



ELECTRONIC TUBE REFERENCE

17KV6

Power - TV Horizontal Output (sweep) electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

BEAMPOWER

16.8-volt-heater beam-power tube designed for television horizontal-deflection amplification, with high sweep-pulse voltage and current capability.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	16.8 V / 600 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Beam Power	
PLATE RESISTANCE	15000 Ω
TRANSCONDUCTANCE	0.0075 S
MAXIMUM PLATE VOLTAGE	770 V
MAXIMUM SCREEN VOLTAGE	220 V
MAXIMUM PLATE DISSIPATION	20 W
MAXIMUM SCREEN DISSIPATION	4 W
MAXIMUM CATHODE CURRENT	200 mA
<i>6KV6 electrical system; heater changed by 17KV6 sheet.</i>	

17KV6 — Beam Power Tube

The 17KV6 is a Novar-type beam power tube designed primarily for high-voltage pulse- or shunt-regulator applications in color television receivers.

Overview

The **17KV6** is a specialized beam power tube constructed in a Novar envelope. It is designed to handle high-voltage pulses and serve as a shunt regulator in color television receivers, specifically within 525-line, 30-frame scanning systems.

Electrically, the 17KV6 is identical to the **6KV6** except for its heater characteristics and ratings. It features a robust cathode structure, high peak current capabilities, and high-voltage insulation to withstand the demanding conditions of television deflection and regulation circuitry.

Construction, Heater, and Physical Characteristics

The 17KV6 is housed in a glass envelope conforming to outline section 31D. It utilizes a 9-contact Novar base, which requires a specialized Novar socket. The physical design is optimized to manage high thermal loads, with a maximum allowable bulb temperature of **240 °C** at its hottest point.

The tube features an indirectly heated cathode with a controlled warm-up time, making it suitable for series-string heater arrangements.

Heater Parameter	Value
Heater Voltage (AC or DC)	16.8 V
Heater Current	0.600 ± 0.040 A
Average Warm-up Time	11 s
Maximum Peak Heater-Cathode Voltage (Positive)	+200 V
Maximum Peak Heater-Cathode Voltage (Negative)	-500 V
Maximum Average Heater-Cathode Voltage	100 V

Pinout and Base Connections

The 17KV6 utilizes the **9QU** pin terminal diagram. The 9-pin Novar base provides separate connections for the internal electrodes, including dual connections for Grid No. 2 to assist in heat dissipation and low-impedance RF grounding.

The pin assignments, viewed from the bottom of the tube base, are as follows:

Pin Number	Connection
1	Grid No. 2 (Screen Grid)
2	Grid No. 1 (Control Grid)
3	Cathode

Pin Number	Connection
4	Heater
5	Heater
6	Grid No. 3 (Suppressor Grid / Beam-Forming Plates)
7	Grid No. 2 (Screen Grid)
8	Internal Connection (Do Not Use)
9	Plate

Electrical Characteristics and Class A1 Operation

The 17KV6 can be operated as a Class A1 amplifier. The tube's characteristics vary significantly depending on the applied electrode potentials. Two distinct operating points illustrate its behavior under static and pulsed conditions:

Operating Point A (Zero-Bias, Pulsed Measurement)

This point represents a high-current state measured via a recurrent waveform to prevent thermal damage:

- **Plate Voltage:** 100 V
- **Grid-No. 3 Voltage:** 0 V
- **Grid-No. 2 Voltage:** 140 V
- **Grid-No. 1 Voltage:** 0 V
- **Plate Current:** 580 mA
- **Grid-No. 2 Current:** 24 mA

Operating Point B (Typical Static Bias)

This point represents a typical biased operating condition:

- **Plate Voltage:** 140 V
- **Grid-No. 3 Voltage:** 0 V
- **Grid-No. 2 Voltage:** 140 V
- **Grid-No. 1 Voltage:** -24.6 V
- **Plate Current:** 80 mA
- **Grid-No. 2 Current:** 2.4 mA
- **Plate Resistance (Approximate):** 6,000 Ω
- **Transconductance:** 9,500 μmhos

- **Triode Amplification Factor:** 4 (*measured with Grid No. 3 connected to cathode, and Grid No. 2 connected to plate at the socket*)
- **Grid-No. 1 Cutoff Voltage:** -42 V (*for a plate current of 1 mA*)

High-Voltage Pulse and Shunt Regulator Service

The primary application of the 17KV6 is as a high-voltage pulse or shunt regulator in television receivers. Under these conditions, the tube is subjected to extreme peak voltages and must be operated within strict design-maximum ratings to ensure reliability.

Design-Maximum Ratings (525-Line, 30-Frame System)

- **DC Plate Supply Voltage (at zero plate current):** 770 V
- **Peak Positive-Pulse Plate Voltage:** 6,500 V (*for a pulse duration not exceeding 15% of a horizontal scanning cycle, or a maximum of 10 μ s*)
- **Peak Negative-Pulse Plate Voltage:** 1,500 V
- **DC Grid-No. 3 Voltage:** 75 V
- **DC Grid-No. 2 Voltage:** 220 V
- **DC Grid-No. 1 Voltage (Negative-bias value):** 75 V
- **Peak Negative-Pulse Grid-No. 1 Voltage:** 330 V
- **Peak Cathode Current:** 950 mA
- **Average Cathode Current:** 275 mA
- **Grid-No. 2 Input Power:** 3.5 W
- **Plate Dissipation:** 20 W continuous (*up to 24 W is temporarily permissible for a maximum duration of 10 seconds, provided the maximum envelope temperature is not exceeded and adequate circuit precautions are implemented to protect the tube in the event of a loss of Grid-No. 1 bias*)

Maximum Circuit Values

- **Grid-No. 1-Circuit Resistance:** 1.0 M Ω (*for grid-No. 1-resistor-bias operation*)

Interelectrode Capacitances

The direct interelectrode capacitances of the 17KV6, measured without an external shield, are approximately:

- **Grid No. 1 to Plate:** 1.2 pF
- **Input Capacitance (Grid No. 1 to Cathode, Heater, Grid No. 2, and Grid No. 3):** 22 pF
- **Output Capacitance (Plate to Cathode, Heater, Grid No. 2, and Grid No. 3):** 9 pF

These capacitances reflect the physical geometry of the beam power structure, where the screen grid (Grid No. 2) and beam-forming plates (Grid No. 3) provide electrostatic shielding between the control grid and the plate, keeping the direct grid-to-plate capacitance relatively low.

Technical Summary

The **17KV6** is a high-performance, Novar-based beam power tube designed for demanding high-voltage shunt regulator and pulse applications. Operating with a **16.8 V, 0.6 A** heater, it is optimized for series-string television chassis. The tube is characterized by its ability to withstand peak positive plate pulses up to **6,500 V** and peak cathode currents up to **950 mA**. With a continuous plate dissipation rating of **20 W** (extendable to **24 W** under transient conditions) and a robust transconductance of **9,500 μmhos** at typical operating points, the 17KV6 provides the high-current capability and voltage tolerance required for stable high-voltage regulation in color television systems.

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.

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Section 1 · Beam Power

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	16.8 V	—
Heater current	600 mA	—
Heater warm-up time	11 s	ControlledWarmup
Maximum DC plate voltage	770 V	HorizontalDeflection
Peak positive-pulse plate voltage	6500 V	HorizontalDeflection
Maximum screen voltage	220 V	HorizontalDeflection
Average cathode current	200 mA	HorizontalDeflection
Plate dissipation	20 W	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Plate voltage	250 V	ClassA
Screen voltage	150 V	ClassA
Plate current	70 mA	ClassA
Plate resistance	15000 ohm	ClassA
Transconductance	7500 uS	ClassA

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-to-plate capacitance	0.26 pF	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Television horizontal-deflection amplifier	—

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