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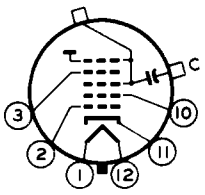
SMALL, COMPACT, RECTANGULAR GLASS TYPE
LOW-VOLTAGE FOCUS MAGNETIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:		
Voltage	6.3	ac or dc volts
Current	0.6 ± 10%	amp
Direct Interelectrode Capacitances:		
Grid No.1 to all other electrodes	6	μμf
Cathode to all other electrodes	5	μμf
External conductive coating to ultor	350 max. 250 min.	μμf μμf
Faceplate, Spherical		Filterglass
Light transmission (Approx.)		80%
Phosphor (For curves, see front of this Section)		P4—Sulfide Type
Fluorescence		White
Phosphorescence		White
Persistence		Short
Focusing Method		Electrostatic
Deflection Method		Magnetic
Deflection Angles (Approx.):		
Diagonal		90°
Horizontal		85°
Vertical		68°
Ion-Trap Gun		Requires External Single-Field Magnet
Tube Dimensions:		
Overall length		10-7/16" ± 5/16"
Greatest width		7-7/8" + 1/16" - 1/32"
Greatest height		6-1/16" + 1/16" - 1/32"
Diagonal		8-7/16" + 1/16" - 1/32"
Neck length		6-1/2" ± 3/16"
Screen Dimensions (Minimum):		
Greatest width		7-3/16"
Greatest height		5-3/8"
Diagonal		7-13/16"
Projected area		35.5 sq. in.
Weight (Approx.)		3 lbs
Mounting Position		Any
Cap		Recessed Small Cavity (JETEC No.J1-21)
Bulb		J67-1/2
Base		Dwarf-Shell Duodecal 6-Pin (JETEC No.B6-158)
Basing Designation for BOTTOM VIEW		12AB

Pin 1 - Heater
Pin 2 - Grid No.1
Pin 3 - 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	8000 max.	volts
GRID-No.4 VOLTAGE:		
Positive value	500 max.	volts
Negative value	500 max.	volts
GRID-No.2 VOLTAGE	300 max.	volts
GRID-No.1 VOLTAGE:		
Negative peak value	130 max.	volts
Negative bias value	100 max.	volts
Positive bias value	0 max.	volts
Positive peak value	2 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 max.	volts
Heater positive with respect to cathode	180 max.	volts

Equipment Design Ranges:

With any ultor voltage (E_{c_5k}) between 4000# and 8000 volts and grid-No.2 voltage (E_{c_2k}) between 85 and 300 volts

Grid-No.4 Voltage Required for Focus:
- Changes directly with E_{c_5k} at the rate of approximately 30 volts for each 1000-volt change in E_{c_5k}.
- Changes inversely with E_{c_2k} at the rate of approximately 25 volts for each 100-volt change in E_{c_2k}.
- Changes inversely with ultor current at the rate of approximately 22.5 volts for each 50-μamp change in ultor current.
- For typical values, see *Examples of Use of Design Ranges.*

Grid-No.1 Voltage (E_{c_1k}) for Visual Extinction of Focused Raster . . . . . *See Cutoff Design 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_{c_1k} except video drive is positive voltage

Grid-No.4 Current	−25 to +25	μamp
Grid-No.2 Current	−15 to +15	μamp
Ion-Trap Magnet Current (Average)**	$\sqrt{E_{c_5k}/8000} \times 32$	ma
Minimum Field Strength of PM Ion-Trap Magnet§	$\sqrt{E_{c_5k}/8000} \times 36$	gausses
Field Strength of Adjustable Centering Magnet	0 to 5	gausses

▲,#,**,§: See next page.

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Examples of Use of Design Ranges:

With ultor voltage of	*6000*	*8000*	*volts*
and grid-No.2 voltage of	*150*	*200*	*volts*
Grid-No.4 Voltage for Focus with Ultor Current of 100 μamp	+15 to +315	+60 to +360	volts
Grid-No.1 Voltage for Visual Extinction of Focused Raster	−13 to −35	−17 to −46	volts
Grid-No.1 Video Drive from Raster Cutoff (Black Level): White-level value (Peak positive)	13 to 35	17 to 46	volts
Minimum Field Strength of PM Ion-Trap Magnet	31	36	gausses

Maximum Circuit Values:

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

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	8000 max.	volts
GRID-No.4-TO-GRID-No.1 VOLTAGE:		
Positive value	500 max.	volts
Negative value	500 max.	volts
GRID-No.2-TO-GRID-No.1 VOLTAGE	400 max.	volts
CATHODE-TO-GRID-No.1 VOLTAGE:		
Positive peak value	130 max.	volts
Positive bias value	100 max.	volts
Negative bias value	0 max.	volts
Negative peak value	2 max.	volts
PEAK HEATER-CATHODE VOLTAGE:		
Heater negative with respect to cathode	180 max.	volts
Heater positive with respect to cathode	180 max.	volts

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

\# Brilliance and definition decrease with decreasing ultor voltage or ultor-to-grid-No.1 voltage. In general, the ultor voltage or ultor-to-grid-No.1 voltage should not be less than 4000 volts.

■ 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.

**, §: See next page.

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Equipment Design Ranges:

With any ultor-to-grid-No.1 voltage ($E_{c_{5g_1}}$) between 4000 and 8000 volts*

and grid-No.2-to-grid-No.1 voltage ($E_{c_{2g_1}}$) between 100 and 400 volts

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

Voltage Required for Focus:

Changes directly with $E_{c_{5g_1}}$ at the rate of approximately 30 volts for each 1000-volt change in $E_{c_{5g_1}}$.

Changes inversely with $E_{c_{2g_1}}$ at the rate of approximately 25 volts for each 100-volt change in $E_{c_{2g_1}}$.

Changes inversely with ultor current at the rate of approximately 22.5 volts for each 50-μamp change in ultor current.

For typical values, see *Examples of Use of Design Ranges.*

Cathode-to-Grid-No.1

Voltage ($E_{k_{g_1}}$) for Visual Extinction of Focused Raster . . . . . *See Cutoff Design Chart for Cathode-Drive Service*

Cathode-to-Grid-No.1

Video Drive from Raster Cutoff (Black Level):

White-level value (Peak negative). . . . . Same value as determined for $E_{k_{g_1}}$

Grid-No.4 Current.	−25 to +25	μamp
Grid-No.2 Current.	−15 to +15	μamp
Ion-Trap Magnet Current (Average)**.	$\sqrt{E_{c_{5g_1}}/8000} \times 32$	ma
Minimum Field Strength of PM Ion-Trap Magnet§.	$\sqrt{E_{c_{5g_1}}/8000} \times 36$	gausses
Field Strength of Adjustable Centering Magnet. . . .	0 to 5	gausses

Examples of Use of Design Ranges:

With ultor-to-grid-No.1 voltage of	*6000*	*8000*	*volts*
and grid-No.2-to-grid-No.1 voltage of	*150*	*200*	*volts*

Grid-No.4-to-Grid-No.1 Voltage for Focus with Ultor Current of 100 μamp.	+15 to +315	+60 to +360 volts

** For JETEC Ion-Trap Magnet No.117, or equivalent, located with the trailing edge of the pole pieces located over the gap between grid No.1 and grid No.2 and rotated to give maximum brightness.

* Brilliance and definition decrease with decreasing ultor voltage or ultor-to-grid-No.1 voltage. In general, the ultor voltage or ultor-to-grid-No.1 voltage should not be less than 4000 volts.

§: See next page.

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Cathode-to-Grid-No.1 Voltage for Visual Extinction of Focused Raster.	14 to 30	17 to 39	volts
Cathode-to-Grid-No.1 Video Drive from Raster Cutoff (Black Level): White-level value (Peak negative)	14 to 30	17 to 39	volts
Minimum Field Strength of PM Ion-Trap Magnet . . .	31	36	gausses

Maximum Circuit Values:

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

§ For specimen PM ion-trap magnet, such as Heppner Model No.E437 or equivalent, located in optimum position and rotated to give maximum brightness. For a given equipment application, the tolerance range for the strength of the PM ion-trap magnet should be added to the minimum value. The maximum strength of this magnet should not exceed the specified minimum value by more than 6 gausses. This procedure will insure use of a PM ion-trap magnet allowing adequate adjustment to permit satisfactory performance without loss of highlight brightness.

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

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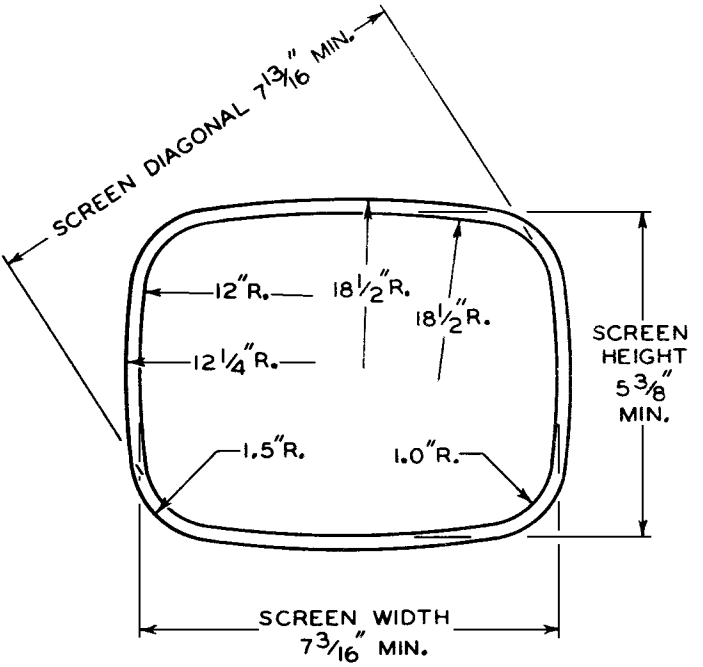

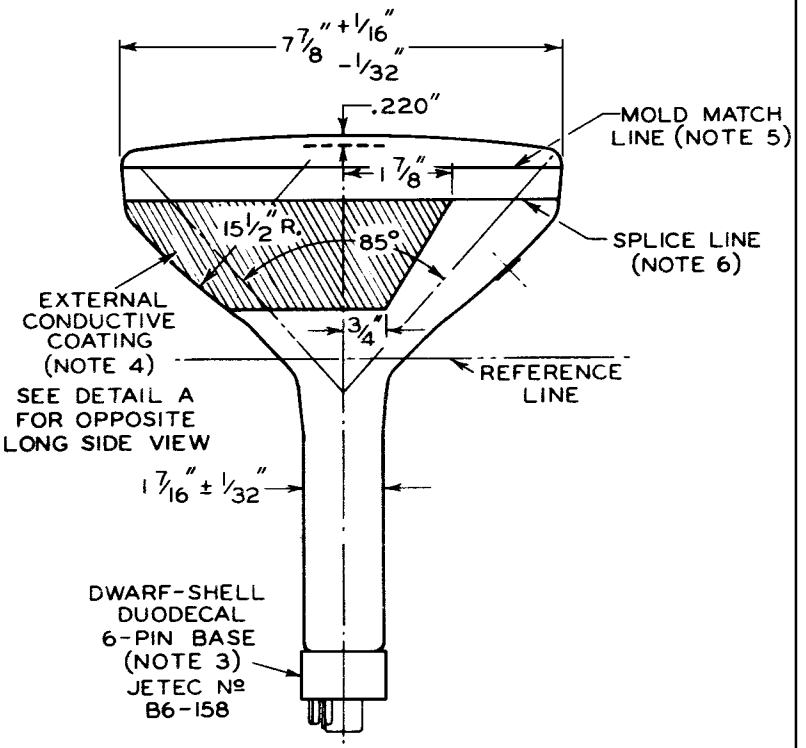

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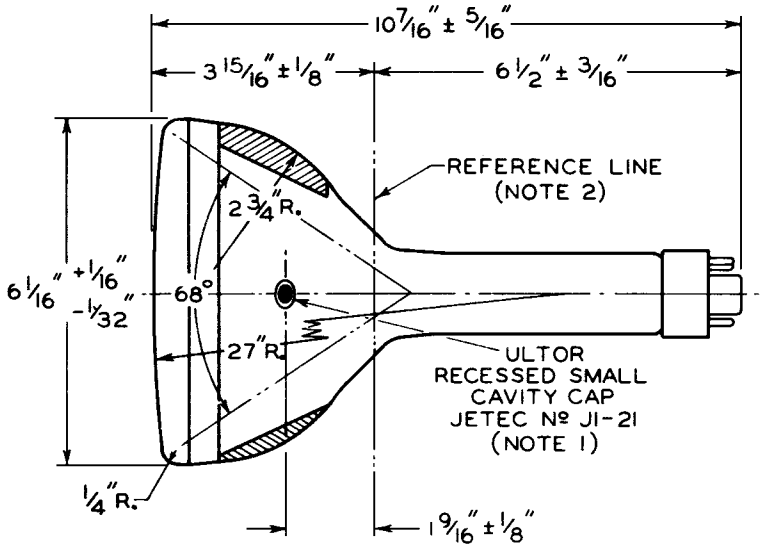

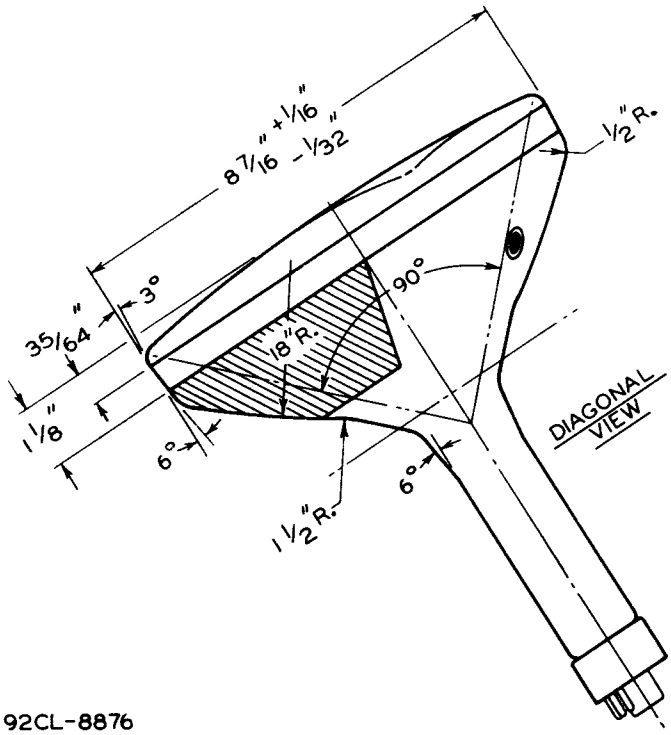

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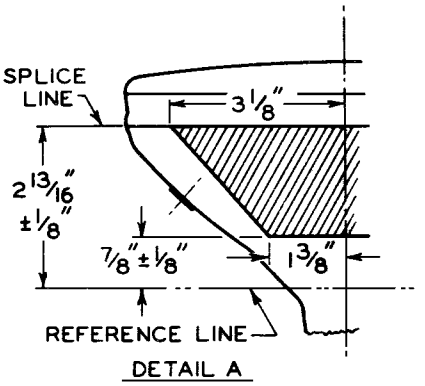

DETAIL A

NOTE 1: THE PLANE THROUGH THE TUBE AXIS AND VACANT PIN POSITION No.6 MAY VARY FROM THE PLANE THROUGH THE TUBE AXIS AND ULTOR TERMINAL BY ANGULAR TOLERANCE (MEASURED ABOUT THE TUBE AXIS) OF ± 30°. ULTOR TERMINAL IS ON SAME SIDE AS VACANT PIN POSITION No.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 AT THE REFERENCE LINE AND HAVING A DIAMETER OF 1-5/8 INCHES.

NOTE 4: EXTERNAL CONDUCTIVE COATING MUST BE GROUNDED.

NOTE 5: THE MAXIMUM RADIAL DISPLACEMENT OF THE FACE PANEL JUST ABOVE THE MOLD MATCH IS 0.040" WHEN THE TUBE IS ROTATED ABOUT THE AXIS OF THE NECK AND SUPPORTED AT THE REFERENCE LINE.

NOTE 6: BULGE AT SPLICE-LINE SEAL WILL NOT PROTRUDE BEYOND THE MAXIMUM ENVELOPE SURFACE AT THE MOLD-MATCH LINE.

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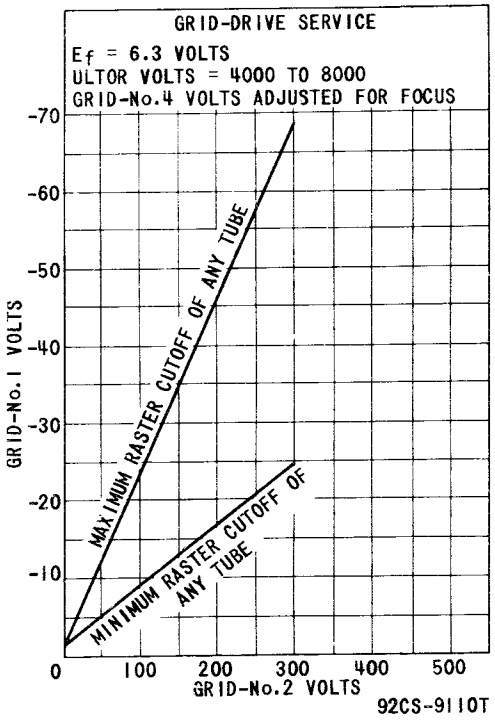
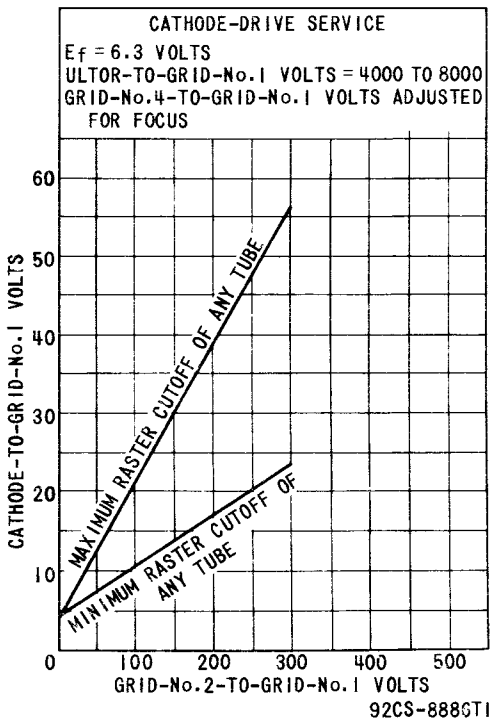
CUTOFF DESIGN CHARTS





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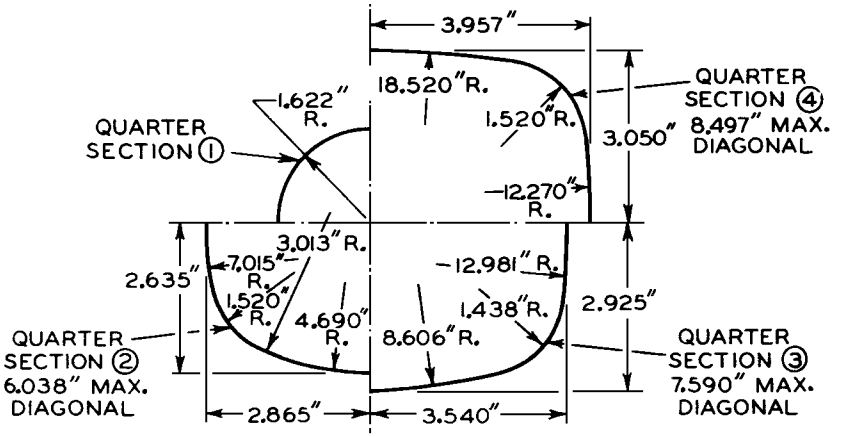
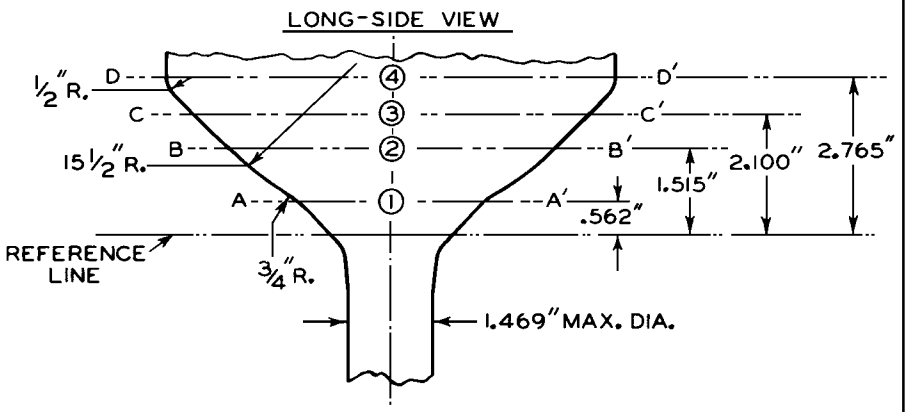
BULB-CONTOUR DIMENSIONS



TOP VIEW SHOWING MAXIMUM QUARTER-SECTION CONTOURS DEFINED BY PLANES AA', BB', CC', and DD'.



CONTOURS (1), (2), (3), AND (4) DEFINE MAXIMUM BULB DIMENSIONS IN THE PLANES AA', BB', CC', AND DD'. THE PLANES ARE NORMAL TO THE TUBE AXIS AND AT FIXED LOCATIONS

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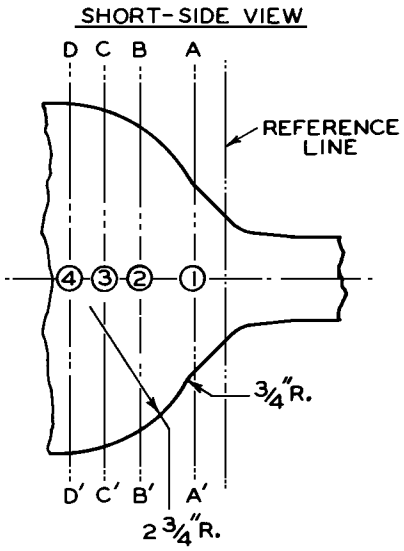
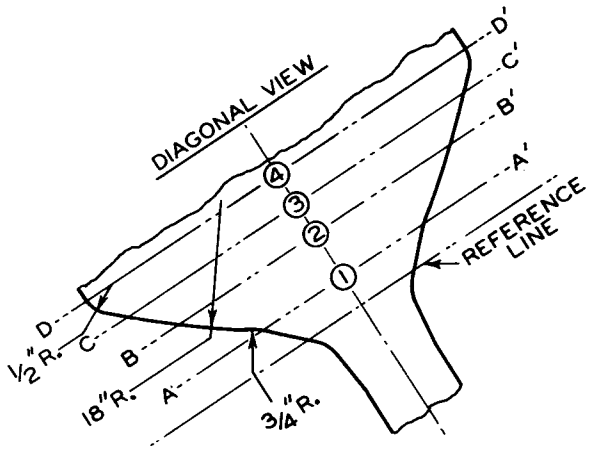
FOR MAXIMUM SPACE REQUIREMENTS





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FROM THE REFERENCE LINE. WHEN DIMENSIONED FROM THE FACEPLATE, THE AXIAL POSITIONS OF PLANES AA', BB', CC', AND DD' WILL VARY BY ±0.125".

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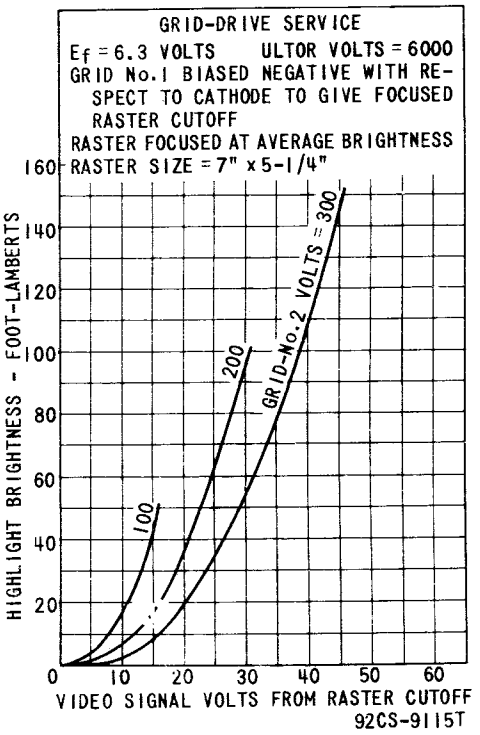
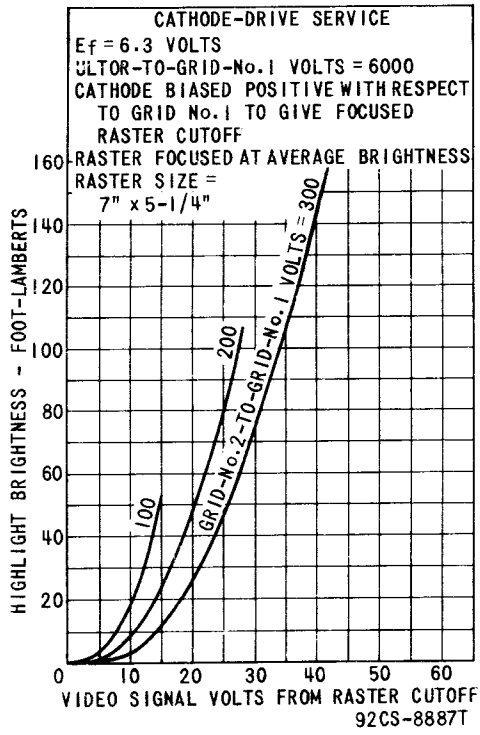
AVERAGE DRIVE CHARACTERISTICS





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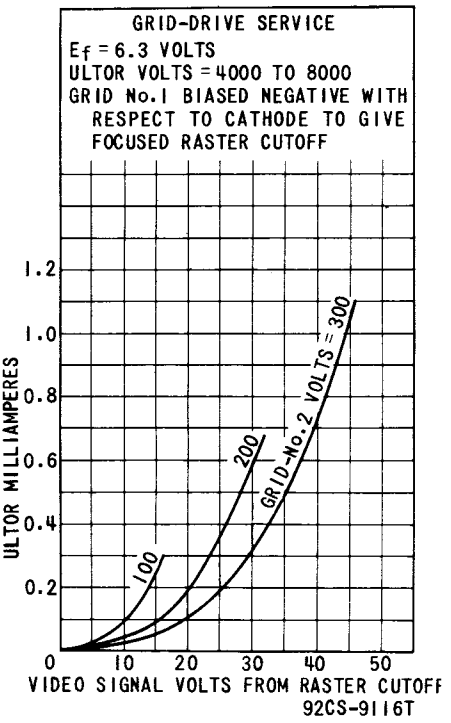
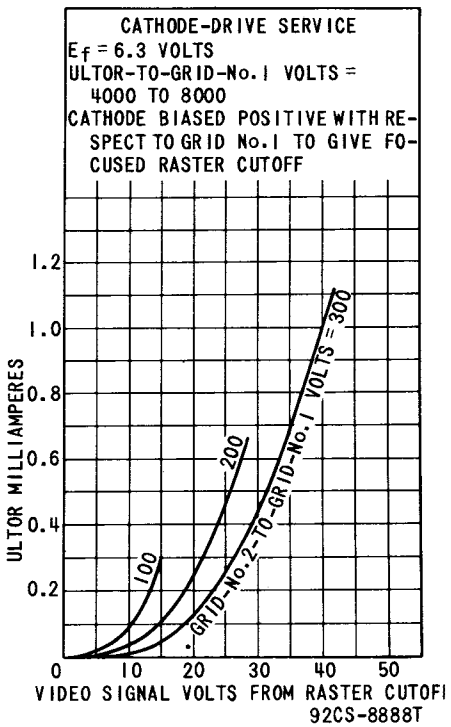
AVERAGE DRIVE CHARACTERISTICS





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