PHILIPS 462A

Horizontal 4-valve table superhet in moulded cabinet with raised scale; wave ranges 16.2—52, 190—575, 800—2,000 metres; for AC only. Made by Philips Electrical Ltd., Century House, Shaftesbury Avenue, London, WC2.

Circuit.—Triode-heptode frequency changer V1 is followed by a similar valve V2 in which the heptode portion is an IF amplifier and the triode portion an audio amplifier.

A double-diode-pentode V3 is the signal rectifier, AVC and output valve. HT is by a full-wave directly heated rectifier V4.

Aerial Circuit.—On SW aerial is connected through S1 to primary L1 of aerial coupling transformer. On MW and LW a band-pass circuit is used and the aerial is connected (through S1) to aerial coils L3 and L4. S5 shorts out L4 for MW operation. The band-pass tuned circuit consists of L5, L6 tuned by VC1, with L7, L8 tuned by VC2, and also L9, L10 and capacitors C3 and C4. S3 and S4 are closed on MW only. T1 is SW trimmer; T2 and T3 MW band-pass trimmers. S2 selects the aerial tuned circuits, and C5 is grid coupler.

AVC is applied to grid of V1 on all wavebands through R2. Cathode is at earth potential.

Screen voltage of V1 is obtained from R1 and decoupled by C6. L18, C25, primary of IFT1, are in the heptode anode circuit of V1.

Oscillator is connected in a tuned anode parallel-fed circuit. S7 selects the oscillator tuned circuits L13 (SW), L15 (MW) and L17 (LW) to oscillator anode through coupling capacitor C7. VC3 is oscillator tuning capacitor, and R3 is anode load resistor. T5 (SW), T7 (MW), T9 (LW) are trimmers, and T6, C9 (MW), T8 (LW) are padding capacitors. S8 and S9 short circuit unwanted tuned circuits.

The grid feedback circuits consist of L11, L12 T4 (SW), L14 (MW) and L16 (LW), and S6 switches these to oscillator grid. C8 is grid coupling capacitor, and R4, C8 provide self-bias for oscillator grid.

IF Amplifier : 470 Kc. L19, C26, the secondary of IFT1, feeds the signal to heptode grid of V2. AVC is applied to grid through R16 and decoupled by C19. Cathode is at earth potential.

Screen voltage is obtained from R5 and decoupled by C11. L20, C27, primary of IFT2, is in the heptode anode circuit of V2.

Signal Rectification is by one of the diode anodes of V3, fed from L21, C28, secondary of IFT2. Diode load is R8 and R10. R9 is shorted out on radio by switch/plug S10, but on

Contd. on next page

V1 — ECH21: OG; OA 115v. 4ma; S 85v. 6ma; G; A 240v. 2ma; IG; C O v.; H; H

V2 — ECH21: TG; TA 40v. 1ma; S 90v. 3·6ma; G; A 240v. 6ma; IG; C O V; H; H

V3 — EBL21: S 240v. 3·5ma; S D; AVC D; G; A 245v. 32ma; C; H; H

V4 — AZ31: A 265v. AC; A 265v. AC; F; F 270v. D.C.

DIAL LAMPS 6·3v ·32A

RESISTORS

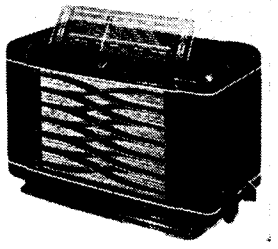
R	Ohms
1	23.5 K (2 x 47 K, 1W)
2	820 K, ¼ W
3	22 K, 1 W
4	47 K, ¼ W
5	39 K, 1 W
6	100 K, ¼ W
7	100 K, ¼ W
8	1 M, ¼ W
9	100 K, ¼ W
10	700 K, Potentiometer (with Switch)
11	22, ¼ W
12	2.2 M, 1 W
13	470 K, ¼ W
14	500 K, Potentiometer
15	120 K, ¼ W
16	1.5 M, ¼ W
17	820 K, ¼ W
18	1.2 K, 1.5 W
19	68, ¼ W
20	33, ¼ W

CAPACITORS

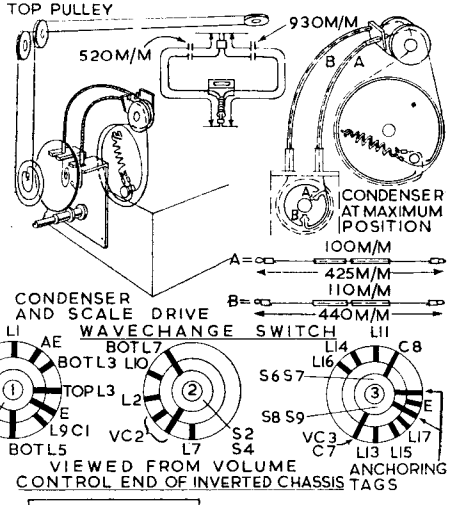
C	Mfds
1	12 pf Ceramic
2	10 pf Ceramic
3	.01 Tubular 100 v
4	.039 Tubular 100 v
5	220 pf Ceramic
6	.047 Tubular 400 v
7	470 pf Ceramic
8	82 pf Ceramic
9	330 pf Mica
10	27 pf Ceramic
11	.047 Tubular 400 v
12	5.6 pf Ceramic
13	.047 Tubular 400 v
14	.022 Tubular 400 v
15	.01 Tubular 100 v
16	.047 Tubular 100 v
17	82 pf Ceramic
18	.0039 Tubular 400 v
19	.047 Tubular 100 v
20	.001 Tubular 400 v
21	.022 Tubular 1400 v
22	250 Electrolytic 12 v
23	47 } Electrolytic 330 v
24	47 }
25	} Values unknown.
26	} Mounted inside
27	} cans of IFT1 and
28	} IFT2

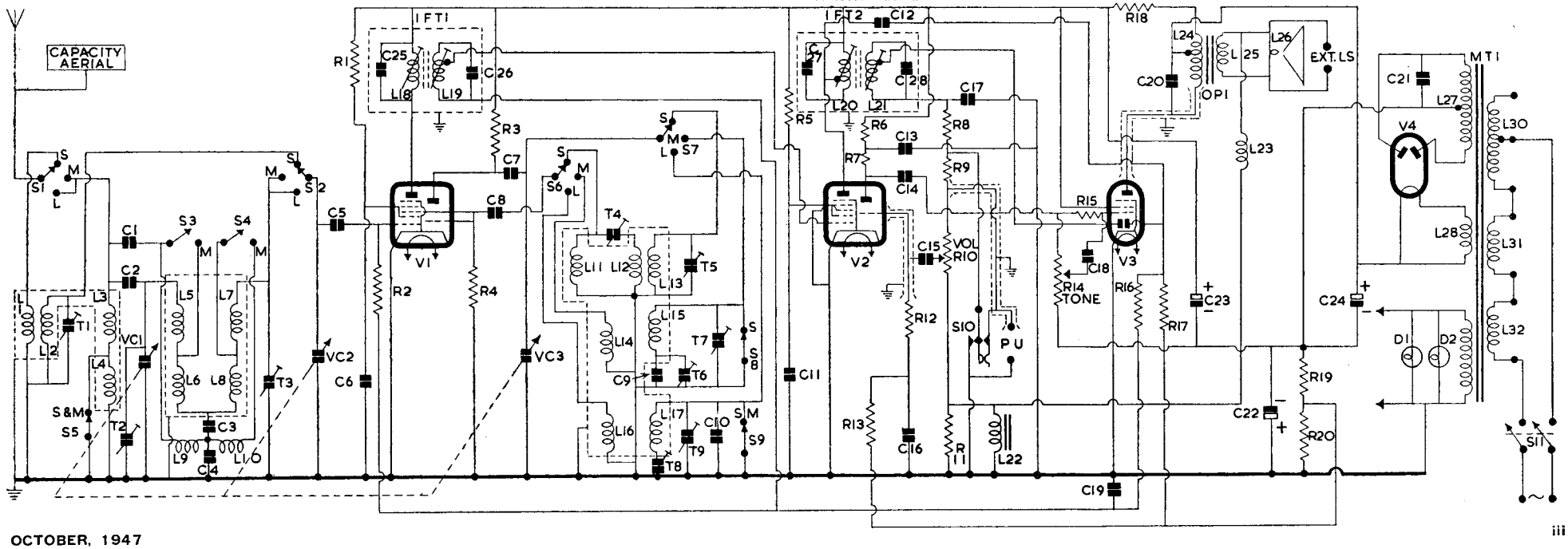
INDUCTORS

L	Ohms
1	2
2	.5
3	100
4	150
5	3.4
6	50
7	4.5
8	45
9	1.025
10	1.075
11	2.1
12	1.2
13	.5
14	2.5
15	7.5
16	4.7
17	20
18	10
19	6.5
20	7
21	5.5
22	2.7
23	155
24	822 (Tap at 22)
25	.7
26	3.5
27	350
28	Very low
29	Very low
30	8
31	21
32	21



Philips 462A has an exterior scale, of which drive details are below





Philips 462A—*Continued*

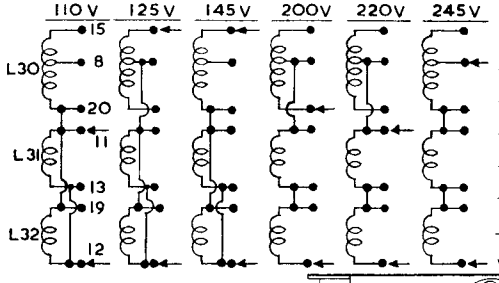
gramophone is brought into circuit across R10 by earthing of the radio section of the receiver at junction of R8 and R9 by S10. PU is connected across R10.

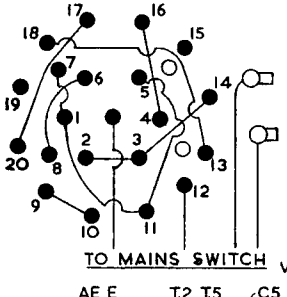
AVC.—C12 feeds signal from anode V2 to second diode anode V3. R17 is the diode load; R16 the AVC feed resistor. Delay bias for AVC diode is from R20.

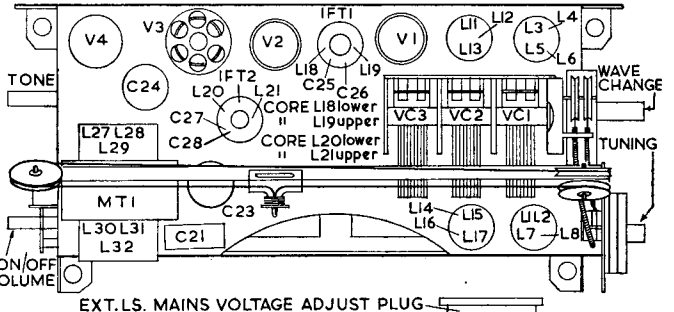
AF Amplifier (triode section of V2).—C15 feeds the signal from R10 to triode grid. R12 is the grid resistor. Negative bias for grid is obtained from R20 through R13. C16 is decoupling capacitor. Negative feedback from the LS speech

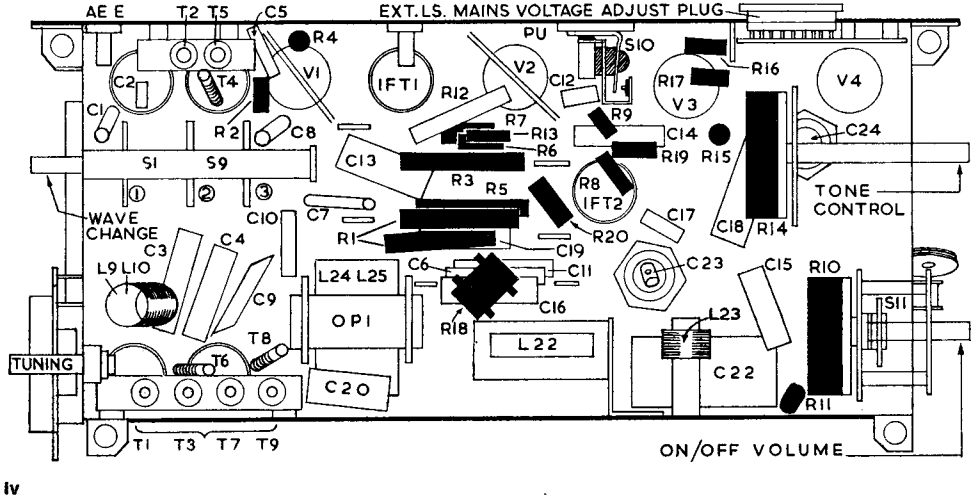
Continued on page viii

Below, mains tap adjustments and chassis diagram







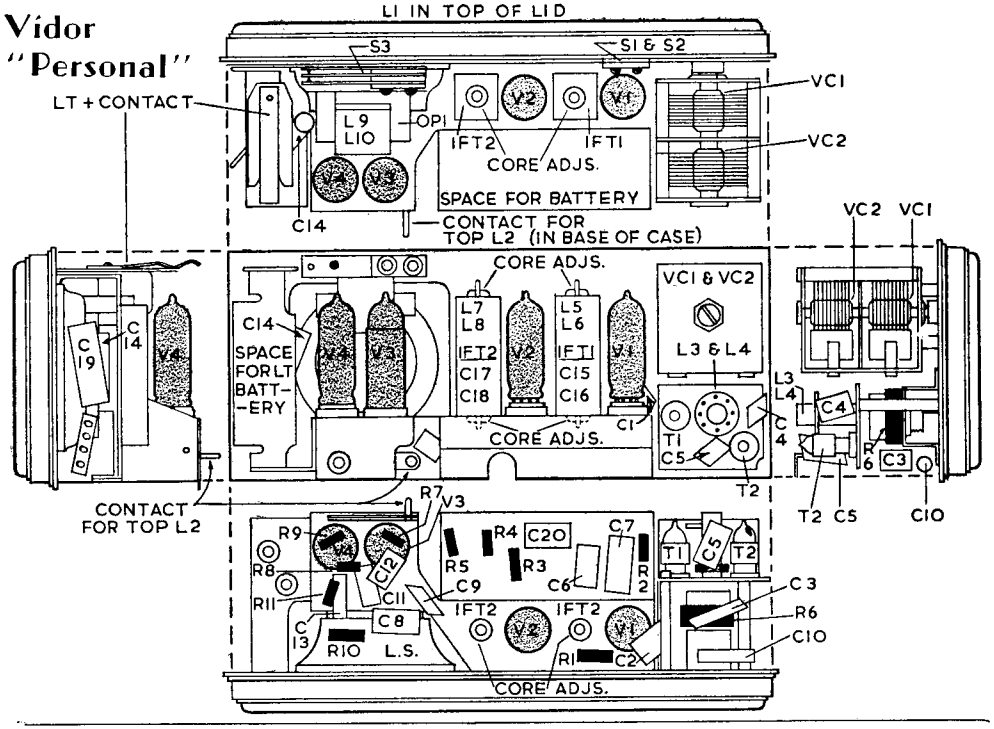


TRIMMING INSTRUCTIONS

Apply Signal as Stated Below	Tune Receiver to	Trim in Order stated for Max. Output
1) 470 Kc to control grid of V1 *via* .01 capacitor	200 metres	*Damp L20. Trim L21. Damp L19. Trim L18, L20. Damp L18. Trim L19
2) See that mark in centre of dial plate coincides with mark in centre of cabinet. Turn gang to max. and adjust pointer to line up with 225 mark on the SW scale		
3) 17.8 Mc to aerial socket *via* dummy aerial	16.9 metres (approx.)	T5. To first signal from minimum. TI
4) 6.1 Mc as above	49.25 metres	T4. Repeat (3)
5) 1.5 Mc as above	200 metres	T2, T3, T7
6) 550 Kc as above	545 metres	T6. Repeat (5)
7) 375 Kc as above	800 metres	T9
8) 160 Kc as above	1875 metres	T8 Repeat (7)

*Damp circuits by connecting 80 pF capacitor across the windings as indicated.

Vidor "Personal"



Philips 462A—*Cont. from p.iv*

coil is also applied to grid through L23, L22, R11, R10, C15.

R7 is the anode load resistor, and R6, C13 provide HT decoupling.

Output Stage.—C14 feeds signal to grid of output valve V3. R15 is grid stopper, and R14 grid resistor. R14 is a potentiometer which, with C18, gives tone control. Bias is from R19, R20.

L24, primary of OP1, is in the anode circuit of V3. Anode supply is from reservoir smoothing capacitor C24, and is fed into the tapping on L24.

C20 provides a degree of tone correction. L25, the secondary of OP1, feeds into the speech coil L26 of an eight-inch PM speaker. Sockets for a 5—7 ohm extension speaker are fitted across L25.

Mains supplies come from a directly heated full-wave rectifier V4. L27, the HT secondary of MT1 mains input transformer, provides anode voltages of V4 ; L28 supplies its heater voltage.

C24, R18, C23 and part of L24 included in the set HT line provide smoothing. C21 is to prevent modulation hum.

Removal of Chassis.—Remove scale ; turn pointer on to top of cabinet. Remove rear of cabinet (Capacity Aerial) ; four control knobs; metallised screening plate from underside of cabinet. Disconnect earth wire from chassis.

Remove screw securing scale pointer to drive wire plate ; unsolder LS and dial lamp leads ; remove four chassis bolts on underside of cabinet.

Chassis is now free to be withdrawn.

Condenser Drive Replacement.—Make up cables as shown. Set condenser to min. Turn friction assembly until slot " B " is at 12 o'clock, with slot " A " at 4 o'clock. To fit cable " B " : Slip inner cable at non-loop end into slot so that nipple fits into the recess and cable leaves drum through hole " B." Outer cable (mantle) should be kept at looped end of the cable.

Turn friction assembly anti-clockwise until hole "A" is at the top and allow inner cable to pass vertically through mantle guide on left bracket. Hold looped end of cable and slide mantle into rear clip on condenser. Take one complete turn anti-clockwise round drum, thence over flanged pin and hook looped end on spring. Secure spring.

To fit cable " A " : Slip inner cable at non-loop end into its slot and through hole "A." Take 1¾ turns anti-clockwise round brass drum and allow cable to pass vertically through mantle clip on right-hand bracket.

Hold looped end and slide mantle down into its clip. Engage the other end of mantle into front clip on condenser bracket. Inner cable is passed clockwise over front pulley round drum (clockwise) and then over flanged pin and hooked to spring. This operation is facilitated by disconnecting spring from drum.

Note.—With gang at minimum, brass drum with slot "A" at top (12 o'clock), the insulated pointer drum should be so fitted that slot is at approximately 9 o'clock.

Pointer Drive Replacement.—Make up cable as shown. Turn condenser to max. Slip end " A " into slot of insulated drum and wind two turns of the shortest part of cable in clockwise direction. Take half a turn of longest part round the drum in an anti-clockwise direction.

Pass shortest part over upper pulley ; pass other part over right-hand pulley (looking at the back), and over lower left-hand pulley. This adjustment is facilitated by pressing spring. Pointer can now be secured. (See Trimming Instructions.)

Note.—The two curved lips of the slotted guide should face front of cabinet.