

## LINE OUTPUT PENTODE

Beam pentode intended for use as line output tube in television receivers.

### QUICK REFERENCE DATA

Anode peak voltage	$V_{ap}$	max.	7 kV
Cathode current	$I_k$	max.	250 mA
Anode dissipation	$W_a$	max.	16 W

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

Heater current

$I_f$  300 mA

Heater voltage

$V_f$  27 V

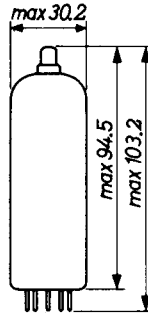
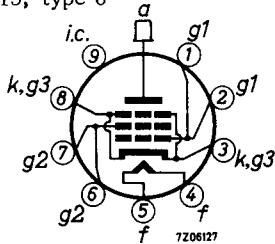
### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Magnoval; IEC 67-I-36a

Cap : Type 1

Outline: IEC67-II-15, type 6



### CAPACITANCES

Anode to grid No. 1

$C_{ag1}$  1.75 pF

Grid No. 1 to heater

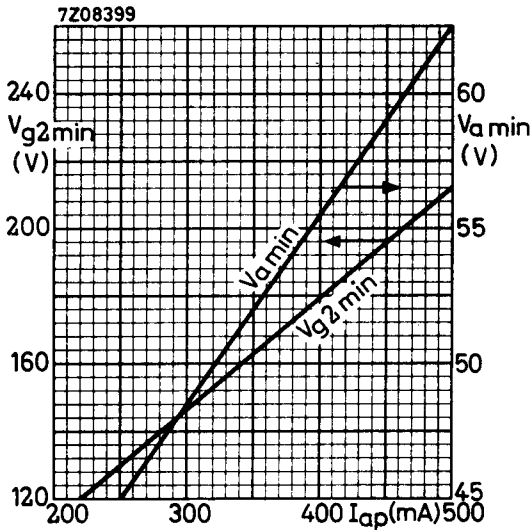
$C_{g1f}$  max. 0.2 pF

**TYPICAL DYNAMIC CHARACTERISTICS** (measured under pulse conditions)

Anode voltage	$V_a$	50	7000	V
Grid No.2 voltage	$V_{g2}$	200	200	V
Grid No.1 voltage	$V_{g1}$	-10	-120	V
Anode current	$I_a$	420	0.05	mA
Grid No.2 current	$I_{g2}$	37		mA

**OPERATING CHARACTERISTICS**

Stabilized circuits (D.C. feedback)



Minimum required values of the screen grid voltage and of the anode voltage when the tube is used in line output stages. The graphs refer to nominal mains voltage provided the specified values of  $V_a$  are increased by 10% of the anode supply voltage. The specified values of  $I_{ap}$  will be available throughout life of the tube at supply voltage values 10% below nominal.

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

Non stabilized circuits

Supply voltage	$V_b$	190	230	V
Grid No.2 series resistor	$R_{g2}$	2.2	2.2	k $\Omega$
Grid No.1 voltage	$V_{g1}$	+1	+1	V
Anode peak current	$I_{ap}$	230	320	mA <sup>1)</sup>

1) See page 3

**HUM**

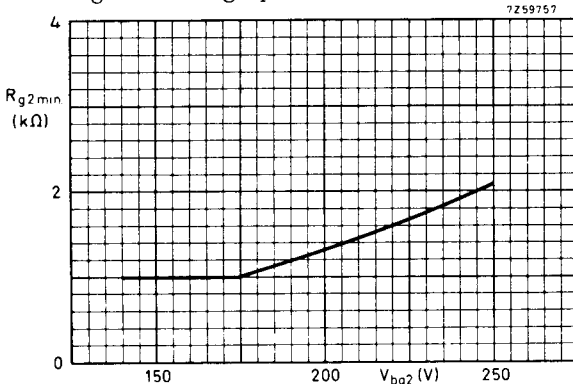
At  $Z_{g1} = 200 \text{ k}\Omega$  ( $f = 50 \text{ Hz}$ ),  $V_{kf} = 220 \text{ V}_{\text{RMS}}$  and without wiring and socket capacitances, the equivalent grid hum voltage is  $< 5 \text{ mV}$ .

**LIMITING VALUES** (Design centre rating system unless otherwise stated)

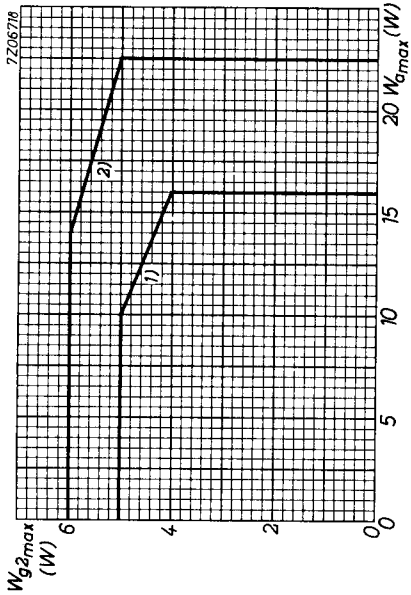
Anode voltage	$V_{a0}$	max.	550 V
Anode voltage	$V_a$	max.	250 V
Anode voltage, peak	$V_{ap}$	max.	7000 V 3)4)
Grid No.2 voltage	$V_{g20}$	max.	550 V
Grid No.2 voltage	$V_{g2}$	max.	250 V
Anode dissipation	$W_a$	see page 4	
Grid No.2 dissipation	$W_{g2}$	see page 4 2)	
Cathode current	$I_k$	max.	250 mA
Grid No.1 resistor	$R_{g1}$	max.	0.5 $\text{M}\Omega$ 5)
Cathode to heater voltage	$V_{kf}$	max.	250 V
Bulb temperature	$t_{\text{bulb}}$	max.	280 $^{\circ}\text{C}$ 6)

**NOTES**

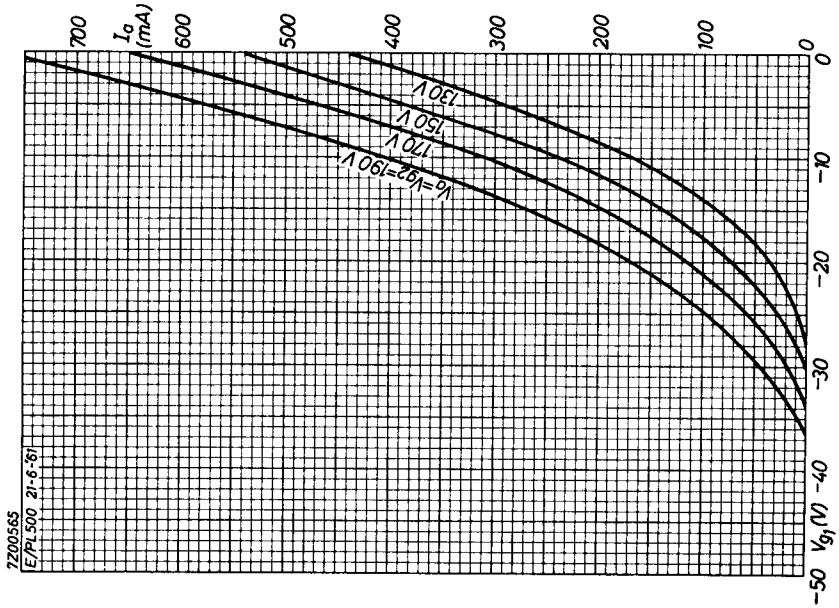
- To allow for tube spread, deterioration during life and a mains voltage 10 % below nominal, the specified values for  $I_{ap}$  should not be exceeded at nominal mains voltage and at the specified conditions.
- To prevent an excessive value of  $W_{g2}$  during the heating-up period, the minimum  $R_{g2}$  values are given in the graph below.



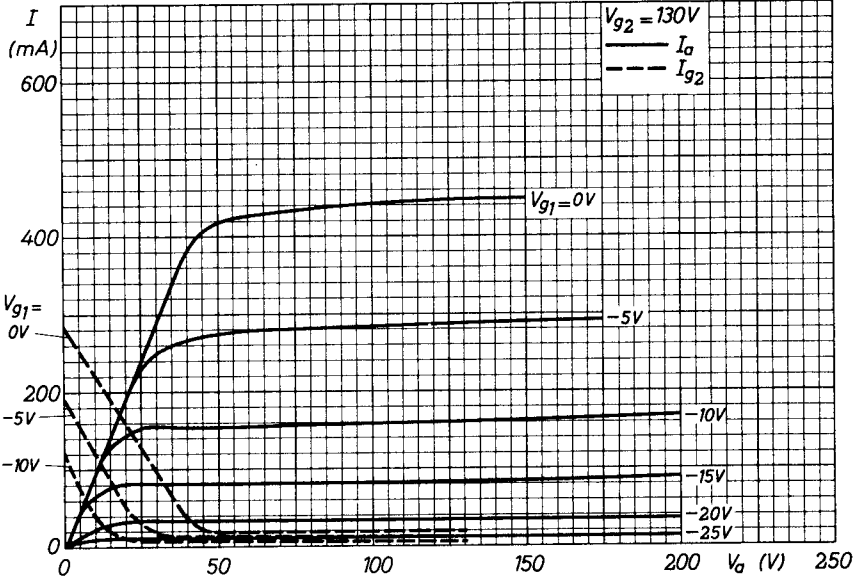
- Maximum pulse duration is 22 % of a cycle and max. 18  $\mu\text{s}$ .
- $V_{ap}$  design max. 8 kV
- $R_{g1} = \text{max. } 2.2 \text{ M}\Omega$  for line output application.
- Absolute max. value.



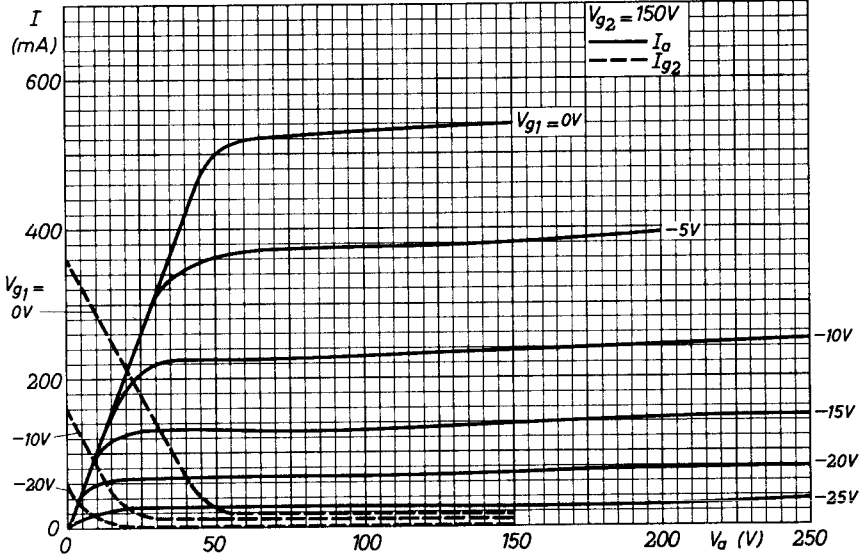
- 1) Design centre limits for  $W_a$  and  $W_{g2}$ .
- 2) These limits for  $W_a$  and  $W_{g2}$  should not be exceeded with a nominal tube operating in a normal line deflection circuit under the worst probable conditions.

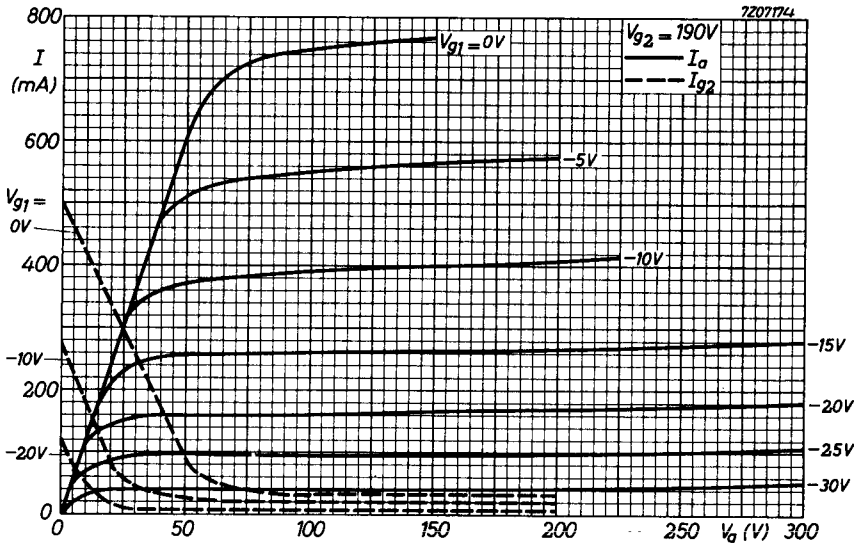
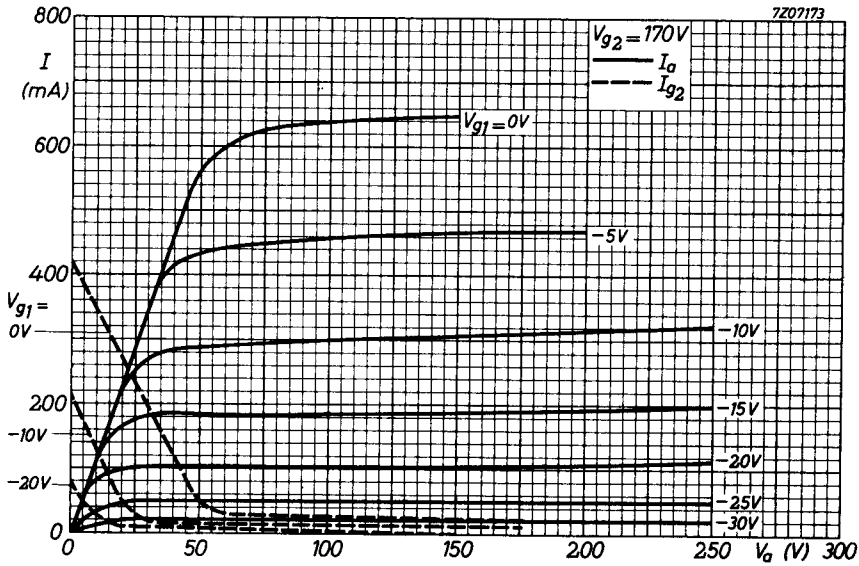


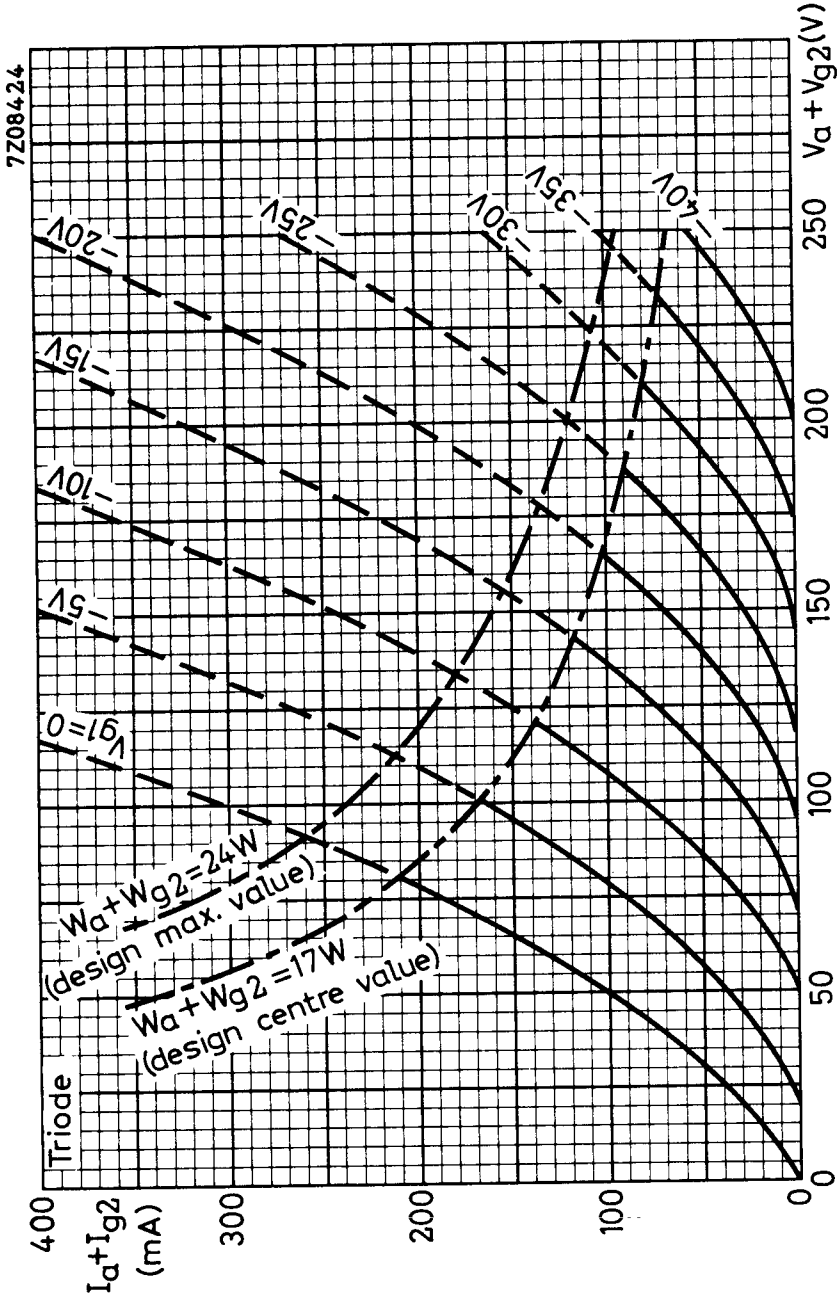
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# PHILIPS

Data handbook



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## PL504

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