



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 $\pm$ 10% amp

Direct Interelectrode Capacitances:

Grid No.1 to all other electrodes 6 μ f
Cathode to all other electrodes 5 μ f
External conductive coating to ultor $\begin{cases} 1500 \text{ max.} \\ 1200 \text{ min.} \end{cases}$ μ f

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 Gun Type Requiring No Ion-Trap Magnet

Tube Dimensions:

Overall length 15" $\pm$ 3/8"

Greatest width 15-5/8" $\pm$ 1/8"

Greatest height 12-3/4" $\pm$ 1/8"

Diagonal 16-9/16" $\pm$ 1/8"

Neck length 5-1/2" $\pm$ 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 Position Any

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

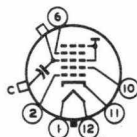
Pin 2—Grid No.1

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[▲] 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
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Negative value	500 max. volts
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GRID-No.2 VOLTAGE.	500 max. volts
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GRID-No.1 VOLTAGE:

Negative-peak value.	200 max. volts
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Negative-bias value.	140 max. volts
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Positive-bias value.	0 max. volts
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Positive-peak value.	2 max. volts
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PEAK HEATER-CATHODE VOLTAGE:

Heater negative with respect to cathode:

During equipment warm-up period not

exceeding 15 seconds	410 max. volts
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After equipment warm-up period	180 max. volts
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Heater positive with respect to cathode.	180 max. volts
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Equipment Design Ranges:

*With any ultor voltage (E_{c5k}) between 12000[‡] and 16000 volts
and grid-No.2 voltage (E_{c2k}) between 200 and 500 volts*

Grid-No.4 Voltage for focus [§]	-50 to +350	volts
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Grid-No.1 Voltage for visual extinction of focused raster.	See Raster-Cutoff-Range Chart for Grid-Drive Service	
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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
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Grid-No.4 Current	-25 to +25	μ a
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Grid-No.2 Current	-15 to +15	μ a
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Field Strength of Adjustable Centering Magnet*.	0 to 8	gausses
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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
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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 $\begin{cases} 16000 & \text{max. volts} \\ 12000^{\oplus} & \text{min. volts} \end{cases}$

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 16000 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 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 voltageGrid-No.4 Current. -25 to +25 μ a



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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:

<i>With ultor-to-grid-</i>		
No.1 voltage of.	16000	volts
<i>and grid-No.2-to-grid-</i>		
No.1 voltage of.	300	volts
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.

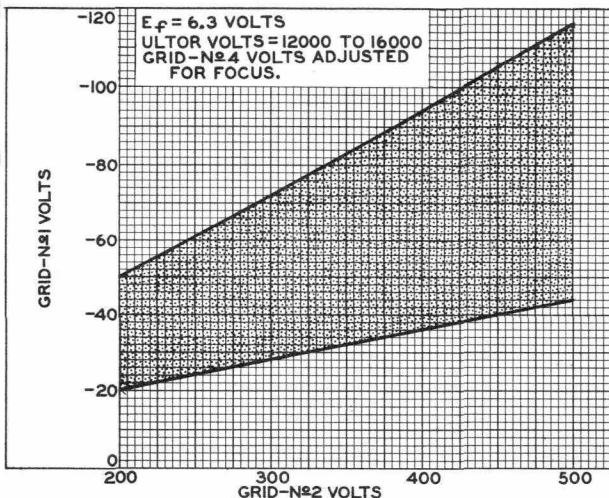
*For X-ray shielding considerations, see sheet
X-RAY PRECAUTIONS FOR CATHODE-RAY TUBES
at front of this Section*



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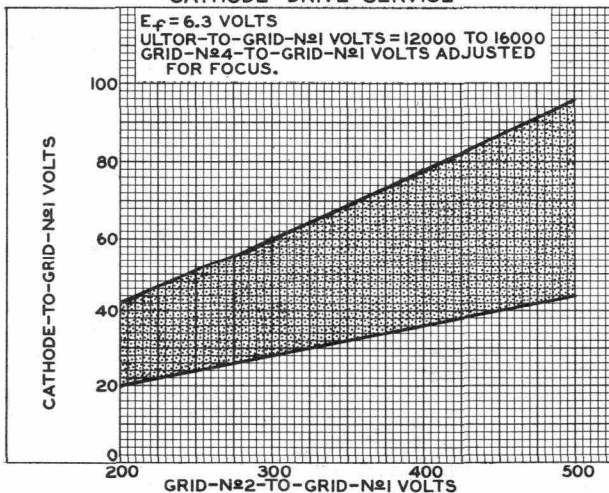
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RASTER-CUTOFF-RANGE CHARTS GRID-DRIVE SERVICE



92CS-10246

CATHODE-DRIVE SERVICE

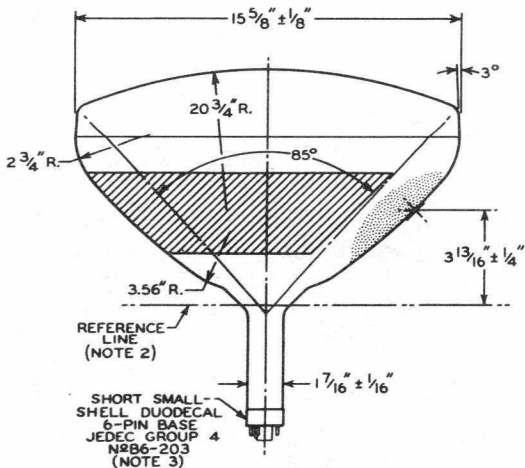
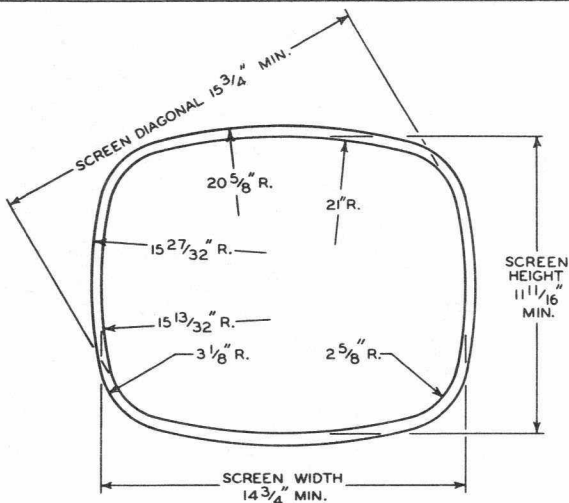


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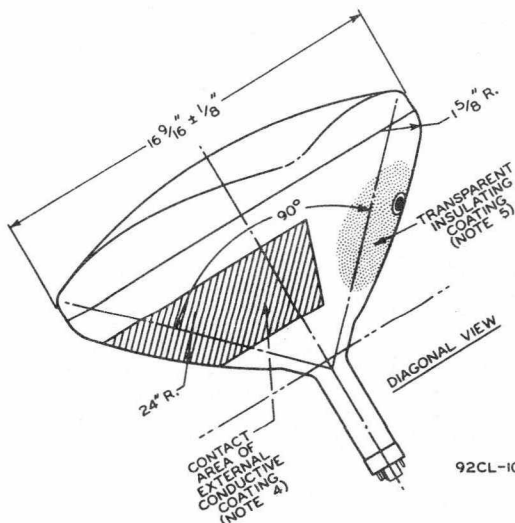
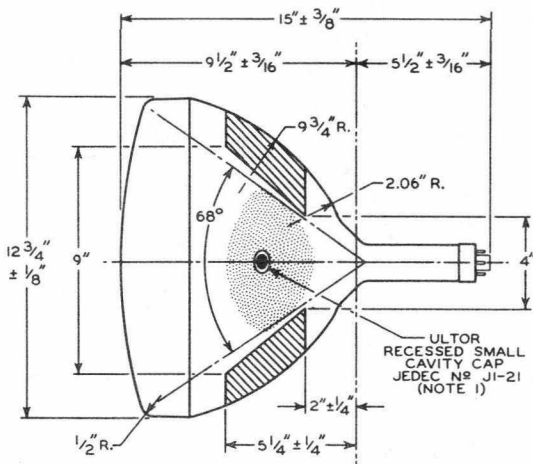




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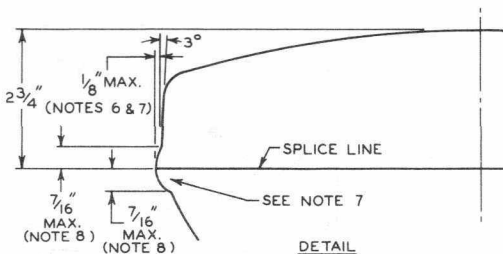
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92CL-10261



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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 $2\frac{3}{4}$ ".

NOTE 4: EXTERNAL CONDUCTIVE COATING MUST BE GROUNDING.

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

NOTE 6: MEASURED $2\frac{9}{32}$ " $\pm$ $\frac{1}{32}$ " 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 $\frac{1}{4}$ ", BUT AT ANY POINT AROUND THE SEAL, THE BULGE WILL NOT PROTRUDE MORE THAN $\frac{1}{8}$ " 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.

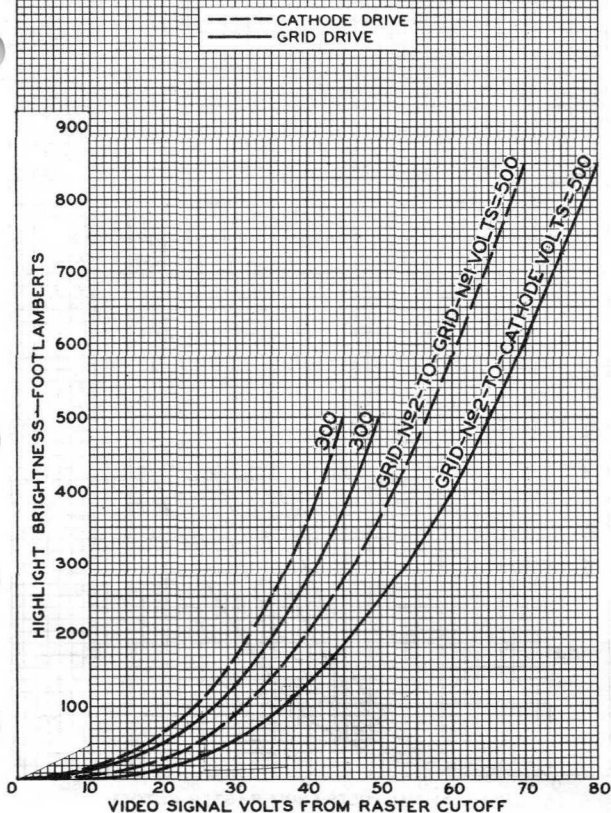


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AVERAGE DRIVE CHARACTERISTICS

CATHODE-DRIVE SERVICE	GRID-DRIVE SERVICE
$E_f = 6.3$ VOLTS	$E_f = 6.3$ VOLTS
ULTOR-TO-GRID-№1 VOLTS = 16000	ULTOR VOLTS = 16000
CATHODE BIASED POSITIVE WITH RESPECT TO GRID №1 TO GIVE FOCUSED RASTER CUTOFF.	GRID №1 BIASED NEGATIVE WITH RESPECT TO CATHODE TO GIVE FOCUSED RASTER CUTOFF.
RASTER FOCUSED AT AVERAGE BRIGHTNESS.	RASTER FOCUSED AT AVERAGE BRIGHTNESS.
RASTER SIZE = $14'' \times 10\frac{1}{2}''$	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

 $E_f = 6.3$ VOLTSULTOR-TO-GRID- $N_{\#1}$

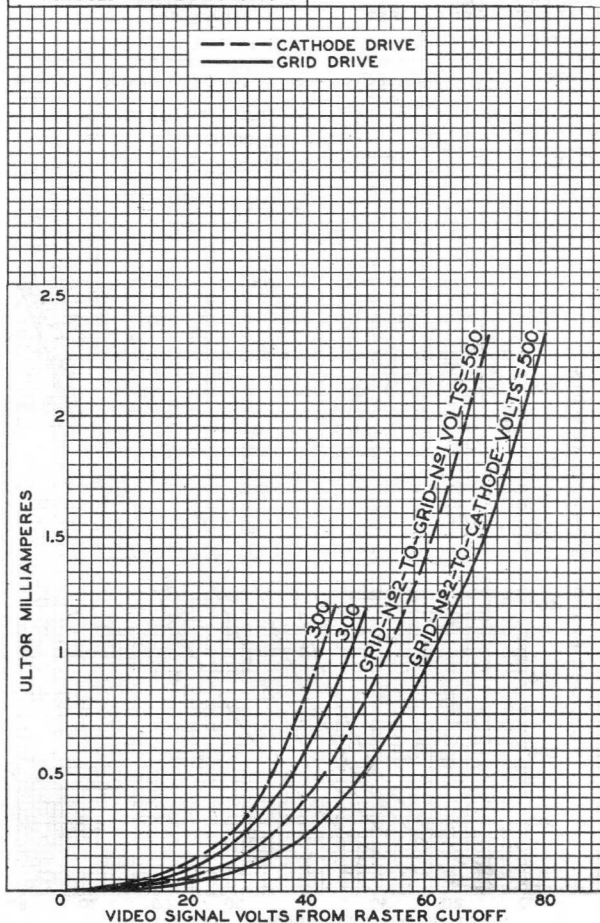
VOLTS = 12000 TO 16000

CATHODE BIASED POSITIVE WITH
RESPECT TO GRID $N_{\#1}$ TO GIVE
FOCUSED RASTER CUTOFF.

GRID-DRIVE SERVICE

 $E_f = 6.3$ VOLTS

ULTOR VOLTS = 12000 TO 16000

GRID $N_{\#1}$ BIASED NEGATIVE WITH
RESPECT TO CATHODE TO GIVE
FOCUSED RASTER CUTOFF.

ELECTRON TUBE DIVISION

RADIO CORPORATION OF AMERICA, HARRISON, NEW JERSEY

92CM-9243