



ELECTRONIC TUBE REFERENCE

11GP4

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION

CONSTRUCTION

CATHODERAY

Eleven-inch P4 cathode-ray picture tube with magnetic deflection and a broad direct-view screen. RCA data show high-voltage anode operation up to about 15 kV together with normal control-grid and focusing-electrode requirements.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	7
NOMINAL HEATER	6.9 V / 20 A	PARALLEL HEATER	— / —
HEATING	Indirect	SERIES OPERATION	Not specified
CATHODE ARRANGEMENT	Separate cathodes	SECTION CONSTRUCTION	Similar

SECTION RATINGS

SECTION 1 Cathode Ray	
MAXIMUM SCREEN VOLTAGE	250 V
<i>CRT-specific ratings, operating conditions, capacitances, focus/deflection, cutoff, optical, and screen data are retained in section parameters.</i>	

11GP4 Picture Tube

The **11GP4** is a filled-rim picture tube designed for television display applications. It features a 110-degree diagonal magnetic deflection angle, an intermediate-grid-No.2 voltage gun design, and a rectangular screen. The tube incorporates an aluminized P4-sulfide phosphor screen and a filterglass faceplate to optimize optical performance.

Optical and Mechanical Characteristics

The 11GP4 is constructed with a filled-rim design that includes integral implosion protection hardware. The faceplate is made of filterglass with an approximate light transmission of 52% at the center. The

optical system utilizes an aluminized P4-sulfide phosphor. The electron gun is designed to operate without requiring an external ion-trap magnet.

Mechanical Dimensions and Deflection Angles

The physical envelope of the 11GP4 is compact, featuring a short neck and a wide deflection angle to minimize cabinet depth. The mechanical specifications include:

- **Weight:** Approximately 5 lb
- **Overall Length:** 8.785 ± 0.250 inches
- **Neck Length:** 4.125 ± 0.125 inches
- **Projected Area of Screen:** 60 square inches
- **Minimum Screen Dimensions:**
 - Diagonal: 10.250 inches
 - Greatest Width: 9.000 inches
 - Greatest Height: 7.062 inches
- **Deflection Angles:**
 - Diagonal: 110°
 - Horizontal: 99°
 - Vertical: 82°

Calculated Screen Aspect Ratio: Based on the minimum screen width of 9.000 inches and greatest height of 7.062 inches, the minimum screen aspect ratio is calculated as 9.000 / 7.062 ≈ 1.274.

External Coating and Grounding

The tube features an external conductive coating of the regular-band type. This coating forms a capacitor with the internal anode structure. The capacitance of this system is rated between a minimum of 500 pF and a maximum of 750 pF. A designated contact area near the reference line is provided for grounding the external coating.

Electrical Connections and Pinout

The 11GP4 uses a JEDEC No. B7-208 Small-Button Neoeightar 7-pin base (Arrangement 1) and a JEDEC No. J1-21 recessed small cavity cap for the high-voltage anode connection. The reference line of the neck is determined by the JEDEC No. G-126 gauge.

The terminal connections, viewed from the bottom of the base, are assigned as follows:

Pin Number	Connection
Pin 1	Heater
Pin 2	Grid No.1
Pin 3	Grid No.2

Pin Number	Connection
Pin 4	Grid No.4
Pin 6	Grid No.1
Pin 7	Cathode
Pin 8	Heater
Cap	Anode (Grid No.3, Grid No.5, Screen, Collector)
C (Coating)	External Conductive Coating

Note that Grid No.1 is connected to both Pin 2 and Pin 6.

Interelectrode Capacitances

The direct interelectrode capacitances of the tube, measured without external shielding, are:

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

Heater and Warm-Up Characteristics

The heater is designed for operation at a nominal voltage of 6.3 V.

Heater Parameter	Value
Nominal Voltage	6.3 V
Current	450 ± 20 mA
Average Warm-Up Time	11 seconds
Voltage Range (Design-Maximum)	5.7 V to 6.9 V

Calculated Nominal Heater Power: Using the nominal voltage of 6.3 V and nominal current of 0.45 A, the nominal power consumption of the heater is calculated as $6.3 \text{ V} \times 0.45 \text{ A} = 2.835 \text{ W}$.

Maximum and Minimum Ratings

The following design-maximum ratings define the operating envelopes of the 11GP4. All voltages, unless otherwise specified, are positive with respect to the cathode.

Electrode Voltages

- **Anode Voltage:** 8,000 V minimum to 15,000 V maximum

- **Grid-No.4 (Focusing Electrode) Voltage:**
 - Positive value: 1,100 V maximum
 - Negative value: 550 V maximum
- **Grid-No.2 Voltage:** 100 V minimum to 250 V maximum
- **Cathode Voltage:**
 - Negative peak value: 220 V maximum
 - Negative bias value: 155 V maximum
 - Positive bias value: 0 V maximum
 - Positive peak value: 2 V maximum

Peak Heater-Cathode Voltage

The insulation between the heater and the cathode is rated to withstand specific peak voltages depending on the polarity and the operating state of the equipment:

- **Heater negative with respect to cathode:**
 - During equipment warm-up period (≤ 15 seconds): 450 V maximum
 - After equipment warm-up period: 300 V maximum
- **Heater positive with respect to cathode:**
 - Combined AC and DC voltage: 200 V maximum
 - DC component: 100 V maximum

Maximum Circuit Values

- **Grid-No.1 Circuit Resistance:** 1.5 M Ω maximum

Typical Operating Conditions (Cathode-Drive Service)

In typical cathode-drive service, the operating voltages are referenced positive with respect to Grid No.1:

- **Anode Voltage:** 11,000 V
- **Grid-No.4 Voltage:** 0 V
- **Grid-No.2 Voltage:** 150 V
- **Cathode Voltage (for visual extinction of focused raster):** 31 V to 49 V

Under these conditions, focusing is achieved with Grid No.4 at ground potential (0 V), and the video signal is applied to the cathode, with raster cutoff occurring within the 31 V to 49 V range.

Technical Summary

The **11GP4** is a compact, 110-degree magnetic deflection picture tube featuring a filled-rim design with integrated implosion protection. It employs a 6.3 V, 450 mA heater with a rapid 11-second average warm-up time. Utilizing a P4-sulfide aluminized phosphor screen and a 52% transmission filterglass faceplate, it provides a 60-square-inch projected screen area. The tube is characterized by its intermediate-grid-No.2

gun design, which operates without an ion-trap magnet, and is optimized for cathode-drive applications with an anode voltage rating up to 15,000 V and a typical operating anode voltage of 11,000 V.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1971 RCA HB3 Binder 1 of 7

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

1971 RCA HB3 BINDER 1 OF 7

Section 1 · Cathode Ray

CHARACTERISTICS		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid No.1 to all other electrodes	6 pF	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
External conductive coating to anodes – published value 1	500 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
External conductive coating to anodes – published value 2	750 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 V – published value 1	6.3 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 V – published value 2	450 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Current at 6.3 V – published value 3	20 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Light transmission at center (Approx.)	52	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Projected Area of Screen	60	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Anode Voltage – published value 1	8000 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Anode Voltage – published value 2	15000 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Grid-No.2 Voltage – published value 1	100 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.2 Voltage – published value 2	250 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Voltage – published value 1	5.7 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Heater Voltage – published value 2	6.9 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Combined AC & DC voltage	200 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Anode Voltage – published value 1	1 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Anode Voltage – published value 2	1000 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.4 Voltage	0 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No.2 Voltage	150 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Cathode Voltage – published value 1	31 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Cathode Voltage – published value 2	49 V	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.
Grid-No. 1 Circuit Resistance	1.5 mA	Published CRT datasheet value; multiple numbers on one source row represent its separate limits or operating conditions.

TUBE TINKER

An independent reference for electronic tubes, vacuum tubes,
and their source documents.

[Catalog](#) [Tube types](#) [Full books](#) [Blog](#) [Feedback & corrections](#)

© 2026 Tube Tinker