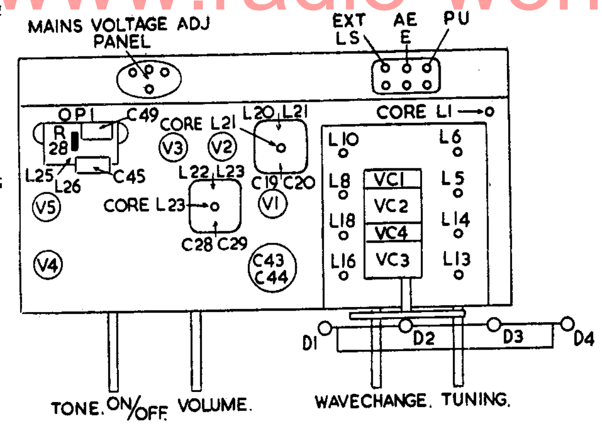
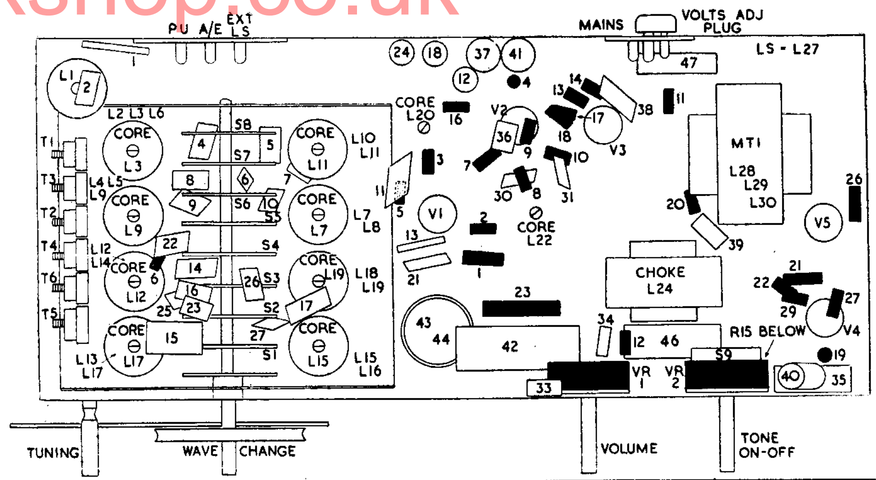
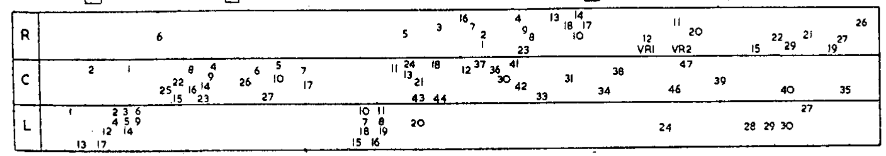
RAYMOND F62

Five-valve eight-waveband superhet receiver with electrical bandspread on six SW ranges. Sockets for connection of high-resistance magnetic or crystal pickup and low-impedance extension speaker. Walnut veneered table cabinet. For 200–250V 40–60 c/s. Manufactured by Raymond Electric, Ltd., Brent Crescent, London, NW10







INDUCTORS

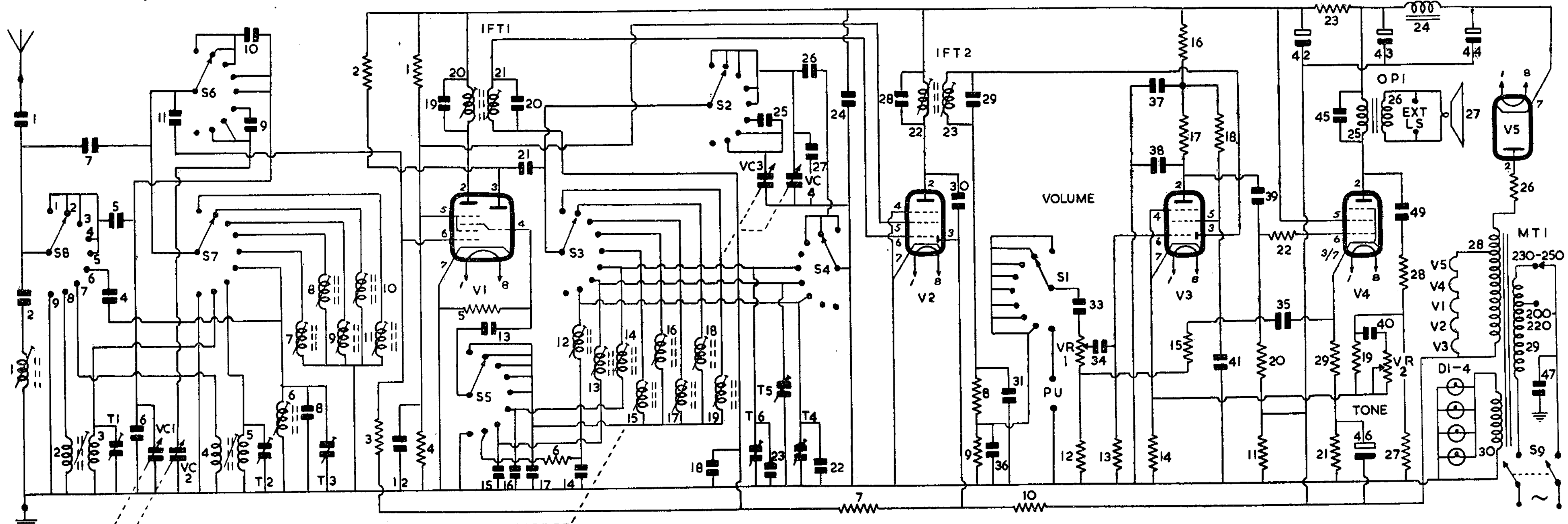
L	Ohms
1	17
2	65
3	15
4	19.5
5	2.5
6—11	Very Low
12	10
13	5.5
14—19	Very Low
20	11
21	11
22, 23	Very Low
24	350
25	350
26	.5
27	2.5
28	80
29	40
30	Very Low

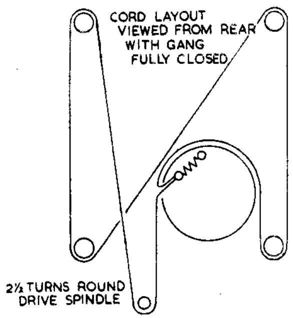
RESISTORS

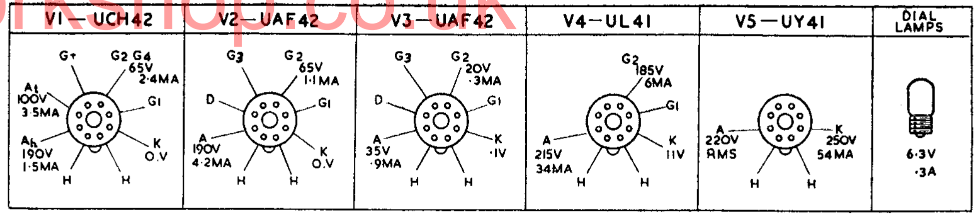
R	Ohms	Watts
1	18K	½
2	22K	¼
3	1M	¼
4	27K	¼
5	47K	¼
6	10K	¼
7	1M	¼
8	47K	¼
9	330K	¼
10	1M	¼
11	15	¼
12	330	¼
13	20M	¼
14	100	¼
15	6.8K	¼
16	47K	¼
17	100K	¼
18	470K	¼
19	3.3K	¼
20	330K	¼
21	270	½
22	22K	¼
23	1.8K	WW4W
24	No Component	
25	No Component	
26	27	½
27	680	¼
28	47K	¼
29	27	¼
VR1	500K Log Potr.	
VR2	10K Linr. Potr. with DPST Switch	

CAPACITORS

C	Capacity	Type
1	1000pF	Silver Mica
2	50pF	Silver Mica
3	No Component	
4	10pF	Silver Mica
5	10pF	Silver Mica
6	50pF	Silver Mica
7	2.2pF	Ceramic
8	30pF	Silver Mica
9	100pF	Silver Mica
10	100pF	Silver Mica
11	1000pF	Silver Mica
12	.1	Tubular 350V
13	200pF	Silver Mica
14	150pF	Silver Mica
15	490pF	Silver Mica
16	200pF	Silver Mica
17	175pF	Silver Mica
18	.1	Tubular 350V
19	100pF	Silver Mica
20	100pF	Silver Mica
21	50pF	Silver Mica
22	30pF	Silver Mica
23	30pF	Silver Mica
24	.1	Tubular 350V
25	175pF	Silver Mica
26	50pF	Silver Mica
27	30pF	Silver Mica
28	100pF	Silver Mica
29	100pF	Silver Mica
30	50pF	Silver Mica
31	100pF	Silver Mica
32	No Component	
33	.01	Tubular 350V
34	.01	Tubular 350V
35	.1	Tubular 350V
36	100pF	Silver Mica
37	.25	Tubular 350V
38	200pF	Silver Mica
39	.005	Tubular 350V
40	.1	Tubular 350V
41	.25	Tubular 350V
42	16	Electrolytic 350V
43	32	Electrolytic 350V
44	32	Electrolytic 350V
45	.01	Tubular 350V
46	25	Electrolytic 25V
47	.02	Tubular 350V
48	No Component	
49	.1	Tubular 350V







AERIAL signal is fed through isolating capacitor C1 to IF rejector L1, C2 and switched by S8 to LW or MW aerial coupling coils L2, L4, or through C4 to 40-50m grid coil L6 or through C5, S6, S7 to remaining SW grid coils L7 to L11.

Grid coils L3(LW), L5(MW), L6(SW 40-50), trimmed by T1 to T3 respectively, together with the other SW coils L7 to L11, are switched by S7 through C11 to g1 of triode-hexode frequency-changer V1. S6 brings in the appropriate grid tuning capacitor VC2 or VC1. On LW and MW, and the 40-50m. band, VC2 is used; for the other SW bands VC1, shunted by C6, is employed. Bandspreading on the 40-50m range is obtained by connecting C9 in series with VC2, and on the other five SW ranges by use of the special VC1 which, on the 13, 16 and 19m bands, also has C10 connected in series with it.

C7 between S8, S7 provides additional capacitive coupling on all ranges.

Cathode V1 is earthed to chassis. AVC and a small standing bias, decoupled by R7 C18 is fed through R3 to grid. Screen (g2 g4) voltage is obtained from potential divider R1 R4 decoupled by C12. Primary L20 C19 of IFT1 is in the hexode anode circuit.

Oscillator is connected in a shunt fed Colpitts circuit. Coils L12 (LW) L13 (MW) and L14 to L19 (SW bands) are switched by S3 through C21 to oscillator anode at V1, R2 being the load. T4 C22 (LW), T5 (MW) and T6 C23 (SW 40-50m) are trimmers.

S2 in shunt with S3 switches in appropriate oscillator tuning capacitor VC3 or VC4. On LW MW and 40-50m bands, VC3 operates while for the other SW band VC4 shunted by C27 is used.

As in the case of aerial circuit, bandspread is obtained on 40-50m band by use of C25 in series with tuning capacitor VC3. On the remaining five SW bands no series capacitor is used, but instead on 19, 16 and 13m bands an additional capacitor C26 is switched across VC4 by S4. S4 is also employed to short circuit to chassis L12 L13 L14 when working on MW, 40-50 and 31m ranges respectively.

Grid reaction voltages are obtained from padders C14 (LW) C15 (MW), C16 (40-50m) and C17 for remainder of SW bands; they are applied by S5 through C13 to oscillator grid.

R6 is LW limiter resistor. Automatic bias for grid is developed on C13 with R5 as leak.

IF amplifier operates at 470 kc/s. Secondary L21 C20 feeds signal, AVC and small standing bias decoupled by R7 C18 to IF amplifier V2. Suppressor grid and cathode are earthed to chassis and screen voltage is obtained in common with that of V1. Primary L22, C28 of IFT2 is in the anode circuit.

Signal rectifier. Secondary L23 C29 of IFT2 feeds signal to single diode of V3 of which R9 is load with R8 C31 C36 forming an IF filter.

AVC. Signal at anode V2 is fed by C30 to diode in same valve. R10 is load and AVC voltage, decoupled by R7 C18 is applied to grid of V1 V2.

Delay voltage, obtained by connecting bottom of R10 to R11 in the negative HT return to chassis, also serves as a standing bias for V1 V2.

Pickup. Sockets are fitted for connection of any high-resistance pickup. The signal is fed through S1 and C33 to volume control VR1. When wave-change switch is placed in Gram position then aerial is connected to chassis by S8, aerial tuning capacitors are short circuited by S7, oscillator grid is earthed by S5 and its anode disconnected from the tuned circuits, thus preventing any possibility of radio breakthrough.

AF amplifier. Audio signal or pickup output is switched by S1 through C33 to volume control VR1 and fed by C34 to grid of pentode AF amplifier V3.

Negative feedback from R29 in cathode V4 is applied through C35 R15 to R12 in bottom end of V3 grid circuit to compensate for loss of lower frequencies when VR1 is in low volume setting. Feedback from potential divider C49 R28 R27 between anode and chassis of output amplifier V4 is applied through R19, with shunt tone control C40 VR2, to R14 in cathode of V3.

Screen (g2) voltage of V3 is obtained from R18 decoupled by C41. Anode load is R17 and C38 anode RF bypass. HT feed to anode and screen is decoupled by R16 C37.

Output stage. Signal is fed by C39 through stopper R22 to grid of pentode output amplifier V4. Cathode bias is by R21 decoupled by C46 and in addition grid bias is provided by connecting bottom of grid load R20 to R11 in the negative HT return to chassis.

Screen (g2) voltage is obtained direct from HT line to V1-3 decoupling being provided by C42. Amplified signal at anode is transformer coupled by OP1 to an 8in. PM speaker. Secondary L26 of OP1 is fitted with sockets for a low-impedance extension speaker. Fixed tone correction is given by C45 across L25.

HT is provided by indirectly-heated half-wave rectifier V5, fed through limiter R26, from secondary L28 of mains input transformer MT1. Choke-capacity smoothing is given by L24 C43 C44 and further resistance-capacity smoothing and voltage dropping by R23 C42. Reservoir smoothing capacitor C44 should be rated to handle 125mA ripple current.

Heaters of V1 to V5 are series connected and fed from a tapping on L28 of MT1.

Dial lights are connected in parallel and fed from L30.

Primary L29 of MT1 is tapped for inputs of 200-220, 230-250 volts 40-60 c/s.

S9 which is ganged to tone control spindle is ON/OFF switch. Mains input is fitted with filter capacitor C47.

TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune receiver to	Trim in order stated for maximum output
(1) 470 kc/s to VC2 via .01mF	MW band with fully-meshed gang	Cores L23, L22, L21, L20
(2) 470 kc/s to aerial socket via dummy AE	Do.	Core L1 for minimum
(3) 160 kc/s, as above	LW band 160 kc/s	Cores L12, L3
(4) 300 kc/s, as above	300 kc/s	T4, T1. Repeat operations (3) and (4)
(5) 600 kc/s, as above	MW band 600 kc/s	Cores L13, L5
(6) 1.5 mc/s, as above	1.5 mc/s	T5, T2. Repeat (5) and (6)
(7) 6 mc/s, as above	40-50 metre band, 6 mc/s	Cores L14, L6
(8) 7.5 mc/s, as above	7.5 mc/s	T6, T3. Repeat (7) and (8)

NOTE.—On the 13, 16, 19, 25 and 31 M bands the generator in use for alignment must be used so as to ensure that the signal tuned in is the fundamental. This is carried out by tuning the signal generator to the image frequencies mentioned below. Providing signal is heard, return generator to fundamental frequency and proceed. If the image signal is not present, retune generator to fundamental frequency and retune the core of the band, selecting the next signal from the generator.

(9) 9.5 mc/s, as above	31M band 9.5 mc/s	Core L15 10.44 mc/s Core L7
(10) 11.5 mc/s, as above	25M band 11.5 mc/s	Core L16 12.44 mc/s Core L8
(11) 15.5 mc/s, as above	19M band 15.5 mc/s	Core L17 16.44 mc/s Core L9
(12) 18 mc/s, as above	16M band	Core L18 18.94 mc/s Core L10
(13) 21.5 mc/s, as above	13M band	Core L19 22.44 mc/s Core L11

HEADPHONES

A CUSTOMER asked for a call to be made to her home to look at her radio. A pre-war Philips was found to have been adapted for headphones, as the lady was deaf. The modification had consisted of removing the output transformer and fitting the phones in its place—they had burnt out!

A phone transformer was made up from a multi-ratio output transformer, new phones tested and the set returned.

A few days later the customer complained of crackling. Investigation proved she was *very* deaf and could only hear when the volume was at maximum! The new phones had thin washers between the earpiece cases and the diaphragms, but these were not preventing the diaphragms "bottoming" on the pole pieces. Thicker washers effected a complete cure.

ALBA IF FAULT

A 5-VALVE Alba battery superhet owned by the writer was brought into emergency use from the attic when the mains receiver packed up. When set up with new batteries volume was far below normal. Though all valves and components were OK, an injected signal to IF grid scarcely reached the speaker.

The IF transformer was stripped. In most Alba sets the second IF can contains a filter unit and the leads out are bound with a cotton tape. This tape was over the resistor-condenser network of the filter, and its removal gave perfect operation.

The tape must have been damp from storage and, touching the filter components, was causing a leak.

EVER READY PORTABLE MODEL "C"

SEVERAL of these sets have suffered from a whistle or, in bad cases, a rapid plopping. The cure has been found to be renewal of the HT by-pass electrolytic.

Complete re-alignment is advised after this repair. During re-alignment the chassis should be in the cabinet with the battery. Having the battery out makes quite a difference even to the alignment of the IF coils.—P.G., Port Erin.