

ELECTRONIC TUBE REFERENCE

17BH3A

Rectifier - Damper Diode electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
RECTIFIER

Half-wave vacuum rectifier designed for television damper service, explicitly a heater-voltage variant of the corresponding 6BH3A type with controlled warm-up.

GENERAL CHARACTERISTICS

BASE DESIGNATION	9HP	BASE PINS	9
NOMINAL HEATER	17 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

9HP - TERMINAL PINOUT

TERMINAL	SECTION	ELEMENT	STATUS
PIN1	–	–	IC
PIN2	–	P – Plate (Anode)	CONNECTED
PIN3	–	–	IC
PIN4	–	H – Heater	CONNECTED
PIN5	–	H – Heater	CONNECTED
PIN6	–	–	IC
PIN7	–	P – Plate (Anode)	CONNECTED
PIN8	–	–	IC
PIN9	–	K – Cathode	CONNECTED

SECTION RATINGS

SECTION1 Rectifier	
MAXIMUM PLATE DISSIPATION	6.8 W
PEAK INVERSE VOLTAGE	5500 V
NOMINAL OUTPUT CURRENT	180 mA
PEAK FORWARD CURRENT	1.1 A
FORWARD VOLTAGE DROP	32 V
MAXIMUM HEATER-CATHODE VOLTAGE	5500 V
WARM-UP TIME	11 s
<i>Rectifier section; ratings and characteristics retained in parameter rows where not safely promotable. Inherited from explicitly referenced 6BH3A electrical characteristics; heater differs per current sheet.</i>	

17BH3A — Half-Wave Vacuum Rectifier

A *Novar-type* heater-cathode diode designed for damper service in horizontal-deflection circuits of television receivers.

Overview

The **17BH3A** is a half-wave vacuum rectifier designed specifically for use as a damper tube in the horizontal-deflection circuits of television receivers, particularly black-and-white systems. It is a heater-cathode diode featuring a 17-volt heater and is constructed in a compact Novar envelope.

The 17BH3A belongs to a family of rectifiers that includes the [6BH3A](#) and [22BH3A](#), sharing identical electrical ratings and construction except for their heater characteristics. It is also closely related to the [17BH3](#), from which it differs by having a shorter bulb and a base that features an exhaust tip at the bottom. Because of its power-handling role in television deflection circuits, the 17BH3A requires adequate ventilation during operation.

Mechanical Specifications and Construction

The 17BH3A features a Novar T-9 glass envelope with a 9-pin button base (E9-89). This construction includes an exhaust tip located at the bottom of the base. The physical dimensions of the tube are:

- **Maximum overall height:** 3.005 inches
- **Maximum seated height:** 2.625 inches
- **Maximum diameter:** 1.188 inches

The tube requires a standard Novar 9-contact socket for installation.

Heater Characteristics

The 17BH3A is equipped with an indirectly heated cathode. Its heater is designed for series-string or parallel applications with the following ratings:

- **Heater Voltage (AC or DC):** 17 V
- **Heater Current:** 0.600 ± 0.040 A (600 mA)
- **Average Heater Warm-up Time:** 11 seconds

Pinout and Basing Configurations

The 17BH3A utilizes a 9HP basing diagram. However, different technical records document two distinct pinout configurations for this designation. In both configurations, pins 1, 3, 6, and 8 are designated as Internal Connections (IC) and must not be used as circuit tie points.

Pinout Configuration A

In this configuration, the heater is connected to pins 2 and 9, while the cathode is redundant on pins 4 and 5:

- **Pin 1:** Internal Connection (IC)
- **Pin 2:** Heater (H)
- **Pin 3:** Internal Connection (IC)
- **Pin 4:** Cathode (K)
- **Pin 5:** Cathode (K)
- **Pin 6:** Internal Connection (IC)
- **Pin 7:** Plate (P)
- **Pin 8:** Internal Connection (IC)
- **Pin 9:** Heater (H)

Pinout Configuration B

In this alternative configuration, the heater is connected to pins 4 and 5, the plate is redundant on pins 2 and 7, and the cathode is on pin 9:

- **Pin 1:** Internal Connection (IC)
- **Pin 2:** Plate (P)
- **Pin 3:** Internal Connection (IC)
- **Pin 4:** Heater (H)
- **Pin 5:** Heater (H)
- **Pin 6:** Internal Connection (IC)
- **Pin 7:** Plate (P)
- **Pin 8:** Internal Connection (IC)
- **Pin 9:** Cathode (K)

Direct Interelectrode Capacitances

Measured without an external shield, the approximate direct interelectrode capacitances of the 17BH3A are:

- **Plate to Cathode and Heater:** 6.5 pF
- **Cathode to Plate and Heater:** 9.0 pF
- **Heater to Cathode:** 2.8 pF

Damper Service Ratings

The maximum ratings of the 17BH3A are established under the Design-Maximum Rating System. For operation in a standard 525-line, 30-frame television scanning system, the ratings are as follows:

Plate Ratings

- **Peak Inverse Plate Voltage:** 5500 V (The duty cycle of the voltage pulse must not exceed 15% of one horizontal scanning cycle, or a maximum duration of 10 microseconds)
- **Steady-State Peak Plate Current:** 1100 mA
- **DC / Average Plate Current:** Technical specifications list this limit as either 130 mA or 180 mA depending on the operating standard.
- **Plate Dissipation:** 6.5 W

Heater-Cathode Voltage Ratings

Due to the high-voltage pulses encountered in television horizontal-deflection circuits, the heater-cathode insulation is rated for high peak voltages:

- **Heater Negative with Respect to Cathode:**
 - **DC Limit:** 900 V
 - **Total DC and Peak Pulse Limit:** 5500 V
- **Heater Positive with Respect to Cathode:**
 - **DC Limit:** 100 V
 - **Total DC and Peak Pulse Limit:** 300 V

Technical Summary

The **17BH3A** is a Novar-based, half-wave vacuum rectifier designed for television horizontal damper service. Operating with a 17 V, 0.6 A heater, it provides high peak inverse voltage capability (up to 5500 V) and substantial peak current capacity (1100 mA) to handle the demanding flyback pulses of television deflection systems. Its physical construction features a compact T-9 bulb with an exhaust tip on its 9-pin button base. Designers must observe the specific pinout configuration of the socket and ensure adequate ventilation to accommodate its 6.5 W plate dissipation rating.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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

1971 RCA HB3 BINDER 5 OF 7

Section 1 · Rectifier

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Voltage (AC or DC) $\pm$	6.3 V	PublishedColumn1
E The do component must not a%teed	900 V	—
The do component must not exceed	100 V	—
Voltage (AC or DC) $\pm$	0.6 V	PublishedColumn2
respect to cathodes b max	5500 V	—
respect to cathode ° max	300 V	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Average Plate Current max	180 mA	—
Plate Dissipation max	6.8 W	—
Heater voltage	17 V	Reference sheet; AC or DC at rated heater current
Heater current	600 mA	Reference sheet nominal current
Warm-up time	11 s	Average
Peak Inverse Plate Voltages max	5500 V	—
Peak Plate Current max	1100 mA	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
P to (H, K)	6.5 pF	—
K to (P,H)	9 pF	—
Heater to cathode	2.8 pF	—

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