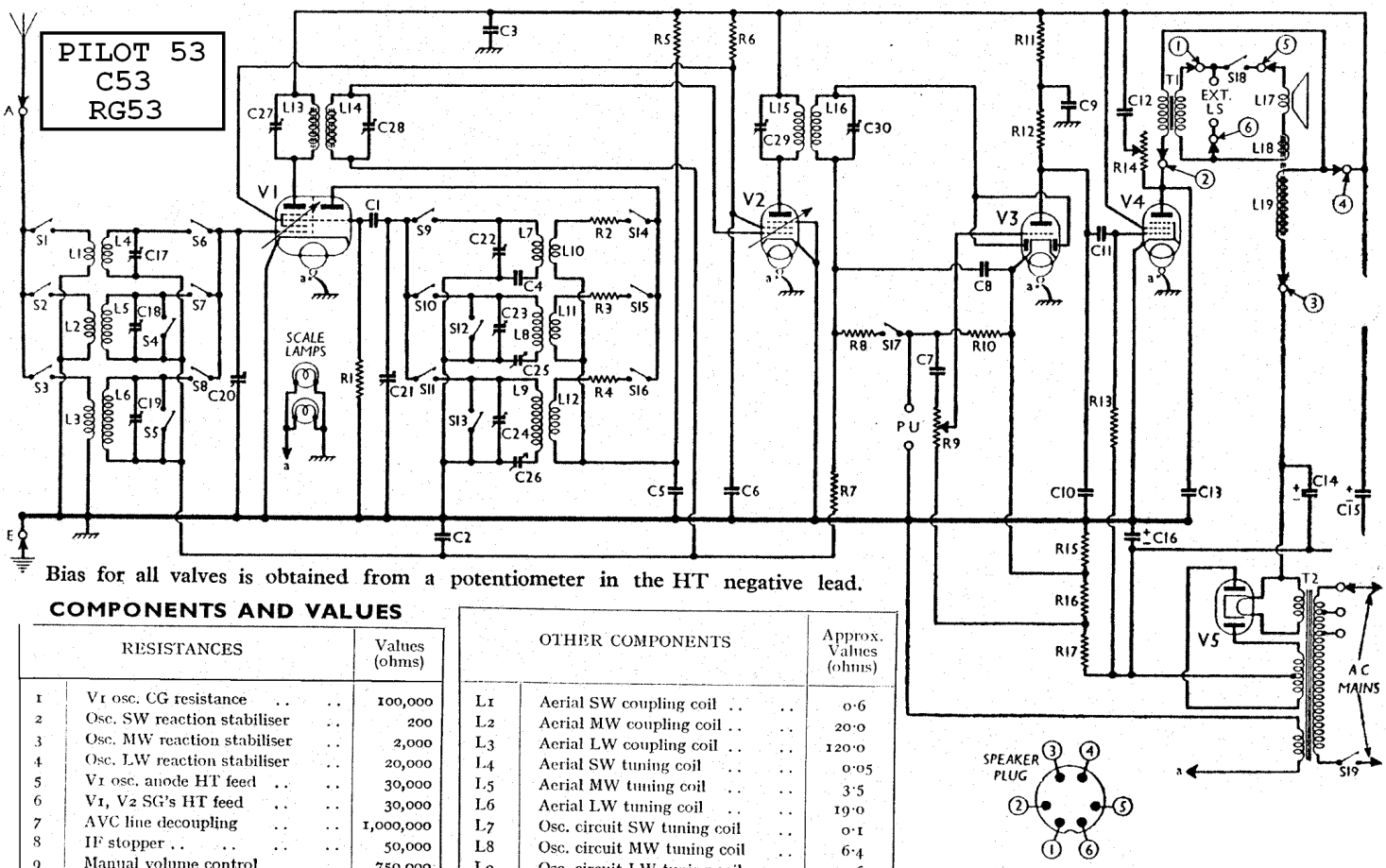


Bias for all valves is obtained from a potentiometer in the HT negative lead.

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
1	V1 osc. CG resistance	100,000
2	Osc. SW reaction stabiliser	200
3	Osc. MW reaction stabiliser	2,000
4	Osc. LW reaction stabiliser	20,000
5	V1 osc. anode HT feed	30,000
6	V1, V2 SG's HT feed	30,000
7	AVC line decoupling	1,000,000
8	IF stopper	50,000
9	Manual volume control	750,000
10	V3 diodes load resistance	300,000
11	V3 triode anode decoupling	100,000
12	V3 triode anode load	200,000
13	V4 CG resistance	500,000
14	Variable tone control	100,000
15	Auto bias pot. divider for V1, V2 fixed GB; V3 triode and V4 GB	70
16		30
17		190

	CONDENSERS	Values (μF)
1	V1 osc. CG condenser	0·0001
2	AVC line decoupling	0·05
3	HT circuit RF by-pass	0·1
4	Osc. circuit SW tracker	0·006
5	V1 osc. anode decoupling	0·1
6	V1, V2 SG's decoupling	0·05
7	AF coupling to V3 triode	0·05
8	IF by-pass	0·00015
9	V3 triode anode decoupling	0·1
10	IF by-pass	0·00015
11	V3 triode to V4 AF coupling	0·01
12	Part of variable tone control	0·05
13	Fixed tone corrector	0·005
14*	HT smoothing	8·0
15*		8·0
16*	Auto GB circuit by-pass	50·0
17‡	Aerial circuit SW trimmer	—
18‡	Aerial circuit MW trimmer	—
19‡	Aerial circuit LW trimmer	—
20‡	Aerial circuit tuning	—
21†	Oscillator circuit tuning	—
22‡	Osc. circuit SW trimmer	—
23‡	Osc. circuit MW trimmer	—
24‡	Osc. circuit LW trimmer	—
25‡	Osc. circuit MW tracker	0·0006
26‡	Osc. circuit LW tracker	0·0002
27‡	1st IF trans. pri. tuning	—
28‡	1st IF trans. sec. tuning	—
29‡	2nd IF trans. pri. tuning	—
30‡	2nd IF trans. sec. tuning	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial SW coupling coil		0·6
L2	Aerial MW coupling coil		20·0
L3	Aerial LW coupling coil		120·0
L4	Aerial SW tuning coil		0·05
L5	Aerial MW tuning coil		3·5
L6	Aerial LW tuning coil		19·0
L7	Osc. circuit SW tuning coil		0·1
L8	Osc. circuit MW tuning coil		6·4
L9	Osc. circuit LW tuning coil		9·6
L10	Oscillator SW reaction		0·8
L11	Oscillator MW reaction		1·8
L12	Oscillator LW reaction		5·8
L13	1st IF trans.	Pri.	7·0
L14		Sec.	7·0
L15	2nd IF trans.	Pri.	11·25
L16		Sec.	11·25
L17	Speaker speech coil		3·0
L18	Hum neutralising coil		0·2
L19	Speaker field coil		1,500·0
T1	Speaker input trans.	Pri	700·0
		Sec.	0·5
T2	Mains trans.	Pri., total	35·0
		Heater sec.	0·1
		Rect. heat. sec.	0·15
		HT sec., total	310·0
S1-S16	Waveband switches		—
S17	Radio muting switch		—
S18	Speaker switch		—
S19	Mains switch, ganged R9		—

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 X65	258 Oscillator 70	1·2 4·5	110	3·1
V2 6U7G	258	6·8	110	1·6
V3 6Q7G	70	2·7	—	—
V4 6F6G	233	35·0	258	6·4
V5 5Z4G	322†	—	—	—

† Each anode, AC.

Valve voltages and currents given in the table above are those measured in our receiver when it was operating on mains of 230 V, using the 225 V tapping on the mains transformer. The receiver was tuned to the lowest wavelength on the medium band, and the volume control was at maximum, but there was no signal input as the aerial and earth leads were shorted.

Voltages were measured on the 400 V scale of a model 7 Universal Avometer, chassis being negative.

If, as in our case, **V2** should become unstable when its anode and screen currents are being measured, it can be stabilised by connecting a non-inductive condenser of about 0·1 μF from grid (top cap) to chassis.

RG53 MODIFICATION

The only difference in the radiogram model RG53 (apart from the addition of a gramophone motor, the use of a larger speaker, etc.), is that the special combined switch (**S17**) and pick-up sockets unit at the rear of the chassis is replaced by a single-pole double-throw switch mounted on the motor board for radio-gram switching.

GENERAL NOTES

Switches.—S1-S16 are the waveband switches, in two rotary units beneath the chassis. These are indicated in the under-chassis view, and shown in detail in the diagrams on this side of this sheet, where they are as seen looking from the rear of the underside of the chassis. The table in col. two gives the switch positions for the three control settings, starting from fully anti-clockwise. A dash indicates open, and **C** closed.

S17 is the radio-gram switch, of the rotary type, associated with the pick-up sockets at the rear of the chassis. **S17** is normally closed, but when the 2-pin pick-up plug is inserted and rotated anti-clockwise, it opens **S17** and so mutes radio by breaking the input to the grid circuit of **V3.** When the pick-up plug is rotated clockwise, however, **S17** closes for radio operation.

S18 is a similar switch associated with the external speaker sockets, also at the rear of the chassis. When an external speaker is plugged in, and the 2-pin plug is rotated anti-clockwise, **S18** opens and mutes the internal speaker by disconnecting its speech coil circuit. In the clockwise position, however, **S18** is closed, and both speakers are in operation.

S19 is the QMB mains switch, ganged with the volume control **R9.**

Coils.—L1-L6, and the IF transformers **L13, L14** and **L15, L16,** are in three screened units on the chassis deck, with their associated trimmers. Note that the trimmers **C17-C19** are reached through three holes in the front of the **L1-L6** can.

L7-L12 are on an unscreened tubular former beneath the chassis.

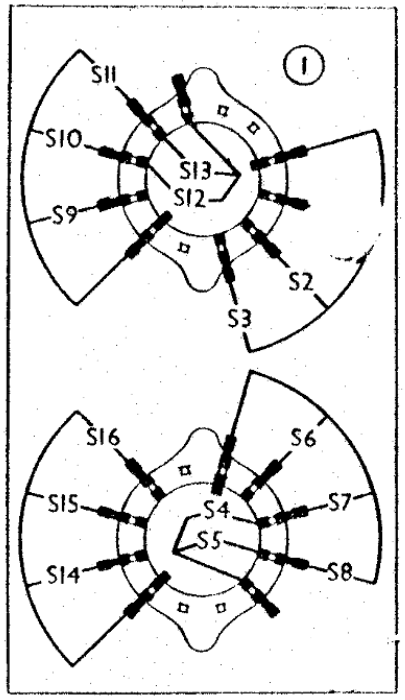
Scale Lamps.—These are two Ever Ready miniature bayonet cap types, rated at 7·3 V, 0·25 A.

TABLE AND DIAGRAMS

Switch	LW	MW	SW
S1	—	—	C
S2	—	C	—
S3	C	—	—
S4	—	—	C
S5	—	C	C
S6	—	—	C
S7	—	C	—
S8	C	—	—
S9	—	—	C
S10	—	C	—
S11	C	—	—
S12	—	—	C
S13	—	C	C
S14	—	—	C
S15	—	C	—
S16	C	—	—

PILOT 53
C53
RG53

Diagrams of the switch units drawn as seen when looking in the direction of the arrows in the under-chassis view. A table giving the switch positions for the three control settings is on the left.



CIRCUIT ALIGNMENT

IF Stages.—Switch set to MW, and turn gang condenser to maximum. Connect signal generator via a 0·1 μF condenser to control grid (top cap) of **V2,** and chassis.

Feed in a 451 KC/S signal, and adjust **C30,** then **C29,** for maximum output. Transfer signal generator to control grid (top cap) of **V1,** and adjust **C28,** then **C27,** for maximum output. Re-check all settings with the signal generator connected to **V1.**

RF and Oscillator Stages.—With gang condenser at maximum, pointer should cover the short vertical line at the top right-hand corner of the tuning scale. Connect signal generator to **A** and **E** leads via a 0·0002 μF condenser.

MW.—Switch set to MW, and tune to 200 m on scale. Feed in a 200 m (1,500 KC/S) signal, and adjust **C23,** then **C18,** for maximum output. Feed in a 500 m (600 KC/S) signal, tune it in, and adjust **C25** for maximum output, while rocking the gang for optimum results. Repeat the 200 m adjustments.

LW.—Switch set to LW, and tune to 800 m on scale. Feed in an 800 m (375 KC/S) signal, and adjust **C24,** then **C19,** for maximum output. Feed in a 2,000 m (150 KC/S) signal, tune it in, and adjust **C26** for maximum output, while rocking the gang for optimum results. Repeat the 800 m adjustments.

SW.—Switch set to SW, and tune to 17 m on scale. Feed in a 17 m (17·65 MC/S) signal, and adjust **C22,** then **C17,** for maximum output. Repeat these adjustments very accurately. There is no variable SW tracker to be adjusted.