



3KPI

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

General:

DATA

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts
 Current. 0.6 amp

Direct Interelectrode Capacitances (Approx.):

Grid No.1 to All Other Electrodes. 8 μf
 DJ₁ to DJ₂ 2.5 μf
 DJ₃ to 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

Phosphor (For Curves, see front of this Section) No.1

Fluorescence Green

Persistence. Medium

Focusing Method. Electrostatic

Deflection Method. Electrostatic

Overall Length 11-1/2" $\pm$ 1/4"Greatest Diameter of Bulb. 3" $\pm$ 1/16"

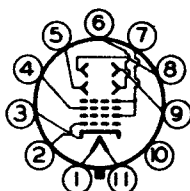
Minimum Useful Screen Diameter 2-3/4"

Mounting Position. Any

Base Medium-Shell Magnal 11-Pin

Basing Designation for BOTTOM VIEW 11M

Pin 1-Heater
 Pin 2-Grid No.1
 Pin 3-Cathode
 Pin 4-Anode No.1
 Pin 5-Deflecting Electrode DJ₃
 Pin 6-Deflecting Electrode DJ₄
 Pin 7-Anode No.2, Grid No.2
 Pin 8-Deflecting Electrode DJ₂
 Pin 9-Deflecting Electrode DJ₁
 Pin 10-Internal Con., Do Not Use
 Pin 11-Heater



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

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 angle between the trace produced by DJ₃ and DJ₄ and its intersection with the plane through the tube axis and pin 1 does not exceed 10°.

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

← Indicates a change.

SEPT. 15, 1949

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Maximum Ratings, Design-Center Values:

ANODE-No.2 [●]	2500 max.	volts
ANODE-No.1 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 ANODE No.2 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 anode-No.2 voltage (E_{b2}) between
recommended minimum* and 2500 volts

Anode-No.1 Voltage . . .	16% to 30% of E_{b2}	. . . volts
Max. Grid-No.1 Voltage for Visual Cutoff	4.5% of E_{b2}	. . . volts
Max. Anode-No.1 Current Range . .	-15 to +10	. . . μ amp
Deflection Factors:		
DJ1 & DJ2	50 to 68	v dc/in./kv of E_{b2}
DJ3 & DJ4	38 to 52	v dc/in./kv of E_{b2}
➤ Spot Position	#	

Examples of Use of Design Ranges:

For anode-No.2 voltage of 1000		2000	. . . volts
Anode-No.1 Voltage . . .	160-300	320-600	. . . volts
Max. Grid-No.1 Voltage for Visual Cutoff	-45	-90	. . . volts
Deflection Factors:			
DJ1 & DJ2	50-68	100-136	volts dc/in.
DJ3 & DJ4	38-52	76-104	volts dc/in.

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1.5 max.	megohms
Resistance in Any Deflecting-Electrode Circuit [□]	5.0 max.	megohms

● Anode No.2 and grid No.2, which are connected together within the tube, are referred to herein as anode No.2. The product of anode-No.2 voltage and average anode-No.2 current should be limited to 6 watts.

* Brilliance and definition decrease with decreasing anode-No.2 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.

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

➤ Indicates a change

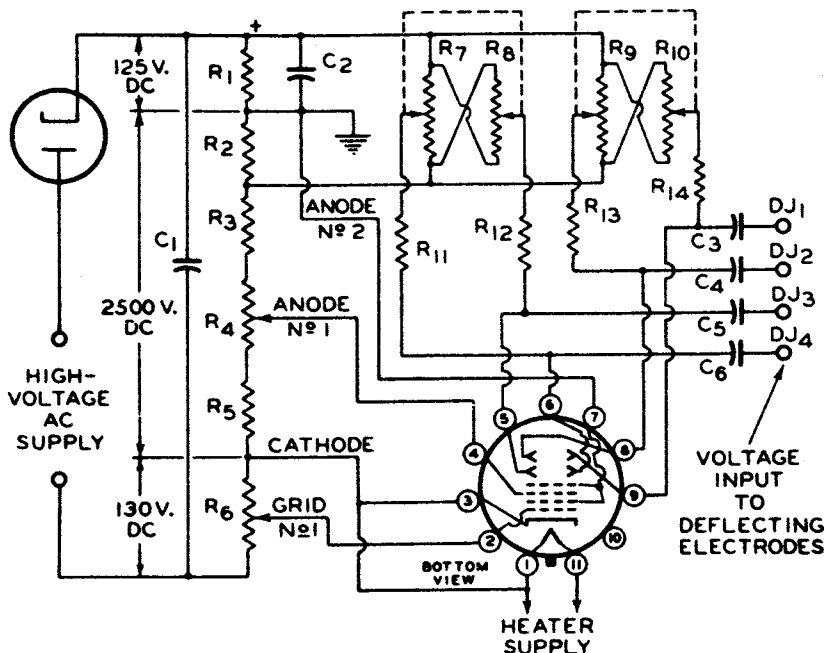


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TYPICAL OSCILLOGRAPH CIRCUIT



92CS-6690R1

C1: 0.1 μ f
 C2: 1.0 μ f
 C3 C4 C5 C6: 0.05- μ f Blocking Capacitors*

R1 R2: 2 Megohms
 R3: 6 Megohms

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

*When cathode is grounded, capacitors should have high voltage rating; when anode No.2 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 anode No.2 be returned to a point in the amplifier system which will give the lowest possible potential difference between anode No.2 and the deflecting electrodes.

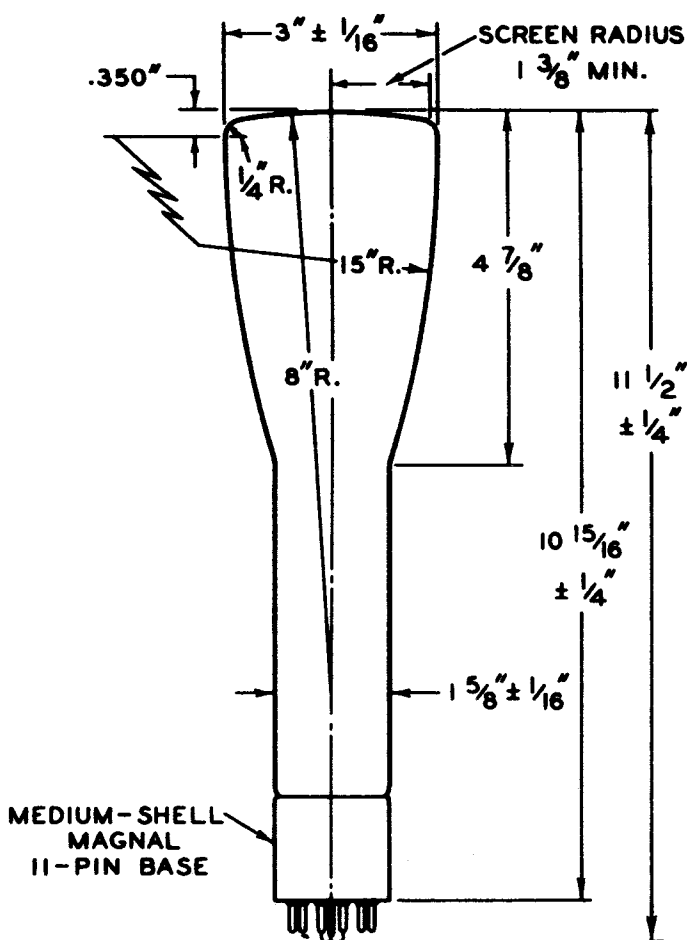
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☐ OF BULB WILL NOT DEVIATE MORE THAN 2° IN ANY DIRECTION FROM PERPENDICULAR ERECTED AT CENTER OF BOTTOM OF BASE.

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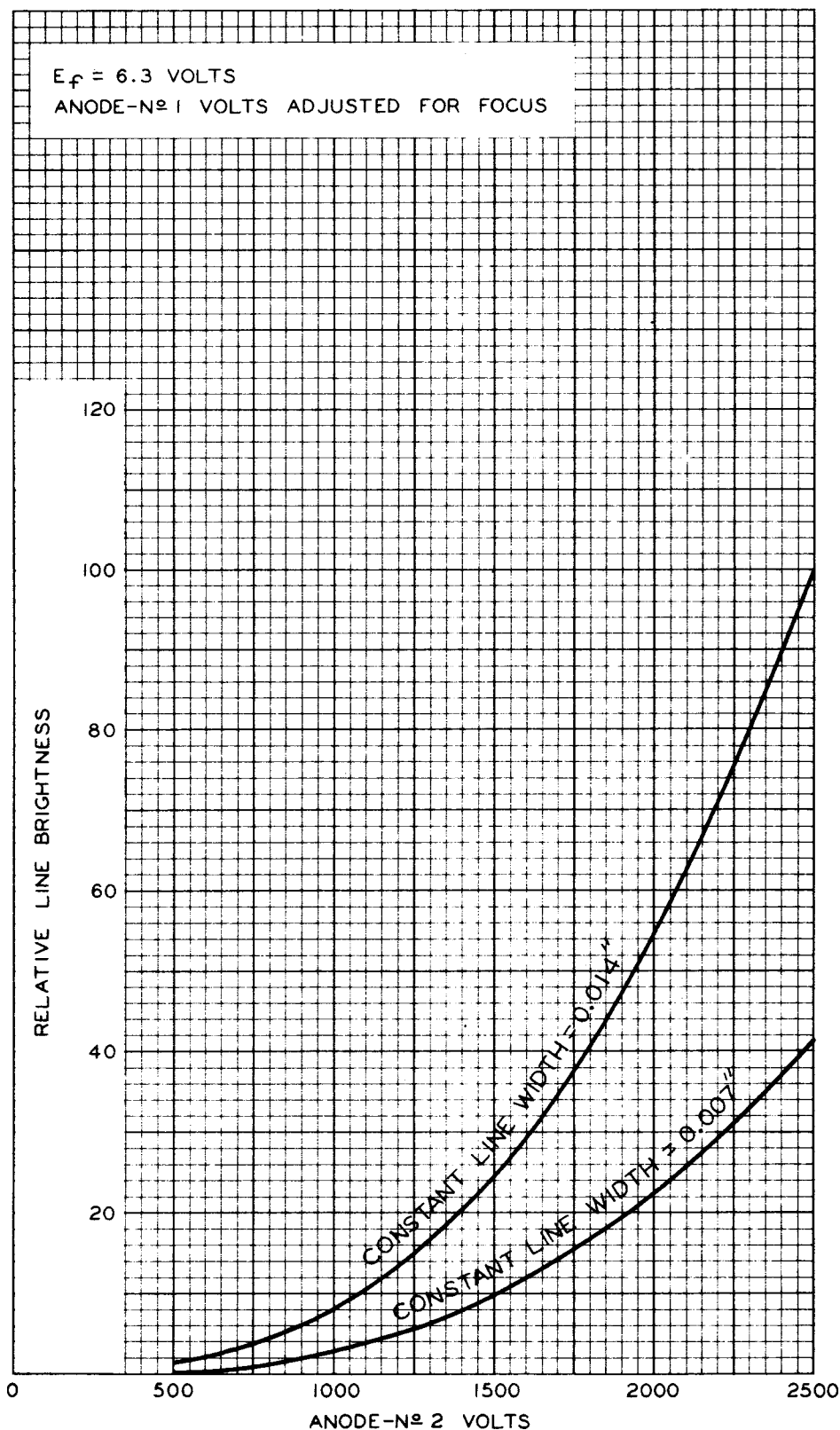
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CHARACTERISTICS

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$E_f = 6.3$ VOLTS

ANODE-№1 VOLTS ADJUSTED FOR FOCUS



FEB. 23, 1949

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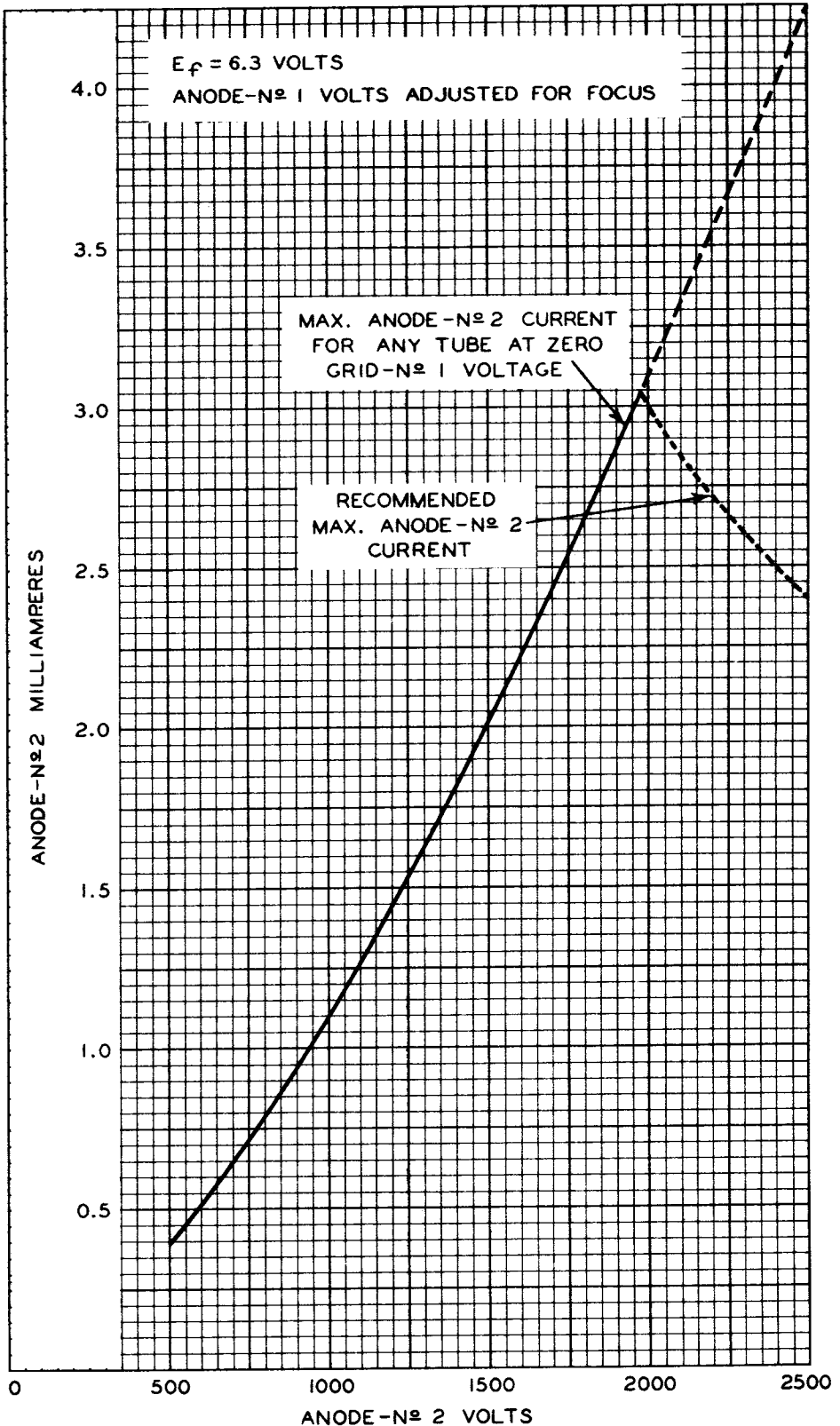
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MAX. ANODE-N^o2 CURRENT REQUIREMENTS FROM POWER SUPPLY



FEB. 24, 1949

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AVERAGE CHARACTERISTICS

