

## 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

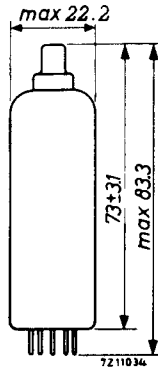
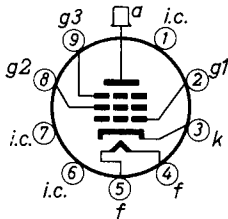
**HEATING :** Indirect by A.C. or D.C. ; parallel supply

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	k $\Omega$
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	$R_{g_2}$	4.7	k $\Omega$
Grid No. 1 voltage	$V_{g_1}$	0	V
Anode current	$I_a$	180	mA
Grid No. 2 current	$I_{g_2}$	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  $Z_{g1} = 1$  k $\Omega$  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.

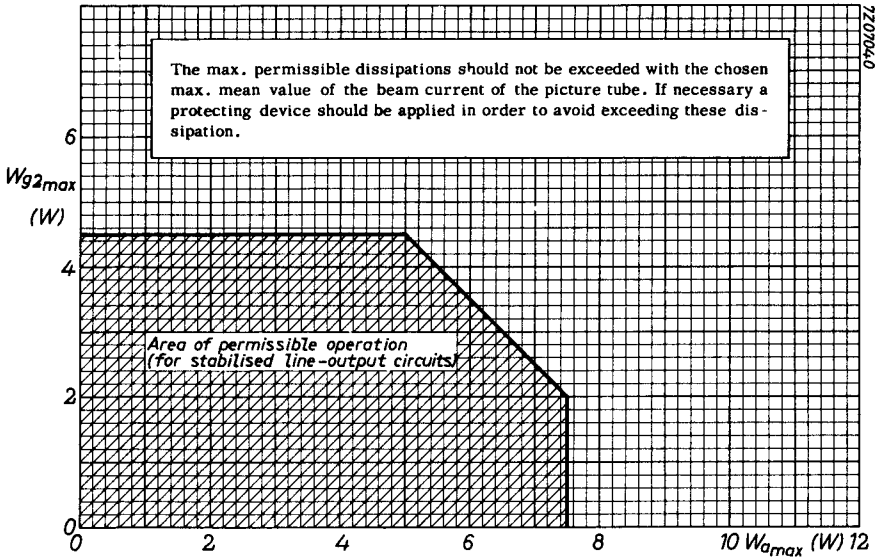
In order to prevent Barkhausen interferences and less of stabilisation, care should be taken that the anode voltage never drops below the specified  $V_a$  min during the scanning period.

**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	k $\Omega$
Grid No. 1 voltage	$V_{g1}$	-27	-31.5	V
Load resistance	$R_{aa}$	2.5	2.5	k $\Omega$
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	%

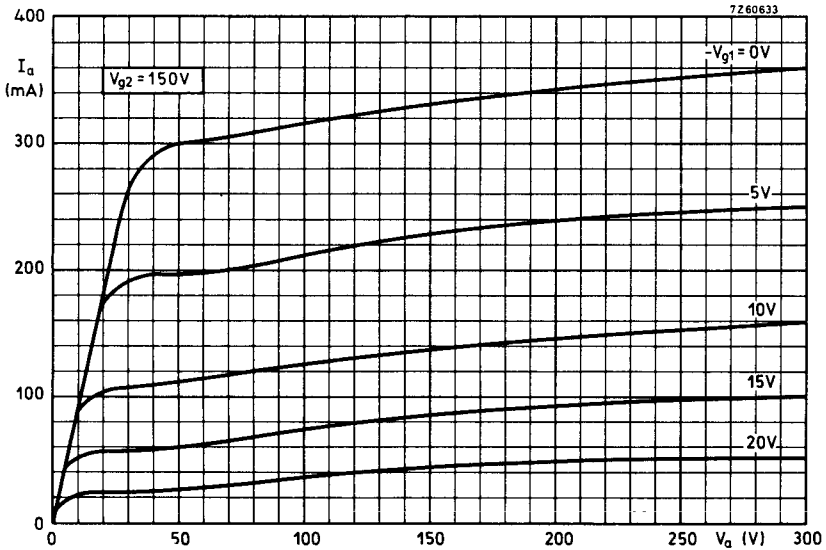
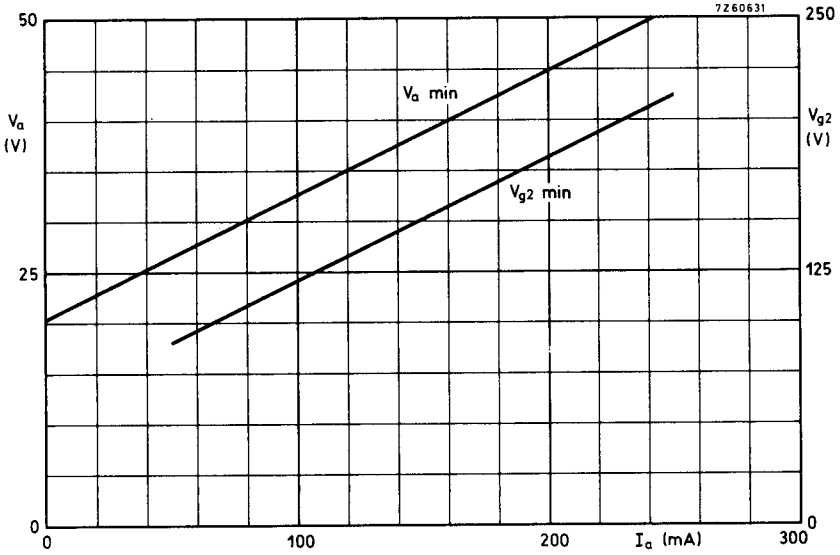
**LIMITING VALUES** (Design centre rating system)

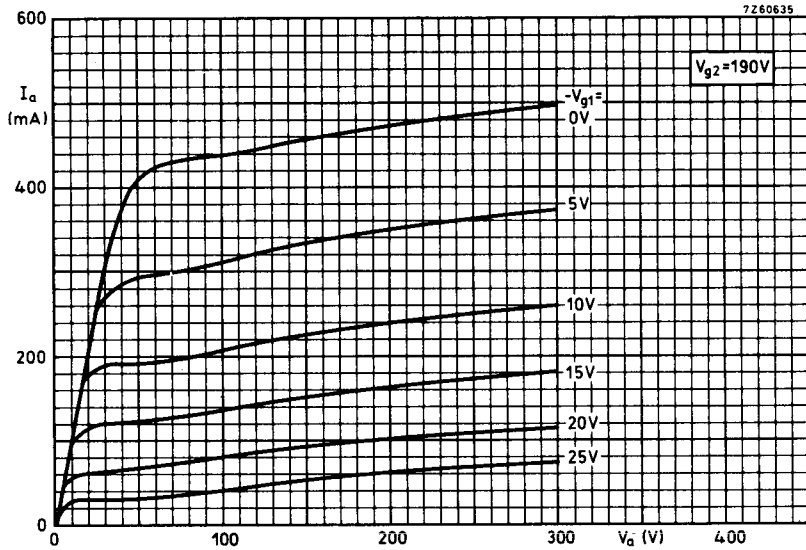
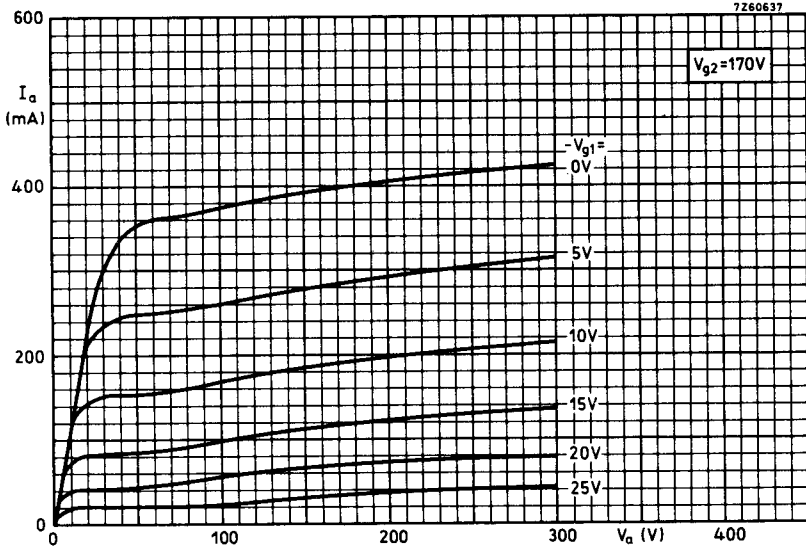
Anode voltage	$V_{a0}$	max. 550	V
	$V_a$	max. 250	V
Anode voltage, peak	$V_{ap}$	max. 7	kV <sup>1)</sup>
negative peak	$-V_{ap}$	max. 7	kV <sup>1)</sup>
Anode dissipation	$W_a$	} See figure below	
Grid No.2 dissipation	$W_{g2}$ <sup>2)</sup>		
Anode + grid No.2 dissipation	$W_a + W_{g2}$		
Grid No.2 voltage	$V_{g20}$	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	$R_{g1}$	max. 0.5	MΩ



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

2) During the heating-up of the cathode  $W_{g2} = \text{max. } 6 \text{ W}$ .





# PHILIPS

Data handbook



Electronic  
components  
and materials

## EL81

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