



IEPI

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OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.6 ± 10% amp

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to all other electrodes 6.5 μμf

Deflecting electrode DJ₁ to
deflecting electrode DJ₂ 1.7 μμf

Deflecting electrode DJ₃ to
deflecting electrode DJ₄ 0.6 μμf

DJ₁ to all other electrodes 5 μμf

DJ₂ to all other electrodes 5 μμf

DJ₃ to all other electrodes 3.8 μμf

DJ₄ to all other electrodes 3.8 μμf

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" ± 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
DJ₄

Pin 7 - Deflecting
Electrode
DJ₃



Pin 8 - Ultor

(Grid No.2,
Grid No.4,
Collector)

Pin 9 - Deflecting
Electrode
DJ₂

Pin 10 - Deflecting
Electrode
DJ₁

Pin 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 DJ_2 positive with respect to DJ_1 , the spot is deflected toward the midpoint between pins 6 and 7. With DJ_3 positive with respect to DJ_4 , the spot is deflected toward the midpoint between pins 9 and 10.

The angle between the trace produced by DJ_3 and DJ_4 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 DJ_3 and DJ_4 and the trace produced by DJ_1 and DJ_2 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 Condition.	-15 to +10	μamp
Deflection Factors:		
DJ_1 & DJ_2	210 to 310 v dc/in./kv of E_{c4}	
DJ_3 & DJ_4	240 to 350 v dc/in./kv of E_{c4}	
Spot Position	**	

Examples of Use of Design Ranges:

<i>For ultor voltage of</i>	<i>500</i>	<i>1000</i>	<i>volts</i>
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 1EPI 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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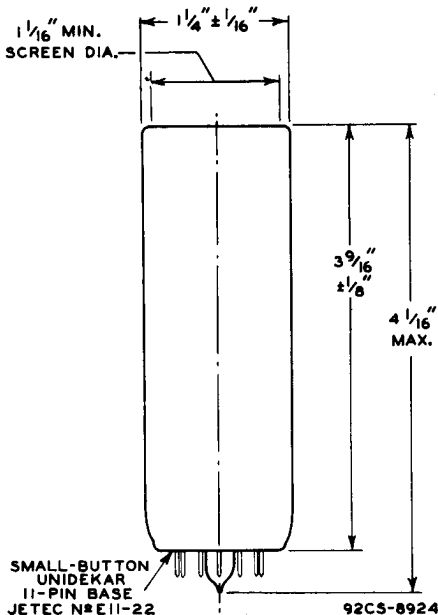
OSCILLOGRAPH TUBE

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

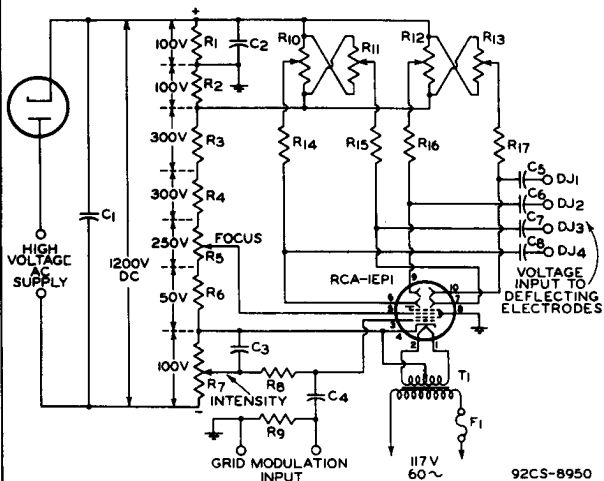
- ## The center of the undeflected focused spot will fall within a circle having 2.5-mm radius concentric with the center of the tube face.
- It is recommended that the deflecting-electrode-circuit resistances be approximately equal.





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 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

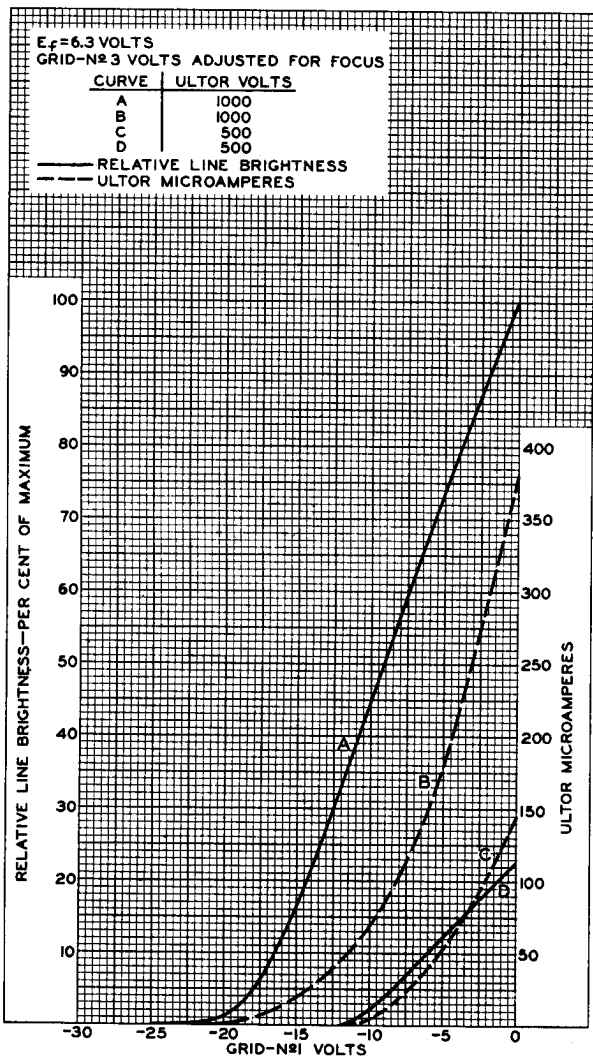
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AVERAGE CHARACTERISTICS



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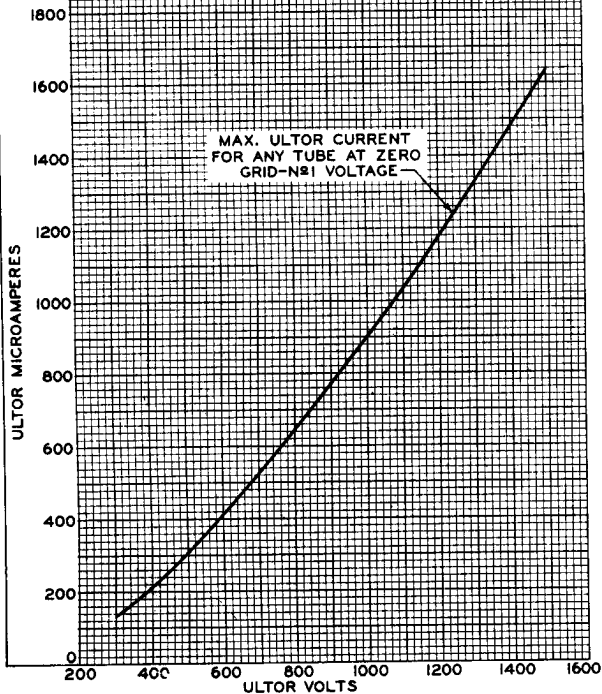
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MAXIMUM ULTOR-CURRENT REQUIREMENTS
FROM POWER SUPPLY

$E_f = 6.3$ VOLTS
GRID-N $\#$ 3 VOLTS ADJUSTED FOR FOCUS



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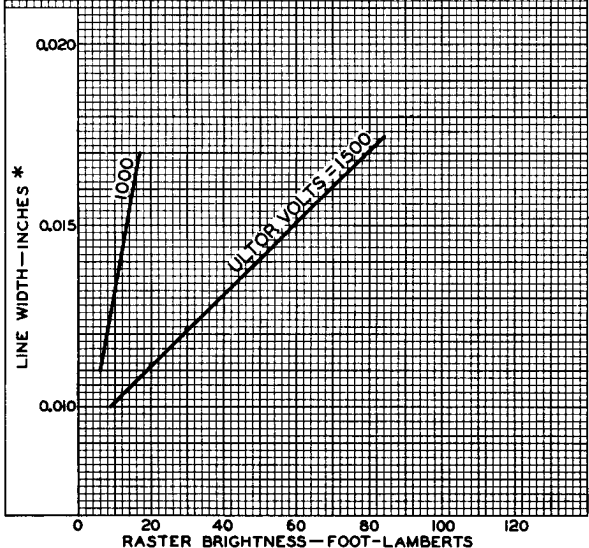


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AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
GRID-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:

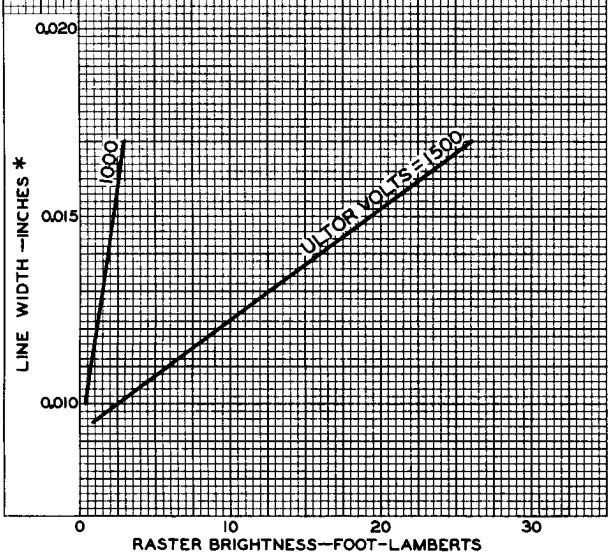
General:

- 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 volt-
age less than 750 volts is not recommended.

AVERAGE CHARACTERISTICS

$E_f = 6.3$ VOLTS
 GRID-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.

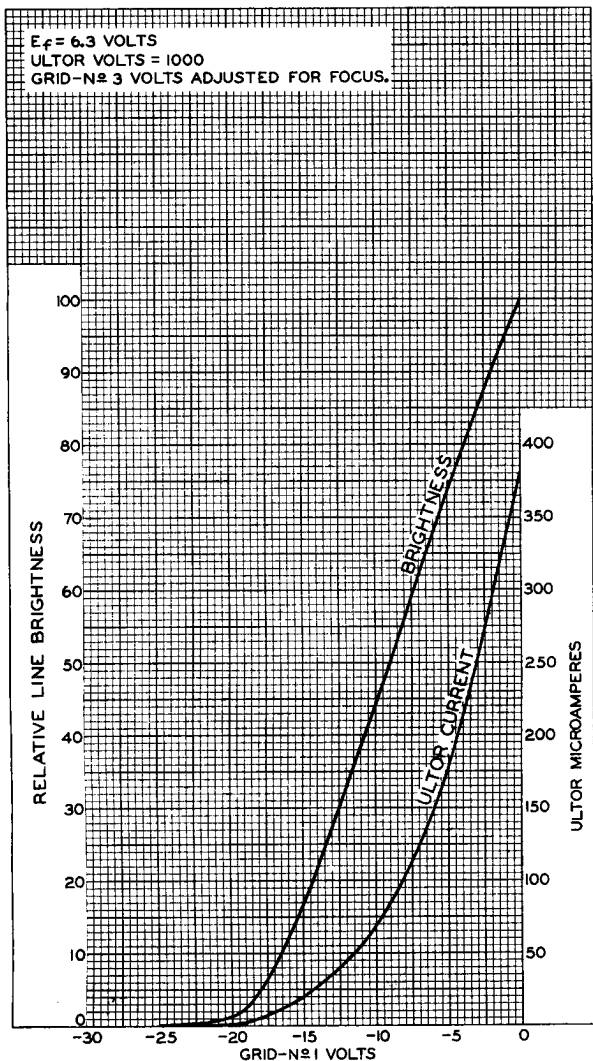


IEP2



IEP2

AVERAGE CHARACTERISTICS



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92CM-9298



1EP11

1EP11

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

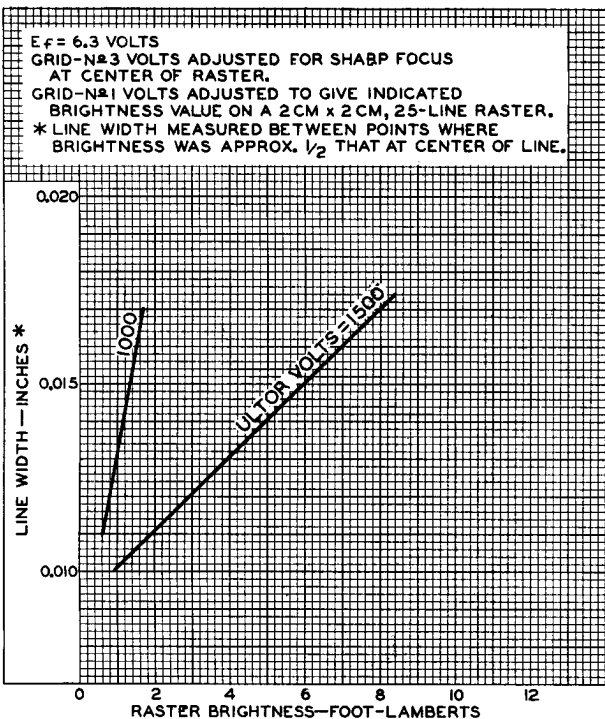
The 1EP11 is the same as the 1EP1 except for the following items:

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

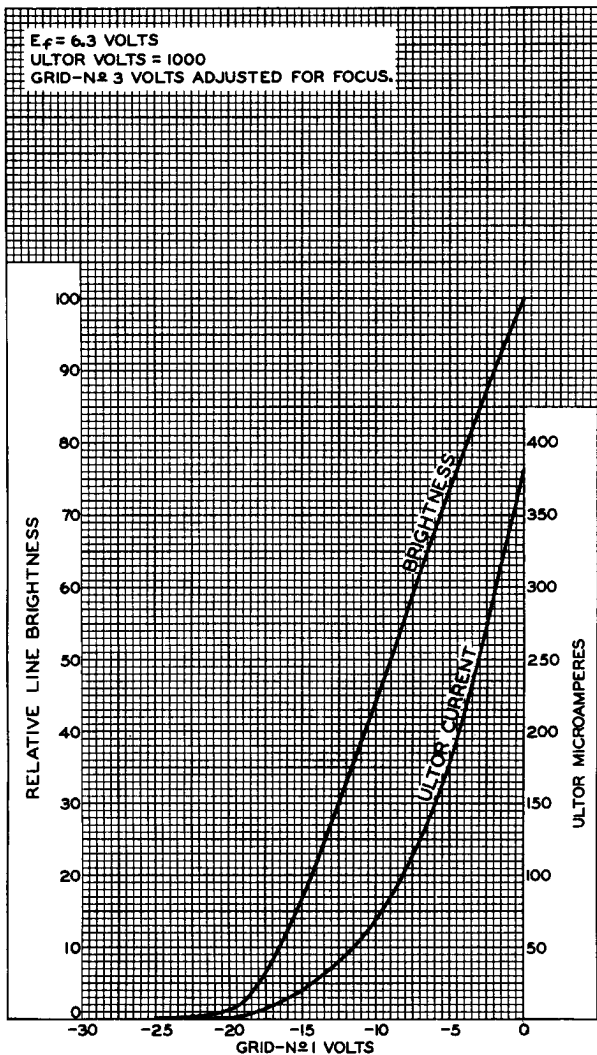


IEP11



IEP11

AVERAGE CHARACTERISTICS



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