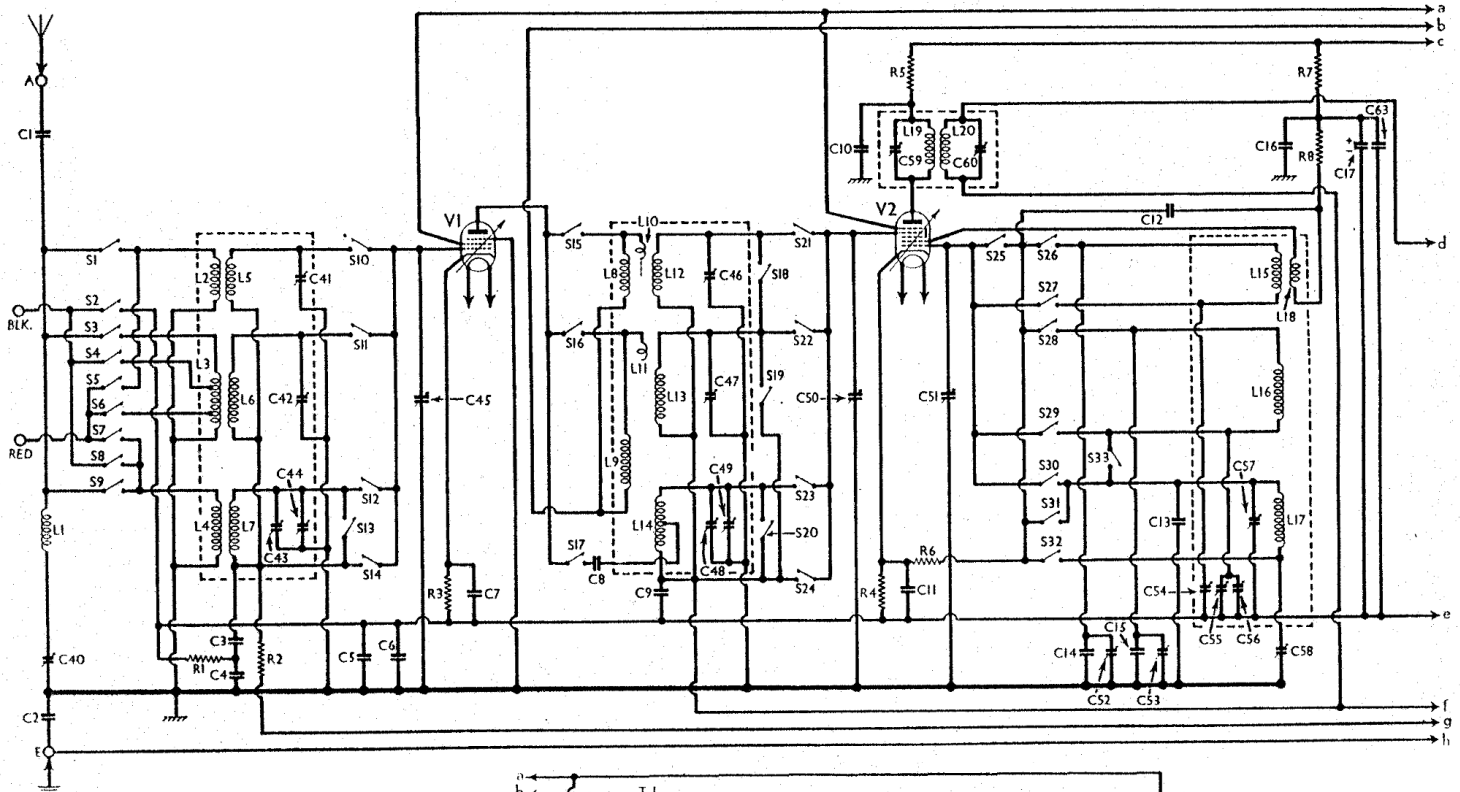


PHILCO - 290



VALVE ANALYSIS

Readings of valve voltages and currents given in the table (Col. 3) were taken with the receiver operating on A.C. mains of 230 V and with the volume control at maximum. The receiver was tuned to the maximum wavelength on the medium band but there was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, negative being the cathode of the valve concerned.

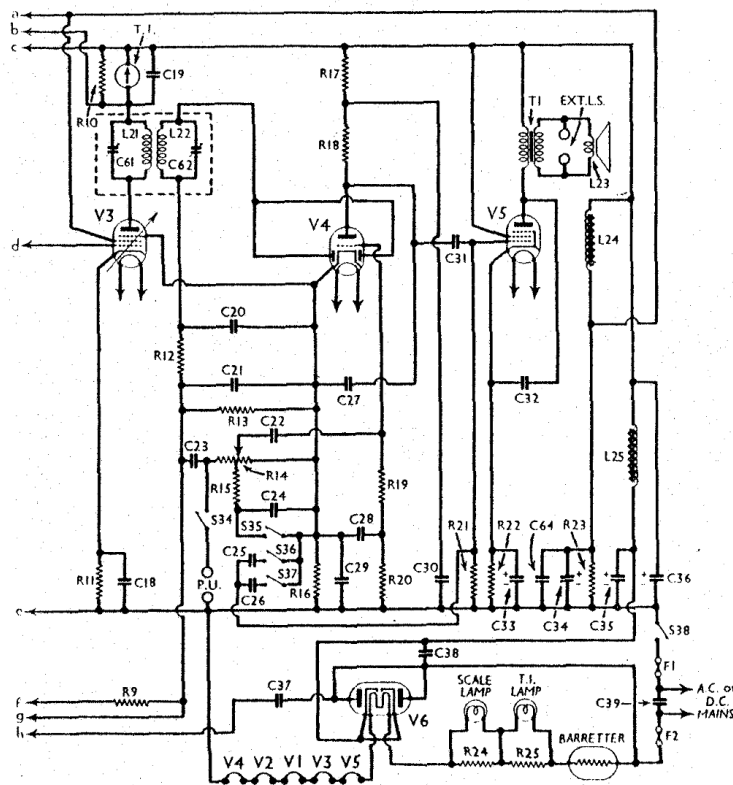
Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 78E	190	3.3	68	0.8
V2 6A7*	180	1.8	68	1.8
V3 78E	190	3.3	68	0.8
V4 75	85	0.4	—	—
V5 18E	108	27.0	205	5.9
V6 25RE†	—	—	—	—

* Osc. anode (G2) 145 V, 2.3 mA.

† Cathode to anode, 245 V D.C.

COMPONENTS AND VALUES

Resistances	Values (ohms)
R1 V1 C.G. decoupling	200
R2 V1 fixed G.B. resistance	400,000
R3 V1 fixed G.B. resistance	800
R4 V2 tet. anode decoupling	500
R5 V2 osc. C.G. resistance	10,000
R6 V2 osc. anode decoupling	51,000
R7 V2 osc. anode decoupling	10,000
R8 V2 osc. anode resistance	10,000
R9 V2, V3 A.V.C. line decoupling	490,000
R10 T.I. shunt	20,000
R11 V3 fixed G.B. resistance	800
R12 L.F. stopper	51,000
R13 V3 signal diode load	330,000
R14 Manual volume control	1,000,000
R15 Part of T.C. circuit	25,000
R16 V4 G.B. resistance	4,900
R17 V4 anode decoupling	70,000
R18 V4 anode load	240,000
R19 V4 C.G. resistance	490,000
R20 V4 C.G. decoupling	490,000
R21 V5 C.G. resistance	490,000
R22 V5 G.B. resistance	380
R23 Speaker field coil ballast	1,900
R24 Scale lamp shunt	25
R25 T.I. lamp shunt	25



On the left, and continued across the previous page, is the circuit diagram of the Philco 290 receiver. The small letters a-h merely indicate the joins in the two sections of the diagram. All the switches are shown as single-pole types (See General Notes).

PHILCO - 290 (suite)

Condensers		Values (μ F)
C1	Aerial series condenser ..	0.001
C2	Earth blocking condenser ..	0.25
C3	V1 C.G. decoupling ..	0.05
C4	V1 C.G. decoupling ..	0.05
C5	H.T. negative line by-passes ..	0.05
C6	V1 cathode by-pass ..	1.0
C7	V1 cathode by-pass ..	0.1
C8	V1 to V2 capacitive coupling (L.W.) ..	0.00041
C9	V2 tet. C.G. decoupling ..	0.05
C10	V2 tet. anode decoupling ..	0.05
C11	V2 cathode by-pass ..	0.05
C12	V2 osc. anode condenser ..	0.0008
C13	Osc. L.W. trimmer ..	0.00005

Other Components		Approx. Values (ohms)
L1	Aerial I.F. filter coil ..	17.0
L2	Aerial S.W. coupling coil ..	0.5
L3	Aerial M.W. coupling coil ..	36.0
L4	Aerial L.W. coupling coil ..	120.0
L5	Aerial S.W. tuning coil ..	0.05
L6	Aerial M.W. tuning coil ..	2.5
L7	Aerial L.W. tuning coil ..	15.0
L8	H.F. trans. S.W. primary ..	5.0
L9	H.F. trans. M.W. and L.W. pri.	120.0
L10	Small couplings	Very low
L11		Very low
L12	H.F. trans. S.W. sec. ..	0.05
L13	H.F. trans. M.W. sec. ..	2.5
L14	H.F. trans. L.W. sec. ..	15.0
L15	Osc. S.W. tuning coil ..	0.05
L16	Osc. M.W. tuning coil ..	2.2
L17	Osc. L.W. tuning coil ..	5.6
L18	Osc. anode reaction coil ..	0.4
L19	1st I.F. trans. { Pri. ..	7.5
L20		12.0
L21	2nd I.F. trans. { Pri. ..	12.0
L22		7.5
L23	Speaker speech coil ..	2.2
L24	Speaker field coil ..	3,300.0
L25	H.T. smoothing choke ..	300.0
T1	Speaker input trans. { Pri. ..	215.0
		0.25
T.I.	Tuning indicator meter ..	3,300.0
S1-S33	Waveband switches ..	---
S34	Gram. pick-up switch ..	---
S35-S37	Tone control switches ..	---
S38		---
Fr, F2	Mains switch, ganged R14 ..	---
	Mains circuit fuses, 1.5 A ..	---

GENERAL NOTES

Switches.—All the switches in our circuit are shown as single-pole types, and there are 34 for wavechange and gramophone switching, mounted in four ganged rotary units, of which separate diagrams are given. The table below gives the switch positions for the various control settings, O indicating open and C, closed.

Switch	L.W.	M.W.	S.W.	Gram.
S1	O	O	C	O
S2	O	O	C	O
S3	O	C	O	O
S4	O	C	O	O
S5	O	C	O	O
S6	O	C	O	O
S7	C	O	O	O
S8	C	O	O	O
S9	C	O	O	O
S10	O	O	C	O
S11	O	C	O	O
S12	C	O	O	O
S13	O	C	O	O
S14	O	O	C	O
S15	O	O	C	O
S16	C	O	O	C
S17	C	O	O	O
S18	O	O	C	O
S19	O	C	O	O
S20	O	C	C	O
S21	O	C	C	O
S22	O	C	O	O
S23	C	O	O	O
S24	O	O	O	C
S25	O	O	O	C
S26	O	O	C	O
S27	O	O	C	O
S28	O	C	O	O
S29	O	C	O	O
S30	C	O	O	O
S31	O	C	O	O
S32	C	O	O	O
S33	O	O	O	C
S34	O	O	O	C

S35-S37 are in another rotary unit, also shown separately. In the fully anti-clockwise position of the tone control, **S35** is closed. In the next position all are open, in the third position **S36** is closed, and in the fully clockwise position **S36** and **S37** are both closed.

S38 is the Q.M.B. mains switch, ganged with **R14**.

Below: The four switch units, looking at the underside of the chassis, from the rear. The top unit is that nearest to the knob. B indicates blank tags.

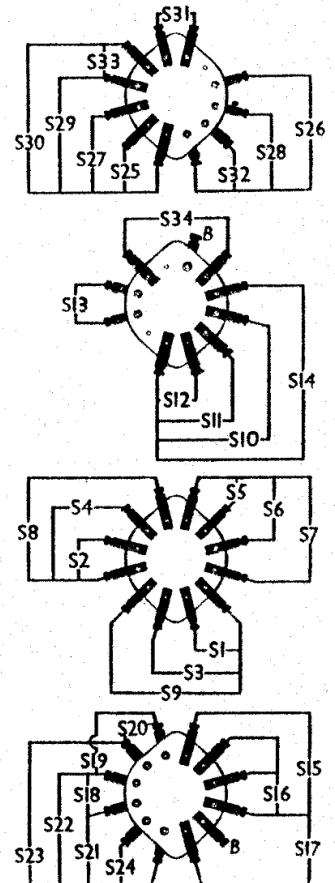


Diagram of the tone control switch unit, seen from the rear of the chassis. The centre tag and the next on the right are common to all three switches.

