



3KPI

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 to

deflecting electrode DJ2. 2.5 μf

Deflecting electrode DJ3 to

deflecting 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

Bulb. 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

OSCILLOGRAPH TUBE

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.



3KPI

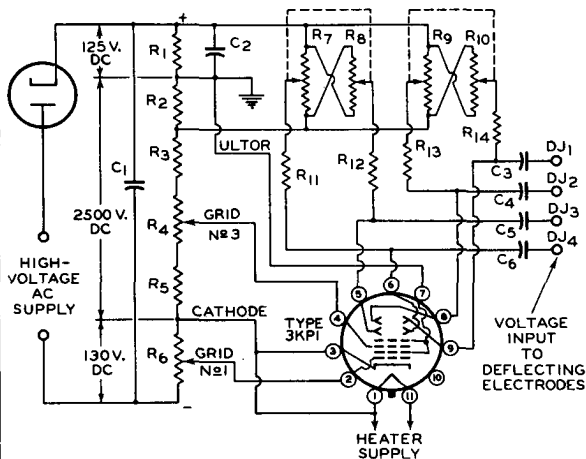
3KPI



3KPI

OSCILLOGRAPH TUBE

TYPICAL OSCILLOGRAPH CIRCUIT



92CS-6690R2

C1: 0.1 μ f, 3000 VoltsC2: 1.0 μ f, 200 VoltsC3 C4 C5 C6: 0.05- μ f Blocking Capacitors*

R1 R2: 2 Megohms, 0.5 Watt

R3: 6 Megohms, 0.5 Watt

R4: 2-Megohm Potentiometer, 0.5 Watt

R5: 1.0 Megohm, 0.5 Watt

R6: 0.5-Megohm Potentiometer, 0.5 Watt

R7 R8: Dual 5-Megohm Potentiometer, 0.5 Watt

R9 R10: Dual 5-Megohm Potentiometer, 0.5 Watt

R11 R12 R13 R14: 2 Megohms, 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.

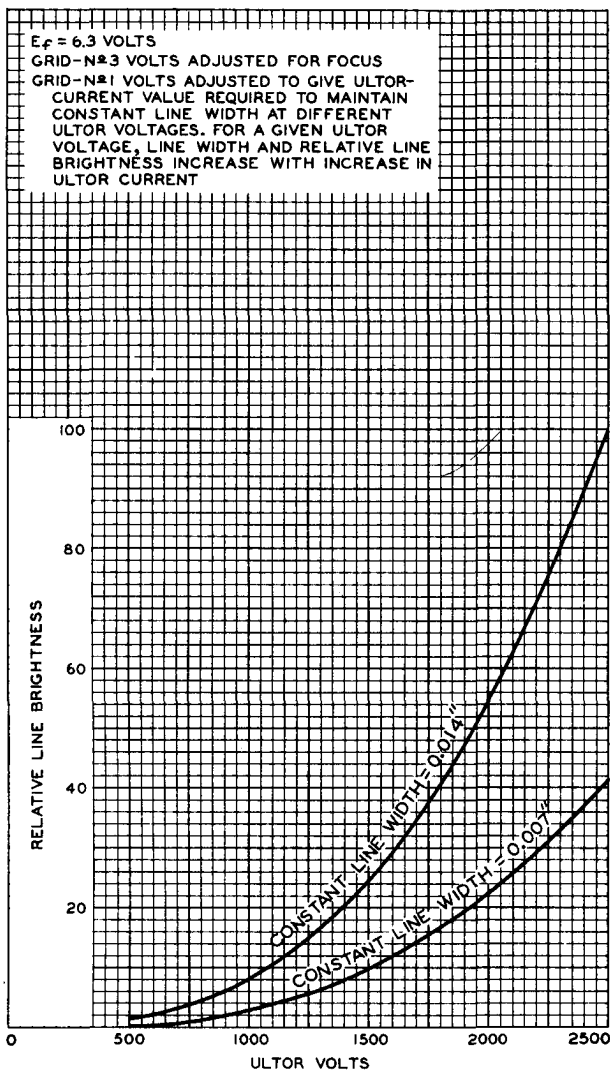
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3KP1

3KP1

CHARACTERISTICS



TUBE DIVISION

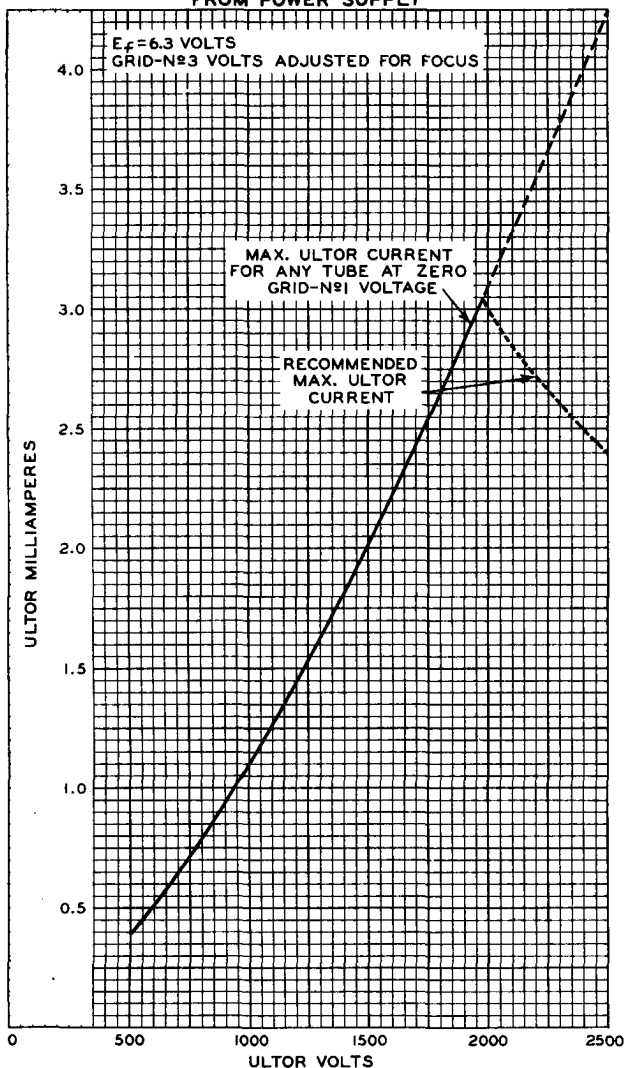
RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-7191R2

3KP1



3KP1

MAXIMUM ULTOR-CURRENT REQUIREMENTS
FROM POWER SUPPLY

TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

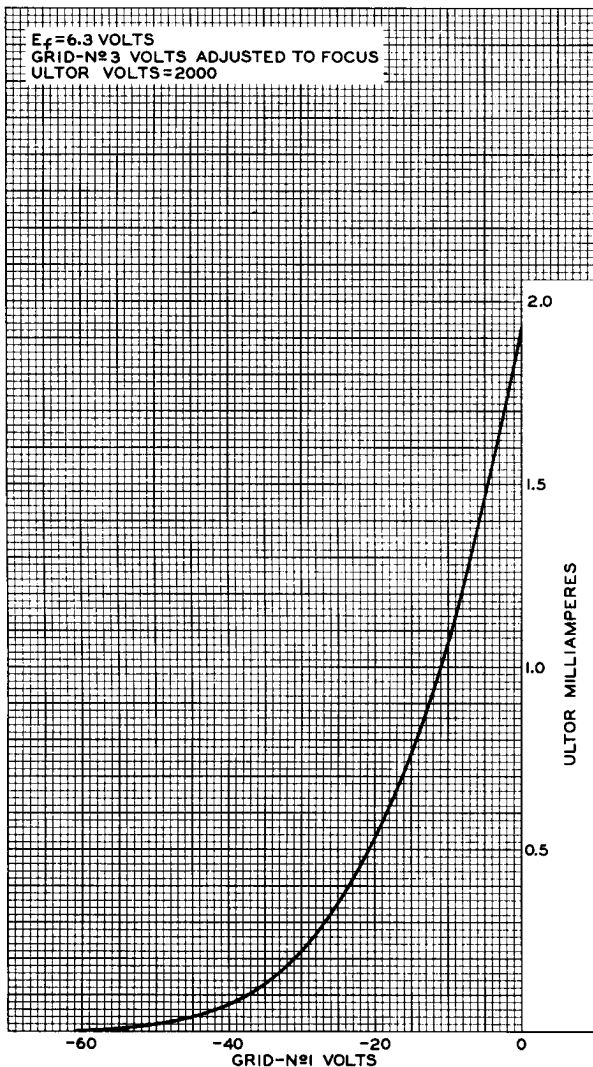
92CM-7192R1



3KP1

3KP1

AVERAGE CHARACTERISTIC





3KP4

3KP4
TO
3KP11**OSCILLOGRAPH TUBE**

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

The 3KP4 is the same as the 3KP1 except for the following items:

General:

Phosphor (For Curves, see front of this Section). P4—Sulfide Type
 Fluorescence. White
 Phosphorescence White
 Persistence Medium-Short ←

In general, operation of the 3KP4 at an ultor voltage less than 1500 volts is not recommended.

The PERSISTENCE CHARACTERISTICS of the P4-sulfide phosphor are the same as those shown for the P11 phosphor at the front of this Section

3KP7

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

The 3KP7 is the same as the 3KP1 except for the following items:

General:

Phosphor (For Curves, see front of this Section). P7
 Fluorescence. Purplish-Blue ←
 Persistence Medium-Short ←
 Phosphorescence Yellowish-Green ←
 Persistence Very Long ←

In general, operation of the 3KP7 at an ultor voltage less than 1500 volts is not recommended.

3KP11

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

The 3KP11 is the same as the 3KP1 except for the following items:

General:

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

In general, operation of the 3KP11 at an ultor voltage less than 1500 volts is not recommended.

← Indicates a change.

3KP16



3KP16

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

The 3KP16 is the same as the 3KP1 except for the following items:

General:

Phosphor (For Curves, see front of this Section) P16

Fluorescence—

Visible radiation. Violet

Invisible radiation. Near-Ultraviolet

Phosphorescence—

Persistence of visible radiation Very Short

Persistence of invisible radiation Very Short

In general, operation of the 3KP16 at an ultor voltage less than 1500 volts is not recommended.



3KP4 KINESCOPE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

3KP4

DATA**General:**

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 Cathode to All Other Electrodes. 5 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.4

Fluorescence and Phosphorescence White

Persistence of Phosphorescence 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"

Raster Size (Approx.). 1-7/8" x 2-1/2"

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

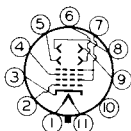
Pin 5-Deflecting Electrode DJ₃Pin 6-Deflecting Electrode DJ₄

Pin 7-Anode No.2, Grid No.2

Pin 8-Deflecting Electrode DJ₂Pin 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*

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°.

NOV. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA 1

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3KP4



3KP4 KINESCOPE

Maximum Ratings, Design-Center Values:

ANODE-No.2 VOLTAGE [■]	2500 max.	volts
ANODE-No.1 VOLTAGE	1000 max.	volts
GRID-No.1 (CONTROL ELECTRODE) 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 1500* and 2500 volts

Anode-No.1 Voltage for Focus [□]	16% to 30% of E_{b2} . . .	volts
Grid-No.1 Voltage for Visual Cutoff	1.9% to 4.5% of E_{b2} . . .	volts
Anode-No.1 Current for Any Operating Condition	-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 2000 volts

Anode-No.1 Voltage [□]	320 to 600 . . .	volts
Grid-No.1 Voltage for Visual Cutoff	-38 to -90 . . .	volts
Deflection Factors:		
DJ1 & DJ2.	100 to 136 volts dc/in.	
DJ3 & DJ4.	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

Minimum Circuit Values:

When the output capacitor of the power supply is capable of storing more than 250 microcoulombs, and when the inherent regulation of the power supply permits the instantaneous short-circuit current to exceed 1 ampere, the effective resistance in circuit between indicated electrode and the output capacitor should be as follows:

Grid-No.1-Circuit Resistance	220 min.	ohms
Anode-No.1-Circuit Resistance.	1100 min.	ohms
Anode-No.2-Circuit Resistance.	3000 min.	ohms

■ * □ ⊙ ○: See next page.

NOV. 15, 1948

TUBE DEPARTMENT

TENTATIVE DATA 1

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3KP4 KINESCOPE

3KP4

The resistors should be capable of withstanding the applied voltage.

- Anode No. 2 and grid No. 2 which are connected together within tube are referred to herein as anode No. 2.
- * Brilliance and definition decrease with decreasing anode-No. 2 voltage.
- With the combined grid-No. 1-bias voltage and video-signal voltage adjusted for a highlight brightness of 2 foot-lamberts on a 1-7/8"x2-1/2" picture area.
- ⊕ With 1500 volts on anode No. 2, grid-No. 1 bias adjusted so that spot is just visible, and no deflection, the center of the 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.

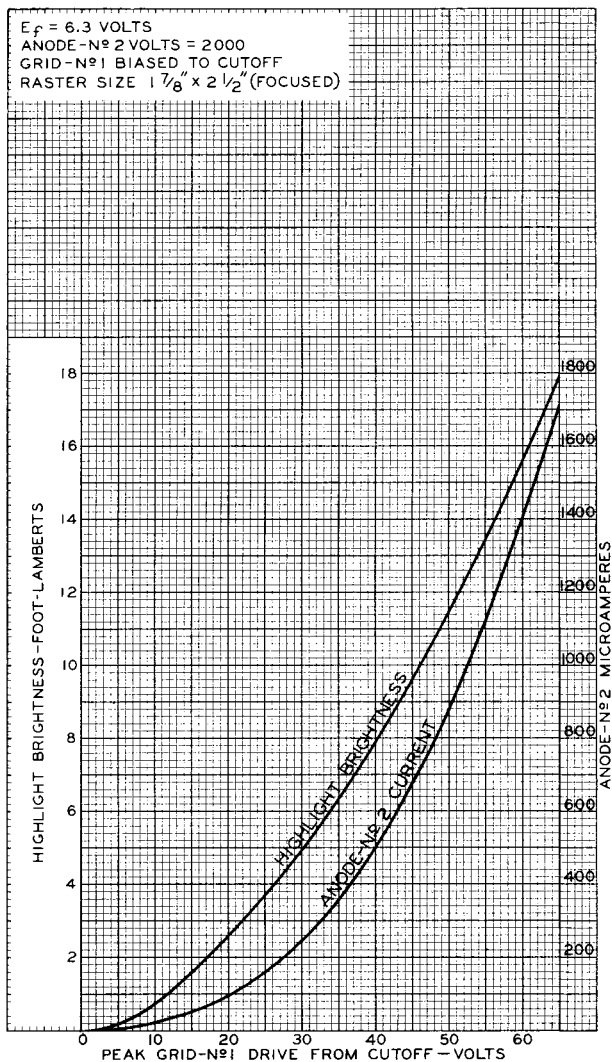
OUTLINE DIMENSIONS for Type 3KP4
are the same as those shown for Type 3KP1

3KP4



3KP4

AVERAGE CHARACTERISTICS



DEC. 13, 1948

TUBE DEPARTMENT

92CM-7087 R I

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3KP11

OSCILLOGRAPH TUBE

ELECTROSTATIC FOCUS

ELECTROSTATIC DEFLECTION

3KP11

The 3KP11 is the same as the 3KP1 except that it has a phosphor of the short-persistence, blue-fluorescence type designated P11. The blue radiation of the P11 screen is highly actinic and has sufficiently short persistence to permit use of the 3KP11 in all moving-film photographic applications without blurring except in those where film moves at a high speed. The 3KP11 is also quite satisfactory for visual observation of phenomena because its phosphor has unusually high brightness for a blue screen.

In general, operation of the 3KP11 at an anode-No.2 voltage less than 1500 volts is not recommended.

THE SPECTRAL-ENERGY EMISSION CHARACTERISTIC
and the PERSISTENCE CHARACTERISTIC of
the P11 Phosphor are shown at the
front of this Section

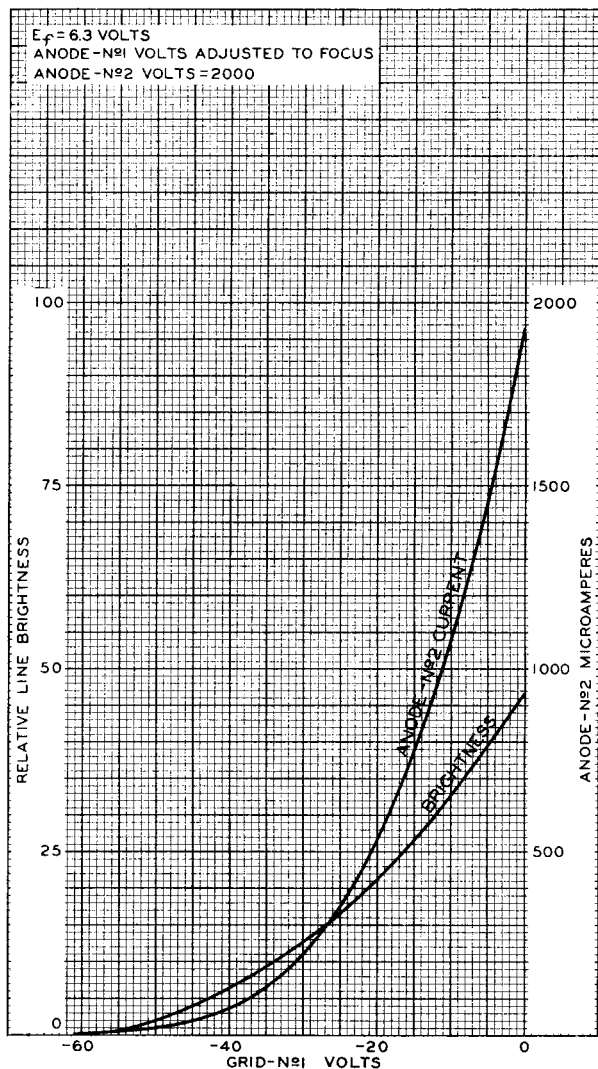
The curve showing MAXIMUM ANODE-No.2 CURRENT
REQUIREMENTS FROM POWER SUPPLY for Type
3KP1 also applies to the 3KP11

3KP11



3KP11

AVERAGE CHARACTERISTICS



FEB. 25, 1949

TUBE DEPARTMENT
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92CM-7193