



ELECTRONIC TUBE REFERENCE

1876

Rectifier - Half Wave electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
RECTIFIER

Directly heated high-vacuum half-wave rectifier for high-voltage, low-current power supplies. Its four-volt filament and kilovolt-class inverse-voltage capability emphasize voltage handling rather than substantial current delivery.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	4 V / 300 mA	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Rectifier	
PEAK INVERSE VOLTAGE	3500 V
NOMINAL OUTPUT CURRENT	5 mA
<i>Directly heated half-wave high-vacuum rectifier.</i>	

1876 — High-Vacuum Half-Wave Rectifier

A directly heated, high-vacuum half-wave rectifier designed primarily for cathode ray oscillographs and high-voltage, low-current applications.

Overview

The **1876** is a high-vacuum half-wave rectifier (also designated as *redresseur monoplaque à vide poussé* or *Hochvakuum Einweggleichrichter*). It is specifically designed for low-current, high-voltage applications, most notably in cathode ray oscillographs. The device features a directly heated filament and

is housed in a glass envelope with a specialized base, providing reliable rectification under high peak inverse voltage conditions.

Filament and Heating

The 1876 utilizes a directly heated filament designed for operation from an AC supply, typically in a parallel supply configuration. The filament characteristics are highly consistent across specifications:

Parameter	Value
Heating Type	Direct, AC (parallel supply)
Filament Voltage (V_f)	4.0 V
Filament Current (I_f)	Approx. 0.3 A

Physical Dimensions and Base Connections

The tube has a maximum overall height of **97 mm** (excluding pins) and a maximum diameter of **52 mm**. It is equipped with a **P35** base (associated with connection reference 41).

Depending on the specific manufacturing run or standard, the pinout configuration for the filament and anode connections is documented with slight variations:

- **Configuration A:** The filament is connected to **Pin 1** and **Pin 2**, with the anode connected to **Pin 8**. Pins 3, 4, 5, 6, and 7 have no active connections.
- **Configuration B:** The filament is connected to **Pin 2** and **Pin 3**, with the anode connected to **Pin 8**. Pins 1, 4, 5, 6, and 7 have no active connections.

In all configurations, the anode remains consistently assigned to **Pin 8**, while the unused pins serve no active electrical function.

Operating Conditions and Limiting Values

The 1876 is rated for high-voltage rectification with strict limits on output current and filter capacitance to ensure long-term reliability. The maximum operating limits are defined as follows:

Parameter	Maximum Rating
Transformer Voltage (V_{tr})	850 V_{eff} (RMS)
DC Output Current (I_o)	5 mA
Peak Inverse Voltage (V_{inv})	3500 V
Filter Capacitance (C)	0.5 μ F
Minimum Series/Protective Resistor (R_t)	0 Ω

The requirement of a minimum protective series resistance (R_t) of **0 Ω** indicates that the tube's internal impedance and the design of the associated high-voltage circuit are sufficient to limit transient currents without requiring an external protective resistor, provided the filter capacitance does not exceed the maximum limit of **0.5 μF** .

Electrical Characteristics and Curve Observations

The anode characteristics of the 1876 follow a standard diode space-charge curve starting at 0 V and 0 mA. At the nominal filament voltage of 4.0 V, the relationship between anode current (I_a) and anode voltage (V_a) exhibits the following behavior:

- **At $V_a = 10 \text{ V}$:** The anode current (I_a) is approximately **3.5 mA to 4.0 mA** (with specific measurements indicating 3.8 mA).
- **At $V_a = 20 \text{ V}$:** The anode current (I_a) rises to approximately **11.0 mA to 11.5 mA**.
- **Above 10 mA (around $V_a = 18 \text{ V to } 25 \text{ V}$):** The characteristic curve is typically represented as a dashed line, indicating operation beyond the typical continuous DC rating. At $V_a = 25 \text{ V}$, the anode current reaches approximately **15.0 mA**.

These curve observations demonstrate that while the tube can conduct peak currents up to 15 mA under transient or pulsed conditions, the continuous DC output current must be restricted to the rated maximum of 5 mA to prevent damage to the directly heated filament and anode structure.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1938 Philips Miniwatt Vacuum Tube Catalog

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1938 PHILIPS MINIWATT VACUUM TUBE CATALOG

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum AC no-load voltage per plate	850 V	HalfWave
Maximum DC output current	5 mA	HalfWave

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1957 Philips Receiving and Amplifying Tubes

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1957 PHILIPS RECEIVING AND AMPLIFYING TUBES

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
RMS Transformer Voltage Maximum	850 V	—
DC Output Current Maximum	5 mA	—
Peak Inverse Voltage Maximum	3500 V	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Interelectrode Capacitance Maximum	0.5 pF	—



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

SOURCE PDF

1963 Philips Electron Tubes Handbook V1

Published test conditions and operating points. Values on this page are preserved as reported by this source.

1963 PHILIPS ELECTRON TUBES HANDBOOK V1

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum AC no-load voltage per plate	650 V	HalfWave
Maximum DC output current	5 mA	HalfWave
Maximum peak inverse voltage	3500 V	HalfWave