

ELECTRONIC TUBE REFERENCE

17CVP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Seventeen-inch direct-view picture and monitor CRT using electrostatic focusing and magnetic deflection. Sylvania specifies high-voltage anode operation, interelectrode capacitances, and an explicit warning regarding X-ray radiation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	8HR	BASE PINS	—
NOMINAL HEATER	6.3 V / 300 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	17600 V
MAXIMUM SCREEN VOLTAGE	550 V
Maximum anode/grid ratings and capacitance presence promoted from supplied Sylvania CRT data. X-ray warning is explicitly published.	

17CVP4 — Rectangular Television Picture Tube

The **17CVP4** is a 17-inch direct-viewed, rectangular glass television picture tube. It features a lightweight design with a spherical faceplate, an aluminized screen, and electrostatic focusing combined with magnetic deflection. The tube does not require an ion trap and incorporates an external conductive coating that must be grounded.

Mechanical and Physical Design

The 17CVP4 is constructed using a J132 1/2-A or J132 1/2-B glass bulb with a neck diameter of 1 1/8 inches. The tube weighs approximately 10 pounds. The faceplate is made of gray filter glass with approximately 77% light transmittance, which improves contrast under ambient light.

The screen utilizes an aluminized P4 phosphor, which produces a white fluorescence with short-to-medium persistence. The physical dimensions and deflection characteristics of the tube include:

- **Minimum Useful Screen Dimensions:** 14 3/4 x 11 11/16 inches
- **Minimum Useful Screen Area:** 155 square inches
- **Deflection Angles (approximate):**
 - Diagonal: 110 degrees
 - Horizontal: 105 degrees
 - Vertical: 87 degrees

The electrical connection to the anode is made via a recessed small cavity cap (J1-21) on the bulb. The tube uses a B7-183 base with an 8HR basing configuration.

Heater and Pin Connections

The 17CVP4 is equipped with an indirectly heated cathode. The heater is designed for series or parallel operation with a controlled warm-up time.

Heater Parameter	Value
Heater Voltage	6.3 V
Heater Current	0.30 A $\pm$ 5%
Heater Warm-up Time	11 seconds

The 8HR basing arrangement provides the following pin connections, viewed from the bottom of the tube:

Pin Number	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 3	Grid No. 2
Pin 4	Grid No. 4 (Focusing Electrode)
Pin 6	Grid No. 1
Pin 7	Cathode
Pin 8	Heater

Pin Number	Connection
Cap	Anode (connected to Grid No. 3, Grid No. 5, and Collector)

Note: The alignment of Pin 4 (Grid No. 4) is designed to be within 10 degrees of the anode contact cap.

Electrical Characteristics and Capacitances

The interelectrode capacitances of the 17CVP4 are approximately as follows:

- **Cathode to all other electrodes:** 5 μF
- **Grid No. 1 to all other electrodes:** 6 μF
- **External conductive coating to anode:**
 - Maximum: 1500 μF
 - Minimum: 1000 μF

The external conductive coating acts as a capacitor in conjunction with the internal anode coating, which helps in filtering the high-voltage anode supply. This external coating must be connected to a reliable system ground.

Operating Conditions and Maximum Ratings

The 17CVP4 operates at high voltages to produce a bright, focused raster. The table below compares the typical operating conditions with the absolute maximum ratings:

Parameter	Typical Operation	Absolute Maximum Rating
Anode Voltage	14,000 V dc	17,600 V dc
Grid No. 4 Voltage (Focus)	0 to 400 V dc	-550 to +1100 V dc
Grid No. 2 Voltage	300 V dc	550 V dc
Grid No. 1 Voltage (Negative Bias)	—	154 V dc
Grid No. 1 Voltage (Negative Peak)	—	220 V
Grid No. 1 Voltage (Positive Bias)	—	0 V dc
Grid No. 1 Voltage (Positive Peak)	—	2 V

Grid No. 1 Cutoff Characteristics

Under typical operating conditions (Anode at 14,000 V and Grid No. 2 at 300 V), the Grid No. 1 voltage required for visual extinction of the focused raster ranges from -35 to -72 V dc. Extinction of a stationary focused spot requires approximately 5 V more negative bias.

Heater-Cathode Voltage Limits

To prevent insulation breakdown, the voltage difference between the heater and the cathode must be kept within specified limits:

- **Heater negative with respect to cathode (during warm-up ≤ 15 seconds):** 450 V maximum
- **Heater negative with respect to cathode (after warm-up):** 200 V maximum
- **Heater positive with respect to cathode:** 200 V maximum

Circuit and Safety Requirements

Grid No. 1 Circuit

The maximum allowable resistance in the Grid No. 1 circuit is 1.5 Megohms. Exceeding this value may lead to unstable operation or bias drift.

X-ray Radiation Warning

When operated at high voltages, television picture tubes can produce X-rays. Shielding may be necessary if the tube is operated above 16,000 V or the maximum rated anode voltage (17,600 V), whichever is less. Adequate shielding must be provided in the receiver design to protect users from exposure.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1950 Sylvania

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

1950 SYLVANIA

Section 1 · Cathode Ray

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	—
Heater Current	300 mA	—
Cathode To All Other Electrodes Capacitance	5 pF	Approximate

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Voltage	17600 V	—
Maximum Grid2 Voltage	550 V	—
Typical Anode Voltage	14000 V	—

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