

Seventeen-inch direct-view monochrome television picture tube with magnetic focusing, magnetic deflection, and an aluminized P4 white screen. Its approximately 90-degree deflection and high-voltage operation support large-screen receiver service with published X-ray precautions.

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	18000 V
MAXIMUM SCREEN VOLTAGE	410 V
CRT-specific electrode/focus/deflection data retained as parameter rows.	

17JP4 — Rectangular Television Picture Tube

The **17JP4** is a 17-inch direct-view rectangular glass cathode ray tube designed specifically for television receiver applications. It features a unipotential cathode, magnetic deflection, magnetic focusing, and an external single-field ion trap. To improve picture contrast under ambient light, the tube is constructed with a neutral density gray filter glass faceplate. It also incorporates an external conductive coating that must be grounded during operation.

Mechanical and Optical Specifications

The 17JP4 is built with a rectangular glass envelope that maximizes the useful screen area relative to its overall physical size.

Physical Dimensions

- **Overall Length:** $19 \frac{3}{16} \pm \frac{3}{8}$ 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:** $12 \frac{9}{32}$ inches (with a tolerance of $+\frac{1}{8}$ to $-\frac{7}{32}$ inches)
- **Minimum Useful Screen Dimensions:**
 - **Diagonal:** $15 \frac{1}{2}$ inches
 - **Width:** $14 \frac{1}{4}$ inches
 - **Height:** $10 \frac{3}{4}$ inches
- **Raster Size:** Nominally $10 \frac{3}{8} \times 14 \frac{1}{8}$ inches to $10 \frac{3}{4} \times 14 \frac{1}{4}$ inches

Optical Characteristics

The screen utilizes a **No. 4 (P4) sulfide-type phosphor** which produces a white fluorescence and white phosphorescence with medium persistence. The faceplate is made of gray filter glass, providing approximately 66% light transmission at the center to enhance contrast by reducing the reflection of ambient room light.

Deflection Angles

The tube's electron gun and bulb shape are designed for the following approximate deflection angles:

- **Horizontal:** 65° to 66°
- **Vertical:** 50°
- **Diagonal:** 70°

Electrical Connections and Basing

The 17JP4 uses a **small shell duodecal 5-pin base (B5-57)** with a **12N basing arrangement**. High voltage is supplied to the anode via a recessed small cavity cap (J1-21) located on the bulb cone. The anode contact is aligned with pin position No. 6 within a tolerance of ± 30 degrees.

Pinout Configuration

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

Pin Number	Connection
Pin 1	Heater

Pin Number	Connection
Pin 2	Grid No. 1 (Control Grid)
Pin 6	Vacant Position (aligned with Anode Cap)
Pin 10	Grid No. 2 (Screen Grid)
Pin 11	Cathode
Pin 12	Heater
Anode Cap	Grid No. 3 / Collector (Anode)

Interelectrode Capacitances

The approximate direct interelectrode capacitances of the tube are:

- **Cathode to all other electrodes:** 5 μf
- **Grid No. 1 to all other electrodes:** 6 μf
- **External conductive coating to collector (anode):** 500 μf (minimum) to 750 μf (maximum)

The external conductive coating must be connected to a reliable electrical ground to complete the high-voltage return path and minimize electrical noise.

Electrical Ratings and Operating Conditions

The operating limits and typical parameters of the 17JP4 are specified under the Design Center rating system.

Maximum Ratings

These ratings represent the absolute limits within which the tube must be operated to ensure reliability and longevity:

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.6 A
- **Maximum DC Grid No. 3 & Collector (Anode) Voltage:** 18,000 V
- **Maximum DC Grid No. 2 Voltage:** 410 V
- **Maximum Grid No. 1 Voltage:**
 - **DC Negative-Bias Value:** 125 V
 - **DC Positive-Bias Value:** 0 V
 - **Positive-Peak Value:** 2 V
- **Maximum DC Peak Heater-Cathode Voltage:**
 - **Heater negative with respect to cathode (during warm-up $\leq$ 15 seconds):** 410 V
 - **Heater negative with respect to cathode (after warm-up):** 150 V
 - **Heater positive with respect to cathode:** 150 V

Typical Operating Conditions

For optimal performance, including adequate picture brilliance and focus definition, the following typical operating conditions are recommended:

- **DC Grid No. 3 & Collector (Anode) Voltage:** 16,000 V (Operation below this value is generally not recommended as brilliance and definition decrease)
- **DC Grid No. 2 Voltage:** 300 V
- **DC Grid No. 1 Voltage (for visual extinction of undeflected focused spot):** -33 V to -77 V
- **DC Focusing Coil Current:** 100 mA to 110 mA (with a tolerance of $\pm 10\%$). This is measured using a standard JETEC focusing coil No. 109 or equivalent, positioned 3.0 inches from the reference line to the center of the coil's air gap. The Grid No. 1 bias and video signal are adjusted to achieve a highlight brightness of 20 to 30 foot-lamberts on a 10 3/4 x 14 1/4 inch picture area.
- **Ion Trap Magnet Field Strength:** 45 to 50 Gauss (using standard single-field magnet coil No. 111 or equivalent).

Circuit Values

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

Safety and Radiation Considerations

When operating the 17JP4, safety precautions must be observed regarding high voltage and potential radiation. If the tube is operated at or near its maximum rated anode voltage, or above 16,000 V (whichever is less), it can produce X-rays. Adequate shielding may be necessary in the receiver cabinet design to protect users from prolonged exposure at close range.

Technical Summary

The **17JP4** is a specialized 17-inch rectangular glass television picture tube utilizing magnetic deflection and focus. Operating with a nominal 6.3 V, 0.6 A heater, it provides a high-resolution monochrome display on a white-emitting P4 phosphor screen. Its design incorporates a neutral density faceplate with 66% light transmission to maintain contrast under ambient light, and an external conductive coating that acts as a filter capacitor when grounded. With a maximum anode rating of 18,000 V and a typical operating point of 16,000 V, the 17JP4 delivers bright, sharply focused television images when paired with a standard 109 focusing coil and a 45 to 50 Gauss single-field ion trap magnet.



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1950 Sylvania

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

1950 SYLVANIA

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Plate Voltage	18000 V	—
Anode Voltage	16000 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Phosphor	P4	Aluminized



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 DATA APPENDIX

SOURCE OPERATING CONDITIONS

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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 Grid No. 2 voltage	410 V	Published maximum Grid No. 2 voltage
FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.)	66 %	FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.) 66 PERCENT
HEATER CURRENT	600 mA	HEATER CURRENT 0.6 AMP,
MAXIMUM DC GRID #~ h COLLECTOR VOLTAGE Z\$	0 V	MAXIMUM DC GRID #~ h COLLECTOR VOLTAGE Z\$ 000 VOLTS
MAXIMUM DC GRID #2 VOLTAGE	410 V	MAXIMUM DC GRID #2 VOLTAGE 410 VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE	150 V	HEATER POSITIVE WITH RESPECT TO CATHODE 150 VOLTS
DC GRID #2 VOLTAGE j	0 V	DC GRID #2 VOLTAGE j00 VOLTS

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
GRID k1 TO ALL OTHER ELECTRODES	6 MMF	GRID k1 TO ALL OTHER ELECTRODES 6 μmf

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