



21DEP4-A

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PICTURE TUBE

RECTANGULAR GLASS TYPE

ALUMINIZED SCREEN

LOW-VOLTAGE ELECTROSTATIC FOCUS

MAGNETIC DEFLECTION

*With heater having controlled warm-up time***DATA****General:**

Heater, for Unipotential Cathode:

Voltage (AC or DC) 6.3 volts

Current 0.6 amp

Warm-up time (Average) 11 sec

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.) 76%

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

Fluorescence White

Phosphorescence White

Persistence Medium-Short

Focusing Method Electrostatic

Deflection Method Magnetic

Deflection Angles (Approx.)

Diagonal 110°

Horizontal 105°

Vertical 87°

Electron Gun Type Requiring No Ion-Trap Magnet

Tube Dimensions:

Overall length 14-11/16" $\pm$ 5/16"Greatest width 20-1/4" $\pm$ 1/8"Greatest height 16-3/8" $\pm$ 1/8"Diagonal 21-3/8" $\pm$ 1/8"

Neck length 5-7/16" + 3/16" - 1/8"

Radius of curvature of faceplate

(External surface) 28-1/2"

Screen Dimensions (Minimum):

Greatest width 19-1/16"

Greatest height 15-1/16"

Diagonal 20-1/4"

Projected area 262 sq. in.

Weight (Approx.) 22 lbs

Operating Position Any

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

Bulb J171G1/K1

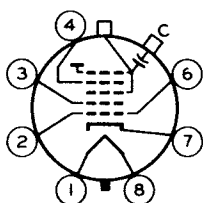
Base Small-Button Eightar 7-Pin,
Arrangement 2, (JEDEC No. B7-183)



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Basing Designation for BOTTOM VIEW. 8HR

Pin 1-Heater
Pin 2-Grid No.1
Pin 3-Grid No.2
Pin 4-Grid No.4
Pin 6-Grid No.1
Pin 7-Cathode
Pin 8-Heater



Cap-Ultor
(Grid No.3,
Grid No.5,
Collector)
C-External
Conductive
Coating

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 (FOCUSING) 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 15000[‡] and 20000 volts
and grid-No.2 voltage (E_{C2k}) between 200 and 500 volts*

Grid-No.4 Voltage for focus§	0 to 500	volts
Grid-No.1 Voltage (E_{C1k}) for visual extinc- tion 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 Adjust-
able Centering Magnet* 0 to 8 gaussess



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Examples of Use of Design Ranges:

With ultor voltage of	16000	volts
and grid-No.2 voltage of	400	volts
Grid-No.4 Voltage for focus. . .	0 to 500	volts
Grid-No.1 Voltage for visual extinction of focused raster	-36 to -94	volts
Grid-No.1 Video Drive from Raster Cutoff (Black level): White-level value.	36 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 (FOCUSING) 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 15000[#]
and 20000 volts and grid-No.2-to-grid-No.1 voltage (E_{c2g_1})
between 225 and 640 volts*

Grid-No.4-to-Grid-No.1 Voltage for focus§	0 to 500	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	



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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_{k_1} except video drive is a negative voltage

Grid-No.4 Current. -25 to +25 μ a

Grid-No.2 Current. -15 to +15 μ a

Field Strength of Adjust-

able Centering Magnet* 0 to 8 gauss

Examples of Use of Design Ranges:

With ultor-to-grid-

No.1 voltage of 16000 volts

and grid-No.2-to-grid-

No.1 voltage of 400 volts

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

Voltage for focus. 0 to 500 volts

Cathode-to-Grid-No.1

Voltage for visual

extinction of focused

raster 36 to 78 volts

Cathode-to-Grid-No.1

Video Drive from Raster

Cutoff (Black level):

White-level value. -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.

* Brightness and focus quality decrease with decreasing ultor voltage. In general, the ultor voltage should not be less than 15,000 volts.

§ 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.

* Distance from *Reference Line* for suitable PM centering magnet should not exceed 2-1/4". 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.

■ 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.

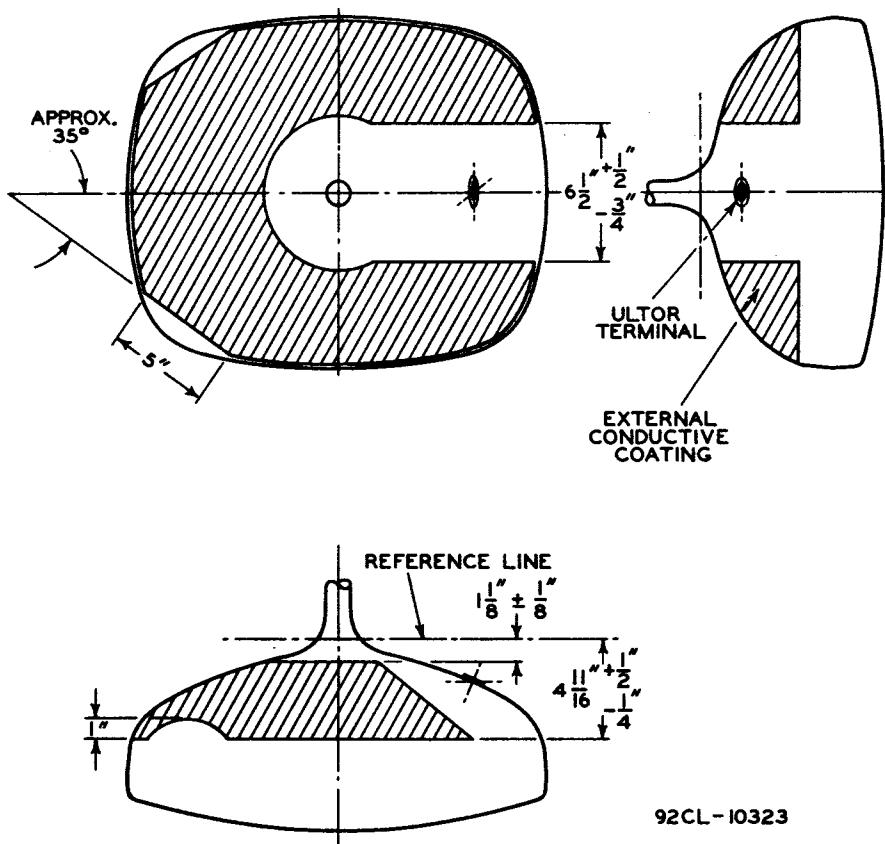
*For X-ray shielding considerations, see sheet
X-RAY PRECAUTIONS FOR CATHODE-RAY TUBES
at front of this Section*



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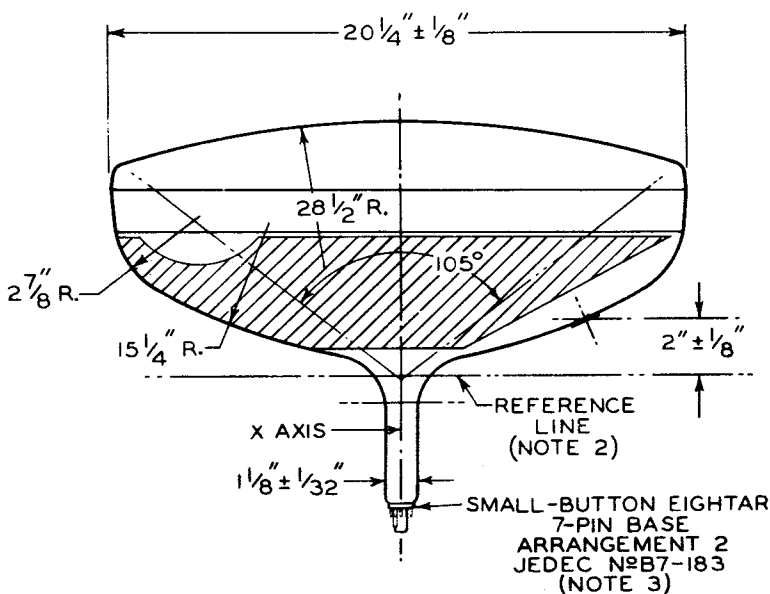
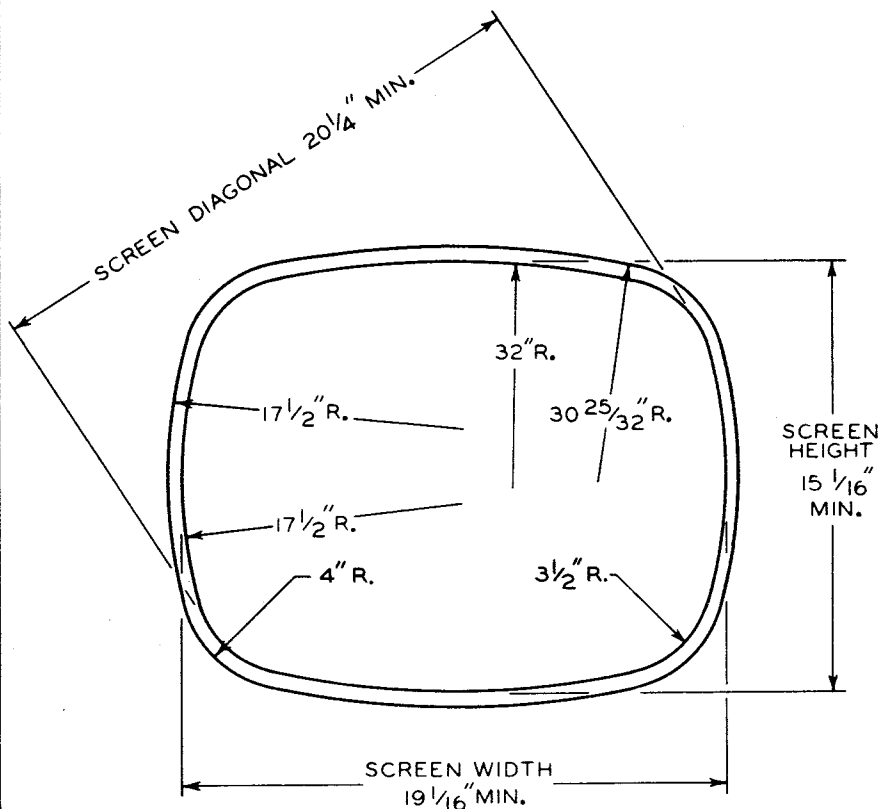
DETAIL SHOWING EXTERNAL CONDUCTIVE COATING



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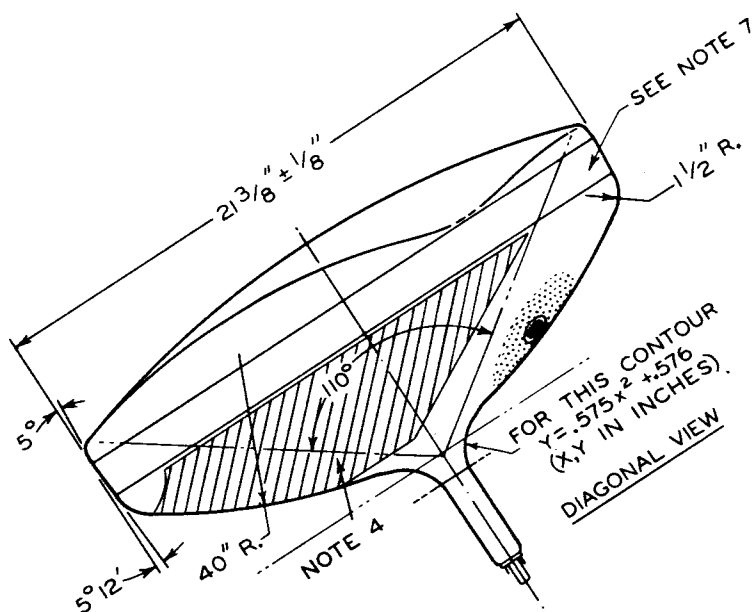
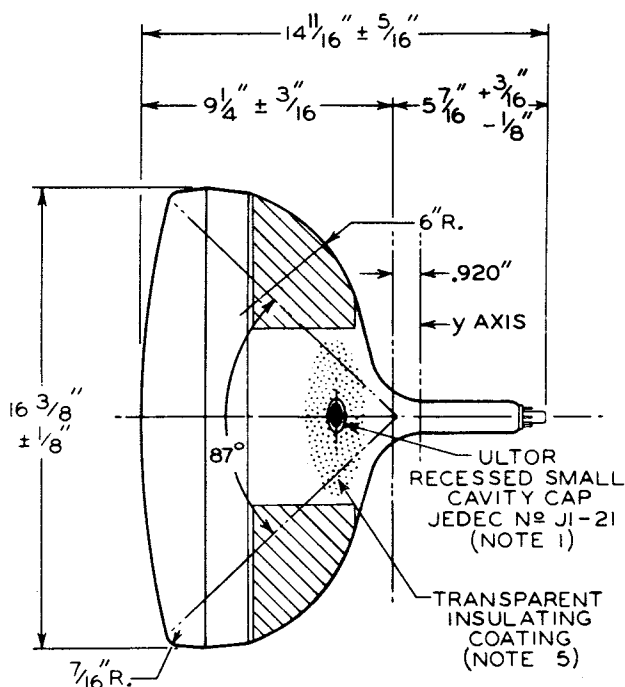
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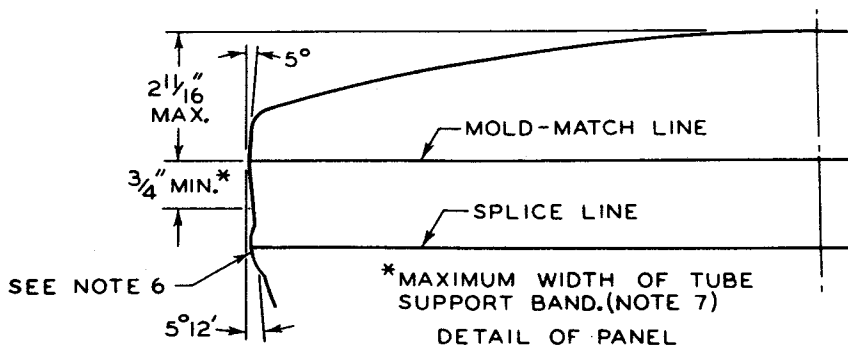
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92CL-10329



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NOTE 1: THE PLANE THROUGH THE TUBE AXIS AND PIN 4 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 4.

NOTE 2: WITH TUBE NECK INSERTED THROUGH FLARED END OF REFERENCE-LINE GAUGE JEDEC No. G-126 (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. THE DESIGN OF THE SOCKET SHOULD BE SUCH THAT THE CIRCUITRY CANNOT IMPRESS LATERAL STRAINS THROUGH THE SOCKET CONTACTS ON THE BASE PINS. BOTTOM CIRCUMFERENCE OF BASE WAFER WILL FALL WITHIN A CIRCLE CONCENTRIC WITH BULB AXIS AND HAVING A DIAMETER OF $1\text{--}3/4$ ".

NOTE 4: EXTERNAL CONDUCTIVE COATING MUST BE GROUNDED.

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.

NOTE 7: UNDISTURBED AREA BETWEEN MOLD-MATCH LINE AND SPLICE LINE IS $3/4$ " MINIMUM. THIS SHOULD BE THE MAXIMUM WIDTH OF TUBE SUPPORT BAND.

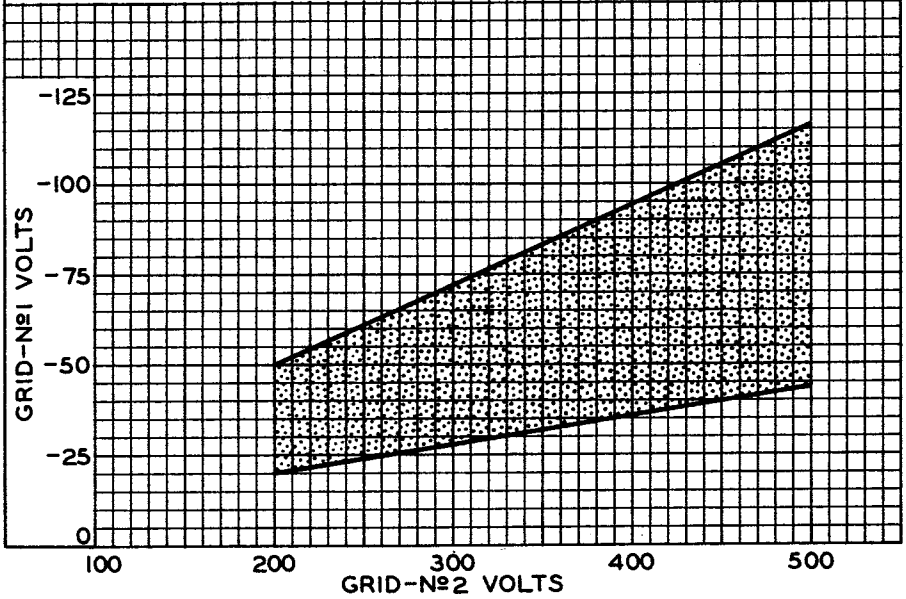


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RASTER-CUTOFF-RANGE CHARTS GRID-DRIVE SERVICE

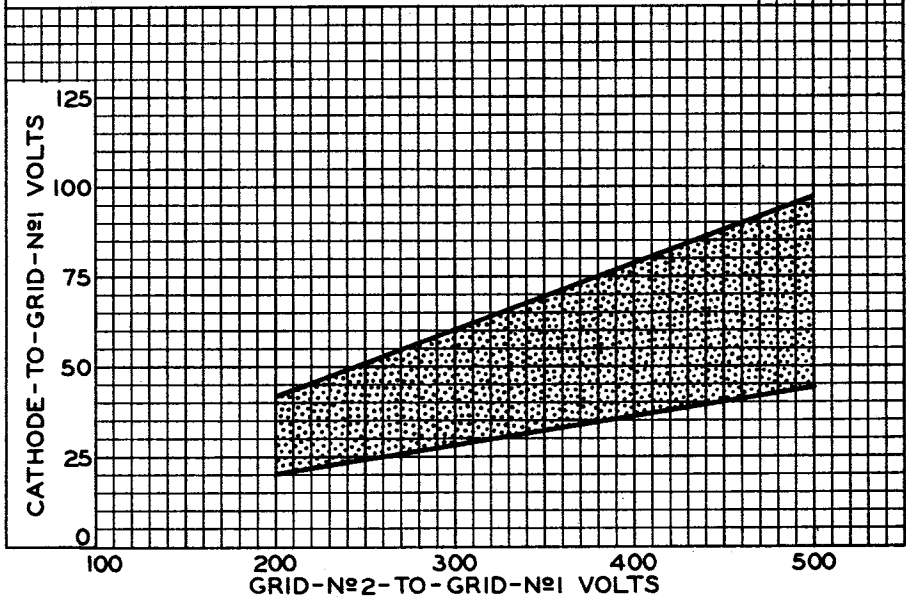
$E_f = 6.3$ VOLTS
ULTOR VOLTS = 15000 TO 20000
GRID-Nº4 VOLTS ADJUSTED FOR FOCUS.



92CS-10324

CATHODE-DRIVE SERVICE

$E_f = 6.3$ VOLTS
ULTOR-TO-GRID-Nº1 VOLTS = 15000 TO 20000
GRID-Nº4-TO-GRID-Nº1 VOLTS ADJUSTED FOR FOCUS.



ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CS-10325



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AVERAGE DRIVE CHARACTERISTICS

CATHODE-DRIVE SERVICE

 $E_f = 6.3$ VOLTS

ULTOR-TO-GRID-№1 VOLTS = 16000

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

RASTER SIZE = 18" x 13½"

GRID-DRIVE SERVICE

 $E_f = 6.3$ VOLTS

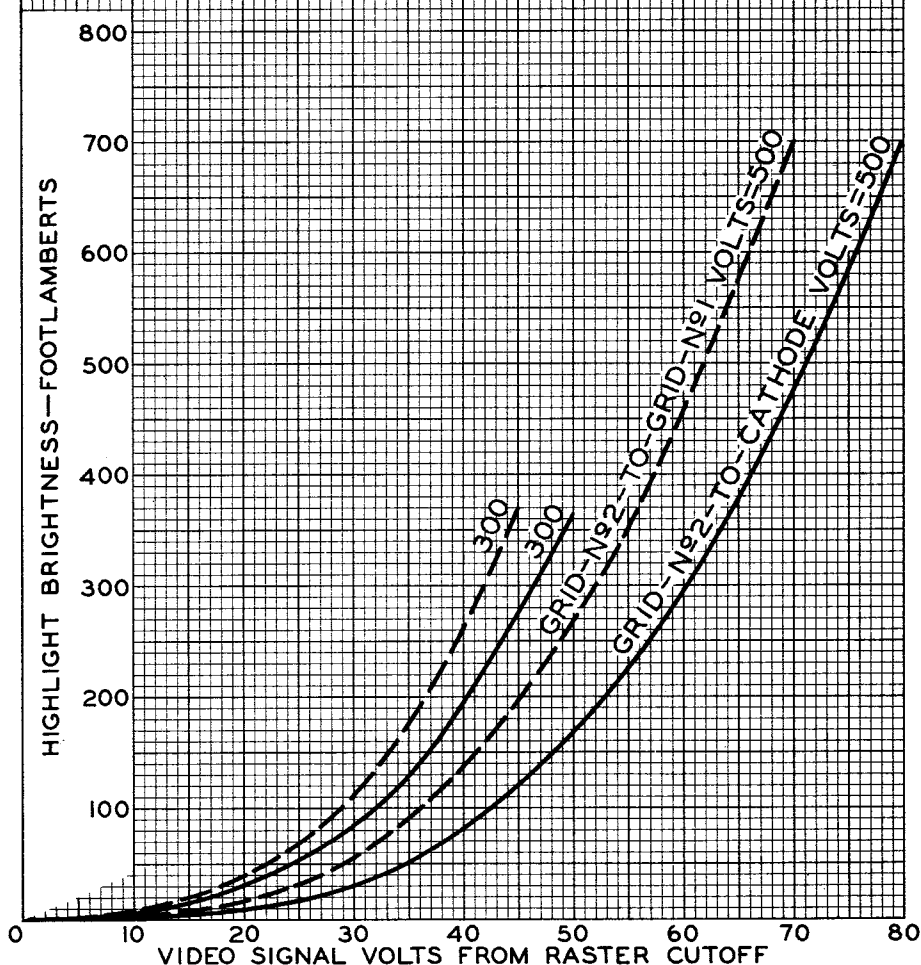
ULTOR VOLTS = 16000

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

RASTER SIZE = 18" x 13½"

I.C.I. COORDINATES OF SCREEN: $x = 0.270$, $y = 0.300$

— CATHODE DRIVE
— GRID DRIVE





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AVERAGE DRIVE CHARACTERISTICS

