

ELECTRONIC TUBE REFERENCE

17BP4C

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

P4 cathode-ray display tube documented for high-voltage direct-view operation, using magnetic deflection and manufacturer-specified beam focusing and control arrangements appropriate to type 17BP4C.

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	16000 V
Direct-view television CRT with magnetic 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.	

17BP4C Television Picture Tube

The **17BP4C** is a direct-view cathode ray picture tube designed specifically for television receiver applications. It features a rectangular glass construction, a unipotential cathode, magnetic focus and deflection systems, and requires an external single-field ion trap. To optimize picture quality, the tube is built with a frosted grey filter faceplate and an external conductive coating.

Mechanical and Physical Specifications

The 17BP4C is constructed with a rectangular glass bulb envelope. Its physical dimensions and screen characteristics are highly standardized to fit specific television chassis designs:

- **Overall Length:** 19-1/4 +/- 3/8 inches
- **Greatest Bulb Dimensions:**
 - **Diagonal:** 16-5/8 +/- 1/8 inches
 - **Width:** 15-3/8 +/- 1/8 inches
 - **Height:** 12-1/4 +/- 1/8 inches
- **Minimum Useful Screen Dimensions:**
 - **Diagonal:** 15-3/8 inches
 - **Width:** 14-1/4 inches
 - **Height:** 10-3/4 inches
- **Standard Raster Size:** 14-1/4 inches by 10-3/4 inches

The electrical connection to the high-voltage anode is made via a recessed small cavity cap (J1-21), which is aligned with pin position #6 +/- 30 degrees. The tube's base is a small shell duodecal 5-pin configuration (B5-57) utilizing the Basing 12N arrangement.

Electro-Optical and Deflection Characteristics

The 17BP4C utilizes magnetic deflection and magnetic focusing. The approximate deflection angles for scanning the screen are:

- **Horizontal Deflection:** 65 degrees
- **Vertical Deflection:** 50 degrees
- **Diagonal Deflection:** 70 degrees

The screen is coated with Phosphor No. 4 (sulfide type), which exhibits white fluorescence and white phosphorescence with medium persistence. The frosted grey filter faceplate is designed to improve contrast, providing a light transmission of approximately 66% at the center of the screen.

Pin Connections and Interelectrode Capacitances

The small shell duodecal base (Basing 12N) provides the following pin connections:

Pin Number	Connection
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

The interelectrode capacitances of the tube are approximately:

- **Cathode to all other electrodes:** 5 uuf
- **Grid No. 1 to all other electrodes:** 6.5 uuf
- **External conductive coating to anode:** 750 uuf (minimum) to 1500 uuf (maximum)

The external conductive coating must be properly grounded to serve as a high-voltage filter capacitor in conjunction with the internal anode.

Electrical Ratings and Operating Conditions

The operating limits and typical characteristics of the 17BP4C are specified under the Design Center system.

Maximum Ratings

- **Heater Voltage:** 6.3 V
- **Heater Current:** 0.6 A
- **Maximum DC Anode (Grid No. 3) Voltage:** 16,000 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 <= 15 seconds):** 410 V
 - **Heater negative with respect to cathode (after warm-up):** 150 V
 - **Heater positive with respect to cathode:** 150 V
- **Maximum Grid No. 1 Circuit Resistance:** 1.5 Megohms

Typical Operating Conditions

For standard operation, the following typical values are used:

- **DC Anode (Grid No. 3) Voltage:** 12,000 V (Note: Operating the anode below 12,000 V is not recommended, as brilliance and definition decrease below this level.)
- **DC Grid No. 2 Voltage:** 300 V
- **DC Grid No. 1 Voltage:** -33 V to -77 V (required for visual extinction of the undeflected focused spot)
- **DC Focusing Coil Current:** Approximately 92 +/- 10% mA. This value applies when using a standard focus coil #109 or equivalent, with the distance from the reference line to the center of the air gap on the focus coil set to 3.0 inches. This is measured with the combined Grid No. 1 bias and video signal adjusted to produce a highlight brightness of 30 foot-lamberts on the 14-1/4 inches by 10-3/4 inches picture area.
- **DC Ion Trap Current:** Approximately 70 mA when using a standard coil #111.

Technical Summary

The **17BP4C** is a rectangular glass television picture tube featuring a 70-degree diagonal deflection angle, magnetic focus, and magnetic deflection. It operates with a standard 6.3 V, 0.6 A heater and is rated for a maximum anode voltage of 16,000 V, with a typical operating anode voltage of 12,000 V to maintain optimal brilliance and definition. Utilizing a No. 4 sulfide-type phosphor, a frosted grey filter faceplate with 66% light transmission, and an external conductive coating, the 17BP4C provides a reliable, medium-persistence white display for direct-view television receivers.

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	410 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	2 V	PositivePeak
Peak heater-cathode voltage	410 V	HeaterNegativeWarmup
Peak heater-cathode voltage	150 V	HeaterNegativeAfterWarmup
Peak heater-cathode voltage	150 V	HeaterPositive
DC anode voltage	12000 V	TypicalOperation
DC grid 2 voltage	300 V	TypicalOperation
DC grid 1 voltage	-33--77 V	TypicalOperation
Focusing coil current	92 mA	Approximate
Ion trap current	70 mA	Approximate

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Horizontal deflection angle	65 degrees	Approximate
Vertical deflection angle	50 degrees	Approximate
Diagonal deflection angle	70 degrees	Approximate

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to all other electrodes capacitance	5 pF	Approximate

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid 1 to all other electrodes capacitance	6.5 pF	Approximate
External conductive coating to anode capacitance	1500 pF	Maximum
External conductive coating to anode capacitance	750 pF	Minimum

TUBE TINKER

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