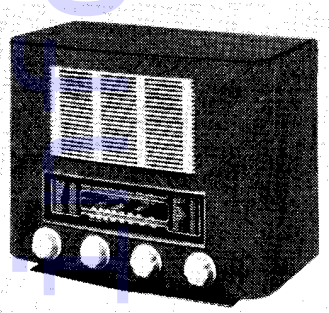
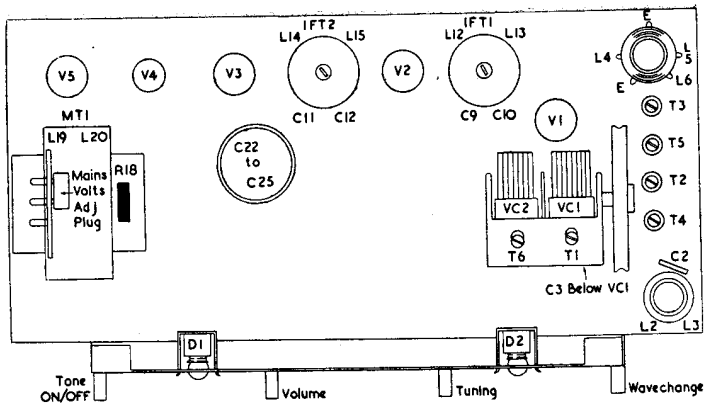
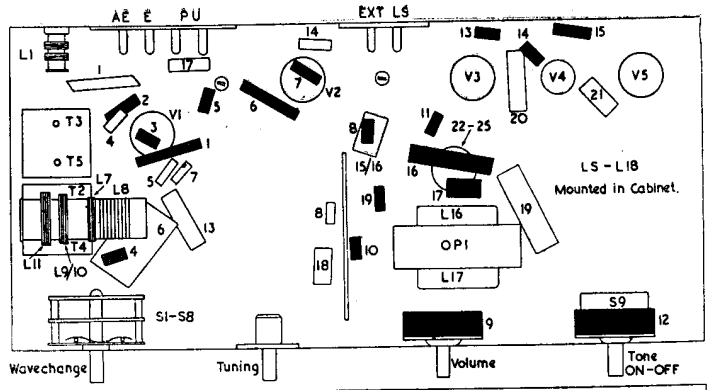
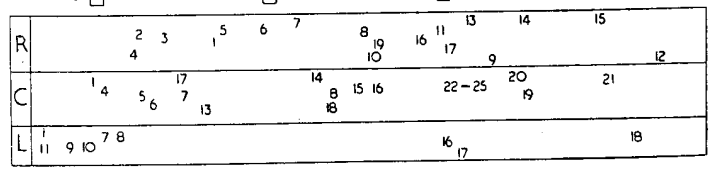
STRAD 521



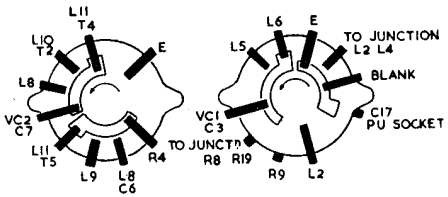




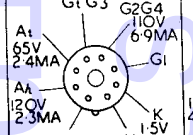
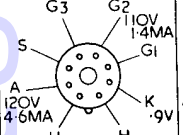
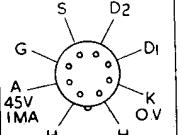
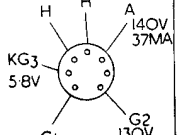
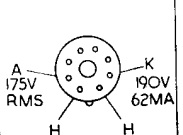
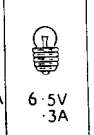


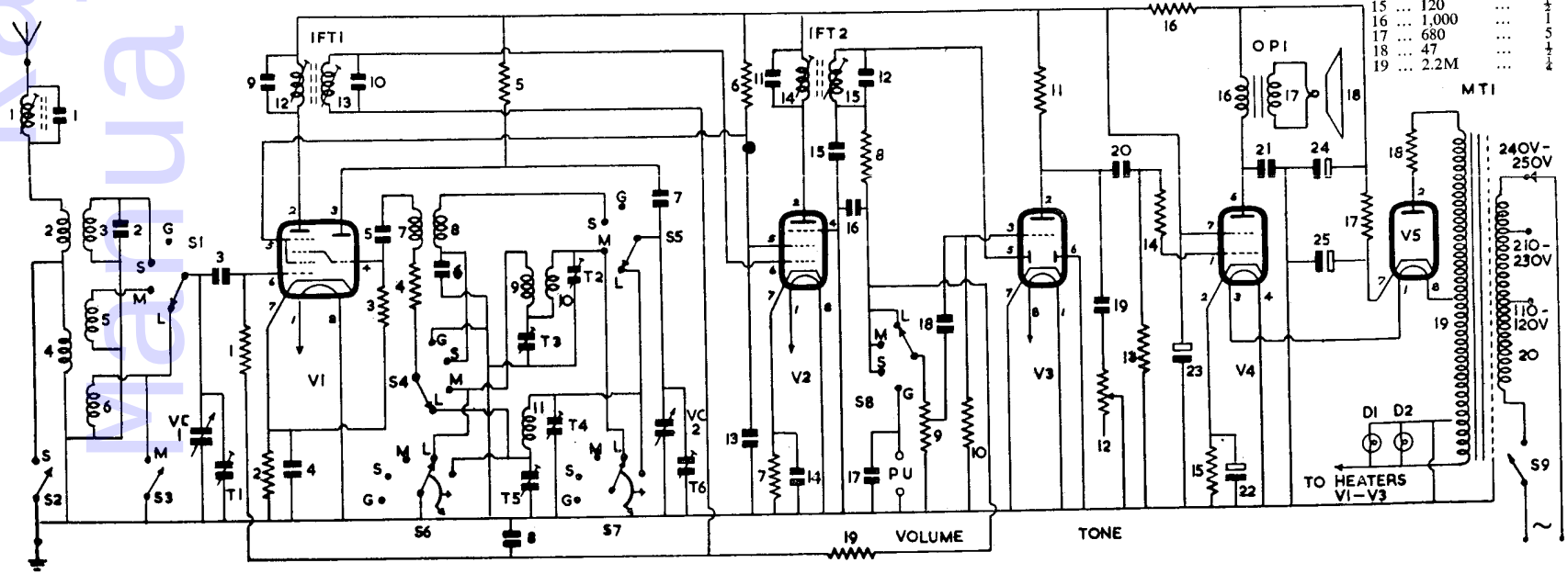
Five-valve three-waveband superhet receiver in walnut veneered table cabinet. Sockets for aerial, earth, low-impedance extension speaker and high-resistance magnetic or crystal pickup. Suitable for 110-120, 210-250V, 50-100c/s. Manufactured by R. M. Electric Ltd., Team Valley, Gateshead, 11.

Wavechange Switch with rear section on left



VIEWED FROM REAR OF INVERTED CHASSIS.
(Switch Shewn In LW Position.)

V1 — 6C9	V2 — 6F15	V3 — 6LD20	V4 — N108	V5 — U404	Dial Lamps
					



RESISTORS

R	Ohms	Watts
1	820K	1
2	180	½
3	47K	¼
4	150	¼
5	22K	¼
6	68K	¼
7	330	½
8	47K	¼
9	500K	Potentiometer
10	10M	¼
11	100K	¼
12	25K	Potentiometer
13	220K	¼
14	47K	¼
15	120	¼
16	1,000	1
17	680	½
18	47	¼
19	2.2M	¼

CAPACITORS

C	Capacity
1	560pF Silver Mica
2	10pF Silver Mica
3	100pF Tubular Ceramic
4	.01 Tubular 150V
5	100pF Tubular Ceramic
6	3790pF Silver Mica
7	100pF Tubular Ceramic.
8	.01 Tubular 150V
9	120pF Silver Mica
10	120pF Silver Mica
11	120pF Silver Mica
12	120pF Silver Mica
13	.01 Tubular 500V
14	.01 Tubular 150V
15	100pF Silver Mica
16	100pF Silver Mica
17	.002 Tubular 500V
18	.005 Tubular 500V
19	.05 Tubular 500V
20	.01 Tubular 500V
21	.005 Tubular 500V
22	25 Electrolytic 25V
23	20 Electrolytic 275V
24	30 Electrolytic 275V
25	40 Electrolytic 275V

INDUCTORS

L	Ohms
1	3.5
2	.5
3	Very low
4	15.5
5	4.5
6	16
7	.5
8	Very low
9	.5
10	2.75
11	6.5
12	10.5
13	10.5
14	9.5
15	9.5
16	350
17	.75
18	2.75
19	36
20	37 tapped 33 and 16

STRAD 521

AERIAL signal is fed through IF filter L1 C1 to series-connected aerial coupling coils L2(SW) L4(MW, LW). When wavechange switch is in SW position L4 is short circuited by S2.

The inductively-coupled grid coils L3(SW) L5(MW) L6(LW) are switched by S1 to aerial tuning capacitor VC1 and thence coupled by C3 to g1 of triode-hexode frequency-changer V1. T1 with C2 is employed as SW trimmer. No MW or LW aerial trimmers are provided.

AVC decoupled by R19 C8 is applied through R1 to grid V1. Cathode bias is provided by R2 decoupled by C4. Screen (g2 g4) voltage is obtained, in common with that of IF amplifier V2, from R6 decoupling being by C13.

Primary L12 C9 of IFT1 are in the hexode anode circuit.

Oscillator is triode section of V1 connected in a tuned-anode shunt-fed circuit. Anode coils L8(SW) L10(MW) L11(LW), trimmed by T6 T2 T4 and padded by C6 T3 T5 respectively, are switched by S5 to Oscillator tuning capacitor VC2 and coupled by C7 to oscillator anode, of which R5 is the load.

The LW and MW reaction voltages, developed on T5 and L9 respectively, are switched by S4 through limiter R4 and SW reaction coil L7 and coupled by C5 to oscillator grid of V1. Automatic bias for grid is developed on C5 with R3 as leak.

In SW position of wavechange switch the MW and LW anode tuned circuits are shorted to chassis by S7 and bottom end of SW limiter R4 is connected by S4 to bottom of SW anode coil L8. On MW band the LW anode tuned circuit and LW padder T5 are shorted to chassis by S7 S6 respectively. On LW band the MW anode and grid coils are shorted to chassis by S7 S6.

IF amplifier operates at 465kC/s. Secondary L13 C10 of IFT1 feeds signal and AVC voltages, decoupled by R19 C8, to grid of IF amplifier V2. Cathode bias is provided by R7 decoupled by C14. Screen (g2 g4) voltage is obtained from R6 decoupled by C13. Suppressor grid is earthed. Primary L14, C11 of IFT2 is in the anode circuit.

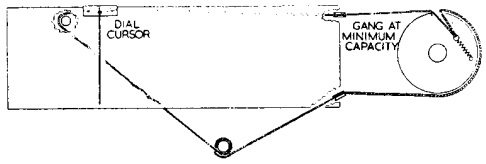
Signal rectifier. Secondary L15 C12 of IFT1 feeds signal to one diode anode of V3, the other one being earthed. R8 C15 C16 constitute an IF filter and R9 the volume control is the diode load.

Pickup. Sockets are provided on rear of chassis for connection of any high-resistance magnetic or crystal pickup. Signal from pickup is fed to S8 which, in its gram position, switches it to volume control R9. When wave-change switch, to which S8 is ganged, is placed in Gram position, the aerial tuned circuits are disconnected from signal grid V1 by S1, oscillator tuned circuits are disconnected from oscillator anode by S5 and oscillator grid is earthed to chassis by S4.

AVC. The DC component of the rectified signal developed across R9 is decoupled by R19 C8 and fed to grids V1 V2 for AVC.

AF amplifier. Rectified signal across volume control R9 is fed by C18 to triode grid V3. Automatic bias for grid is developed on C18 with R10 as leak. R11 is anode load and C19 with R12 provides variable top cut.

Output stage. Signal at anode V3 is fed by C20 through stopper R14 to grid of beam tetrode output amplifier V4. R13 is its grid resistor and



cathode bias is provided by R15 decoupled by C22. Screen voltage is obtained direct from HT line to V1-3, decoupling being by C23.

Signal at anode V4 is transformer coupled by OP1 to a 6½in. PM speaker L18. Sockets are fitted on secondary L17 of OP1 for connection of a low-impedance extension speaker.

HT is provided by an indirectly-heated halfwave rectifier V5 fed through current limiter R18 from HT secondary L19 of mains input transformer MT1. Resistance-capacity smoothing is by R17 C24 C25. HT line to V1-3 and screen V4 is voltage dropped and further resistance capacity smoother by R16 C23.

Reservoir smoothing capacitor C25 should be rated to handle 125mA ripple current.

Heaters of V1 V2 V3 and dial lamps are parallel connected and fed from 6.3V tapping on secondary L19 of MT1. Heaters V4 and V5 are series connected between chassis and 80V tapping on L19. Primary L20 of MT1 is tapped for inputs of 110-120, 210-230, 240-250V 50-100c/s.

S9 which is ganged to tone control spindle is on/off switch.

TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune Receiver to	Trim in Order stated for Max. Output
(1) 465 kc/s to g1 of V1 via .01 mF.	MW Band with Gang at Min. cap.	Cores L12, L13, L14, L15
(2) With gang at maximum capacity check to see that dial pointer coincides with calibration mark on dial plate.		
(3) 17.64 mc/s to aerial socket via dummy aerial.	17 metres	T1, T6
(4) 1.5 mc/s as above	200 metres	T2
(5) 575 kc/s as above	522 metres	T3 and repeat (4) and (5)
(6) 300 kc/s as above	1000 metres	T4
(7) 150 kc/s as above	2000 metres	T5 and repeat (6) and (7)

PHILIPS 209U

HAD a habit of shutting off at irregular intervals. Any mains disturbance, or even the connection of a meter would bring the set back to full volume. The fault occurred on each waveband and strong signals could be faintly heard when the fault occurred. After tedious checks of oscillator, RF circuits and IF's, the fault was traced to the coupling condenser to the output valve grid. Apparently this partially broke down occasionally although "Megger" tests were good.—R.H.G.

BYLOCK 'VICTOR' SAFETY IRON—*Continued from page 32*

adjusting screw. Smooth operation of the latter is provided by action of spring and friction washer which exert pressure between bush face on bridge and collar of screw.

The 2.5V .3A MES indicator lamp is connected across a low resistance shunt wired between one end of element and upper switch blade.

The 700W element is tape wound on a mica former and clamped between soleplate and an asbestos gasket by a metal pressure plate held by the two lower lock nuts on soleplate studs (Fig. 5).

Operation of Thermostat

With iron cold and with heat control knob set to any position, the circuit switch contacts are closed. Switch blades are both sprung in an upward direction. As upper blade is held down by connecting rod of bimetal strip, the lower blade bears up against the upper blade by virtue of its own springiness, and the switch contacts are held closed.

When iron is plugged in and mains supply switched on power is connected through to element, the indicator lamp lights up, and the iron commences to heat up. As soleplate temperature rises the free end of bimetal strip begins to flex upward and the closed pair of switch blades, coupled to bimetal by connecting rod to upper blade, also move upward.

This movement continues until lower switch blade bear against glass bead on end of heat control knob spindle. Further rise in temperature of soleplate and upward flexing of bimetal results only in movement of upper switch blade. The switch contacts separate, power to element is cut off and indicator light is extinguished.

As soleplate cools, the bimetal moves downward pulling with it the upper switch blade until switch contacts close again.

Position of glass bead on end of heat control knob spindle decides temperature at which switch contacts open and close. The bimetal strip is sufficiently sensitive to maintain soleplate temperature within a few degrees of nominal figure.

MAINTENANCE

Renewal of indicator lamp. Unscrew plastic lamp-cover on top of body just under handle at rear and unscrew and remove faulty bulb. Insert new 2.5V .3A bulb and replace cover.

Renewal of element. Remove moulded heel-plate, held by three self-tapping screws, and also asbestos pad below. Withdraw cast iron counter balance weight (Fig. 2) and disconnect mains and earth lead from terminal block.

Remove heat control knob held by grub screw. Body with handle attached can now be removed by undoing and removing the two screw-nuts positioned at front and rear of knob indicator plate (Fig. 3). Soleplate, thermostat assembly, lamp, bridge, etc., are exposed as a single unit.

Disconnect element connecting straps from fixing bolts on terminal block. Remove 10BA adjusting nut from connecting rod of bimetal strip—then undo and remove 2BA bridge fixing nuts. Remove earthing strip and lift off bridge complete with control knob spindle, terminal block and indicator lamp (Fig. 5).

Remove spacing collars from studs and undo and remove clamp nuts and remove bimetal clamp pieces from rear stud and also bimetal strip from out of well in soleplate. Lift off clamp plate and asbestos gasket to expose element below.

Replace element with one of correct type (obtainable only from Bylock Electric Ltd.) and reassemble in reverse order. When placing clamp-plate lock nuts on studs check to see that full nut is on front and half nut on rear stud. This is essential in order to ensure that bridge assembly, when placed on spacing collar, lies parallel to surface of soleplate. The 10BA nut on connecting rod should be screwed down to leave between ⅛ and ¼in. of thread above. After fixing body and heelplate in position leave control knob off and adjust thermostat setting as described below.

Adjustment of thermostat. Place iron on soleplate temperature tester, connect to mains and switch on and allow iron to heat up for approximately one minute. Adjust heat control spindle by screwing in or out until indicator light is extinguished. This setting should give Rayon heat of between 180-200 deg. F.

Temporarily replace heat control knob in Rayon position and then rotate it to Linen setting. Allow iron to heat up for approximately five minutes and then check temperature which should be between 440-450 deg. F.

Finally turn control knob to Rayon position and allow iron to cool down. When indicator re-lights temperature should be 180-200 deg. F. as before.

LOW GAIN, MARCONI T11DA

A MARCONI T11DA receiver was brought in for an O/C line cord. This was replaced and, as sensitivity appeared to be low, the set was realigned. The overall gain was still rather low and a check indicated the first IF transformer as suspect.

A close examination of this component showed that the spring holding one dust iron core adjusting screw was not making contact with the brass screw. This was adjusted and, when in contact and earthing the core screw, it brought the gain back to normal.—K. DRAY, Ramsgate.

MULLARD 200 U

THIS was a new receiver with strong background mains hum. Suspecting an O/C smoothing capacitor, new ones were bridged across the HT line, but without avail.

By "earthing" grids and anodes via a 0.1 mF capacitor, the hum was found to arise in the AF coupling capacitor. It was close to the rectifier wiring, and the hum was reduced considerably by moving the near-by wiring.

The hum could not be eliminated, however, so a miniature capacitor was fitted in place of the tubular paper type. To completely eliminate the noise, this replacement and its leads had to be totally enclosed.—J. C. H., IoM.

PHILIPS 650A

SIGNALS obtainable on SW only. It was discovered that the FC valve had positive bias on MW and LW. Tracing the circuit showed that AVC was applied to grid ccts which, on SW were returned via a resistance to earth.

Eventually the source of positive bias was found to be a leakage on the edge of a wafer of a Yaxley type switch. HT was leaking through a high resistance path to the adjacent contact which switched the AVC line into cct on MW and LW. Scraping the edge of the switch wafer cleared the fault.—R.H.G.