



ELECTRONIC TUBE REFERENCE

17HP4B

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Seventeen-inch direct-view monochrome television picture tube with magnetic focusing and magnetic deflection. A white P4 screen, approximately 90-degree deflection, and high-voltage operation provide the conventional large-screen receiver image.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12L	BASE PINS	6
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	– / –
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION1 Cathode Ray	
MAXIMUM SCREEN VOLTAGE	500 V
CRT-specific electrode/focus/deflection data retained as parameter rows.	

17HP4B — Electrostatic-Focus Magnetic-Deflection Cathode Ray Tube

The **17HP4B** is a direct-view, all-glass cathode ray tube (picture tube) designed primarily for use in television receivers. It features electrostatic focusing, magnetic deflection, a unipotential cathode, and a rectangular glass construction. The tube is equipped with an external conductive coating and requires an external single-field ion-trap magnet.

Overview and Comparison

The 17HP4B is characterized by its rectangular screen and reflective aluminized backing. It is electrically and mechanically identical to the [17HP4](#) and [17HP4A](#) models, with the primary distinction being the

screen construction:

- The **17HP4** utilizes a standard grey filter faceplate.
- The **17HP4A** features a grey frosted filter faceplate.
- The **17HP4B** incorporates a highly reflective aluminized screen.

The screen uses a No. 4 (P4) sulfide-type phosphor, which produces a white fluorescence and phosphorescence with medium to short persistence. The faceplate is spherical and made of gray glass, providing an approximate center light transmission of 66% to 72%.

Mechanical Specifications

The physical envelope of the 17HP4B is a rectangular glass bulb with a nominal deflection angle of 70° diagonally, 65° horizontally, and 50° vertically. The tube can be mounted in any position.

Physical Dimensions

- **Overall Length:** $19 \frac{3}{16} \pm \frac{3}{8}$ inches (varying up to $19 \frac{3}{8} \pm \frac{3}{8}$ inches in some specifications)
- **Neck Length:** $7 \frac{1}{2}$ inches
- **Greatest Bulb Dimensions:**
 - Diagonal: $16 \frac{5}{8} \pm \frac{1}{8}$ inches (or $16 \frac{5}{8} \pm \frac{3}{32}$ inches)
 - Width: $15 \frac{3}{8} \pm \frac{1}{8}$ inches (or $15 \frac{25}{64} \pm \frac{1}{8}$ inches)
 - Height: $12 \frac{1}{4} \pm \frac{1}{8}$ inches
- **Minimum Useful Screen Dimensions:**
 - Diagonal: $15 \frac{1}{2}$ inches
 - Width: $14 \frac{1}{4}$ inches (or $14 \frac{5}{16}$ inches)
 - Height: $10 \frac{3}{4}$ inches
- **Raster Size:** $10 \frac{3}{4}$ inches by $14 \frac{1}{4}$ inches
- **Net Weight:** Approximately 16 lbs

Connections and Alignment

The tube uses a small-shell duodecal 6-pin base (JETEC No. B6-63) with a 12L basing designation. The high-voltage anode connection is made via a recessed small-cavity cap (JETEC No. J1-21). The anode contact is aligned with pin position No. 6 within a tolerance of ± 30 degrees.

Electrical Characteristics and Basing

The 17HP4B is equipped with an indirectly heated, unipotential cathode. The heater is designed for a nominal 6.3 V supply.

Heater Ratings

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.6 A (with a tolerance of $\pm 10\%$)

Direct Interelectrode Capacitances

- **Cathode to all other electrodes:** 5 μF (approximate)
- **Grid No. 1 to all other electrodes:** 6 μF (approximate)
- **External conductive coating to anode:** 1500 μF maximum, 750 μF minimum

Pinout Configuration (12L Bottom View)

- **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
- **Anode Cap:** Grid No. 3, Grid No. 5, Collector (connected internally)

Maximum Ratings (Design-Center Values)

The following absolute limits must be observed to ensure reliable operation and prevent damage to the tube:

- **Anode Voltage (Grid No. 3, Grid No. 5, Collector):** 16,000 V DC maximum
- **Focusing-Electrode (Grid No. 4) Voltage:** -500 to +1000 V DC maximum (or 500 V DC maximum depending on the specific rating system)
- **Grid No. 2 Voltage:** 500 V DC maximum
- **Grid No. 1 Voltage:**
 - DC Negative-Bias Value: 125 V DC maximum
 - DC Positive-Bias Value: 0 V DC maximum
 - Positive-Peak Value: 2 V maximum
- **Peak Heater-Cathode Voltage:**
 - Heater negative with respect to cathode during warm-up (≤ 15 seconds): 410 V maximum
 - Heater negative with respect to cathode after warm-up: 180 V maximum
 - Heater positive with respect to cathode: 180 V maximum
- **Grid No. 1 Circuit Resistance:** 1.5 Megohms maximum

Typical Operating Conditions

Under typical operating conditions, the focusing electrode (Grid No. 4) operates at a low voltage relative to the anode, allowing for electrostatic focusing without requiring high-voltage auxiliary supplies.

- **Anode Voltage:** 14,000 V DC (with a minimum recommended operating voltage of 12,000 V DC)
- **Grid No. 4 (Focusing Electrode) Voltage:** -56 to +310 V DC (or -56 to +308 V DC; the focusing electrode may be modulated within this range to maintain focus across the raster)
- **Focusing Electrode Current:** -15 to +25 μA DC

- **Grid No. 2 Voltage:** 300 V DC
- **Grid No. 1 Voltage (for visual extinction of focused raster or undeflected spot):** -33 to -77 V DC (or -28 to -72 V DC)
- **Ion-Trap Magnet Field Requirements:**
 - Standard Coil No. 111: Approximately 85 mA current
 - JETEC Ion-Trap Magnet No. 117: Approximately 37 Gauss (equivalent to 37 mA)

Circuit Design Recommendations

The cathode should be returned directly to one side or to the center tap of the heater transformer winding to minimize potential differences and hum injection.



SOURCE OPERATING CONDITIONS

1961 Tung Sol

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

1961 TUNG SOL

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OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Voltage	18000 V	—
Typical Anode Voltage	14000 V	—
Maximum Grid2 Voltage	500 V	—
Typical Grid2 Voltage	300 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
FocusingMethod	Magnetic	—
DeflectingMethod	Magnetic	—
DeflectionAngleApproximate	90 degree	—
PhosphorNumber	4	—
FluorescentColor	White	—
Variant	Published faceplate/screen variant on shared datasheet	—



SOURCE OPERATING CONDITIONS

1966 Tung Sol Electronic Tubes 4 of 4

[SOURCE PDF](#)

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

1966 TUNG SOL ELECTRONIC TUBES 4 OF 4

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Grid No. 2 voltage	500 V	Published maximum Grid No. 2 voltage
FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.)	66 %	FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.) 66 PERCENT
HEATER VOLTAGE	6.3 V	HEATER VOLTAGE 6.3 voLTs
HEATER CURRENT	600 mA	HEATER CURRENT 0.6 AMP.
MAXIMUM DC GRID #3, GRID #5, COLLECTOR \ 'OL TA GE	16000 V	MAXIMUM DC GRID #3, GRID #5, COLLECTOR \ 'OL TA GE 16 000 VOLTS
MAXIMUM DC GRID #4 VOLTAGE	500 V	MAXIMUM DC GRID #4 VOLTAGE 500 voLTs
MAXIMUM DC GRID #2 VOLTAGE	500 V	MAXIMUM DC GRID #2 VOLTAGE 500 VOLTS
(EATER POSITIVE WITH RESPECT TO CATHODE IS	0 V	(EATER POSITIVE WITH RESPECT TO CATHODE ISO VOLTS
DC GRID #3, GRID #5, COLLECTOR VOLTAGE	14000 V	DC GRID #3, GRID #5, COLLECTOR VOLTAGE 14 000 voLTs
DC GRID #4 VOLTAGE -56 r	310 V	DC GRID #4 VOLTAGE -56 ro 310 voLTs
DC GRID #2 VOLTAGE	300 V	DC GRID #2 VOLTAGE 300 voLTs
OC GRID #1 VOLTAGE A -33 To -	77 V	OC GRID #1 VOLTAGE A -33 To -77 voLTs
DC ION TRAP CURRENT STANDARD COIL #111 (APPROX.)	85 mA	DC ION TRAP CURRENT STANDARD COIL #111 (APPROX.) 85 MA.

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CATHODE TO ALL OTHER ELECTRODES	5 MMF	CATHODE TO ALL OTHER ELECTRODES 5 µpf
GRID #i TO ALL OTHER ELECTRODES	6 MMF	GRID #i TO ALL OTHER ELECTRODES 6 µpf
MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	1500 MMF	MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE 1 500 µpf
MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	750 MMF	MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE 750 µpf



SOURCE DATA APPENDIX

1968 General Electric Co

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

1968 GENERAL ELECTRIC CO

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OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
AnodeVoltageTypical	14000 V	—
Grid2VoltageMaximum	500 V	—