

ELECTRONIC TUBE CORPORATION

CATHODE-RAY TUBE

4KP

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The ETC type 4KP is a short 3-1/2 square face electrostatic focus and deflection cathode-ray tube with very high sensitivity D1D2 and D3D4 deflection plates. In addition, tolerances are very closely controlled. Angle alignment between the D1D2 and D3D4 traces are held to within 1°, while deflection factors are held to within 10% with low pattern distortion. Grid cut-off bias is held to within 25%. A gun which draws negligible focusing electrode current is also employed.

GENERAL CHARACTERISTICS

Electrical Data

Heater Voltage	6.3 Volts
Heater Current	0.6 ± 10% Amperes

Focusing Method	Electrostatic
Deflecting Method	Electrostatic

Phosphor	P1	P11
Fluorescence	Green	Blue
Persistence	Medium	Short

Direct Interelectrode Capacitances Max. ----

Cathode to all other electrodes	4.6 uuf
Grid No. 1 to all other electrodes	5.9 uuf
D1 to D2	2.6 uuf
D3 to D4	1.6 uuf
D1 to all	7.8 uuf
D2 to all	7.8 uuf
D3 to all	5.5 uuf
D4 to all	5.5 uuf

Mechanical Data

Overall Length	11-1/8" ± 1/16 Inches
Greatest Bulb Diagonal Dimensions	4-1/4 ± 3/32 Inches
Minimum Useful Screen (Rounded Corners)	2-7/8 x 2-7/8 Inches
Base (Small Shell 12 Pin Duodecal)	Special

Base Alignment

D3D4 trace aligns with Base Key and tube axis	±10° Degrees
Positive voltage on D1 deflects the beam approximately towards Pin No. 4.	
Positive voltage on D3 deflects the beam approximately towards Pin No. 1.	

Trace Alignment

Angle between D3D4 and D1D2 trace	±1° Degrees
D1D2 Trace aligns with bulb wall	±3° Degrees

## 4KP Cathode Ray Tube

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### MAXIMUM RATINGS

Accelerator Voltage	2500 Max. Volts D-C
Focusing Voltage	1000 Max. Volts D-C
Grid No. 1 Voltage	
Negative Bias Value	200 Max. Volts D-C
Positive Bias Value	0 Max. Volts D-C
Positive Peak Value	0 Max. Volts D-C
Peak Heater to Cathode Voltage	
Heater Negative with respect to Cathode	180 Max. Volts D-C
Heater Positive with respect to Cathode	180 Max. Volts D-C
Peak Voltage between Accelerator and any Deflection Electrode	500 Max. Volts D-C

### TYPICAL OPERATING CONDITIONS

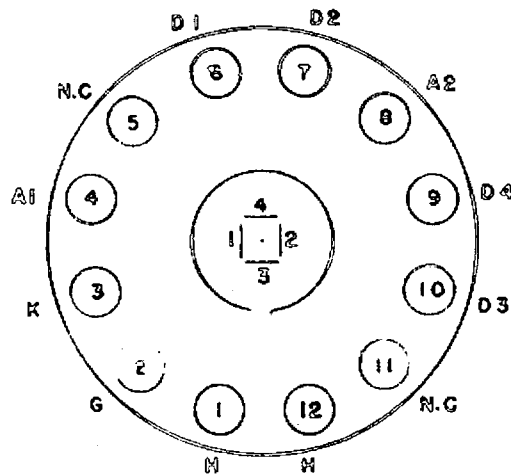
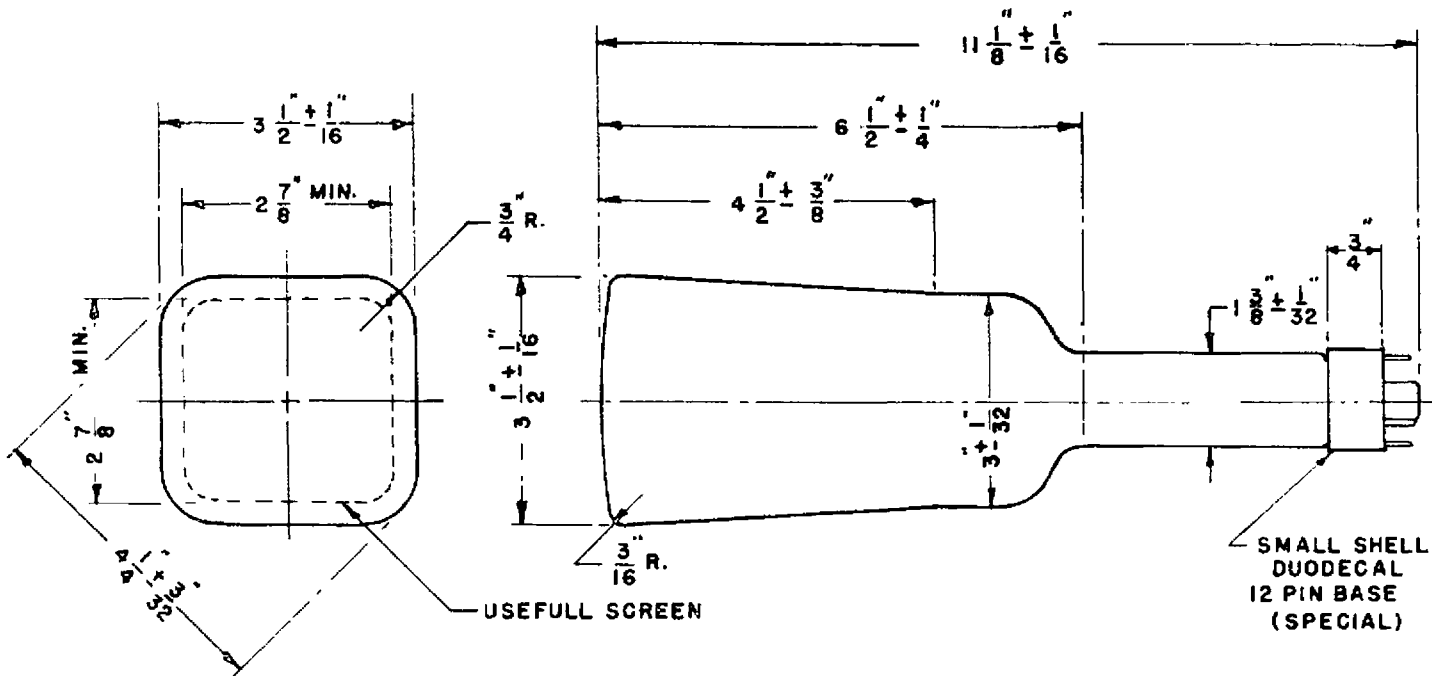
For Accelerator Voltage of	1500 Volts D-C
Focusing Voltage	255-545 Volts D-C
Grid No. 1 Voltage (Note 1)	36-60 Volts D-C
Modulation Factor (Note 2)	35 Volts Max.
Line Width A (4 Ft. L.) (Note 2)	.4 MM
Line Width B (4 Ft. L.) (Note 2)	.4 MM
Deflection Factors	
D1 and D2	62-76 Volts D-C/Inch
D3 and D4	36-46 Volts D-C/Inch
Spot Position (Undelected and focused) circle (Note 3)	Within a 3/16 Inch radius

### CIRCUIT DESIGN VALUES

Focusing Voltage	170-364 Volts per Kilovolt of Accelerator Voltage	
Focusing Current for any operating condition	-15 to +10	Microamperes
Grid No. 1 Voltage	25 - 39 Volts per Kilovolt of Accelerator Voltage	
Grid No. 1 Circuit Resistance	1.5	Max. Megohms
Deflection Factors		
D1 and D2	42.0 to 51.2 Volts D-C/Inch/KV of Accelerator Voltage	
D3 and D4	24 to 30.6 Volts D-C/Inch/KV of Accelerator Voltage	
Resistance in any Deflecting-Electrode Circuit 5		Max. Megohms


### NOTES

- (1) Visual extinction of undeflected focused spot.
- (2) Measured in accordance with MIL-E-10 Specification using 4 ft. L.
- (3) Centered with respect to the tube face with the tube shielded.
- (4) It is recommended that the deflecting circuit resistance be approximately equal.



NOTE:  
+3D4 TOWARDS INDEX KEY

BOTTOM VIEW OF BASE CONNECTIONS.

 <b>ELECTRONIC TUBE CORPORATION</b> PHILADELPHIA, PA.			
TITLE			
4KP TUBE OUTLINE DRAWING			
TOLERANCES	DEC.	FRAC.	ANG.
ENG.	DATE 9-5-56.		APP. <i>A. Roman</i>
DR. H. WARREN	ALE $\frac{3}{8}$ & $1\frac{1}{2}$		DRAWING NO.
CKD. <i>H. Warren</i>	REV. WAS 41HAP		A-2996