

## TRIODE-OUTPUT PENTODE

Triode-pentode with separate cathodes.

The triode section is intended for use as A.F. amplifier.

The pentode section is intended for use as A.F. power amplifier.

### QUICK REFERENCE DATA

#### Triode section

Anode current	$I_a$	1.2 mA
Transconductance	$S$	1.6 mA/V
Amplification factor	$\mu$	100 -

#### Pentode section

Anode current	$I_a$	39 mA
Transconductance	$S$	10.5 mA/V
Amplification factor	$\mu_{g_2g_1}$	21 -
Output power	$W_o$	4.1 W

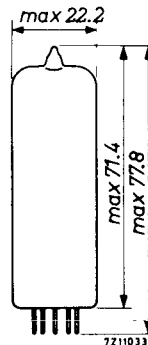
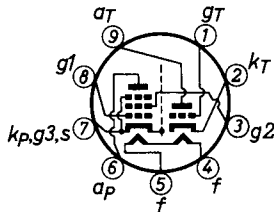
**HEATING:** Indirect by A.C. or D.C.; series supply

Heater current	$I_f$	300 mA
Heater voltage	$V_f$	13.3 V

### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



**CAPACITANCES**

Triode section

Anode to all except grid	$C_{a(g)}$	2.5 pF
Grid to all except anode	$C_{g(a)}$	2.3 pF
Anode to grid	$C_{ag}$	1.4 pF
Grid to heater	$C_{gf}$	max. 0.006 pF

Pentode section

Grid No. 1 to all except anode	$C_{g1(a)}$	10 pF
Anode to grid No. 1	$C_{ag1}$	max. 0.4 pF
Grid No. 1 to heater	$C_{g1f}$	max. 0.24 pF

Between triode and pentode sections

Anode triode to grid No. 1 pentode	$C_{a-Tg1P}$	max. 0.2 pF
Grid triode to grid No. 1 pentode	$C_{gTg1P}$	max. 0.02 pF
Anode triode to anode pentode	$C_{a-Tap}$	max. 0.15 pF
Grid triode to anode pentode	$C_{g-Tap}$	max. 0.006 pF <sup>1)</sup>

**TYPICAL CHARACTERISTICS**

Triode section

Anode voltage	$V_a$	230 V
Grid voltage	$V_g$	-1.7 V
Anode current	$I_a$	1.2 mA
Transconductance	$S$	1.6 mA/V
Amplification factor	$\mu$	100

Pentode section

Anode voltage	$V_a$	230 V
Grid No. 2 voltage	$V_{g2}$	230 V
Grid No. 1 voltage	$V_{g1}$	-5.7 V
Anode current	$I_a$	39 mA
Grid No. 2 current	$I_{g2}$	6.5 nA
Transconductance	$S$	10.5 mA/V
Amplification factor	$\mu_{g2g1}$	21
Internal resistance	$R_i$	45 k $\Omega$

<sup>1)</sup> The capacitance between triode grid and pentode anode ( $C_{gT-ap}$ ) can be reduced to a value of less than 0.002 pF by using a shielding ring with a diameter of 22.5 mm and a height of 15 mm with respect to the tube base.

## OPERATING CHARACTERISTICS

Triode sectionA.F. amplifier

Supply voltage	$V_b$	200	230	200	230	V
Cathode resistor	$R_k$	0	0	2.6	2.1	$k\Omega$
Anode resistor	$R_a$	220	220	220	220	$k\Omega$
Grid resistor	$R_g$	10	10	-	-	$M\Omega$
Grid resistor of following stage	$R_{g'}$	680	680	680	680	$k\Omega$
Signal source resistance	$R_s$	47	47	-	-	$k\Omega$
Anode current	$I_a$	0.42	0.52	0.42	0.52	mA
Output voltage	$V_o$	3.2	3.2	3.2	3.2	$V_{RMS}$
Voltage gain	$V_o/V_i$	66	68	66	68	
Distortion	$d_{tot}$	0.6	0.5	0.6	0.5	%

Microphony

The triode section can be used without special precautions against microphonic effect in circuits in which an output of 50 mW is obtained at an input voltage of not less than 10 mV<sub>RMS</sub>.

Hum

The hum level will be better than 60 dB under the following conditions;

Input voltage minimum 10 mV<sub>RMS</sub> for 50 mW output.

Grid circuit impedance max. 0.5  $M\Omega$  at 50 Hz.

Cathode decoupling capacitor minimum 100  $\mu F$ .

Pin 4 connected to earth.

A.C. voltage between pin 4 and cathode max. 30 V<sub>RMS</sub>.

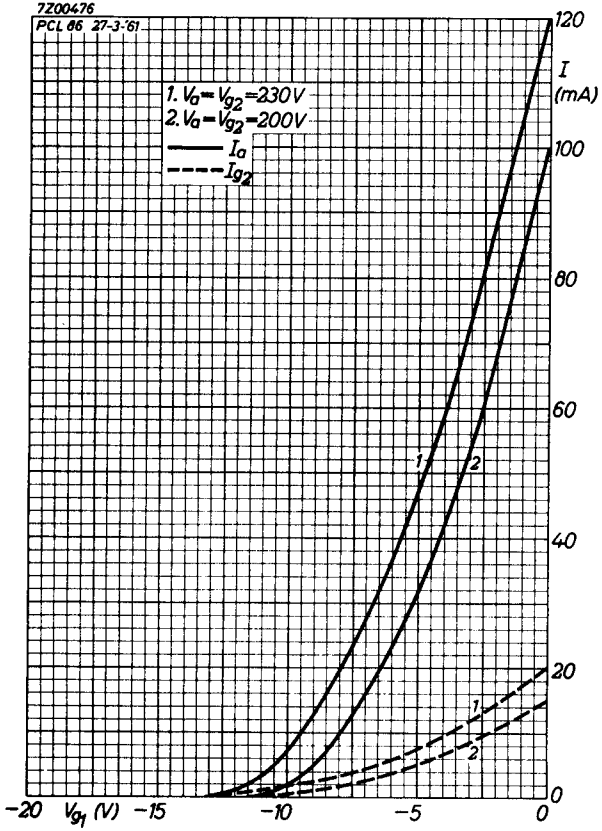
**OPERATING CHARACTERISTICS**

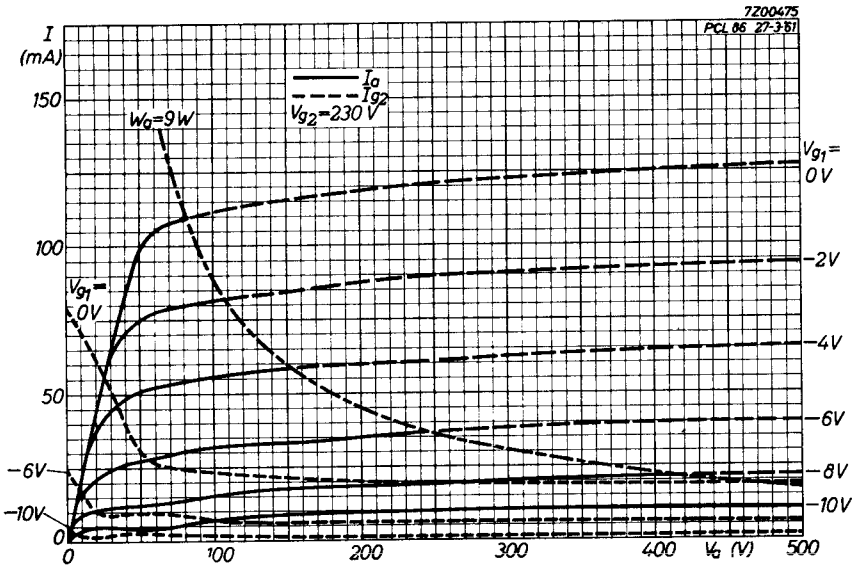
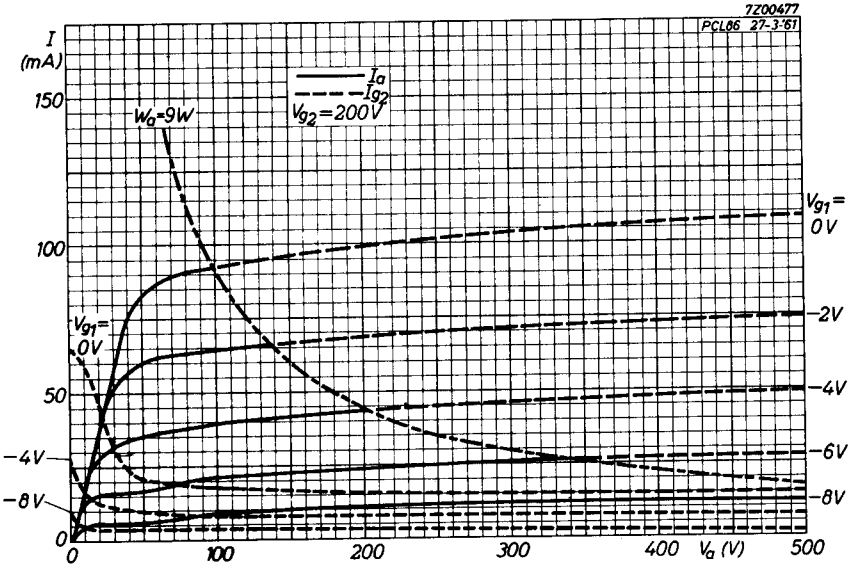
Pentode section

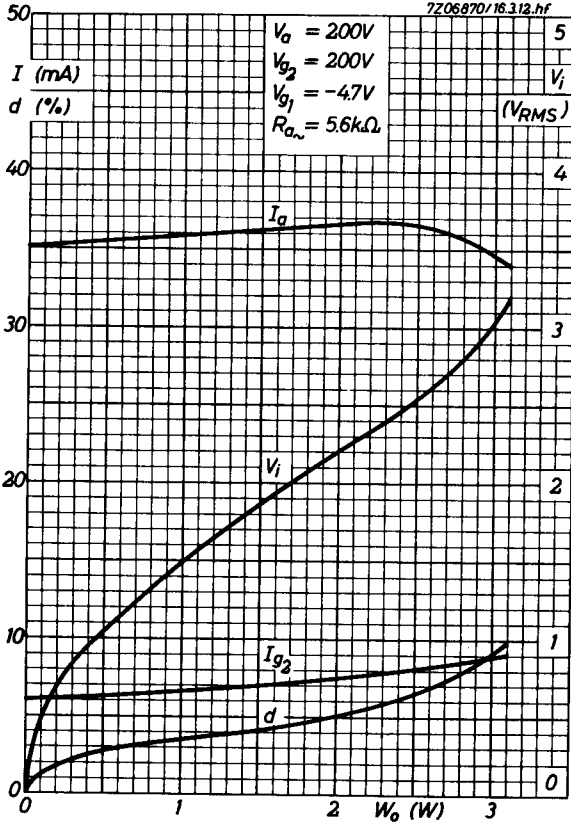
Class A (Measured with  $V_k$  constant)

Anode voltage	$V_a$	200	230	V
Grid No. 2 voltage	$V_{g2}$	200	230	V
Cathode resistor	$R_k$	115	125	$\Omega$
(Grid No. 1 voltage)	$V_{g1}$	-4.7	-5.7	V)
Load resistance	$R_{a\sim}$	5.6	5.1	$k\Omega$
Grid No. 1 driving voltage	$V_i$	0 0.32 3.2		0 0.34 3.6 $V_{RMS}$
Anode current	$I_a$	35 - 34	39 -	40.7 mA
Grid No. 2 current	$I_{g2}$	6.0 - 9.0	6.5 -	10.5 mA
Output power	$W_o$	0 0.05 3.1	0 0.05	4.1 W
Distortion	$d_{tot}$	- 0.9 10	- 0.9	10 %

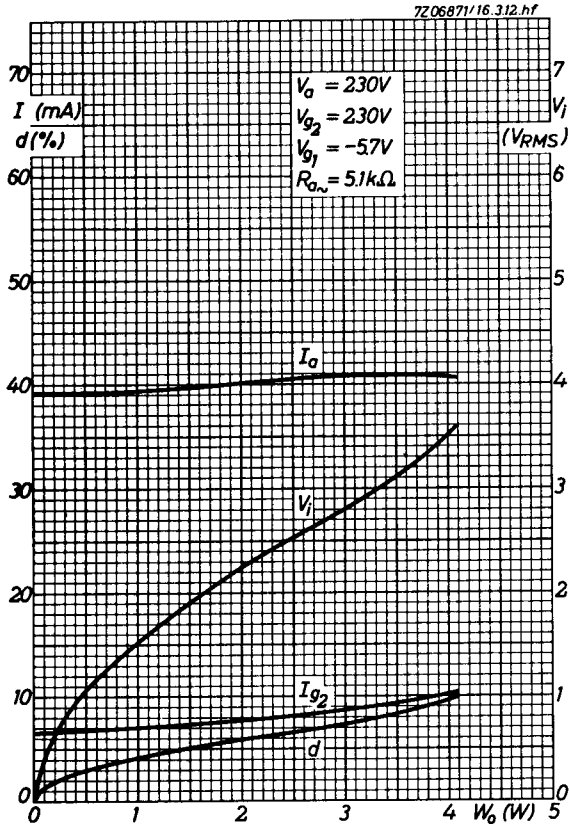


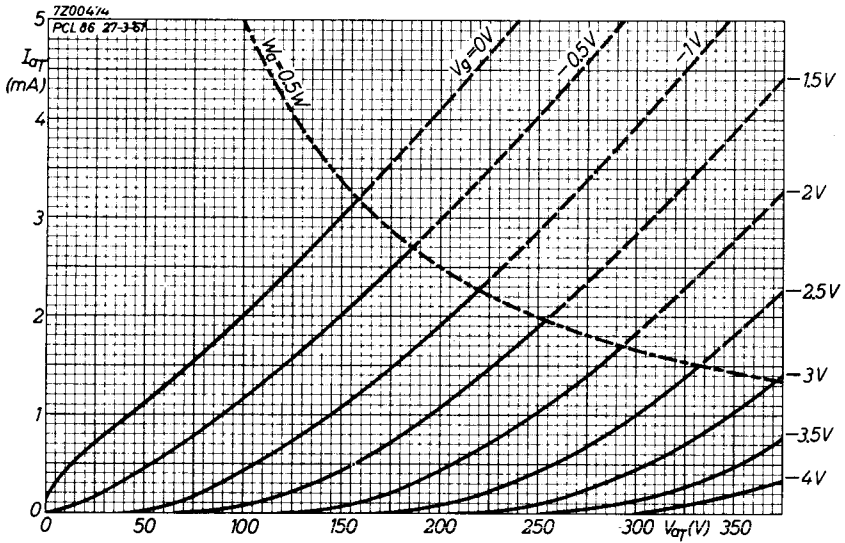
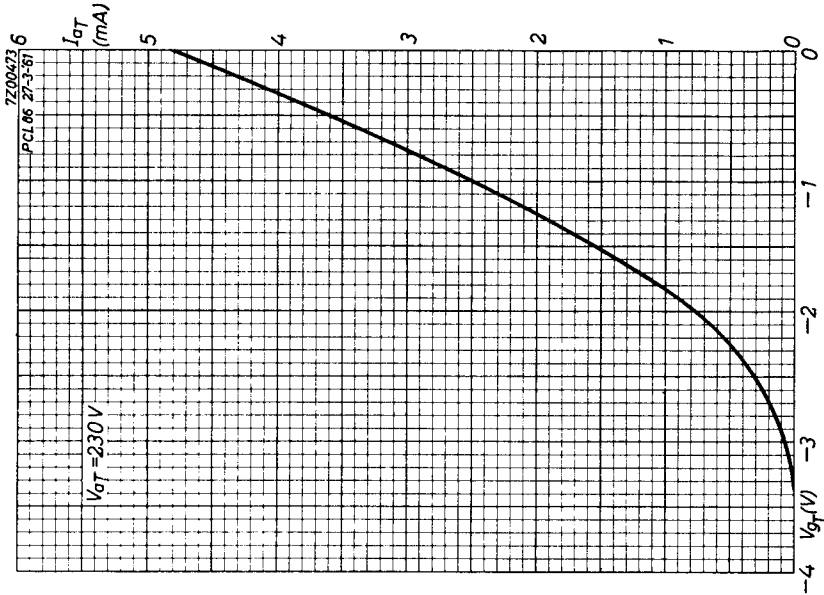












# PHILIPS

Data handbook



Electronic  
components  
and materials

## PCL86

<b>page</b>	<b>sheet</b>	<b>date</b>
1	1	1969.12
2	2	1968.09
3	3	1968.09
4	4	1968.09
5	5	1968.09
6	6	1968.09
7	7	1968.09
8	8	1968.09
9	9	1968.09
10	10	1968.09
11	FP	1999.08.02