



TYPE 10UP21 CATHODE-RAY TUBE

The Type 10UP- is a 10-inch electrostatic focus and magnetic deflection cathode-ray tube. It is similar to the Type 10KP- but with an electrostatic focus lens system and considerably improved resolution. It is designed for specific applications where high resolution is the prime requirement. The focus lens is designed to operate at or near cathode potential to afford substantially automatic focus, independent of accelerator voltage variations. A gray filter face plate is used in conjunction with a metal-backed screen for improved contrast and brightness.

GENERAL CHARACTERISTICSElectrical Data

Heater Voltage	6.3	Volts
Heater Current	$0.6 \pm 10\%$	Ampere
Focusing Method	Electrostatic	
Deflecting Method	Magnetic	
Deflecting Angle (Approx.)	50	Degrees
Phosphor	No. 21	
Fluorescence	Orange	
Phosphorescence	Orange	
Persistence	Long	
Direct Interelectrode Capacitances, Approx.		
Cathode to all other electrodes	5	uuf.
Grid No. 1 to all other electrodes	6.5	uuf.

Mechanical Data

Overall Length	$17 \frac{5}{8} \pm \frac{3}{8}$	Inches
Greatest Diameter of Bulb	$10 \frac{1}{2} \pm \frac{1}{8}$	Inches
Minimum Useful Screen Diameter	9	Inches
Bulb Contact (Recessed small cavity cap)	J1-21	
Base (Small shell duodecal 6-Pin)	B6-63	
Basing	12M	
Bulb Contact Alignment		
J1-21 contact aligns with vacant pin position No.3	± 10	Degrees

MAXIMUM RATINGS Design Center Values

Accelerator Voltage	12,000	Max. Volts D-C
Focusing Electrode Voltage	-500 to +1000	Max. Volts D-C
Grid No. 2 Voltage	700	Max. Volts D-C
Grid No. 1 Voltage		
Negative Bias Value	180	Max. Volts D-C
Positive Bias Value ¹	0	Max. Volts D-C
Positive Peak Value	2	Max. Volts
Peak Heater-Cathode Voltage		
Heater Negative with respect to cathode	180	Max. Volts D-C
Heater Positive with respect to cathode	180	Max. Volts D-C

TYPICAL OPERATING CONDITIONS

Accelerator Voltage ²	10,000	Volts D-C
Focusing Electrode Voltage ³	0 to +200	Volts D-C
Focusing Electrode Current	-15 to + 25	ua. D-C
Grid No. 2 Voltage	300	Volts D-C
Grid No. 1 Voltage ⁴	-28 to -72	Volts D-C
Line Width A ⁵	.013	Inch Max.
Spot Position (Undelected) ⁶	$\frac{1}{2}$	Inch

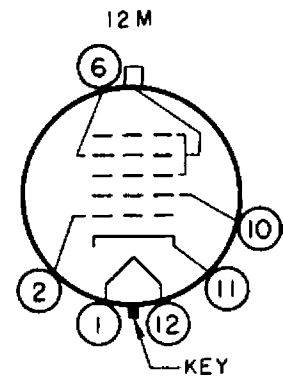
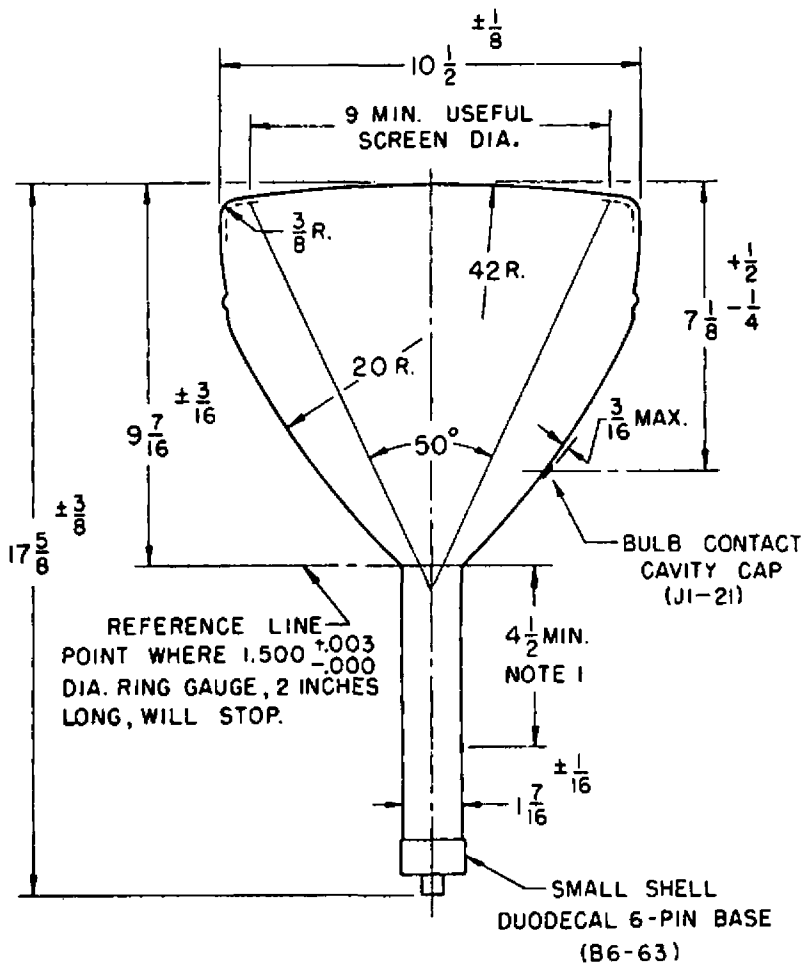
MAXIMUM CIRCUIT VALUES

Grid No. 1 Circuit Resistance	1.5	Max. Megohms
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NOTES

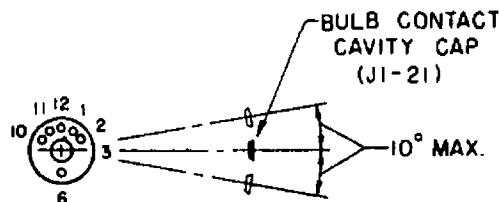
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1. At or near this rating, the effective resistance of the accelerator supply should be adequate to limit the accelerator input power to 6 watts.
2. Brilliance and definition decrease with decreasing accelerator voltage. In general, accelerator voltage should not be less than 7,000 volts.
3. With Grid No. 1 voltage adjusted to produce an accelerator current of 50 ua., with the pattern adjusted for best overall focus. Measured with a 525-line interlaced and synchronized 6x8-inch pattern with interlaced line blanking.
4. Visual extinction of focused, 6x8-inch pattern.
5. Measured with a 525-line interlaced and synchronized pattern with interlaced line blanking. Pattern width adjusted to 90% of minimum useful screen diameter. $I_b = 25$ ua., measured with interlaced line blanking. Line width is the merged raster width divided by the number of lines (262.5).
6. The center of the undeflected, focused spot will fall within a circle of 1/2-inch radius concentric with the center of the tube face.



BOTTOM VIEW OF BASE

PIN NO.	ELEMENT
1	HEATER
2	GRID NO.1
6	FOCUSING ELECTRODE
10	GRID NO.2
11	CATHODE
12	HEATER
CAP	ACCELERATOR



BOTTOM VIEW OF TUBE

NOTE 1 - NECK O.D. TO BE $1 \frac{7}{16} \pm \frac{1}{32}$ WITHIN THIS SPACE.

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