

NATIONAL UNION

21F4

"VIDEOTRON"

Low Voltage Electrostatic Focus  
Cylindrical Face Plate

Magnetic Deflection  
Ion-Trap Gun

Rectangular All Glass  
Filterglass Face Plate

The NU-21 F4 is a Rectangular Face, cylindrical front, direct-view, electrostatically focused, magnetically-deflected Television Picture Tube, providing a 19-1/8" x 13-7/8" picture.

The rectangular face of the NU-21 F4 uses a special "Filter" glass plate which effectively reduces ambient-light reflection, thus increasing picture contrast. Further, Advantage is taken of the well known optical properties of a cylindrical front surface to eliminate reflection and preserve sharp definition of the picture.

The tube has an electron gun designed to be used with a single-magnet external ion-trap magnet.

DATA

General:

Heater, for unipotential Cathode	
Voltage (AC or DC)	6.3 Volts
Current	0.6 ( $\pm$ 10%) Amp.
Direct interelectrode capacitance	
Grid No. 1 to all other electrodes	6 uuf
Cathode to all other Electrodes	5 uuf
Face plate (with about 66% light transmission)	Filter Glass
Phosphor	No. 4-Sulfide Type
Fluorescence	White
Phosphorescence	White
Persistence	Short
Focusing Method	Electrostatic
Deflection Method	Magnetic
Deflection Angles (Approx.)	
Diagonal	70°
Horizontal	65°
Vertical	50°
Ion-Trap gun	Requires external, single-field magnet
Overall Length	<del>22-1/16</del> $\pm$ 3/8"
Greatest Diagonal of Tube at Face	21-7/32 $\pm$ 3/16"
Greatest Width of Tube at Face	20-1/4" $\pm$ 3/16"
Greatest Height of Tube at Face	15-9/16 $\pm$ 3/16"
Screen Size	19-1/8 x 13-7/8

Cap	Recessed Small Cavity (JETEC No. J1-21)
Base	Small-Shell Duodecal 6-Pin (JETEC No. 86-63)
Mounting Position	Any

MAXIMUM RATINGS, Design-Center Values:

Collector <sup>1</sup> VOLTAGE	18,000 Max. Volts
GRID-No. 4 VOLTAGE (Focus)	500 Max. Volts
GRID-No. 2 VOLTAGE	500 Max. Volts
GRID-No. 1 VOLTAGE	
Negative Bias Value	125 Max. Volts
Positive Bias Value	0 Max. Volts
Positive Peak Value	2 Max. Volts
PEAK HEATER-CATHODE VOLTAGE:	
Heater negative with respect to cathode:	
During equipment warm-up period not exceeding 15 seconds	410 Max. Volts
After equipment warm-up period	180 Max. Volts
Heater positive with respect to cathode	180 Max. Volts

TYPICAL OPERATION:

Collector <sup>1</sup> Voltage <sup>2</sup>	14,000 Max. Volts
Grid-No. 4 Voltage (Focus)	200 $\pm$ 200 Volts
Grid-No. 2 Voltage	300 Volts
Grid-No. 1 Voltage for visual extinction of undeflected focused spot	-33 to -77 Volts
Grid-No. 4 Current	-15 to $\pm$ 25 uamp
Grid-No. 2 current	-15 to $\pm$ 25 uamp
Field strength of adjustable centering magnet	40 gaussess
Ion-Trap-Magnet Current (DC, approx.) <sup>4</sup>	75 ma
Field strength of adjustable centering magnet	0 to 8 gaussess

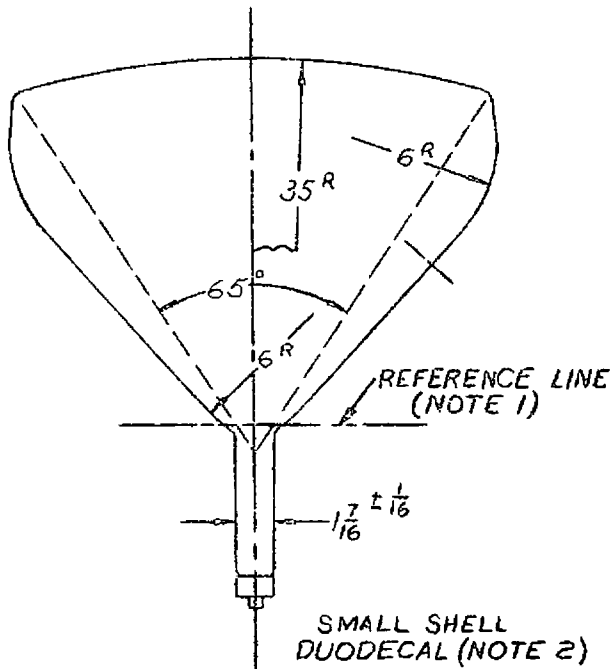
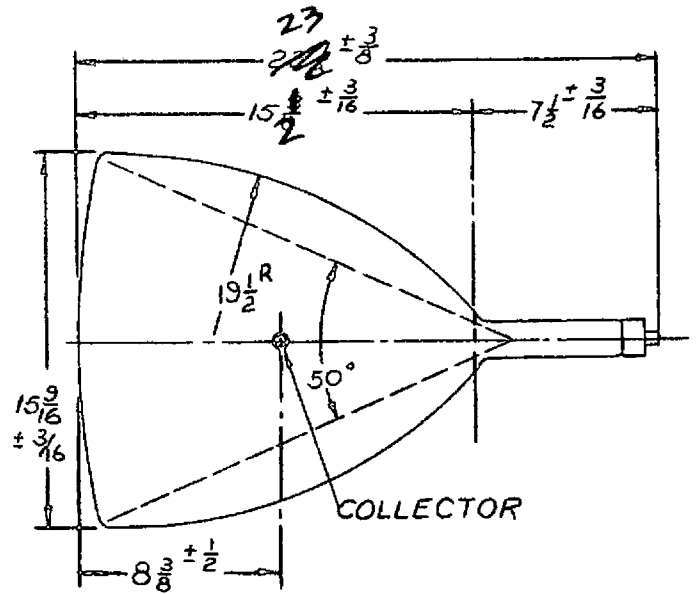
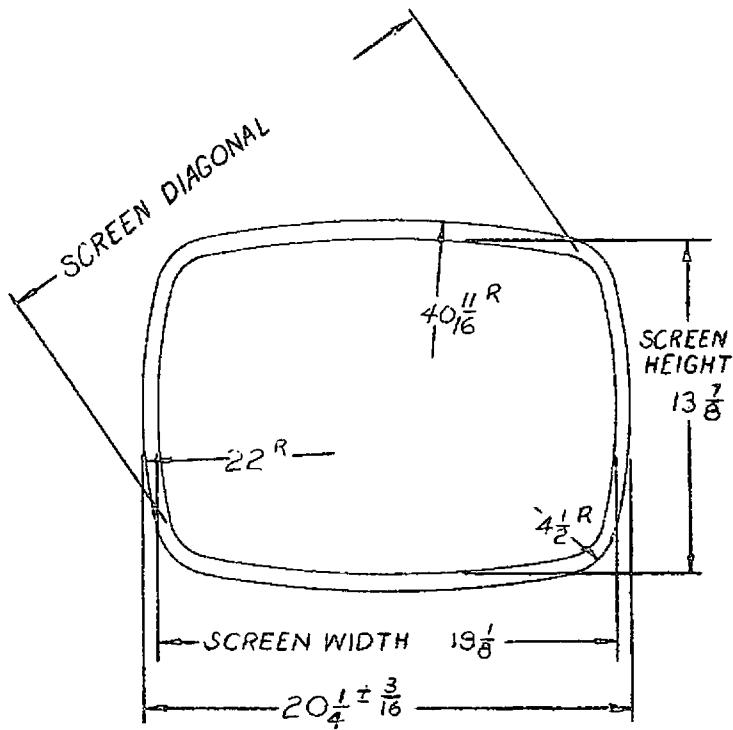
MAXIMUM CIRCUIT VALUES:

Grid-No. 1-circuit resistance	1.5 megohms
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1. Collector, Grid #3 and Grid #5 are connected internally and referred to herein as collector.
2. Brilliance and definition decrease with decreasing collector voltage. In general, the collector voltage should not be less than 14,000 volts.
3. Measured at center of field.
4. JETEC ion-trap magnet No. 111 located in optimum position and rotated to give maximum brightness.

X-Ray Warning - Because the rating of the tube permits operation at voltages as high as 19.8 KILOVOLTS (absolute value), shielding of the tube for X-ray radiation may be needed whenever the operating conditions involve voltages in excess of 16 kilovolts.

Socket Connections - Pin 1: Heater; Pin 2: Grid No. 1; Pin 6: Grid No. 4; Pin 10: Grid No. 2; Pin 11: Cathode; Pin 12: Heater; CAP: Grid No. 3, Grid No. 5, Collector; ~~Pin 3: Grid No. 1; Pin 4: Grid No. 2; Pin 5: Grid No. 3; Pin 7: Grid No. 4; Pin 8: Grid No. 5; Pin 9: Grid No. 6; Pin 13: Grid No. 7; Pin 14: Grid No. 8; Pin 15: Grid No. 9; Pin 16: Grid No. 10; Pin 17: Grid No. 11; Pin 18: Grid No. 12~~



NOTE 1: With tube neck inserted through flared end of reference-line gauge (JETEC No. 110) and with tube seated in gauge, the reference line is determined by the inter-section of the plane CC' of the gauge with the glass funnel.

NOTE 2: Socket for this base should not be rigidly mounted; it should have flexible leads and be allowed to move freely. Bottom circumference of base shell will fall within a circle concentric with bulb axis and having a diameter of 3".