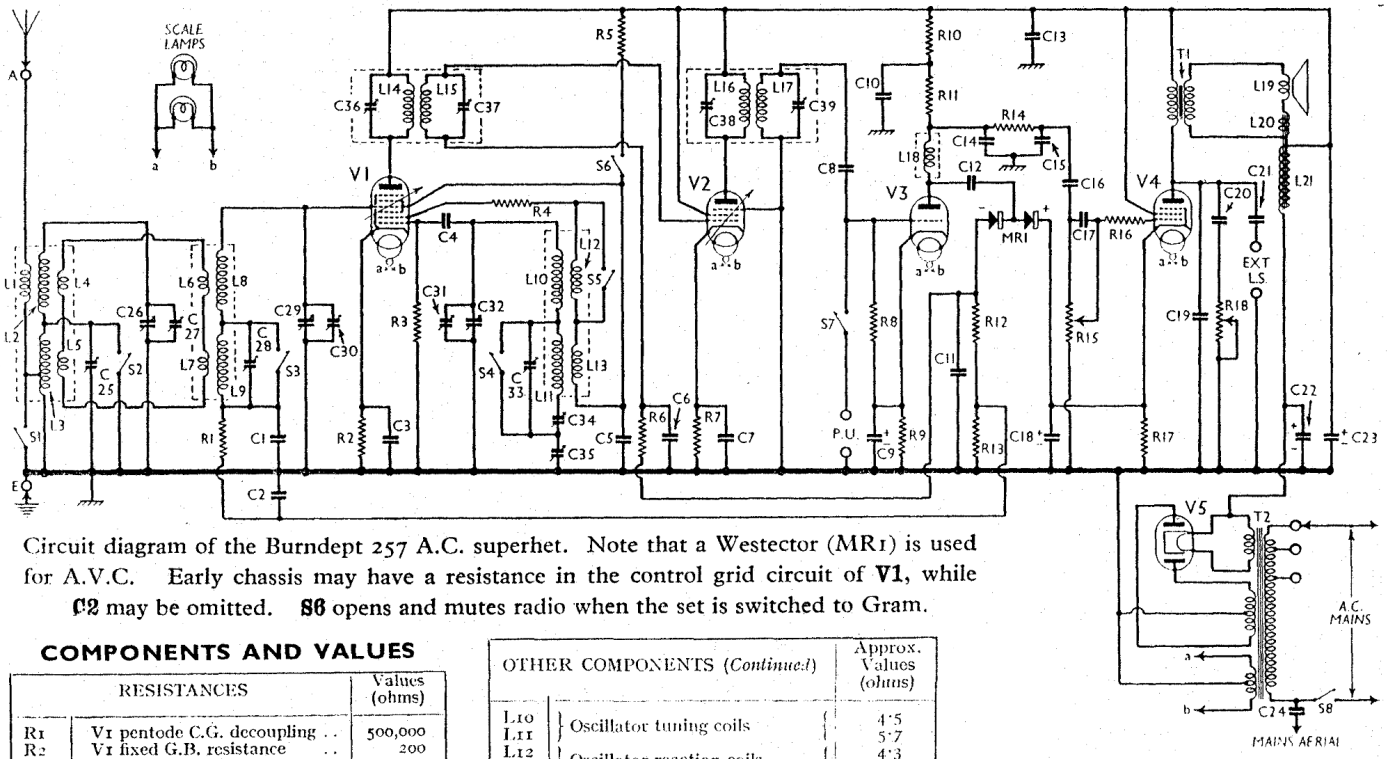
BURNDEPT - 257



Circuit diagram of the Burndept 257 A.C. superhet. Note that a Westector (MR1) is used for A.V.C. Early chassis may have a resistance in the control grid circuit of **V1**, while **C2** may be omitted. **S6** opens and mutes radio when the set is switched to Gram.

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 pentode C.G. decoupling ..	500,000
R2	V1 fixed G.B. resistance ..	200
R3	V1 osc. C.G. resistance ..	50,000
R4	V1 osc. anode stabiliser ..	200
R5	V1 S.G.'s and osc. A decoupling	30,000
R6	V2 C.G. decoupling	500,000
R7	V2 fixed G.B. resistance ..	150
R8	V3 grid leak	500,000
R9	V3 G.B. resistance	1,000
R10	V3 anode decoupling ..	20,000
R11	V3 anode load	25,000
R12	MR1 load resistances ..	500,000
R13		500,000
R14	I.F. stopper	20,000
R15	Manual volume control ..	500,000
R16	V4 C.G. I.F. stopper	100,000
R17	V4 G.B. resistance	150
R18	Variable tone control ..	250,000

	CONDENSERS	Values (μF)
C1	V1 pentode C.G. decoupling ..	0·1
C2	V1 A.V.C. line decoupling ..	0·01
C3	V1 cathode by-pass	0·1
C4	V1 osc. C.G. condenser ..	0·001
C5	V1 S.G.'s and osc. A decoupling	0·1
C6	V2 C.G. decoupling	0·1
C7	V2 cathode by-pass ..	0·1
C8	V3 C.G. condenser	0·0001
C9*	V3 cathode by-pass	25·0
C10	V3 anode decoupling ..	0·1
C11	I.F. by-pass	0·01
C12	MR1 coupling	0·0005
C13	H.T. supply H.F. by-pass ..	0·1
C14	I.F. by-passes ..	0·0005
C15		0·0005
C16	V3 to V4 L.F. coupling ..	0·01
C17	V4 C.G. I.F. by-pass ..	0·0001
C18*	V4 cathode by-pass	50·0
C19	Fixed tone corrector	0·002
C20	Part of T.C. filter	0·1
C21	Ext. speaker coupling ..	0·5
C22*	H.T. smoothing ..	8·0
C23*		16·0
C24	Mains aerial coupling ..	0·0001
C25‡	Band-pass pri. L.W. trimmer	—
C26†	Band-pass pri. tuning ..	—
C27‡	Band-pass pri. M.W. trimmer	—
C28‡	Band-pass sec. L.W. trimmer	—
C29†	Band-pass sec. tuning ..	—
C30‡	Band-pass sec. M.W. trimmer	—
C31‡	Oscillator M.W. trimmer ..	—
C32†	Oscillator tuning	—
C33‡	Oscillator L.W. trimmer ..	—
C34‡	Oscillator L.W. tracker ..	—
C35‡	Oscillator M.W. tracker ..	—
C36‡	1st I.F. trans. pri. tuning ..	—
C37‡	1st I.F. trans. sec. tuning ..	—
C38‡	2nd I.F. trans. pri. tuning ..	—
C39‡	2nd I.F. trans. sec. tuning ..	—

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial M.W. coupling coil ..	4·9
L2	Band-pass primary coils	5·5
L3		9·0
L4	Band-pass coupling coils ..	0·4
L5		
L6	Band-pass coupling coils ..	0·4
L7		
L8	Band-pass secondary coils	5·0
L9		9·0

	OTHER COMPONENTS (*Continued*)	Approx. Values (ohms)
L10	Oscillator tuning coils	4·5
L11		5·7
L12	Oscillator reaction coils	4·3
L13		1·2
L14	1st I.F. trans. Pri. ..	30·0
L15	Sec. ..	30·0
L16	2nd I.F. trans. Pri. ..	30·0
L17	Sec. ..	30·0
L18	V3 anode I.F. choke	200·0
L19	Speaker speech coil	2·7
L20	Hum neutralising coil ..	0·1
L21	Speaker field coil	2,000·0
T1	Speaker input trans. Pri. ..	600·0
	Sec. ..	0·45
T2	Mains trans. Pri. total ..	25·0
	Heater sec. ..	0·03
	Rect. heat. sec.	0·05
	H.T. sec. total	430·0
S1 S5	Waveband switches	..
S6, S7	Gram. switches	..
S8	Mains switch, ganged R15 ..	..

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 220 V, using the 230 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.

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

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 FC4*	265	1·3	85	4·5
V2 VP4B ..	265	14·0	265	5·0
V3 354V ..	80	4·3	—	—
V4 PenA4	240	34·0	265	4·2
V5 R2 ..	370†	—	—	—

* Oscillator anode (G2) 85 V, 1·9 mA.

GENERAL NOTES

Switches.— **S1-S7** are the waveband and gramophone switches, ganged in a single unit beneath the chassis. Note that one of the switches in the unit, marked "B," is blank. The table below gives the switch positions for the various control settings, starting with the control fully anti-clockwise. O indicates open, and C, closed.

Switch	L.W.	M.W.	Gram
S1	O	C	O
S2	O	C	O
S3	O	C	O
S4	O	C	O
S5	O	C	O
S6	C	C	O
S7	O	O	C

S8 is the Q.M.B. mains switch, ganged with the volume control **R15**.

Coils.—**L1-L5, L6-L9** and **L10-L13** are in three screened units on the chassis deck. The I.F. transformers **L14, L15** and **L16, L17** are in two further screened units, with their associated trimmers. **L18** is a screened I.F. choke.

CIRCUIT ALIGNMENT

I.F. Stages.—Short-circuit the oscillator grid coils in the receiver by means of a connecting link between the oscillator grid (pin 2) of **V1** and the chassis.

Inject a 130 KC/S signal into the control grid of **V1** (top cap), across a 0·25 MO resistance, which should be connected between the grid and chassis.

A useful accessory for facilitating this operation is a standard grid cap with two leads soldered to it, one to the outer shield and one to the contact cap, the 0.25 MO resistance being connected across the two, and the ends of the two leads having crocodile clips attached.

The input should be kept very low indeed, or trouble will be experienced with the detector overloading, causing incorrect alignment and distortion.

If the minimum output of the signal generator is suspected of being too large and liable to cause trouble, the E lead of the signal generator and the grid cap should be taken to the bottom of the grid coil instead of to the chassis. This will retain full A.V.C. on **V1** and **V2** and prevent the detector from being overloaded. The trimming of the I.F. transformers will not appear to be so sharp, however.

If a very small signal is available, the A.V.C. may be cut out by connecting the negative end of the Westector to chassis. This will make the trimming appear sharper than before.

Now adjust **C39, C38, C37** and **C36** in turn for maximum output. Afterwards, re-check them all again to make sure that previous adjustments were correct.

Remove the 0·25 MO resistance and replace the normal grid cap on the FC4. Remove the short-circuit from the oscillator grid coils.