

EIGHT-VALVE (including full-wave rectifier and magic eye) four-waveband AM/FM receivers for 100-120V and 200-250V AC mains, but whereas the VHF64 will operate on 40-100c/s, the RG66 is confined to 50c/s.

Model VHF64 is a table receiver; released February, 1957, at 47gns. inclusive, while radiogram model RG66 came out in March 1957, at 98gns. inclusive.

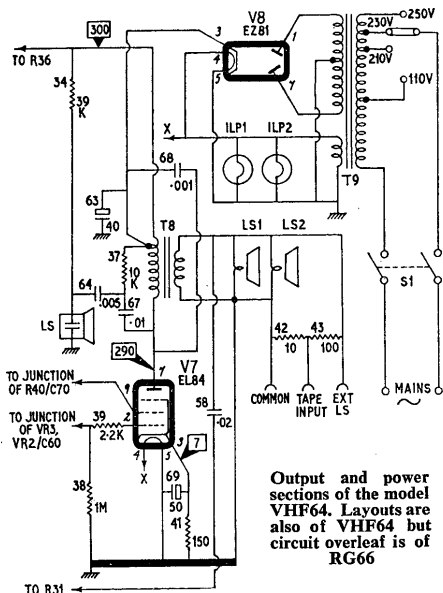
Circuit. When switched to LW, MW or SW, circuit is a conventional seven-valve superhet with V2 (ECH81) as the frequency-changer; V3 (EF89) second IF amplifier; V4 (EF89) third IF amplifier; V5 (EABC80) detector, AGC diode and audio amplifier; V6 (EM81) tuning indicator; V7 (EL84) output; V8 (EZ81) full-wave rectifier.

When switched to the VHF band, the circuit is modified by the addition of two further stages with V1 (ECC85) as VHF amplifier and

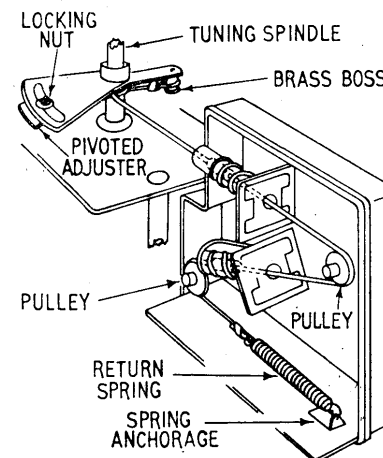
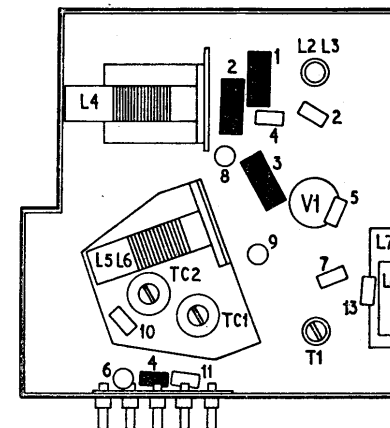
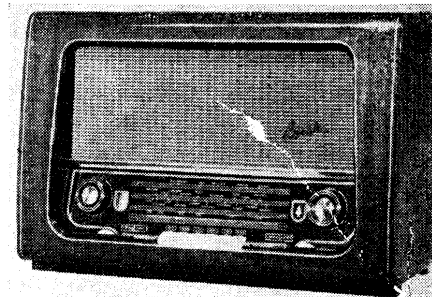
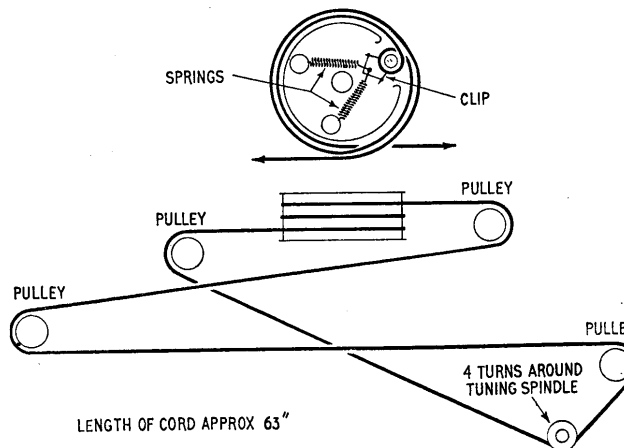
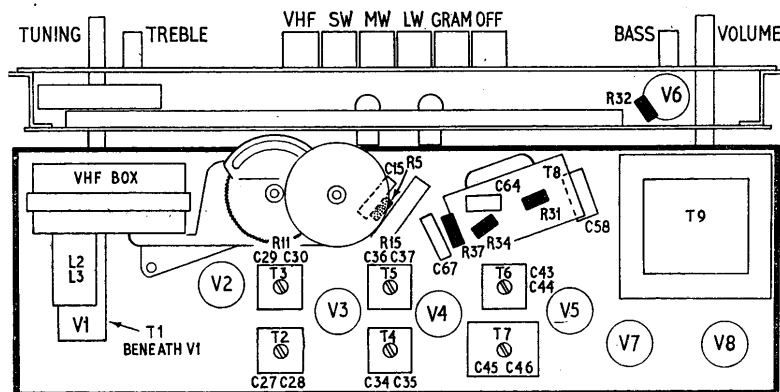
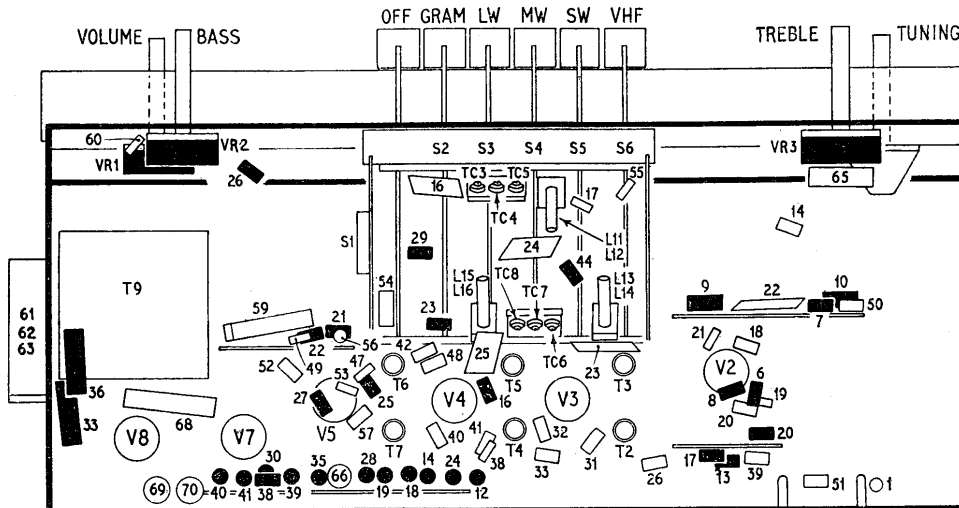
mixer; V2 (ECH81) heptode section operating as first IF amplifier; V3 (EF89) second IF amplifier; V4 (EF89) third IF amplifier; V5 (EABC80) two diodes and triode working as ratio detector and audio amplifier; V6 (EM81) tuning indicator; V7 (EL84) output; V8 (EZ81) full-wave rectifier.

Wavebands. SW 18.75-6mc/s (16-50m); MW 1604-535kc/s (187-560m); LW 285-155kc/s (1,050-1,935m); VHF 87.5-100mc/s.

Continued overleaf



Output and power sections of the model VHF64. Layouts are also of VHF64 but circuit overleaf is of RG66



COMPONENT RATINGS

Capacitors

- Silvered ceramic 750V : C1 7 (N750) 8 (P100) 10 (N750) 13 (N750) 21 47 49.
- Silvered ceramic 500V : C55.
- Silvered ceramic 350V : C2 4-6 11 17 19 53 56 60.
- Silvered mica 350V: C3 12 16 22-25 27-30 34-37 43-46.
- Polystyrene film tubular 350V : C15.
- Metallised paper 400V : C26 31 33 38 41 42 50 51 (on VHF64 only).
- Metallised paper 200V : C14 18 32 40 48 52 54 57.

- Metallised paper 150V : C39.
 - Paper tubular 750V : C64 (on VHF64 only) 67 68.
 - Paper tubular 500V : C65.
 - Paper tubular 350V : C66.
 - Paper tubular 150V : C58.
 - Electrolytic 350V : C61-63 70.
 - Electrolytic 70V : C64 (on RG66 only).
 - Electrolytic 50V : C59.
 - Electrolytic 12V : C69.
- Resistors**
- 6W wirewound : R33 36.
 - ½W : R4 9 10 12 14 18 19 28 37 41.
 - All others ¼ watt.

Potentiometers
VR1-3.

Inductors

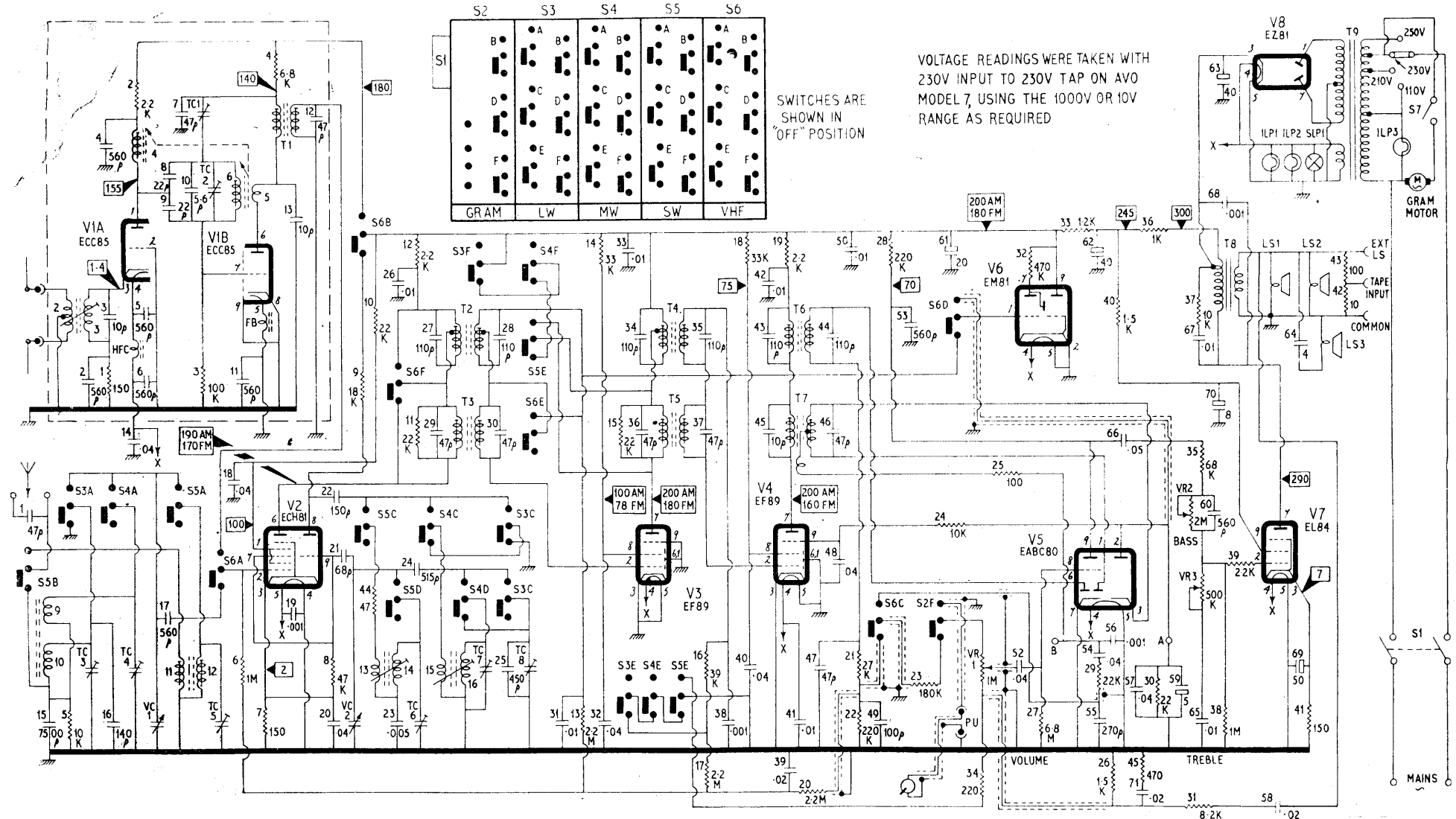
| L | Ohms |
|-----|------------------|
| 6 | ... RG66 only 12 |
| 15 | ... 1 |
| 16 | ... 4.5 |
| T | ... |
| 2 | ... Pri. 14 |
| ... | ... Sec. 14 |
| 4 | ... Pri. 14 |
| ... | ... Sec. 14 |

| L | Ohms |
|-----|-------------------------------|
| 6 | ... Pri. 14 |
| ... | ... Sec. 14 |
| 8 | ... Pri. 230 |
| ... | ... Sec. Very low |
| 9 | ... Pri. 18.5 |
| ... | ... HT sec. 188 |
| ... | ... LT sec. Very low |
| ... | ... All others below 0.5 ohm. |

External speaker impedance should be about 2.5 ohms.

Audio output is approximately 4W.

Speakers. Models VHF64 has an electrostatic speaker, an 8-in. flared cone unit, type J8Q0, and an 8-in. straight cone design, type L8Q0; both 8-in. speakers are made by Celestion. The RG66 employs two 10-in. units—Celestion Z10Z0/Spec CT3516 and



Celestion Z10Z0/Spec CT3494 ; also a Celestion H4BC 4-in. speaker.

Lamps. Two scale lamps rated at 6.5V 0.3A ; one 110V 15W GEC pigmy for gramophone compartment of model RG66.

Record-changer unit is Garrard type RC120/4H.

Circuit shown is of model RG66.

PRACTICAL HINTS

Removing VHF box from chassis requires that the five connections to box be unsoldered, the tuning capacitor set at minimum and the cord loop slipped from brass boss. After which, remove the three bolts holding box to bracket and also withdraw the bolt from beneath chassis (near C10, R50).

Replacing VHF tuning cord drive. Should a breakage occur in either the cord or the cores, it is recommended that the complete assembly (AP24888) be obtained and fitted.

To do this, first remove front side of VHF box by withdrawing the seven retaining screws. Then set tuning capacitor to minimum and thread assembly of tuning cores through coil formers and hook the spring to its anchorage. Take one turn clockwise around tuning capacitor spindle and slip the loop in cord over brass boss. If necessary, reset pivoted adjuster as described in alignment of VHF.

MODIFICATIONS

Earlier models of both receivers differ from the circuits shown: There was no hum cancellation winding on the output transformer; R40 (6.8k) and C70 (.02mF) were in series between pin 3 V7 and junction of C68 and HT line; R26 was from VR1 to chassis as shown on the underside view, but is now on the output transformer; R45 and C71 were not incorporated.

Model VHF64 has a 560 pF capacitor across pickup input, but there is no 220ohm (R34) resistor between bottom end of VR1 and switch contact S5F.

ALIGNMENT

General. Model VHF64 can be aligned in cabinet once the wood panel under the chassis has been removed. Model RG66 must be taken from cabinet for alignment.

Allow about 15 minutes for signal generator and receiver to warm up before any alignment.

IF transformer T7 has secondary at bottom of can; all others have the secondaries at the top.

AM Section

IF stages. Switch to MW, set pointer to 1mc/s.

Inject modulated 470kc/s at pin 2 V4 and tune T6 secondary and then primary for maximum audio output.

Inject modulated 470kc/s at pin 2 V3 and adjust T4 secondary and primary for maximum output.

Inject modulated 470kc/s at pin 2 V3. Adjust T2 secondary and primary for maximum output.

RF stages. Inject required signal at AM aerial sockets and align circuits as follows:—

| Operation | Band | Generator Frequency | Adjust for Maximum Audio Output |
|-----------|------|------------------------------|---------------------------------|
| 1 | MW | 600kc/s | L15/L16 osc. |
| 2 | MW | 1,500kc/s | TC7 osc. |
| 3 | | Repeat and check calibration | |
| 4 | LW | 214kc/s | TC8 osc. |
| 5 | | Repeat and check calibration | |
| 6 | SW | 6mc/s | L13/L14 osc. and L11/L12 aerial |

| | | | |
|---|----|------------------------------|-------------------------|
| 7 | SW | 15mc/s | TC6 osc. and TC5 aerial |
| 8 | | Repeat and check calibration | |

For the adjustment of TC3 and TC4 (LW and MW aerial trimmers) it is necessary to couple the generator by means of a single loop of wire approximately 5in. in dia., positioned 12in. to 18in. away from cabinet. Align as follows:—

| | | | |
|----|----|-----------|-----|
| 9 | MW | 1,500kc/s | TC4 |
| 10 | LW | 214kc/s | TC3 |

FM section

Equipment required. Signal generator covering 10.7mc/s and 87.5-100mc/s; Avo model 8 or LC valve-voltmeter and microammeter (50A full-scale deflection); two 47k ½watt matched resistors; one 1k ½watt resistor; non-metallic trimming tool.

IF stages. Switch to FM band, connect the two 47k resistors in series between point A and chassis and put the Avo model 8 (10V DC range) or the valve-voltmeter across them (see circuit diagram). Apart from discriminator T7 primary, the correct peak for all cores is the first one reached—from the top of coil former as core enters the secondary winding, or from the base of former as core enters the primary winding.

Inject unmodulated 10.7mc/s at pin 2 V2, set volume control at minimum. During alignment keep input from signal generator at a level which provides a reading of 4V on the meter.

T7. Adjust primary for maximum DC output—start with core ¼in. inside former.

T5. Connect 1k resistor across secondary and adjust primary for maximum DC output.

Damp T5 primary with 1k resistor. Adjust secondary for maximum output.

T3. Connect 1k resistor across secondary. Adjust primary for maximum output.

Transfer resistor to T3 primary. Adjust secondary for maximum output.

Readjust T7 primary for maximum DC output.

Connect Avo model 8 (50µA range) or the microammeter between junction of the two 47k resistors (which are connected in series from pin 2 V5 to chassis) and point B (junction R25/C54/C56).

T7. Adjust secondary for zero response on microammeter—start with core ¼in. inside former. It is essential that maximum DC output coincides with minimum response on microammeter. Zero response can only occur when T7 secondary is in balance—when it is off tune, either positive or negative output will result. Avo model 8 has a reversing button for current readings in either direction but with the microammeter, the connections will have to be reversed as necessary.

Transfer signal input to VHF aerial sockets.

T1. Adjust secondary for maximum DC output.

RF stages.

Set the generator and the pointer to 88mc/s. Slacken the locking nut on the pivoted adjuster and rotate the arm for maximum DC output. This operation adjusts the cores of L4 (RF) and L5/6 (oscillator). Tighten locking screw.

Set the generator and the pointer to 95mc/s and adjust L2/L3 (aerial) for maximum DC output.

Check calibration.

Note. Trimmers TC1, TC2 are preset during manufacture and normally should not need readjustment.