TELEVISION PICTURE TUBE TYPE 14AEP4

February 20, 1957

90° Deflection
Rectangular Glass
Magnetic Deflection

Low G2 Voltage
Cathode Drive Design
Aluminized
No Ion Trap

External Conductive Coating
Spherical Face Plate
12 1/16" x 9 1/2" Picture

The 14AEP4 is an electrostatic-focus picture tube of rectangular glass construction with a spherical face plate of neutral gray glass. Its features include an electron gun designed specifically for cathode drive operation. Fuller advantage is taken of the potentialities of cathode drive, with the result that this tube gives increased highlight contrast, as compared with conventional tubes, with equal or slightly less drive required. It operates at a low G2 voltage. The allowable cutoff range has been reduced to assure greater uniformity of product. The 14AEP4 has an external conductive coating, and it has a metalbacked screen for increased picture brightness. A new design no-ion-trap gun allows a reduction in overall length from previous 90° tubes.

ELECTRICAL:		
Cathode	Coated Unipotential	
Heater:		
Voltage	6.3 ac or dc	Volts
Current	0.6	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	1200	uuf
Minimum	800	uuf
Screen		
Phosphor	No. 4 Sulfide Type	
Fluorescence	White	
Persistence	Short	
Focusing Method	Low-Voltage Electrostatic	
Deflection Method	Magnetic	
Horizontal Angle (Approx.)	80°	
Vertical Angle (Approx.)	65°	
Diagonal Angle (Approx.)	90°	
No Ion Trap	No. Magnet Required	

MECHANICAL:	
Mounting Position	Any
Screen Dimensions	
Height	9-1/2" min.
Width	12-1/16" min.
Diagonal	13" min.
Faceplate	Spherical
Glass	Neutral Filter
Transmission (Approx.)	78 per cent
Bulb Dimensions	
Height	10-9/16" ± 1/8"
Width	13-1/16" ± 1/8"
Diagonal	14" ± 1/8"
Overall Length	13-3/16" ± 3/8"
Anode Terminal	Recessed Small Cavity Cap (JETEC J1-21)
Base	Small Shell Duodecal 6-Pin (JETEC B6-63)

MAXIMUM RATINGS, Cathode Drive Service:	
Design Center Values	
Anode Voltage*	14,000 max. Volts
Grid 4 to Grid 1 Voltage	
Positive Value	1000 max. Volts
Negative Value	500 max. Volts
Grid 2 to Grid 1 Voltage	200 max. Volts
Cathode to Grid 1 Voltage	
Positive Bias Value	125 max. Volts
Negative Bias Value	0 max. Volts
Negative Peak Value	0 max. Volts
Peak Heater-Cathode Voltage	
Heater Negative with respect to Cathode	
During warm-up period of 15 sec. max.	410 max. Volts
After equipment warm-up period	180 max. Volts
Heater Positive with respect to Cathode	180 max. Volts

TYPICAL OPERATING CONDITIONS

Cathode Drive ♦			
Anode to Grid 1 Voltage	10000	12000	Volts
Grid 4 to Grid 1 Voltage	-50 to +350	-50 +350	Volts
Grid 2 to Grid 1 Voltage	110	110	Volts
Cathode to Grid 1 for Raster Cutoff ♦ §	32 to 50	32 to 50	Volts

LIMITING CIRCUIT VALUES:	
Grid 1 Circuit Resistance	1.5 max. Megohms
Grid 2 Circuit Resistance ⊕	0.1 min. Megohm
Focus Electrode Circuit Resistance ⊕	0.1 min. Megohm

NOTES:

* Brilliance and definition decrease with decreasing anode voltage. In general, anode voltage should not be less than 9000 volts..

♦ This tube may be operated in grid drive if desired, with some loss in efficiency. Average raster cutoff, using grid drive, may be calculated:

$$E_{G1_{CO}} = .502\, E_{G2} + 5.8$$

⊕ Protective resistance in the G2 and focus electrode circuits is advisable to prevent damage to the tube.

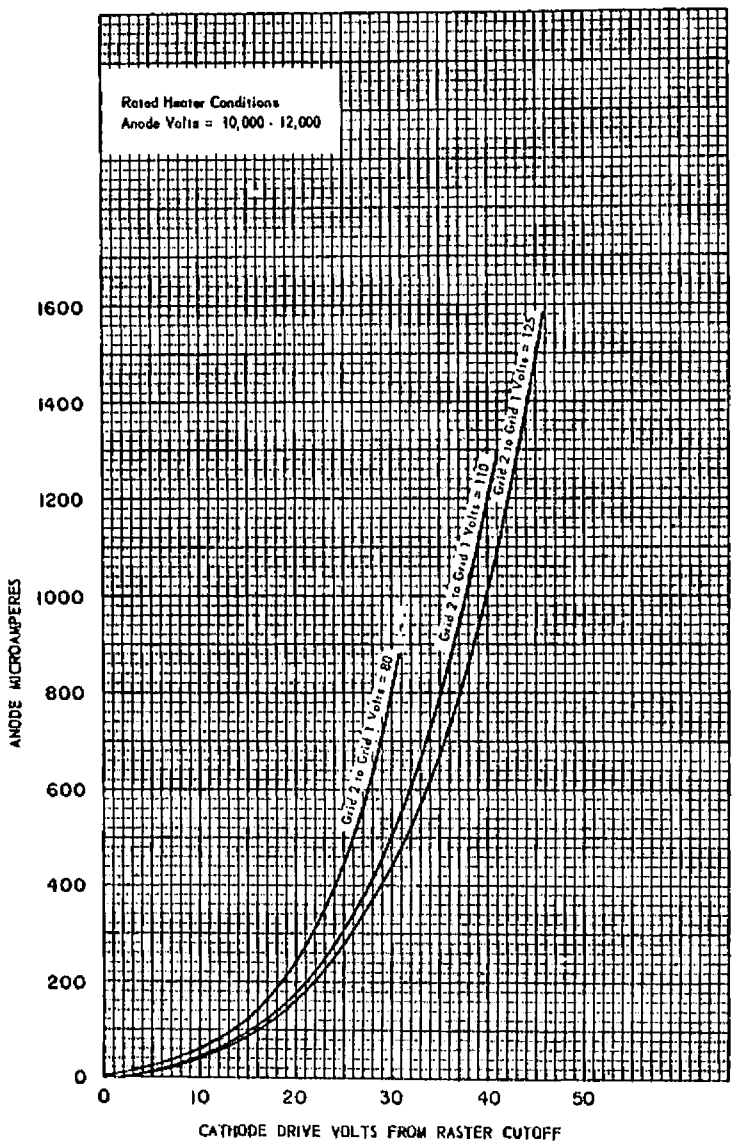
♦ Raster size 12 1/16" by 9 1/2".

§ For values of cutoff other than recommended operating voltages, see Cutoff Design Chart.

from JETEC release #1863, March 11, 1957

Westinghouse

AVERAGE CATHODE DRIVE CHARACTERISTICS



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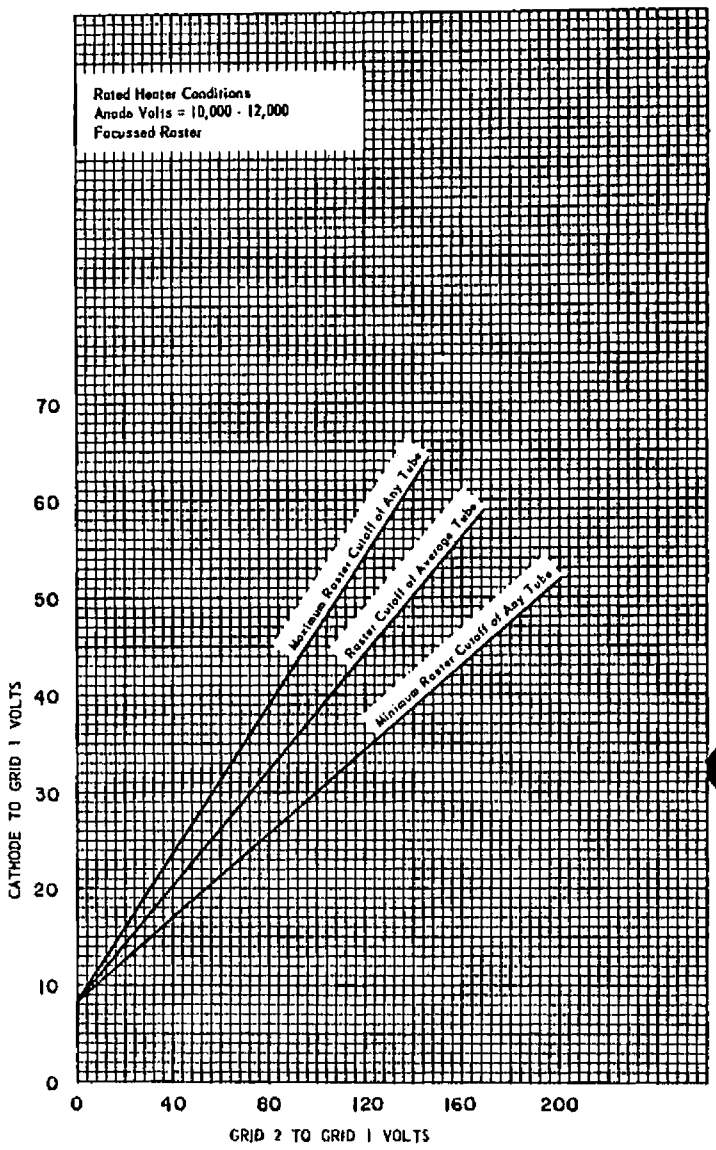
CATHODE DRIVE CUTOFF DESIGN CHART



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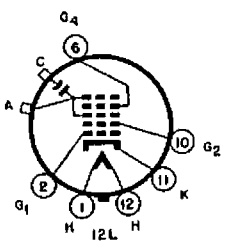
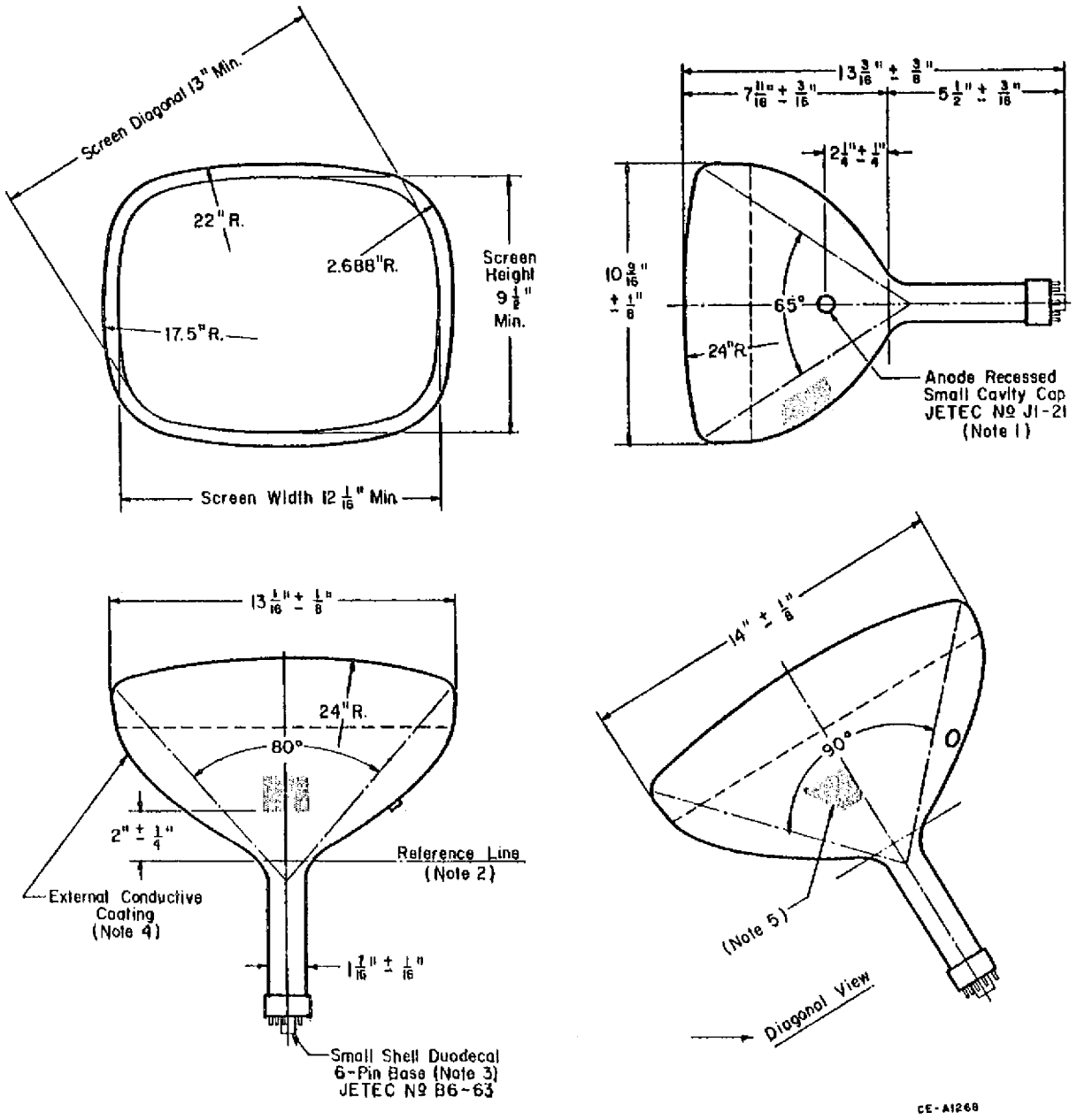


Bottom View

A—Grids 3 & 5, Collector.

C—External Conductive Coating.

OUTLINE DRAWING



NOTE 1: The plane through the tube axis and the base pin No. 6 may vary from the plane through the tube axis and the bulb terminal by an angular tolerance of ±30° measured about the tube axis. The bulb terminal is on the same side of the tube as pin No. 6.

NOTE 2: With the tube neck inserted through the flared end of REFERENCE-Line Gauge (JETEC No. 116) and with the tube seated in the gauge, the reference line is determined by the intersection of the plane cc' (face of the flared end) of the gauge with the glass funnel.

NOTE 3: The socket should not be mounted rigidly but it should be allowed to move freely and it should have flexible leads. The bottom circumference of the base shell will lie within a circle concentric with the bulb axis and having a diameter of 2¾".

NOTE 4: External conductive coating must be grounded.

NOTE 5: Contact area of external conductive coating 2" min. x 2" min. located 2" ±¼" from Reference Line 90° counterclockwise from anode button as viewed from base end of tube.