



3RP1-A

3RP1-A 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 $\mu\mu\text{f}$ Deflecting electrode DJ₁ todeflecting electrode DJ₂. 2 $\mu\mu\text{f}$ Deflecting electrode DJ₃ todeflecting electrode DJ₄. 2 $\mu\mu\text{f}$ DJ₁ to all other electrodes 11 $\mu\mu\text{f}$ DJ₂ to all other electrodes 8 $\mu\mu\text{f}$ DJ₃ to all other electrodes 7 $\mu\mu\text{f}$ DJ₄ to all other electrodes 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

Overall Length. $9\frac{1}{8}'' \pm \frac{1}{4}''$ Greatest Diameter of Bulb $3'' \pm \frac{1}{16}''$ Minimum Useful Screen Diameter. $2\frac{3}{4}''$

Mounting Position Any

Weight (Approx.). 12 oz

Bulb. J-24S1

Base. Small-Shell Duodecal 10-Pin (JETEC No.B10-75),

or Small-Shell Duodecal 12-Pin (JETEC No.B12-43)

Basing Designation for BOTTOM VIEW. 12E

Pin 1 - Heater

Pin 2 - Grid No.1

Pin 3 - Cathode

Pin 4 - Grid No.3

Pin 5▲ - Internal

Connection-

Do Not Use

Pin 6 - Deflecting

Electrode

DJ₃

Pin 7 - Deflecting

Electrode

DJ₄

Pin 8 - Ultor

(Grid No.2,

Grid No.4,

Collector)

Pin 9 - Deflecting

Electrode

DJ₂

Pin 10 - Deflecting

Electrode

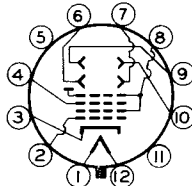
DJ₁

Pin 11▲ - Internal

Connection-

Do Not Use

Pin 12 - Heater

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

▲ Pins 5 and 11 are omitted from the 10-pin base.

JULY 1, 1955

TUBE DIVISION

TENTATIVE DATA 1

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

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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 10° (measured about the tube axis).

The angle between DJ₁ - DJ₂ trace and DJ₃ - DJ₄ trace is 90° ± 3°.

Maximum Ratings, Design-Center Values:

ULTOR ^o 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 500 and 2500 volts*

Grid-No.3 Voltage		
for Focus.	16.5% to 31% of E_{c4}	volts
Maximum Grid-No.1		
Voltage for Visual		
Extinction of Un-		
deflected Focused		
Spot	-6.75% of E_{c4}	volts
Grid-No.3 Current for		
Any Operating Con-		
dition		
	-15 to +10	μamp
Deflection Factor:		
DJ ₁ & DJ ₂	73 to 99	v dc/in./kv of E_{c4}
DJ ₃ & DJ ₄	52 to 70	v dc/in./kv of E_{c4}
Spot Position.	##	

^o The "ultor" in a cathode-ray tube is the electrode to which is applied the highest dc voltage for accelerating the electrons in the beam prior to its deflection. In the 3RP1-A, the ultor function is performed by grid No.4. Since grid No.4, grid No.2, and collector are connected together within the 3RP1-A, they are collectively referred to simply as "ultor" for convenience in presenting data and curves.

* Brilliance and definition decrease with decreasing ultor voltage. A value as low as 500 volts is recommended only for 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.



3RPI-A

OSCILLOGRAPH TUBE

3RPI-A

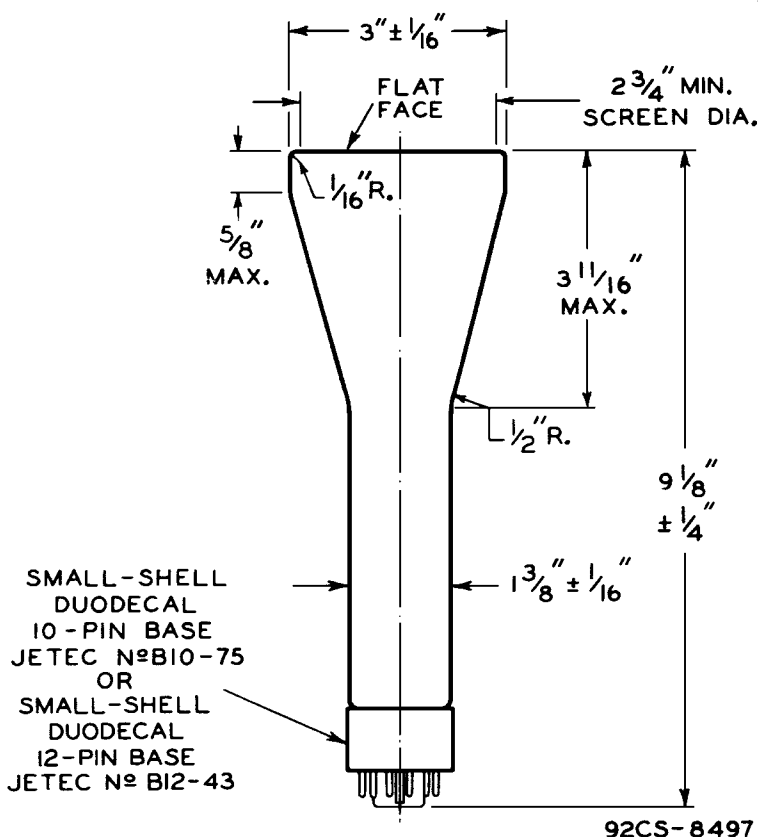
Examples of Use of Design Ranges:

For ultor voltages of	1000	2000	volts
Grid-No.3 Voltage			
for Focus.	165 to 310	330 to 620	volts
Maximum Grid-No.1			
Voltage for Visual			
Extinction of Un-			
deflected Focused			
Spot	-67.5	-135	volts
Deflection Factors:			
DJ1 & DJ2.	73 to 99	146 to 198	volts dc/in.
DJ3 & DJ4.	52 to 70	104 to 140	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.

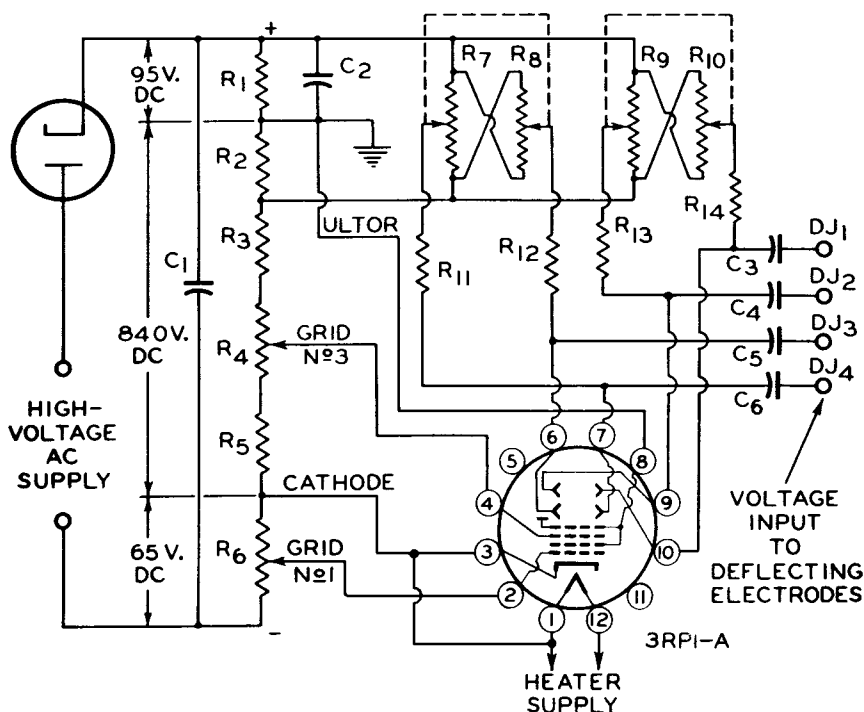


CENTER LINE OF BULB WILL NOT DEVIATE MORE THAN 2° IN ANY DIRECTION FROM PERPENDICULAR ERECTED AT CENTER OF BOTTOM OF BASE.



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TYPICAL OSCILLOGRAPH CIRCUIT



92CS-6777RI

C1: 0.2 μ f
C2: 1.0 μ f
C3 C4 C5 C6: 0.05- μ f Blocking
Capacitors*
R1 R2: 2.5 Megohms, 0.5 Watt
R3: 2.5 Megohms, 1 Watt

R4: 1.0-Megohm Potentiometer
R5: 0.5 Megohm, 0.5 Watt
R6: 0.35 Megohm, 0.5 Watt
R7 R8: Dual 5-Megohm Potentiometer
R9 R10: Dual 5-Megohm Potentiometer
R11 R12 R13 R14: 2 Megohms, 0.5 Watt

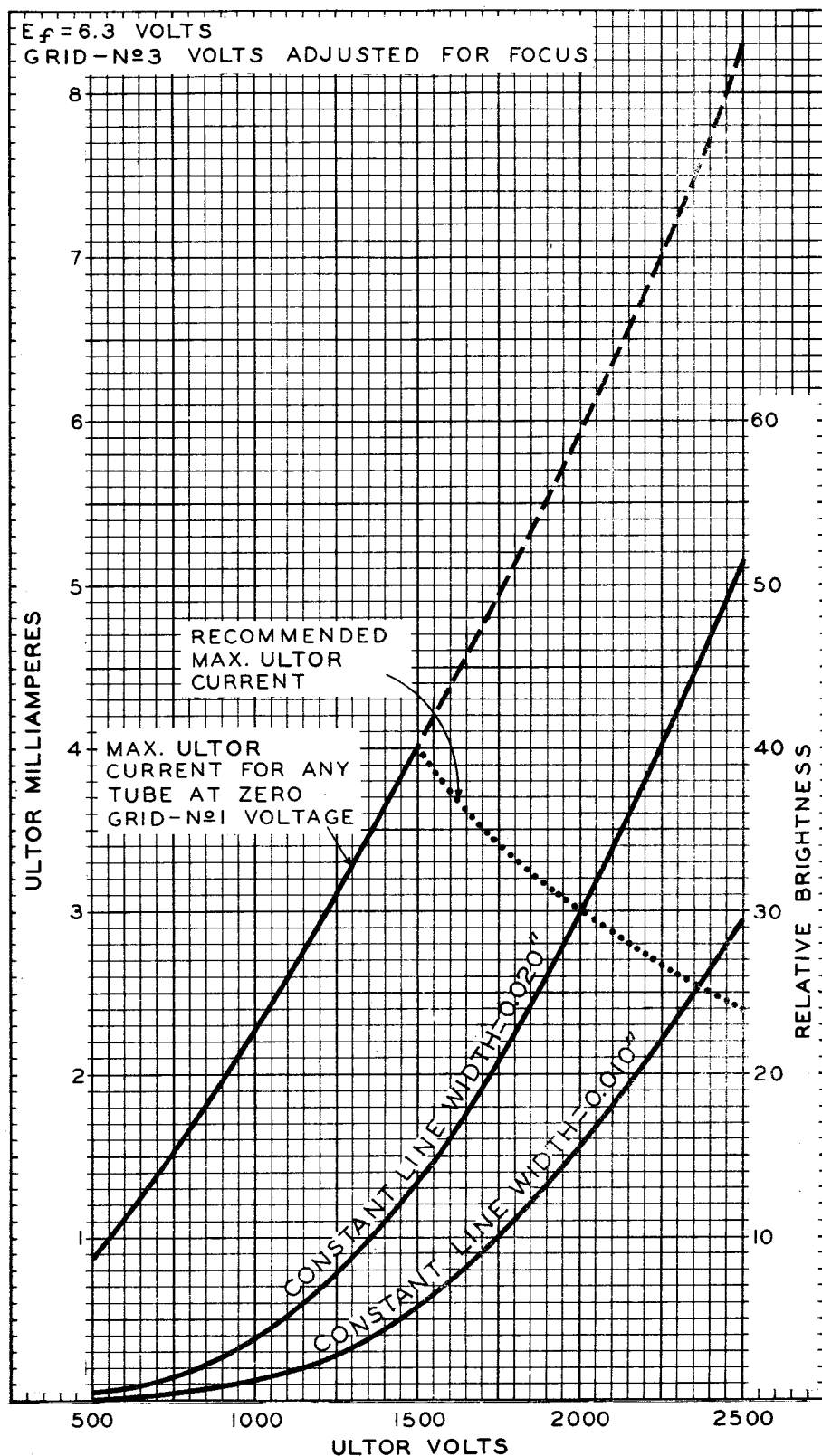
* When cathode is grounded, capacitors should have high voltage rating; when ultor is grounded, they may have low voltage rating. For dc amplifier service, deflecting electrodes should be connected direct to amplifier output. In this service, it is preferable usually to remove deflecting-electrode resistors 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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3RP1-A CHARACTERISTICS

3RP1-A



MAR. 24, 1955

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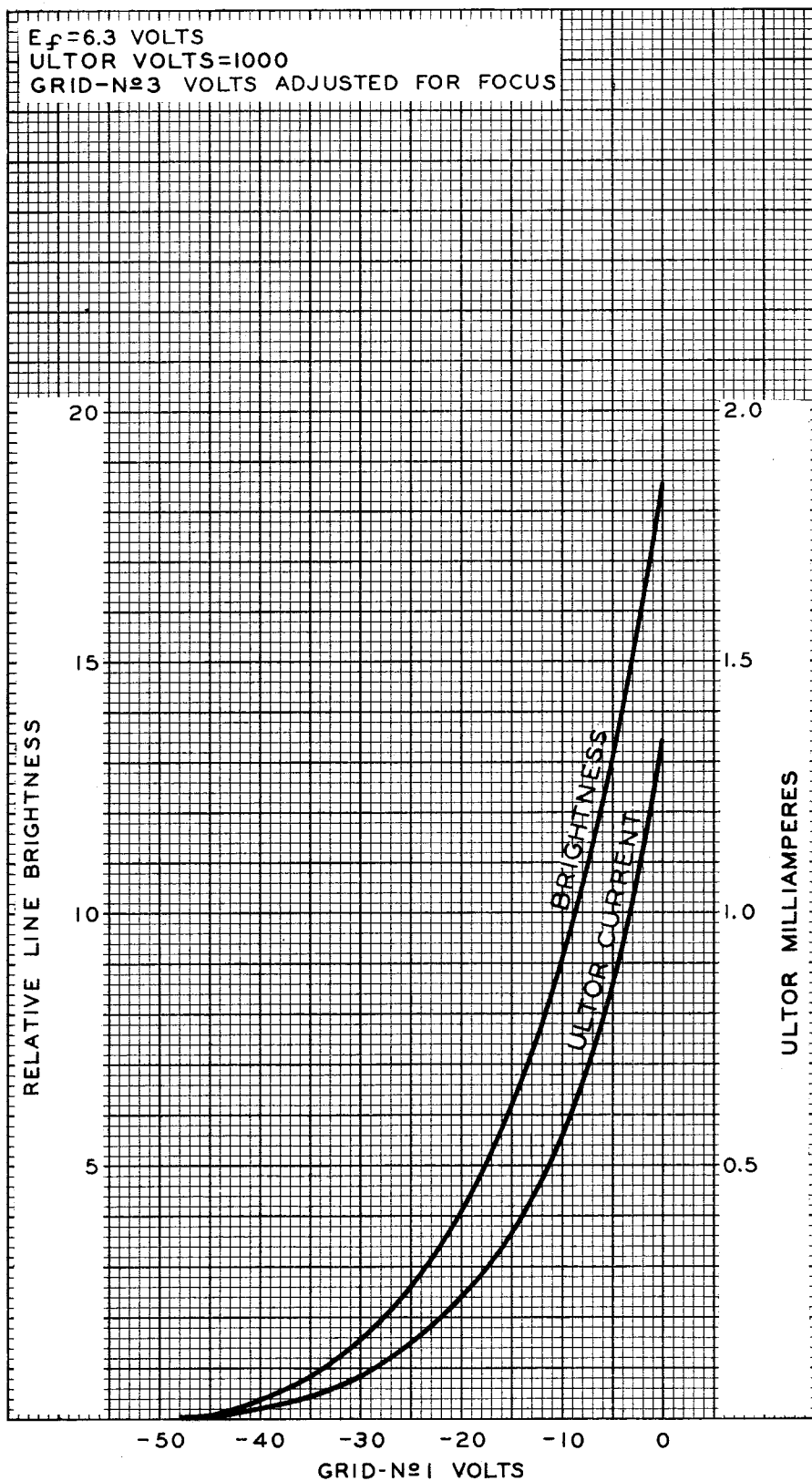
92CM-7143RI

3RPI-A



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AVERAGE CHARACTERISTICS



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92CM-714IRI