

ELECTRONIC TUBE REFERENCE

16JP4A

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Direct-view cathode-ray picture tube documented by manufacturer data for type 16JP4A; available extracted technical detail is limited, so the description remains conservative.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12N	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

SECTION1 Cathode Ray	
MAXIMUM SCREEN VOLTAGE	41 V
CRT-specific anode/focus/deflection ratings retained as parameters rather than mapped to ordinary plate/screen fields.	

16JP4A — Direct-View Cathode Ray Picture Tube

The **16JP4A** is a round glass, direct-view cathode ray picture tube designed primarily for television display applications. It is identical to the [16JP4](#) except for its grey filter faceplate, which is designed to enhance contrast under ambient room lighting.

Physical and Mechanical Construction

The 16JP4A features a round glass bulb construction with an external conductive coating. Its physical dimensions and mechanical specifications include:

- **Overall Length:** 20 3/4 ± 3/8 inches
- **Greatest Diameter of Bulb:** 16 1/8 ± 1/4 inches
- **Minimum Useful Screen Diameter:** 15 inches
- **Neck Diameter:** 1 7/16 ± 1/16 inches
- **Deflection Angle:** Approximately 60 degrees
- **Bulb Contact:** Recessed small cavity cap (J1-21), which serves as the anode terminal.
- **Bulb Contact Alignment:** The J1-21 contact aligns with pin position #3 ± 10 degrees.
- **Base:** Small shell duodecal 5-pin base (designation B5-57).
- **Basing Arrangement:** 12N.

Pin Connections

The 12N basing arrangement provides the following connections, viewed from the bottom of the base:

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

Optical Characteristics

The 16JP4A utilizes a sulfide-type phosphor designated as **No. 4**. Its optical properties include:

- **Fluorescent Color:** White
- **Phosphorescent Color:** White
- **Persistence:** Medium
- **Faceplate Light Transmission:** The grey filter faceplate provides an approximate light transmission of 66 percent at the center of the screen.

Electrical Ratings and Design Center Values

The operating limits of the 16JP4A are specified under the Design Center rating system. Operating the tube beyond these limits may impair performance or cause permanent damage.

Parameter	Rating (Design Center Value)
Heater Voltage	6.3 V

Parameter	Rating (Design Center Value)
Heater Current	0.6 A
Maximum DC Anode Voltage	14,000 V
Maximum DC Grid No. 2 Voltage	410 V
Maximum DC Grid No. 1 Negative-Bias Value	125 V
Maximum DC Grid No. 1 Positive-Bias Value	0 V
Maximum Grid No. 1 Positive-Peak Value	2 V
Maximum Grid No. 1 Circuit Resistance	1.5 MΩ

Heater-to-Cathode Voltage Limits

The maximum peak voltage between the heater and the cathode is restricted to prevent insulation breakdown:

- **Heater Negative with Respect to Cathode:**
 - During a warm-up period not exceeding 15 seconds: **410 V**
 - After the equipment warm-up period: **125 V**
- **Heater Positive with Respect to Cathode: 125 V**

Typical Operating Conditions

Under typical operating conditions in a television receiver, the tube is operated with the following parameters:

- **DC Anode Voltage:** 11,000 V
- **DC Grid No. 2 Voltage:** 250 V
- **DC Grid No. 1 Voltage (for visual extinction of undeflected focused spot):** -33 V to -77 V
- **DC Focusing Coil Current (approximate):** 115 mA
- **DC Ion Trap Current (approximate, using standard coil #108):** 120 mA

Interelectrode Capacitances

The direct interelectrode capacitances of the tube are approximately:

- **Cathode to all other electrodes:** 5 μF (pF)
- **Grid No. 1 to all other electrodes:** 6.5 μF (pF)
- **External conductive coating to anode:** 750 μF (minimum) to 2,000 μF (maximum)

The external conductive coating forms a capacitor with the internal anode, which can be utilized in the receiver's high-voltage filtering circuit.

Technical Summary

The **16JP4A** is a 16-inch round glass cathode ray tube designed for television display applications. It features magnetic focus and deflection with a 60-degree deflection angle, a unipotential cathode, and a sulfide-based No. 4 white phosphor screen. The 16JP4A is distinguished from the standard [16JP4](#) by its grey filter faceplate, which has a nominal light transmission of 66% at the center. Operating with a 6.3 V, 0.6 A heater, the tube is rated for a maximum DC anode voltage of 14,000 V (typically operated at 11,000 V) and requires an external double-field ion trap and focusing coil. It utilizes a small shell duodecal 5-pin base with a 12N basing configuration and a J1-21 recessed cavity cap for the high-voltage anode connection.



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

Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Maximum Anode Voltage	14000 V	—
Typical Anode Voltage	11000 V	—
Maximum Grid2 Voltage	410 V	—
Typical Grid2 Voltage	250 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DeflectionAngleApproximate	60 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

Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
MAGNETIC FOCUS 8 DEFLECTION	8 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DEFLECTION	6 degrees	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC ANODE	11000 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	250 V	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC FOCUSING COIL CURRENT (APPROX.)	115 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC ION TRAP CURRENT STANDARD CULL #108 (APPROX.) – value 1	108 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.
DC ION TRAP CURRENT STANDARD CULL #108 (APPROX.) – value 2	120 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 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.
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 #1 CIRCUIT RESISTANCE	1 mA	Published CRT datasheet value; multiple values on a row represent the source table's separate conditions/limits.