

Westinghouse



Television Picture Tubes

50 Volt Grid 2: 23HWP4
400 Volt Grid 2: 23HQP4

23" Black & White
Banded with Mounting Lugs Implosion Protection
110° Diagonal Deflection
282 Square Inch Screen
6.3 Volt, 0.45 Ampere Heater

Electrical

Focusing Method . . . Low Voltage Electrostatic
Deflection Method Magnetic
Deflection Angles (Approx.)

Diagonal 110 Degrees
Horizontal 99 Degrees
Vertical 82 Degrees

Direct Interelectrode Capacitances:

Cathode to All Other Electrodes
(Approx.) 5 pF

Grid No. 1 to All Other Electrodes
(Approx.) 6 pF

External Conductive Coating to Anode:
(Note 1)

Minimum 2000 pF

Maximum 2500 pF

Resistance Between External Conductive

Coating and Implosion Protection

Hardware (minimum) 5 Megohms

Heater Current at 6.3 Volts . . . 450 ± 5% mA

Heater Warm-up Time (Note 2) . . 11 Seconds

Optical

Phosphor Number Aluminized P4

Light Transmittance at Center

(Approx.) 42%

Mechanical

Over-all Length 14.875" ± 0.281"

Neck Length 5.125" ± 0.125"

Greatest Dimensions of Tube: (Excluding

Mounting Lugs)

Diagonal 23.662" ± 0.125"

Width 20.654" ± 0.125"

Height 16.612" ± 0.125"

Minimum Useful Screen Dimensions

(projected):

Diagonal 22.312"

Horizontal Axis 19.250"

Vertical Axis 15.125"

Area 282 Sq. Inches

Implosion Protection Tension Band

with Mounting Lugs

Bulb Contact EIA J1-21

Base EIA B7-208

Basing EIA 8HR

Net Weight 27.5 Pounds

Bulb EIA J187K1

Ratings

Design Maximum System

Unless Otherwise Specified, Voltage Values are Positive and Measured with respect to Grid 1.

	23HQP4	23HWP4
Maximum Anode Voltage (Note 3)	23000	22000 Volts
Minimum Anode Voltage	12000	12000 Volts
Maximum Grid 4 (Focusing Electrode) Voltage	+1100, -550	+1100, -550 Volts
Maximum Grid 2 Voltage	550	70 Volts
Minimum Grid 2 Voltage	200	30 Volts

Cathode Voltage:

Maximum Negative Bias Value	0	0 Volts
Maximum Negative Peak Value	2	2 Volts
Maximum Positive Bias Value	154	154 Volts
Maximum Positive Peak Value	220	220 Volts

Maximum Heater-Cathode Voltage:

Heater Negative with respect to Cathode:		
During Warm-up Period not to Exceed 15 Seconds	450	450 Volts
After Equipment Warm-up Period	200	300 Volts
Heater Positive with respect to Cathode	200	200 Volts

Limiting Circuit Values

Maximum Grid 1 Circuit Resistance	1.5	1.5 Megohms
Minimum Grids 2 & 4 Circuit Resistance (Note 4)	10000	10000 Ohms

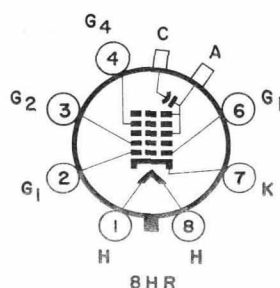
Typical Cathode Drive Operation

Unless Otherwise Specified, Voltage Values are Positive with respect to Grid 1.

Anode Voltage (Note 3)	16000	16000 Volts
Grid 4 Voltage (Focusing Electrode)	0 to 400	0 to 400 Volts
Grid 2 Voltage	400	50 Volts
Cathode Voltage for Raster Cutoff	39 to 94	35 to 55 Volts

Notes

1. Includes implosion protection hardware.
2. Heater warm-up time is defined as the time required for the voltage across the heater to reach 80% of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times rated heater voltage divided by rated heater current.
3. Operation with voltage in excess of 16KV may require shielding to limit radiation of very soft X-rays.
4. Protective resistance in the grids 2 & 4 circuits is advisable to prevent damage.



The information contained herein is supplied without assuming responsibility for infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Westinghouse Electric Corporation.

Television Picture Tubes

50 Volt Grid 2: 23HWP4
400 Volt Grid 2: 23HQP4

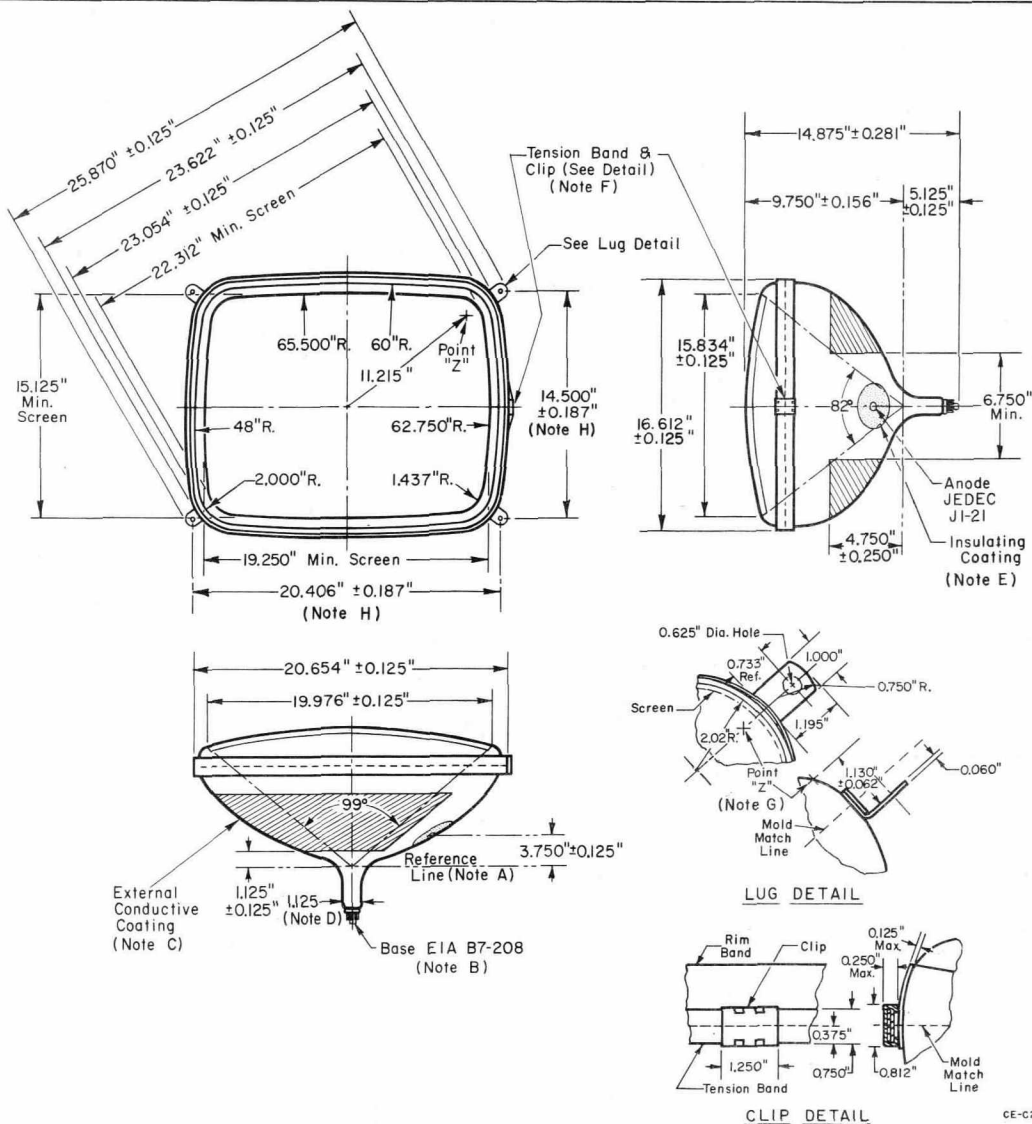
23" Black & White

Banded with Mounting Lugs Implosion Protection

110° Diagonal Deflection

282 Square Inch Screen

6.3 Volt, 0.45 Ampere Heater



Outline Notes

- Yoke Reference Line is determined by plane surface of flared end of EIA Reference Line Gauge No. 126 when seated on funnel of tube. Contour of yoke area is given by formula: $y = 0.58x^2 + 0.576$, parabolic.
- Lateral strains on base pins must be avoided. The socket should have flexible leads permitting movement. The perimeter of the base wafer will be inside a 1.750" diameter circle concentric with tube axis. Base pin 4 aligns with major axis within 30° and is on same side as anode terminal.
- External conductive coating forms supplementary filter capacitance and must be grounded.
- Neck diameter may be a maximum of 1.168" at the splice.
- Transparent insulating coating, 3" in diameter. Clean only with soft, dry, lintless cloth.
- Tension band must be grounded.
- Point "Z" is located on the tube diagonal at the faceplate surface.
- Tube shall fit on 0.312" pegs centered at corners of 14.500" x 20.406" rectangle. (Suggested stud diameter is 0.200" to 0.250").