

# National Video Corporation

4300 W. 47TH STREET CHICAGO 32, ILLINOIS  
CLIFFSIDE 4-5600

The 23FSP4 is a 23"-110° cathode ray tube with filled rim implosion protection and a 5 1/8" neck length. This tube has a straight gun which requires no ion trap and a 600 milliamperere 6.3 volt filament.

## ELECTRICAL DATA

Focusing Method	Electrostatic
Deflection Method	
Deflection Angles (Approximate)	
Diagonal	110 Degrees
Horizontal	99 Degrees
Vertical	82 Degrees
Direct Interelectrode Capacitances	
Cathode to all other electrodes (approximate)	5 uuf
Grid No. 1 to all other electrodes (approximate)	6 uuf
External conductive coating to anode (Note 1)	2,500 max. uuf 1,700 min. uuf
Resistance Between External Conductive Coating and Implosion Protection Hardware	50 min. megohms
Heater Current at 6.3 Volts	600 +30 ma
Heater Warm-up Time	11 seconds

## OPTICAL DATA

Phosphor Number	P4 Aluminized
Light Transmittance at Center (Approximate)	42 Per cent
Antireflection Treatment	No

## MECHANICAL DATA

Overall Length	14 7/8 +1/4 Inches
Neck Length	5 1/8 +1/8 Inches
Greatest Dimensions of Shell	
Diagonal	25 31/32 +3/32 Inches
Width	21 17/64 +1/16 Inches
Height	17 21/64 +1/16 Inches
Minimum Useful Screen Dimensions (Projected)	
Diagonal	22 5/16 Inches
Horizontal axis	19 1/4 Inches
Vertical axis	15 1/8 Inches
Area	282 Sq. Inches

Implosion Protection		Filled Rim
Bulb	JEDEC Designation	J-187-K1
Bulb Contact	JEDEC Designation	J1-21
Base	JEDEC Designation	B7-208
Basing	JEDEC Designation	8HR
Bulb Contact Alignment	J1-21 contact aligns with Pin Position No. 4 $\pm 30^\circ$ .	

RATINGS (Design Maximum System)

Unless otherwise specified, voltage values are positive and measured with respect to cathode.

Maximum Anode Voltage	23,000 volts
Minimum Anode Voltage	12,000 volts
Maximum Grid No. 4 (Focusing Electrode) Voltage	+1,000 -500 volts
Maximum Grid No. 2 Voltage	500 volts
Minimum Grid No. 2 Voltage	200 volts
Grid No. 1 Voltage	
Maximum negative value	154 volts dc
Maximum negative peak value	220 volts
Maximum positive value	0 volts dc
Maximum positive peak value	2 volts
Maximum Heater Voltage	6.9 volts
Minimum Heater Voltage	5.8 volts
Maximum 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 SERVICE

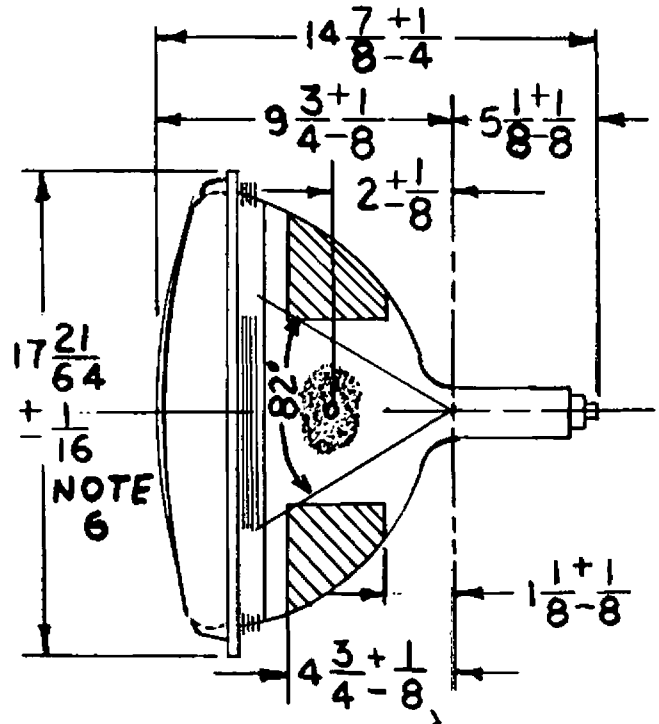
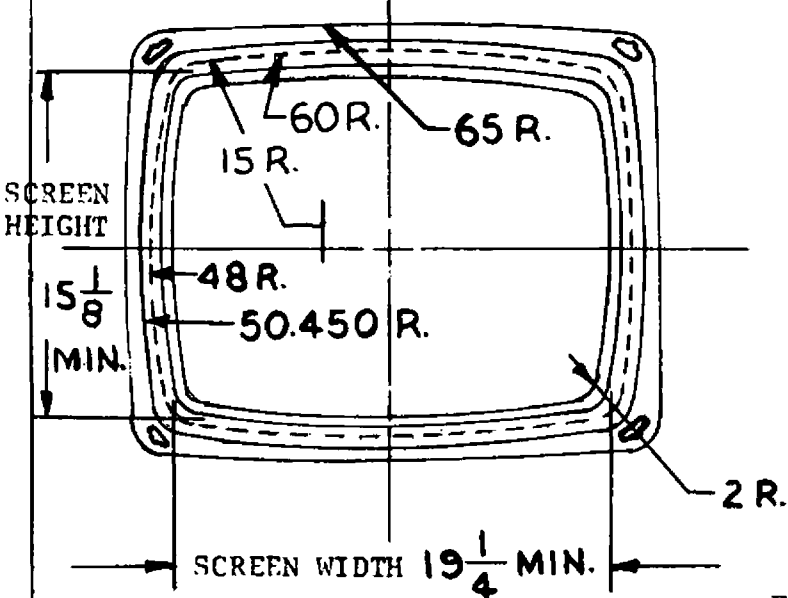
Unless otherwise specified, all voltage values are positive with respect to cathode.

Anode Voltage	16,000 volts dc
Grid No. 4 Voltage (Focusing Electrode)	0 to +400 volts dc
(Notes 3 and 4)	
Grid No. 2 Voltage	400 volts dc
Grid No. 1 Voltage (Note 2)	39 to 94 volts dc

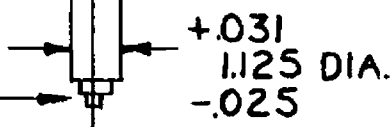
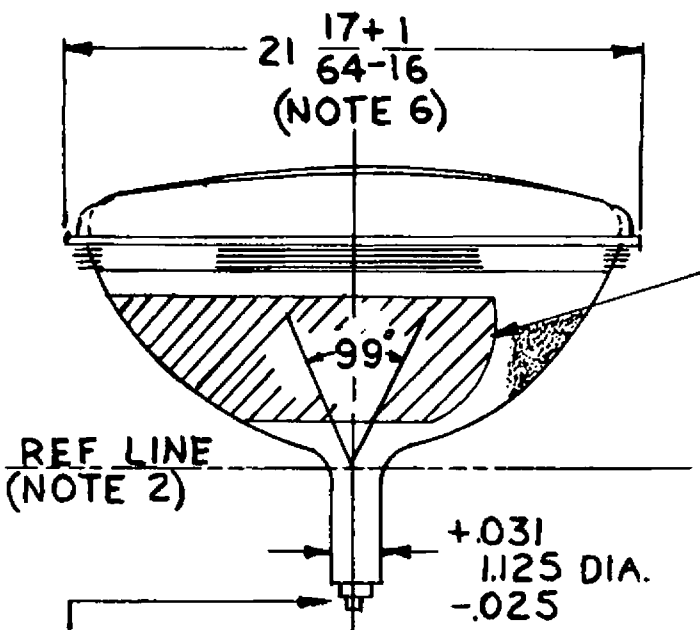
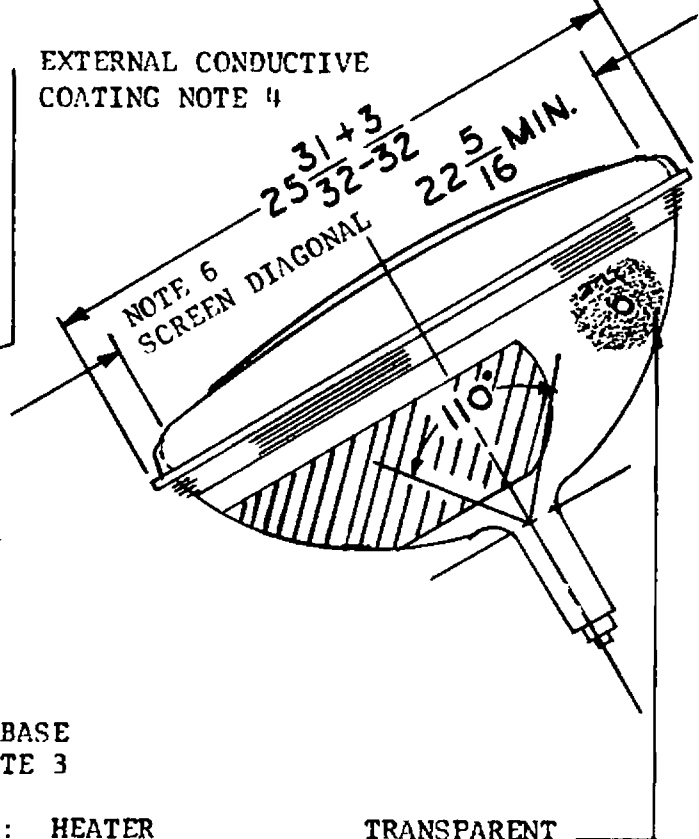
MAXIMUM CIRCUIT VALUES

Maximum Grid No. 1 Circuit Resistance	1.5 megohms
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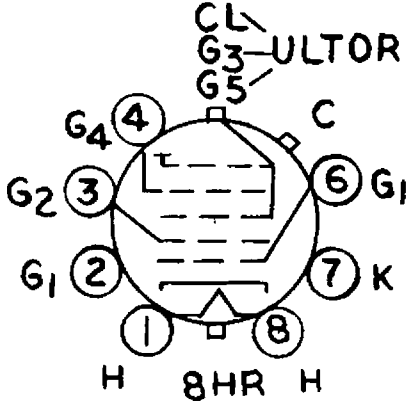
ULTOR RECESSED SMALL  
CAVITY CAP JEDEC J1-21  
NOTE 1



EXTERNAL CONDUCTIVE  
COATING NOTE 4



SMALL BUTTON NINEEIGHTAR 7 PIN BASE  
ARRANGEMENT 1 JEDEC #B7-208 NOTE 3



- 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: ULTOR (GRID NO. 3 GRID NO. 5 COLLECTOR)
  - C: EXTERNAL CONDUCTIVE COATING
- TRANSPARENT  
INSULATING  
COATING  
NOTE 5

DRAWN BY W.C. GRAF	SCALE	EFFECTIVE 2-12-64	DISTRIBUTION	DRAWING NO. 23 FSP4
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GRAPHS AND DRAWINGS

## Tube Outline with Essential Dimensions and Tolerances

## Pin Connections:

Pin 1	Heater	Pin 6	Grid #1
Pin 2	Grid #1	Pin 7	Cathode
Pin 3	Grid #2	Pin 8	Heater
Pin 4	Grid #4		

NOTES

1. Measured with implosion protection hardware connected to external coating.
2. Visual extinction of focused raster.
3. With the combined Grid No. 1 bias voltage and video-signal voltage adjusted to give an anode current of 100 microamperes on a 19 1/4" by 15 1/8" pattern from RCA 2F21 monoscope or equivalent.
4. Individual tubes will have satisfactory focus at some value between 0 and +400 volts.

NOTES FOR DIMENSIONAL OUTLINE

1. The plane through the tube axis and Pin No. 4 may vary from the plane through the tube axis and ultor terminal by angular tolerance (measured about the tube axis) of  $\pm 30^\circ$ . Ultor terminal is on same side as Pin No. 4.
2. With tube neck inserted through flared end of reference-line gauge JEDEC No. G-126 and with tube seated in gauge, the reference-line is determined by the intersection of the Plane CC' of the gauge with the glass funnel.
3. Socket for this base should not be rigidly mounted; it should have flexible leads and be allowed to move freely. The design of the socket should be such that the circuit wiring cannot impress lateral strains through the socket contacts on the base pins. Bottom circumference of base wafer will fall within a circle concentric with bulb axis and having a diameter of 1 3/4".
4. External conductive coating must be grounded.
5. To clean this area, wipe only with soft dry lint-less cloth.
6. Measured at O.D. of shell.