



ELECTRONIC TUBE REFERENCE

17VP4B

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

High-voltage P4 cathode-ray picture-display tube using magnetic deflection, with manufacturer data supporting wide-angle scanning and typical anode operation in the 12-14 kV range.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	5
NOMINAL HEATER	6.3 V / 600 mA	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Cathode Ray	
MAXIMUM PLATE VOLTAGE	350 V
MAXIMUM SCREEN VOLTAGE	5 V
<i>CRT-specific electrode/focus/deflection data retained as parameter rows.</i>	

17VP4B — Direct-View Television Picture Tube

An aluminized, rectangular glass cathode-ray tube featuring low-voltage electrostatic focus, magnetic deflection, and a unipotential cathode for television receiver applications.

Overview

The **17VP4B** is a direct-view picture tube designed specifically for television display systems. It features a rectangular glass envelope, a cylindrical faceplate, and a unipotential cathode. The tube utilizes low-voltage electrostatic focusing and magnetic deflection, with a horizontal deflection angle of 66° and a diagonal deflection angle of 70°.

The 17VP4B is identical to the [17VP4](#) except for the inclusion of an aluminized screen, which improves light output and picture contrast. The tube's construction incorporates a neutral density faceplate, an external conductive coating, and an external single-field ion trap.

Physical Construction and Optical Characteristics

The 17VP4B is built with a rectangular glass bulb and a cylindrical faceplate. The screen is coated with Phosphor No. 4 (sulfide type), which produces a white fluorescent and phosphorescent display with short persistence. The neutral density faceplate provides a light transmission of 58% to 72% at the center of the screen.

Physical Dimensions

The physical envelope of the tube has the following dimensions:

- **Overall Length:** $19 \frac{3}{16} \pm \frac{3}{8}$ inches
- **Greatest Diagonal:** $16 \frac{5}{8} \pm \frac{1}{8}$ inches
- **Greatest Width:** $15 \frac{3}{8} \pm \frac{1}{8}$ inches
- **Greatest Height:** $12 \frac{9}{32} \pm \frac{1}{8}$ inches
- **Minimum Useful Screen Diagonal:** $15 \frac{3}{4}$ inches
- **Minimum Useful Screen Width:** $14 \frac{1}{2}$ inches
- **Minimum Useful Screen Height:** $10 \frac{7}{8}$ inches
- **Raster Size:** $10 \frac{7}{8}'' \times 14 \frac{1}{2}''$ (with a minimum useful picture area of $10 \frac{3}{4}'' \times 14 \frac{1}{4}''$)

An external conductive coating is applied to the envelope, forming a capacitor with the internal anode. This capacitance ranges from a minimum of 750 μf to a maximum of 1500 μf .

Electrical Connections, Pinout, and Heater Ratings

The 17VP4B is equipped with a **small shell duodecal 6-pin base (B6-63)** and uses the **12L** basing configuration. The high-voltage connection to the anode is made via a **recessed small cavity cap (J1-21)** located on the bulb. This bulb contact is aligned with pin position #6 within a tolerance of ± 30 degrees.

Heater Ratings

The tube's heater is designed for parallel or series AC/DC operation with the following nominal ratings:

- **Heater Voltage:** 6.3 Volts
- **Heater Current:** 0.6 Amp

Pinout Configuration (Basing 12L)

The electrical connections to the base pins and anode cap are assigned as follows:

Pin / Cap	Electrode Connection
Pin 1	Heater

Pin / Cap	Electrode Connection
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 / Anode No. 2

Interelectrode Capacitances

The approximate capacitances between the electrodes are:

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

Operating Characteristics and Ratings

The 17VP4B operates under specified design-center maximum ratings and typical operating conditions.

Design-Center Maximum Ratings

These ratings represent the limits within which the tube must be operated to ensure reliable performance and prevent damage:

- **Anode No. 2 and Grid No. 3 Voltage:** 16,000 Volts DC (with a protective face viewing window)
- **Grid No. 2 Voltage:** 500 Volts DC
- **Anode No. 1 Voltage:** -500 to +1000 Volts DC
- **Anode No. 1 Current Range:** -15 to +25 μAmp DC
- **Grid No. 1 Voltage:**
 - DC Negative-bias value: 125 Volts
 - DC Positive-bias value: 0 Volts
 - Positive-peak value: 2 Volts
- **Grid No. 1 Circuit Resistance:** 1.5 Megohms (maximum)
- **Peak Heater-Cathode Voltage:**
 - Heater negative with respect to cathode during warm-up (≤ 15 seconds): 410 Volts
 - Heater negative with respect to cathode after warm-up: 180 Volts
 - Heater positive with respect to cathode: 180 Volts
- **Anode No. 1 Voltage Range for Focus:** -64 to +350 Volts (with combined Grid No. 1 and video-drive voltage adjusted for 100 μA average beam current)

Typical Operating Conditions

For standard television receiver service, the typical operating parameters are:

- **Anode No. 2 and Grid No. 3 Voltage:** 12,000 Volts DC
- **Anode No. 1 Voltage (Focusing Electrode):** -48 to +260 Volts DC
- **Grid No. 2 Voltage:** 300 Volts DC
- **Grid No. 1 Voltage (for visual extinction of undeflected focused spot):** -33 to -77 Volts DC
- **Ion Trap Current (using Standard Coil #111):** $75 \pm 50\%$ mA
- **Ion Trap Field Intensity:** Approximately 35 Gauss (with a single-field ion trap adjusted to the optimum position)

Technical Summary

The **17VP4B** is a rectangular, direct-view television picture tube utilizing low-voltage electrostatic focus and magnetic deflection (66° horizontal, 70° diagonal). It is distinguished from the standard **17VP4** by its aluminized screen, which provides enhanced brightness and contrast. Operating at a typical anode voltage of 12,000 Volts, the tube features a unipotential cathode, a 6.3 V / 0.6 A heater, and a small shell duodecal 6-pin base. Its optical performance is characterized by a white-emitting Phosphor No. 4 with short persistence, housed behind a neutral density cylindrical faceplate. Proper operation requires the use of an external single-field ion trap adjusted to approximately 35 Gauss.



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

Section 1 · Cathode Ray

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

SOURCE PDF

1966 Tung Sol Electronic Tubes 4 of 4

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

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CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
FACEPLATE LIGHT TRANSMISSION AT CENTER (gPPROX.) – value 1	58 percent	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
FACEPLATE LIGHT TRANSMISSION AT CENTER (gPPROX.) – value 2	72 percent	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
HEATER VOLTAGE	6.3 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
HEATER POSITIVE WITH RESPECT TO CATHODE	1 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM GRID M1 CIRCUIT RESISTANCE	1.5 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
PATTERN WITH THE BL ACNS JUST BL AC N, TO GIVE AN AVERAGE BEAM CURRENT OF 100 MICPO AMPERES ON A	100	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
DC ANODE N2,, GRID N} VOLTAGE	12 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
DC ANODE N1 VOLTAGE (FOCUSING ELECTRODE)	260 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
DC GRID M2 VOLTAGE	3 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
DC ION TRAP CURRENT STANDARD COIL 8111 – value 1	8111 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
DC ION TRAP CURRENT STANDARD COIL 8111 – value 2	75 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
ION TRAP FIELD INTENSITY (APPROX.)D	35	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAXIMUM ANODE 81 VOLTAGE RANGE FOR FOCUS B – value 1	81 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM ANODE 81 VOLTAGE RANGE FOR FOCUS B – value 2	-64 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM ANODE 81 VOLTAGE RANGE FOR FOCUS B – value 3	350 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM DC GRID N2 VOLTAGE	5 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM DC ANODE #i VOLTAGE	-5 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM DC ANODE IM1 CURRENT RANGE – value 1	-15 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM DC ANODE IM1 CURRENT RANGE – value 2	25 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.

TUBE TINKER

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