

TRADER SERVICE SHEETS

NUMBER THIRTY-SIX (VOLUME TWO)

PHILIPS 580A A.C. SUPERHET

THE Philips Model 580A is a 5-valve (plus valve rectifier) A.C. superhet, with a circuit and chassis very similar to that of the Model 588A (Service Sheet No. 26, Vol. I). There are, however, several modifications, notably a change from choke to resistance smoothing, an alteration in the gramophone pick-up circuit and the elimination of the variable tone control circuit.

CIRCUIT DESCRIPTION

Signal input by way of I.F. rejector circuit **L1, C20** and series condenser **C1** to capacity-coupled band-pass filter. Primary **L2, L3** tuned by **C21**; secondary **L4, L5** tuned by **C23**; coupling condensers **C2, C3**.

First valve (**V1, Mullard metallised FC4**) is an octode operating as frequency-changer with electron coupling. Oscillator grid tuning coils **L6, L7** tuned by **C25**; anode reaction coils **L8, L9**; tracking by fixed condensers **C5 (L.W.)** and **C6 (M.W.)**.

One variable-mu pentode intermediate frequency amplifier (**V2, Mullard metallised VP4A**) with tuned-primary tuned-secondary transformer couplings **L10, L11** and **L12, L13**.

Intermediate frequency 115 KC/S.

Half-wave diode second detector forming part of double diode valve (**V3, Mullard metallised 2D4A**). Steady voltage developed across load resistances **R7, R8** by reason of the carrier waves of a transmitter is fed back via decoupling circuits as G.B. to frequency changer and I.F. valves, giving automatic volume control.

Audio-frequency component in output from rectifier is tapped off by manual volume control **R8** and passed by way of

coupling condenser **C11** to pentode L.F. amplifier (**V4, Mullard metallised SP4**). Provision for connection of gramophone pick-up across volume control.

Resistance - capacity coupling to directly-heated output pentode (**V5, Mullard PM24M**). Fixed tone compensation by condenser **C17** across primary of speaker input transformer **T1**.

H.T. current supplied by full-wave rectifying valve (**V6, Philips 1821**). Smoothing by resistance **R14** and large-capacity electrolytic condensers **C15, C18**.

DISMANTLING THE SET

Removing Chassis.—Remove the three knobs (grub screws fitting into slots in spindles). Unsolder speaker earth-lead from speaker. Unclip speaker cable from side of cabinet. Remove four screws from underside of cabinet which hold the chassis. These screws pass through tubular distance pieces, fitted with rubber bushes. When replacing do not forget the contact strip clamped by one of the screws between the chassis and the metal foil lining to the cabinet.

Chassis may now be withdrawn sufficiently for normal repair work. To free it entirely, unsolder the two leads in the speaker cable from the tags on the speaker transformer.

Removing Speaker.—This is held to its sub-baffle by three clips, with bolts, nuts and lock nuts. When replacing the transformer should be at the top.

COMPONENTS AND VALUES

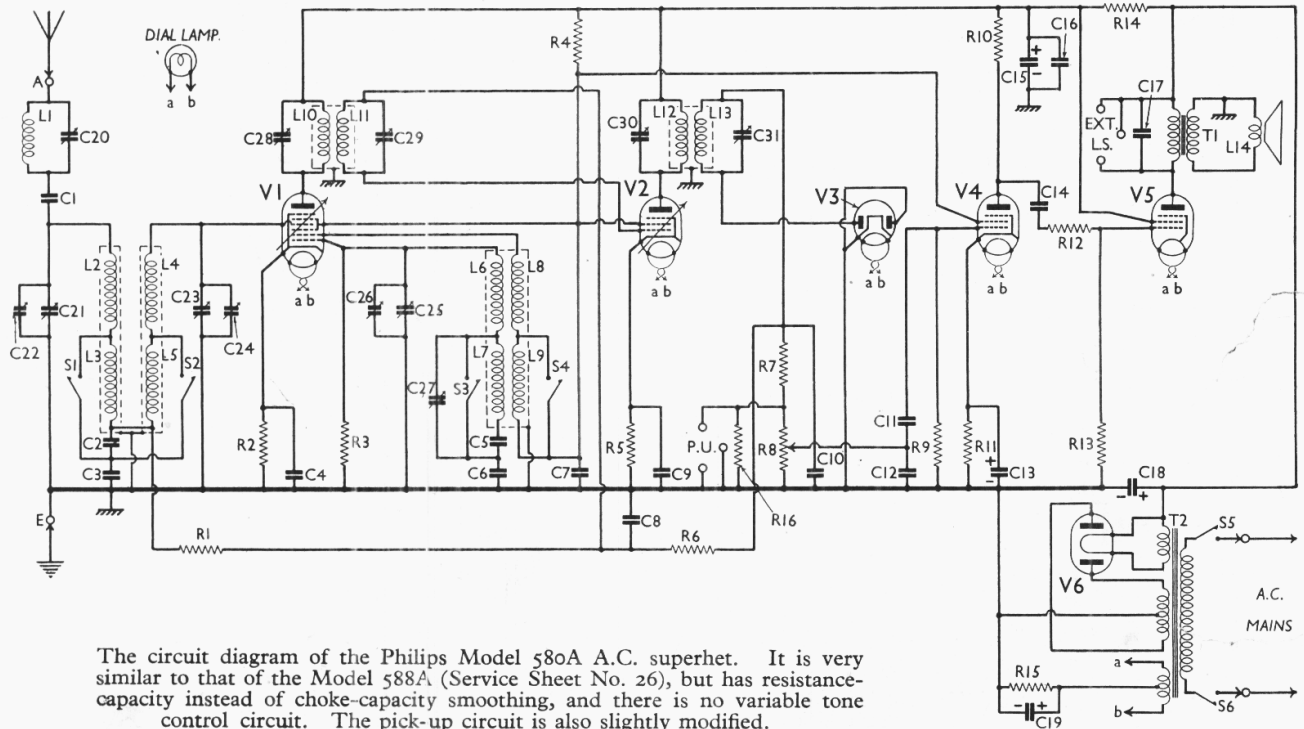
Resistances		Values (ohms)
R1	V1 cont. grid decoupling ..	10,000
R2	V1 fixed G.B. resistance ..	200
R3	V1 osc. grid resistance ..	50,000
R4*	V1, V2 and V4 S.G.'s H.T. feed	32,000
R5	V2 fixed G.B. resistance ..	2,000†
R6	V2 cont. grid decoupling ..	1,000,000
R7	Part of diode load ..	250,000
R8	Manual volume control ..	500,000
R9	V4 grid resistance ..	1,000,000
R10	V4 anode resistance ..	320,000
R11	V4 G.B. resistance ..	6,400
R12	V5 grid H.F. stopper ..	640,000
R13	V5 grid resistance ..	500,000
R14	H.T. smoothing ..	2,500
R15	V5 G.B. resistance ..	640
R16‡	Volume control shunt ..	1,000,000

* Two 64,000 Ω resistances in parallel.
† Or 640 Ω. ‡ In our chassis.

Condensers		Values (μF)
C1	Aerial series condenser ..	0.000025
C2	Band-pass coupling condensers ..	0.025
C3		0.025
C4	V1 cathode by-pass ..	0.05
C5	Osc. L.W. tracker ..	0.00093
C6	Osc. M.W. tracker ..	0.00181
C7*	V1, V2 and V4 S.G.'s by-pass	0.5
C8	V2 cont. grid decoupling ..	0.1
C9	V2 cathode by-pass ..	0.1
C10	Diode reservoir ..	0.0001
C11	L.F. coupling to V4 ..	0.01
C12	H.F. by-pass ..	0.0002
C13	V4 cathode by-pass ..	25.0
C14	L.F. coupling to V5 ..	0.01
C15	H.T. smoothing, electrolytic	32.0
C16*	H.T. smoothing ..	1.0
C17	Tone compensator ..	0.002

* In metal "can."

(Continued overleaf)



The circuit diagram of the Philips Model 580A A.C. superhet. It is very similar to that of the Model 588A (Service Sheet No. 26), but has resistance-capacity instead of choke-capacity smoothing, and there is no variable tone control circuit. The pick-up circuit is also slightly modified.

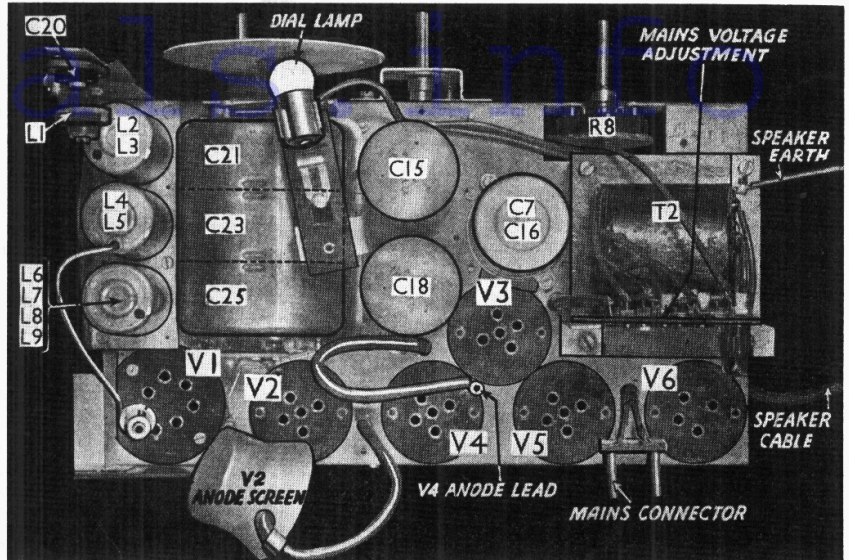
PHILIPS 580A A.C. SUPERHET
(continued)

Condensers (contd.)		Values (μ F)
C18	H.T. smoothing, electrolytic	32.0
C19	V5 G.B. resistor by-pass	25.0
C20	I.F. rejector tuning, pre-set	0.000145
C21	Band-pass primary tuning	0.00043
C22	Band-pass pri. trimmer	0.000055
C23	Band-pass secondary tuning	0.00043
C24	Band-pass sec. trimmer	0.000055
C25	Oscillator grid tuning	0.00043
C26	Oscillator main trimmer	0.000055
C27	Oscillator L.W. trimmer	0.000055
C28	1st I.F. trans. pri. tuning	0.000145
C29	1st I.F. trans. sec. tuning	0.000145
C30	2nd I.F. trans. pri. tuning	0.000145
C31	2nd I.F. trans. sec. tuning	0.000145

Other Components		Values (ohms)
L1	Aerial I.F. rejector coil	127.0
L2	Band-pass primary coils	3.9
L3		36.8
L4	Band-pass secondary coils	3.9
L5		36.8
L6	Oscillator grid coils	9.75
L7		27.4
L8	Oscillator anode coils	4.1
L9		10.7
L10	1st I.F. transformer	135.0
L11		Sec. 135.0
L12	2nd I.F. transformer	135.0
L13		Sec. 135.0
L14	Speaker speech coil	4.35/3.3 680/330
T1	Speaker input trans.	Pri. 0.66/0.78
		Sec. —
T2	Mains trans.	Pri. total 73.0
		Heater sec. 0.1
		Rect. fil. sec. 0.2
		H.T. sec. 500.0
S1-S4	Waveband switches	—
S5-S6	Mains switches	—

VALVE ANALYSIS

The voltage and current readings listed in the table below are those given by Philips for an average chassis working with no aerial or earth connected. All voltages were measured with a high resistance voltmeter, the chassis being negative, and the anode currents of V1 and V2 were taken with a milliammeter inserted in the low H.F. potential ends of the circuits. As an alternative to this method of ensuring stability during measurements the valves may be



Plan view of the chassis. C15 and C18 are electrolytics, while C7 and C16 are two paper condensers in a single can.

stabilised by means of condensers (0.1 μ F or larger) connected between their anodes and cathodes.

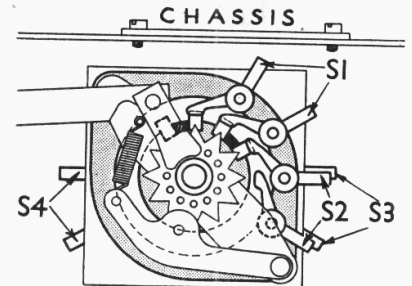
Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 FC4*	235	0.8	65	2.5
V2 VP4A	235	2.0	65	1.0
V3 2D4A	—	—	—	—
V4 SP4	140	0.3	65	0.12
V5 PM24M	230	22.6	220	4.25
V6 1821	225†	—	—	—

* Osc. anode (G2) 65 V 1.25 mA.
† A.C., each anode.

GENERAL NOTES

In the majority of cases the notes given on pages 32 and 33 of Sheet No. 26, Vol. I, will be applicable also to the Model 580A under consideration, but as a certain amount of re-numbering of components has occurred, the numbers do not necessarily correspond.

Switches.—There are four waveband switches, S1-S4, and a two-pole mains switch, S5, S6. These two groups are ganged by a lever. S5 and S6 are shown in our under-chassis view, while the S1-S4 assembly is shown in the form of a diagram below. All the wavechange



The wavechange switch assembly. S3 is below S2.

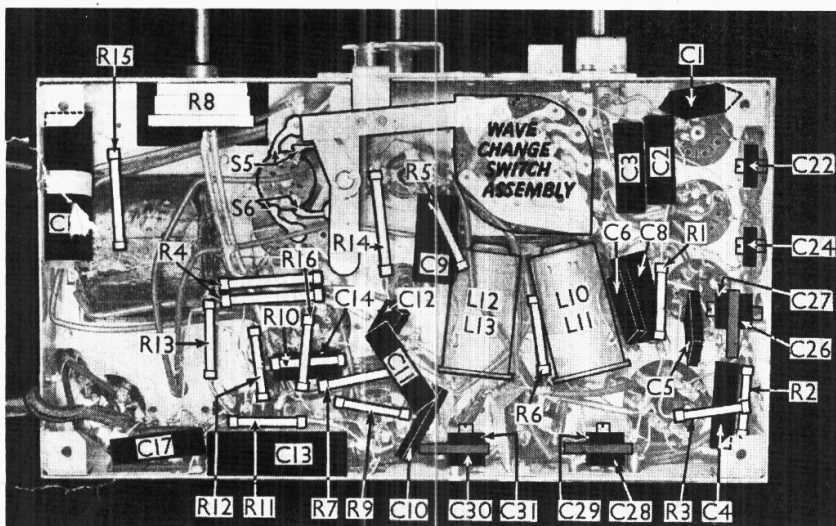
switches are closed on the M.W. band and open on the L.W. band.

Coils.—The signal frequency and oscillator coils are mounted in three "cans" on top of the chassis, whilst the I.F. coils are in two similar "cans" below the chassis. Since the screens are not removable, it will be advisable, in case of coil trouble, to fit new units. The units are easily removable from the chassis.

Dial Lamp.—This is a 6 V 3W car type, with a centre contact S.B.C. base.

Condensers C7, C16.—These are in a single can on top of the chassis. Three connecting tags project downwards through the chassis. The common tag is that which is earthed to chassis. The tag connected to the screening grids of V1, V2, V4 is the other terminal of C7, while that connected to the screening grid of V5 is the other terminal of C16.

Circuit Alignment.—The instructions given in Sheet No. 26 can be followed, bearing in mind the different numbering of the components. All the condensers involved in the trimming operations now have numbers two less than in Sheet 26. Thus C25 is now C23, and C33 is now C31.



The under-chassis view. S5 and S6 are indicated, and are ganged with the wavechange switch assembly, shown in a sketch on this page.