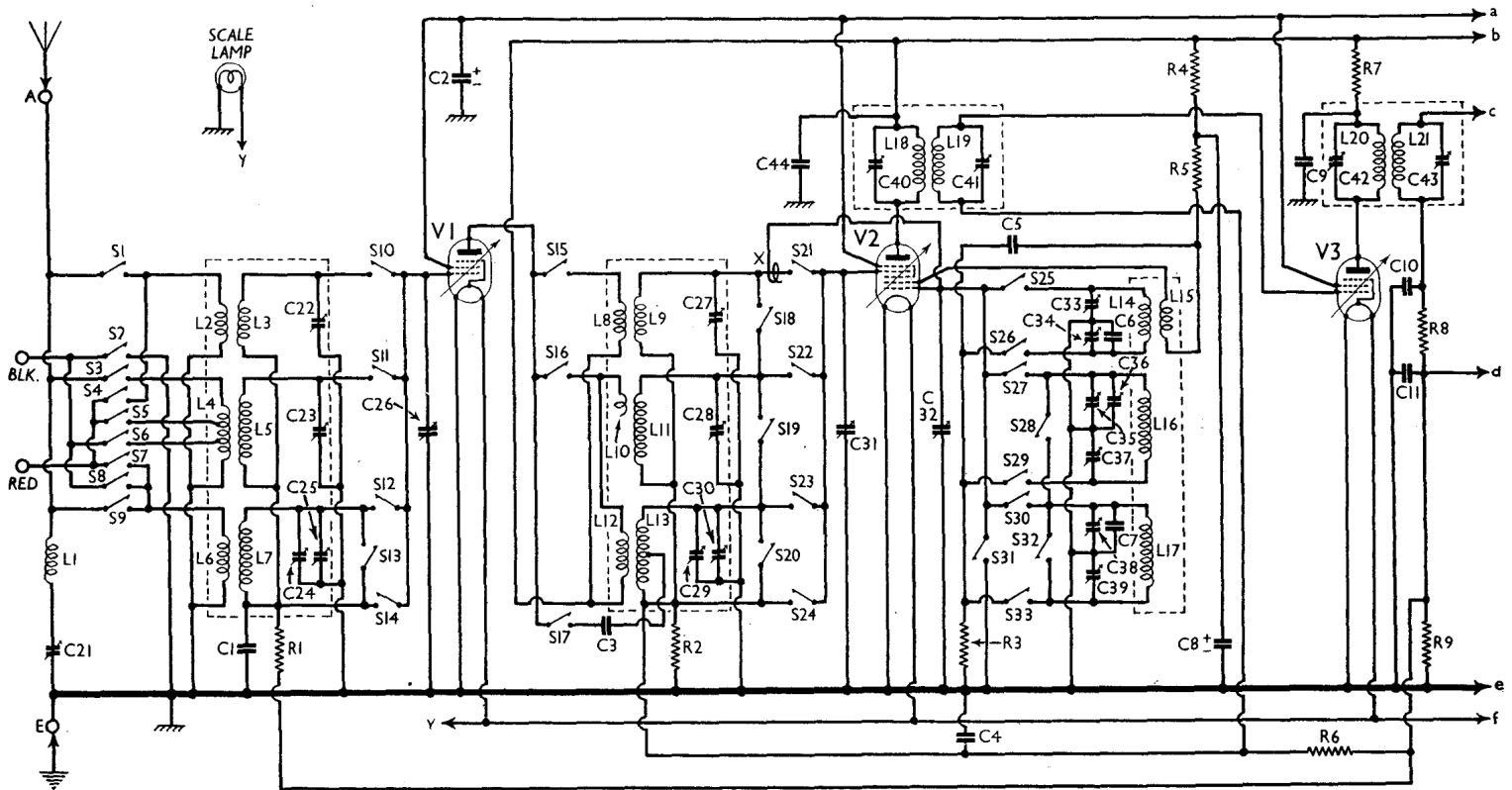


# PHILCO - 295



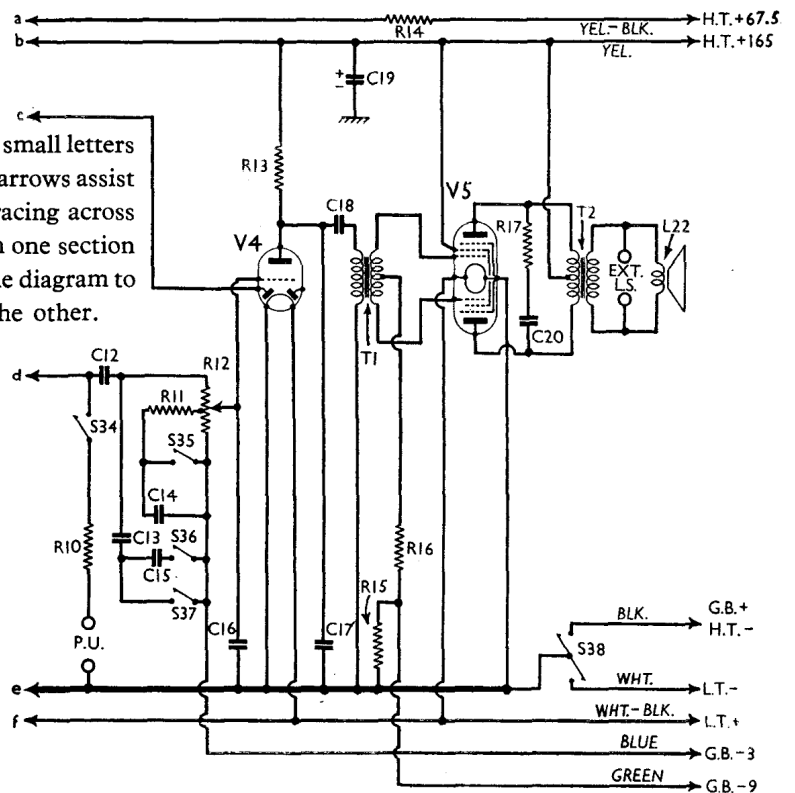
## COMPONENTS AND VALUES

Resistances	Values (ohms)
R1 V1 C.G. decoupling ..	2,000,000
R2 V2 tetrode C.G. decoupling ..	2,000,000
R3 V2 osc. C.G. resistance ..	32,000
R4 V2 osc. anode decoupling ..	2,000
R5 V2 osc. anode resistance ..	10,000
R6 V2 and V3 A.V.C. line decoupling ..	2,000,000
R7 V3 anode decoupling ..	1,000
R8 I.F. stopper ..	51,000
R9 V4 diode load ..	330,000
R10 Gram. pick-up series resistance ..	51,000
R11 Part of T.C. circuit ..	25,000
R12* Manual volume control ..	1,000,000
R13 V4 triode anode load ..	51,000
R14 V1, V2, V3, S.G.'s decoupling ..	20,000
R15 G.B. battery load ..	1,000
R16 V5 C.G. circuits stabiliser ..	240,000
R17 Part V5 imp. limiting filter ..	25,000

\* Tapped at 215,000 O.

Condensers	Values (μF)
C1 V1 C.G. decoupling ..	0.05
C2* V1, V2, V3 S.G.'s decoupling ..	4.0
C3 H.F. trans. cap. coupling (L.W.) ..	0.00041
C4 V2, V3 A.V.C. line decoupling ..	0.05
C5 V2 osc. anode coupling ..	0.00025

The small letters and arrows assist in tracing across from one section of the diagram to the other.



PHILCO - 295 (suite)
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Condensers (continued)		Values ( $\mu$ F)
C6	Oscillator fixed tracker (S.W.)	0.00225
C7	Oscillator fixed trimmer (L.W.)	0.00005
C8*	V2 osc. anode decoupling ..	8.0
C9	V3 anode decoupling ..	0.09
C10	I.F. by-passes ..	0.000111
C11		0.000111
C12	L.F. coupling to vol. cont. ..	0.01
C13	Parts of tone control circuit	0.001
C14		0.01
C15		0.001
C16		V4 triode C.G. I.F. by-pass ..
C17	V4 triode anode I.F. by-pass ..	0.0008
C18	L.F. coupling to T <sub>1</sub> ..	0.09
C19*	H.T. supply reservoir ..	2.0
C20	Part V <sub>5</sub> imp. limiting filter ..	0.001
C21	Aerial I.F. filter tuning ..	0.000045
C22†	Aerial S.W. trimmer ..	—
C23†	Aerial M.W. trimmer ..	—
C24†	Aerial L.W. trimmers ..	—
C25†		—
C26†	Aerial circuit tuning ..	—
C27†	H.F. trans. S.W. sec. trimmer ..	—
C28†	H.F. trans. M.W. sec. trimmer ..	—
C29†	H.F. trans. L.W. sec. trimmers.	—
C30†		—
C31†	H.F. trans. sec. tuning ..	—
C32†	Oscillator circuit tuning ..	—
C33†	Osc. S.W. trimmer ..	—
C34†	Osc. S.W. tracker ..	0.0006
C35†	Osc. M.W. trimmers ..	—
C36†		—
C37†	Osc. M.W. tracker ..	0.0015
C38†	Osc. L.W. trimmer ..	—
C39†	Osc. L.W. tracker ..	0.000375
C40†	1st I.F. trans. pri. tuning ..	—
C41†	1st I.F. trans. sec. tuning ..	—
C42†	2nd I.F. trans. pri. tuning ..	—
C43†	2nd I.F. trans. sec. tuning ..	—
C44	V2 anode decoupling ..	0.09

\* Electrolytic. † Variable. ‡ Pre-set.

Other Components		Approx. Values (ohms)
L <sub>1</sub>	Aerial I.F. filter coil ..	17·0
L <sub>2</sub>	Aerial S.W. coupling coil ..	0·5
L <sub>3</sub>	Aerial S.W. tuning coil ..	0·1
L <sub>4</sub>	Aerial M.W. coupling coil ..	35·0
L <sub>5</sub>	Aerial M.W. tuning coil ..	2·5
L <sub>6</sub>	Aerial L.W. coupling coil ..	115·0
L <sub>7</sub>	Aerial L.W. tuning coil ..	15·0

Other Components (continued).		Approx. Values (ohms)
L8	H.F. trans. S.W. primary ..	5·0
L9	H.F. trans. S.W. secondary ..	0·1
L10	Small coupling ..	Very low
L11	H.F. trans. M.W. secondary ..	2·5
L12	H.F. trans. M.W. and L.W. primary ..	115·0
L13	H.F. trans. L.W. secondary ..	15·0
L14	Oscillator S.W. tuning coil ..	0·1
L15	Osc. anode reaction coil ..	0·4
L16	Oscillator M.W. tuning coil ..	2·0
L17	Oscillator L.W. tuning coil ..	6·0
L18	} 1st I.F. trans. { Pri. ..	8·0
L19		{ Sec. ..
L20	} 2nd I.F. trans. { Pri. ..	12·0
L21		{ Sec. ..
L22	Speaker speech coil ..	2·0
T1	Intervalve trans. { Pri. ..	650·0
		{ Sec. total
T2	Speaker input trans. { Pri. total	500·0
	{ Sec. ..	0·2
St-S33	Waveband and muting switches	—
S34	Gram. pick-up switch ..	—
S35-	} Tone control switches. . .	—
S37		
S38	L.T. and H.T. switch, ganged	—
	R12 ..	—
X	Small coupling ..	—

## VALVE ANALYSIS

Valve voltages and currents given in the table below were measured with a battery reading 165 V, with the volume control at maximum and the receiver tuned to the lowest wavelength on the medium band. There was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, with chassis as negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V <sub>1</sub> 1A4E	165	0.9	25	0.2
V <sub>2</sub> 1C6*	165	0.3	25	0.6
V <sub>3</sub> 1A4E	165	0.9	25	0.2
V <sub>4</sub> 2102	90	1.3	—	—
V <sub>5</sub> 2103	162†	6.7†	165	3.8

\* Osc. anode (G2), 130 V, 2.2 mA.

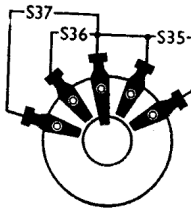
† Each anode.

## GENERAL NOTES

**Switches.—81-834** are the waveband and gramophone switches in four ganged assemblies beneath the chassis. For the sake of clarity in the circuit diagram the contacts have been separated into single-pole units which are shown in the separate switch diagrams. These show the contact arrangements as seen looking at the underside of the chassis from the rear. The table (p. viii) gives the switch positions for the various settings of the control knob, O indicating open and C closed.

**S35-S37**, the tone control switches, are in a separate rotary assembly also shown diagrammatically. Here again, the contacts have been separated into single-pole units. With the control knob in its fully anticlockwise position (normal) **S35** is *closed*. In the next

Diagram of the tone control switch unit, seen from the rear of the underside of the chassis.



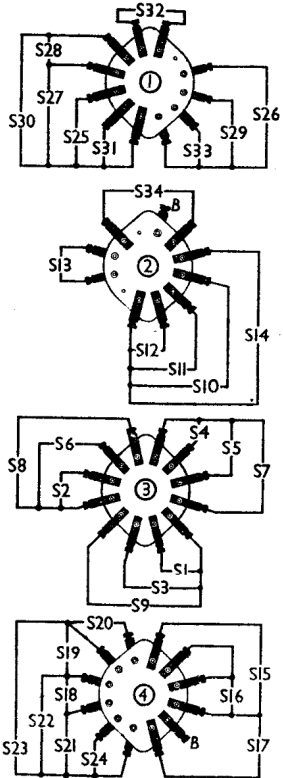
position (bass boost) all switches are *open*, in the third position (top cut 1) **S38** is *closed*, and in the fully clockwise position (top cut 2) both **S38** and **S37** are *closed*.

**R38** is a 3-point Q.M.B. switch used for L.T. and H.T. switching. It is ganged with the manual volume control **R12**.

Switch	L.W.	M.W.	S.W.	Gram.
S <sub>1</sub>	O	O	C	O
S <sub>2</sub>	O	O	C	O
S <sub>3</sub>	O	C	O	O
S <sub>4</sub>	O	O	C	O
S <sub>5</sub>	O	C	O	O
S <sub>6</sub>	O	C	O	O
S <sub>7</sub>	C	O	O	O
S <sub>8</sub>	C	O	O	O
S <sub>9</sub>	C	O	O	O
S <sub>10</sub>	O	O	C	O
S <sub>11</sub>	O	C	O	O
S <sub>12</sub>	C	O	O	O
S <sub>13</sub>	O	C	O	O
S <sub>14</sub>	O	O	O	C
S <sub>15</sub>	O	O	C	O
S <sub>16</sub>	C	O	O	C
S <sub>17</sub>	C	O	O	O
S <sub>18</sub>	O	O	O	C
S <sub>19</sub>	O	O	C	O
S <sub>20</sub>	O	C	C	O
S <sub>21</sub>	O	O	C	O
S <sub>22</sub>	O	C	O	O
S <sub>23</sub>	C	O	O	O
S <sub>24</sub>	O	O	O	C
S <sub>25</sub>	O	O	C	O
S <sub>26</sub>	O	O	C	O
S <sub>27</sub>	O	C	O	O
S <sub>28</sub>	O	O	O	C
S <sub>29</sub>	O	C	O	O
S <sub>30</sub>	C	O	O	O
S <sub>31</sub>	O	O	O	C
S <sub>32</sub>	O	C	O	O
S <sub>33</sub>	C	O	O	O
S <sub>34</sub>	O	O	O	C

**Coils.**—All tuning coils, with the exception of the I.F. filter coil **L1**, are in five screened units mounted on the chassis deck. **L1** is beneath the chassis, at the rear.

**Condensers.**—C2, C8 and C19 are respectively 4, 8 and 2  $\mu$ F dry electrolytics in a single cylindrical metal can beneath the chassis. The can is the common negative connection, while the positive connections are taken out to colour-coded tags. The blue tag is



Diagrams of the wave-change and gramophone switches, as seen from the rear of the underside of the chassis. The units are numbered in accordance with the under-chassis view.