



IEPI

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

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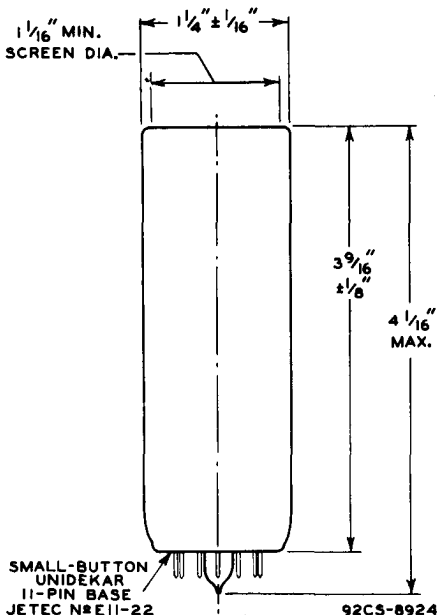
For ultor voltage of	500	1000	volts
Grid-No.1 Voltage for Visual Extinction of Undelected Focused Spot	-7 to -21	-14 to -42	volts
Deflection Factors:			
DJ ₁ & DJ ₂	105 to 155	210 to 310	volts dc/in.
DJ ₃ & DJ ₄	120 to 175	240 to 350	volts dc/in.

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 undeflected focused spot will fall within a circle having 2.5-mm radius concentric with the center of the tube face.

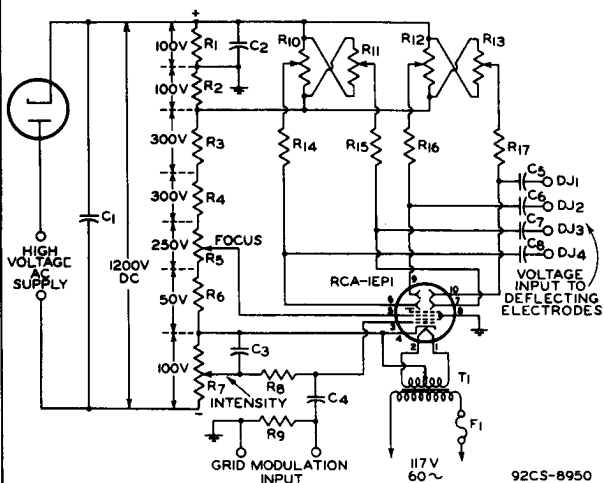
■ It is recommended that the deflecting-electrode-circuit resistances be approximately equal.





OSCILLOGRAPH TUBE

TYPICAL OSCILLOGRAPH CIRCUIT



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 po-
 tentiometer
 R6: 51,000 ohms, 1/2 watt
 R7: 100,000-ohms, 1/2-watt po-
 tentiometer
 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

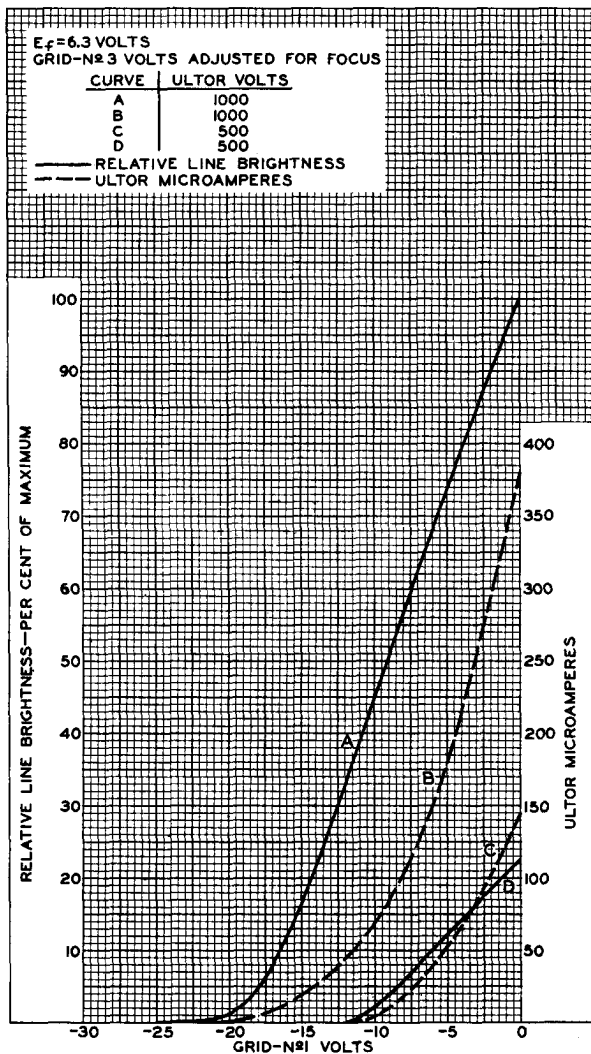
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AVERAGE CHARACTERISTICS



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92CM-8938

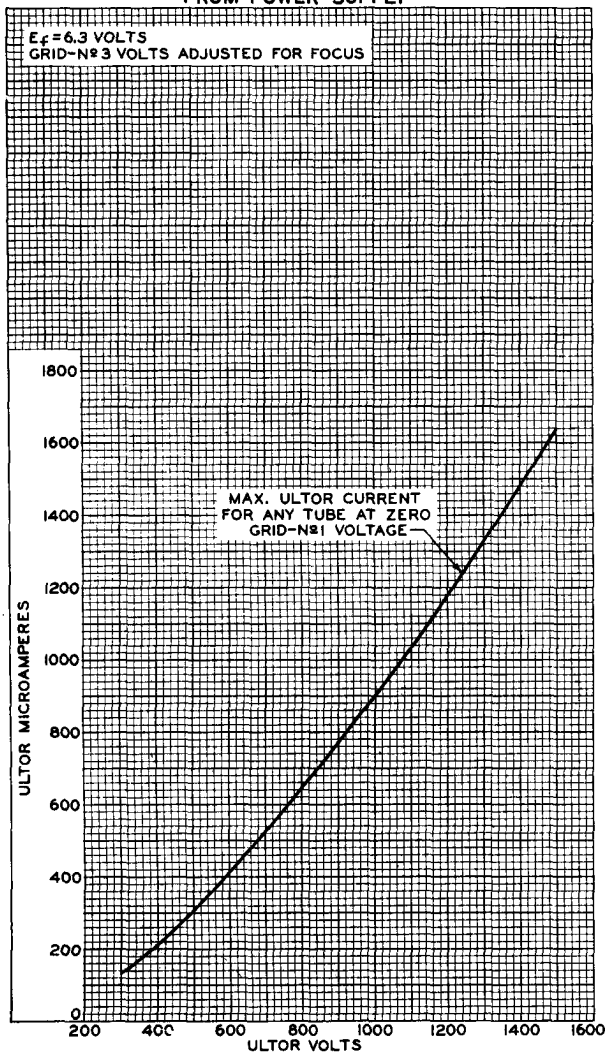
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MAXIMUM ULTOR-CURRENT REQUIREMENTS FROM POWER SUPPLY



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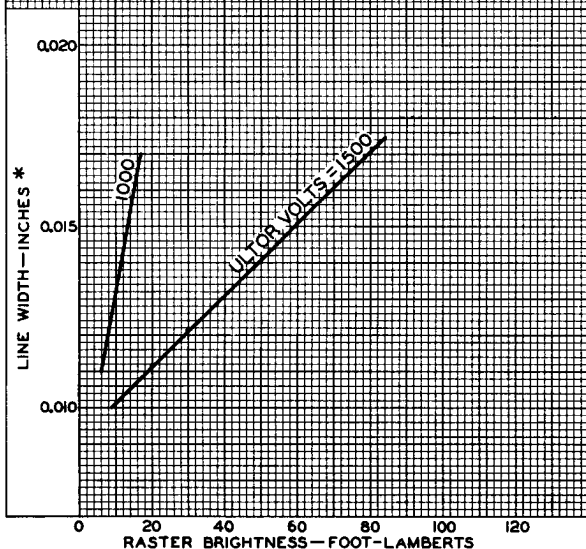
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AVERAGE CHARACTERISTICS

 $E_f = 6.3$ VOLTSGRID-N $\&$ 3 VOLTS ADJUSTED FOR SHARP FOCUS
AT CENTER OF RASTER.GRID-N $\&$ 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



1EP2

1EP2

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

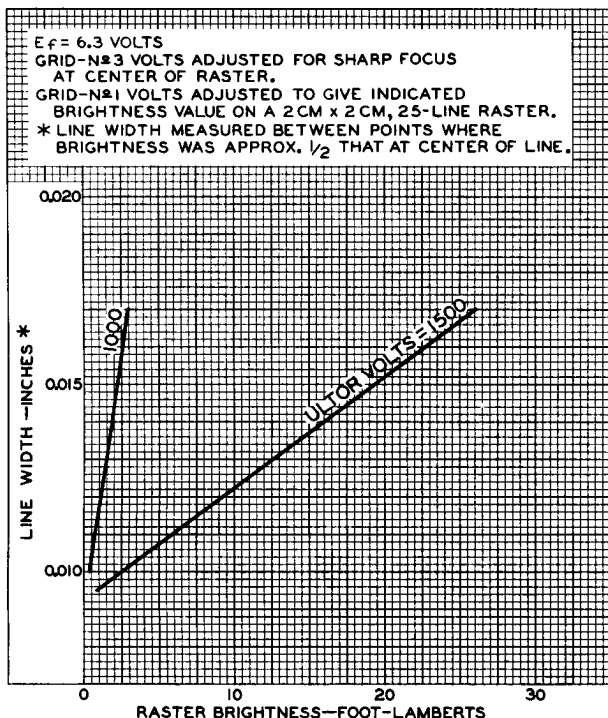
The 1EP2 is the same as the 1EP1 except for the following items:

General:

Phosphor (For Curves, see front of this Section) P2
 Fluorescence Greenish-Yellow
 Phosphorescence Greenish-Yellow
 Persistence Long

In general, operation of the 1EP2 at an ultor voltage less than 750 volts is not recommended.

AVERAGE CHARACTERISTICS



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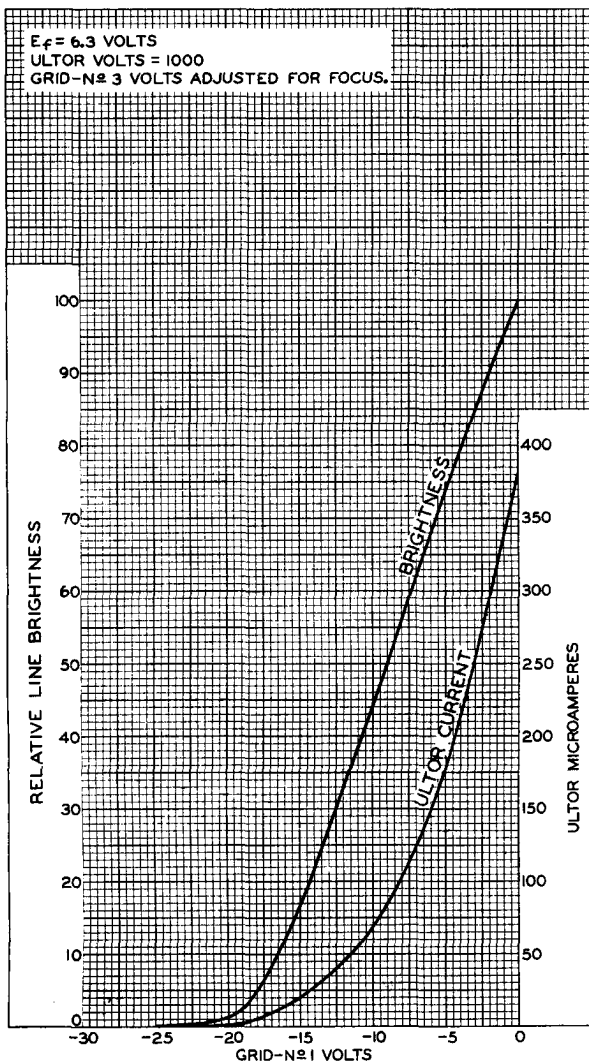
92CM-9189

IEP2



IEP2

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92CM-9298



IEP11

IEP11

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

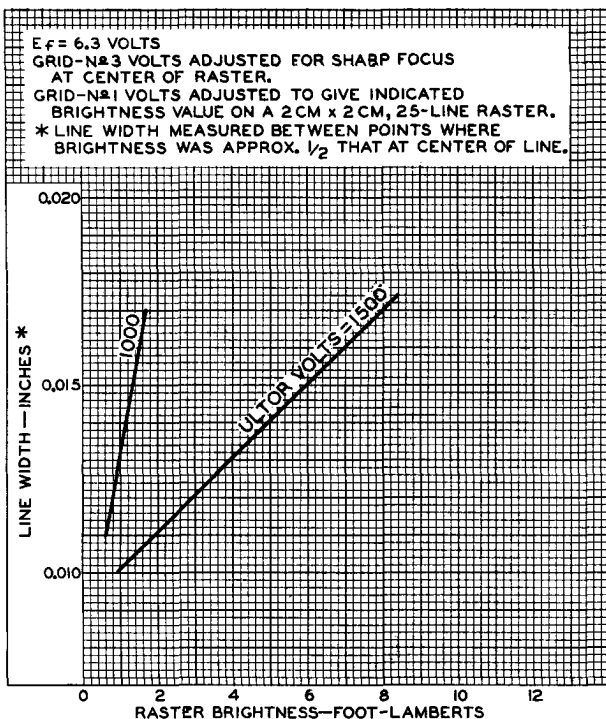
ELECTROSTATIC DEFLECTION

The 1EP11 is the same as the 1EP1 except for the following items:

General:

Phosphor (For Curves, see front of this Section). P11
 Fluorescence. Blue
 Phosphorescence Blue
 Persistence Short

In general, operation of the 1EP11 at an ultor voltage less than 750 volts is not recommended.

AVERAGE CHARACTERISTICS

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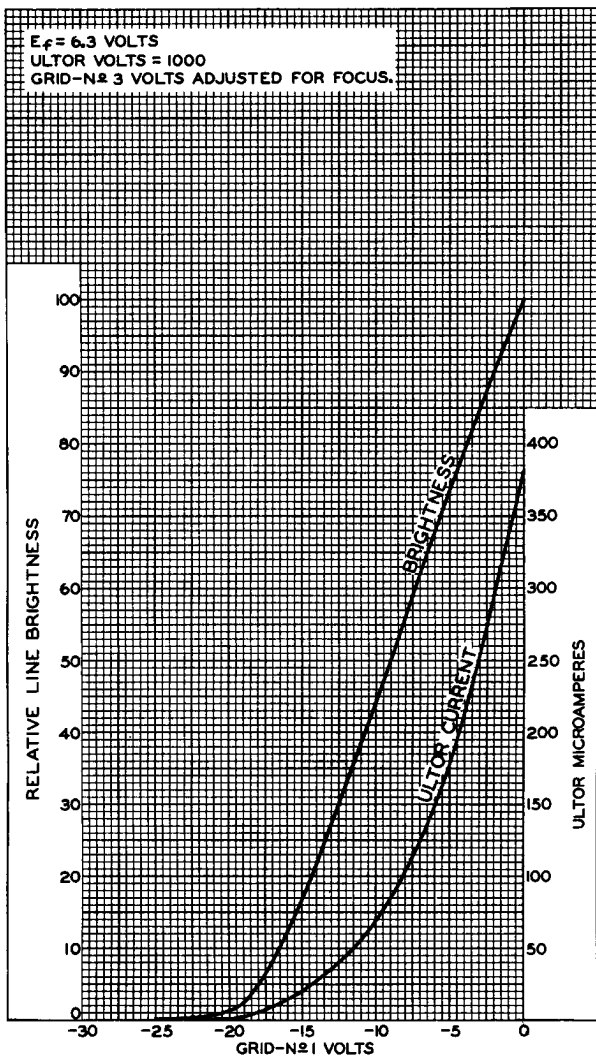
92CM-9188

IEP11



IEP11

AVERAGE CHARACTERISTICS



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