



ELECTRONIC TUBE REFERENCE

16GP4C

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

P4 television picture tube using magnetic focusing and deflection, with approximately 70-degree deflection and high-voltage direct-view operation.

GENERAL CHARACTERISTICS

BASE DESIGNATION	120	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

SECTION 1 Cathode Ray

No fixed ratings recorded.

CRT-specific anode/focus/deflection ratings retained as parameters rather than mapped to ordinary plate/screen fields.

16GP4C — Direct-View Television Picture Tube

A 16-inch class, round metal-cone cathode-ray tube featuring a clear glass, frosted faceplate, designed for television receiver applications.

Overview

The **16GP4C** is a direct-view cathode-ray picture tube designed primarily for television display applications. It features a round metal-cone construction, magnetic focus, and magnetic deflection. The 16GP4C belongs to a family of four closely related picture tubes—comprising the **16GP4**, **16GP4A**, **16GP4B**, and **16GP4C**—which share identical electrical, mechanical, and basic optical characteristics.

The primary distinction among these four types lies in their faceplate treatments:

- **16GP4**: Grey filter faceplate
- **16GP4A**: Clear glass faceplate
- **16GP4B**: Grey filter, frosted faceplate
- **16GP4C**: Clear glass, frosted faceplate

The 16GP4C is specifically configured with a **clear glass, frosted faceplate** to reduce specular reflection of ambient light while maintaining high light transmission.

Optical and Mechanical Characteristics

The 16GP4C is designed to display a standard **10" x 13 1/4"** television raster. Its optical and physical specifications are highly standardized to ensure compatibility with contemporary television chassis designs.

Optical Specifications

- **Phosphor Number**: No. 4
- **Fluorescent Color**: White
- **Phosphorescent Color**: White
- **Persistence**: Medium
- **Faceplate Light Transmission at Center**: Approximately 65%
- **Specular Reflection of Ambient Light**: While the frosted grey-filter variant (16GP4B) is rated at 2.5% specular reflection, the frosted clear-glass 16GP4C provides a balanced alternative that diffuses reflections through its frosted surface.

Mechanical Dimensions and Basing

- **Overall Length**: 17 11/16 inches maximum
- **Greatest Diameter of Bulb**: 15 7/8 ± 1/8 inches
- **Minimum Useful Screen Diameter**: 14 3/8 inches
- **Bulb Contact**: Metal shell lip, which serves as the electrical connection for the anode and Grid No. 3
- **Base**: Small shell duodecal 5-pin base (designation **B5-57**)
- **Basing Configuration**: 12D

The underside pin connections for the 12D basing arrangement are:

- **Pin 1**: Heater
- **Pin 2**: Grid No. 1
- **Pin 10**: Grid No. 2
- **Pin 11**: Cathode
- **Pin 12**: Heater
- **Metal Shell Lip**: Anode / Grid No. 3

A physical clearance of **4 inches** along the neck must be kept entirely clear for the installation and adjustment of an external single-field ion trap magnet.

Electrical Ratings and Operating Conditions

The electrical design of the 16GP4C requires high-voltage anode operation and precise magnetic focusing and deflection fields.

Design Center Ratings

The following maximum ratings are established under the design center system:

- **Heater Voltage:** 6.3 Volts
- **Heater Current:** 0.6 Ampere
- **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 (not to exceed 15 seconds): 410 Volts
 - Heater negative with respect to cathode after warm-up: 150 Volts
 - Heater positive with respect to cathode: 150 Volts

To prevent thermal damage and ensure safe operation, the product of the anode voltage and the average anode current must be limited to a maximum of **6 Watts**.

Typical Operating Conditions

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

- **DC Anode & Grid No. 3 Voltage:** 12,000 Volts. (Note: Brilliance and definition decrease with decreasing anode voltage. In general, the anode voltage should not be operated below 10,000 Volts).
- **DC Grid No. 2 Voltage:** 300 Volts
- **DC Grid No. 1 Voltage:** -33 to -77 Volts (for visual extinction of an undeflected, focused spot)
- **DC Focusing Coil Current:** Approximately 100 mA when using a standard focus coil (such as No. 109 or equivalent). This current is specified with the combined Grid No. 1 bias and video signal voltage adjusted to produce a highlight brightness of 30 foot-lamberts on the standard 10" x 13 1/4" picture size. The distance from the reference line to the center of the focus coil's air gap must be maintained at 3 inches.
- **Ion Trap Magnet Strength:**
 - **23 Gauss**es for the [16GP4](#) and 16GP4C
 - **35 Gauss**es for the [16GP4A](#) and [16GP4B](#)

Circuit Values and Capacitances

- **Maximum Grid No. 1 Circuit Resistance:** 1.5 Megohms
- **Direct Interelectrode Capacitances (Approximate):**
 - Cathode to all other electrodes: 5 μF (pF)
 - Grid No. 1 to all other electrodes: 6 μF (pF)

Technical Summary

The **16GP4C** is a **16-inch class, round metal-cone cathode-ray tube** featuring a **clear glass, frosted faceplate**. It operates with a **6.3 V, 0.6 A** heater and is designed for magnetic focus and deflection with a **70-degree** deflection angle. Utilizing **Phosphor No. 4** for a medium-persistence white display, it is capable of presenting a **10" x 13 1/4"** television raster. The tube requires an external single-field ion trap magnet (rated at **23 Gauss**es for the 16GP4C) and operates typically at an anode voltage of **12,000 Volts** (with a design center maximum of **14,000 Volts**). Its physical interface is supported by a **small shell duodecal 5-pin base (B5-57)**, with high-voltage anode connection made directly to the metal shell lip.



SOURCE OPERATING CONDITIONS

1961 Tung Sol

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

1961 TUNG SOL

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OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Voltage	14000 V	—
Typical Anode Voltage	12000 V	—
Maximum Grid2 Voltage	410 V	—
Typical Grid2 Voltage	300 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DeflectionAngleApproximate	70 degree	—
FocusingMethod	Magnetic	—
DeflectingMethod	Magnetic	—
PhosphorNumber	4	—
FluorescentColor	White	—
Persistence	Medium	—



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
DEFLECTION ANGLE (APPROX.)	70 degrees	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
A TnF PRODUCT OF ANO OE VOI TAGE AND AYER AGE ANODE CURRENT SNOVLO BE LIMITED TO 6 MATT S.	6 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC ANODE S	1 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
ION TRAP MAGNET (RATED STRENGTH)	2 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
SIGNAL VOLTAGE ADJUSTED TO PRODUCE A MI GMIiGMT BRIGHTNESS OF j0 f00T LAYS ER TS ON A 10• BT	10 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
1j 1/4" PICTURE SIZE. 0I ST ANCE FROY REFERENCE LIME TO CENTER OF AIR GAP ON FOCUS COIL SN ALL BE – value 1	1	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
1j 1/4" PICTURE SIZE. 0I ST ANCE FROY REFERENCE LIME TO CENTER OF AIR GAP ON FOCUS COIL SN ALL BE – value 2	4	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAXIMUM GRID *i CIRCUIT RESISTANCE	1 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.