OUTPUT PENTODE

Output pentode primarily intended for use as line time base output valve in A.C. television receivers.

EL38
EL38M

HEATER

V_h	6.3	V
I_h	1.4	A

CAPACITANCES

	EL38M	EL38	
C_{in}	18	18	μμF
C_{out}	9.5	6.5	μμF
C_{a-g1}	<1.0	<1.2	μμF

CHARACTERISTICS

V_a	275	V
V_{g2}	275	V
I_a	91	mA
I_{g2}	11	mA
V_{g1}	−9	V
g_m	14	mA/V
μ_{g1-g2}	16.5	
r_a	20,000	Ω

OPERATION AS LINE OUTPUT PENTODE

Circuit Design

To allow for valve spread and for deterioration during life the line output stage should be designed around the following value of peak anode current:—

V_a	90	V
V_{g2}	275	V
$i_{a\ (pk)}$	150	mA

For the average new valve the following figures will apply:—

V_a	90	V
V_{g2}	275	V
V_{g1}	−1	V
$i_{a\ (pk)}$	225	mA

Typical Circuit (See circuit on page 3)

	V_b	300	V
For EL38	I_a	64	mA
	I_{g2}	18	mA
	R_k	120	Ω
For EBC33	I_a	0.8	mA

N.B.—Above figures measured under synchronised conditions.

LIMITING VALUES

$V_{a\ (b)}$ max.	1,200	V
V_a max.	800	V
$v_{a\ (pk)}$ max.	8,000	V
$V_{g2\ (b)}$ max.	800	V
V_{g2} max.	400	V
p_a max.	25	W
p_{g2} max.	8	W
I_k max.	200	mA
V_{g1} max. (I_{g1} = +0.3 μA)	1.3	V
R_{g1-k} max. (p_a <25W)	0.5	MΩ
R_{g1-k} max. (p_a <9·W)	0.8	MΩ
V_{h-k} max.	100	V
R_{h-k} max.	20,000	Ω

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CIRCUIT VALUES (see circuit on page 3)

Resistors		Value	Wattage	Tolerance
R_1	47	KΩ	½ W	20%
R_2	330	KΩ	½ W	10%
R_3	50	KΩ	1 W	Potentiometer
R_4	680	Ω	½ W	10%
R_5	820	KΩ	½ W	20%
R_6	120	Ω	1 W	20%
R_7	500	Ω	4 W	Potentiometer
R_8	2.2	KΩ	½ W	20%
R_9	2.5	KΩ	4 W	Potentiometer
R_{10}	2.7	KΩ	4 W	20%
R_{11}	100	Ω	½ W	20%

Capacitors		Value	Tolerance	Wkg. Voltage
C_1	0.1	μF	20%	350 V
C_2	0.0022	μF	20%	350 V
C_3	0.01	μF	10%	350 V
C_4	0.001	μF	10%	350 V
C_5	0.004–0.006	μF	—	500 V

Transformers

T1 Ratio 1 : 3 (step-up into grid circuit)
T2 Ratio 4 : 1 primary inductance ≮1 H

Deflector Coils

Resistance 13 Ω
Inductance 6.5 mH

To provide full scan for 9" picture tube (V_a=7KV) with peak to peak current swing of 500 mA.

Notes

(I) Synchronising pulses may be applied negatively to the anode or positively to the grid of the EBC33.

(II) The decoupling components (R_1 C_1) in the anode circuit of the EBC33 are necessary only if there is ripple on the H.T. line.

(III) All potentiometers should be linear components to provide smooth control.

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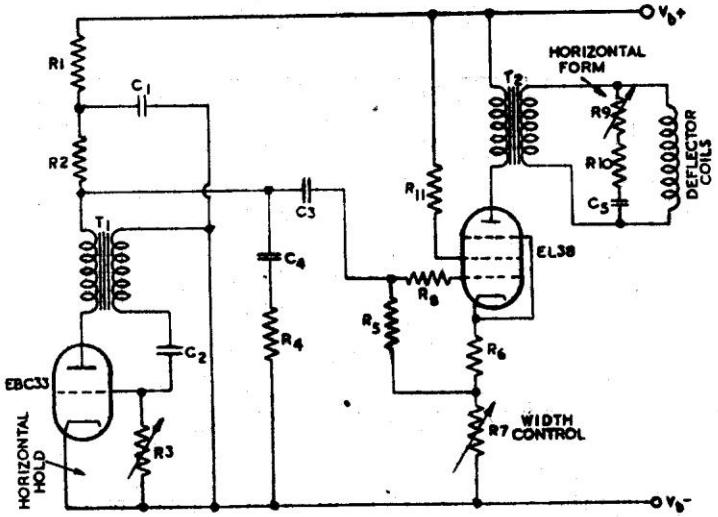
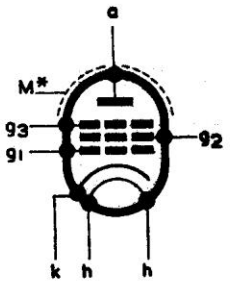
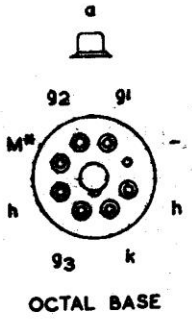
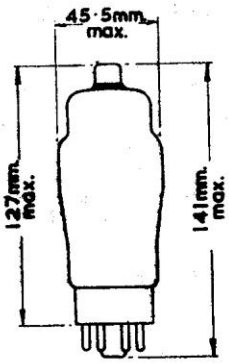


LINE TIME BASE CIRCUIT





OCTAL BASE



* External metallising on type EL38M only.

732

EL38
EL38M

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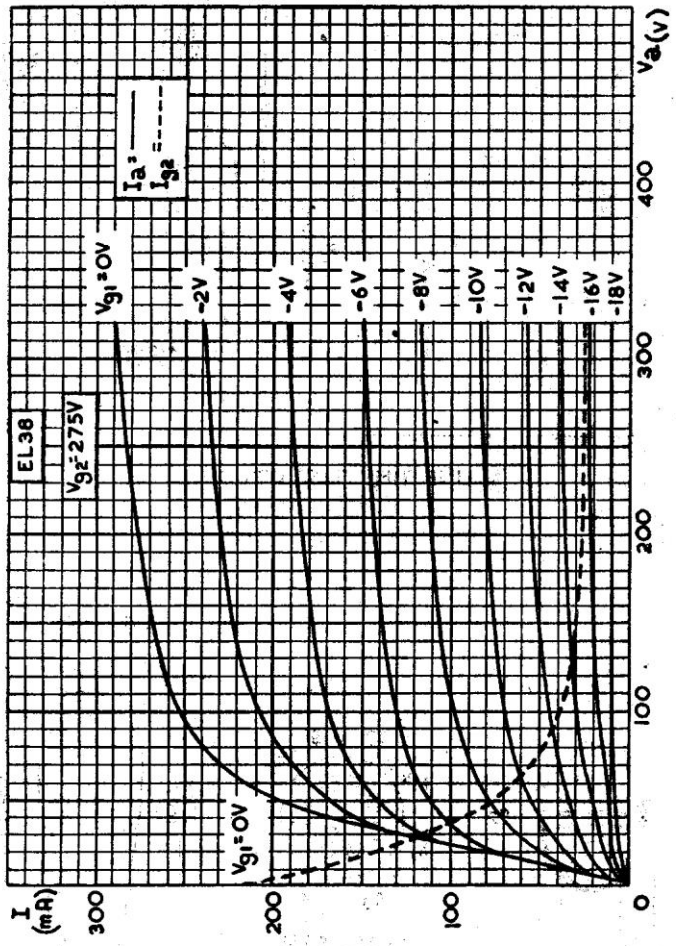

ANODE CURRENT AND SCREEN GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL GRID VOLTAGE AS PARAMETER