



ELECTRONIC TUBE REFERENCE

1729

Rectifier - Full Wave electronic tube

CONSOLIDATED TECHNICAL DATA

2 SECTIONS

CONSTRUCTION

RECTIFIER-RECTIFIER

Philips directly heated double-anode mercury-vapor/gas industrial rectifier designed particularly for battery chargers. Low forward voltage and multiampere output suit efficient high-current charging equipment.

GENERAL CHARACTERISTICS

BASE DESIGNATION	GOLIATH	BASE PINS	—
NOMINAL HEATER	1.9 V / 8 A	PARALLEL HEATER	— / —
HEATING	Direct	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Common cathode	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Rectifier	
PEAK INVERSE VOLTAGE	300 V
NOMINAL OUTPUT CURRENT	6 A
PEAK FORWARD CURRENT	18 A
FORWARD VOLTAGE DROP	10 V
WARM-UP TIME	120 s
Representative of two identical paths; application rating 6 A per valve and published I_a max 3 A per anode.	

SECTION2 Rectifier	
PEAK INVERSE VOLTAGE	300 V
NOMINAL OUTPUT CURRENT	6 A
PEAK FORWARD CURRENT	18 A
FORWARD VOLTAGE DROP	10 V
WARM-UP TIME	120 s
<i>Second physical rectifier section added to represent the full-wave/double-anode structure.</i>	

1729 — Double-Anode Rectifying Valve

The **1729** is a mercury vapour and gas-filled, double-anode rectifying valve designed for industrial applications, specifically battery charging systems. It is capable of delivering 6 A per valve and is rated for charging a maximum of 36 lead-acid (Pb) cells.

Mechanical Construction and Physical Dimensions

The 1729 is constructed with a glass envelope and requires a specific vertical mounting position with the base down. The physical dimensions and mechanical specifications of the valve include:

- **Maximum Diameter:** 81 mm
- **Maximum Height:** 240 mm
- **Net Weight:** 250 g
- **Shipping Weight:** 5700 g
- **Base Type:** Goliath
- **Socket/Support:** Type 65909 BG/01

The valve features a top anode connection with an M6 terminal. A side terminal (M4) is located on the bulb, positioned 70 mm above the base bottom and projecting outward by 20 mm. The valve also incorporates a screen (s), which must be connected directly to the cathode via an external 10 kΩ, 0.5 W resistor.

Filament and Heating Requirements

The 1729 utilizes a directly heated, oxide-coated filament. The electrical requirements and pre-heating times for the filament are strictly defined:

Parameter	Value
Filament Voltage (V_f)	1.9 V
Filament Current (I_f)	8 A

Parameter	Value
Recommended Pre-heating Time (T_w)	2 minutes

The pre-heating time (T_w) is critical to ensure proper vaporization of the mercury before anode voltage is applied. Under urgent conditions, the pre-heating time may be decreased to a minimum of 1 minute. To automate this delay, a type [4152](#) time delay switch can be integrated into the circuit. Following transport or after a prolonged interruption of service, the pre-heating time must be extended to a minimum of 5 minutes.

Electrical Characteristics and Operating Limits

The electrical operation of the 1729 is characterized by low internal voltage drops typical of gas and mercury vapour rectifiers.

Typical Characteristics

- **Arc Voltage (V_{arc}):** 10 V
- **Ignition Voltage (V_{ign}):** 30 V

Limiting Values

The operating limits must be strictly observed to prevent damage to the valve:

Parameter	Limit Value
Maximum Transformer Voltage (V_{tr})	$95 V_{eff} / 20 V_{eff}$ (under Circuit a conditions)
Maximum Peak Inverse Anode Voltage (V_{ainvp})	300 V
Maximum Anode Current (I_a)	3 A
Maximum Peak Anode Current (I_{ap})	18 A
Minimum Surge-Limiting Resistance (R_t)	0.4 Ω
Operating Mercury Temperature Range (t_{Hg})	30 to 80 °C

The minimum surge-limiting resistance (R_t) of 0.4 Ω is required to protect the anodes from excessive current surges during operation.

Technical Summary

The **1729** is a specialized, directly heated, double-anode rectifying valve filled with mercury vapour and gas. Utilizing a Goliath base and designed for vertical, base-down mounting, it is optimized for heavy-duty battery charging applications up to 36 lead-acid cells. With a filament rating of 1.9 V at 8 A, the valve requires a carefully managed pre-heating delay of 2 minutes (extendable to 5 minutes after transport) to

safeguard its oxide-coated filament. Its electrical limits include a maximum peak inverse voltage of 300 V, a maximum anode current of 3 A (18 A peak), and a required minimum series resistance of 0.4 Ω , operating within a controlled mercury temperature range of 30 to 80 °C.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1999 Philips 0-D

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

1999 PHILIPS 0-D

Section 1 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum RMS anode supply voltage	95 V	—
Minimum RMS anode supply voltage	20 V	—
Maximum average anode current per anode	3 A	—
Minimum series resistance	0.4 ohm	—
Permitted mercury/ambient temperature	30–80 degC	—
DC output current	6 A	—

1999 PHILIPS 0-D

Section 2 · Rectifier

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum RMS anode supply voltage	95 V	—
Minimum RMS anode supply voltage	20 V	—
Maximum average anode current per anode	3 A	—
Minimum series resistance	0.4 ohm	—
Permitted mercury/ambient temperature	30–80 degC	—
DC output current	6 A	—

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker