

ELECTRONIC TUBE REFERENCE

17KP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Seventeen-inch direct-view television picture tube with magnetic focusing, magnetic deflection, and a white P4 screen. Approximately 90-degree deflection and high-voltage operation make it a conventional monochrome receiver display CRT.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	—
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 PLATE VOLTAGE	0 V
CRT-specific electrode/focus/deflection data retained as parameter rows.	

17KP4 — Electrostatic-Focus Television Picture Tube

Overview

The **17KP4** is a direct-view cathode-ray picture tube designed for television applications. It features a rectangular glass construction with a nominal diagonal dimension of 16 5/8 inches. The tube utilizes electrostatic focusing and magnetic deflection, incorporating a grey filter faceplate to enhance picture contrast under ambient light. To ensure proper beam alignment and operation, the 17KP4 requires an external single-field ion trap and an external conductive coating.

Mechanical Specifications and Optical Characteristics

The 17KP4 is constructed with a rectangular glass envelope. Its physical dimensions and screen area are highly standardized for television receiver integration:

- **Overall Length:** $19 \frac{1}{4} \pm \frac{3}{8}$ inches
- **Greatest Bulb Dimensions:**
 - **Diagonal:** $16 \frac{5}{8} \pm \frac{1}{8}$ inches
 - **Width:** $15 \frac{3}{8} \pm \frac{1}{8}$ inches
 - **Height:** $12 \frac{1}{4} \pm \frac{1}{8}$ inches
- **Minimum Useful Screen Dimensions:**
 - **Width:** 14 $\frac{1}{4}$ inches
 - **Height:** 10 $\frac{3}{4}$ inches
 - **Raster Size:** 14 $\frac{1}{8}$ " x 10 $\frac{3}{4}$ " to 14 $\frac{1}{4}$ " x 10 $\frac{3}{4}$ "

The faceplate is made of grey filter glass with a light transmission of approximately 66% at the center. The screen is coated with Phosphor No. 4, which produces a white fluorescent and white phosphorescent color with medium persistence, suitable for television scanning rates.

The deflection system is designed for magnetic deflection with approximate deflection angles of:

- **Horizontal:** 65 degrees
- **Diagonal:** 70 degrees

Electrical Connections and Basing

The tube uses a small shell duodecal 5-pin base (B5-57) with a 12P basing designation. High voltage is applied to the anode via a recessed small cavity cap (J1-21). The anode contact is aligned with pin position #6 within a tolerance of ± 30 degrees.

The pin connections, viewed from the bottom of the base, are as follows:

- **Pin 1:** Heater
- **Pin 2:** Grid No. 1
- **Pin 10:** Grid No. 2
- **Pin 11:** Cathode
- **Pin 12:** Heater
- **Anode Cap:** Recessed small cavity cap (J1-21)

Interelectrode Capacitances

The direct interelectrode capacitances of the 17KP4 are approximately:

- **Cathode to all other electrodes:** 6.0 μf
- **Grid No. 1 to all other electrodes:** 6.5 μf
- **External conductive coating to anode:** 1,000 μf (minimum) to 1,500 μf (maximum)

The external conductive coating forms a capacitor with the internal anode coating, which can be utilized as a high-voltage filter capacitor in the receiver's power supply circuit.

Heater and Maximum Ratings

The 17KP4 operates with an indirectly heated unipotential cathode. The heater ratings and absolute design-center maximum limits are specified to ensure reliable operation:

Heater Ratings

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

Design-Center Maximum Ratings

- **Maximum DC Anode Voltage:** 16,000 Volts
- **Maximum DC Grid No. 2 Voltage:** 500 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 $\leq$ 15 seconds):** 410 Volts
 - **Heater negative with respect to cathode (after warm-up):** 180 Volts
 - **Heater positive with respect to cathode:** 180 Volts

The maximum grid No. 1 circuit resistance must not exceed **1.5 Megohms**.

Typical Operating Conditions

Under typical operating conditions, the 17KP4 is configured with the following electrical and magnetic parameters:

- **DC Anode Voltage:** 12,000 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):** $50 \pm 50\%$ mA (approximately)
- **Field Strength of Centering Magnet:** 0 to 8 Gauss

The electrostatic focusing mechanism operates in conjunction with the magnetic deflection coils and the external centering magnet to produce a sharp, well-defined raster. The external single-field ion trap magnet must be adjusted to prevent ion burn on the phosphor screen.

Technical Summary

The **17KP4** is a rectangular, electrostatic-focus, magnetic-deflection television picture tube featuring a 16 5/8-inch diagonal screen. It utilizes a unipotential cathode with a standard 6.3 V, 0.6 A heater. Operating typically at an anode potential of 12,000 V and a grid No. 2 potential of 300 V, it provides a medium-persistence white display using Phosphor No. 4. The tube is housed in a glass envelope with a 12P duodecal base and a recessed small cavity cap for the high-voltage anode connection.



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

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum anode voltage	0 V	Published maximum anode voltage

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
HEATER VOLTAGE	6.3 V	HEATER VOLTAGE 6.3 VOLTS
MAXIMUM DC ANODE VOLTAGE iG	0 V	MAXIMUM DC ANODE VOLTAGE iG 000 VOLTS
MAX I4TUM DC GRID #2 VOLTAGE	500 V	MAX I4TUM DC GRID #2 VOLTAGE 500 VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE 1\$	0 V	HEATER POSITIVE WITH RESPECT TO CATHODE 1\$0 VOLTS
DC ANODE VOLTAGE 1Z	0 V	DC ANODE VOLTAGE 1Z 000 VOLTS
DC GRID #2 VOLTg6E	300 V	DC GRID #2 VOLTg6E 300 VOLTS

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CATHODE TO ALL OTHER ELECTRODES	6 MMF	CATHODE TO ALL OTHER ELECTRODES 6.0 μ mf
GRID #1 TO ALL OTHER ELECTRODES	6.5 MMF	GRID #1 TO ALL OTHER ELECTRODES 6.5 μ mf
MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	1500 MMF	MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE 1 500 μ mf
MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	1000 MMF	MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE 1 000 μ mf
FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.)	66 %	FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.) 66 PERCENT