

ELECTRONIC TUBE REFERENCE

CONSOLIDATED TECHNICAL DATA

19EDP4

1 SECTION
CONSTRUCTION
CATHODERAY

Specialized - Cathode Ray electronic tube

Nineteen-inch direct-view monochrome television CRT with electrostatic focus, magnetic deflection, and an aluminized P4 white screen. Wide-angle scanning and high-voltage operation suit large-screen receiver service, with published X-ray precautions.

GENERAL CHARACTERISTICS

BASE DESIGNATION	8HR	BASE PINS	—
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 PLATE VOLTAGE	23000 V
Cathode-ray picture-tube section; anode rating and published direct capacitances captured from supplied family sheet.	

19EDP4 — Television Picture Tube

The **19EDP4** is a 19-inch direct-viewed rectangular glass television picture tube. It features electrostatic focusing, magnetic deflection, and an aluminized screen. Designed without an ion trap, the tube incorporates integral banded implosion protection and an external conductive coating. The 19EDP4 is characterized as the high anode voltage version of the television picture tube family, in contrast to the low anode voltage [19EHP4](#).

Mechanical Design and Physical Characteristics

The 19EDP4 utilizes a J149F glass bulb with a gray filter glass faceplate that provides approximately 49% light transmittance. The screen is coated with an aluminized P4 phosphor, which exhibits white fluorescence and medium-short persistence.

The physical dimensions and mechanical limits of the tube are as follows:

- **Overall Length:** 11 3/8 ± 1/4 inches to 11 5/8 ± 1/4 inches
- **Neck Length:** 4 3/8 ± 1/8 inches
- **Neck Diameter:** 1 1/8 inches
- **Minimum Useful Screen Dimensions:** 12 inches in height, 15 3/8 inches in width, and 17 9/16 inches diagonally
- **Minimum Useful Screen Area:** 172 square inches
- **Weight:** Approximately 15 lbs

For proper operation, the external conductive coating and rimbands must be grounded. The electrical resistance between the external conductive coating and the rimband is specified at a minimum of 50 MΩ.

Deflection Angles

The tube is designed for wide-angle magnetic deflection with the following approximate angles:

- **Diagonal Deflection:** 114°
- **Horizontal Deflection:** 101°
- **Vertical Deflection:** 86°

Electrical Characteristics and Heater Ratings

The 19EDP4 features an indirectly heated cathode with a controlled warm-up time. The electrical specifications for the heater and the interelectrode capacitances are detailed below:

Parameter	Value
Heater Voltage	6.3 V
Heater Current	0.60 ± 5% A
Heater Warm-up Time	11 seconds

Direct Interelectrode Capacitances

- **Cathode to all other electrodes:** Approximately 5 pF
- **Grid No. 1 to all other electrodes:** Approximately 6 pF
- **External conductive coating and rimbands to anode:** 1000 pF minimum, 1500 pF maximum

Pinout and Basing Diagram

The tube uses a **B7-208** base and follows the **8HR** basing diagram. The electrical connections are assigned as follows:

- **Pin 1:** Heater
- **Pin 2:** Grid No. 1
- **Pin 3:** Grid No. 2
- **Pin 4:** Grid No. 4 (Focusing Electrode)
- **Pin 6:** Grid No. 1
- **Pin 7:** Cathode
- **Pin 8:** Heater
- **Recessed Cap:** Anode (Recessed small cavity cap, J1-21)

Pin 4 (the focusing electrode) is aligned with the horizontal centerline (A-A') within an angular tolerance of 30° and is positioned on the same side of the neck as the recessed anode contact.

Operating Modes and Maximum Ratings

The 19EDP4 can be operated in either Grid Drive Service or Cathode Drive Service. The maximum ratings are defined under the Design Maximum Rating System.

Design Maximum Ratings

Parameter	Grid Drive Service	Cathode Drive Service
Anode Voltage (DC)	15,000 V min / 23,000 V max	15,000 V min / 23,000 V max
Grid No. 4 Voltage (Focusing Electrode)	-550 to +1100 V dc	-400 to +1250 V dc
Grid No. 2 Voltage (DC)	200 V min / 550 V max	350 V min / 700 V max
Grid No. 1 Voltage (Negative Bias)	155 V dc	—
Grid No. 1 Voltage (Negative Peak)	220 V	—
Grid No. 1 Voltage (Positive Bias)	0 V dc	—
Grid No. 1 Voltage (Positive Peak)	2 V	—
Cathode Voltage (Positive Bias)	—	155 V dc
Cathode Voltage (Positive Peak)	—	220 V

Parameter	Grid Drive Service	Cathode Drive Service
Cathode Voltage (Negative Bias)	—	0 V dc
Cathode Voltage (Negative Peak)	—	2 V
Max Grid No. 1 Circuit Resistance	1.5 MΩ	1.5 MΩ

Peak Heater-Cathode Voltage Ratings

The limits for the voltage between the heater and cathode depend on the service mode and whether the equipment has warmed up:

- **Grid Drive Service:**
 - Heater negative with respect to cathode (during warm-up ≤ 15 s): 450 V max
 - Heater negative with respect to cathode (after warm-up): 200 V max
 - Heater positive with respect to cathode: 200 V max
- **Cathode Drive Service:**
 - Heater negative with respect to cathode (during warm-up ≤ 15 s): 450 V max
 - Heater negative with respect to cathode (after warm-up): 300 V max (with a maximum DC component of 200 V)
 - Heater positive with respect to cathode: 200 V max (with a maximum DC component of 100 V)

Typical Operating Conditions

Under typical operating conditions, both drive services utilize an anode voltage of 20,000 V DC and a Grid No. 2 voltage of 400 V DC.

Parameter	Grid Drive Service	Cathode Drive Service
Anode Voltage (DC)	20,000 V	20,000 V
Grid No. 4 Voltage for Focus	0 to 400 V dc	0 to 400 V dc
Grid No. 2 Voltage (DC)	400 V	400 V
Voltage Required for Cutoff	-46 to -94 V dc (Grid No. 1)	42 to 78 V dc (Cathode)



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1950 Sylvania

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

1950 SYLVANIA

Section 1 · Cathode Ray

CHARACTERISTICS

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Phosphor	P4	—
Focusing method	Electrostatic	—
Deflection method	Magnetic	—

OTHER

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater voltage	6.3 V	—
Heater current	600 mA	—



SOURCE OPERATING CONDITIONS

[SOURCE PDF](#)

1965 Sylvania Electronic Tubes Vol3

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

1965 SYLVANIA ELECTRONIC TUBES VOL3

Section 1 · Cathode Ray

CHARACTERISTIC

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
Heater Voltage	6.3 V	—
Heater Current	600 mA	—
FocusingMethod	Electrostatic	—
DeflectionMethod	Magnetic	—
Phosphor	Aluminized P4 white	—

PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
DeflectionAngles	110-class magnetic	—
Cathode To All Capacitance	5 pF	—
Grid1 To All Capacitance	6 pF	—
ExternalConductiveCoatingToAnodeCapacitanceMaximum	1500 pF	—
ExternalConductiveCoatingToAnodeCapacitanceMinimum	1000 pF	—
RimbandToExternalCoatingResistanceMinimum	50 Mohm	—

OTHER		
PARAMETER	PUBLISHED VALUE	CONDITION / NOTE
AnodeVoltageMaximum	23000 V	—
AnodeVoltageMinimum	15000 V	—
FocusingElectrodeVoltageRangeMaximum	-400 to +1250 V	—
Grid2VoltageMaximum	700 V	—
Grid2VoltageMinimum	350 V	—
Grid1NegativeBiasMagnitudeMaximum	155 V	—
Grid1PositivePeakVoltageMaximum	2 V	—
HeaterCathodeVoltageMaximum	450 V	Warmup<=15s;HeaterNegative
HeaterCathodeVoltageMaximum	200 V	AfterWarmup
HeaterCathodeVoltageMaximum	200 V	HeaterPositive
Anode Voltage	20000 V	—
FocusingElectrodeVoltage	0 to +400 V	—
Grid1VoltageForCutoff	-46 to -94 V	—
Grid1CircuitResistanceMaximum	1.5 Mohm	—

TUBE TINKER

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and their source documents.

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