



2IDFP4

2IDFP4 PICTURE TUBE

RECTANGULAR GLASS TYPE
LOW-VOLTAGE FOCUS

ALUMINIZED SCREEN
MAGNETIC DEFLECTION

DATA

General:

Heater, for Unipotential Cathode:

Voltage 6.3 ac or dc volts

Current 0.6 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. . . { 2200 max. μf
1500 min. μf

Faceplate, Spherical. Filterglass

Light transmission (Approx.). 73%

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

Fluorescence. White

Phosphorescence White

Persistence 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. 14-7/16" $\pm$ 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" $\pm$ 1/8"

Screen Dimensions (Minimum):

Greatest width. 19-1/16"

Greatest height 15-1/16"

Diagonal. 20-1/4"

Projected area. 262 sq. in.

Weight (Approx.). 23 lbs

Operating Position. Any

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

Bulb. J171 (110°)

Socket. Ucinite Part No.115446, or equivalent

Base. Small-Button Eightar 7-Pin,
Arrangement 2, (JETEC No.87-183)

Basing Designation for BOTTOM VIEW. 8HR

Pin 1—Heater

Pin 2—Grid No.1

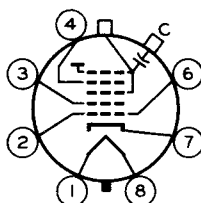
Pin 3—Grid No.2

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



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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.	{18000 max. volts 12000 [⊕] min. volts
GRID-No.4 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.	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 [§]	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	
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	14000	16000	volts
and grid-No.2 voltage of	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.	-28 to -72	-36 to -94	volts

[▲], [⊕], [§], * : See next page.



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Grid-No.1 Video Drive
from Raster Cutoff
(Black Level):

White-level value. 28 to 72 36 to 94 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 Ratings, Design-Center Values:

ULTOR-TO-GRID-No.1 VOLTAGE {18000 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. 180 max. volts

Heater positive with respect to cathode. 180 max. volts

Equipment Design Ranges:

*With any ultor-to-grid-No.1 voltage (E_{c5g1}) between 12000
and 18000 volts and grid-No.2-to-grid-No.1 voltage (E_{c2g1})
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_{kg1}) 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_{kg1} except video drive is a
negative voltage

Grid-No.4 Current. -25 to +25 μ a

▲, ⊕, §, *, ■: See next page.

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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	14000	16000	volts
<i>and grid-No.2-to-grid-</i>			
No.1 voltage of	300	400	volts
<i>Grid-No.4-to-Grid-</i>			
No.1 Voltage for focus.	0 to 400	0 to 400	volts
<i>Cathode-to-Grid-No.1</i>			
Voltage for visual extinction of focused raster.	28 to 60	36 to 78	volts
<i>Cathode-to-Grid-No.1</i>			
Video Drive from Raster Cutoff (Black Level):			
White-level value.	-28 to -60	-36 to -78	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 11,000 volts, below which the serviceability of the 21DFP4 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 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*

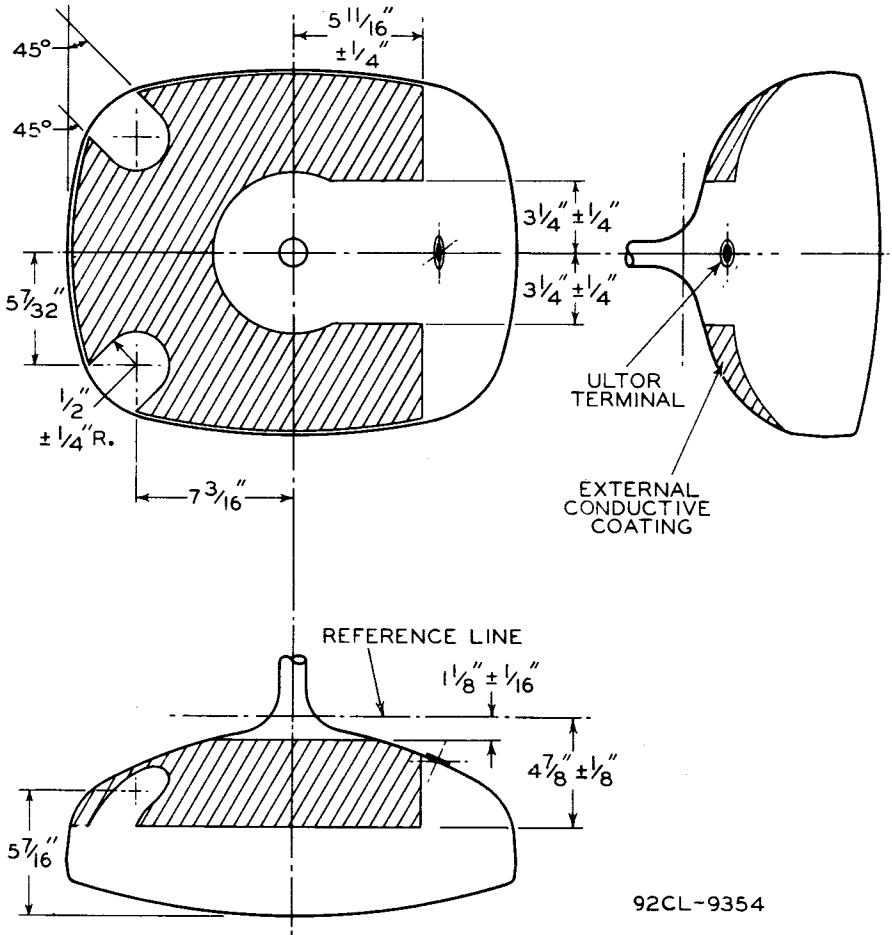
**Curves and Charts shown under Type 21CEP4
also apply to the 21DFP4**



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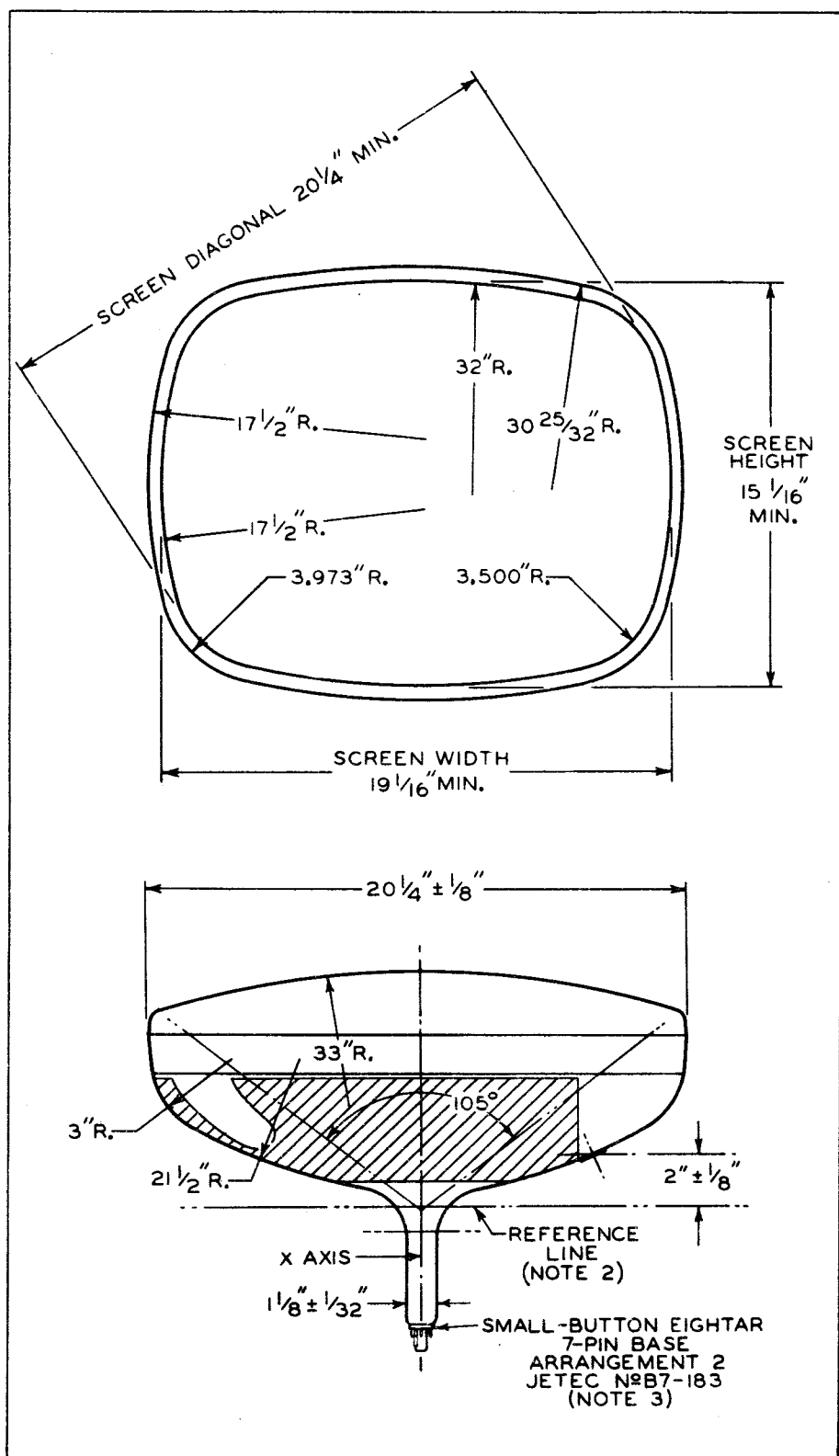
DETAIL SHOWING EXTERNAL CONDUCTIVE COATING



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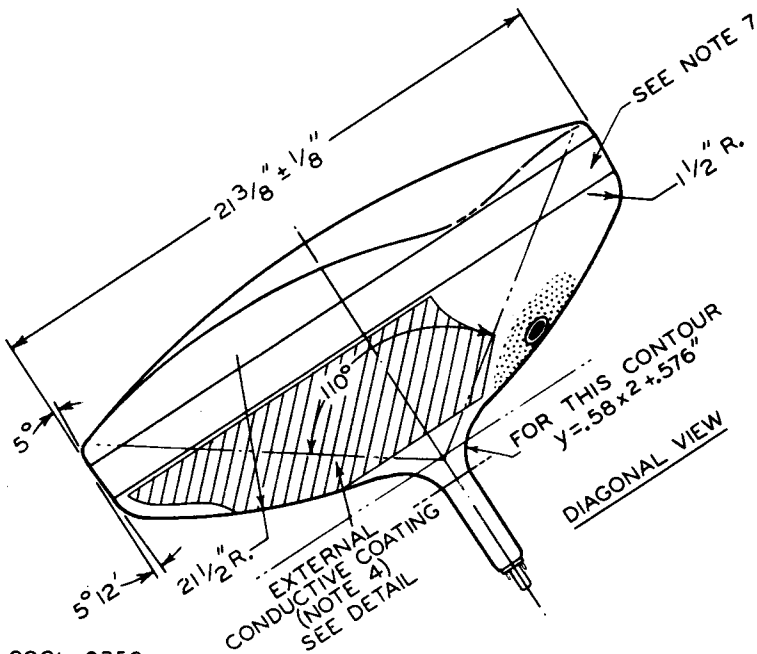
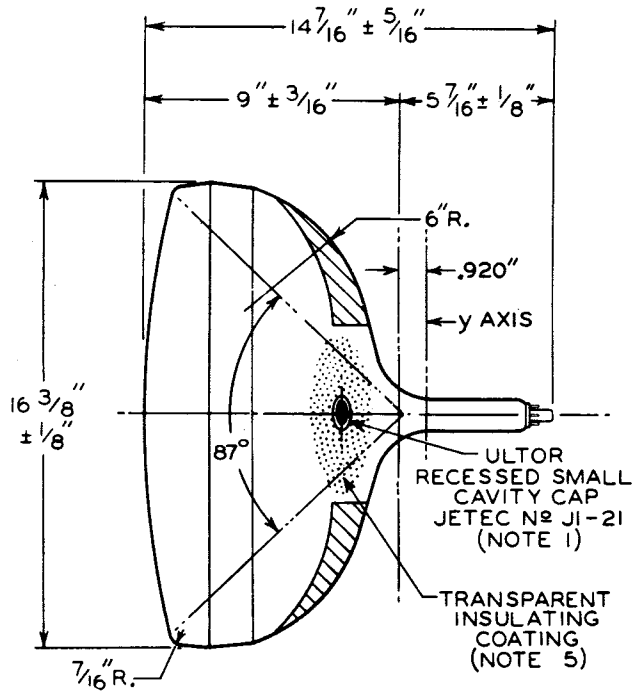




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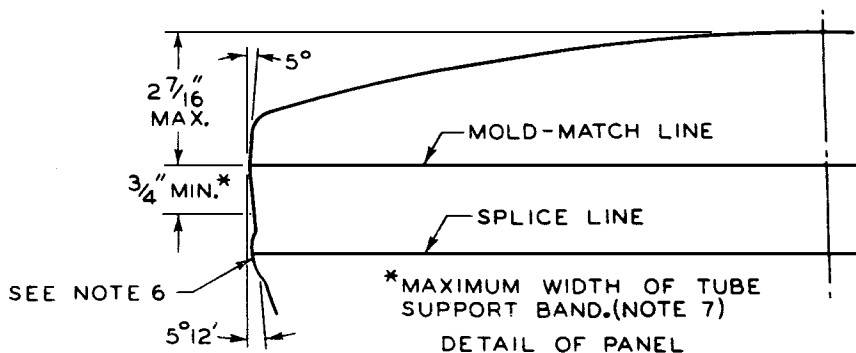


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NOTE 1: THE PLANE THROUGH THE TUBE AXIS AND PIN 4 MAY VARY FROM THE PLANE THROUGH THE TUBE AXIS AND ULTOR TERMINAL BY ANGULAR TOLERANCE (MEASURED ABOUT THE TUBE AXIS) OF $\pm 30^\circ$. ULTOR TERMINAL IS ON SAME SIDE AS PIN 4.

NOTE 2: WITH TUBE NECK INSERTED THROUGH FLARED END OF REFERENCE-LINE GAUGE JETEC No. 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 $1\text{--}3/4$ ".

NOTE 4: EXTERNAL CONDUCTIVE COATING MUST BE GROUNDING.

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

NOTE 6: 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.