

ELECTRONIC TUBE REFERENCE

17DWP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Seventeen-inch direct-view monochrome television picture tube with electrostatic focus, magnetic deflection, gray/filter faceplate, and aluminized P4 white screen. Its high-voltage design includes an X-ray warning and conventional receiver-display operating characteristics.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12L	BASE PINS	6
NOMINAL HEATER	6.3 V / 10 A	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	22000 V
MAXIMUM SCREEN VOLTAGE	700 V
CRT-specific ratings, operating conditions, capacitances, focus/deflection, cutoff, optical, and screen data are retained in section parameters.	

17DWP4 — 17-Inch Direct-Viewed Cathode Ray Tube

The **17DWP4** is a 17-inch, rectangular glass picture and television monitor tube designed for high-resolution display applications. It features a spherical faceplate, an aluminized screen, low-voltage electrostatic focusing, and magnetic deflection. The design does not require an ion-trap magnet, simplifying the deflection yoke and neck components.

Construction and Optical Characteristics

The 17DWP4 is constructed with a rectangular glass bulb (J133B or J133D) and a gray filterglass faceplate. The faceplate provides approximately 74% light transmission, which improves contrast under ambient light conditions.

The screen utilizes an aluminized P4-Sulfide Type phosphor that exhibits white fluorescence with short-to-medium persistence. To prevent electrostatic charge buildup and assist in high-voltage filtering, the tube is equipped with a Regular-Band type external conductive coating. This coating must be grounded during operation, with the grounding contact area located near the reference line.

Mechanical Dimensions and Physical Data

Parameter	Value
Overall Length	19-3/16" $\pm$ 3/8"
Neck Length	7-1/2" $\pm$ 3/16"
Maximum Useful Screen Diagonal	17" (approximate)
Maximum Useful Screen Width	14-5/16 inches
Maximum Useful Screen Height	11-1/8 inches
Minimum Projected Screen Area	149 sq. inches
Approximate Weight	18 lbs
Operating Position	Any

Electrical Connections and Basing

The 17DWP4 uses a Small-Shell Duodecal 6-Pin base (JEDEC Group 4, No. B6-63) with a 12L basing designation (viewed from the bottom). High voltage is applied via a recessed small cavity cap (JEDEC No. J1-21) located on the bulb side.

Pin Connection Diagram (Basing 12L)

- **Pin 1:** Heater
- **Pin 2:** Grid No. 1 (Control Grid)
- **Pin 6:** Grid No. 4 (Focusing Electrode)
- **Pin 10:** Grid No. 2 (Screen Grid)
- **Pin 11:** Cathode
- **Pin 12:** Heater
- **Recessed Cavity Cap:** Ultor / Anode (Grid No. 3, Grid No. 5, Collector)
- **External Coating (C):** Grounding Contact

The focusing electrode (Grid No. 4) pin connection (Pin 6) is aligned within 30 degrees of the horizontal centerline on the same side as the anode contact.

Heater Ratings and Interelectrode Capacitances

The heater is designed for AC or DC operation. The direct interelectrode capacitances are relatively low, minimizing loading on the driving circuitry.

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.6 A (with a tolerance of $\pm 5\%$ to $\pm 10\%$, corresponding to $600 \pm 10\%$ mA)
- **Grid No. 1 to all other electrodes:** $6.5 \mu\text{F}$
- **Cathode to all other electrodes:** $5 \mu\text{F}$
- **External conductive coating to ultor/anode:** 1500 max. μF , 750 min. μF

The nominal heater power is calculated as $6.3 \text{ V} \times 0.6 \text{ A} = 3.78 \text{ W}$, using the nominal heater voltage and current values.

Operating Ratings and Conditions

The tube's ratings are specified under both Design-Maximum and Absolute Maximum rating systems. These limits must not be exceeded under any operating conditions.

Maximum Ratings

Parameter	Design-Maximum	Absolute Maximum
Ultor (Anode) Voltage	22,000 V	22,000 V dc
Grid No. 4 (Focusing) Voltage	800 V (Positive)	-550 to +1100 V dc
Grid No. 2 Voltage	700 V	700 V dc
Grid No. 1 Negative Bias Value	180 V	180 V dc
Grid No. 1 Negative Peak Value	—	220 V dc
Grid No. 1 Positive Bias Value	0 V	0 V dc
Grid No. 1 Positive Peak Value	2 V	2 V
Grid No. 1 Circuit Resistance	—	1.5 Megohms max.

Peak Heater-Cathode Voltage Limits

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

Typical Operating Conditions (Grid Drive Service)

Under typical operating conditions, the 17DWP4 is operated with an ultor voltage of 18,000 V dc. The focusing voltage is adjusted to achieve the sharpest spot or raster.

- **Ultor (Anode) Voltage:** 18,000 V dc
- **Grid No. 2 Voltage:** 300 V dc
- **Grid No. 4 Voltage for Focus:** 0 to 400 V dc
- **Grid No. 1 Voltage for Visual Extinction of Focused Raster:** -28 to -72 V dc (or -35 to -72 V dc depending on specific operating limits)
- **Grid No. 1 Voltage for Extinction of Stationary Focused Spot:** Approximately 5 V more negative than the raster extinction value (approx. -40 to -77 V dc)

Deflection and Focus

The 17DWP4 utilizes magnetic deflection with approximate deflection angles of:

- **Diagonal:** 70°
- **Horizontal:** 65°
- **Vertical:** 50°

Focusing is achieved via a low-voltage electrostatic lens (Grid No. 4). Because the focusing voltage range spans from 0 to 400 V dc, the focusing electrode can often be connected to a low-voltage supply or potentiometer in the receiver or monitor, eliminating the need for high-voltage focusing controls.

Safety and Operational Precautions

X-ray Radiation Warning

When operated at anode voltages above 16,000 V, the 17DWP4 can produce X-rays. Although the glass envelope provides some shielding, additional external shielding may be necessary if the tube is operated near or at its maximum rated anode voltage of 22,000 V. This is particularly important to prevent prolonged close-range exposure to operators or service technicians.

Grounding

The external conductive coating must be reliably connected to the chassis ground. Failure to ground this coating can result in high-voltage shocks, erratic operation, or damage to associated electronic components due to electrostatic discharge.



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	600 mA	—
Cathode To All Other Electrodes Capacitance	5 pF	Approximate

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Voltage	22000 V	—
Maximum Grid2 Voltage	700 V	—
Typical Anode Voltage	18000 V	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1965 Sylvania Electronic Tubes Vol3

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

1965 SYLVANIA ELECTRONIC TUBES VOL3

Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing method	Electrostatic	—
Deflection method	Magnetic	—
Horizontal deflection angle	65 deg	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Diagonal deflection angle	70 deg	—
Vertical deflection angle	50 deg	—
Fluorescence	White	—
Persistence	Short to medium	—
Heater voltage	6.3 V	—
Heater current	600 mA	—

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Phosphor	Aluminized P4	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum anode voltage	22000 V	—
Typical anode voltage	16000 V	—
Typical focus-electrode voltage maximum	400 V	—
Typical grid2 voltage	500 V	—
Cutoff voltage range	-35 to -72 V	—
Grid1 circuit resistance maximum	1.5 Mohm	—

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid1-to-all capacitance	6 pF	—
External conductive coating to anode capacitance maximum	1500 pF	—

APPLICATION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Application	Monochrome television picture display	—



SOURCE DATA APPENDIX

1971 RCA HB3 Binder 1 of 7

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

1971 RCA HB3 BINDER 1 OF 7

Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
LOW-VOLTAGE ELECTROSTATIC FOCUS	70 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 volts – published value 1	6.3 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 volts – published value 2	600 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 volts – published value 3	10 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid No.1 to all other electrodes	65	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Light transmission (Approx)	74	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Projected Area of Screen	149	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.4 Voltage for focus – published value 1	0 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.4 Voltage for focus – published value 2	400 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
extinction of focused raster – published value 1	-28 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
extinction of focused raster – published value 2	-72 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
ULTOR VOLTAGE	22000 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
GRID-No.2 VOLTAGE	700 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

TUBE TINKER

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