



17DSP4

# 17DSP4 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	$\mu\mu\text{f}$
Cathode to all other electrodes . . . . .	5	$\mu\mu\text{f}$
External conductive coating to ultor. . . . .	{1500 max.	$\mu\mu\text{f}$
	{1000 min.	$\mu\mu\text{f}$

Faceplate, Spherical . . . . . Filterglass

Light transmission (Approx.) . . . . . 78%

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 . . . . . 11-1/4"  $\pm$  3/16"

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 . . . . . 4-1/8"  $\pm$  1/8"

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 A1/B1

Socket . . . . . Ucinite Part No. 115446, or equivalent



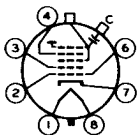
## 17DSP4

## PICTURE TUBE

Base . . . . . Small-Button Neoeightar 7-Pin, Arrangement 1,  
(JEDEC No. B7-208)

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<sup>A</sup> SERVICE

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

## Maximum and Minimum Ratings, Design-Center Values:

ULTOR VOLTAGE . . . . .	{ 18000 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 ( $E_{c5k}$ ) between 12000\* and 18000 volts and grid-No. 2 voltage ( $E_{c2k}$ ) between 200 and 500 volts*

Grid-No. 4 Voltage for focus $\S$ . . . . .	0 to 400	volts
Grid-No. 1 Voltage ( $E_{c1k}$ ) for visual extinction of focused raster . . . . .	<i>See Raster-Cutoff-Range Chart for Grid-Drive Service</i>	

## 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



17DSP4

17DSP4

PICTURE TUBE

Grid-No.4 Current. . . . .	-25 to +25	$\mu$ a
Grid-No.2 Current. . . . .	-15 to +15	$\mu$ a
Field Strength of Adjust- able Centering Magnet* . . . . .	0 to 8	gausses

Examples of Use of Design Ranges:

<i>With ultor voltage of</i>	16000	16000	volts
<i>and grid-No.2 voltage of</i>	300	400	volts
Grid-No.4 Voltage for focus. . . . .	0 to 400	0 to 400	volts
Grid-No.1 Voltage for visual extinction of focused raster . . . . .	-38 to -72	-45 to -90	volts
Grid-No.1 Video Drive from Raster Cutoff (Black level): White-level value. . . . .	38 to 72	45 to 90	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 and Minimum Ratings, Design-Center Values:

ULTOR-TO-GRID-No.1 VOLTAGE . . . . .	{ 18000 max.	volts
	{ 12000* min.	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



## 17DSP4

## PICTURE TUBE

## Equipment Design Ranges:

With any ultor-to-grid-No.1 voltage ( $E_{c5g_1}$ ) between 12000\* and 18000 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 400 volts

## Cathode-to-Grid-No.1 Voltage

( $E_{k_1}$ ) 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  $E_{k_1}$  except video drive is a negative value

Grid-No.4 Current . . . . . -25 to +25  $\mu$ a

Grid-No.2 Current . . . . . -15 to +15  $\mu$ a

Field Strength of Adjustable Centering Magnet\*. . . . . 0 to 8 gauss

## Examples of Use of Design Ranges:

With ultor-to-grid-No.1 voltage of 16000 16000 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 400 0 to 400 volts

## Cathode-to-Grid-No.1

Voltage for visual extinction of focused raster. . . . . 35 to 63 43 to 78 volts

## Cathode-to-Grid-No.1 Video

Drive from Raster Cutoff (Black level):  
White-level value . . . . . -35 to -63 -43 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.

\* This value is a working design-center minimum. The equivalent absolute minimum ultor (or ultor-to-grid-No.1) voltage is 11,000 volts, below which the serviceability of the 17DSP4 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 11,000 volts.

§ The grid-No.4 (or grid-No.4-to-grid-No.1) voltage required for optimum focus of any individual tube will have a value between 0 and 400 volts independent of ultor current and will remain essentially constant for values of ultor (or ultor-to-grid-No.1) voltage or grid-No.2 (or grid-No.2-to-grid-No.1) voltage within design ranges shown for these items.



17DSP4

## PICTURE TUBE

17DSP4

- \* Distance from *Reference Line* for suitable PM centering magnet should not exceed  $2\frac{1}{8}$ ". Excluding extraneous fields, the center of the undeflected focused spot will fall within a circle having a  $\frac{5}{16}$ -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  $\frac{1}{2}$ -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.

### OPERATING CONSIDERATIONS

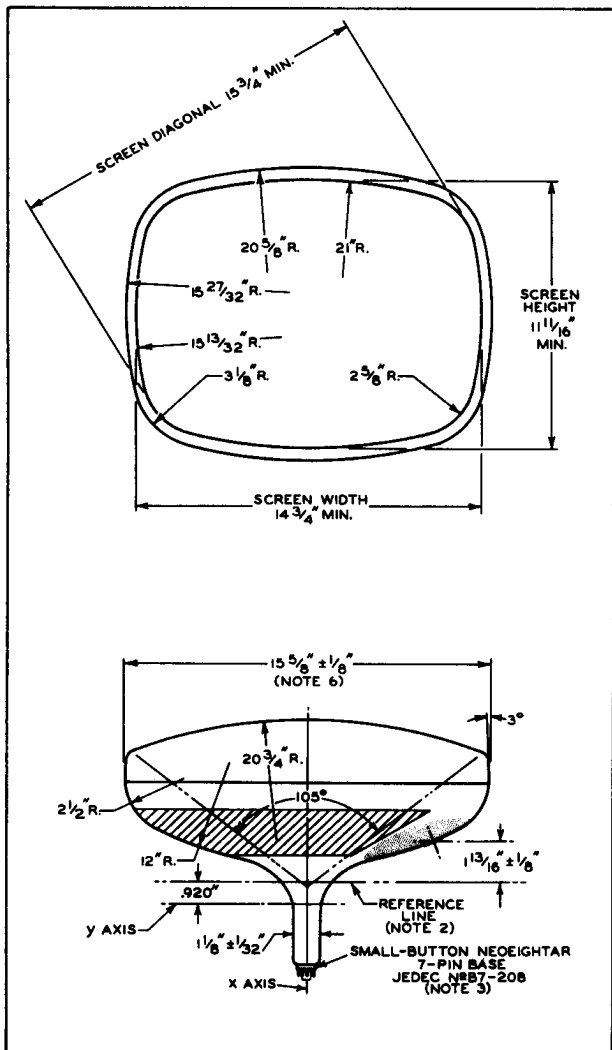
*Shatter-Proof Cover Over the Tube Face.* Following conventional picture-tube practice, it is recommended that the cabinet be provided with a shatter-proof, glass cover over the face of the 17DSP4 to protect it from being struck accidentally and to protect against possible damage resulting from tube implosion under some abnormal condition. This safety cover can also provide X-ray protection when required.

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

17DSP4



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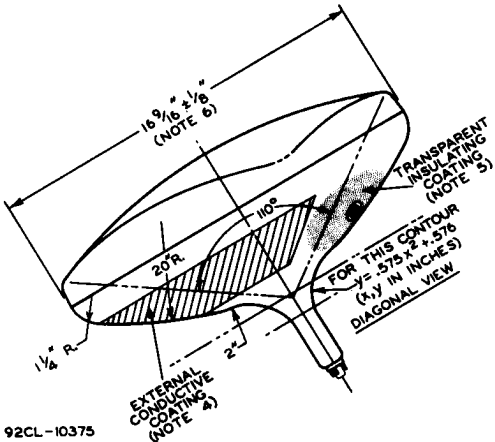
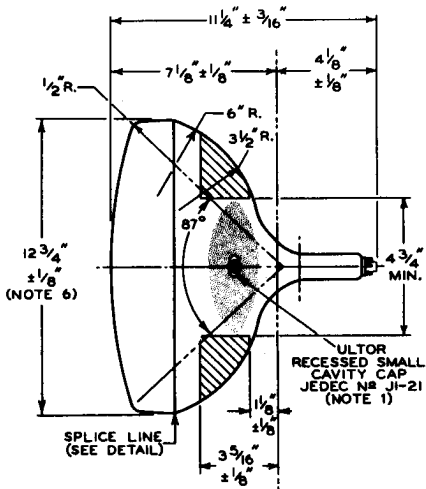




17DSP4

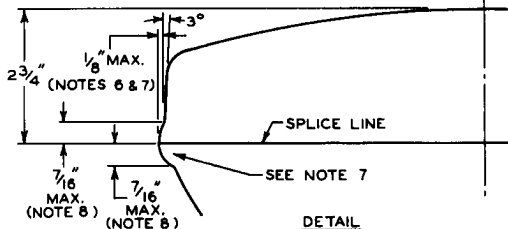
PICTURE TUBE

17DSP4





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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 CIRCUIT WIRING 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  $1-3/4$ ".

**NOTE 4:** EXTERNAL CONDUCTIVE COATING MUST BE GROUNDING.

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

**NOTE 6:** MEASURED  $2-9/32" \pm 1/32"$  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. SUPPORTS MUST BE SPACED FROM THE TUBE BY THE USE OF CUSHIONING PADS MADE OF MATERIAL SUCH AS ASPHALT-IMPREGNATED FELT, OR EQUIVALENT.

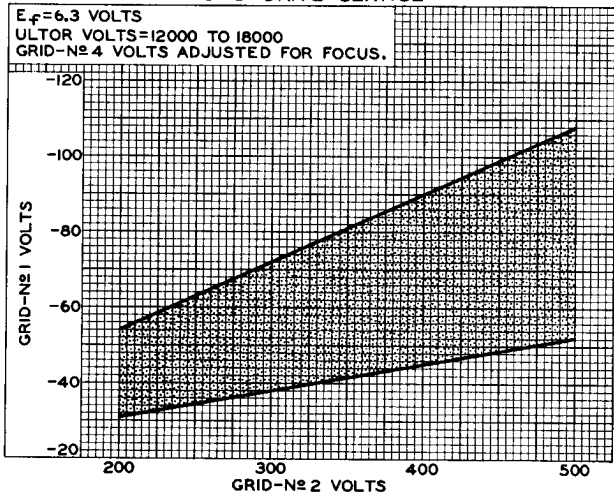




17DSP4

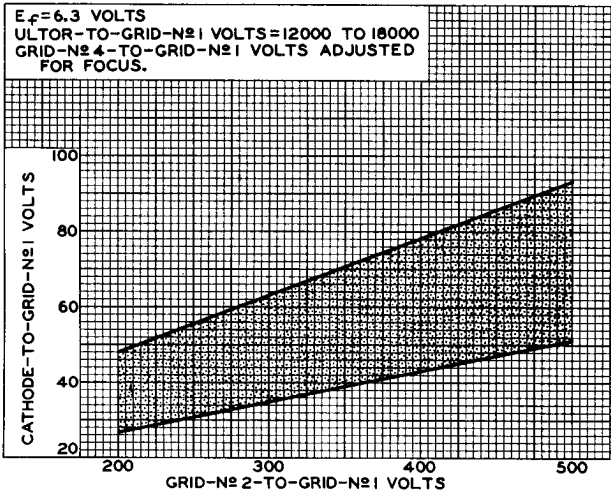
# 17DSP4

## RASTER-CUTOFF-RANGE CHARTS GRID-DRIVE SERVICE



92CS-10376

## CATHODE-DRIVE SERVICE



92CS-10377

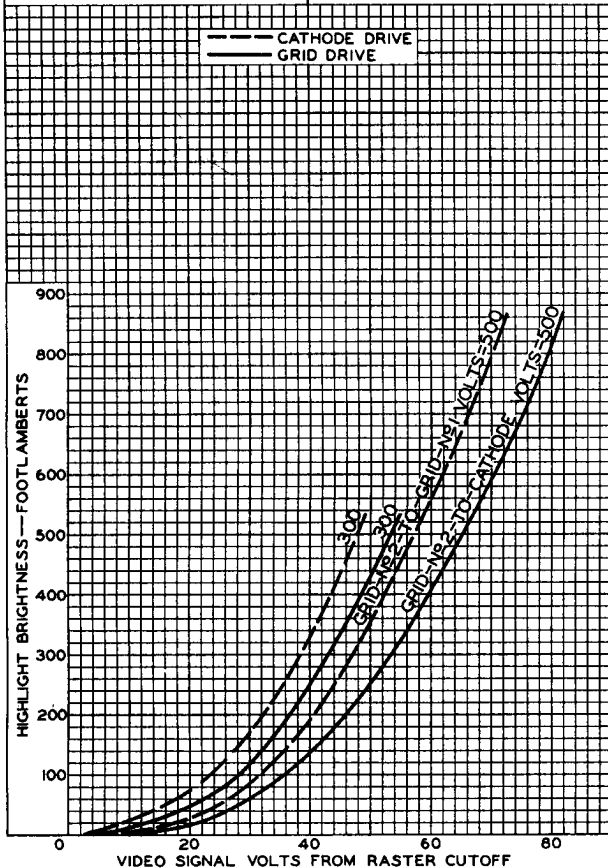
17DSP4



17DSP4

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 = $14" \times 10\frac{1}{2}"$





17DSP4

17DSP4

### AVERAGE DRIVE CHARACTERISTICS

<p><b>CATHODE-DRIVE SERVICE</b>  <math>E_f = 6.3</math> VOLTS          ULTOR-TO-GRID-N<sup>o</sup>1          VOLTS = 12000 TO 18000          CATHODE BIASED POSITIVE WITH          RESPECT TO GRID N<sup>o</sup>1 TO GIVE          FOCUSED RASTER CUTOFF.</p>	<p><b>GRID-DRIVE SERVICE</b>  <math>E_f = 6.3</math> VOLTS          ULTOR VOLTS = 12000 TO 18000          GRID N<sup>o</sup>1 BIASED NEGATIVE WITH          RESPECT TO CATHODE TO GIVE          FOCUSED RASTER CUTOFF.</p>
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