



2ICBP4-A PICTURE TUBE

2ICBP4-A

RECTANGULAR GLASS TYPE
LOW-VOLTAGE FOCUS

ALUMINIZED SCREEN
MAGNETIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:

Voltage. 6.3 ac or dc volts

Current. $0.6 \pm 10\%$ amp

Direct Interelectrode Capacitances:

Grid No.1 to all other electrodes. 6 μf

Cathode to all other electrodes. 5 μf

External conductive coating to ultor {2500 max. μf
2000 min. μf

Faceplate, Spherical Filterglass

Light transmission (Approx.) 74%

Phosphor (For curves, see front of this section) . P4—Sulfide Type
Aluminized

Fluorescence White

Phosphorescence. White

Persistence. Short

Focusing Method. Electrostatic

Deflection Method. Magnetic

Deflection Angles (Approx.):

Diagonal 90°

Horizontal 85°

Vertical 68°

Electron Gun Type Requiring No Ion-Trap Magnet

Tube Dimensions:

Overall length $18" \pm 3/8"$

Greatest width $20-1/4" \pm 1/8"$

Greatest height. $16-3/8" \pm 1/8"$

Diagonal $21-3/8" \pm 1/8"$

Screen Dimensions (Minimum):

Greatest width $19-1/16"$

Greatest height. $15-1/16"$

Diagonal $20-1/4"$

Neck length. $5-1/2" \pm 3/16"$

Projected area 262 sq. in.

Weight (Approx.) 24 lbs

Operating Position Any

Cap. Recessed Small Cavity (JETEC No. J1-21)

Bulb J171 (90°)

Base Small-Shell Duodecal 6-Pin (JETEC No. B6-63)

Basing Designation for BOTTOM VIEW 12L

Pin 1—Heater

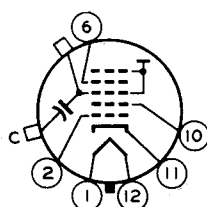
Pin 2—Grid No.1

Pin 6—Grid No.4

Pin 10—Grid No.2

Pin 11—Cathode

Pin 12—Heater



Cap—Ultor

(Grid No.3,
Grid No.5,
Collector)

C—External
Conductive
Coating



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GRID-DRIVE[▲] SERVICE

Unless otherwise specified, voltage values are positive with respect to cathode

Maximum Ratings, Design-Center Values:

ULTOR VOLTAGE.	20000 max.	volts
GRID-No.4 VOLTAGE:		
Positive value	1000 max.	volts
Negative value	500 max.	volts
GRID-No.2 VOLTAGE.	500 max.	volts
GRID-No.1 VOLTAGE:		
Negative peak value.	200 max.	volts
Negative bias value.	140 max.	volts
Positive bias value.	0 max.	volts
Positive peak value.	2 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode:		
During equipment warm-up period		
not exceeding 15 seconds	410 max.	volts
After equipment warm-up period	180 max.	volts
Heater positive with respect to cathode.	180 max.	volts

Equipment Design Ranges:

With any ultor voltage (E_{c5k}) between 12000 and 20000 volts and grid-No.2 voltage (E_{c2k}) between 200 and 500 volts*

Grid-No.4 Voltage for focus§	0 to 450	volts
Grid-No.1 Voltage (E_{c1k}) for visual extinction of focused raster.	See Raster-Cutoff-Range Chart for Grid-Drive Service	
Grid-No.1 Video Drive from Raster Cutoff (Black Level):		
White-level value (Peak positive).	Same value as determined for E_{c1k} except video drive is a positive voltage	
Grid-No.4 Current.	-25 to +25	μ a
Grid-No.2 Current.	-15 to +15	μ a
Field Strength of Adjustable Centering Magnet*.	0 to 8	gausses

Examples of Use of Design Ranges:

With ultor voltage of	16000	18000	volts
and grid-No.2 voltage of	300	400	volts
Grid-No.4 Voltage for focus.	0 to 450	0 to 450	volts

▲, *, #, §: See next page.



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Grid-No.1 Voltage for visual extinction of focused raster	-28 to -72	-35 to -94	volts
Grid-No.1 Video Drive from Raster Cutoff (Black Level): White-level value.	28 to 72	35 to 94	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1.5 max.	megohms
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CATHODE-DRIVE[■] SERVICE

*Unless otherwise specified, voltage values are positive
with respect to grid No.1*

Maximum Ratings, Design-Center Values:

ULTOR-TO-GRID-No.1 VOLTAGE	20000 max.	volts
GRID-No.4-TO-GRID-No.1 VOLTAGE:		
Positive value	1000 max.	volts
Negative value	500 max.	volts
GRID-No.2-TO-GRID-No.1 VOLTAGE	640 max.	volts
GRID-No.2-TO-CATHODE VOLTAGE	500 max.	volts
CATHODE-TO-GRID-No.1 VOLTAGE:		
Positive peak value.	200 max.	volts
Positive bias value.	140 max.	volts
Negative bias value.	0 max.	volts
Negative peak value.	2 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode:		
During equipment warm-up period		
not exceeding 15 seconds	410 max.	volts
After equipment warm-up period	180 max.	volts
Heater positive with respect to cathode.	180 max.	volts

Equipment Design Ranges:

*With any ultor-to-grid-No.1 voltage (E_{c5g_1}) between 12000[#]
and 20000 volts and grid-No.2-to-grid-No.1 voltage (E_{c2g_1})
between 220 and 640 volts*

Grid-No.4-to-Grid-No.1 Voltage for focus [§]	0 to 450	volts
Cathode-to-Grid-No.1 Voltage (E_{kg_1}) for visual extinction of focused raster.	See Raster-Cutoff-Range Chart for Cathode-Drive Service	

▲, *, #, §, ■: See next page.



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Cathode-to-Grid-No.1 Video

Drive from Raster Cutoff

(Black Level):

White-level value

(Peak negative). Same value as determined for E_{kg1} except video drive is a negative voltage

Grid-No.4 Current. -25 to +25 μa

Grid-No.2 Current. -15 to +15 μa

Field Strength of Adjustable

Centering Magnet*. 0 to 8 gaussess

Examples of Use of Design Ranges:

With ultor-to-grid-

No.1 voltage of 16000 18000 volts

and grid-No.2-to-grid-

No.1 voltage of 300 400 volts

Grid-No.4-to-Grid-No.1 Voltage

for focus. 0 to 450 0 to 450 volts

Cathode-to-Grid-No.1 Voltage

for visual extinction

of focused raster. 28 to 60 36 to 78 volts

Cathode-to-Grid-No.1 Video

Drive from Raster Cutoff

(Black Level):

White-level value. -28 to -60 -36 to -78 volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance 1.5 max. megohms

▲ Grid drive is the operating condition in which the video signal varies the grid-No.1 potential with respect to cathode.

* Distance from *Reference Line* for suitable PM centering magnet should not exceed 2-1/2". Excluding extraneous fields, the center of the undeflected focused spot will fall within a circle having a 3/8-inch radius concentric with the center of the tube face. It is to be noted that the earth's magnetic field can cause as much as 1/2-inch deflection of the spot from the center of the tube face.

operation below this value is not recommended.

§ The grid-No.4 voltage or grid-No.4-to-grid-No.1 voltage required for focus of any individual tube is independent of ultor current and will remain essentially constant for values of ultor voltage (or ultor-to-grid-No.1 voltage) or grid-No.2 voltage (or grid-No.2-to-grid-No.1 voltage) within design ranges shown for these items.

■ Cathode drive is the operating condition in which the video signal varies the cathode potential with respect to grid No.1 and the other electrodes.

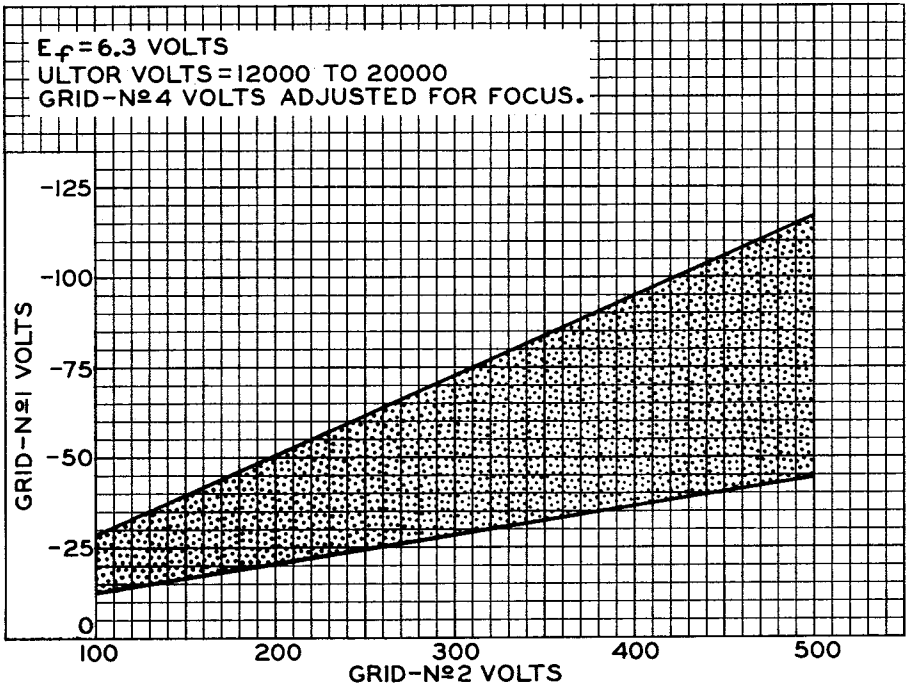
*For X-ray shielding considerations, see sheet
X-RAY PRECAUTIONS FOR CATHODE-RAY TUBES
at front of this Section*



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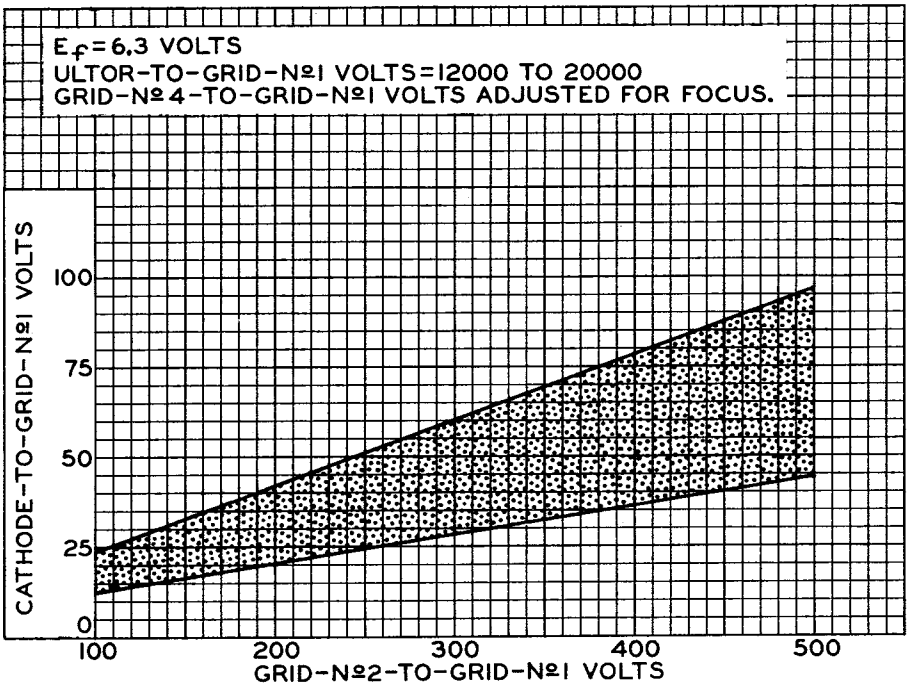
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RASTER-CUTOFF-RANGE CHARTS GRID-DRIVE SERVICE



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CATHODE-DRIVE SERVICE

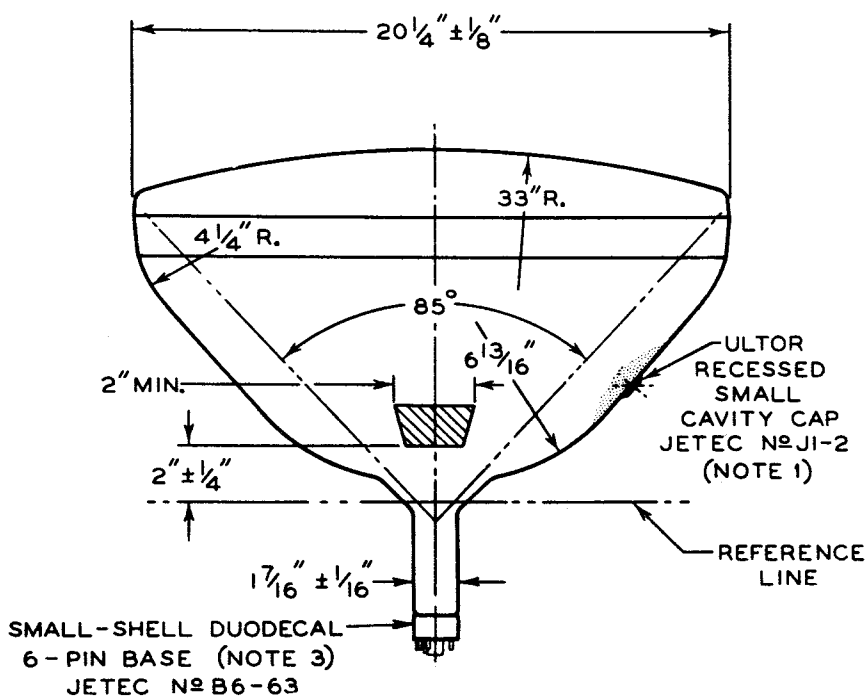
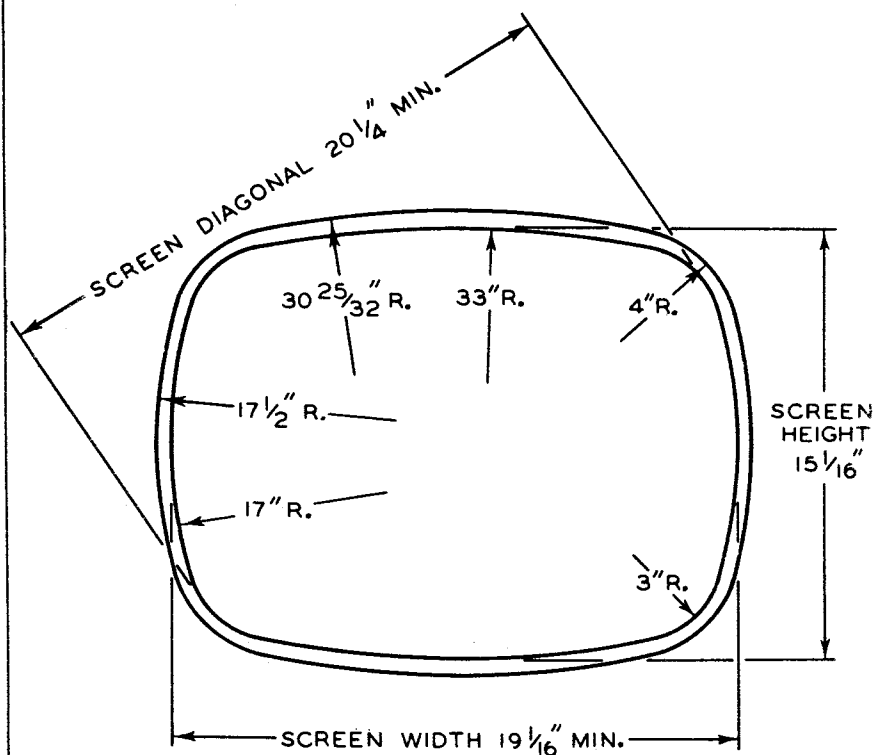


92CS-9350V

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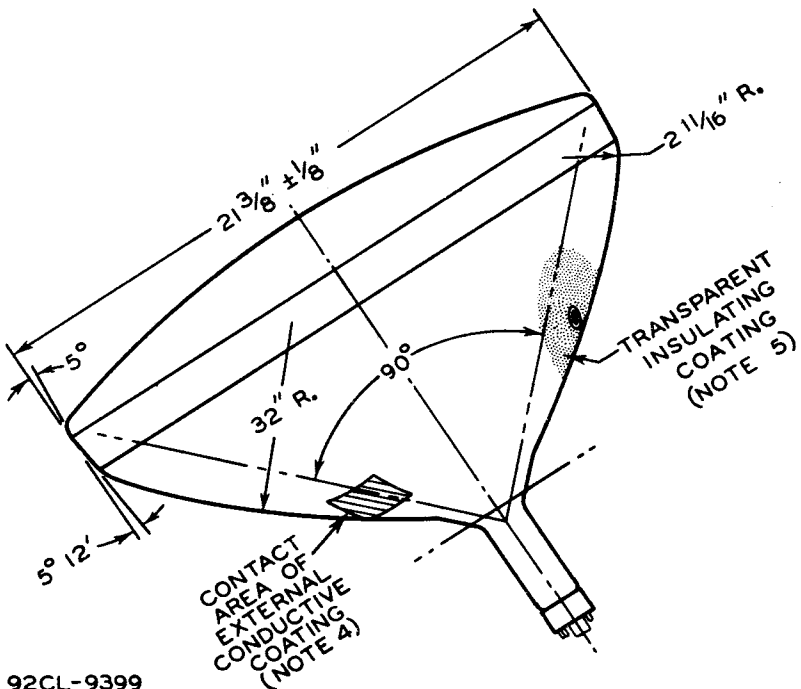
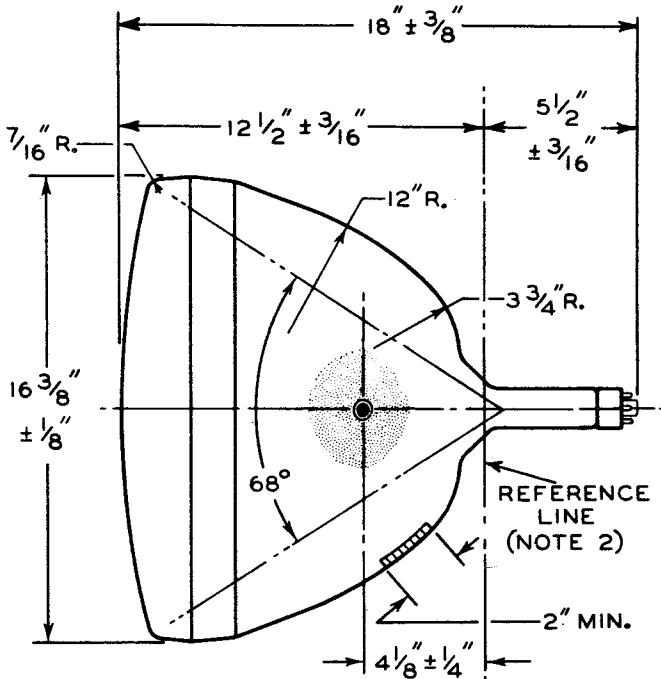
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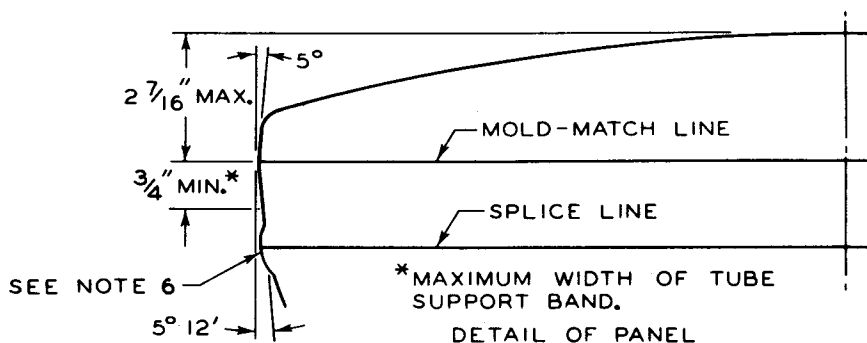
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92CL-9399



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NOTE 1: THE PLANE THROUGH THE TUBE AXIS AND PIN 6 MAY VARY FROM THE PLANE THROUGH THE TUBE AXIS AND ULTOR TERMINAL BY ANGULAR TOLERANCE (MEASURED ABOUT THE TUBE AXIS) OF $\pm 30^\circ$. ULTOR TERMINAL IS ON SAME SIDE AS PIN 6.

NOTE 2: WITH TUBE NECK INSERTED THROUGH FLARED END OF REFERENCE-LINE GAUGE JETEC No. 116 (SHOWN AT FRONT OF THIS SECTION) AND WITH TUBE SEATED IN GAUGE, THE REFERENCE LINE IS DETERMINED BY THE INTERSECTION OF THE PLANE CC' OF THE GAUGE WITH THE GLASS FUNNEL.

NOTE 3: SOCKET FOR THIS BASE SHOULD NOT BE RIGIDLY MOUNTED; IT SHOULD HAVE FLEXIBLE LEADS AND BE ALLOWED TO MOVE FREELY. BOTTOM CIRCUMFERENCE OF BASE SHELL WILL FALL WITHIN A CIRCLE CONCENTRIC WITH BULB AXIS AND HAVING A DIAMETER OF 3".

NOTE 4: THE DRAWING SHOWS THE MINIMUM SIZE AND LOCATION OF THE CONTACT AREA OF THE EXTERNAL CONDUCTIVE COATING. THE ACTUAL AREA OF THIS COATING WILL BE GREATER THAN THE CONTACT AREA SO AS TO PROVIDE THE REQUIRED CAPACITANCE. EXTERNAL CONDUCTIVE COATING MUST BE GROUNDING.

NOTE 5: TO CLEAN THIS AREA, WIPE ONLY WITH SOFT DRY LINTLESS CLOTH.

NOTE 6: BULGE AT SPLICE-LINE SEAL MAY INCREASE THE INDICATED MAXIMUM VALUE FOR ENVELOPE WIDTH, DIAGONAL, AND HEIGHT BY NOT MORE THAN 1/8", BUT AT ANY POINT AROUND THE SEAL, THE BULGE WILL NOT PROTRUDE MORE THAN 1/16" BEYOND THE ENVELOPE SURFACE AT THE MOLD-MATCH LINE.



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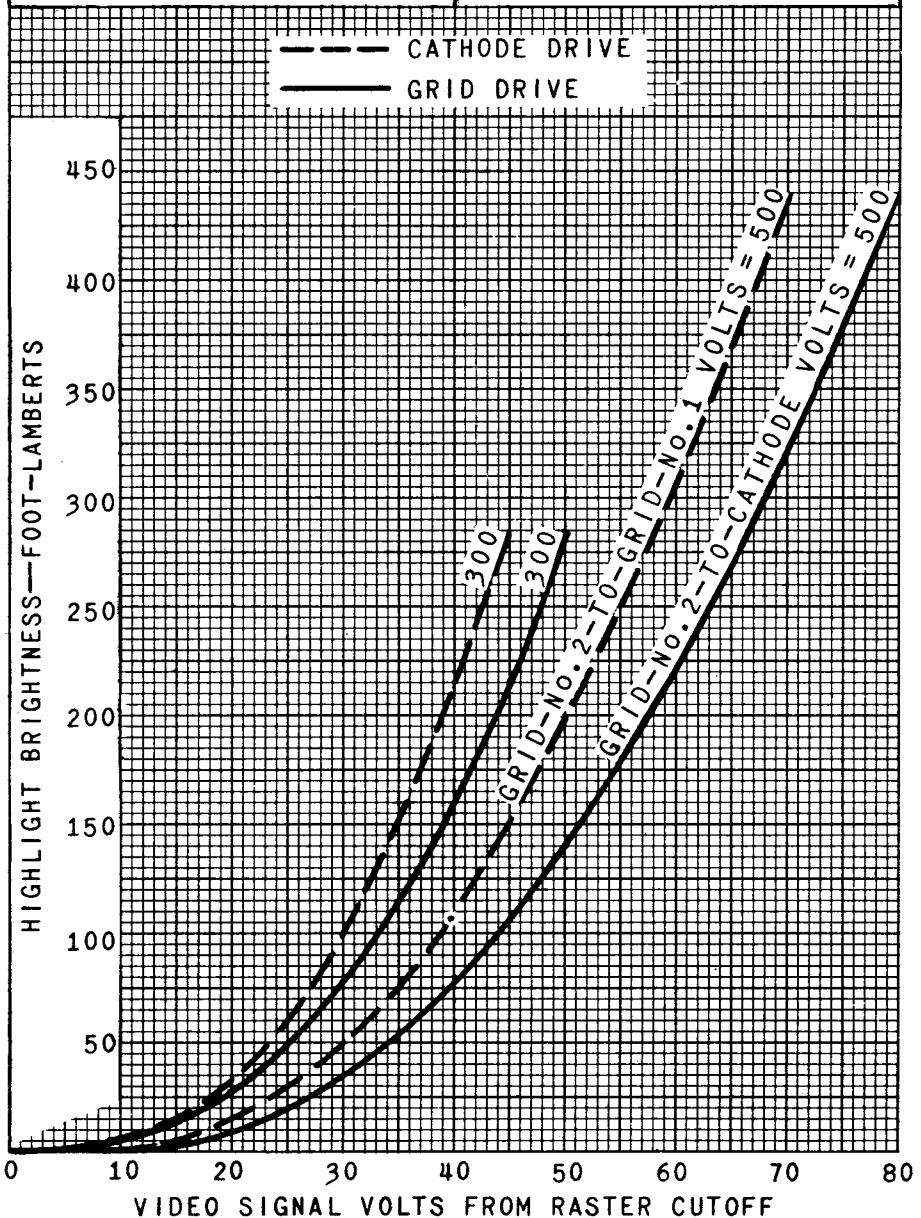
AVERAGE DRIVE CHARACTERISTICS

CATHODE-DRIVE SERVICE

$E_f = 6.3$ VOLTS
ULTOR-TO-GRID-No.1
VOLTS = 16000
CATHODE BIASED POSITIVE
WITH RESPECT TO GRID
No.1 TO GIVE FOCUSED
RASTER CUTOFF.
RASTER FOCUSED AT AVERAGE
BRIGHTNESS.
RASTER SIZE = $18" \times 13\frac{1}{2}"$

GRID-DRIVE SERVICE

$E_f = 6.3$ VOLTS
ULTOR VOLTS = 16000
GRID-No.1 BIASED NEGATIVE
WITH RESPECT TO CATH-
ODE TO GIVE FOCUSED
RASTER CUTOFF.
RASTER FOCUSED AT
AVERAGE BRIGHTNESS.
RASTER SIZE = $18" \times 13\frac{1}{2}"$



ELECTRON TUBE DIVISION

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92CS-9143R1

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AVERAGE DRIVE CHARACTERISTICS

CATHODE-DRIVE SERVICE

 $E_f = 6.3$ VOLTS

ULTOR-TO-GRID-No.1

VOLTS = 12000 TO 20000

CATHODE BIASED POSITIVE
WITH RESPECT TO GRID No.1
TO GIVE FOCUSED RASTER
CUTOFF.

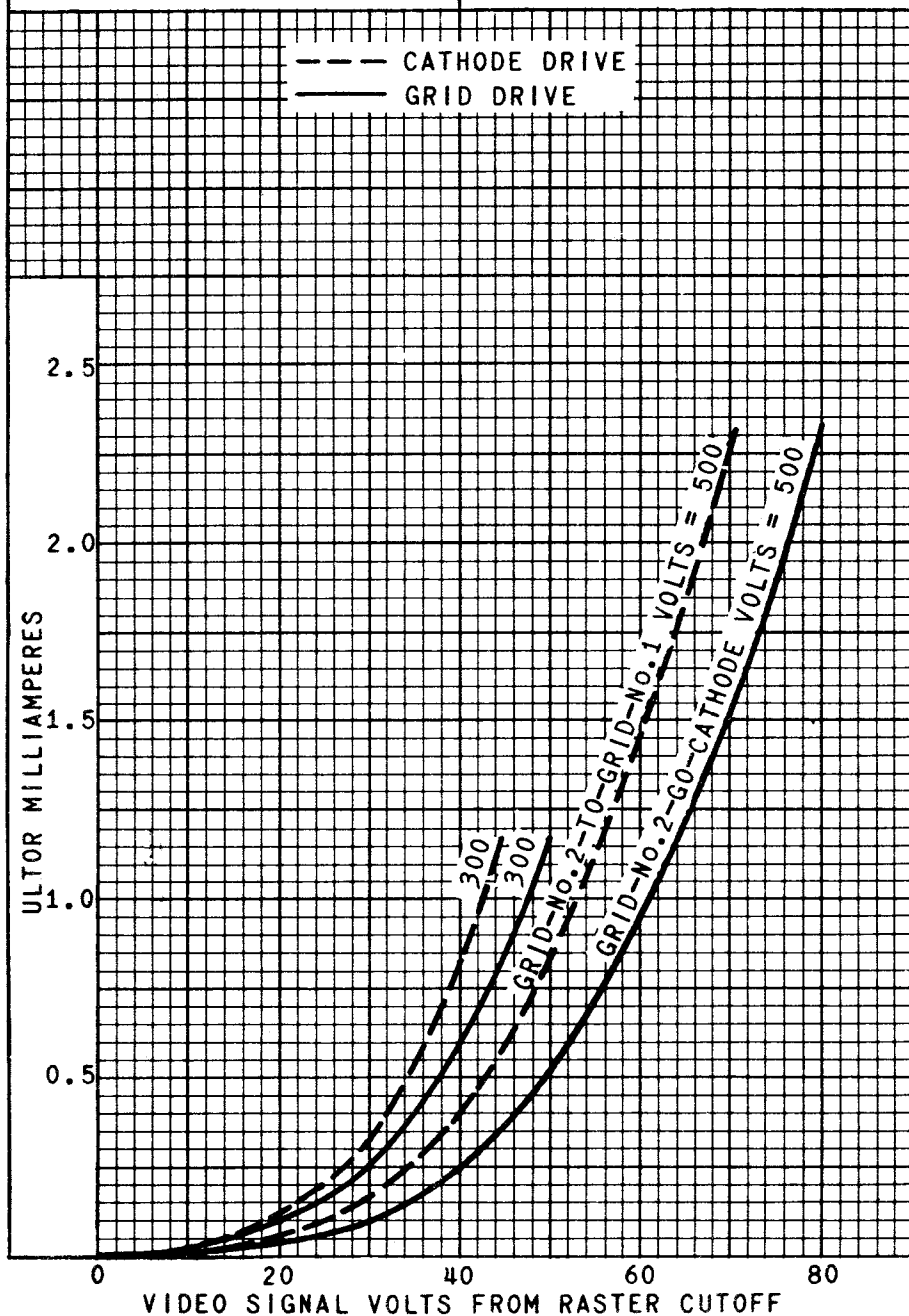
GRID-DRIVE SERVICE

 $E_f = 6.3$ VOLTS

ULTOR VOLTS =

12000 TO 20000

GRID No.1 BIASED NEGATIVE
WITH RESPECT TO CATHODE
TO GIVE FOCUSED RASTER
CUTOFF.



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