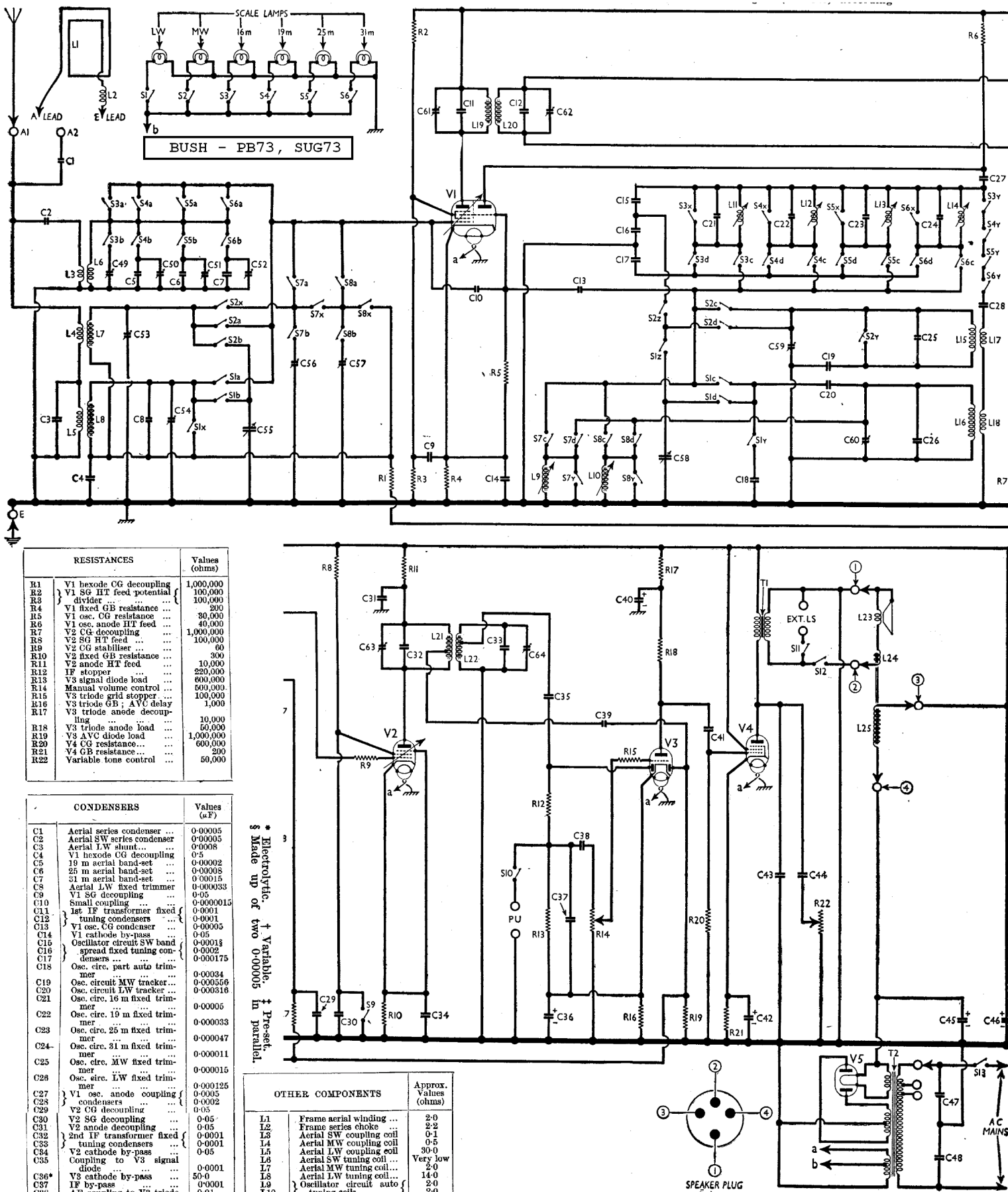


RESISTANCES		Values (ohms)
R1	V1 hexode CG decoupling	1,000,000
R2	V1 SG HT feed potential divider	100,000
R3	V1 SG HT feed potential divider	100,000
R4	V1 fixed GB resistance	200
R5	V1 osc. CG resistance	30,000
R6	V1 osc. anode HT feed	40,000
R7	V2 CG decoupling	1,000,000
R8	V2 SG HT feed	100,000
R9	V2 CG stabiliser	60
R10	V2 fixed GB resistance	300
R11	V2 anode HT feed	10,000
R12	IF stopper	220,000
R13	V3 signal diode load	600,000
R14	Manual volume control	500,000
R15	V3 triode grid stopper	100,000
R16	V3 triode GB ; AVC delay	1,000
R17	V3 triode anode decoupling	10,000
R18	V3 triode anode load	50,000
R19	V3 AVC diode load	1,000,000
R20	V4 CG resistance	600,000
R21	V4 GB resistance	200
R22	Variable tone control	50,000

CONDENSERS		Values (μF)
C1	Aerial series condenser	0·00005
C2	Aerial SW series condenser	0·00005
C3	Aerial LW shunt	0·00008
C4	V1 hexode CG decoupling	0·5
C5	19 m aerial band-set	0·00002
C6	25 m aerial band-set	0·00008
C7	31 m aerial band-set	0·00015
C8	Aerial LW fixed trimmer	0·000033
C9	V1 SG decoupling	0·05
C10	Small coupling	0·0000015
C11	1st IF transformer fixed tuning condensers	0·0001
C12	1st IF transformer fixed tuning condensers	0·0001
C13	V1 osc. CG condenser	0·00005
C14	V1 cathode by-pass	0·05
C15	Oscillator circuit SW band spread fixed tuning condensers	0·0001§
C16	Oscillator circuit SW band spread fixed tuning condensers	0·0002
C17	Oscillator circuit SW band spread fixed tuning condensers	0·000175
C18	Osc. circ. part auto trimmer	0·00034
C19	Osc. circuit MW tracker	0·000556
C20	Osc. circuit LW tracker	0·000316
C21	Osc. circ. 16 m fixed trimmer	0·00005
C22	Osc. circ. 19 m fixed trimmer	0·000033
C23	Osc. circ. 25 m fixed trimmer	0·000047
C24	Osc. circ. 31 m fixed trimmer	0·000011
C25	Osc. circ. MW fixed trimmer	0·000015
C26	Osc. circ. LW fixed trimmer	0·000125
C27	V1 osc. anode coupling condensers	0·0005
C28	V1 osc. anode coupling condensers	0·0002
C29	V2 CG decoupling	0·05
C30	V2 SG decoupling	0·05
C31	V2 anode decoupling	0·05
C32	2nd IF transformer fixed tuning condensers	0·0001
C33	2nd IF transformer fixed tuning condensers	0·0001
C34	V2 cathode by-pass	0·05
C35	Coupling to V3 signal diode	0·0001
C36*	V3 cathode by-pass	50·0
C37	IF by-pass	0·0001
C38	AF coupling to V3 triode	0·01
C39	Coupling to V3 AVC diode	0·00005
C40*	V3 triode anode decoupling	2·0
C41	V3 triode to V4 coupling	0·01
C42*	V4 cathode by-pass	50·0
C43	Fixed tone corrector	0·003
C44	Part variable tone control	0·03
C45*	HT smoothing condensers	8·0
C46*	HT smoothing condensers	16·0
C47	Mains RF by-pass condensers	0·01
C48	Mains RF by-pass condensers	0·01
C49†	16 m aerial trimmer	0·00004
C50†	19 m aerial trimmer	0·00004
C51†	25 m aerial trimmer	0·00004
C52†	31 m aerial trimmer	0·00004
C53‡	Aerial circuit MW trimmer	0·00001
C54‡	Aerial circuit LW trimmer	0·00001
C55†	Aerial manual tuning	—
C56‡	Aerial circuit auto tuning trimmers	0·00045
C57‡	Aerial circuit auto tuning trimmers	0·00045
C58†	Osc. circ. manual tuning	—
C59†	Osc. circ. MW trimmer	0·00001
C60‡	Osc. circ. LW trimmer	0·00001
C61‡	1st IF trans. pri. trimmer	0·00009
C62‡	1st IF trans. sec. trimmer	0·00009
C63‡	2nd IF trans. pri. trimmer	0·00009
C64‡	2nd IF trans. sec. trimmer	0·00009

* Electrolytic. † Variable. ‡ Pre-set. § Made up of two 0·00005 in parallel.

OTHER COMPONENTS		Approx. Values (ohms)
L1	Frame aerial winding	2·0
L2	Frame series choke	2·2
L3	Aerial SW coupling coil	0·1
L4	Aerial MW coupling coil	0·5
L5	Aerial LW coupling coil	30·0
L6	Aerial SW tuning coil	Very low
L7	Aerial MW tuning coil	2·0
L8	Aerial LW tuning coil	14·0
L9	Oscillator circuit auto tuning coils	2·0
L10	Oscillator circuit auto tuning coils	2·0
L11	Osc. circuit 16 m coil	Very low
L12	Osc. circuit 19 m coil	Very low
L13	Osc. circuit 25 m coil	Very low
L14	Osc. circuit 31 m coil	Very low
L15	Osc. circ. MW tuning coil	1·5
L16	Osc. LW and master tuning	2·7
L17	Oscillator MW reaction	1·0
L18	Osc. LW and master reaction	2·3
L19	1st IF trans. Pri.	3·8
L20	1st IF trans. Sec.	3·8
L21	2nd IF trans. Pri., total	3·8
L22	2nd IF trans. Sec., total	3·8
L23	Speaker speech coil	2·6
L24	Hum neutralising coil	0·2
L25	Speaker field coil	2,000·0
T1	Output trans. Pri.	700·0
	Output trans. Sec.	0·3
T2	Mains trans. Pri., total	53·0
	Mains trans. Heat. sec., total	0·1
	Mains trans. Rect. heat. sec.	0·1
	Mains trans. HT sec., total	700·0
S1-S6	Scale lamps switches	—
S1a-S1z	Aerial and osc. LW switches	—
S2a-S2z	Aerial and osc. MW switches	—
S3a-S3y	Aerial and osc. 16 m switches	—
S4a-S4y	Aerial and osc. 19 m switches	—
S5a-S5y	Aerial and osc. 25 m switches	—
S6a-S6y	Aerial and osc. 31 m switches	—
S7a-S7y	Aerial and oscillator pre-set station switches	—
S8a-S8y	Aerial and oscillator pre-set station switches	—
S9	Radio muting switch	—
S10	Gram pick-up switch	—
S11, S12	Speaker circuit switches	—
S13	Mains switch, ganged R22	—

VALVE ANALYSIS

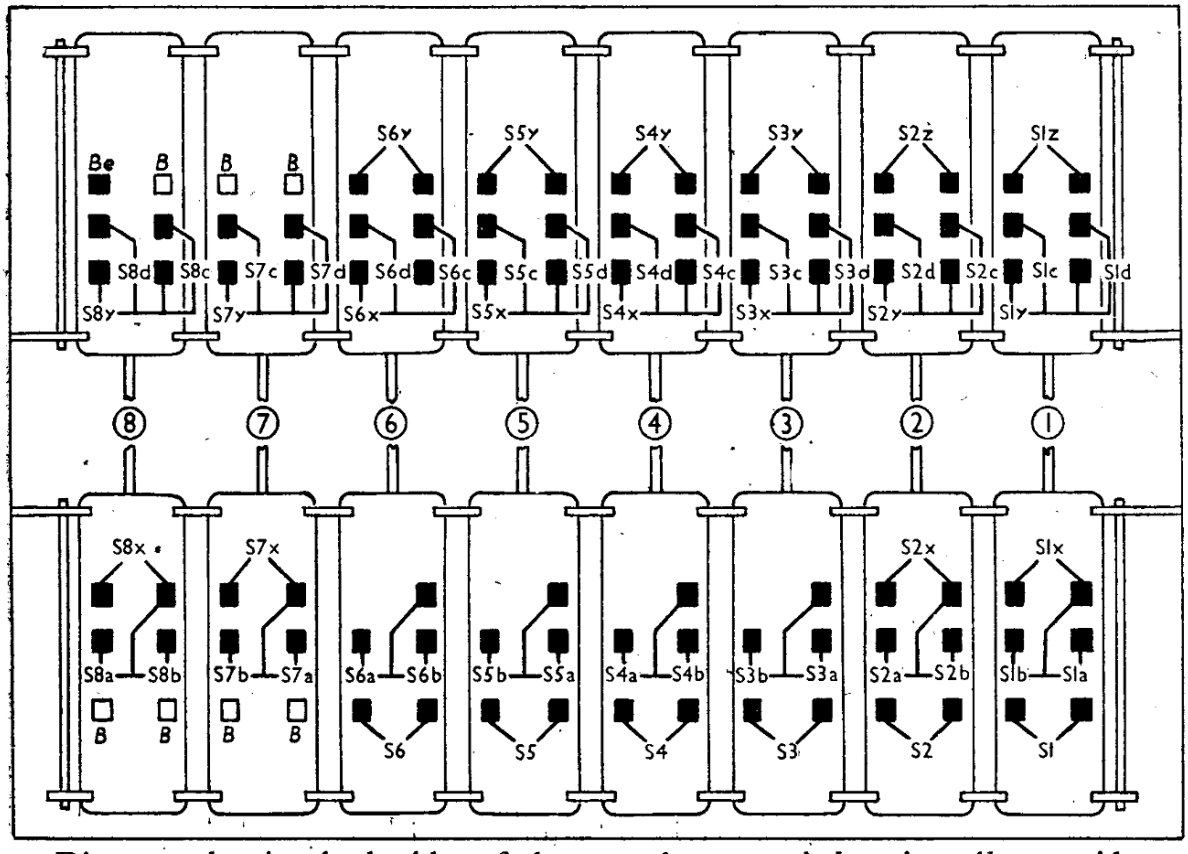
Valve voltages and currents given in the table below are those measured in our receiver when it was operating on AC mains of 235 V. using the 230 V tapping on the mains transformer.

The receiver was tuned to the lowest wave length on the medium band and the volume control was at maximum, but there was no signal input.

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

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 ECH35	265	1·1	55	1·3
	Oscillator 95	4·6		
V2 EF39	200	5·0	90	1·7
V3 EBC33	110	2·2	—	—
V4 EL33	245	30·0	265	4·0
V5 DW4/350	360†	—	—	—

† Each anode, AC.



Diagrams showing both sides of the press-button switch unit. *Above :* side facing chassis deck; *below :* side seen in under-chassis view. The switches without lettered suffixes are the scale lamp switches.

CIRCUIT ALIGNMENT

IF Stages.—Press MW button and tune to 300 m on scale. Turn the volume control to maximum, and the tone control fully clockwise. A damping shunt consisting of a 30,000 Ω resistance and a 0.05 μF condenser in series should be made up.

Connect the shunt between **V2** anode and chassis, and the signal generator leads to CG (top cap) of **V2** and chassis. Feed in a 465 KC/S (645.16 m) signal and adjust **C64** for maximum output. Transfer shunt to signal diode of **V3** and adjust **C63** for maximum output.

Transfer signal generator lead to control grid (top cap) of **V1**, leaving existing connector in place. Transfer shunt to anode of **V1** hexode, and adjust **C62** for maximum output. Transfer shunt to **V2** control grid, and adjust **C61** for maximum output. Disconnect shunt.

RF and Oscillator Stages (Manual).—With the gang at maximum, scale cursor should coincide with the marks near the tops of the scales. Connect signal generator leads to **A1** and **E** sockets, via a suitable dummy aerial. If the escutcheon plate is removed from the front of the cabinet, the chassis need not be removed.

MW.—With the receiver still tuned to 300 m, feed in a 300 m (1,000 KC/S) signal, and adjust **C59,** then **C53,** for maximum output. Check calibration at 500 m (600 KC/S).

LW.—Press LW button, tune to 1,500 m on scale, feed in a 1,500 m (200 KC/S) signal, and adjust **C60,** then **C54,** for maximum output. Check calibration at 1,900 m (157.6 KC/S).

SW Bands.—The makers recommend that alignment on these bands should be carried out on the signal of a known station, because the ordinary signal generator would not be satisfactory. Alignment should only be necessary after a component has been replaced, or a new frequency changer fitted. The operator is advised first to tune in on another set a known station near the middle of the appropriate band. The wavelengths should be close to the following: 16 m band, 16.8 m; 19 m band, 19.6 m; 25 m band, 25.4 m; 31 m band, 31 m. The second receiver should be used for checking and identifying the transmission.

If the four bands are to be aligned, always commence with the 31 m band. Tune in the required station on the monitor (second) receiver, and identify it carefully. Press the appropriate button on the Bush receiver, tune to the identified station on the scale, and adjust the appropriate oscillator coil **(L11-L14),** then the aerial trimmer **(C49-C52)** for maximum output. Repeat the procedure on the 25 m, 19 m, then the 16 m bands. The aerial trimmer tuning will be found to be fairly flat.

The lock-nut securing the inductance adjusting screw should be slackened before making the adjustment, and the screw should be held securely while the nut is tightened.

PRE-SET STATIONS

The range of each of these is 325-550 m (923-545 KC/S). It is recommended that the adjustment should be made on the actual transmission.

Press the appropriate button, and adjust the oscillator coil core **(L9, L10).** A clockwise movement *increases* the wavelength. Then adjust the aerial trimmer **(C56, C57)** in the same direction. The lock-nut should be treated as described at the end of the SW alignment.

Re-adjustment will be necessary after any alteration to MW and LW manual circuits.