



ELECTRONIC TUBE REFERENCE

19GEP4A

Specialized - Cathode Ray electronic tube

CONSOLIDATED TECHNICAL DATA

1 SECTION
CONSTRUCTION
CATHODERAY

Wide-angle aluminized P4 monochrome television picture tube using electrostatic focusing and magnetic deflection, designed for high-voltage direct-view service with a large approximately 19-inch screen.

GENERAL CHARACTERISTICS

BASE DESIGNATION	—	BASE PINS	7
NOMINAL HEATER	6.3 V / 450 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	23000 V
<i>Cathode-ray electron-gun/screen system; anode/ultor maximum promoted to MaxPlateVoltage when explicitly published. Explicit X-ray warning/precaution or X-radiation characteristic is present in the supplied source.</i>	

19GEP4A Picture Tube

The **19GEP4A** is a PAN-O-PLY type cathode-ray picture tube designed for television display applications. It features a 114° magnetic deflection angle and incorporates an electron gun that does not require an ion-trap magnet. The tube is constructed with integral implosion protection hardware and mounting lugs to facilitate installation.

Physical and Mechanical Characteristics

The 19GEP4A is built using the JEDEC Bulb J149F2A envelope. Its faceplate is made of filterglass, which provides approximately 48% light transmission at the center to improve picture contrast under ambient

light. The screen utilizes an aluminized P4-Sulfide type phosphor.

Dimensions and Weight

- **Overall Length:** 11.625 ± 0.250 inches
- **Neck Length:** 4.375 ± 0.125 inches
- **Projected Screen Area:** 172 square inches
- **Minimum Screen Dimensions:**
 - Diagonal: 17.562 inches
 - Width: 15.188 inches
 - Height: 12.000 inches
- **Weight:** Approximately 15 pounds

Electrical Connections and Pinout

The tube utilizes a Small-Button Neoeightar 7-Pin base (Arrangement 1, JEDEC No. B7-208) and a Recessed Small Cavity cap (JEDEC No. J1-21).

Pin Configuration (8HR Bottom View)

Pin / Cap	Connection
Pin 1	Heater
Pin 2	Grid No. 1
Pin 3	Grid No. 2
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	External Conductive Coating

Interelectrode Capacitances

- **Cathode to all other electrodes:** 5 pF
- **Grid No. 1 to all other electrodes:** 6 pF
- **External conductive coating to anode:** 1250 minimum to 1750 maximum pF

Heater and Design-Maximum Ratings

All voltages are specified positive with respect to the cathode unless otherwise noted.

Heater Ratings

- **Nominal Voltage:** 6.3 V
- **Design-Maximum Voltage Range:** 5.7 V minimum to 6.9 V maximum
- **Current:** 450 mA at 6.3 V
- **Average Warm-Up Time:** 11 seconds

Design-Maximum Ratings

- **Anode Voltage:** 11,000 V minimum to 23,000 V maximum
- **Grid-No. 4 Voltage:** Positive 1100 V maximum, Negative 550 V maximum
- **Grid-No. 2 Voltage:** 200 V minimum to 550 V maximum
- **Grid-No. 1 Voltage:**
 - Negative peak: 220 V maximum
 - Negative bias: 155 V maximum
 - Positive bias: 0 V maximum
 - Positive peak: 2 V maximum
- **Peak Heater-Cathode Voltage:**
 - *Heater negative to cathode:* 450 V maximum during the first 15 seconds of warm-up; 300 V maximum after warm-up
 - *Heater positive to cathode:* 200 V maximum (combined AC & DC); 100 V maximum (DC component only)
- **Maximum Grid-No. 1 Circuit Resistance:** 1.5 MΩ

Typical Operating Conditions (Cathode-Drive Service)

Under typical cathode-drive operating conditions, voltages are specified positive with respect to Grid No. 1:

- **Anode Voltage:** 16,000 V
- **Grid-No. 4 Voltage:** 0 to 400 V
- **Grid-No. 2 Voltage:** 300 V
- **Cathode Voltage (for visual extinction of focused raster):** 28 to 62 V
- **Centering Magnet Field Strength:** 0 to 8 Gauss

Technical Summary

The **19GEP4A** is a 114° magnetic deflection picture tube featuring a PAN-O-PLY construction with mounting lugs and integrated implosion protection. It operates with a 6.3 V, 450 mA heater and utilizes a Small-Button Neoeightar 7-pin base. Designed for cathode-drive service, it operates typically with an

anode voltage of 16,000 V and a Grid-No. 2 voltage of 300 V, requiring no ion-trap magnet for its electron gun.

SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

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

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Section 1 · Cathode Ray

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	Nominal heater voltage
Heater Current	450 mA	Nominal heater current
Phosphor	P4	Published phosphor designation
External conductive coating to anode	1250–1750 pF	External conductive coating to anode. . 1250 min— 1750 max pF
Projected Area of Screen	172 sq in	Projected Area of Screen 172 sq in
Anode Voltage	1000--23000 V	Anode Voltage 1 1000 min-23000 max V
Grid-No.2 Voltage	200--550 V	Grid-No.2 Voltage 200 min-550 max V
Heater Voltage	5.7--6.9 V	Heater Voltage 5.7 min-6.9 max V
During equipment warm-up period <	450 V	During equipment warm-up period < 15 s 450 max V
After equipment warm-up period	300 V	After equipment warm-up period 300 max V
Combined AC & DC voltage	200 V	Combined AC & DC voltage 200 max V
Anode Voltage	16000 V	Anode Voltage 16000 V
Grid-No.4 Voltage	0–400 V	Grid-No.4 Voltage 0 to 400 V
Grid-No.2 Voltage	300 V	Grid-No.2 Voltage 300 V
Cathode Voltage	28–62 V	Cathode Voltage 28 to 62 V

CONSTRUCTION		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Deflection Method	Magnetic	Published deflection method

CHARACTERISTIC		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
PAN-O-PLY TYPE WITH MOUNTING LUGS	14 deg	PAN-O-PLY TYPE WITH MOUNTING LUGS 14° MAGNETIC DEFLECTION

CAPACITANCE		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Cathode to al l other electrodes	5 pF	Cathode to al l other electrodes. 5 pF
Grid No.1 to all other electrodes	6 pF	Grid No.1 to all other electrodes 6 pF
Heater Current at	450 mA	Heater Current at 6.3 V 450 mA

TUBE TINKER

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