

## LINE OUTPUT PENTODE

Output pentode intended for colour TV line deflection circuits.

QUICK REFERENCE DATA		
Anode peak voltage	$V_{a_p}$	7000 V
Cathode current	$I_k$	max. 500 mA
Anode dissipation	$W_a$	max. 30 W

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

Heater current

$I_f$  300 mA

Heater voltage

$V_f$  40 V

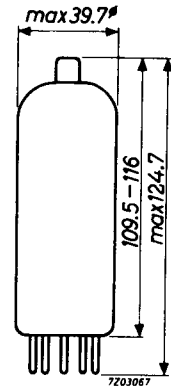
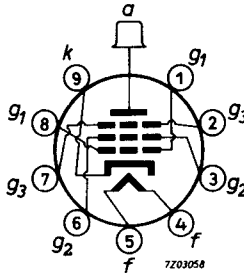
### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Magnoval

Top cap: Type 1

Mounting: Additional supporting of the tube at the top is required.



### CAPACITANCES

Grid No. 1 to filament

$C_{g_1f}$  max. 0.2 pF

Anode to grid No. 1

$C_{ag_1}$  max. 3.0 pF

$C_{ag_1}$  2.5 pF

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

Anode voltage	$V_a$	160	50 V
Grid No.3 voltage	$V_{g_3}$	0	0 V
Grid No.2 voltage	$V_{g_2}$	160	175 V
Grid No.1 voltage	$V_{g_1}$	0	-10 V
Anode current	$I_a$	1400	800 mA
Grid No.2 current	$I_{g_2}$	45	70 mA

**OPERATING CONDITIONS** (D.C. feedback)

Cut-off voltage

The minimum required cut-off voltage ( $-V_{g_1}$ ) during flyback at  $V_a = 7000$  V and at line frequency is at :

$$\begin{aligned} V_{g_2} = 150 \text{ V} : V_{g_1} &= -175 \text{ V} \\ V_{g_2} = 200 \text{ V} : V_{g_1} &= -195 \text{ V} \\ V_{g_2} = 250 \text{ V} : V_{g_1} &= -215 \text{ V} \end{aligned}$$

Supply voltages: See pages 4-5-6

Minimum required anode voltage:  $V_a \text{ min}$

In order to prevent Barkhausen interference and loss of stabilization, care should be taken that the anode voltage never drops below the specified  $V_a \text{ min}$  during the scanning period.

If low values of  $V_a \text{ min}$  are required, the  $V_a \text{ min}$  1-line can be shifted over 10 V to  $V_a \text{ min}$  2, provided a D.C. voltage of at least +20 V is applied to the beamplate ( $g_3$ ). To compensate for the influence of mains voltage variations, the specified values of  $V_a \text{ min}$  have to be increased with 10% of the anode supply voltage.

Minimum required values of the screen grid voltage:  $V_{g_2 \text{ min}}$

The graph refers to nominal mains voltage. The specified values of  $I_{a_p}$  will be available throughout life of the tube at supply voltages 10% below nominal.

Maximum permissible screen grid series resistance:  $R_{g_2 \text{ max}}$ . See pages 4-5-6

Decoupling-capacitors in the grid no 2 and/or grid no 3 circuit

In circuits where decoupling capacitors in the grid no 2 or the grid no 3 circuits are applied, incidental flashover in the tube may give rise to excessive discharge currents and component or tube failure.

Therefore it is recommended to limit the discharge currents to these capacitors by means of an 100 Ohm resistance between  $g_2$  and the  $g_2$ -bypass capacitance.

The 1000 Ohms resistance should be protected by a spark-gap connected between  $g^3$  and earth.

Hum

At  $Z_{g_1} = 200 \text{ k}$  ( $f = 50 \text{ Hz}$ ),  $V_k/f = 220 \text{ V}_{\text{RMS}}$  and without wiring and socket capacitance, the equivalent grid hum voltage is less than 5 mV.

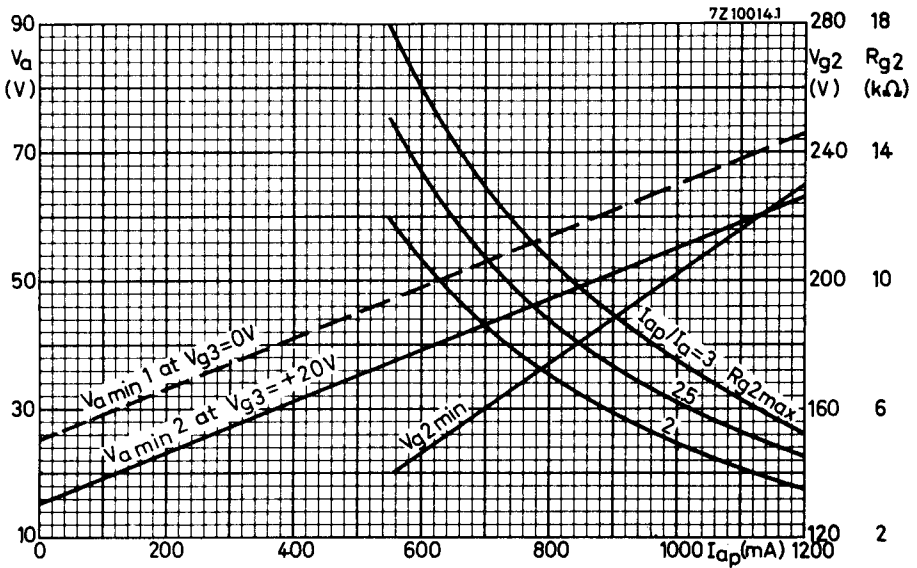


Min. required anode voltage.

$R_{g2 \text{ max}}$  : max. permissible screen grid series resistance for 400 V screen grid supply.

The specified values of  $I_{ap}$  are available at supply voltages 10% below nominal and throughout the tube life.

Remark:  $R_{g2 \text{ min}}$  for 400 V screen grid supply is 2.9 k $\Omega$ . (See page 3)

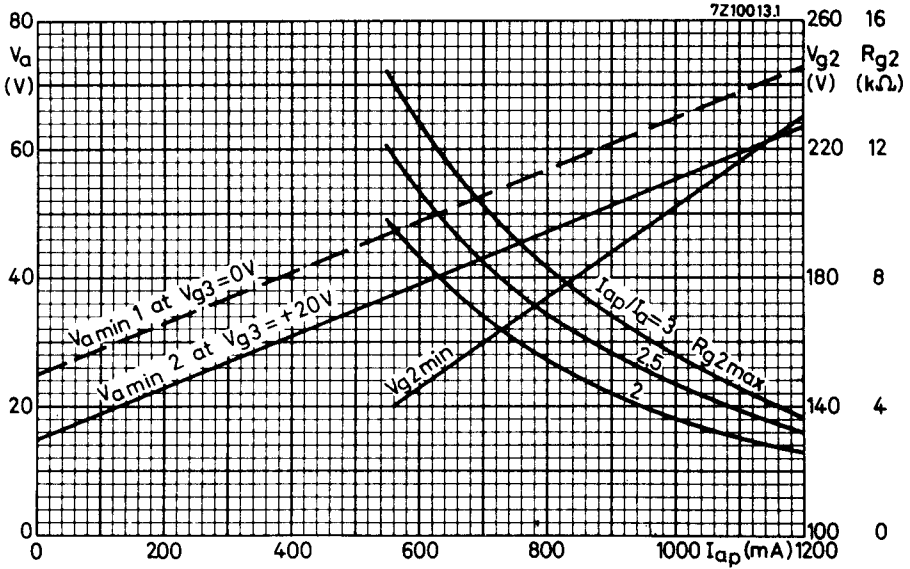


Min. required anode voltage.

$R_{g2 \text{ max}}$  : max. permissible screen grid series resistance for 350 V screen grid supply.

The specified values of  $I_{ap}$  are available at supply voltages 10% below nominal and throughout the tube life.

Remark:  $R_{g2 \text{ min}}$  for 350 V screen grid supply is 2.2 k $\Omega$ . (See page 3)

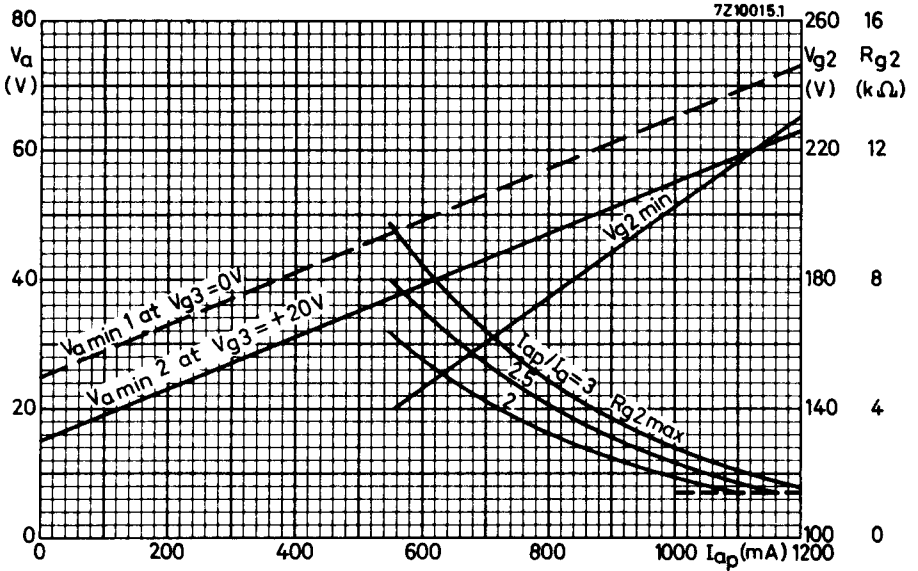


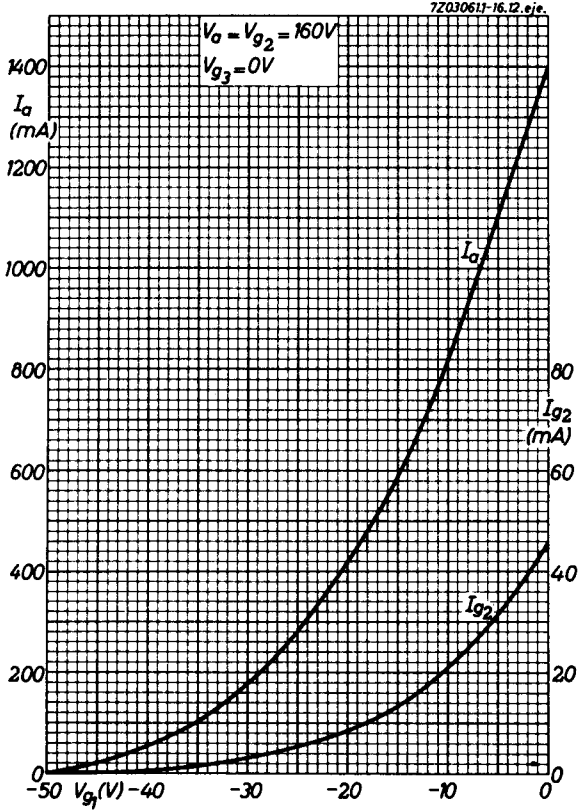
Min. required anode voltage.

$R_{g2 \text{ max.}}$ : max. permissible screen grid series resistance for 280 V screen grid supply.

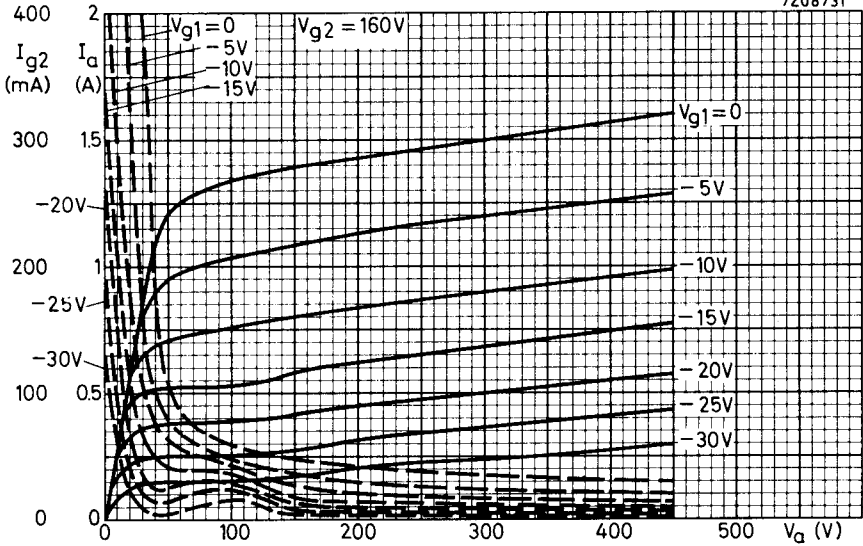
The specified values of  $I_{ap}$  are available at supply voltages 10% below nominal and throughout the tube life.

Remark:  $R_{g2 \text{ min}}$  for 280 V screen grid supply is 1.4 k $\Omega$ . (See page 3)

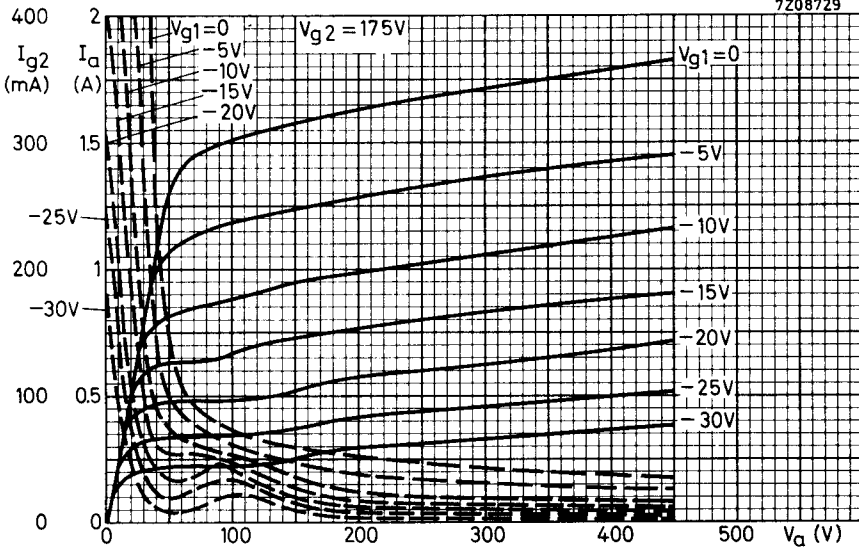




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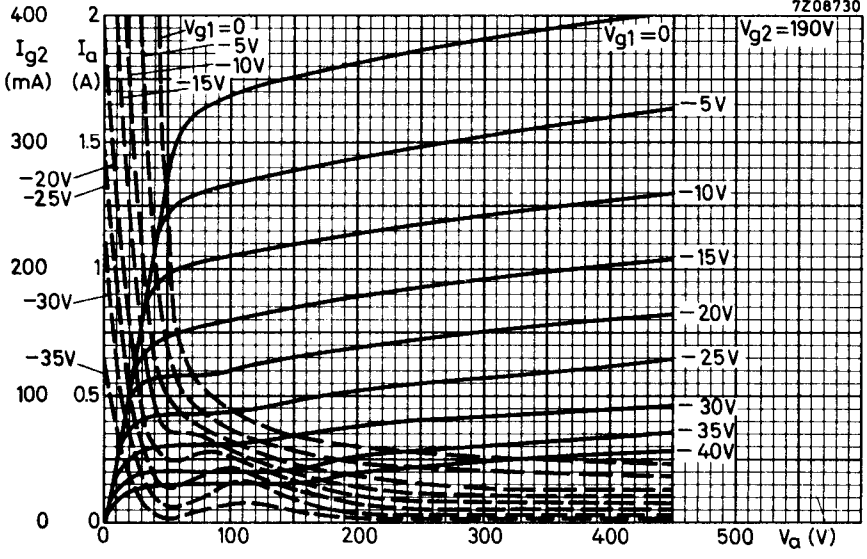


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# PHILIPS

Data handbook



Electronic  
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and materials

## PL509

<b>page</b>	<b>sheet</b>	<b>date</b>
1	1	1969.11
2	2	1972.01
3	3	1969.11
4	4	1969.11
5	5	1969.11
6	6	1969.11
7	7	1969.11
8	8	1969.11
9	9	1969.11
10	FP	1999.03.20