.S. earthing lead under IFT2 screw.

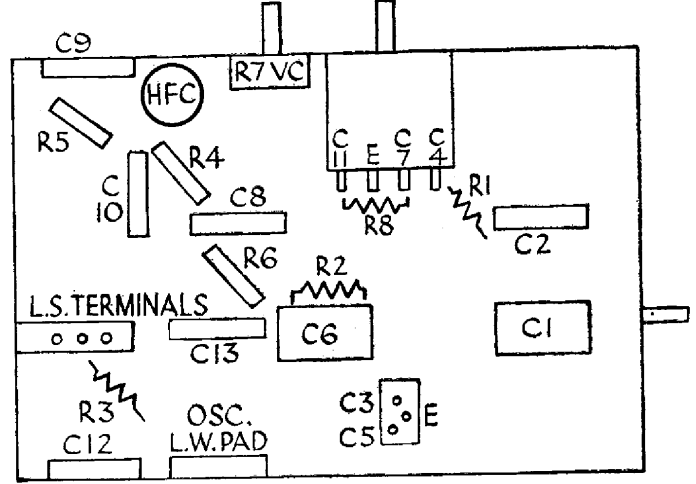
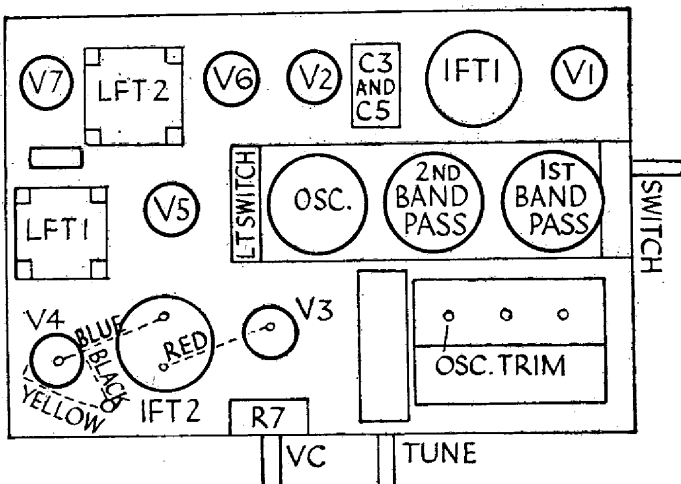
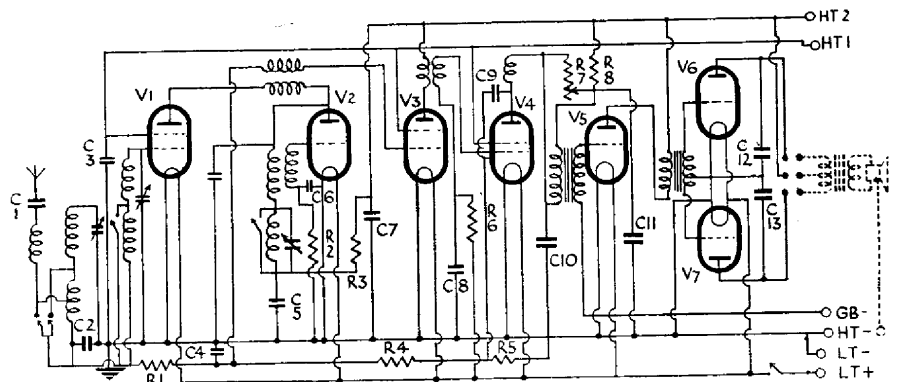
Place rubber distance piece on tuning spindle and slide chassis into position. Replace screws and knobs.

### VALVE READINGS

New battery and no signal.

| Valve. | Type.  | Electrode.   | Volts. | M.A. |
|--------|--------|--------------|--------|------|
| 1      | SG 215 | anode ...    | 100    | 1.5  |
|        |        | screen ...   | 72     | —    |
| 2      | HL 2   | anode ...    | 100    | 3.9  |
|        |        | screen ...   | 120    | 1.8  |
| 3      | SG 215 | anode ...    | 120    | —    |
|        |        | screen ...   | 72     | —    |
|        |        | aux.grid ... | 75     | 3.6  |
| 4      | AVC 2  | anode ...    | 72     | —    |
|        |        | aux.grid ... | 75     | 3.6  |
| 5      | L 2    | anode ...    | 120    | 1.2  |
| 6      | B 2    | anode ...    | 120    | .85  |
| 7      | B 2    | anode ...    | 120    | .85  |

Battery voltages and leads. Special battery type LN 2009. White plug into 0. Black into 3v. Pink plug into 72v. Red into 120v. (Black is HT—of set, and white is GB—to V5.)



Above is the circuit and below are the chassis layouts of the seven-valve superhet battery Skyscraper receiver produced by Lissen Ltd.