



ELECTRONIC TUBE REFERENCE

16QP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Direct-view cathode-ray picture tube documented by manufacturer data for type 16QP4; available extracted technical detail is limited, so the description remains conservative.

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	
MAXIMUM PLATE VOLTAGE	16000 V
MAXIMUM SCREEN VOLTAGE	41 V
<i>CRT-specific anode/focus/deflection ratings retained as parameters rather than mapped to ordinary plate/screen fields.</i>	

16QP4 — Direct-View Cathode Ray Tube

The **16QP4** is a rectangular glass, direct-view picture tube designed primarily for television receiver applications. It features magnetic focus and deflection, a unipotential cathode, a grey filter faceplate, and requires an external double field ion trap magnet for proper operation.

Mechanical Specifications and Physical Dimensions

The 16QP4 is constructed with a rectangular glass bulb. Its physical dimensions and screen characteristics are as follows:

- **Overall Length:** 19 1/8 inches
- **Greatest Bulb Dimensions:**
 - **Diagonal:** 16 1/8 inches
 - **Width:** 14 3/4 inches
 - **Height:** 11 1/2 inches
- **Minimum Useful Screen Dimensions:**
 - **Diagonal:** 15 inches
 - **Width:** 13 19/32 inches
 - **Height:** 10 3/16 inches
- **Useful Screen Area (Raster Size):** 13 1/2 inches width by 10 1/8 inches height
- **Neck Diameter:** 1 7/16 ± 1/16 inches
- **Bulb Contact:** Recessed small cavity cap (J1-21)
- **Base:** Small shell duodecal 5-pin (B5-57)
- **Basing Designation:** 12D

The tube's neck includes a designated space that must be kept clear for the installation of the external double field ion trap magnet. The anode terminal is located on the side of the bulb, positioned $3 \frac{5}{8} \pm \frac{3}{8}$ inches from the reference line.

Electrical Connections and Interelectrode Capacitances

The 16QP4 utilizes the 12D basing configuration, which provides the following pin connections viewed from the bottom of the base:

Pin Number	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 10	Grid No. 2
Pin 11	Cathode
Pin 12	Heater
Cap	Anode

The direct interelectrode capacitances of the tube are approximately:

- **Cathode to all other electrodes:** 5 μ F
- **Grid No. 1 to all other electrodes:** 7 μ F

Optical Characteristics

The faceplate of the 16QP4 is made of grey filter glass to improve picture contrast under ambient light. The optical properties of the screen are:

- **Phosphor Number:** No. 4
- **Fluorescent Color:** White
- **Phosphorescent Color:** White
- **Persistence:** Medium

Ratings and Operating Limits

The following limits are established on the design center system:

Heater Ratings

- **Heater Voltage:** 6.3 Volts
- **Heater Current:** 0.6 Ampere
- **Calculated Heater Power:** 3.78 Watts (derived from $6.3\text{ V} \times 0.6\text{ A}$)

Maximum Ratings

- **Maximum DC Anode Voltage:** 16,000 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 period (not to exceed 15 seconds):* 410 Volts
 - *After equipment warm-up period:* 125 Volts
 - **Heater positive with respect to cathode:** 125 Volts
- **Maximum Grid No. 1 Circuit Resistance:** 1.5 Megohms

Typical Operating Conditions

Under typical operating conditions, the 16QP4 is configured with the following parameters:

- **DC Anode Voltage:** 14,000 Volts
- **DC Grid No. 2 Voltage:** 250 Volts
- **DC Grid No. 1 Voltage:** -27 to -63 Volts (for visual extinction of the undeflected focused spot)
- **DC Focusing Coil Current:** Approximately 150 mA
- **DC Ion Trap Current:** Approximately 120 mA (using standard coil #108)

The deflection angles for the scanning raster are approximately:

- **Horizontal Deflection Angle:** 54.5 degrees
- **Vertical Deflection Angle:** 50.8 degrees
- **Diagonal Deflection Angle:** 70 degrees

Technical Summary

The **16QP4** is a 16-inch class rectangular glass cathode ray tube designed for television display applications. It operates with a nominal 6.3 V, 0.6 A heater and utilizes magnetic focus and deflection. With a typical anode operating voltage of 14,000 V and a maximum rating of 16,000 V, the tube provides a white display using a No. 4 medium-persistence phosphor. Its design incorporates a grey filter faceplate to enhance contrast, a duodecal 5-pin base, and requires an external double field ion trap magnet.



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	16000 V	—
Typical Anode Voltage	14000 V	—
Maximum Grid2 Voltage	410 V	—
Typical Grid2 Voltage	250 V	—

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



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

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CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAGNETIC FOCUS 8 DEFLECTION – value 1	1 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
MAGNETIC FOCUS 8 DEFLECTION – value 2	13 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
MAGNETIC FOCUS 8 DEFLECTION – value 3	1 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
OC ANODE VOLTAGE	14000 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC GRID #2 VOLTAGE – value 1	2 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC GRID #2 VOLTAGE – value 2	2 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC GRID #1 VOLTAGE A – value 1	27 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC GRID #1 VOLTAGE A – value 2	63 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC FOCUSING COIL CURRENT (APPROX.)	150 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAXIMUM DC ANODE VOLTAGE	16000 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
MAXIMUM DC GRID #2 VOLTAGE – value 1	2 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
MAXIMUM DC GRID #2 VOLTAGE – value 2	41 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAXIMUM GRID #1 VOLTAGE	1 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
MAXIMUM GRID #i CIRCUIT RESISTANCE – value 1	1 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
MAXIMUM GRID #i CIRCUIT RESISTANCE – value 2	5 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.

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