



17CFP4

17CFP4 PICTURE TUBE

RECTANGULAR GLASS TYPE
LOW-VOLTAGE ELECTROSTATIC FOCUS

ALUMINIZED SCREEN
MAGNETIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:

Voltage (AC or DC)	6.3	volts
Current	0.6 ± 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	{ 1500 max. 1200 min.	{ μf μf

Faceplate, Spherical	Filterglass
Light transmission (Approx.)	79%

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	90°
Horizontal	85°
Vertical	68°

Electron GunType Requiring No Ion-Trap Magnet

Tube Dimensions:

Overall length	15" ± 3/8"
Greatest width	15-5/8" ± 1/8"
Greatest height	12-3/4" ± 1/8"
Diagonal	16-9/16" ± 1/8"
Neck length	5-1/2" ± 3/16"
Radius of curvature of faceplate (External surface)	20-3/4"

Screen Dimensions (Minimum):

Greatest width	14-3/4"
Greatest height	11-11/16"
Diagonal	15-3/4"
Projected area	155 sq. in.

Weight (Approx.) 10 lbs

Operating PositionAny

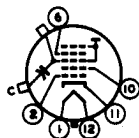
Cap. Recessed Small Cavity (JEDEC No. J1-21)

Bulb J132-1/2 C1/D1

Base Short Small-Shell Duodecal 6-Pin
(JEDEC Group 4, No. B6-203)

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^A SERVICE

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

Maximum and Minimum Ratings, Design-Center Values:

ULTOR VOLTAGE.	{16000 max. volts 12000* min. 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_{c_3k}) between 12000* and 16000 volts and grid-No.2 voltage (E_{c_2k}) between 200 and 500 volts

Grid-No.4 Voltage for focus \S	-50 to +350	volts
Grid-No.1 Voltage 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_{c_1k} 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	volts
and grid-No.2 voltage of	300	volts
Grid-No.4 Voltage for focus . . .	-50 to +350	volts
Grid-No.1 Voltage for visual extinction of focused raster.	-28 to -72	volts



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Grid-No.1 Video Drive from Raster
 Cutoff (Black level):
 White-level value. 28 to 72 volts

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 and Minimum Ratings, Design-Center Values:

ULTOR-TO-GRID-No.1 VOLTAGE { 16000 max. volts
 12000* min. 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 ($E_{c_5g_1}$) between 12000 and 16000 volts and grid-No.2-to-grid-No.1 voltage ($E_{c_2g_1}$) between 220 and 640 volts*

Grid-No.4-to-Grid-No.1
 Voltage for focus \S 0 to 400 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

Cathode-to-Grid-No.1
 Video Drive from Raster
 Cutoff (Black level):
 White-level value
 (Peak negative). Same value as determined for
 E_{kg_1} except video drive is a
 negative voltage

Grid-No.4 Current. -25 to +25 μ a



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Grid-No.2 Current.	-15 to +15	μ a
Field Strength of Adjust- able Centering Magnet*	0 to 8	gausses

Examples of Use of Design Ranges:

<i>With ultor-to-grid-</i>		
<i>No.1 voltage of.</i>	<i>16000</i>	<i>volts</i>
<i>and grid-No.2-to-grid-</i>		
<i>No.1 voltage of.</i>	<i>300</i>	<i>volts</i>
Grid-No.4-to-Grid-No.1		
Voltage for focus.	0 to 400	volts
Cathode-to-Grid No.1		
Voltage for visual extinction of focused raster	28 to 60	volts
Cathode-to-Grid-No.1		
Video Drive from Raster Cutoff (Black level): White-level value.	-28 to -60	volts

Maximum Circuit Values:

Grid-No.1-Circuit Resistance	1.5 max.	megohms
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▲ Grid drive is the operating condition in which the video signal varies the grid-No.1 potential with respect to cathode.

● This value is a working design-center minimum. The equivalent absolute minimum ultor- or ultor-to-grid-No.1 voltage is 10,800 volts, below which the serviceability of the 17CFP4 will be impaired. The equipment designer has the responsibility of determining a minimum design value such that under the worst probable operating conditions involving supply-voltage variation and equipment variation the absolute minimum ultor- or ultor-to-grid-No.1 voltage is never less than 10,800 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 2-1/2". Excluding extraneous fields, the center of the undeflected focused spot will fall within a circle having a 5/16-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.

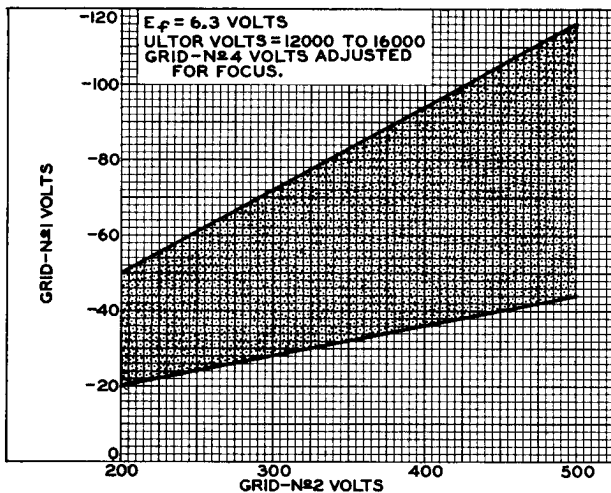
*For X-ray shielding considerations, see sheet
X-RAY PRECAUTIONS FOR CATHODE-RAY TUBES
at front of this Section*



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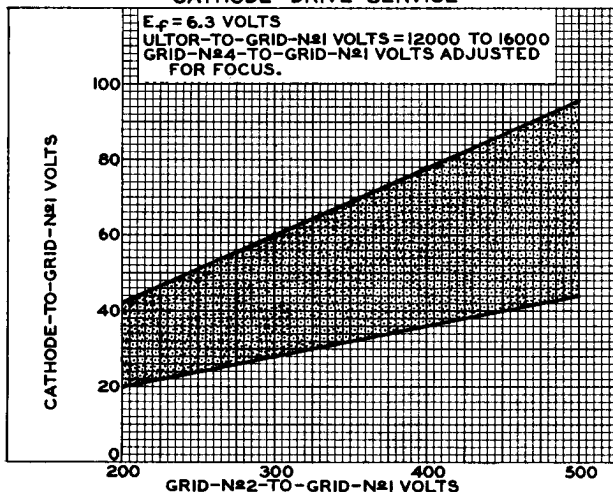
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RASTER-CUTOFF-RANGE CHARTS GRID-DRIVE SERVICE



92CS-10246

CATHODE-DRIVE SERVICE



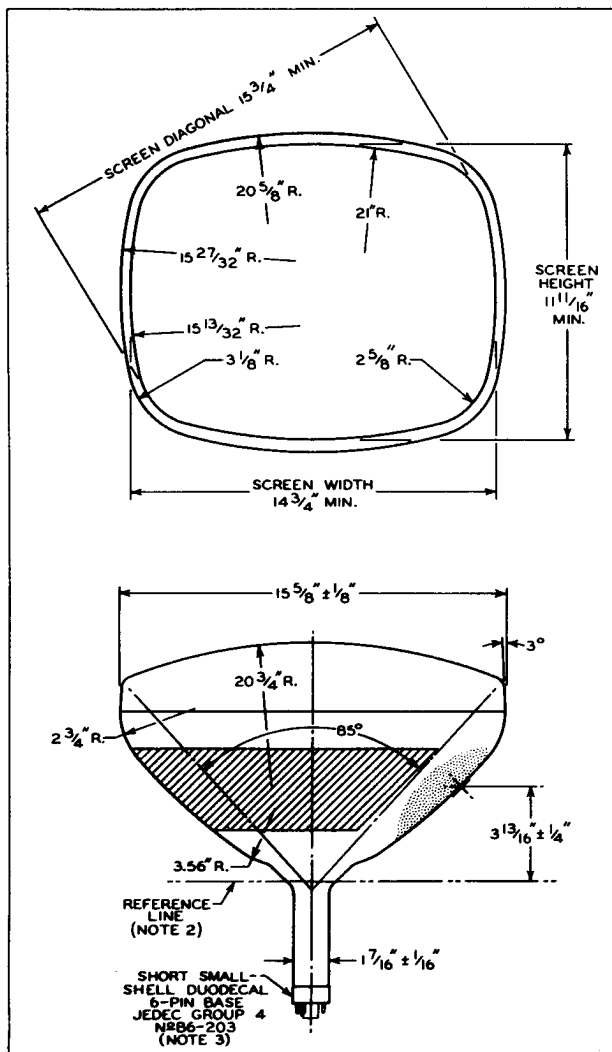
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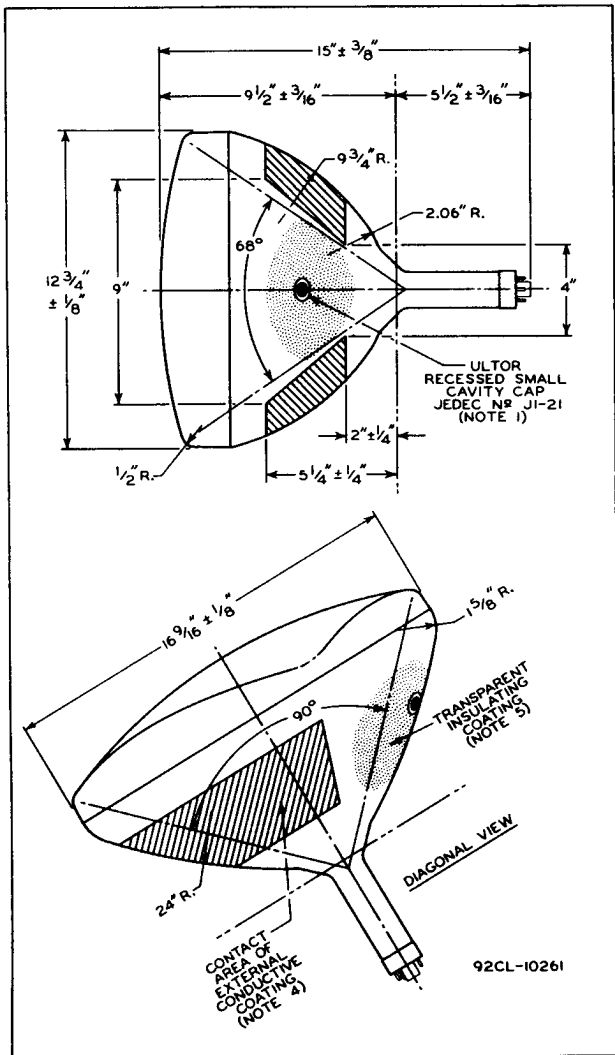




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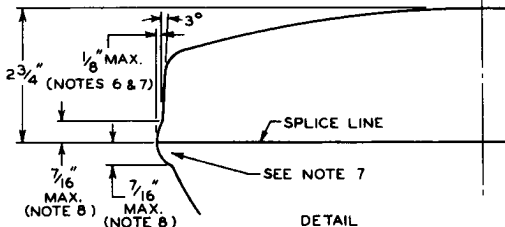
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NOTE 1: THE PLANE THROUGH THE TUBE AXIS AND PIN 6 MAY VARY FROM THE PLANE THROUGH THE TUBE AXIS AND ULTOR TERMINAL BY ANGULAR TOLERANCE (MEASURED ABOUT THE TUBE AXIS) OF $\pm 30^\circ$. ULTOR TERMINAL IS ON SAME SIDE AS PIN 6.

NOTE 2: WITH TUBE NECK INSERTED THROUGH FLARED END OF REFERENCE-LINE GAUGE JEDEC No. G-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. 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 2-3/4".

NOTE 4: EXTERNAL CONDUCTIVE COATING MUST BE GROUNDED.

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

NOTE 6: MEASURED $2-9/32" \pm 1/32"$ FROM THE PLANE TANGENT TO THE SURFACE OF THE FACEPLATE AT THE TUBE AXIS.

NOTE 7: BULGE AT SPLICE-LINE SEAL MAY INCREASE THE INDICATED MAXIMUM VALUE FOR ENVELOPE WIDTH, DIAGONAL, AND HEIGHT BY NOT MORE THAN 1/4", BUT AT ANY POINT AROUND THE SEAL, THE BULGE WILL NOT PROTRUDE MORE THAN 1/8" BEYOND THE ENVELOPE SURFACE AT THE LOCATION SPECIFIED FOR DIMENSIONING THE ENVELOPE WIDTH, DIAGONAL, AND HEIGHT.

NOTE 8: THE TUBE SHOULD BE SUPPORTED ON BOTH SIDES OF THE BULGE. THE MECHANISM USED SHOULD PROVIDE CLEARANCE FOR THE MAXIMUM DIMENSIONS OF THE BULGE.



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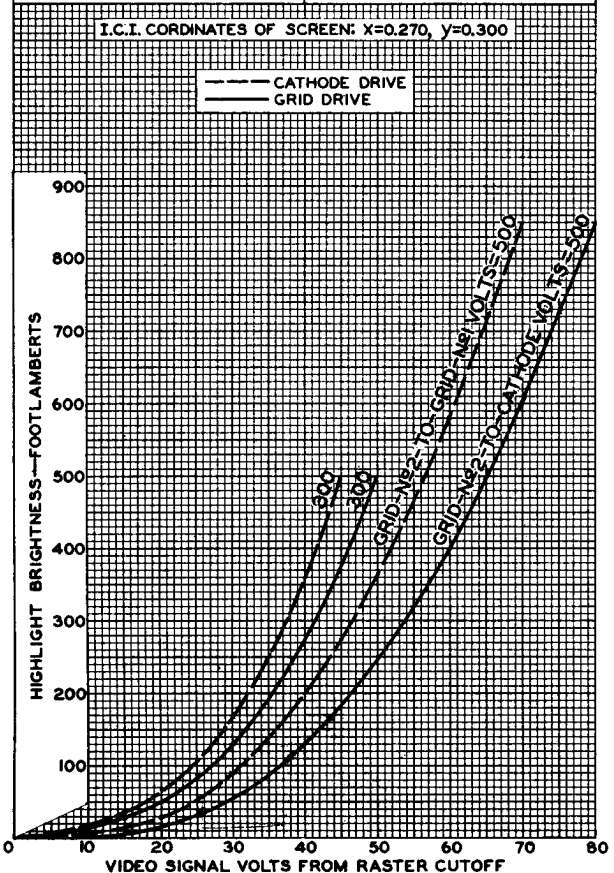
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AVERAGE DRIVE CHARACTERISTICS

CATHODE-DRIVE SERVICE
 $E_f = 6.3$ VOLTS
 ULTOR-TO-GRID- $N\#1$ VOLTS = 16000
 CATHODE BIASED POSITIVE WITH
 RESPECT TO GRID $N\#1$ TO GIVE
 FOCUSED RASTER CUTOFF.
 RASTER FOCUSED
 AT AVERAGE BRIGHTNESS.
 RASTER SIZE = $14'' \times 10\frac{1}{2}''$

GRID-DRIVE SERVICE
 $E_f = 6.3$ VOLTS
 ULTOR VOLTS = 16000
 GRID $N\#1$ BIASED NEGATIVE WITH
 RESPECT TO CATHODE TO GIVE
 FOCUSED RASTER CUTOFF.
 RASTER FOCUSED
 AT AVERAGE BRIGHTNESS.
 RASTER SIZE = $14'' \times 10\frac{1}{2}''$

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



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AVERAGE DRIVE CHARACTERISTICS

CATHODE-DRIVE SERVICE

$E_f = 6.3$ VOLTS
 ULTOR-TO-GRID-N₁
 VOLTS = 12000 TO 16000
 CATHODE BIASED POSITIVE WITH
 RESPECT TO GRID N₁ TO GIVE
 FOCUSED RASTER CUTOFF.

GRID-DRIVE SERVICE

$E_f = 6.3$ VOLTS
 ULTOR VOLTS = 12000 TO 16000
 GRID N₁ BIASED NEGATIVE WITH
 RESPECT TO CATHODE TO GIVE
 FOCUSED RASTER CUTOFF.

--- CATHODE DRIVE
 ——— GRID DRIVE

