May 16, 1958

TELEVISION PICTURE TUBE TYPE 21CEP4

110° Magnetic Deflection
Rectangular Glass
Aluminized
Neutral Gray Glass
External Conductive Coating
Spherical Faceplate
No Ion Trap
19-1/16" x 15-1/16" Picture

The 21CEP4 is a low-voltage-electrostatic focus, rectangular glass picture tube. It has a spherical neutral gray glass faceplate, an aluminized screen and an external conductive coating.

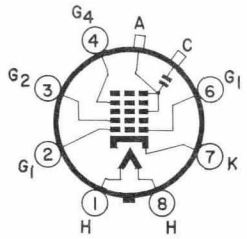
The 21CEP4 features wide angle (110°) deflection and an improved, short, electron gun. As a result of these features, the overall length is greatly reduced. Television receiver designers using this tube can employ more compact cabinets than were previously required for 21" tubes. The 21CEP4 also has a smaller diameter neck permitting more efficient deflection. By this means the power necessary to fully scan the picture area is little more than that required for a 90° Tube.

ELECTRICAL:

Cathode	Coated Unipotential	
Heater:		
Voltage (ac or dc)	6.3	Volts
Current	0.60	Ampere
Direct Interelectrode Capacitances:		
Grid 1 to all other Electrodes	6	uuf
Cathode to all other Electrodes	5	uuf
External Conductive Coating to Anode:		
Maximum	2500	uuf
Minimum	2000	uuf
Screen:		
Phosphor	No. 4 Sulfide Type	
Fluorescence	White	
Persistance	Short	
Focusing Method	Low Voltage Electrostatic	
Deflection Method	Magnetic	
Horizontal Angle	105°	
Vertical Angle	87°	
Diagonal Angle	110°	
No Ion Trap	No Magnet Required	

MECHANICAL:

Mounting Position	Any
Screen Dimensions:	
Height	15-1/16"
Width	19-1/16"
Diagonal	20-1/4"
Area	262 sq. Inches
Faceplate	Spherical
Glass	Neutral Gray
Transmission	73%
Bulb Dimensions:	
Height	16-3/8" ± 1/8"
Width	20-1/4" ± 1/8"
Diagonal	21-3/8" ± 1/8"
Overall Length	14-7/16" ± 5/16"
Anode Terminal	Recessed Small Cavity Cap (JETEC J1-21)
Base	Small Button 7-Pin ((JETEC B7-183)
Basing	8HR
Net Weight	23 Pounds



8HR

CATHODE DRIVE OPERATION

MAXIMUM RATINGS:

Design Center Values

Anode to Grid 1 Voltage	18000▲	max.	Volts
Grid 4 to Grid 1 Voltage:			
Positive Value	1000	max.	Volts
Negative Value	500	max.	Volts
Grid 2 to Grid 1 Voltage	640	max.	Volts
Cathode to Grid 1 Voltage:			
Positive Bias Value	140	max.	Volts
Positive Peak Value	200	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

TYPICAL OPERATING CONDITIONS:

Anode to Grid 1 Voltage♦	14000	16000	Volts
Grid 4 to Grid 1 Voltage	0 to +400	0 to +400	Volts
Grid 2 to Grid 1 Voltage	300	400	Volts
Cathode to Grid 1 Voltage for Raster Cutoff	28 to 60	28 to 60	Volts

GRID DRIVE OPERATION

MAXIMUM RATINGS:

Design Center Values

Anode Voltage	18000▲	max.	Volts
Grid 4 Voltage:			
Positive Value	1000	max.	Volts
Negative Value	500	max.	Volts
Grid 2 Voltage	500	max.	Volts
Grid 1 Voltage:			
Positive Bias Value	0	max.	Volts
Positive Peak Value	2	max.	Volts
Negative Bias Value	140	max.	Volts
Negative Peak Value	200	max.	Volts
Peak Heater-Cathode Voltage:			
Heater Negative with respect to Cathode	180	max.	Volts
Heater Positive with respect to Cathode	180	max.	Volts

TYPICAL OPERATING CONDITIONS:

Anode Voltage♦	14000	16000	Volts
Grid 4 Voltage	0 to +400	0 to +400	Volts
Grid 2 Voltage	300	400	Volts
Grid 1 Voltage for Raster Cutoff	-28 to -72	-36 to -94	Volts

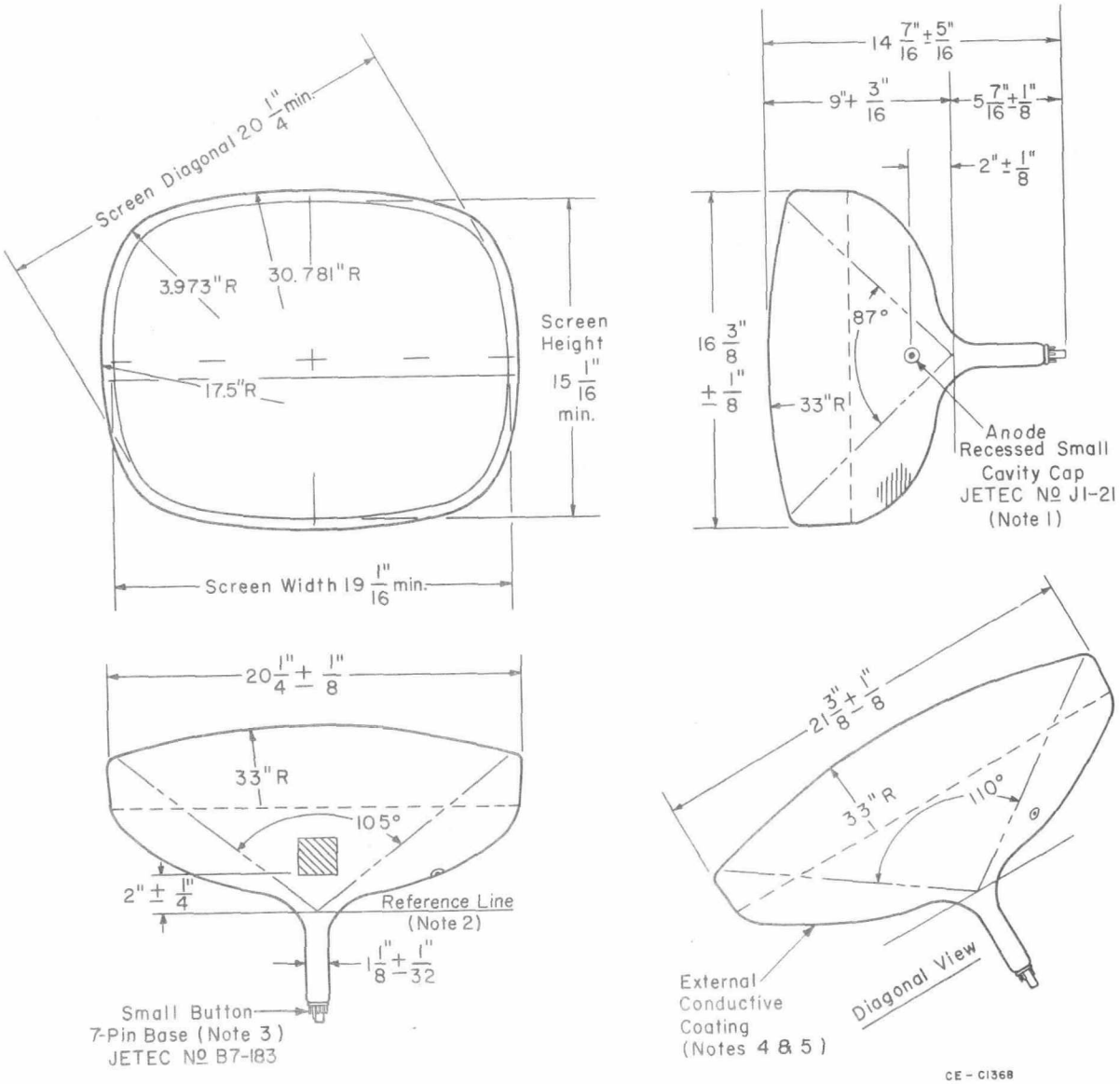
LIMITING CIRCUIT VALUES:

Grid 4 Resistance to Voltage Source■	0.10	min.	Megohms
Grid 2 Resistance to Voltage Source■	0.10	min.	Megohms
Grid 1 Circuit Resistance	1.5	max.	Megohms

♦ Operation with anode voltage or anode to grid 1 voltage less than 12000 volts is not recommended.

■ Protective resistance in the grid 4 and grid 2 circuits is advisable to prevent damage to the tube. If applicable, one resistor common to both circuits may be used.

▲ Inasmuch as the tube rating permits operation at voltages as high as 19.8 kilovolts (absolute value), shielding of the tube for x-ray radiation may be needed when operating conditions involve voltages in excess of 16 kilovolts.



NOTE 1: The plane through the tube axis and base pin 4 may vary from the plane through the tube axis and the anode terminal by an angular tolerance of ±30°. The anode terminal is on the same side of the tube as pin 4.

NOTE 2: With the tube neck inserted through the flared end of Reference Line Gauge JETEC No. 126 and with the tube seated in the gauge, the reference line is determined by the intersection of the plane face of the flared end of the gauge with the tube funnel.

NOTE 3: The socket should not be mounted rigidly, but should be allowed to move freely and have flexible leads. The associated wiring should not impress latual strains on the base pins. The bottom circumference of the base wafer will lie within a circle concentric with the bulb axis and having a diameter of 1-3/4".

NOTE 4: External conductive coating forms supplementary filter capacitor and must be grounded.

NOTE 5: Contact area of external conductive coating 2" min. x 2" min. located 2" ± 1/4" from Reference Line 90° counterclockwise from anode button as viewed from base end of tube.