

LINE OUTPUT PENTODE

PL8I

Output pentode primarily intended for use in the line timebase of television receivers.

HEATER

Suitable for series operation, a.c. or d.c.

I_h	300	mA
V_h	21.5	V

CAPACITANCES

C_{in}	14.7	pF
C_{out}	6.4	pF
C_{a-g1}	<800	mpF
C_{g1-h}	<200	mpF
C_{a-k}	<100	mpF

CHARACTERISTICS

V_a	170	V
V_{g3}	0	V
V_{g2}	170	V
V_{g1}	-24	V
I_a	45	mA
I_{g2}	3.0	mA
g_m	6.5	mA/V
r_a	15	k Ω
μ_{g1-g2}	5.5	
$V_{g1 \text{ max. }} (I_g = +0.3\mu A)$	-1.3	V

OPERATION AS LINE OUTPUT PENTODE

Circuit Design

In calculating the peak anode current for circuit design purposes the knee is taken as the reference point. Operation so that the anode potential of the output valve at the end of scan is above the knee of the anode characteristic is not recommended, unless an effective feedback stabilising circuit is employed.

For operation below the knee of the characteristic the nomogram on page C1 should be used.

LIMITING VALUES

$V_{a(b)} \text{ max.}$	650	V
$V_a \text{ max.}$	250	V
$p_a \text{ max.}$	8.0	W
$V_{g2(b)} \text{ max.}$	550	V
$V_{g2} \text{ max.}$	250	V
** $p_{g2} \text{ max.}$	4.5	W
$p_a + p_{g2} \text{ max.}$	8.5	W
$I_k \text{ max.}$	180	mA
$R_{g1-k} \text{ max.}$	500	k Ω
$V_{h-k} \text{ max.}$	200	V
$R_{h-k} \text{ max.}$	20	k Ω
$T_{bulb} \text{ max.}$	240	°C

Line output applications

*+ $v_{a(pk)}$ max.	6.0	kV
p_a max.	7.0	W
** p_{g2} max.	4.5	W
$p_a + p_{g2}$ max.	8.5	W
*+ $v_{g1(pk)}$ max.	3.0	V
*- $v_{g1(pk)}$ max.	1.0	kV
R_{g1-k} max.	3.3	M Ω
Min. drive at $v_{a(pk)} = 4kV$	80	V
Min. drive at $v_{a(pk)} = 6kV$	95	V

*Max. pulse duration 22% of one cycle, with a maximum of 18 μ s.

**Max. average p_{g2} is 6W during the period between the commencement of i_{g2} and the instant when i_a attains one half of its normal operating value.

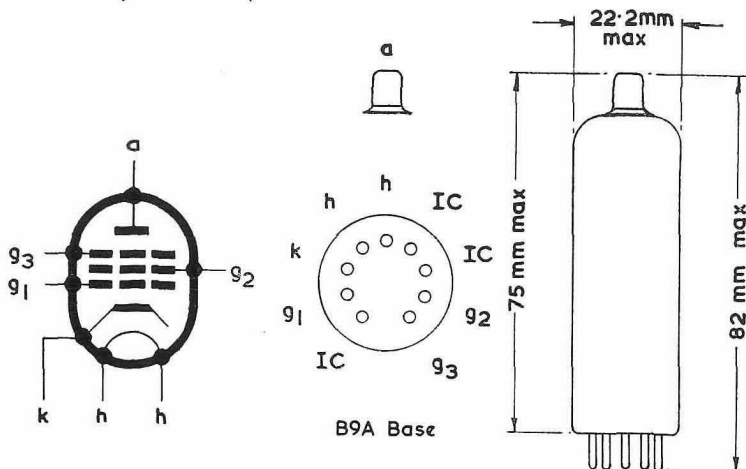
PEAK ANODE CURRENT NOMOGRAM

The nomogram shown on the following pages gives directly the recommended peak values of anode current, $i_a(\text{design})$, for a wide range of h.t. line potentials and screen-grid resistors.

It assumes 'below the knee' operation (which is recommended for all cases except when a stabilising circuit is used), undecoupled screen-grid resistor (excluding capacitors of a few hundred picofarad), and control-grid potential of +1V. The last condition is normally fulfilled by driven time bases having the control-grid resistor returned to chassis.

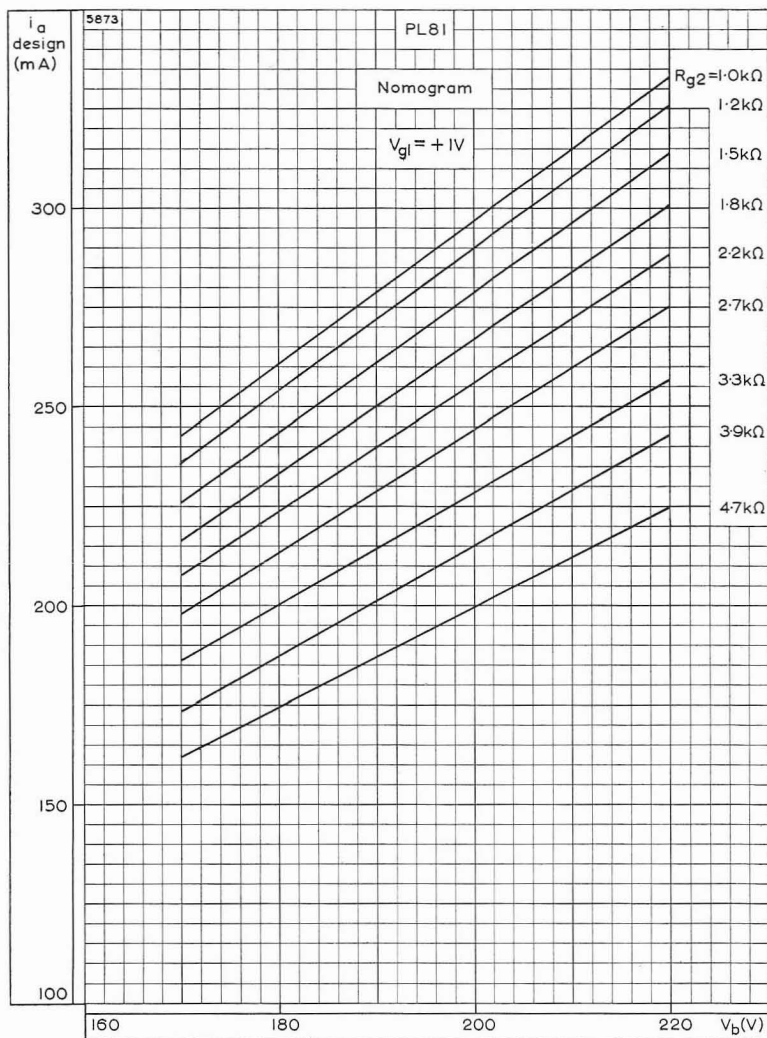
The use of the nomogram does not exempt the designer from checking that the valve is operating within its limiting values. During measurements of the operating conditions in a line timebase a valve whose characteristic is close to that of a nominal valve and a nominal screen-grid resistor should be used.

In receivers designed for a range of declared values of mains voltages, measurements should be made at the nominal declared value of mains voltage producing the lowest nominal h.t. voltage. The timebase should be synchronised and the raster adjusted to nominal scan. The beam current drawn from the e.h.t. supply should be adjusted to 300 μ A.

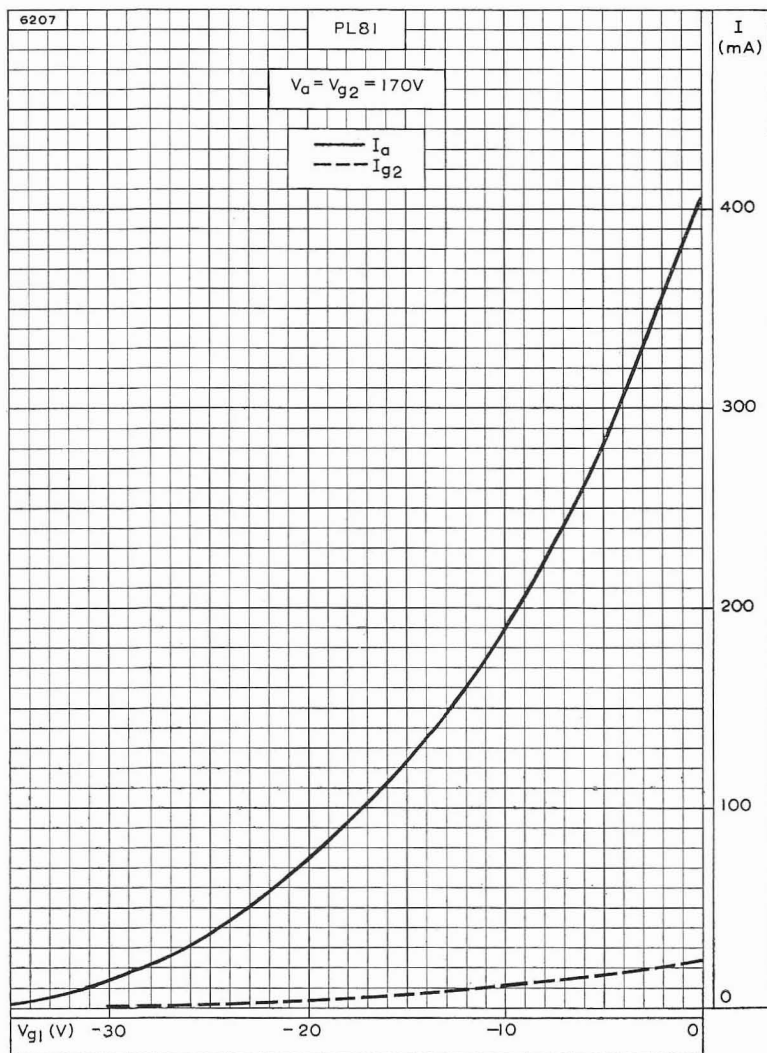


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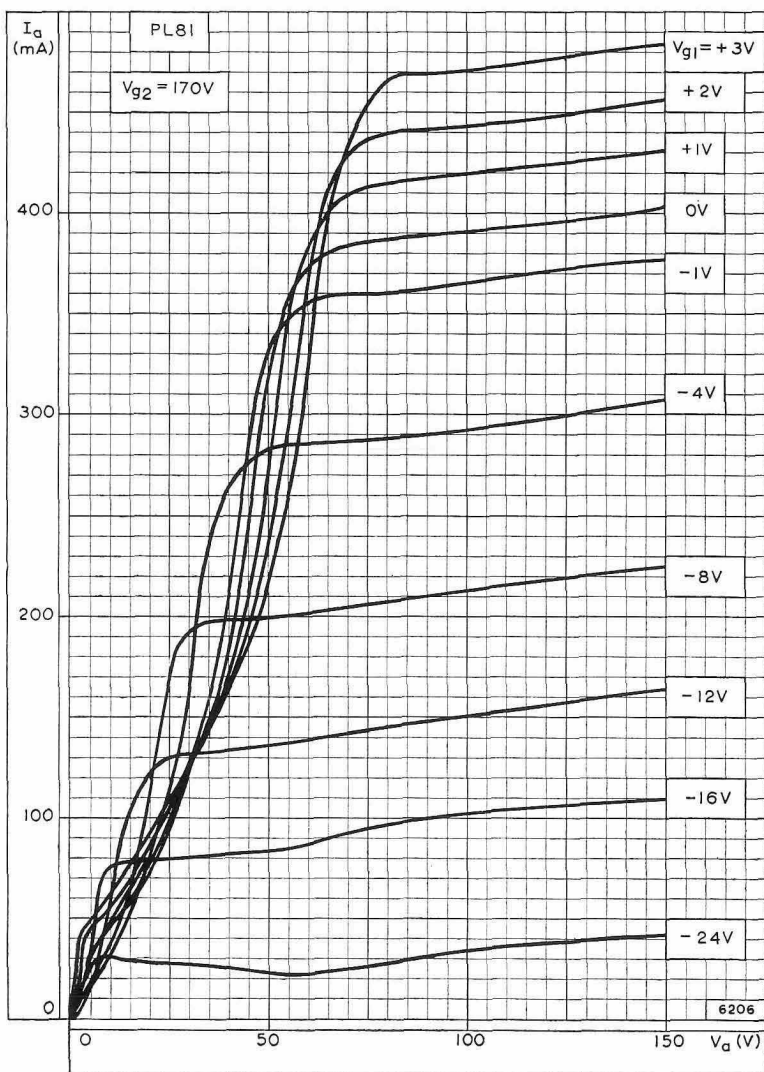




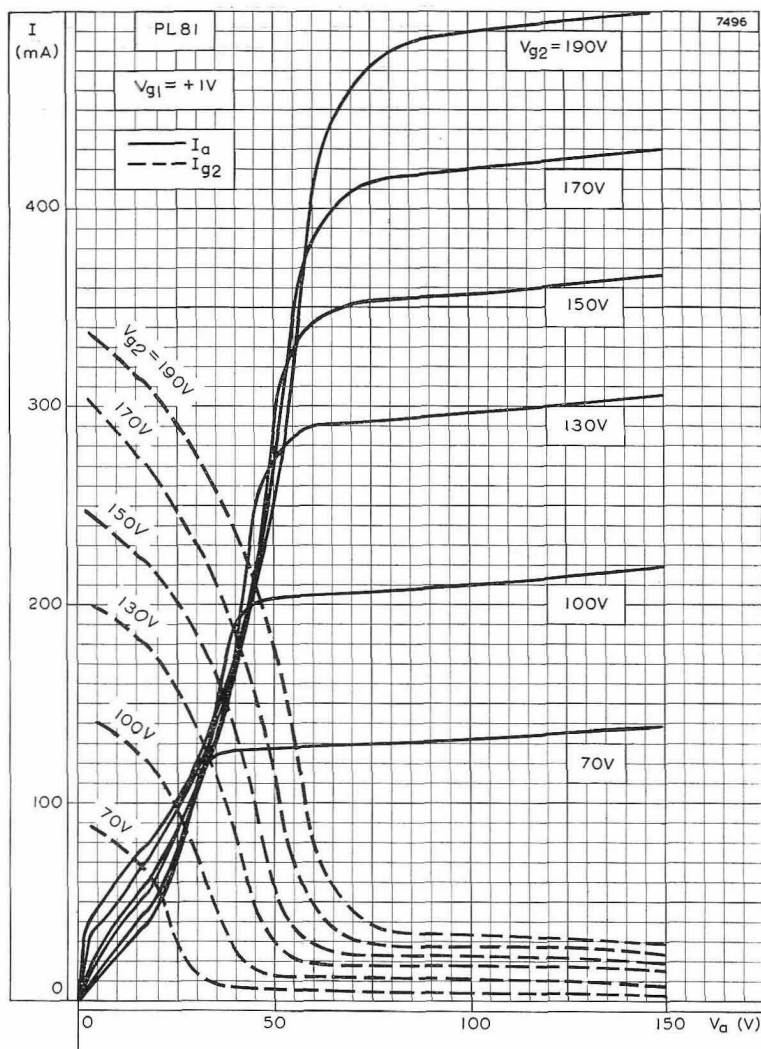
NOMOGRAM



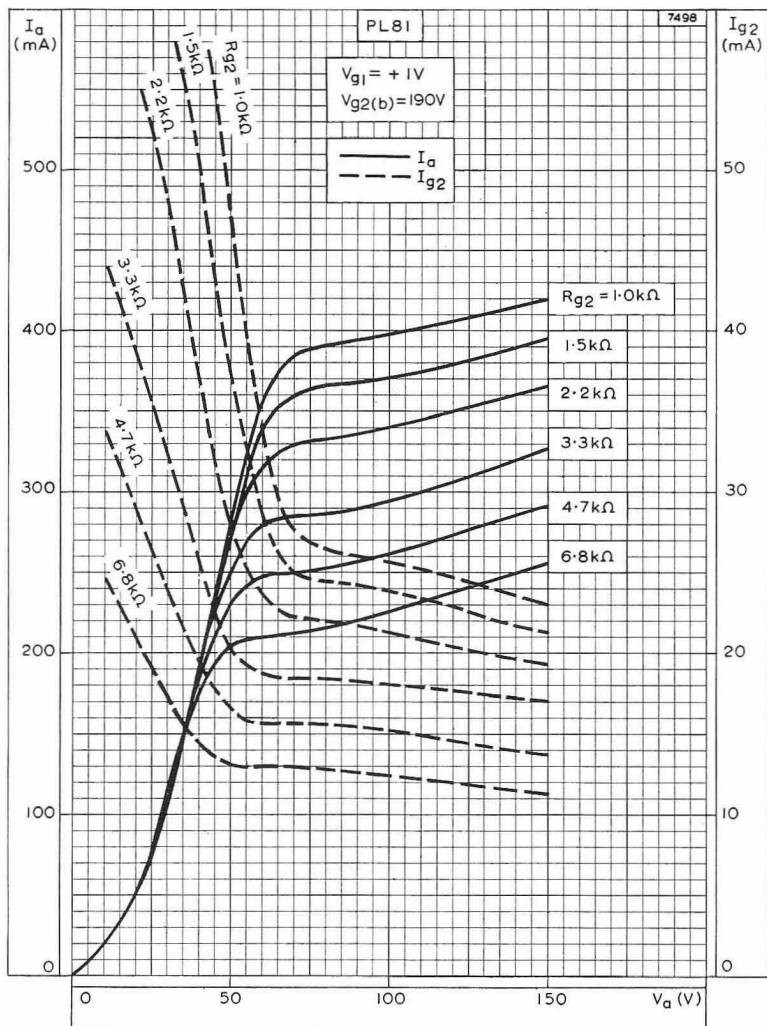
ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST
CONTROL-GRID VOLTAGE



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE
WITH CONTROL-GRID VOLTAGE AS PARAMETER



ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST ANODE VOLTAGE WITH SCREEN-GRID VOLTAGE AS PARAMETER



ANODE AND SCREEN-GRID CURRENTS PLOTTED AGAINST ANODE VOLTAGE WITH SCREEN-GRID RESISTOR AS PARAMETER

