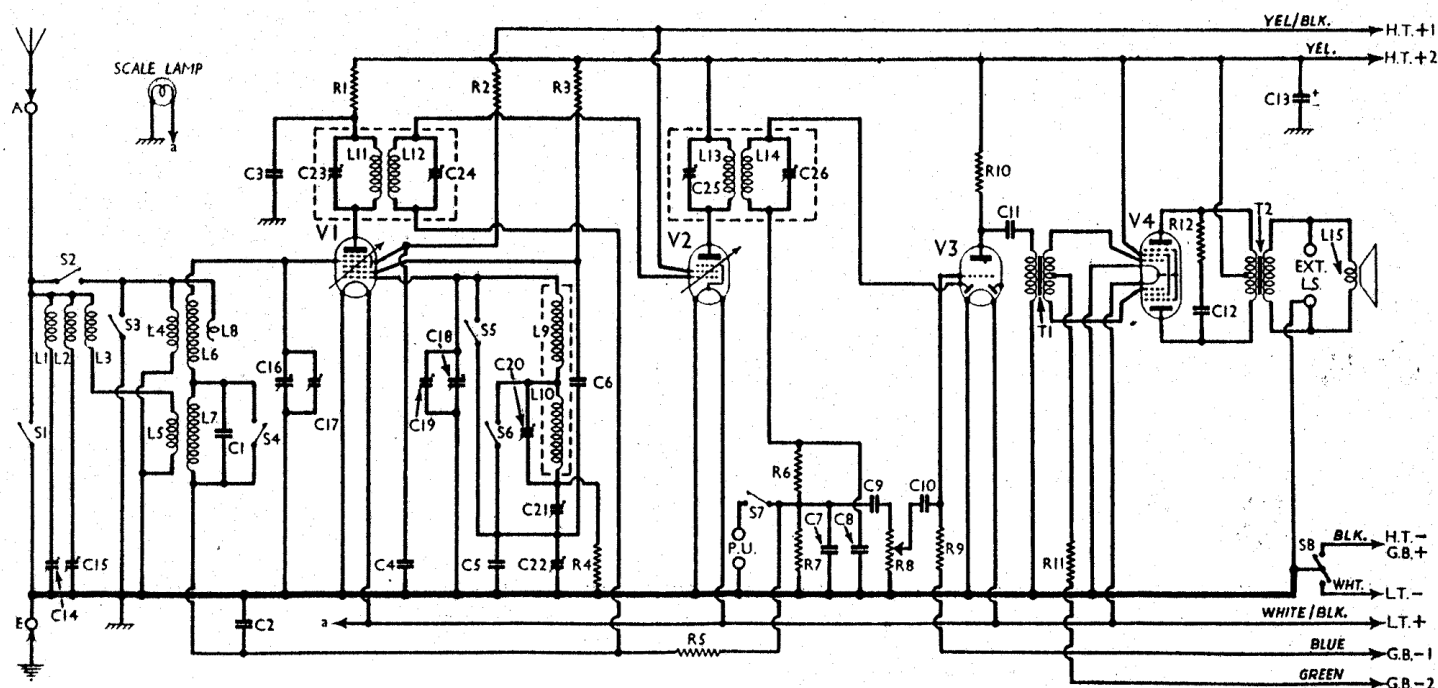


PHILCO - 255



Circuit diagram of the Philco 255 battery superhet. Note that one diode anode of V3 is not used. V4 is a special double pentode output valve.

COMPONENTS AND VALUES

| Resistances | | Values (ohms) |
|-------------|------------------------------|---------------|
| R1 | V1 tet. anode decoupling | 10,000 |
| R2 | V1 S.G.'s H.T. feed | 20,000 |
| R3 | V1 osc. anode resistance | 51,000 |
| R4 | V1 osc. grid resistance | 51,000 |
| R5 | A.V.C. line decoupling | 2,000,000 |
| R6 | I.F. stopper | 51,000 |
| R7 | V3 diode load | 490,000 |
| R8 | Manual volume control | 1,000,000 |
| R9 | V3 grid resistance | 1,000,000 |
| R10 | V3 anode load | 51,000 |
| R11 | V4 anti-parasitic resistance | 240,000 |
| R12 | Part of tone comp. filter | 35,000 |

| Condensers | | Values (μF) |
|------------|-------------------------------|-------------|
| C1 | Aerial circuit L.W. trimmer | 0.000035 |
| C2 | A.V.C. line decoupling | 0.05 |
| C3 | V1 tet. anode decoupling | 0.01 |
| C4 | V1 S.G.'s by-pass | 0.05 |
| C5 | Osc. M.W. tracker, fixed | 0.000175 |
| C6 | V1 osc. reaction condenser | 0.01 |
| C7 | I.F. by-passes | 0.00011 |
| C8 | I.F. by-passes | 0.00011 |
| C9 | L.F. coupling to vol. control | 0.01 |
| C10 | L.F. coupling to V3 grid | 0.01 |
| C11 | L.F. coupling to T1 | 0.09 |
| C12 | Part of tone comp. filter | 0.001 |
| C13* | H.T. reservoir | 8.0 |
| C14† | Aerial I.F. filter tuning | — |
| C15† | Broadcast wave-trap tuning | — |
| C16† | Aerial circuit tuning | — |
| C17† | Aerial circuit trimmer | — |
| C18† | Oscillator tuning | — |
| C19† | Oscillator main trimmer | — |
| C20† | Oscillator L.W. trimmer | — |
| C21† | Oscillator L.W. tracker | — |
| C22† | Oscillator M.W. tracker | — |
| C23† | 1st I.F. trans. pri. tuning | — |
| C24† | 1st I.F. trans. sec. tuning | — |
| C25† | 2nd I.F. trans. pri. tuning | — |
| C26† | 2nd I.F. trans. sec. tuning | — |

* Electrolytic. † Variable. ‡ Pre-set.

| Other Components | | Values (ohms) |
|------------------|-------------------------------|---------------|
| L1 | Aerial I.F. filter coil | 15.0 |
| L2 | Broadcast wave-trap coil | 9.0 |
| L3 | Aerial choke coil (L.W.) | 40.0 |
| L4 | Aerial M.W. coupling coil | 24.0 |
| L5 | Aerial L.W. coupling coil | 120.0 |
| L6 | Aerial tuning coils | 3.0 |
| L7 | | 16.0 |
| L8 | Part of aerial circuit | Very low |
| L9 | Oscillator tuning coils | 3.3 |
| L10 | | 13.0 |
| L11 | 1st I.F. trans | 7.5 |
| L12 | | 11.0 |
| L13 | 2nd I.F. trans | 7.5 |
| L14 | | 11.0 |
| L15 | Speaker speech coil | 2.2 |
| T1 | Intervalve trans. | 600.0 |
| T2 | Speaker input | 5,000.0 |
| T3 | trans. | 480.0 |
| S1, S5 | Radio muting switches (gram.) | 0.25 |
| S2-S4 | Waveband switches | — |
| S6 | Gram. pick-up switch | — |
| S7 | H.T. and L.T. switch, ganged | — |
| S8 | R8 | — |

VALVE ANALYSIS

Valve voltages and currents given in the table below were measured with the receiver operating with the recommended voltages, obtained from a new battery reading 140 V on the H.T. section and 9.4 V on the G.B. section.

The volume control was at maximum and the receiver was tuned to the lowest wavelength on the M.W. band, but there was no signal input. Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

| Valve | Anode Volts | Anode Current (mA) | Screen Volts | Screen Current (mA) |
|---------|-------------|--------------------|--------------|---------------------|
| V1 1C6* | 110 | 1.1 | 45 | 1.1 |
| V2 1A4E | 138 | 4.1 | 70 | 1.0 |
| V3 2102 | 90 | 0.8 | — | — |
| V4 2103 | 135† | 2.0† | 138 | 1.1 |

* Osc. anode (G2) 50 V, 1.6 mA. † Each anode.

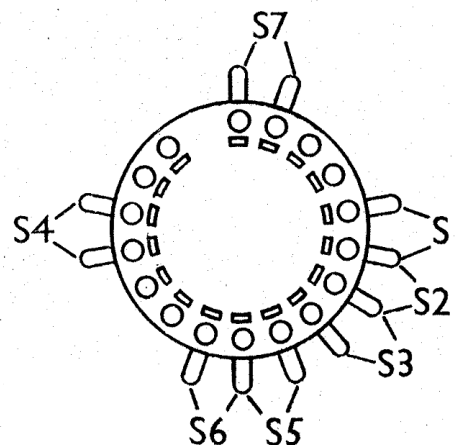
GENERAL NOTES

Switches.—The waveband switches, S1-S7, are in a single rotary unit indicated in the under-chassis view, and shown in detail in a separate sketch. This is drawn as it is seen looking at the underside of the chassis, from the rear. Note that all the switches, except S4 and S7, each have one common contact. The table below gives the switch positions for the three settings of the control, O indicating open, and C, closed.

| Switch | M.W. | L.W. | Gram. |
|--------|------|------|-------|
| S1 | O | O | C |
| S2 | C | O | O |
| S3 | O | C | O |
| S4 | C | O | O |
| S5 | O | O | C |
| S6 | C | O | O |
| S7 | O | O | C |

S8 is the Q.M.B. filament switch, ganged with the volume control, R8.

Coils.—L1, L2, L3 are three separate unscreened small coils, on formers mounted beneath the chassis. L4-L8 are wound on a single tubular former, also unscreened, and beneath the chassis.



The switch unit, as seen looking at the underside of the chassis, from the rear.