



ELECTRONIC TUBE REFERENCE

17RP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

High-voltage P4 cathode-ray picture-display tube using magnetic deflection, with manufacturer data supporting wide-angle scanning and typical anode operation in the 12-14 kV range.

GENERAL CHARACTERISTICS

BASE DESIGNATION	12L	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

SECTION 1 Cathode Ray	
MAXIMUM SCREEN VOLTAGE	500 V
<i>CRT-specific electrode/focus/deflection data retained as parameter rows.</i>	

17RP4 — Direct-View Cathode Ray Picture Tube

An all-glass, rectangular, direct-view cathode ray picture tube featuring low-voltage electrostatic focus and magnetic deflection, designed for television receiver applications.

Overview

The **17RP4** is a rectangular, direct-view cathode ray picture tube designed primarily for television receiver applications. It features low-voltage electrostatic focusing and magnetic deflection. The tube incorporates a unipotential cathode, a gray filter faceplate, an external conductive coating, and is designed for use with an external single-field ion-trap magnet.

The 17RP4 is identical in characteristics to the [17HP4](#). It is also identical to the [17RP4C](#), with the sole distinction that the 17RP4 features a non-aluminized screen, whereas the [17RP4C](#) features an aluminized screen.

Mechanical Specifications and Physical Dimensions

The 17RP4 utilizes a rectangular glass bulb (ASA designation J133-A1 or -B1) with a spherical gray faceplate. The physical dimensions and mechanical characteristics are as follows:

- **Overall Length:** 19 1/4 ± 3/8 inches or 19 3/8 ± 3/8 inches
- **Neck Length:** 7 1/2 inches
- **Greatest Bulb Dimensions:**
 - Diagonal: 16 5/8 ± 1/8 inches
 - Width: 15 3/8 ± 1/8 inches (also specified as 15 25/64 ± 1/8 inches)
 - Height: 12 1/4 ± 1/8 inches
- **Minimum Useful Screen Dimensions:**
 - Diagonal: 15 1/2 inches
 - Width: 14 1/4 inches
 - Height: 10 3/4 inches
- **Raster Size:** 14 1/4 inches by 10 3/4 inches
- **Approximate Net Weight:** 16 lbs
- **Mounting Position:** Any

The faceplate is a gray filter glass providing light transmission at the center of approximately 66% to 72%.

Electron Gun, Heater, and Basing

The tube is equipped with an electron gun designed for use with an external single-field ion-trap magnet. The heater is rated for a nominal voltage of 6.3 V and a current of 0.6 A (with a tolerance of ±10%).

The 17RP4 uses a **Small Shell Duodecal 6-Pin** base (JETEC No. B6-63) with a **12L** basing configuration. High voltage is applied via a recessed small cavity cap (JETEC No. J1-21) located on the bulb. The anode contact aligns with pin position No. 6 within a tolerance of ±30 degrees.

Pin Connections (Bottom View)

Pin	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 6	Grid No. 4 (Focusing Electrode)
Pin 10	Grid No. 2

Pin	Connection
Pin 11	Cathode
Pin 12	Heater
Recessed Cap	Anode (Grid No. 3 / Grid No. 5, connected internally)

Electrostatic and Optical Characteristics

The 17RP4 utilizes a **No. 4 (P4)** sulfide-type phosphor screen. It exhibits white fluorescence and white phosphorescence, with persistence described as medium or short.

Deflection Angles (Approximate)

- **Horizontal:** 66 degrees
- **Diagonal:** 70 degrees

Interelectrode Capacitances (Approximate)

- **Cathode to all other electrodes:** 5 μF
- **Grid No. 1 to all other electrodes:** 6 μF
- **External conductive coating to anode:** 750 μF (minimum) to 1,500 μF (maximum)

The external conductive coating, when properly grounded, serves as a filter capacitor for the high-voltage power supply.

Maximum Ratings (Design-Center Values)

The following maximum ratings are established under the Design-Center system:

- **Anode (Grid No. 3, Grid No. 5) Voltage:** 16,000 V DC maximum
- **Focusing Electrode (Grid No. 4 / Anode No. 1) Voltage:** -500 to +1,000 V DC maximum
- **Focusing Electrode Current:** -15 to +25 μA DC maximum (measured at design-center maximum anode voltage plus 10%)
- **Grid No. 2 Voltage:** 500 V DC maximum
- **Grid No. 1 Voltage:**
 - DC Negative-Bias Value: 125 V DC maximum
 - DC Positive-Bias Value: 0 V DC maximum
 - Positive-Peak Value: 2 V maximum
- **Peak Heater-Cathode Voltage:**
 - Heater negative with respect to cathode (during warm-up $\leq$ 15 seconds): 410 V maximum
 - Heater negative with respect to cathode (after warm-up): 180 V maximum
 - Heater positive with respect to cathode: 180 V maximum

- **Grid No. 1 Circuit Resistance:** 1.5 MΩ maximum

Typical Operating Conditions

The 17RP4 can be operated under typical conditions with anode voltages of 12,000 V or 14,000 V DC. While 12,000 V is a standard operating point, performance characteristics such as brightness and focus quality may decrease below 14,000 V, and the anode voltage should not be operated below 12,000 V.

Parameter	Operating Condition A	Operating Condition B
Anode Voltage	12,000 V DC	14,000 V DC
Focusing Electrode Voltage	0 V DC (may be modulated)	-56 to +308 V DC
Grid No. 2 Voltage	300 V DC	300 V DC
Grid No. 1 Voltage (for visual extinction)	-33 to -77 V DC	-28 to -72 V DC
Ion-Trap Field / Current	75 ± 50% mA (Standard Coil #111)	~37 Gausses (~37 mA through magnet #117)

The focusing electrode voltage may be modulated within its maximum range to improve overall focus across the raster without causing damage to the tube.

Technical Summary

The **17RP4** is a rectangular, direct-view cathode ray picture tube featuring low-voltage electrostatic focus and magnetic deflection. It is designed with a unipotential cathode, a gray filter faceplate, and an external conductive coating that functions as a filter capacitor. The tube operates with a 6.3 V, 0.6 A heater and is housed in a glass bulb with a Small Shell Duodecal 6-Pin base (12L basing). It is electrically identical to the **17HP4**, and is identical to the **17RP4C** except for its non-aluminized screen. With a design-center maximum anode voltage rating of 16,000 V, the 17RP4 typically operates at 12,000 V to 14,000 V, utilizing an external single-field ion-trap magnet to ensure proper beam alignment and raster illumination.



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	18000 V	—
Typical Anode Voltage	14000 V	—
Maximum Grid2 Voltage	500 V	—
Typical Grid2 Voltage	300 V	—

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
FocusingMethod	Magnetic	—
DeflectingMethod	Magnetic	—
DeflectionAngleApproximate	90 degree	—
PhosphorNumber	4	—
FluorescentColor	White	—



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 Grid No. 2 voltage	500 V	Published maximum Grid No. 2 voltage

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	3 V	Published heater voltage
FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.)	65 %	FACEPLATE LIGHT TRANSMISSION AT CENTER (APPROX.) 65 PERCENT
HEATER VOLTAGE (	3 V	HEATER VOLTAGE (.3 VOLTS
HEATER CURRENT	600 mA	HEATER CURRENT 0.6 AMP.
MAXIMUM OC ANODE, GRID #} VOLTAGE	16000 V	MAXIMUM OC ANODE, GRID #} VOLTAGE 16 000 VOLTS
MAXIMUM DC GRID #2 VOLTAGE	500 V	MAXIMUM DC GRID #2 VOLTAGE 500 VOLTS
HEATER POSITIVE WITH RESPECT TO CATHODE 1\$	0 V	HEATER POSITIVE WITH RESPECT TO CATHODE 1\$0 VOLTS
MAXIMUM GRID #1 CIRCUIT RESISTANCE	15 Mohm	MAXIMUM GRID #1 CIRCUIT RESISTANCE 1,5 MEGOHMS
DC ANODE S GRID #} VOLTAGE	12000 V	DC ANODE S GRID #} VOLTAGE 12 000 VOLTS
DC ANODE #1 VOLTAGE (FOCUSING EIECTR00E)A	0 V	DC ANODE #1 VOLTAGE (FOCUSING EIECTR00E)A 0 VOLTS
DC GRID #2 VOLTAGE	300 V	DC GRID #2 VOLTAGE 300 VOLTS

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
CATHODE TO ALL OTHER ELECTRODES	5 MMF	CATHODE TO ALL OTHER ELECTRODES 5 µµf
GRID #1 TO ALL OTHER ELECTRODES	6 MMF	GRID #1 TO ALL OTHER ELECTRODES 6 µµf
MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	1500 MMF	MAXIMUM EXTERNAL CONDUCTIVE COATING TO ANODE 1 500 µµf
MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE	750 MMF	MINIMUM EXTERNAL CONDUCTIVE COATING TO ANODE 750 µµf



SOURCE DATA APPENDIX

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1968 General Electric Co

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

1968 GENERAL ELECTRIC CO

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
AnodeVoltageMaximum	16000 V	—
AnodeVoltageTypical	14000 V	—
Grid2VoltageMaximum	500 V	—

TUBE TINKER

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and their source documents.

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