

ELECTRONIC TUBE REFERENCE

17DHP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Seventeen-inch rectangular monochrome picture tube with low-voltage electrostatic focus, 110-degree magnetic deflection, and an aluminized P4 white screen. Designed for high-voltage direct-view television display, it carries an X-ray radiation warning.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
NOMINAL HEATER	6.3 V / 450 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	16000 V
Source-derived physical section; applicable promoted ratings are populated from the printed sheet.	

17DHP4 Television Picture Tube

The **17DHP4** is a rectangular glass television picture tube designed for use in television receivers. It features a spherical faceplate, low-voltage electrostatic focusing, and 110-degree magnetic deflection. The tube utilizes a straight electron gun design that eliminates the need for an external ion trap magnet, and it is equipped with an aluminized screen and an external conductive coating.

Mechanical Specifications and Physical Construction

The 17DHP4 is constructed with a rectangular glass envelope designated as bulb number J132A1, J132-1/2 A1, or equivalent. It features a spherical faceplate made of neutral gray glass with approximately 78%

light transmission. The screen utilizes an aluminized P4 phosphor, which exhibits white fluorescence and short persistence.

Envelope Dimensions

- **Overall Length:** 11-1/4 inches nominal (with a tolerance of +3/16 inches, up to a maximum of 11-7/16 inches)
- **Neck Length:** 4-1/8 ± 1/8 inches
- **Neck Diameter:** Maximum of 1.168 to 1.188 inches at the splice
- **Bulb Dimensions (Greatest):** Width of 15-5/8 ± 1/8 inches, Height of 12-3/4 ± 1/8 inches, and Diagonal of 16-3/16 to 16-9/16 ± 1/8 inches
- **Minimum Screen Dimensions:** Width of 14-3/4 inches, Height of 11-11/16 inches, and Diagonal of 15-3/4 inches, providing a minimum useful screen area of 155 square inches
- **Deflection Angles:** Diagonal 110°, Horizontal 105°, Vertical 87°
- **Net Weight:** Approximately 10 lbs

The tube can be mounted in any position. The external conductive coating must be grounded, as it forms a supplementary high-voltage filter capacitor when combined with the internal anode coating. Additionally, the tube features a transparent insulating coating approximately 6 inches in diameter.

Electrical Connections and Pinout

The 17DHP4 is equipped with a Small Button 7-Pin Style B base (JEDEC No. B7-208) with an 8HR basing arrangement. The high-voltage anode connection is made via a Recessed Small Cavity Cap (JEDEC No. J1-21) located on the bulb cone.

The heater is designed for a controlled warm-up time of approximately 11 seconds, making it suitable for series-string receiver designs. The cathode is a coated unipotential type.

Heater Ratings

- **Heater Voltage (AC or DC):** 6.3 V
- **Heater Current:** 0.45 A

Pin Connection Table (Basing 8HR)

Pin Number	Electrode Connection
Pin 1	Heater
Pin 2	Grid 1 (Control Grid)
Pin 3	Grid 2 (Screen Grid)
Pin 4	Grid 4 (Focusing Electrode)
Pin 6	Grid 1 (Control Grid)

Pin Number	Electrode Connection
Pin 7	Cathode
Pin 8	Heater
Cap	Anode

Interelectrode Capacitances

- **Grid 1 to all other electrodes:** 6 μF
- **Cathode to all other electrodes:** 5 μF
- **External conductive coating to anode:** 1000 μF (minimum) to 1500 μF (maximum)

Maximum Ratings and Limiting Circuit Values

The following maximum ratings are specified under the Design Center system:

Maximum Ratings

- **Anode Voltage:** 16,000 V max (An absolute maximum value of 17.6 kV is permitted for X-ray considerations)
- **Grid 4 (Focusing) Voltage:** Positive 1000 V max, Negative 500 V max
- **Grid 2 Voltage:** 500 V max
- **Grid 1 Voltage:**
 - Negative Bias Value: 140 V max
 - Negative Peak Value: 200 V max
 - Positive Bias Value: 0 V max
 - Positive Peak Value: 2 V max
- **Peak Heater-Cathode Voltage:**
 - Heater negative with respect to cathode: 180 V max (During equipment warm-up, a peak value of 410 V design center maximum is allowed for a duration not exceeding 15 seconds)
 - Heater positive with respect to cathode: 180 V max

Limiting Circuit Values

- **Grid 1 Circuit Resistance:** 1.5 M Ω max
- **Grid 2 Circuit Resistance:** 10,000 Ω min (A protective resistance is advised)
- **Grid 4 Circuit Resistance:** 10,000 Ω min (A protective resistance is advised)

Typical Operating Conditions and Drive Configurations

The 17DHP4 can be operated using either grid drive (video signal applied to the control grid) or cathode drive (video signal applied to the cathode).

Grid Drive Operation

In this configuration, the video signal is applied to Grid 1:

- **Anode Voltage:** 14,000 V
- **Grid 2 Voltage:** 500 V
- **Grid 4 Voltage for Focus:** 0 to +400 V
- **Grid 1 Cutoff Voltage:** -43 to -72 V (for visual extinction of the focused raster)

Cathode Drive Operation

In this configuration, the video signal is applied to the Cathode:

- **Anode to Grid 1 Voltage:** 14,000 V
- **Grid 2 to Grid 1 Voltage:** 500 V
- **Grid 4 to Grid 1 Voltage for Focus:** 0 to 400 V
- **Cathode to Grid 1 Cutoff Voltage:** 40 to 63 V (for visual extinction of the focused raster)

Operating and Safety Notes

- **Anode Voltage Recommendation:** Operation of the tube below 12,000 V is not recommended, as it results in a significant decrease in picture brilliance and definition.
- **X-Ray Protection:** If the operating anode voltage exceeds 16 kV, appropriate shielding may be required to protect users from X-ray radiation.
- **Centering Magnet:** When using a permanent magnet centering device (0 to 8 gauss), it should extend no more than 2-1/8 inches from the yoke reference line, particularly on tubes with minimum neck length.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1947 Westinghouse

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

1947 WESTINGHOUSE

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater: Anode Voltage . . . vevesveasas.,	16000 V	Heater: Anode Voltage . . . vevesveasas., 16000 max. Volts
Voltage {ac orde) v v v v v v v we v v e v	4 V	Voltage {ac orde) v v v v v we v v e v .. 6.3 Volts Grid 4 Voltage:
Current & v v v v it a i e s e	1000 A	Current & v v v v it a i e s e 0.45 Ampere Positive Value . . cvissuvssenens. 1000 max. Volts
Worm-Up Time {approx.)é ... ,	11 s	Worm-Up Time {approx.)é ..., ... 11 Seconds Negative Value . v e e v i v vaeavsss
.. 500 max, Volts	500 V	.. 500 max, Volts
Direct Interelectrode Capacitances: Grid	500 V	Direct Interelectrode Capacitances: Grid 2 Voltage v .00 o e v vt veernoes 500 max, Volts
Grid to all other Electrodes	6 pF	Grid to all other Electrodes. 6 fLpf Grid Voltage:
External Conductive Coating to Anode: Negative Peak Value	200 V	External Conductive Coating to Anode: Negative Peak Value, 200 max. Volts
Miaimum.. et e e	2 V	Miaimum.. et e e 1000 ek Positive Peak Value o 2 max. Volts
Fluorescence ., . . oo v e e Whita Heater Negative with Respecta Cothode§	180 V	Fluorescence ., . . oo v e e Whita Heater Negative with Respecta Cothode§ . 180 max. Volts
Phosphor . . v o v v i i v v e s nm v e Aluminized P4 Heater Positive with Respectto Cathode	180 V	Phosphor . . v o v v i i v v e s nm v e Aluminized P4 Heater Positive with Respectto Cathode .. 180 max. Volts
Anode Voltage e e s	14000 V	Anode Voltage e e s 0 0 a0 e s 14000 Volis
Grid	500 V	Grid 2 Voltage .. e v v auns e 500 Volts
Grid } Cutoff Voltage	-72 V	Grid } Cutoff Voltage. . . . -43 10 -72 VVolts

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Glass voltage in the Neutral Gray Anode to Grid Voltage	14000 V	Glass voltage in the Neutral Gray Anode to Grid Voltage 14000 Volts
Transmission (approx.) of voltage	500 V	Transmission (approx.) of voltage 78% Grid 2 to Grid Voltage . . . "vs 500 Volts
Bulb Dimensions (all greatest part): Grid	400 V	Bulb Dimensions (all greatest part): Grid 4 to Grid 1 Voltage for Focus, . 0 to 400 Volts
Width e e e e,	63 V	Width e e e e, .. 15-5/8" + 1/B" Cathode to Grid 1 Cutoff Voltage a . 40 to 63 Volts
Diagonal e	1 V	Diagonal e 16-3/16" + 1/8° 1 Brilliance and definition decrease with decreasing anode voltage.
Bulb Number. . , . . . o o o oot we e JI3	12000 V	Bulb Number. . , . . . o o o oot we e JI32KA1T or equiv. Operation with anode voltage less than 12000 volts is not recommended
Neck Length,	8 mm	Neck Length, ... 4-1/8" + 1/8" recommended.
voltages as high as	17.6 V	voltages as high as 17.6 kilovolts (absolute value), shielding of
conditions involve voltages in excess of	16 V	conditions involve voltages in excess of 16 kilovolts.
§ A peak value of	410 V	§ A peak value of 410 volts design center maximum may be applied
for not more than	15 s	for not more than 15 seconds during equipment warm-up periods,

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Focusing Method veevsss. Low-Voltage Electrostatic Grid	1.5 Mohm	Focusing Method veevsss. Low-Voltage Electrostatic Grid 1 Circuit Resistance 1.5 max. Megohms
Deflection Method	10000 ohm	Deflection Method 10000 ohm Magnetic Grid 2 Circuit Resistance® 10000 min. Ohms
Deflection Angle: Grid	10000 ohm	Deflection Angle: Grid 4 Circuit Resistance® 10000 min, Ohms
& o v t e e e e e	155 Inche	& o v t e e e e e 155 Sq. Inche=x (Video Signal Applied to Cathode)
in series with o resistance equal to	3 V	in series with o resistance equal to 3 times rated heater voltage

SOURCE OPERATING CONDITIONS

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	1 code	LowVoltageElectrostatic
Deflection method	1 code	Magnetic
Deflection angle	110 deg	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Anode voltage maximum	16000 V	—
Anode voltage	14000 V	—
Grid No. 2 voltage maximum	500 V	—
Grid No. 4 focusing voltage minimum	0 V	—
Grid No. 4 focusing voltage maximum	400 V	—