

ELECTRONIC TUBE REFERENCE

17UP4

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

SECTION1 Cathode Ray	
MAXIMUM SCREEN VOLTAGE	4 V
CRT-specific electrode/focus/deflection data retained as parameter rows.	

17UP4 — Cathode Ray Picture Tube

A direct-view rectangular glass cathode ray picture tube designed for television applications, featuring magnetic focus and deflection, a 70-degree horizontal deflection angle, and a unipotential cathode.

Overview

The **17UP4** is a direct-view rectangular glass cathode ray picture tube designed for television applications. It features a cylindrical faceplate with a grey filter, magnetic focusing and deflection, and an external single-field ion trap. The tube utilizes a unipotential cathode and incorporates an external conductive coating. It provides a horizontal deflection angle of approximately 70 degrees, producing a nominal raster size of 14 1/2" by 10 7/8".

Physical and Mechanical Specifications

The 17UP4 is constructed with a rectangular glass bulb and a cylindrical faceplate. The faceplate is treated with a grey filter that provides approximately 70% light transmission at the center.

Dimensions and Screen Size

The physical dimensions of the tube are as follows:

- **Overall Length:** $19 \frac{3}{16} \pm \frac{3}{8}$ inches
- **Greatest Diagonal Dimension:** $16 \frac{5}{8} \pm \frac{1}{8}$ inches
- **Greatest Width:** $15 \frac{3}{8} \pm \frac{1}{8}$ inches
- **Greatest Height:** $12 \frac{1}{4} \pm \frac{1}{8}$ inches

The minimum useful screen dimensions are:

- **Diagonal:** $15 \frac{13}{16}$ inches
- **Width:** $14 \frac{1}{2}$ inches
- **Height:** $10 \frac{7}{8}$ inches

Base, Basing, and Anode Connection

The tube uses a **small shell duodecal 5-pin base (B5-57)** with a **12N** basing configuration. High-voltage anode connection is made via a **recessed small cavity cap (J1-21)**. The alignment of this bulb contact is positioned such that the J1-21 contact aligns with pin position #3 within a tolerance of ± 10 degrees.

Pin Connections (Bottom View)

- **Pin 1:** Heater
- **Pin 2:** Grid No. 1
- **Pin 10:** Grid No. 2
- **Pin 11:** Cathode
- **Pin 12:** Heater
- **Anode Cap:** Grid No. 3 (Anode)

Electrical and Optical Characteristics

Heater Ratings

The 17UP4 operates with a nominal heater supply:

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

Interelectrode Capacitances

The direct interelectrode capacitances of the tube are approximately:

- **Cathode to all other electrodes:** 5 μF
- **Grid No. 1 to all other electrodes:** 6.5 μF
- **External conductive coating to anode:** 500 μF (minimum) to 750 μF (maximum)

Optical Properties

The tube utilizes **Phosphor No. 4**, which exhibits the following characteristics:

- **Fluorescent Color:** White
- **Phosphorescent Color:** White
- **Persistence:** Medium

Maximum Ratings (Design Center Values)

The following limits are established under the Design Center rating system and must not be exceeded:

- **Maximum DC Anode (Grid No. 3) Voltage:** 14,000 Volts
- **Maximum DC Grid No. 2 Voltage:** 410 Volts
- **Maximum Grid No. 1 Voltage:**
 - **DC Negative-bias value:** 125 Volts
 - **DC Positive-bias value:** 0 Volts
 - **Positive-peak value:** 2 Volts
- **Maximum DC 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:** 125 Volts
 - **Heater positive with respect to cathode:** 125 Volts

Note on Heater-Cathode Connection: The cathode should be returned to one side or to the midtap of the heater transformer winding.

Typical Operating Conditions and Circuit Values

Under typical operating conditions, the 17UP4 is configured as follows:

- **DC Anode (Grid No. 3) Voltage:** 13,000 Volts
- **DC Grid No. 2 Voltage:** 250 Volts
- **DC Grid No. 1 Voltage:** -33 to -77 Volts (for visual extinction of the undeflected focused spot)
- **DC Focusing Coil Current:** Approximately 110 mA. This typical value is specified using a standard focus coil #109 or equivalent, with the combined Grid No. 1 bias and video signal adjusted to produce 20 foot-lamberts highlight brightness on a 7 1/2" x 10" picture size. The focus coil air gap center is positioned 3.25 inches from the reference line.
- **DC Ion Trap Current:** Approximately 120 mA, using a standard single-field coil #111.

Circuit Constraints

- **Maximum Grid No. 1 Circuit Resistance:** 1.5 Megohms

Technical Summary

The **17UP4** is a 17-inch class rectangular glass television picture tube featuring magnetic focus and deflection, a 70-degree horizontal deflection angle, and a unipotential cathode. It operates with a standard 6.3 V, 0.6 A heater and requires an external single-field ion trap. With a maximum design-center anode rating of 14,000 V and typical operation at 13,000 V, the tube utilizes Phosphor No. 4 to deliver a medium-persistence white display. Its electrical connections are facilitated through a small shell duodecal 5-pin base and a recessed small cavity cap for the high-voltage anode.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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	—



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
MAGNETIC FOCUS AND DEFLECTION – value 1	10 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAGNETIC FOCUS AND DEFLECTION – value 2	7 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAGNETIC FOCUS AND DEFLECTION – value 3	8 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.)	7 percent	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
HEATER	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 #111 (APPROX.)	111 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
Cf00. STANDARD FOCUS COIL 1109. OR EQUIVALENT. WITH THE COMBINED GRID FL BIAS VOLTAGE AND VIDEO	1109 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
SIGNAL VOLTAGE ADJUSTED TO PRODUCE A HIGHLIGHT BRIM THE SS OF 20 FOOT LENGTHS ON A 1 U2" BY – value 1	20 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
SIGNAL VOLTAGE ADJUSTED TO PRODUCE A HIGHLIGHT BRIM THE SS OF 20 FOOT LENGTHS ON A 1 U2" BY – value 2	1 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
10" PICTURE SIZE. DISTANCE FROM REFERENCE LINE TO CENTER OF 41R GAP ON FOCUS COIL SM ALI BE – value 1	10	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
10" PICTURE SIZE. DISTANCE FROM REFERENCE LINE TO CENTER OF 41R GAP ON FOCUS COIL SM ALI BE – value 2	41	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAXIMUM DC 1NODE I GRID #} VOLTAGE	1 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM DC GRID #2 VOLTAGE – value 1	2 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM DC GRID #2 VOLTAGE – value 2	4 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM DC PEAK HEATER – CATHODE VOLTA 6E A	6 V	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.
MAXIMUM GRID #1 CIRCUIT RESISTANCE	1 mA	Published CRT datasheet value; multiple values on a row correspond to separate source-table conditions or limits.