



IEPI

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

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DATA

General:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current $0.6 \pm 10\%$ amp

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to all other electrodes 6.5 $\mu\mu\text{f}$ Deflecting electrode DJ₁ to
deflecting electrode DJ₂ 1.7 $\mu\mu\text{f}$ Deflecting electrode DJ₃ to
deflecting electrode DJ₄ 0.6 $\mu\mu\text{f}$ DJ₁ to all other electrodes 5 $\mu\mu\text{f}$ DJ₂ to all other electrodes 5 $\mu\mu\text{f}$ DJ₃ to all other electrodes 3.8 $\mu\mu\text{f}$ DJ₄ to all other electrodes 3.8 $\mu\mu\text{f}$

Faceplate, Flat Clear Glass

Phosphor (For Curves, see front of this Section). P1

Fluorescence. Green

Phosphorescence Green

Persistence Medium

Focusing Method Electrostatic

Deflection Method Electrostatic

Maximum Overall Length. 4-1/16"

Maximum Diameter. 1-1/4" $\pm$ 1/16"

Minimum Useful Screen Diameter. 1-1/16"

Mounting Position Any

Weight (Approx.). 2 oz

Bulb. T-10

Base. Small-Button Unidekar 11-Pin (JETEC No.E11-22)

Basing Designation for BOTTOM VIEW. 11V

Pin 1-Heater

Pin 2-Heater

Pin 3-Grid No.1

Pin 4-Cathode

Pin 5-Grid No.3

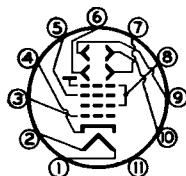
Pin 6-Deflecting
Electrode
DJ₄Pin 7-Deflecting
Electrode
DJ₃

Pin 8-Ultor

(Grid No.2,

Grid No.4,

Collector)

Pin 9-Deflecting
Electrode
DJ₂Pin 10-Deflecting
Electrode
DJ₁Pin 11-Internal
Connection-
Do Not Use

*DJ₁ and DJ₂ are nearer the screen
DJ₃ and DJ₄ are nearer the base*



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With DJ₂ positive with respect to DJ₁, the spot is deflected toward the midpoint between pins 6 and 7. With DJ₃ positive with respect to DJ₄, the spot is deflected toward the midpoint between pins 9 and 10.

The angle between the trace produced by DJ₃ and DJ₄ and its intersection with the plane through the tube axis and the midpoint between pins 9 and 10 does not exceed $\pm 10^\circ$.

The angle between the trace produced by DJ₃ and DJ₄ and the trace produced by DJ₁ and DJ₂ is $90^\circ \pm 3^\circ$.

Maximum Ratings, Design-Center Values:

ULTOR VOLTAGE	1500 max.	volts
GRID-No.3 VOLTAGE	1200 max.	volts
GRID-No.1 VOLTAGE:		
Negative bias value	200 max.	volts
Positive bias value	0 max.	volts
Positive peak value	2 max.	volts
PEAK VOLTAGE BETWEEN ULTOR AND ANY DEFLECTING ELECTRODE.	500 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode.	125 max.	volts
Heater positive with respect to cathode.	125 max.	volts

Equipment Design Ranges:

For any ultor voltage (E_{c4}) between
recommended minimum* and 1500 volts

Grid-No.3 Voltage for Focus	10% to 30% of E_{c4}	volts
Grid-No.1 Voltage for Visual Extinction of Undelected Focused Spot.	-1.4% to -4.2% of E_{c4}	volts
Grid-No.3 Current for Any Operating Con- dition.	-15 to +10	μ amp
Deflection Factors:		
DJ ₁ & DJ ₂	210 to 310 vdc/in./kv of E_{c4}	
DJ ₃ & DJ ₄	240 to 350 vdc/in./kv of E_{c4}	
Spot Position	##	

Examples of Use of Design Ranges:

For ultor voltage of	500	1000	volts
Grid-No.3 Voltage for Focus	50 to 150	100 to 300	volts

* Brilliance and definition decrease with decreasing ultor voltage. Recommended minimum for the IEP1 in general service is 500 volts, but a value as low as 300 volts may be used under conditions of low-velocity deflection and low ambient light levels. For operation between 300 and 500 volts, it is essential that the ultor voltage be applied before beam-current flow. Otherwise, a screen charge may develop to block off or distort the scanning pattern.

##: See next page.



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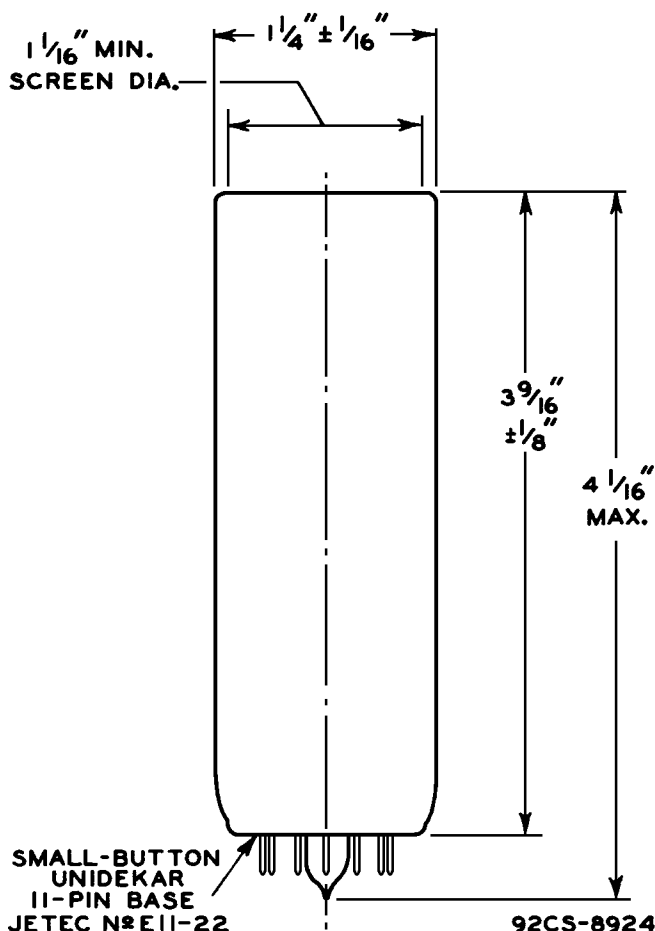
For ultor voltage of	500	1000	volts
Grid-No.1 Voltage for Visual Extinction of Undelected Focused Spot	-7 to -21	-14 to -42	volts
Deflection Factors:			
DJ ₁ & DJ ₂	105 to 155	210 to 310	volts dc/in.
DJ ₃ & DJ ₄	120 to 175	240 to 350	volts dc/in.

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1.5 max.	megohms
Resistance in Any Deflecting- Electrode Circuit [■]	2.0 max.	megohms

^{##} The center of the undelected focused spot will fall within a circle having 2.5-mm radius concentric with the center of the tube face.

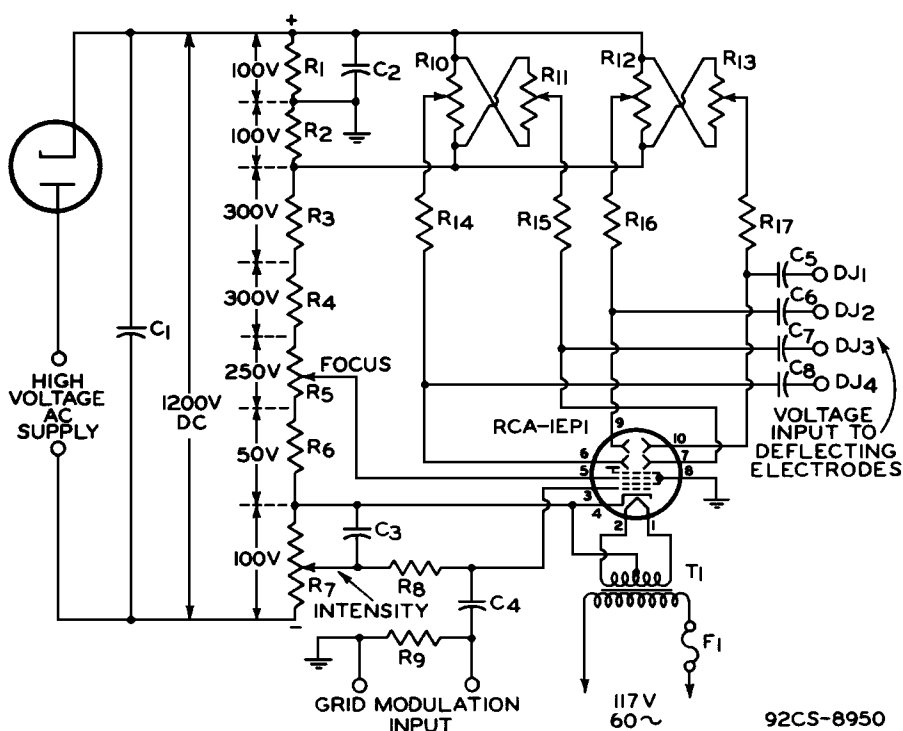
[■] It is recommended that the deflecting-electrode-circuit resistances be approximately equal.





OSCILLOGRAPH TUBE

TYPICAL OSCILLOGRAPH CIRCUIT



92CS-8950

C1: 0.5 μ f, 2000 volts
 C2: 1 μ f, 200 volts
 C3: 1 μ f, 200 volts
 C4: 0.05 μ f, 1600 volts
 C5 C6 C7 C8: 0.05 μ f, 600 volts
 R1 R2: 510,000 ohms, 1/2 watt
 R3 R4: 300,000 ohms, 1 watt
 R5: 250,000-ohms, 2-watt potentiometer
 R6: 51,000 ohms, 1/2 watt
 R7: 100,000-ohms, 1/2-watt potentiometer
 R8: 510,000 ohms, 1/2 watt

R9: 5 megohms, 1/2 watt
 R10 R11: Dual 1-megohm potentiometer
 R12 R13: Dual 1-megohm potentiometer
 R14 R15 R16 R17: 1.5 megohms, 1/2 watt
 T1: Transformer, 6.3 volts at 1 ampere, insulated for 2000 volts, such as Thordarson T21F08
 F1: 1-ampere fuse

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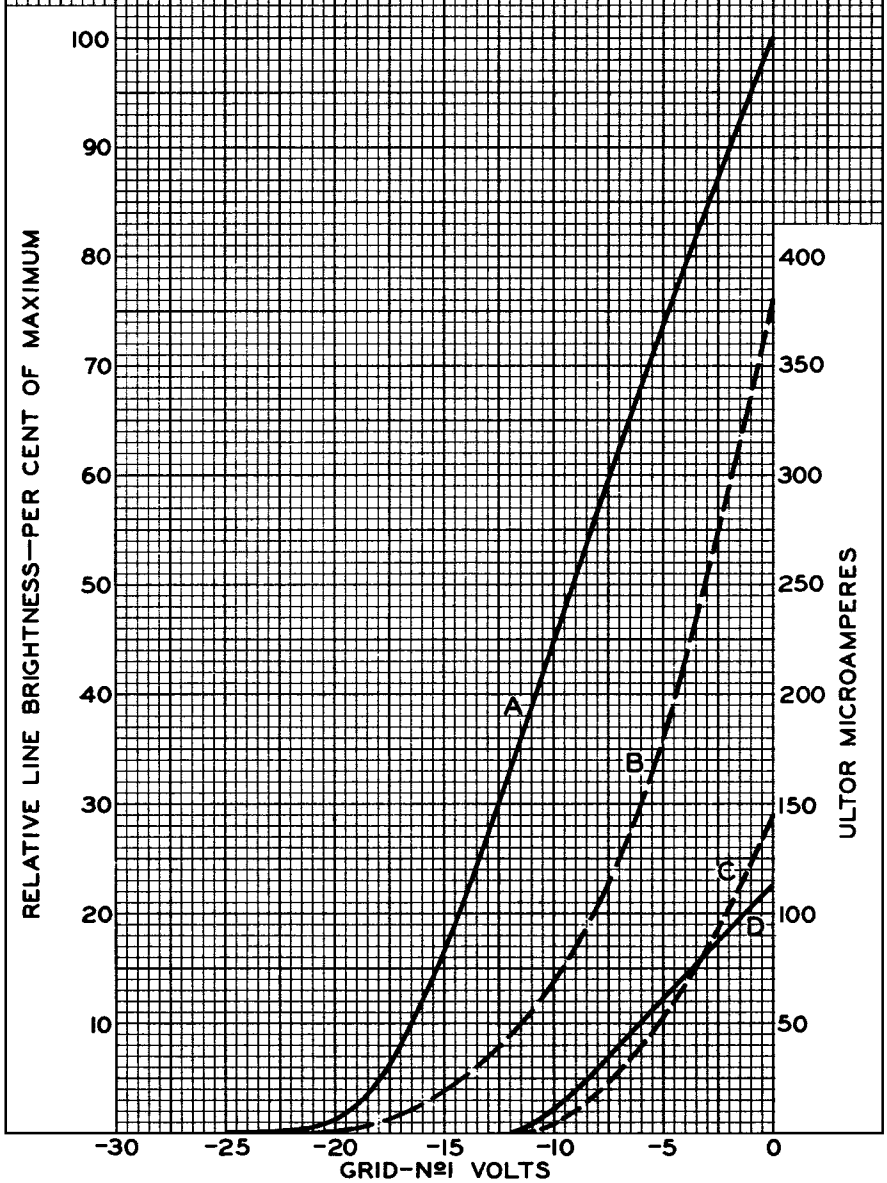
AVERAGE CHARACTERISTICS

 $E_f = 6.3$ VOLTSGRID-N₂ 3 VOLTS ADJUSTED FOR FOCUS

CURVE	ULTOR VOLTS
A	1000
B	1000
C	500
D	500

— RELATIVE LINE BRIGHTNESS

- - - ULTOR MICROAMPERES



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92CM-8938

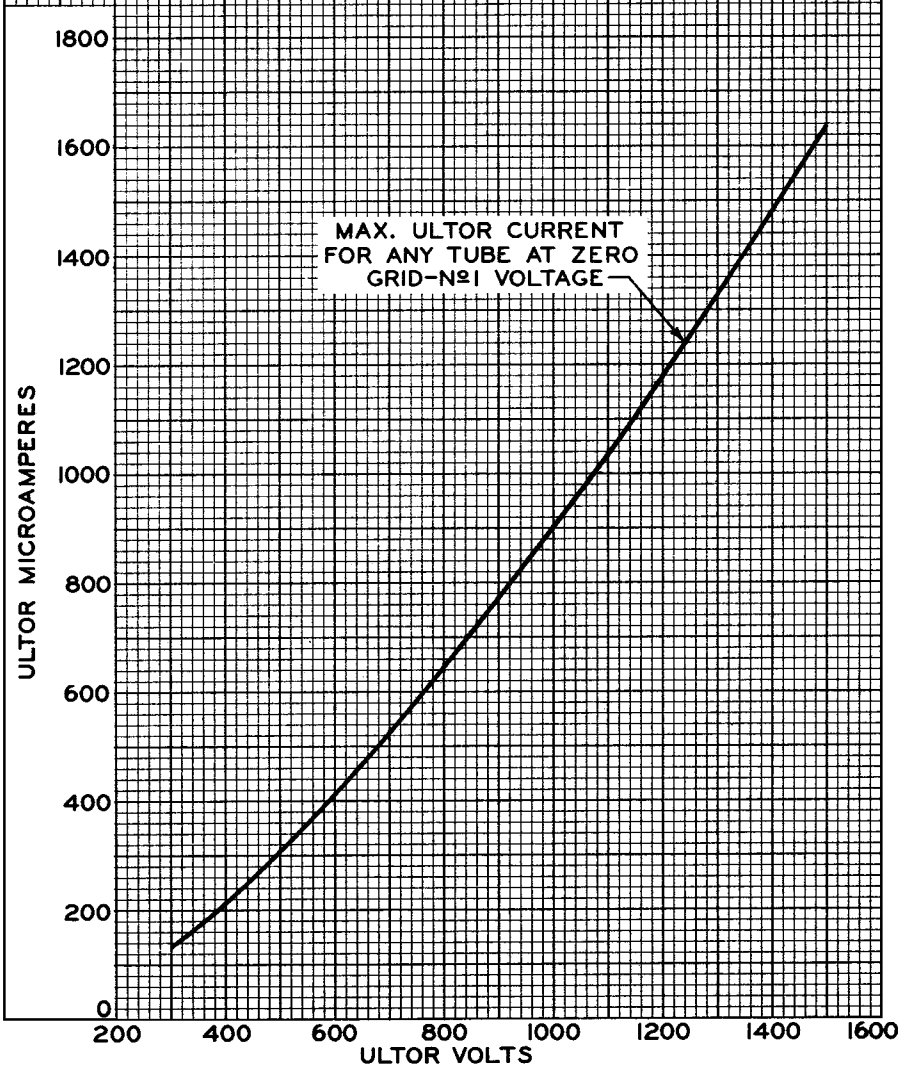
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MAXIMUM ULTOR-CURRENT REQUIREMENTS FROM POWER SUPPLY

$E_f = 6.3$ VOLTS
GRID-Nº3 VOLTS ADJUSTED FOR FOCUS



MAX. ULTOR CURRENT
FOR ANY TUBE AT ZERO
GRID-Nº1 VOLTAGE

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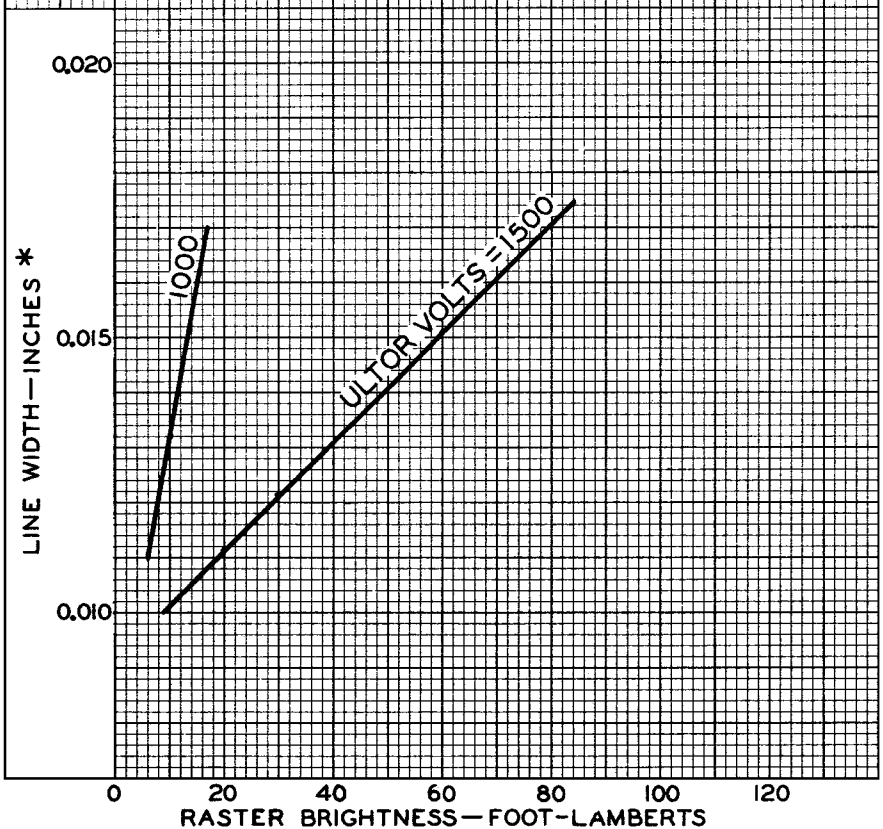


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AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-N $\approx$ 3 VOLTS ADJUSTED FOR SHARP FOCUS
AT CENTER OF RASTER.
GRID-N $\approx$ 1 VOLTS ADJUSTED TO GIVE INDICATED
BRIGHTNESS VALUE ON A 2 CM x 2 CM, 25-LINE RASTER.
* LINE WIDTH MEASURED BETWEEN POINTS WHERE
BRIGHTNESS WAS APPROX. $\frac{1}{2}$ THAT AT CENTER OF LINE.



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92CM-8975R1