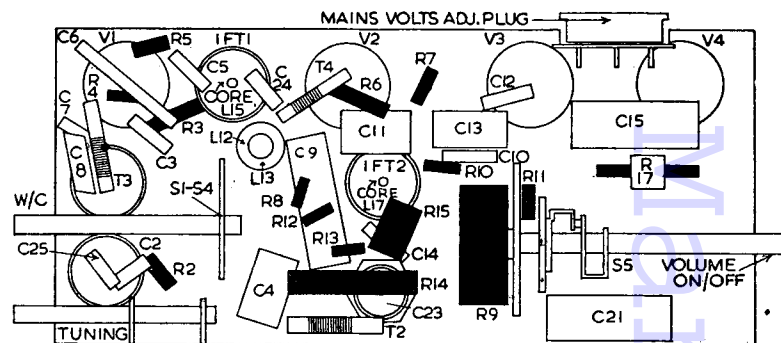
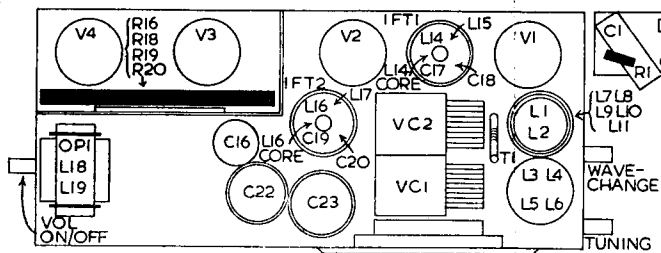
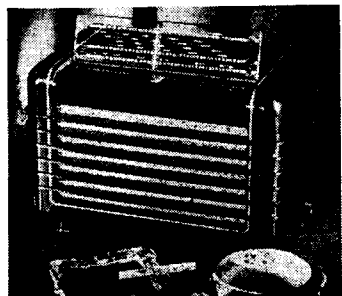


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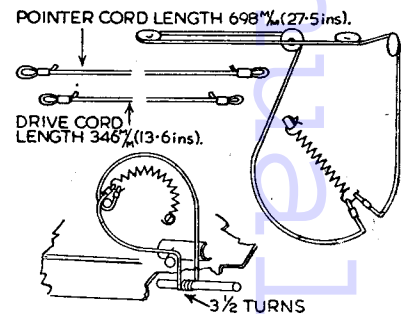
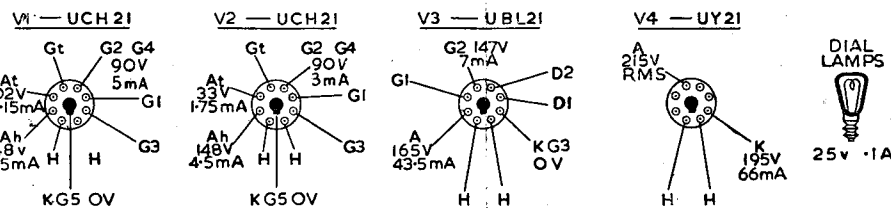
PHILIPS 209U



Three-valve plus rectifier, three-waveband semi-midget superhet. for operation on 95-115 and 190-260V AC or DC mains. In moulded plastic cabinet. Manufactured by Philips Electrical, Ltd., Century House, Shaftesbury Avenue, London, WC2.

AERIAL. A capacity aerial, a sheet of metal foil inside the cabinet, is permanently attached. A socket provides for connection of an external aerial. The signal is fed through C1 to series-connected aerial coupling coils L1 (SW), L3 (MW), L5 (LW). S1 short circuits the unwanted coils when receiver is switched to SW and MW bands. R1 is a static drain resistor and R2 a damping resistor across MW coil.

S2 switches the grid coils L2 (SW), L4 (MW), L6 (LW) to tuning capacitor VC1 and through C3 to grid of V1. T1, T2 and C2 are trimmers.

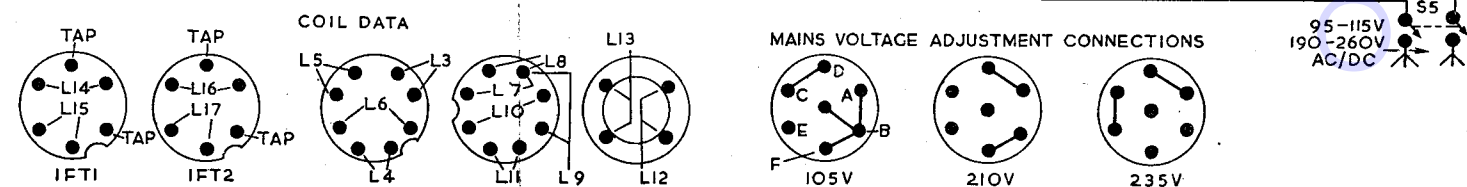
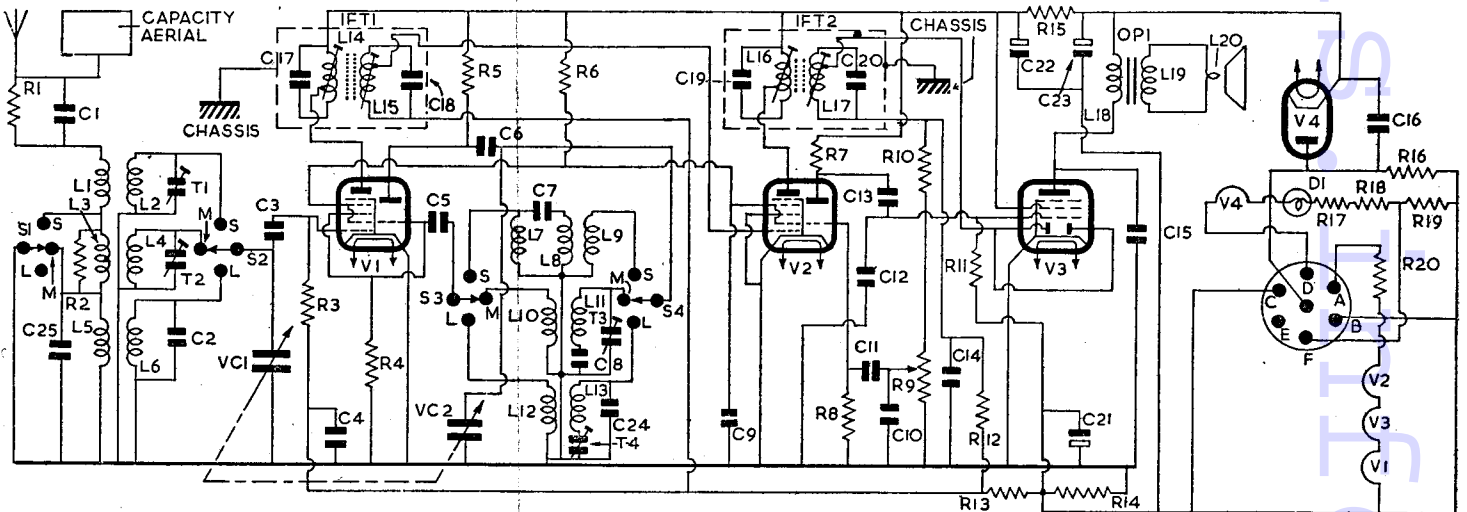


Continued overleaf

RESISTORS		Capacity		Type
R	Ohms	C	Capacity	Type
1	1.2 M	13	.0068 Tubular	400V
2	18 K	14	100 pF Ceramic	
3	1.2 M	15	.0047 Tubular	
4	47 K	16	.022 Tubular	
5	10 K	17	103 pF	Capacitors
6	10 K	18	103 pF	(mounted in
7	68 K	19	103 pF	side IFT
8	6.8 M	20	103 pF	Cans.
9	500 K	21	75 Electrolytic	12V
10	47 K	22	32 Electrolytic	275V
11	680 K	23	47 Electrolytic	330V
12	1 M	24	47 pF Ceramic	
13	6.8 M	25	32 pF Ceramic	
14	120			
15	1.2 K			
16	150			
17	160			
18	170			
19	250			
20	100			

INDUCTORS		Capacity		Type
L	Ohms	C	Capacity	Type
1	3	10	6	
2	Very low	11	5	
3	40	12	7	
4	6.5	13	17	
5	175	14	11.5	
6	43	15	14	
7	2.5	16	11	
8	Very low	17	13.5	
9	Very low	18	350	
10	6	19	.5	
11	6	20	.3	

CAPACITORS		Capacity		Type
C	Capacity	Type	Capacity	Type
1	1000 pF	Tubular		
2	22 pF	Ceramic		
3	120 pF	Ceramic		
4	.047	Tubular	100V	
5	82 pF	Ceramic		
6	470 pF	Ceramic		
7	56 pF	Ceramic		
8	432 pF	Silver Mica		
9	.047	Tubular	400V	
10	68 pF	Ceramic		
11	.022	Tubular	100V	
12	150 pF	Ceramic		



PHILIPS 209U—Continued

AVC is applied to grid through R3, decoupled by C4. Cathode of V1 is connected down to chassis. Screen voltage is obtained from R6, decoupled by C9. Primary L14, C17 of IFT1 are in the heptode anode circuit of V1.

Oscillator is connected in a parallel fed tuned anode circuit. L9 (SW), L11 (MW), L13 (LW) are the tuned coils connected by S4 to tuning VC2 and through C6 to oscillator anode. R5 is oscillator anode load. T3 (MW), C24 (LW) are trimmers and C8 (MW), T4 (LW) are padders. No trimmer or padder is provided on the SW circuit. Grid feedback voltages are developed inductively on L7, L8, coupled by C7 on SW range, and on L10 and L12 on MW and LW ranges. S3 switches these voltages through C5 to oscillator grid. R4 is the oscillator grid leak and bias for grid is developed on C5.

IF amplifier. L15, C18, the secondary of IFT1, feeds 470 kc/s signal to grid of heptode section of V2. AVC and a small standing bias are fed through L15 to grid, from R12, and is decoupled by C4.

Screen voltage is obtained from R6 decoupled by C9 (R6 also feeds screen of V1). G3 is not used and is strapped to cathode, which is at chassis potential. L16, C19, which form the primary of IFT2, are in the heptode anode circuit.

Signal rectifier. L17, C20, the secondary of IFT2, feeds signal to strapped diodes of V3. R9, the volume control, is the diode load and R10, C10, C14 form an IF filter.

AVC voltages are obtained from the DC component of the rectified signal and are fed by R12, together with a small standing bias from R13, to grids of heptode sections of V1 and V2.

AF amplifier. C11 feeds signal from volume control R9 to grid of triode section of V2. R8 is its grid leak and bias is developed on C11.

Output stage. C13 feeds signal from anode of triode section of V2 to grid of pentode output section of V3. R11 is its grid resistor and negative bias for the grid is obtained by connecting "earthy" end of R11 to R14, which is inserted in the negative HT return lead to chassis. C21 is the bias voltage decoupling capacitor. Cathode is at chassis potential. Screen voltage is obtained from HT line to V1 and V2, and is decoupled by C22. L18, the primary of OPI, the output matching transformer, is in the anode circuit. HT for anode is obtained direct from reservoir capacitor C23. C15 provides a degree of fixed tone correction. L19, the secondary of OPI, feeds signal to a 5 in. PM loudspeaker L20.

High tension is provided on AC mains supplies by an indirectly-heated half-wave rectifier V4. Its anode voltage is obtained from the input mains through R16, except in the case of 105 volt range where R16 is shorted out by the special plug used. R15, C22, C23 provide resistance-capacitance smoothing of the HT supply.

Heaters V1 to V4 and dial light are series connected in two separate circuits, V4, D1, R17, R18, R19 and V1, V2, V3, R20. The circuits are wired to a socket which is provided with two plugs. These plugs are used to effect voltage range changing. When the separate 105V plug is inserted in the socket, then the two circuits are paralleled and connected across the input mains. At the same time R16 is shorted.

On 210V position of the second plug the circuits

are series connected across the input mains and R19 is shorted out. In 235V position the circuits remain series connected but short circuit across R19 is removed.

S5, which is ganged to the volume control spindle, is the receiver ON/OFF switch.

Chassis removal. Remove scale and place pointer inside the slot on top of the cabinet. Remove the three knobs (three holes in the bottom of the cabinet give access to the screws), the back plate, the pilot lamp bracket, and the casing screws. Disconnect the leads to the speech coil of the speaker from the terminal plate. Chassis can now be withdrawn.

Pointer cable replacement. Remove the receiver from the cabinet. The overall length of the pointer cable, including the two loops, is 698 mm., which requires 712 mm. of cord. Looking at the back, first lead the cord over the left hand and then over the right hand pulleys.

Cord drive replacement. The overall length of the driving cord, including the two loops, is 346 mm. When a new cord is being made up approximately 366 mm. will be required.

Pilot lamp. Loosen screw securing the pilot lamp bracket (the screw retained by a washer at the rear). Bring bracket forward and unscrew lamp.

TRIMMING INSTRUCTIONS

Apply Signal as Below	Tune Receiver to	Trim in Order stated for Max. Output
(1) 470 kc/s to g1. of V1, via .032 capacitor	192 metres	Damp L16 with an 80 pf capacitor. Adjust core of L17.
(2) Ditto.	Ditto.	Damp L15 and adjust L16 and L14
(3) Ditto.	Ditto.	Damp L14 and adjust L15
(4) With gang condenser pointer to coincide with the 200 metre mark on scale.	at minimum	capacity adjust mark just below
(5) 17.5 mc/s to Ae socket, via dummy aerial	17.143 metres	T1
(6) 1.44 mc/s as above	208.3 metres	T3, T2.
(7) 160 kc/s as above	1875 metres	T4

NOTE.

T1 to T4 are wire trimmers. Capacity is reduced by removing turns of wire. After correct capacity is reached cut off surplus wire and seal windings with wax.

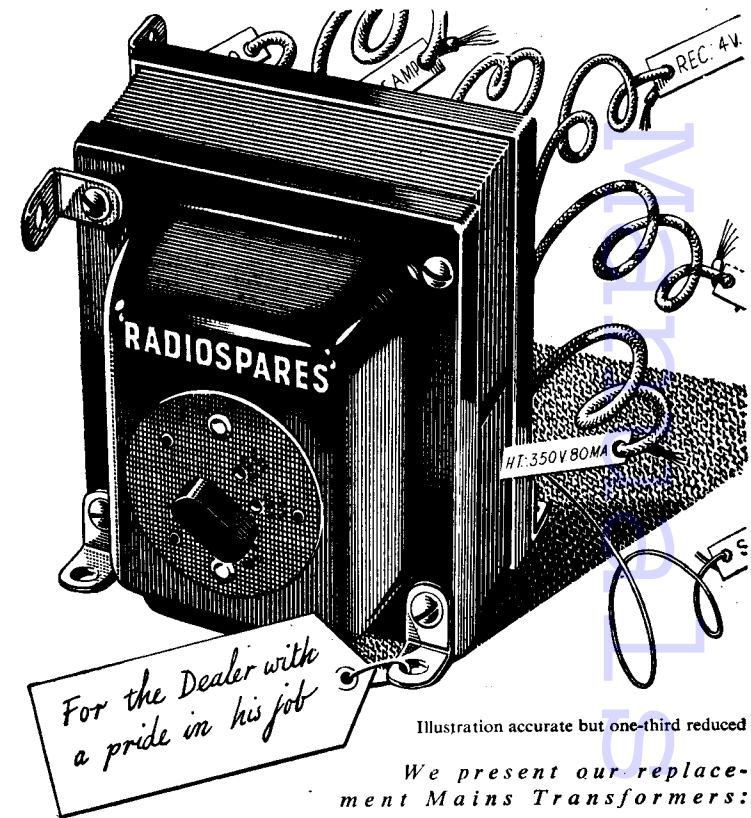
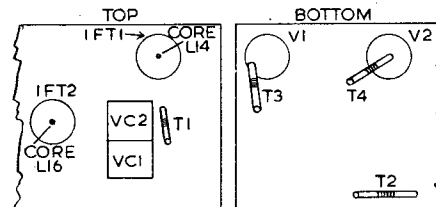


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