

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA

17DCP4

1 SECTION
CONSTRUCTION
CATHODERAY

Specialized - Cathode Ray electronic tube

Seventeen-inch direct-view monochrome picture/monitor CRT with magnetic deflection and high-voltage anode operation. Sylvania documentation includes an X-ray radiation warning, reflecting the elevated accelerating voltage used to produce a bright large-screen image.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12L	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.	

17DCP4 — Electrostatic-Focus Television Picture Tube

The **17DCP4** is a 17-inch, direct-viewed, rectangular glass television picture tube. It features electrostatic focusing, magnetic deflection, and an aluminized screen, designed for television receiver applications without the need for an external ion trap magnet.

Construction and Screen Characteristics

The 17DCP4 is constructed with a rectangular glass bulb (J133F or J133G) and a spherical faceplate made of gray filter glass. This faceplate provides approximately 74% light transmittance, which helps improve picture contrast under ambient light.

The screen utilizes an aluminized P4 phosphor that produces a white fluorescence. This phosphor is characterized by short to medium persistence, making it suitable for displaying moving television images without objectionable trailing.

Deflection is accomplished magnetically, with nominal deflection angles of:

- **Horizontal deflection:** 85°
- **Diagonal deflection:** 90°

The tube incorporates an external conductive coating that must be grounded. This coating, in conjunction with the internal anode, forms a capacitor that assists in high-voltage filtering. The external coating contact area is 2" x 2" and is located 90° counterclockwise from the anode contact (when viewed from the base). The anode contact itself is a recessed small cavity cap (J1-21) that aligns with pin 6 $\pm$ 30°.

Physical Dimensions and Weight

- **Weight:** Approximately 13 pounds
- **Minimum Useful Screen Dimensions:** 14 5/16 x 11 1/8 inches
- **Minimum Useful Screen Area:** 149 square inches

Electrical Connections and Pinout

The 17DCP4 uses a small shell duodecal 6-pin base (B6-63) with a 12L basing arrangement. The electrical connections are assigned as follows:

Pin	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 6	Grid No. 4 (Focusing Electrode)
Pin 10	Grid No. 2
Pin 11	Cathode
Pin 12	Heater
Cap	Anode

Heater Characteristics

The heater is designed for a nominal voltage of 6.3 V and draws a current of $0.3 \pm 5\%$ A (300 mA).

The heater warm-up time is rated at 11 seconds. This warm-up time is specifically defined as the time required for the heater voltage to reach 80% of its rated value when four times the rated heater voltage is applied in series with an external resistance equal to three times the rated voltage divided by the rated current.

Direct Interelectrode Capacitances

The approximate capacitances of the tube's electrodes are:

- **Cathode to all other electrodes:** 5 μf
- **Grid No. 1 to all other electrodes:** 6 μf
- **External conductive coating to anode:** 1000 μf (minimum) to 1500 μf (maximum)

Typical Operating Conditions

Under typical operating conditions, the electrostatic focusing electrode (Grid No. 4) is adjusted to focus the electron beam onto the screen. The typical operating parameters are:

- **Anode Voltage:** 14,000 Volts dc
- **Grid No. 4 Voltage (Focusing Electrode):** -50 to +300 Volts dc
- **Grid No. 2 Voltage:** 300 Volts dc
- **Grid No. 1 Voltage for Cutoff:** -35 to -72 Volts dc

The Grid No. 1 voltage range specified for cutoff is the value required to achieve visual extinction of a focused raster. To achieve complete extinction of a stationary focused spot, the Grid No. 1 bias must be made approximately 5 Volts more negative.

Circuit Constraints

To ensure stable operation and prevent damage to the tube, the maximum Grid No. 1 circuit resistance must not exceed **1.5 Megohms**.

Absolute Maximum Ratings

The following absolute maximum values must not be exceeded under any condition of operation:

Parameter	Absolute Maximum Value
Anode Voltage	17,600 Volts dc
Grid No. 4 Voltage (Focusing Electrode)	-550 to +1100 Volts dc
Grid No. 2 Voltage	550 Volts dc

Parameter	Absolute Maximum Value
Grid No. 1 Negative Bias Value	155 Volts dc
Grid No. 1 Negative Peak Value	220 Volts
Grid No. 1 Positive Bias Value	0 Volts dc
Grid No. 1 Positive Peak Value	2 Volts

Heater-Cathode Voltage Limits

The potential difference between the heater and the cathode is restricted to prevent insulation breakdown:

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

Safety and X-ray Radiation

When operating the 17DCP4 at high voltages, safety precautions regarding X-ray radiation must be observed. Appropriate shielding may be necessary to protect users if the tube is operated above 16,000 Volts or above its maximum rated anode voltage (17,600 Volts), whichever of these two values is less.

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	—