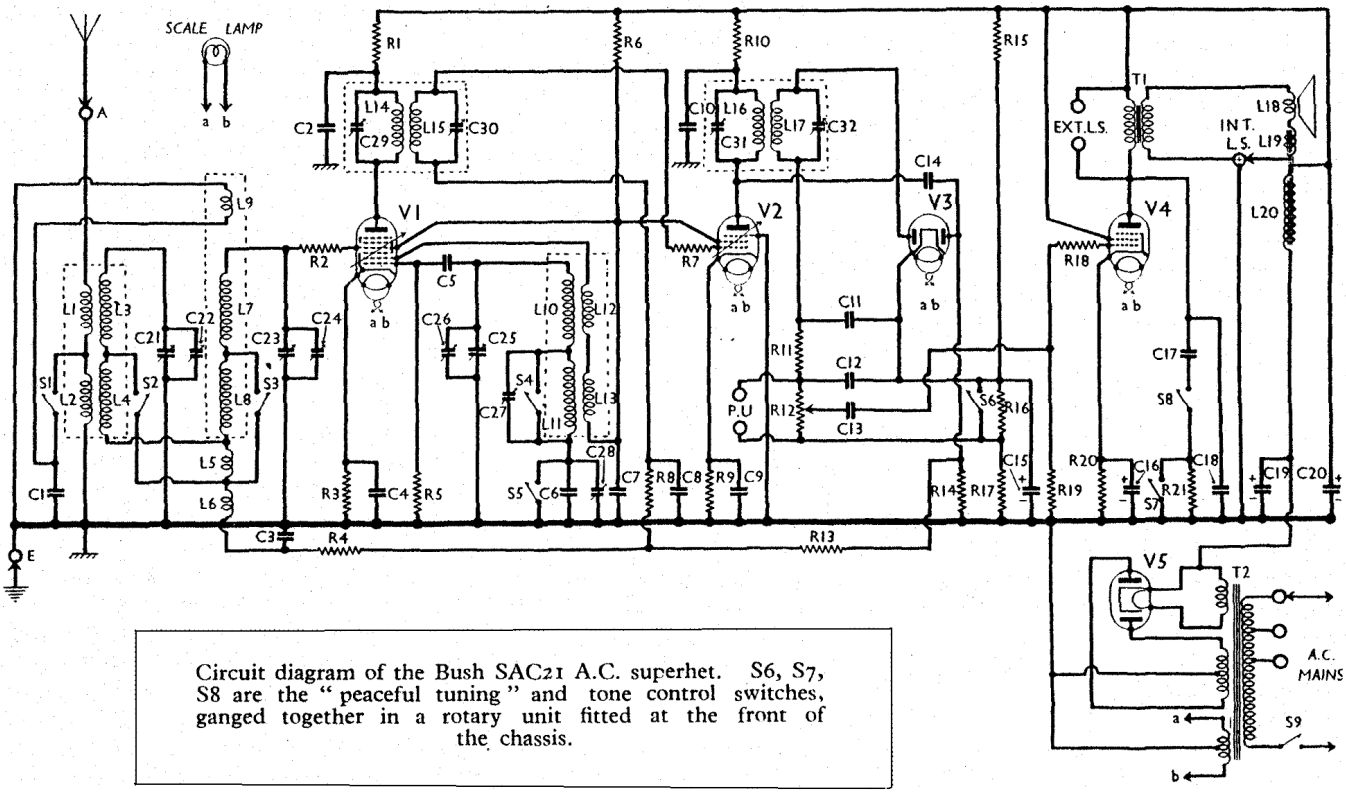
BUSH - SAC 21



Circuit diagram of the Bush SAC21 A.C. superhet. S6, S7, S8 are the "peaceful tuning" and tone control switches, ganged together in a rotary unit fitted at the front of the chassis.

COMPONENTS AND VALUES

	Condensers	Values (μF)
C1	Part of image suppression circuit	0·01
C2	V1 anode decoupling	0·1
C3	V1 cont. grid decoupling	0·1
C4	V1 cathode by-pass	0·1
C5	V1 osc. grid condenser	0·0005
C6	Oscillator L.W. tracker	0·001
C7	V1, V2 S.G.'s by-pass; osc. anode decoupling	0·1
C8	V2 cont. grid decoupling	0·1
C9	V2 cathode by-pass	0·1
C10	V2 anode decoupling	0·1
C11	I.F. by-passes	0·0001
C12	I.F. by-passes	0·0002
C13	L.F. coupling to V4	0·005
C14	Coupling to V3 A.V.C. diode	0·0001
C15*	V3 cathode by-pass	25·0
C16*	V4 cathode by-pass	25·0
C17	Parts of tone control filter	0·03
C18	Parts of tone control filter	0·001
C19*	H.T. smoothing	8·0
C20*	H.T. smoothing	8·0
C21	Band-pass primary tuning	—
C22‡	Band-pass primary trimmer	0·00005
C23	Band-pass secondary tuning	—
C24‡	Band-pass secondary trimmer	0·00005
C25	Oscillator tuning	—
C26‡	Oscillator main trimmer	0·00005
C27‡	Oscillator L.W. trimmer	0·000075
C28¶	Oscillator L.W. tracker	0·0003
C29‡	1st I.F. trans. pri. tuning	0·00015
C30‡	1st I.F. trans. sec. tuning	0·00015
C31‡	2nd I.F. trans. pri. tuning	0·0003
C32‡	2nd I.F. trans. sec. tuning	0·0003

	Resistances	Values (ohms)
R1	V1 anode decoupling	10,000
R2	V1 cont. grid series resistance	250
R3	V1 fixed G.B. resistance	250
R4	V1 cont. grid decoupling	1,000,000
R5	V1 osc. grid resistance	30,000
R6	V1 and V2 S.G.'s and osc. anode H.T. feed	20,000
R7	V2 cont. grid series resistance	250
R8	V2 cont. grid decoupling	1,000,000
R9	V2 fixed G.B. resistance	250
R10	V2 anode decoupling	10,000
R11	I.F. stopper	50,000
R12	Manual volume control	500,000
R13	A.V.C. circuit decoupling	1,000,000
R14	A.V.C. diode load	1,000,000
R15	A.V.C. delay voltage potential divider	100,000
R16	A.V.C. delay voltage potential divider	1,500
R17	A.V.C. delay voltage potential divider	10,000
R18	V4 grid I.F. stopper	100,000
R19	V4 grid resistance	500,000
R20	V4 auto. G.B. resistance	150
R21	Part of tone control filter	10,000*

* 20,000 Ω in some early chassis.

	Other Components	Values (ohms)
L1	Aerial coupling coils	1·5
L2	Aerial coupling coils	7·0
L3	Band-pass primary coils	3·0
L4	Band-pass primary coils	12·0
L5	Band-pass coupling coils	3·5
L6	Band-pass coupling coils	0·5
L7	Band-pass secondary coils	3·0
L8	Band-pass secondary coils	12·0
L9	Image suppression coil	Very low
L10	Oscillator tuning coils	3·5
L11	Oscillator tuning coils	8·5
L12	Oscillator anode coils	3·5
L13	Oscillator anode coils	
L14	1st I.F. trans. Pri.	110·0
L15	1st I.F. trans. Sec.	110·0
L16	2nd I.F. trans. Pri.	60·0
L17	2nd I.F. trans. Sec.	60·0
L18	Speaker speech coil	1·75

	Other Components (Contd.)	Values (ohms)
L19	Hum neutralising coil	0·2
L20	Speaker field winding	2000·0
T1	Speaker input trans. Pri.	600·0
T1	Speaker input trans. Sec.	0·35
T2	Mains trans. Pri. total	25·0
T2	Mains trans. Heater sec.	0·05
T2	Mains trans. Rect. heat. sec.	0·1
T2	Mains trans. H.T. sec.	600·0
S1-S5	Waveband switches	—
S6	Interstation noise suppressor switch	—
S7, S8	Tone control switches	—
S9	Mains switch (ganged R12)	—

VALVE ANALYSIS

Valve voltages and currents given in the table below were measured with the receiver operating on A.C. mains of 225 V, with no aerial connected, the volume control at maximum and the tuning condenser at maximum, the wavechange switch being in the L.W. position. The "Peaceful Tuning" switch was in position 1.

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

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 FC4*	220	2·3	80	4·2
V2 VP4	195	4·0	80	1·6
V3 2D4A	—	—	—	—
V4 Pen4VB	210	36·0	240	4·0
V5 1W3	305†	—	—	—

* Osc. anode (G2) 85 V, 2·2 mA.
† Each anode, A.C.

GENERAL NOTES

Switches.—The wavechange switches, **S1-S5,** are in a single unit, seen in the under-chassis view, where they are clearly indicated. They are all *closed* on the M.W. band, and *open* on the L.W. band.

S6, S7 and **S8** are the "peaceful tuning" and tone control switches, ganged in a unit fitted to the front of the chassis. Their positions are indicated roughly in the under-chassis view. In each position of the control knob, only one of the switches opens. In position 1, **S8** opens; position 2, **S7** opens; position 3, **S6** opens.

In case of trouble with these switches, make sure that the paxolin panel carrying them has not warped, causing one or other of the switches to be shorted to chassis.

S9 is the Q.M.B. mains switch, ganged with the volume control **R12.**