

## TRIODE-OUTPUT PENTODE

Triode-pentode with separate cathodes.

Triode section intended for use in circuits for keyed A.G.C., sync. separation, sync. amplification and noise suppression.

Pentode section is intended for use as video output tube.

### QUICK REFERENCE DATA

#### Triode section

|                      |       |        |
|----------------------|-------|--------|
| Anode current        | $I_a$ | 3 mA   |
| Transconductance     | $S$   | 4 mA/V |
| Amplification factor | $\mu$ | 65 -   |

#### Pentode section

|                      |                |         |
|----------------------|----------------|---------|
| Anode current        | $I_a$          | 18 mA   |
| Transconductance     | $S$            | 11 mA/V |
| Amplification factor | $\mu_{g_2g_1}$ | 36 -    |

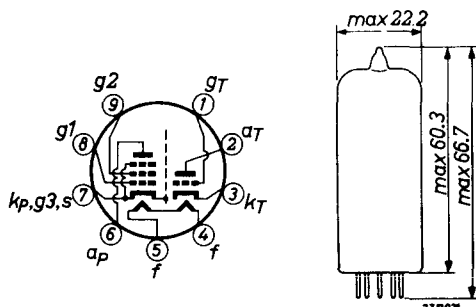
**HEATING:** Indirect by A.C. or D.C.; series supply

|                |       |        |
|----------------|-------|--------|
| Heater current | $I_f$ | 300 mA |
| Heater voltage | $V_f$ | 15 V   |

### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



**CAPACITANCES**Triode section

|                          |            |          |    |
|--------------------------|------------|----------|----|
| Anode to all except grid | $C_{a(g)}$ | 2.3      | pF |
| Grid to all except anode | $C_{g(a)}$ | 3.8      | pF |
| Anode to grid            | $C_{ag}$   | 2.7      | pF |
| Grid to heater           | $C_{gf}$   | max. 0.1 | pF |

Pentode section

|                               |              |          |    |
|-------------------------------|--------------|----------|----|
| Anode to all except grid No.1 | $C_{a(g_1)}$ | 4.2      | pF |
| Grid No.1 to all except anode | $C_{g_1(a)}$ | 8.7      | pF |
| Anode to grid No.1            | $C_{ag_1}$   | max. 0.1 | pF |
| Grid No.1 to heater           | $C_{g_1f}$   | max. 0.1 | pF |

Between triode and pentode sections

|                                   |              |           |    |
|-----------------------------------|--------------|-----------|----|
| Anode triode to grid No.1 pentode | $C_{aTg_1P}$ | max. 0.01 | pF |
| Grid triode to grid No.1 pentode  | $C_{gTg_1P}$ | max. 0.01 | pF |

**TYPICAL CHARACTERISTICS**Triode section

|                      |       |      |      |
|----------------------|-------|------|------|
| Anode voltage        | $V_a$ | 200  | V    |
| Grid voltage         | $V_g$ | -1.7 | V    |
| Anode current        | $I_a$ | 3    | mA   |
| Transconductance     | $S$   | 4    | mA/V |
| Amplification factor | $\mu$ | 65   | -    |

Pentode section

|                      |                |      |      |      |            |
|----------------------|----------------|------|------|------|------------|
| Anode voltage        | $V_a$          | 170  | 200  | 220  | V          |
| Grid No.2 voltage    | $V_{g_2}$      | 170  | 200  | 220  | V          |
| Grid No.1 voltage    | $V_{g_1}$      | -2.1 | -2.9 | -3.4 | V          |
| Anode current        | $I_a$          | 18   | 18   | 18   | mA         |
| Grid No.2 current    | $I_{g_2}$      | 3.0  | 3.0  | 3.0  | mA         |
| Transconductance     | $S$            | 11   | 10.4 | 10   | mA/V       |
| Amplification factor | $\mu_{g_2g_1}$ | 36   | 36   | 36   | -          |
| Internal resistance  | $R_{i\min}$    | 100  | 130  | 150  | k $\Omega$ |

## OPERATING CHARACTERISTICS

## Pentode section

Video output tube

|                       |          |      |      |      |           |
|-----------------------|----------|------|------|------|-----------|
| Supply voltage        | $V_b$    | 170  | 200  | 220  | V         |
| Grid No.2 voltage     | $V_{g2}$ | 170  | 200  | 220  | V         |
| Anode series resistor | $R_a$    | 3    | 3    | 3    | $k\Omega$ |
| Grid No.1 voltage     | $V_{g1}$ | -2   | -2.8 | -3.3 | V         |
| Anode current         | $I_a$    | 18   | 18   | 18   | mA        |
| Grid No.2 current     | $I_{g2}$ | 3.2  | 3.1  | 3.1  | mA        |
| Transconductance      | $S$      | 10.4 | 10.0 | 9.7  | mA/V      |

### LIMITING VALUES (Design centre rating system)

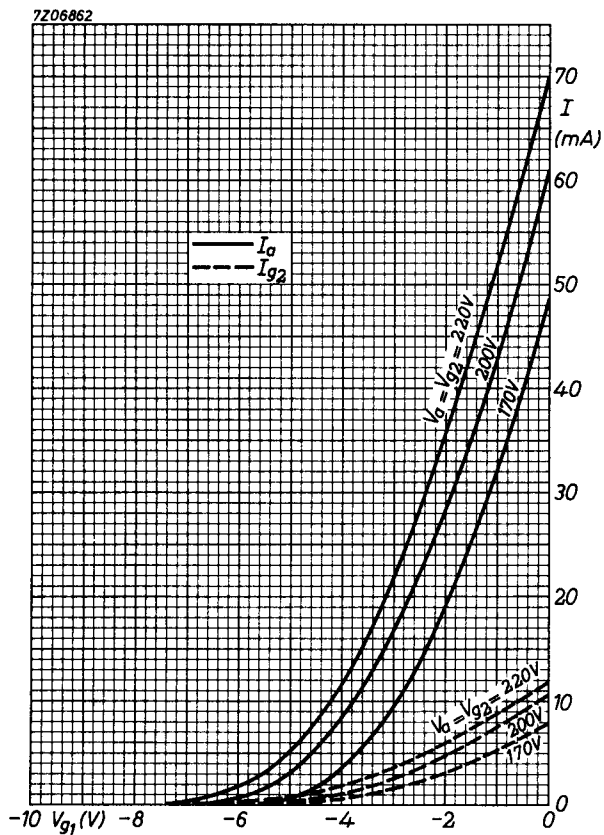
## Triode section

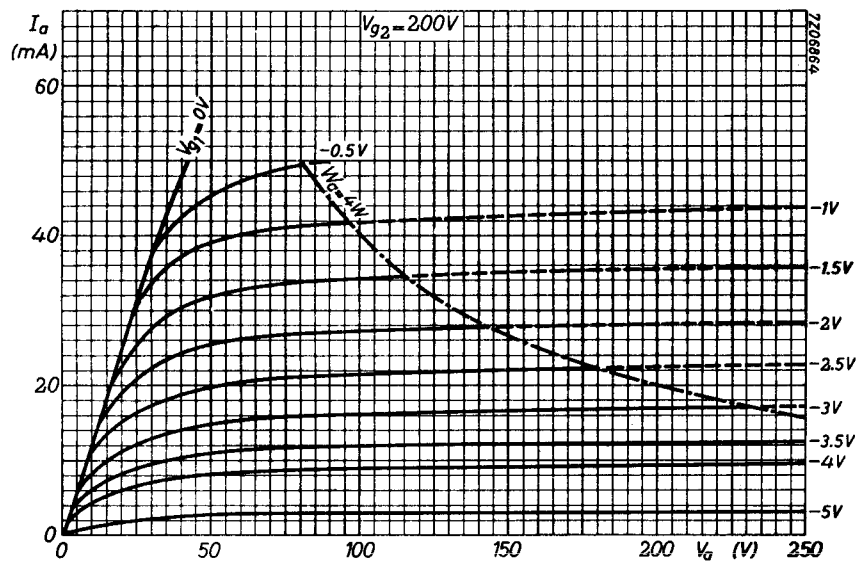
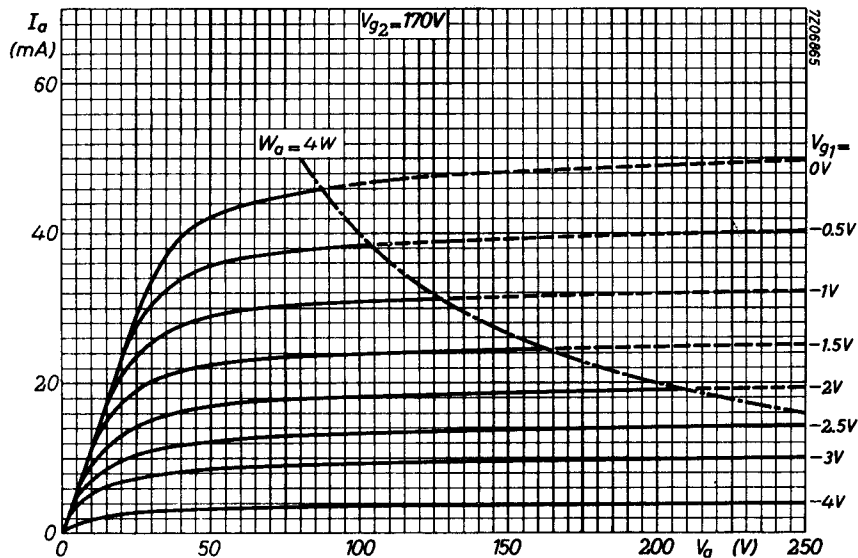
|                                         |           |      |             |                  |
|-----------------------------------------|-----------|------|-------------|------------------|
| Anode voltage                           | $V_{a_o}$ | max. | $\pm 550$   | V                |
|                                         | $V_a$     | max. | $\pm 300$   | V                |
| Anode peak voltage ( $I_a$ max. 0.1 mA) | $V_{a_p}$ | max. | 600         | V <sup>1)</sup>  |
| Anode dissipation                       | $W_a$     | max. | 1           | W                |
| Cathode current                         | $I_k$     | max. | 12          | mA               |
| Grid resistor, for fixed bias           | $R_g$     | max. | 1           | M $\Omega$       |
| for automatic bias                      | $R_g$     | max. | 3           | M $\Omega$       |
| Cathode to heater voltage, cathode neg. | $V_{kf}$  | max. | 150         | V                |
| cathode pos.                            | $V_{kf}$  | max. | 200 V + 150 | V <sub>RMS</sub> |

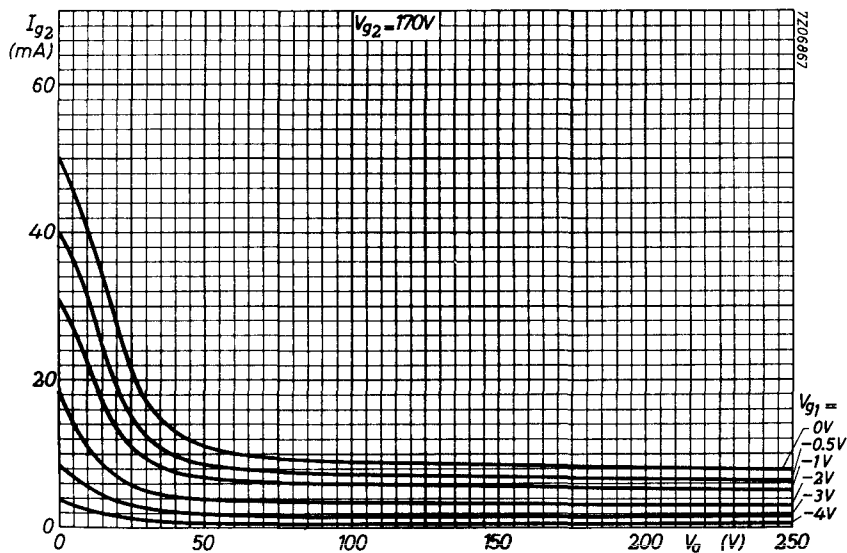
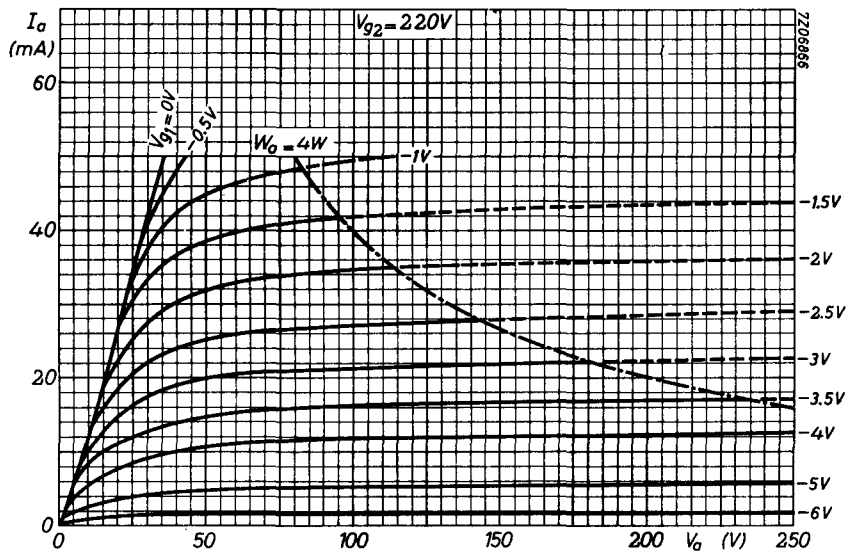
### Pentode section

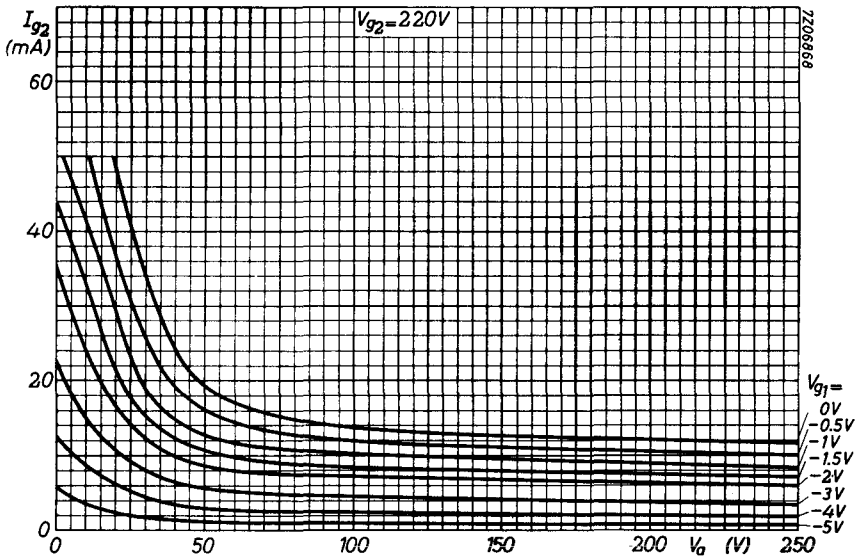
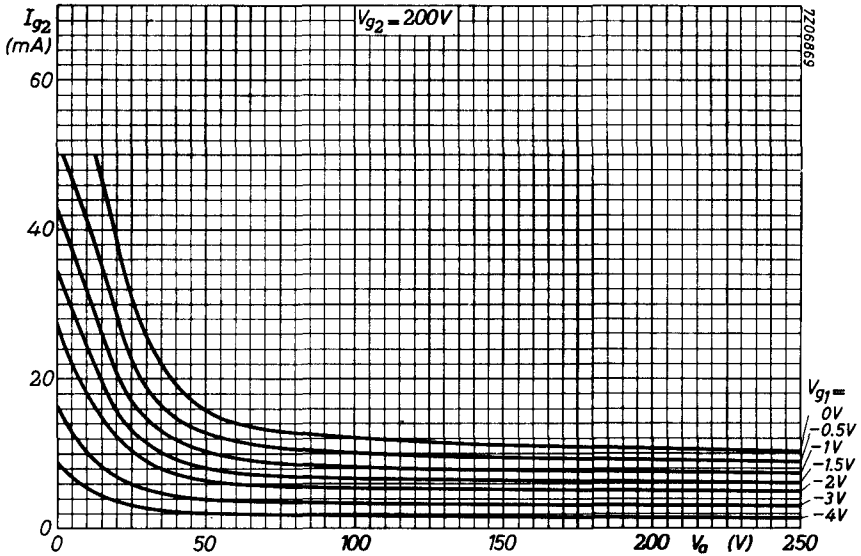
|                                    |               |      |     |           |
|------------------------------------|---------------|------|-----|-----------|
| Anode voltage                      | $V_{a_0}$     | max. | 550 | V         |
|                                    | $V_a$         | max. | 300 | V         |
| Grid No.2 voltage                  | $V_{g_{2_0}}$ | max. | 550 | V         |
|                                    | $V_{g_2}$     | max. | 250 | V         |
| Anode dissipation                  | $W_a$         | max. | 4   | W         |
| Grid No.2 dissipation              | $W_{g_2}$     | max. | 1.7 | W         |
| Cathode current                    | $I_k$         | max. | 40  | mA        |
| Grid No.1 resistor, for fixed bias | $R_{g_1}$     | max. | 1   | $M\Omega$ |
| for automatic bias                 | $R_{g_1}$     | max. | 2   | $M\Omega$ |
| Cathode to heater voltage          | $V_{kf}$      | max. | 200 | V         |

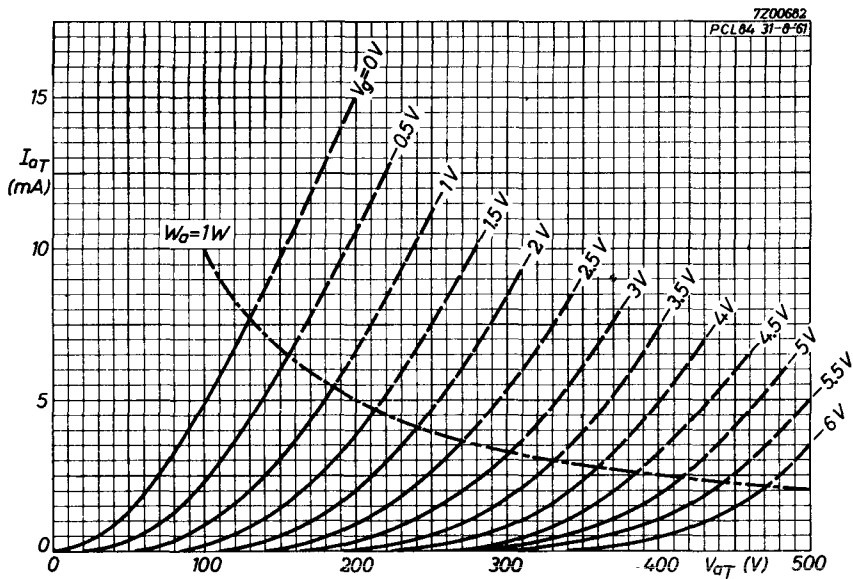
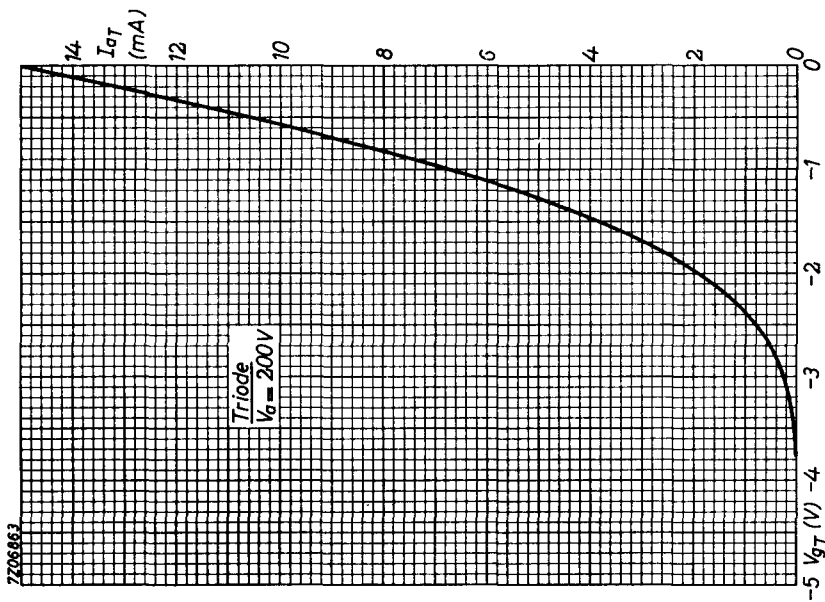
<sup>1</sup>) Max. pulse duration 18% of a cycle with a maximum of 18  $\mu$ sec.











# PHILIPS

## Data handbook



**Electronic  
components  
and materials**

### PCL84

| page | sheet | date       |
|------|-------|------------|
| 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    | FP    | 1999.08.02 |