OUTPUT PENTODE FOR LINE DEFLECTION AND A.F. OUTPUT PENTODE

Output pentode intended for use as horizontal deflection amplifier in small screen television receivers and as A. F. power amplifier.

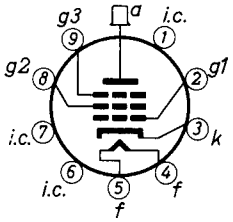
QUICK REFERENCE DATA				
Anode peak voltage	V_{ap}	max.	7	kV
Cathode current	I_k	max.	180	mA
Output power, class B two tubes	W_o		20	W

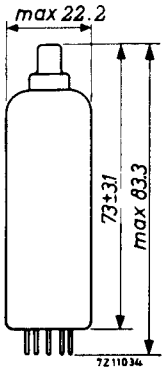
HEATING : Indirect by A.C. ot D.C. ; parallel supply

Heater voltage	V_f	6.3	V
Heater current	I_f	1.05	A

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: Noval





CAPACITANCES

Anode to all except grid No. 1	$C_{a(g_1)}$		6	pF
Grid No. 1 to all except anode	$C_{g_1(a)}$		14	pF
Anode to grid No. 1	C_{ag_1}	max.	0.8	pF
Anode to cathode	C_{ak}	max.	0.1	pF
Grid No. 1 to heater	C_{g_1f}	max.	0.2	pF

TYPICAL CHARACTERISTICS

A)

Anode voltage	V_a	170	V
Grid No. 3 voltage	V_{g_3}	0	V
Grid No. 2 voltage	V_{g_2}	170	V
Grid No. 1 voltage	V_{g_1}	-24	V
Anode current	I_a	45	mA
Grid No. 2 current	I_{g_2}	2.4	mA
Transconductance	S	6.3	mA/V
Internal resistance	R_i	11	kΩ
Amplification factor	$\mu_{g_2g_1}$	5.0	

B) (Measured under pulse conditions)

Anode voltage	V_a	40	V
Grid No. 3 voltage	V_{g_3}	0	V
Grid No. 2 supply voltage	V_{bg_2}	190	V
Grid No. 2 series resistor	R_{g2}	4.7	kΩ
Grid No. 1 voltage	V_{g_1}	0	V
Anode current	I_a	180	mA
Grid No. 2 current	I_{g2}	18	mA

OPERATING CONDITIONS

Stabilized circuits (D.C. feedback)

Cut-off voltage

The minimum required cut-off voltage ($-V_{g1}$) during flyback is 120 V at V_a = 6000 V, V_{g2} = 190 V, and Z_{g1} = 1 kΩ at line-frequency.

Supply-voltage: See page 5

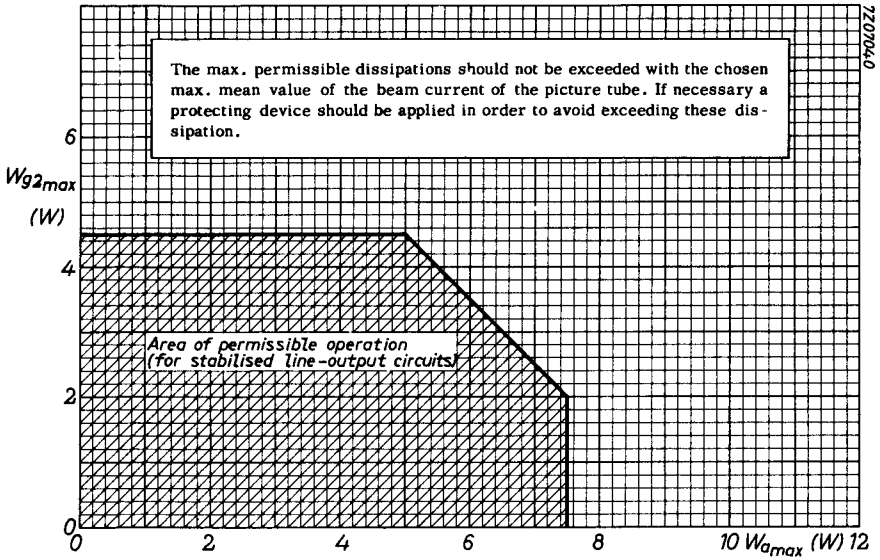
Minimum required value of the screengrid voltage and of the anode voltage, when the tube is used in a line output stage.
The graphs refer to nominal mains voltage provided the specified values of I_a at V_a min, will be available throughout life of the tube at supply voltage values 10% below nominal.
In order to prevent Barkhausen interferences and less of stabilisation, care should be taken that the anode voltage never drops below the specified V_a min. during the scanning period.

OPERATING CHARACTERISTICS as class B push-pull A.F. power amplifier, two tubes.

Anode voltage	V_a	170		200		V
Grid No. 3 voltage	V_{g3}	0		0		V
Grid No. 2 supply voltage	V_{bg2}	170		200		V
Common Grid No. 2 series resistor	R_{g2}	1		1		kΩ
Grid No. 1 voltage	V_{g1}	−27		−31.5		V
Load resistance	$R_{aa\sim}$	2.5		2.5		kΩ
Grid No. 1 driving voltage	V_i	0	16.5	0	21.5	V_{RMS}
Anode current	I_a	2x25	2x72	2x27	2x84	mA
Grid No. 2 current	I_{g2}	2x1.5	2x10	2x2.0	2x11.0	mA
Output power	W_o	0	13.0	0	20	W
Distortion	d_{tot}	-	5.2	-	6.5	%

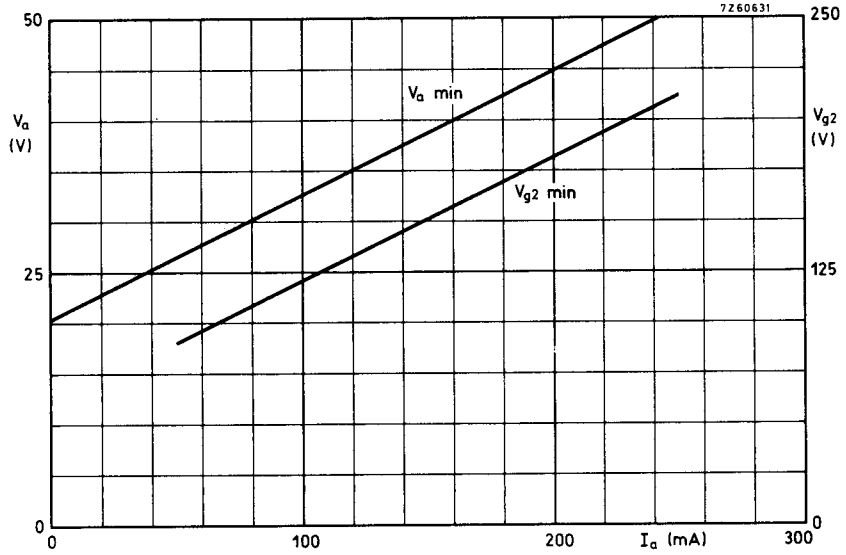
LIMITING VALUES (Design centre rating system)

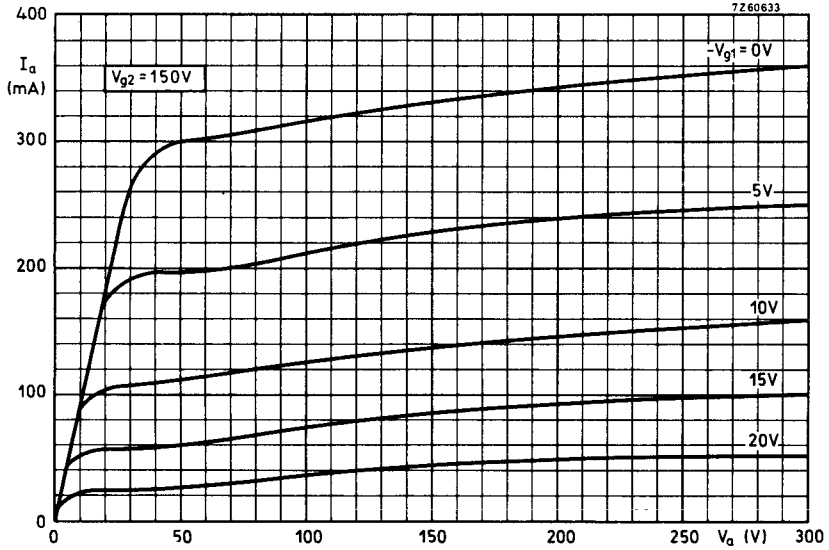
Anode voltage	V_{a_o}	max. 550	V
	V_a	max. 250	V
Anode voltage, peak	V_{a_p}	max. 7	kV [1]
negative peak	$-V_{a_p}$	max. 7	kV [1]
Anode dissipation	W_a	See figure below	
Grid No. 2 dissipation	W_{g2} [2]		
Anode + grid No. 2 dissipation	$W_a + W_{g2}$		
Grid No. 2 voltage	V_{g2_o}	max. 550	V
	V_{g2}	max. 250	V
Cathode current	I_k	max. 180	mA
Cathode to heater voltage	V_{kf}	max. 100	V
Grid No. 1 resistor	R_{g_1}	max. 0.5	MΩ

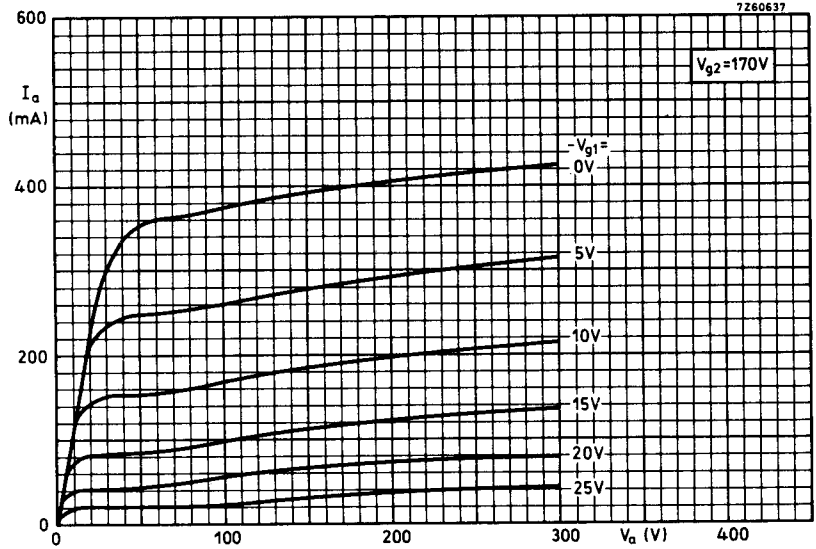


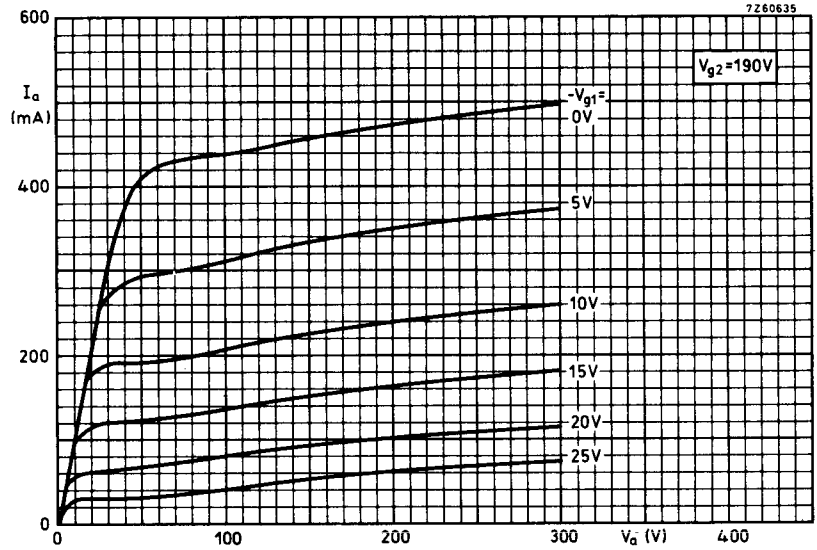
[1]) Maximum pulse duration 22 % of a cycle but maximum 18 μs.

[2]) During the heating-up of the cathode W_{g2} = max. 6 W.


7Z60631
50
25
0
V_a (V)
250
125
0
V_{g2} (V)
V_a min
V_{g2} min
0
100
200
I_a (mA)
300


7Z60633
400
300
200
100
0
I_a (mA)
V_{g2} = 150V
$-V_{g1}$ = 0V
-5V
10V
15V
20V
0
50
100
150
200
250
V_a (V)
300


7Z60637
600
400
200
0
I_a (mA)
V_{g2}=170V
-V_{g1}=
0V
5V
10V
15V
20V
25V
0
100
200
300
V_a (V)
400


7Z60635
600
400
200
0
I_a (mA)
V_{g2}=190V
-V_{g1}=
0V
5V
10V
15V
20V
25V
0
100
200
300
V_a (V)
400

PHILIPS

Data handbook

Electronic components and materials

EL81

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