

CHARACTERISTICS

GENERAL DATA

Focusing Method	Electrostatic
Deflection Method	Magnetic
Deflection Angles (Approx.)	
Horizontal	102 Degrees
Diagonal	114 Degrees
Vertical	86 Degrees
Phosphor	Aluminized P4
Fluorescence	White
Persistence	Short to Medium
Faceplate	Bonded Shield
(Gray Filter Glass Safety Plate Laminated Directly to Face of Tube)	
Light Transmittance of Faceplate Assembly (Approx.)	44 Percent
Types 19AUP4 and 19BCP4 have external surface of safety plate treated to reduce specular reflection.	

ELECTRICAL DATA

	19BAP4 19BCP4	19AFP4 19AUP4
Heater Voltage	6.3	6.3 Volts
Heater Current $\pm 5\%$	0.30	0.60 Ampere
Heater Warm-up Time ¹	11	11 Seconds
Direct Interelectrode Capacitances (Approx.)		
Cathode to All Other Electrodes		5 $\mu\mu\text{f}$
Grid No 1 to All Other Electrodes		6 $\mu\mu\text{f}$
External Conductive Coating to Anode ²		1500 $\mu\mu\text{f}$ Max. 1000 $\mu\mu\text{f}$ Min.

MECHANICAL DATA

Minimum Useful Screen Dimensions (Maximum Assured)	
Height	12 $\frac{1}{16}$ Inches
Width	15 $\frac{1}{4}$ Inches
Diagonal	17 $\frac{3}{4}$ Inches
Area	174 Sq. Inches
Neck Length	4 $\frac{1}{8} \pm \frac{1}{8}$ Inches
Overall Length	11 $\frac{5}{8} \pm \frac{5}{16}$ Inches
Bulb	J149C
Safety Plate (19AFP4, 19BAP4)	FP159A
Safety Plate (19AUP4, 19BCP4)	FP159B
Bulb Contact (Recessed Small Cavity Cap)	J1-21
Base	B7-208
Basing	8HR
Weight (Approx.)	18 $\frac{1}{2}$ Pounds

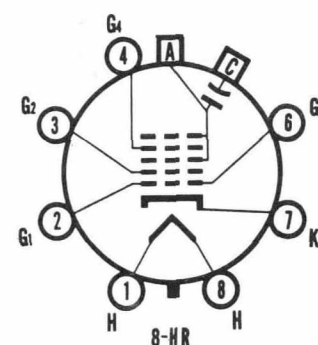
RATINGS

MAXIMUM RATINGS (Design Maximum Values)

Grid Drive Service ³		
Anode Voltage	20,000 Volts	dc
Grid No. 4 Voltage (Focusing Electrode)	-550 to +1100 Volts	dc
Grid No. 2 Voltage	550 Volts	dc
Grid No. 1 Voltage		
Negative Bias Voltage	155 Volts	dc
Negative Peak Value	220 Volts	
Positive Bias Value	0 Volts	dc
Positive Peak Value	2 Volts	
Peak Heater-Cathode Voltage		
Heater Negative with Respect to Cathode		
During Warm-up Period not to Exceed 15 Seconds	450 Volts	
After Equipment Warm-up Period	200 Volts	
Heater Positive with Respect to Cathode	200 Volts	

QUICK REFERENCE DATA

Television Picture Tube
19" Direct Viewed
Rectangular Glass Type
Spherical Faceplate
Bonded Shield
Gray Filter Glass
Aluminized Screen
Electrostatic Focus
114° Magnetic Deflection
No Ion Trap
External Conductive Coating



SYLVANIA ELECTRONIC TUBES

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File Under
TELEVISION PICTURE TUBES

MAXIMUM RATINGS (Design Maximum Values) Con't.

Cathode Drive Service⁴

Anode Voltage	20,000 Volts	dc
Grid No. 4 Voltage (Focusing Electrode)	-400 to +1250 Volts	dc
Grid No. 2 Voltage	700 Volts	dc
Cathode Voltage		
Positive Bias Value	155 Volts	dc
Positive Peak Value	220 Volts	
Negative Bias Value	0 Volts	dc
Negative Peak Value	2 Volts	
Peak Heater-Cathode Voltage		
Heater Negative with Respect to Cathode		
During Warm-up Period not to Exceed 15 Seconds	450 Volts	
After Equipment Warm-up Period	200 Volts	
Heater Positive with Respect to Cathode	200 Volts	

TYPICAL OPERATING CONDITIONS

Grid Drive Service³

Anode Voltage	16,000 Volts	dc
Grid No. 4 Voltage for Focus	0 to 400 Volts	dc
Grid No. 2 Voltage	400 Volts	dc
Grid No. 1 Voltage Required for Cutoff ⁵	-46 to -94 Volts	dc

Cathode Drive Service⁴

Anode Voltage	16,000 Volts	dc
Grid No. 4 Voltage for Focus	0 to 400 Volts	dc
Grid No. 2 Voltage	400 Volts	dc
Cathode Voltage Required for Cutoff ⁵	42 to 78 Volts	dc

CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5 Megohms Max.
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NOTES:

1. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of the rated heater voltage after applying four (4) times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to three (3) times the rated heater voltage divided by the rated heater current.
2. External conductive coating must be grounded.
3. Voltages are positive with respect to cathode unless indicated otherwise.
4. Voltages are positive with respect to Grid No. 1 unless indicated otherwise.
5. Visual extinction of focused raster. For cutoff of the undeflected focused spot, the absolute value of the bias between cathode and grid will increase by about 5 volts.

WARNING:

X-ray radiation shielding may be necessary to protect against possible danger of personal injury from prolonged exposure at close range if this tube is operated at higher than the manufacturer's Maximum Rated Anode Voltage or 16,000 volts, whichever is less.

Technical drawing of a shield assembly, showing front, side, and bottom views with dimensions and labels.

Front View (Top Left):

- Overall width: $17\frac{17}{64} \pm \frac{3}{32}$
- Overall height: $19\frac{55}{64} \pm \frac{3}{32}$
- Mounting tabs: $1\frac{1}{4}$ (top left), $1\frac{1}{2}$ (top left corner)
- Useful screen area: $15\frac{5}{16}$ MIN.
- Internal dimensions: $6\frac{3}{8}$, $9\frac{1}{8}$, $17\frac{3}{4}$ MIN., $35^\circ 21'$, $8\frac{1}{8}$, $12\frac{1}{16}$ MIN., $48\frac{3}{8}$ R, $2\frac{9}{16}$, $15\frac{3}{8}$ R, $30\frac{1}{16}$ R, $7\frac{1}{8}$ R.
- Points: X (NOTE-3), Y, Z, A, A'

Side View (Top Right):

- Overall height: $14\frac{3}{32} \pm \frac{3}{32}$
- Internal dimensions: $5\frac{1}{2} \pm \frac{1}{4}$, $53\frac{1}{4}$ R, 86° , $2\frac{1}{16}$, $20\frac{1}{4}$ R, $1\frac{9}{16} \pm \frac{1}{8}$, $7\frac{1}{2} \pm \frac{3}{16}$, $4\frac{1}{8} \pm \frac{1}{8}$, $10\frac{5}{8} \pm \frac{5}{16}$.
- Labels: EXTERNAL CONDUCTIVE COATING, REF. LINE.

Bottom View (Bottom Left):

- Overall width: $17\frac{17}{64} \pm \frac{3}{32}$
- Internal dimensions: $3\frac{1}{16}$, $2 \pm \frac{1}{8}$, $2\frac{27}{32}$, $2\frac{1}{16}$, $53\frac{1}{4}$ R, $20\frac{1}{4}$ R, 102° .
- Labels: EDGE OF SHIELD, SEAL LINE, CENTERLINE A-A', J1-21, REFERENCE LINE (NOTE-1), $Y = .575X^2 + .576$, 1.125 O.D. $+.043$ $-.025$.

Bottom View of Base (Bottom Right):

- Label: BOTTOM VIEW OF BASE (NOTE-2)
- Dimensions: 30, 30, 6, 7, 8, 9, 10, 11, 12.

DIAGRAM NOTES:

1. Reference line is determined by plane C-C' of JEDEC No. 126 Reference Line Gauge, when the gauge is seated against the bulb.
2. Base Pin No. 4 aligns with horizontal centerline (A-A') within 30° and is on same side as anode contact, J1-21.
3. Planes perpendicular to tube axis and passing through points X, Y and Z are located as follows:

Plane tangent to crown of face to plane of X: 0.500" Nominal

Plane of X to plane of Y = .421" $\pm$.025"

Plane of X to plane of Z = $.738'' \pm .045''$