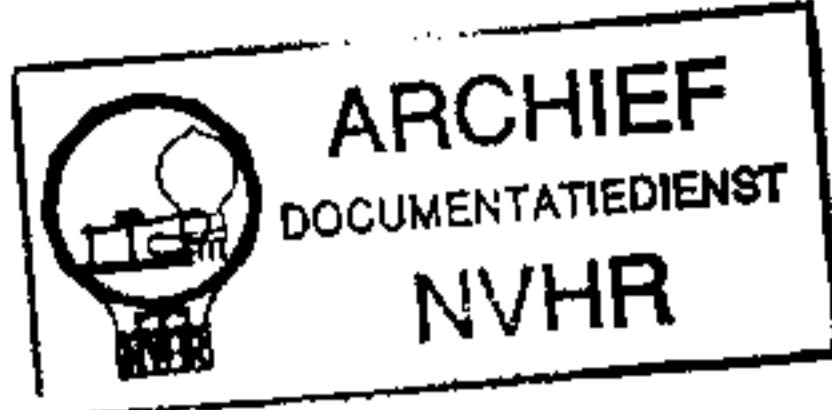


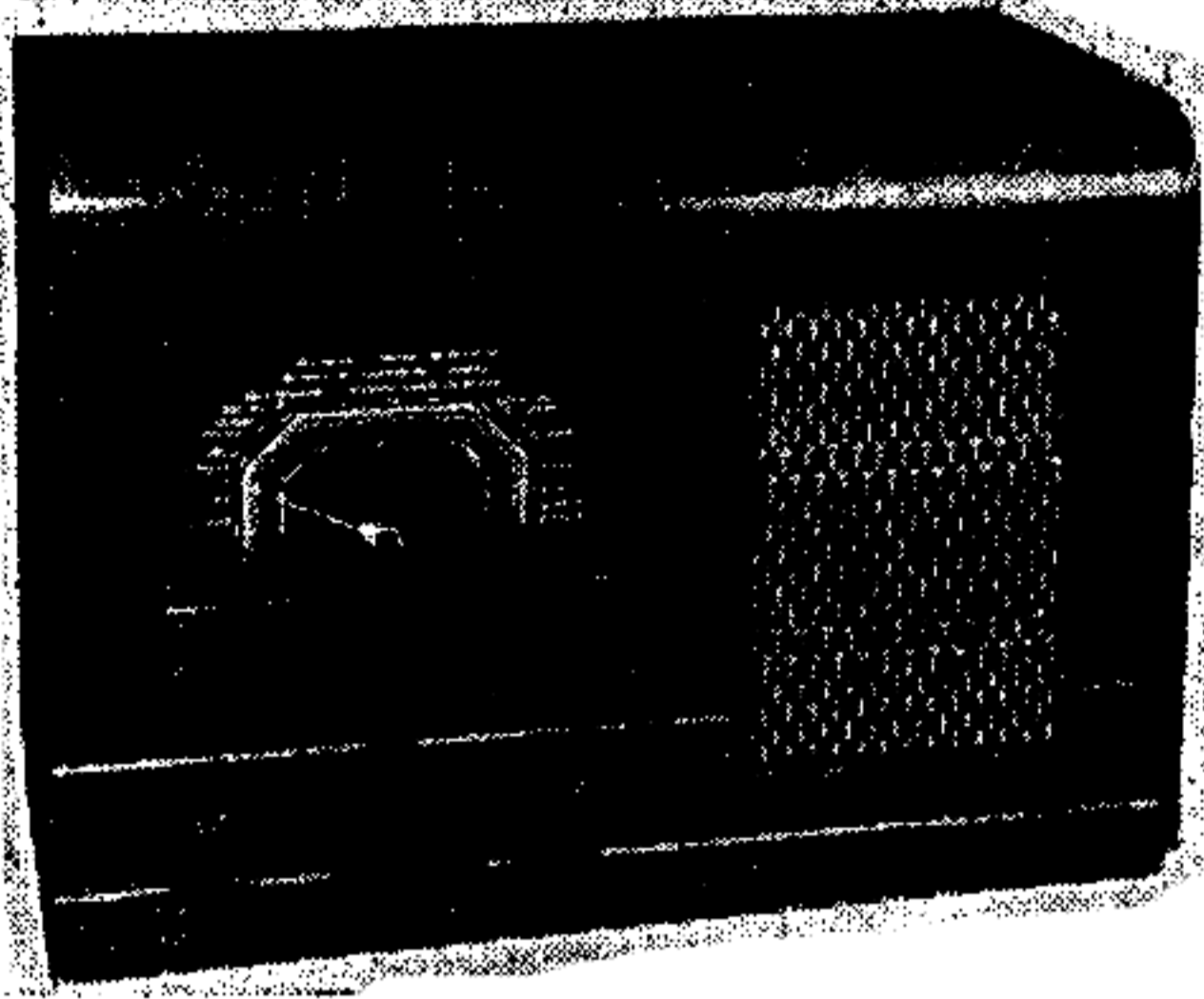
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COSSOR 57

COMPONENTS AND VALUES

| RESISTORS | | Values (ohms) |
|-----------|--|---------------|
| R1 | V1 hex. CG decoupling ... | 500,000 |
| R2 | V1 SG HT feed ... | 8,000 |
| R3 | V1 osc. CG resistor ... | 50,000 |
| R4 | V1 osc. anode HT feed ... | 10,000 |
| R5 | IF stopper ... | 50,000 |
| R6 | Manual volume control; V3 signal diode load ... | 500,000 |
| R7 | V3 triode CG resistor ... | 2,000,000 |
| R8 | IF stopper ... | 100,000 |
| R9 | V3 triode anode load ... | 500,000 |
| R10 | AVC line decoupling ... | 2,000,000 |
| R11 | V3 AVC diode load ... | 1,000,000 |
| R12 | V4 CG resistor ... | 500,000 |
| R13 | V4 grid stopper ... | 100,000 |
| R14 | V3 triode and V4 GB; V1, V2 fixed GB; and AVC delay pot. divider | 75 |
| R15 | HT smoothing resistors ... | 40 |
| R16 | | 500 |
| R17 | HT smoothing resistors ... | 2,000 |
| R18 | | 3,000 |
| R19 | Scale lamp shunt ... | 50 |
| R20 | Heater ballast ... | 83 |
| R21 | Line cord heater ballast ... | 447 |



AN AC/DC midget receiver, the Coszor 57 is a 4-valve (plus rectifier) 2-band (SW and MW) superhet designed for 200-220 V and 220-240 V mains. The SW range is 15-50. m.

Release date and original price: August, 1942; £15 0s. (£12 6s. 11d., plus £2 13s. 1d. purchase tax).

CIRCUIT DESCRIPTION

Aerial input is via C2 and coupling coil L1 (SW), or C3 (MW), to single-tuned circuits L2, C28 (SW) and L3, C28 (MW). L3 is wound as a frame aerial on the back cover of the receiver.

First valve (V1, Coszor 6K8G) is a triode hexode operating as frequency changer with electron coupling. Oscillator grid coils L4 (SW) and L5 (MW) are tuned by C29. Parallel trimming by C30 (SW) and C31 (MW); series tracking by C9 (SW) and C10 (MW). Inductive reaction coupling from anode by coils L6 (SW) and L7 (LW), with capacitive coupling across the trackers.

Second valve (V2, Coszor 6K7G) is a variable-mu RF pentode operating as intermediate frequency amplifier with tuned-primary, tuned-secondary iron-cored transformer couplings C6, L8, L9, C7 and C13, L10, L11, C14.

Intermediate frequency 465 kc/s.

Diode second detector is part of double diode triode valve (V3, Coszor 6Q7G). Audio frequency component in rectified output is developed across the manual volume control R6, which operates as load resistor, and passed via C18 and R8 to CG of triode section.

Second diode of V3, fed from V2 anode via C15, provides DC potential which is developed across R11 and fed back through decoupling circuits as GB to FC and IF valves, giving AVC.

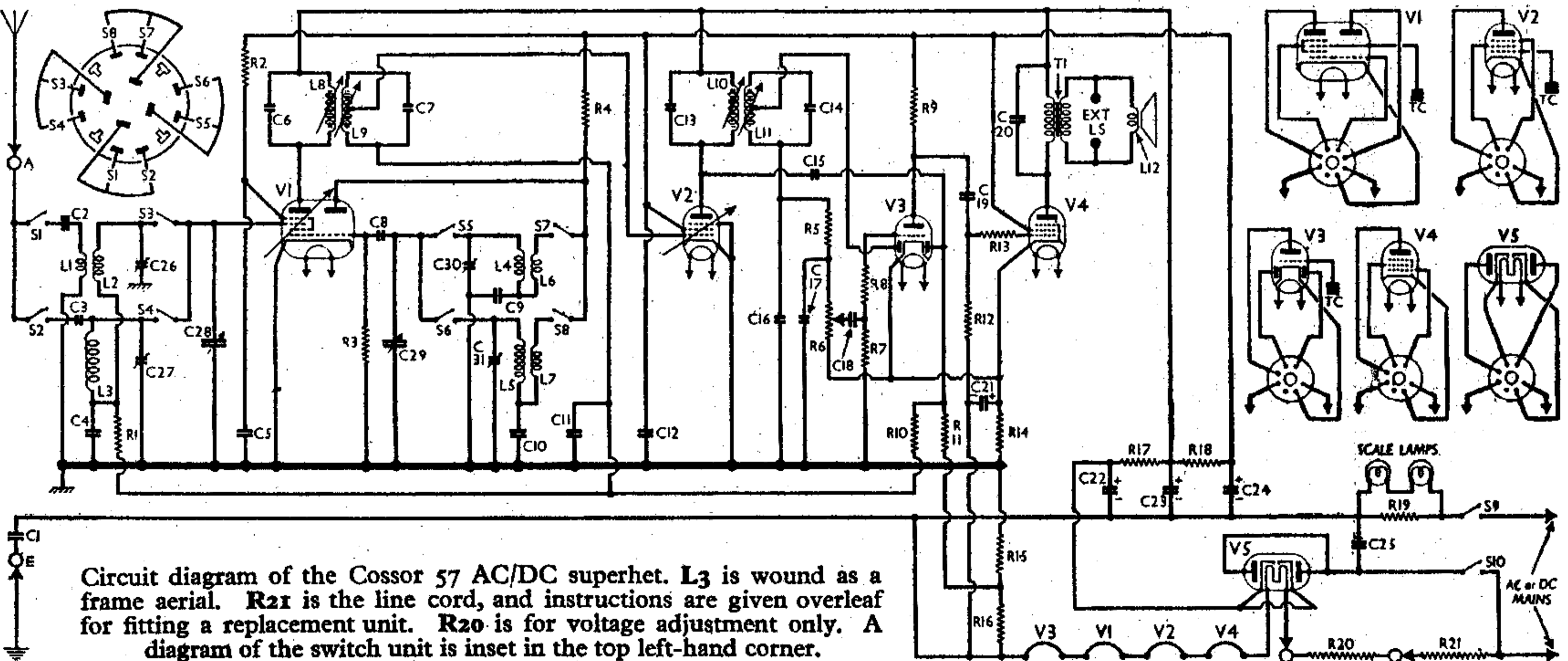
Resistance-capacitance coupling by R9, C19 and R12 between V3 triode and pentode output valve (V4, Coszor 25A6G). Fixed tone correction by C20. Provision for connection of low impedance external speaker.

When the receiver operates with AC mains, HT current is supplied by half-wave rectifying valve (V5, Coszor 25Z6G), which on DC mains behaves as a low resistance. Smoothing by resistors R17, R18 and capacitors C22, C23, C24.

Valve heaters, together with scale lamps, line cord ballast resistor R21 and voltage adjustment resistor R20 are connected in series across mains input. Resistors R15, R16 form a potential divider in the negative HT lead to chassis to provide fixed GB voltages for V1, V2 and AVC delay. Additional AVC delay, together with GB for V3 triode, is obtained from the drop along R14. GB for V4 is derived from the total drop along R14, R15, R16.

| CAPACITORS | | Values (µF) |
|------------|--------------------------------------|-------------|
| C1 | Earth isolator ... | 0.05 |
| C3 | Aerial SW series ... | 0.0005 |
| C3 | Aerial MW series ... | 0.000005 |
| C4 | V1 hex. CG decoupling ... | 0.05 |
| C5 | V1 SG decoupling ... | 0.05 |
| C6 | 1st IF transformer tuning capacitors | 0.000065 |
| C7 | | 0.000075 |
| C8 | V1 osc. CG capacitor ... | 0.00005 |
| C9 | Osc. circ. SW tracker ... | 0.005177 |
| C10 | Osc. circ. LW tracker ... | 0.000688 |
| C11 | V2 CG decoupling ... | 0.05 |
| C12 | V2 SG decoupling ... | 0.05 |
| C13 | 2nd IF transformer tuning capacitors | 0.00006 |
| C14 | | 0.000075 |
| C15 | AVC diode coupling ... | 0.00001 |
| C18 | IF by-pass capacitors | 0.00005 |
| C17 | | 0.00005 |
| C18 | V3 triode CG capacitor ... | 0.005 |
| C19 | AF coupling to V4 ... | 0.005 |
| C20 | Fixed tone corrector ... | 0.005 |
| C21* | V4 CG decoupling ... | 25.0 |
| C22 | HT smoothing capacitors | 8.0 |
| C23 | | 16.0 |
| C24 | | 16.0 |
| C25 | Mains RF by-pass ... | 0.01 |
| C26† | Aerial circ. SW trimmer ... | — |
| C27† | Aerial circ. MW trimmer ... | — |
| C28† | Aerial circuit tuning ... | — |
| C29† | Oscillator circuit tuning ... | — |
| C30† | Osc. circ. SW trimmer ... | — |
| C31† | Osc. circ. MW trimmer ... | — |

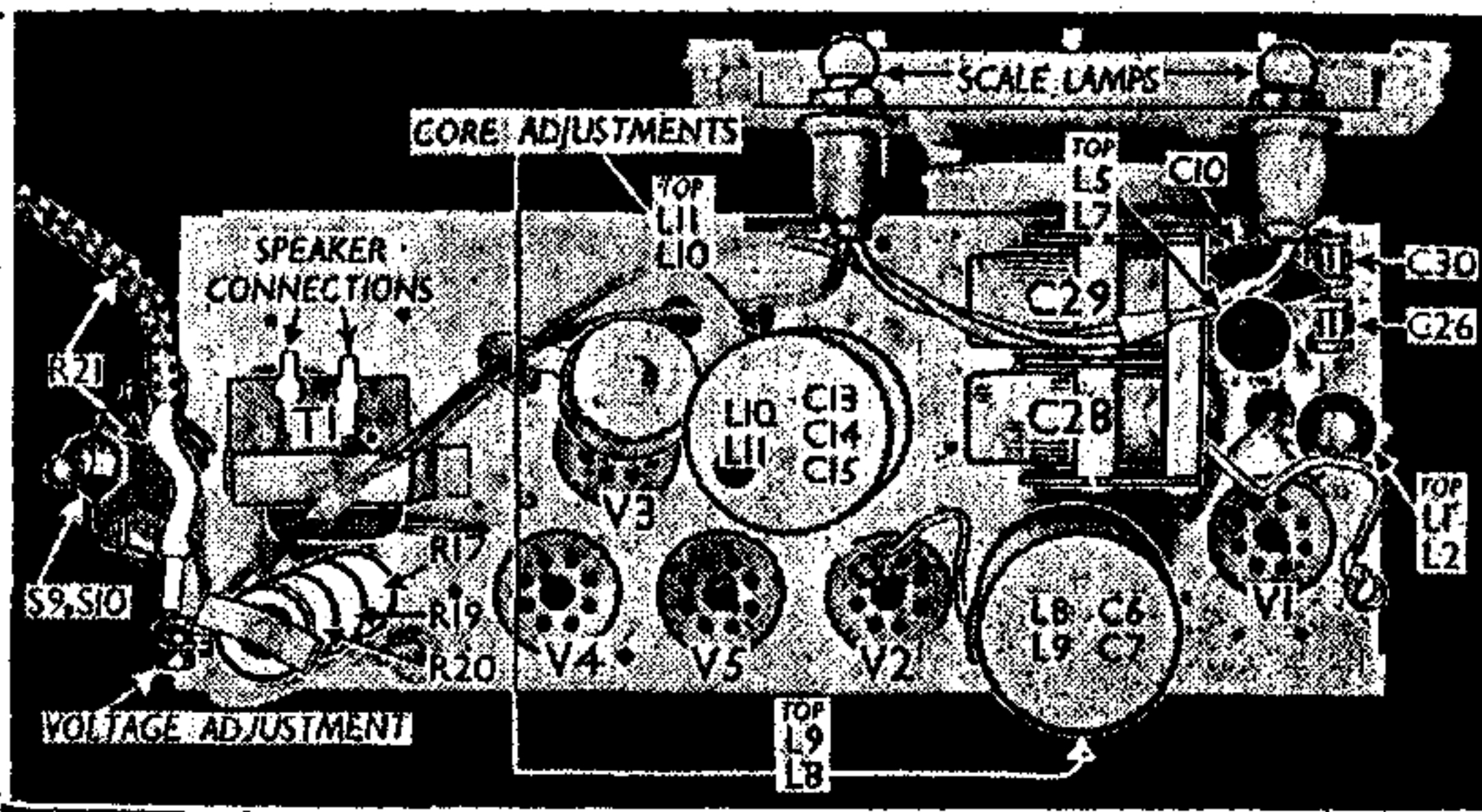
* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Coszor 57 AC/DC superhet. L3 is wound as a frame aerial. R21 is the line cord, and instructions are given overleaf for fitting a replacement unit. R20 is for voltage adjustment only. A diagram of the switch unit is inset in the top left-hand corner.

| OTHER COMPONENTS | | Approx. Values (ohms) |
|------------------|-----------------------------|-----------------------|
| L1 | Aerial SW coupling coil ... | 1.0 |
| L2 | Aerial SW tuning coil ... | Very low |
| L3 | Aerial MW (frame) coil ... | 0.5 |
| L4 | Osc. SW tuning coil ... | Very low |
| L5 | Osc. MW tuning coil ... | 6.0 |
| L6 | Osc. SW reaction coil ... | 0.1 |
| L7 | Osc. MW reaction coil ... | 1.5 |
| L8 | 1st IF trans. { Pri. ... | 19.0 |
| L9 | | Sec. ... |
| L10 | 2nd IF trans. { Pri. ... | 19.0 |
| L11 | | Sec. ... |
| L12 | Speaker speech coil ... | 2.0 |
| T1 | Output trans. { Pri. ... | 550.0 |
| | Sec. ... | Very low |
| S1-S8 | Waveband switches ... | — |
| S9, S10 | Mains circuit switches ... | — |

Plan view of the chassis. R17, R19, R20 are three separate sections of a wire-wound unit. The IF core adjustments are indicated. L3 is fitted to the back cover of the set.



VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured by the makers, the receiver tuned to 200 m and connected to 200 V AC mains. Voltages were measured with a high resistance meter whose negative lead was connected to chassis.

| Valve | Anode Voltage (V) | Anode Current (mA) | Screen Voltage (V) | Screen Current (mA) |
|-----------|-------------------|--------------------|--------------------|---------------------|
| V1 6K8G | 140 | 1.5 | 80 | 3.0 |
| | Oscillator | 76 | | |
| V2 6K7G | 140 | 5.0 | 110 | 1.5 |
| V3 6Q7G | 50 | Very low | — | — |
| V4 25A6G | 130 | 20.0 | 110 | 3.0 |
| V5 25Z6G* | — | — | — | — |

* Cathode readings 210 V, 33.0 mA, DC.

DISMANTLING THE SET

Removing Chassis.—Remove the three control knobs (recessed grub screws); remove back cover (four set screws with washers) and unsolder from the aerial panel on it the four leads from chassis; remove the fixing ring from the mains switch on side of cabinet, and push switch in; remove the lin. wood screw holding top of scale assembly to front of cabinet; remove the three screws (with washers) holding chassis to bottom of cabinet, when chassis may be withdrawn to extent of speaker leads; or, if these are unsoldered, it may be freed entirely. **When replacing,** the yellow lead from chassis goes to the aerial socket on the back cover, and the plain grey rubber lead goes to the earth socket.

The remaining two grey rubber leads, marked with red paint, go to the ends of the frame winding on the two tags under the aerial panel fixing rivets. **Removing Speaker.**—Slacken the four clamp nuts and swivel the clamps. **When replacing,** the connecting panel should be at the top.

GENERAL NOTES

Switches.—S1-S8 are the waveband switches, ganged in a single rotary 2-way unit indicated in our under-chassis view. The unit is shown in detail in the diagram inset in the circuit diagram overleaf. S1, S3, S5, S7 close on SW and open on LW; S2, S4, S6, S8 close on MW and open on SW. S9, S10 are the QMB mains switches, in a toggle unit fitted to the side of the cabinet.

Coil L3 is wound flat on the back cover of the receiver, where it is connected to tags under the rivets holding the A, E panel. Two leads marked with red paint connect these to chassis.

Scale Lamps.—These are two Osram MES type lamps rated at 6.5 V, 0.3 A. **External Speaker.**—Two tags on the output transformer T1 on the chassis deck provide convenient points for the connection of a low impedance (2.5-4 Ω) external speaker.

Capacitors C22, C23, C24.—These are all cardboard tubular type electrolytics. C22 is rated at 8μF, 350 V working; C23, C24 are both rated at 16 μF, 250 V peak working, 300 V surge.

Resistors R17, R19, R20.—These form the three sections of a wire-wound resistance unit on the chassis deck. The top section R20 provides voltage adjustment ballast for the heater circuit, the tag of R21 going to either end according to the voltage of the mains.

Chassis Divergencies.—A 15 μμF (0.000015 μF) capacitor may be found connected between V1 hexode anode and chassis as additional capacitance across L8. In the makers' diagram the valve heater sequence, from HT negative to R20, was V1, V2, V3, V4, V5, so that V1 and V2 are transposed as compared with our sample.

Small differences in component values may be found in some chassis, but these are such as not to affect the performance seriously. In our sample R15 was 47 Ω, and C25 was 0.05 μF, but departures are due to supply difficulties, and we quote the original values in our tables.

Line Cord Replacement.—In view of possible difficulty in obtaining line cords, the makers have prepared a suitable wire-wound replacement unit, in a strong perforated metal shroud, which can easily be fitted externally to the back cover.

The unit has three coloured connecting leads, and the instructions are as follows: Mount the unit vertically, taking care that the fixing screws do not foul the frame winding. Disconnect R21 (white fluffy lead) from R20, cut it back to mains lead and tape up.

Connect the orange (or yellow) lead from the replacement unit to R20, and the blue lead to the mains side of S10. The red lead is superfluous, and should be cut off and discarded.

The resistance of the replacement unit is a little higher than that of the original line cord, but this appears to have no adverse effect on the performance, and it is of some advantage when the set is working on mains voltages near the upper ends of the two adjustment positions.

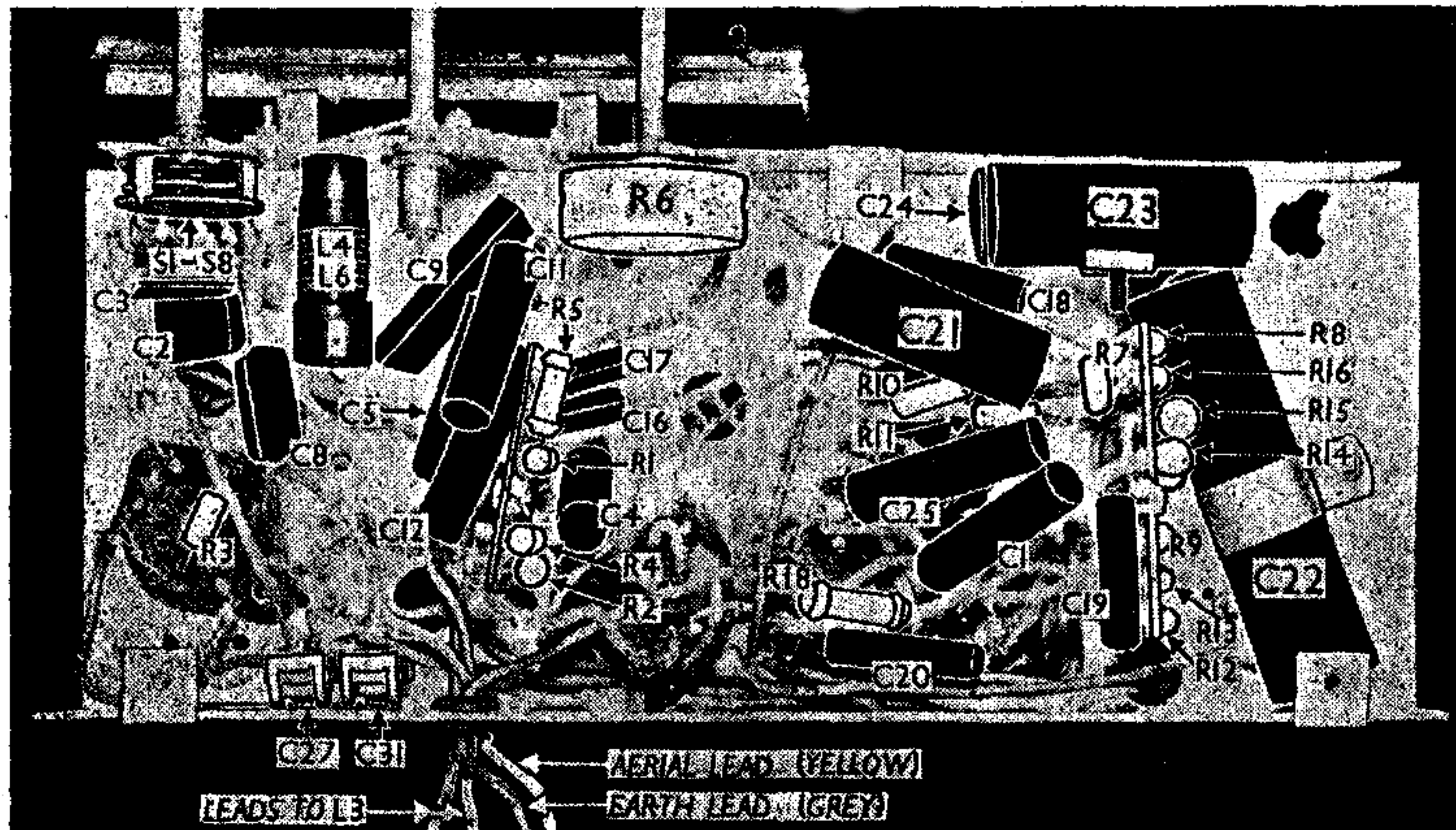
CIRCUIT ALIGNMENT

IF Stages.—Switch set to MW, connect signal generator leads to control grid (top cap) of V1 and chassis, feed in a 465 kc/s (645.16 m) signal, turn the volume control to maximum, and adjust the cores of L9, L11, L8 and L10 in that order for maximum output.

MW.—Transfer signal generator leads to A and E sockets, tune to 214 m on scale, feed in a 214 m (1,400 kc/s) signal, and adjust C21, then C27, for maximum output.

SW.—Switch set to SW, tune to 16 m on scale, feed in a 16 m (18.75 Mc/s) signal, and adjust C30, then C26, for maximum output.

Tracking is fixed, but a check should be made at several points on each band.



Under-chassis view. A diagram of the switch unit is inset in the circuit overleaf.