PHILIPS MODEL 584A SUPERHET

Circuit.—The combined first detector oscillator valve, FC4 met. (V1), is preceded by a special aerial filter and band-pass coupling. Bias is partly by cathode resistance and partly from A.V.C. Oscillator tuning is in the grid circuit of the triode element.

The following coupling is a band-pass I.F. transformer (frequency 125 kc.).

The I.F. valve, VP4A met. (V2), is also biased by cathode resistance and A.V.C., and is followed by a second band-pass I.F. transformer.

The second detector is a diode, 2D4A met. (V3), of which only one anode is used. Both D.C. and A.C. components of the rectified carrier are utilised, the D.C. providing A.V.C. to V1 and V2.

Coupling to the next valve is by resistance capacity filter with the potentiometer volume control forming the diode load.

The L.F. valve, SP4 met. (V4), is resistance capacity coupled to the output valve, a PM24M. This is of the directly heated type, and is biased by R7 in the common heater centre tap lead.

Tone compensation and control are provided in the anode circuit, and the speaker is the usual permanent-magnet type.

Mains equipment consists of transformer, full-wave, type 1821, rectifier, a choke in the positive H.T. lead, and electrolytic condensers.

Special Notes.—Pilot lamps are type No. 8054X, and the pilot lamp panel can be removed for replacement by slackening the two left-hand screws and removing the one right-hand screw.

Owing to the fact that the tuning dial and indicator are in the top of the cabinet, this set appears more complicated than it really is.

A band drive is used, and if instructions are carried out there is no difficulty attached to removing the chassis.

The tuning indicator meter is connected in the H.T. lead to V1 and V2.

Quick Tests.—Between the two terminals on the speaker transformer and chassis (it is immaterial which way round these are connected), 227 volts and 210 volts.

Removing Chassis.—Unsolder the earth wire from the case of the speaker transformer. Remove the knobs (grub screw, two on large knob); remove four screws from underneath and slip the driving band from the drum in front of the gang condenser.

Ease the chassis backwards and free the pin on the driving band from the hole in the condenser drum.

If the chassis must be removed completely, unsolder the leads to the speaker and to the pilot lamps and tuning indicator, marking them carefully.

General Notes.—Alignment of circuits. The tuning on the I.F. circuits is sharp, and accurate tuning to 125 kc. will be facilitated by connecting temporary resistances of 10,000 or 15,000 ohms across the coils.

Trim the I.F. transformer by injecting 125 kc. to grid (top) of FC4 with set switched to the long waveband and R1 short-circuited (see diagram).

To trim H.F. and oscillator sections, turn condenser to minimum and switch to the medium waveband. Leave the 10,000 ohm resistance across the primary of IFT1 and remove the short circuit on R1. Inject on 225 m. for M.W. and on 900 m. for L.W.

Condenser Driving Mechanism.—The friction drive is mounted on a plate fixed to the chassis by three screws. For adjustment or removal, the two grub screws on the collar of the drum should be loosened.

Replacing Chassis.—Lay the chassis half-way inside the cabinet and engage the

An inclined tuning scale at the top of the cabinet is embodied in the Philips 584A, although the controls are below the speaker opening.

VALVE READINGS

Valve.	Type.	Electrode.	Volts.	M.a.
1	FC4 met. (7)..	anode ..	230	1.25
		aux. grid..	73	
2	VP4 A met (5)	anode ..	230	.6
		aux grid ..	73	
3	2DD4A (5) ..	* ..	..	..
4	SP4 met (5) ..	anode ..	140	.36
		aux. grid..	73	
5	PM24M (5) ..	anode ..	210	26.6
		aux. grid	227	4

* Diode only.

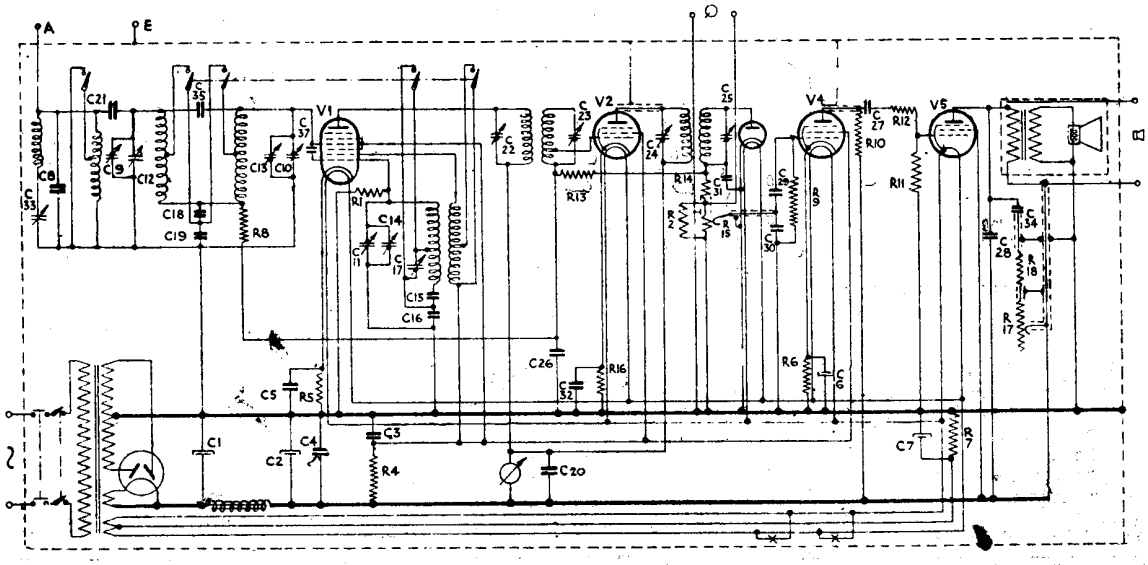
CONDENSERS

C.	Purpose.	Mfd.
1	H.T. smoothing	32*
2	H.T. smoothing	32*
3	Decoupling aux. grids	1
4	H.T. smoothing	.5
5	V1 cathode by-pass	.05
6	V4 cathode by-pass	25
7	V5 bias resistor by-pass ..	.225
15	Tracking on osc.	.0009
16	Tracking on osc.	.00181
18	Band pass coupling on M.W. ..	.025
19	Band pass coupling on L.W. (series).	.025
20	Across tuning indicator	.1
26	Decoupling A.V.C.	.1
27	L.F. coupling V4 to V5	.01
28	Tone compensating, V5 anode ..	.002
29	L.F. coupling from diode ..	.01
30	H.F. by-pass from diode ..	.0002
31	H.F. by-pass from diode ..	.0001
32	V2 cathode by-pass	.1
34	Tone control circuit	.032

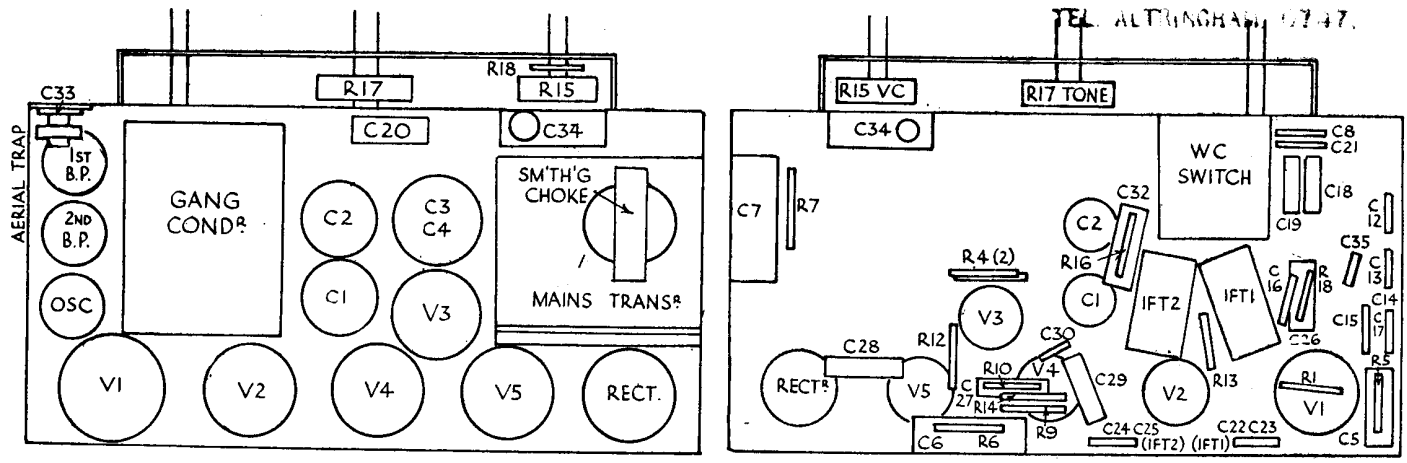
* Code No. 28, 180, 011.

RESISTANCES

R.	Purpose.	Ohms.
1	V1 osc. grid leak	50,000
2	Across V.C.	1 Meg
4	Voltage dropping to aux. grids..	64,000 (2)
5	V1 cathode bias	200
6	V4 cathode bias	6,400
7	V5 bias	800
8	V1 grid decoupling	10,000
9	V4 grid leak	1 Meg
10	V4 anode coupling	.32 Meg
11	V5 grid leak	.5 Meg
12	V5 grid stabiliser..	.64 Meg
13	A.V.C. decoupling	1 Meg
14	H.F. stopper from diode ..	.25 Meg
15	V.C.	.5 Meg
16	V2 cathode bias	640
17	Tone control circuit (var.) ..	64,000
18	Tone control circuit	100



A sensitive superhet, the 584A incorporates six valves, including an octode and a single diode. The first L.F. amplifier is actually an H.F. pentode.



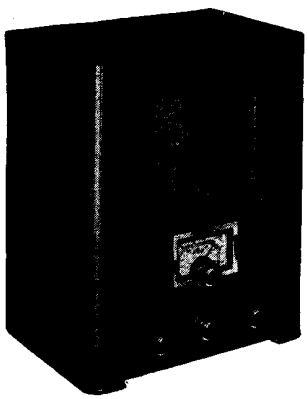
The components in the 584A are all special Philips productions and lend themselves to compact construction. Care should be taken not to displace the bare wires.

pin on the driving band in the hole in the drum.

Slide chassis into position and replace the earthing contact plate under the left-hand rear corner, so that it touches the screen in the bottom of the cabinet.

Replace holding screws and knobs and, after resoldering the earthing lead (and others, if these have been disconnected), slip the driving band over the pulleys. The tension spring allows adequate freedom for this operation.

G.E.C. BATTERY S.G.3



The S.G.3 just introduced by G.E.C. for the coming season.

Circuit.—The H.F. valve, VS 24 met. (V1), is preceded by a tuned secondary aerial transformer. the volume control being a potentiometer across the aerial coil which also acts as a control of bias. The following coupling is a tuned secondary H.F. transformer with reaction.

The detector valve, VP21 met. (V2), operates as a leaky-grid detector and has reaction applied to the H.F. transformer by means of a differential condenser. Coupling to the next valve is by auto-coupled transformer.

The output valve, PT2 (V3), has a grid stabilising resistance and is tone compensated by a condenser between anode and chassis. The speaker is a permanent-magnet moving-coil type.

Switching is in both the L.T.– and the main H.T. + leads. The H.T.– lead is fused with a 3.5 volt, .15 amp flashlamp bulb.

Quick Tests.—These are best carried out by making the routine valve tests (see table).

Special Notes.—The battery is type No. BB120.

H.T. +, red, is the 120 v. tapping, and H.T.+, blue, is the 60 v. tapping.

Bias is obtained by means of the resistances R5 and R6 in the common negative lead.

Removing Chassis.—Pull off the knobs and remove three screws from underneath. For quick tests the cleat holding the speaker leads should be undone or, if it is necessary to remove the chassis entirely, the plugs should be removed and the earthing lead unsoldered.

(*Continued on next page.*)

VALVE READINGS

V.	Type.	Electrode.	Volts.	M.A.
1	VS24 met (4)	.. anode ..	110	1.5
		screen ..	60	
2	VP21 met (7)	.. anode ..	44	2
		aux.grid.	60	
3	PT2 (5)	.. anode ..	106.5	4
		aux.grid	120	

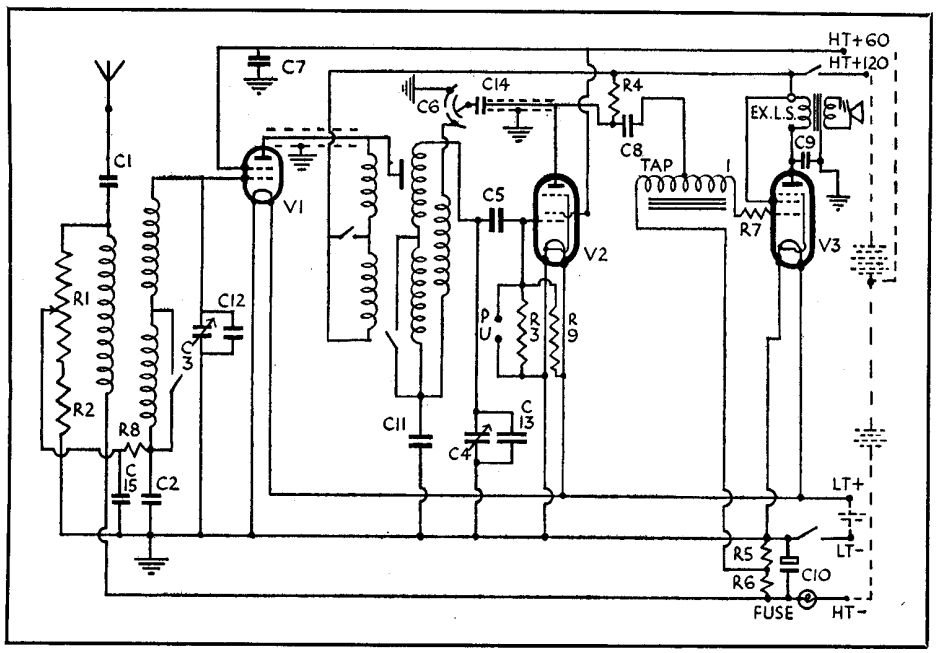
The average set current is 9 m.a.

RESISTANCES

R.	Purpose.	Ohms.
1	Volume control ptr.	50,000
2	In series with R1 (min. bias) ..	2,200
3	V2 grid leak	2 meg.
4	V2 anode coupling	33,000
5	Part of bias ptr.	350
6	Part of bias ptr.	500
7	V3 grid stabiliser..	99,000
8	Decoupling V1 grid	33,000
9	Bias ptr. of V2.	2 meg.

CONDENSERS

C.	Purpose.	Mfd.
1	Series aerial	.003
2	Decoupling V1 grid	.005
5	V2 grid reservoir	.0001
6	Reaction	.0005
7	V1 screen by-pass	.25
8	L.F. feed to L.F. transformer ..	.1
9	V3 anode compensating ..	.002
10	Across bias ptr.	50 (20v.)
11	Aligning H.F. transr. secondary	.005
14	H.T. blocking in reaction circuit	.005
15	Decoupling aerial coil	.005



The S.G.3 utilises a straight and orthodox circuit which includes refinements such as a differential reaction control.