

ELECTRONIC TUBE REFERENCE

17BUP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Seventeen-inch direct-view television picture tube with electrostatic focusing, magnetic deflection, an aluminized screen, and external ion-trap system. Published operating data place typical anode voltage around 12 kV.

GENERAL CHARACTERISTICS

BASE DESIGNATION	B6-63	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 PLATE VOLTAGE	18000 V
Direct-view television CRT with electrostatic focus and magnetic deflection. P-4 white screen data and CRT electrode ratings are preserved in parameters; CRT maximum anode voltage is promoted to MaxPlateVoltage.	

17BUP4 — Direct-View Cathode-Ray Picture Tube

The **17BUP4** is a direct-view, rectangular glass cathode-ray picture tube designed for television receiver applications. It features electrostatic focusing, magnetic deflection, a unipotential cathode, a gray filter faceplate, and an external conductive coating. The tube is designed to operate with an external single-field ion trap magnet.

The 17BUP4 is electrically and mechanically identical to the **17CBP4**, with the sole distinction being that the 17BUP4 features an aluminized screen to enhance brightness and picture definition.

Mechanical Specifications and Optical Characteristics

The 17BUP4 is constructed with a rectangular glass envelope. Its physical dimensions and screen area are specified as follows:

Dimension	Value
Overall Length	15 1/4 inches $\pm$ 3/8 inch
Greatest Bulb Diagonal	16 5/8 inches $\pm$ 1/8 inch
Greatest Bulb Width	15 3/8 inches $\pm$ 1/8 inch
Greatest Bulb Height	12 9/32 inches $\pm$ 1/8 inch
Minimum Useful Screen Diagonal	15 9/16 inches
Minimum Useful Screen Width	14 5/16 inches
Minimum Useful Screen Height	11 1/8 inches
Raster Size	14 5/16 inches x 11 1/8 inches

The faceplate is a gray filter glass with an approximate light transmission of 74% at the center. The screen utilizes a sulfide-type P-4 phosphor, which provides a white fluorescent and phosphorescent color with short persistence.

Deflection is achieved magnetically, with approximate deflection angles of:

- **Horizontal:** 85°
- **Vertical:** 68°
- **Diagonal:** 90°

Electrical Connections and Basing

The tube utilizes a **Small Shell Duodecal 6-Pin (B6-63)** base with a **12L** basing configuration. High-voltage connection to the anode (Grid No. 3 and Grid No. 5) is made via a **Recessed Small Cavity Cap (J1-21)**. The bulb contact is aligned such that the J1-21 contact aligns with pin position #6 within a tolerance of ± 30 degrees.

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

Pin	Connection
Pin 1	Heater
Pin 2	Grid #1
Pin 6	Grid #4
Pin 10	Grid #2

Pin	Connection
Pin 11	Cathode
Pin 12	Heater
Anode Cap	Grid No. 3, Grid No. 5

The heater is rated for a nominal voltage of **6.3 V** and a current of **0.6 A**.

Interelectrode Capacitances

The approximate direct interelectrode capacitances of the 17BUP4 are:

- **Cathode to all other electrodes:** 5 μf
- **Grid #1 to all other electrodes:** 6 μf
- **External conductive coating to anode:** Minimum 1200 μf , Maximum 1500 μf

Electrical Ratings and Operating Conditions

The maximum ratings of the 17BUP4 are established under the **Design Center System**. These limits must be respected to ensure reliable operation and tube longevity.

Absolute and Design-Maximum Ratings

- **Maximum DC Anode Voltage:** 18,000 V
- **Maximum DC Grid #4 Voltage:** -500 to +1000 V
- **Maximum DC Grid #2 Voltage:** 500 V
- **Maximum Grid #1 Voltage:**
 - DC Negative-Bias Value: 125 V
 - DC Positive-Bias Value: 0 V
 - Positive-Peak Value: 0 V
- **Maximum Grid #1 Circuit Resistance:** 1.5 M Ω
- **Maximum DC Peak Heater-Cathode Voltage:**
 - *Heater negative with respect to cathode:*
 - During warm-up period (not to exceed 15 seconds): 410 V
 - After equipment warm-up period: 180 V
 - *Heater positive with respect to cathode:* 180 V

Typical Operating Conditions

Under typical operating conditions, the tube is configured with the following parameters:

- **DC Anode Voltage:** 12,000 V (Note: Brilliance and definition decrease with decreasing anode voltage; the anode voltage should not be operated below 12,000 V)
- **DC Grid #4 Voltage:** -50 to +350 V

- **DC Grid #2 Voltage:** 300 V
- **DC Grid #1 Voltage:** -28 to -72 V (for visual extinction of the focused raster)
- **DC Ion Trap Magnet Rated Strength:** 32 Gauss (using an external single-field ion trap)

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
Heater voltage	6.3 V	Nominal
Heater current	600 mA	Nominal
Anode voltage	18 V	Published CRT operating condition
Grid 2 voltage	300 V	Published CRT operating condition

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 DC grid 2 voltage	500 V	—
Maximum DC grid 4 voltage	-500–1000 V	—
Maximum grid 1 negative-bias voltage	125 V	NegativeBias
Maximum grid 1 positive-bias voltage	0 V	PositiveBias
Maximum grid 1 positive-peak voltage	0 V	PositivePeak
Peak heater-cathode voltage	410 V	HeaterNegativeWarmup

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Peak heater-cathode voltage	180 V	HeaterNegativeAfterWarmup
Peak heater-cathode voltage	180 V	HeaterPositive
DC anode voltage	12000 V	TypicalOperation
DC grid 4 voltage	-50–350 V	TypicalOperation
DC grid 2 voltage	300 V	TypicalOperation
DC grid 1 voltage	-48–72 V	TypicalOperation
Ion trap magnet rated strength	32 gauss	—
Faceplate transmission at center	74 %	Approximate

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Horizontal deflection angle	85 degrees	Approximate
Vertical deflection angle	68 degrees	Approximate
Diagonal deflection angle	90 degrees	Approximate

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to all other electrodes capacitance	5 pF	Approximate
Grid 1 to all other electrodes capacitance	6 pF	Approximate
External conductive coating to anode capacitance	1500 pF	Maximum
External conductive coating to anode capacitance	1200 pF	Minimum

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes, and their source documents.

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