



3KPI

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 8 μf Deflecting electrode DJ₁ todeflecting electrode DJ₂. 2.5 μf Deflecting electrode DJ₃ todeflecting electrode DJ₄. 2.5 μf DJ₁ to all other electrodes 11 μf DJ₂ to all other electrodes 8 μf DJ₃ to all other electrodes 7 μf DJ₄ to all other electrodes 8 μf

Faceplate Clear Glass

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

Fluorescence. Green

Phosphorescence Green

Persistence Medium

Focusing Method Electrostatic

Deflection Method Electrostatic

Overall Length. $11\frac{1}{2}'' \pm \frac{1}{4}''$ Greatest Diameter of Bulb $3'' \pm \frac{1}{16}''$ Minimum Useful Screen Diameter. $2\frac{3}{4}''$

Weight (Approx.). 9 oz

Mounting Position Any

Eulb. J-24

Base. Medium-Shell Magnal 11-Pin (JETEC No.B11-66)

Basing Designation for BOTTOM VIEW. 11M

Pin 1 - Heater

Pin 2 - Grid No.1

Pin 3 - Cathode

Pin 4 - Grid No.3

Pin 5 - Deflecting

Electrode

DJ₃

Pin 6 - Deflecting

Electrode

DJ₄

Pin 7 - Ultor

(Grid No.2,

Grid No.4,

Collector)

Pin 8 - Deflecting

Electrode

DJ₂

Pin 9 - Deflecting

Electrode

DJ₁

Pin 10 - Internal

Connection-

Do Not Use

Pin 11 - Heater

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

← Indicates a change.

3KP1



3KP1

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With DJ₁ positive with respect to DJ₂, the spot is deflected toward pin 4. With DJ₃ positive with respect to DJ₄, the spot is deflected toward pin 1.

The plane through the tube axis and pin 1 may vary from the trace produced by DJ₃ and DJ₄ by $\pm 10^\circ$ (measured about the tube axis).

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

Maximum Ratings, Design-Center Values:

ULTOR VOLTAGE	2500 max.	volts
→ ULTOR INPUT (AVERAGE)	6 max.	watts
GRID-No.3 VOLTAGE	1000 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 2500 volts

Grid-No.3 Voltage		
for Focus	16% to 30% of E_{c4}	volts
→ Grid-No.1 Voltage for		
Visual Extinction of		
Undeflected Focused		
Spot.	1.9% to 4.5% of E_{c4}	volts
Grid-No.3 Current for		
Any Operating Condi-		
tion.		
	-15 to +10	μ amp
Deflection Factors:		
DJ ₁ & DJ ₂	50 to 68	v dc/in./kv of E_{c4}
DJ ₃ & DJ ₄	38 to 52	v dc/in./kv of E_{c4}
Spot Position	##	

Examples of Use of Design Ranges:

For ultor voltage of	1000	2000	volts
Grid-No.3 Voltage			
for Focus	160 to 300	320 to 600	volts

* Brilliance and definition decrease with decreasing ultor voltage. Recommended minimum for the 3KP1 in general service is 1000 volts but a value as low as 500 volts may be used under conditions of low-velocity deflection and low ambient-light levels.

The center of the undeflected focused spot will fall within a circle having 7.5-mm radius concentric with the center of the tube face.

→ Indicates a change.



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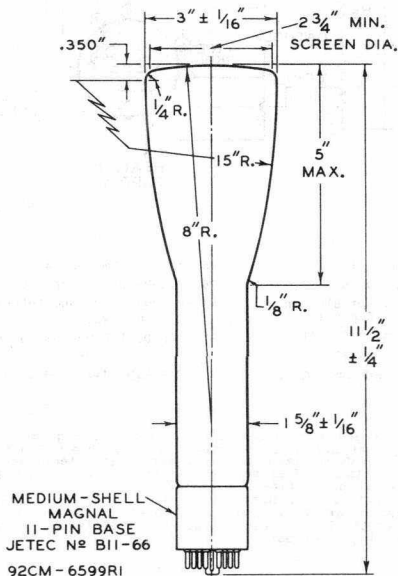
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For ultor voltage of	1000	2000	volts
Grid-No.1 Voltage for Visual Extinction of Undelected Focused Spot	-19 to -45	-38 to -90	volts ←
Deflection Factors:			
DJ1 & DJ2	50 to 68	100 to 136	volts dc/in.
DJ3 & DJ4	38 to 52	76 to 104	volts dc/in.

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1.5 max.	megohms
Resistance in Any Deflecting Electrode Circuit ■	5 max.	megohms

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



⊙ OF BULB WILL NOT DEVIATE MORE THAN 2° IN ANY DIRECTION FROM PERPENDICULAR ERECTED AT CENTER OF BOTTOM OF BASE.

← Indicates a change.

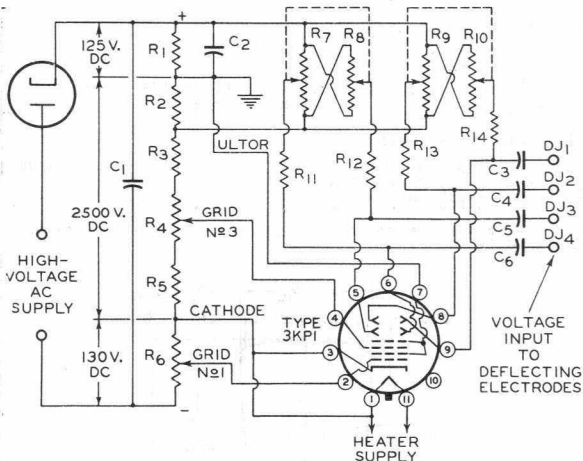
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TYPICAL OSCILLOGRAPH CIRCUIT



92CS-6690R2

- | | |
|---|---|
| C1: 0.1 μ f, 3000 Volts | R5: 1.0 Megohm, 0.5 Watt |
| C2: 1.0 μ f, 200 Volts | R6: 0.5-Megohm Potentiometer, 0.5 Watt |
| C3 C4 C5 C6: 0.05- μ f Blocking Capacitors* | R7 R8: Dual 5-Megohm Potentiometer, 0.5 Watt |
| R1 R2: 2 Megohms, 0.5 Watt | R9 R10: Dual 5-Megohm Potentiometer, 0.5 Watt |
| R3: 6 Megohms, 0.5 Watt | R11 R12 R13 R14: 2 Megohms, 0.5 Watt |
| R4: 2-Megohm Potentiometer, 0.5 Watt | |

* When cathode is grounded, capacitors should have high voltage rating (3000 volts); when ultor is grounded, they may have low voltage rating (200 volts). For dc amplifier service, deflecting electrodes should be connected direct to amplifier output. In this service, it is preferable usually to remove deflecting-electrode resistors to minimize loading effect on amplifier. In order to minimize spot defocusing, it is essential that ultor be returned to a point in the amplifier system which will give the lowest possible potential difference between ultor and the deflecting electrodes.

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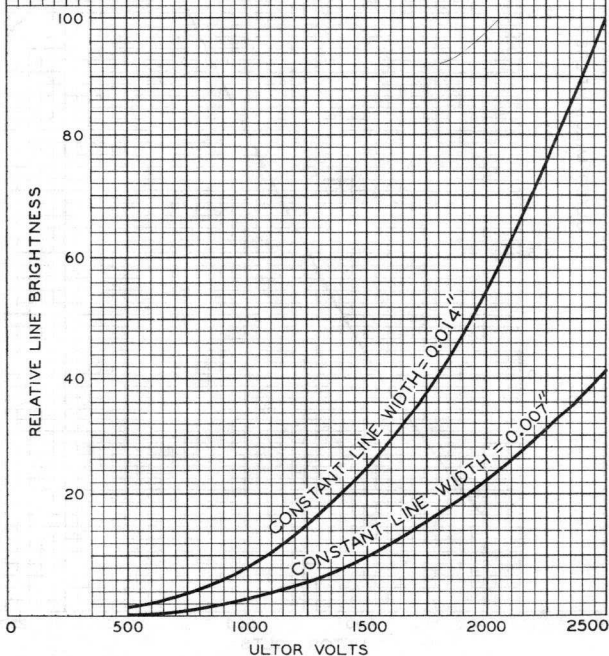
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CHARACTERISTICS

 $E_f = 6.3$ VOLTS

GRID-№3 VOLTS ADJUSTED FOR FOCUS

GRID-№1 VOLTS ADJUSTED TO GIVE ULTOR-CURRENT VALUE REQUIRED TO MAINTAIN CONSTANT LINE WIDTH AT DIFFERENT ULTOR VOLTAGES. FOR A GIVEN ULTOR VOLTAGE, LINE WIDTH AND RELATIVE LINE BRIGHTNESS INCREASE WITH INCREASE IN ULTOR CURRENT



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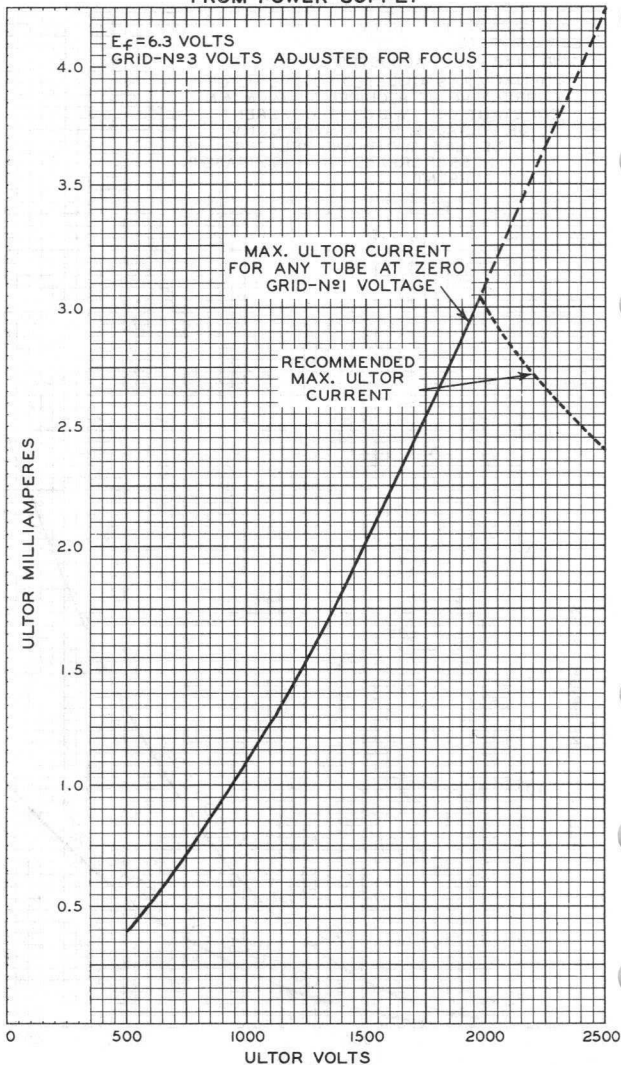
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92CM-7191R2

3KP1



3KP1

MAXIMUM ULTOR-CURRENT REQUIREMENTS
FROM POWER SUPPLY

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92CM-7192RI

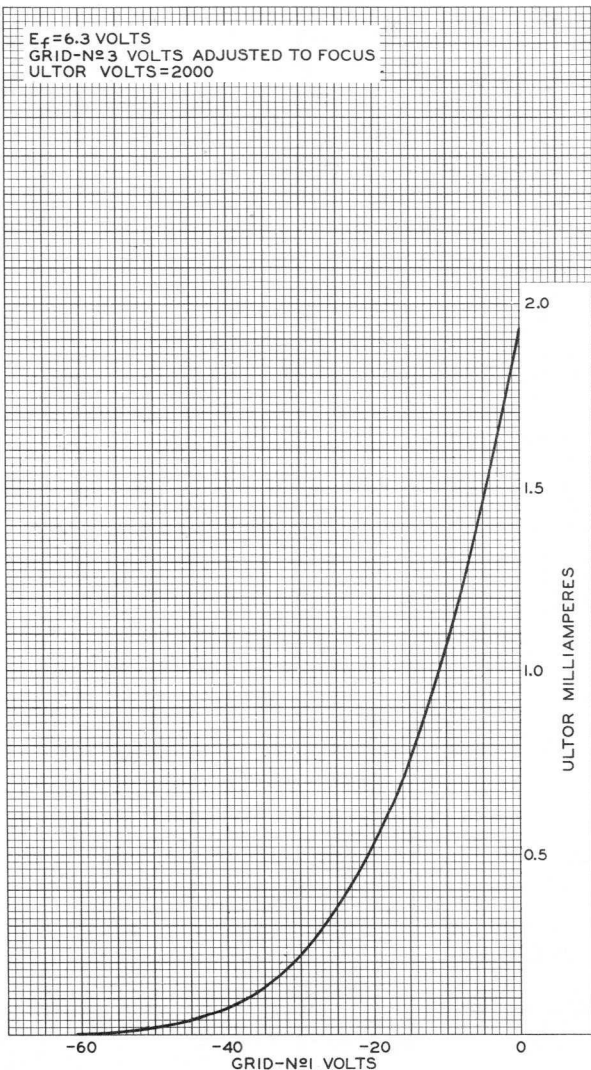


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AVERAGE CHARACTERISTIC

$E_f = 6.3$ VOLTS
GRID-N $\approx$ 3 VOLTS ADJUSTED TO FOCUS
ULTOR VOLTS=2000



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92CM-6658R2

