from JEDEC release
#2403, March 9, 1959

electronic ETC tube corp.

CATHODE-RAY TUBE
6GP

The ETC type 6GP is a 4.5 x 5.5 inch rectangular, two beam, electrostatic deflection and focus mono-accelerator cathode-ray tube. The two guns are independent of each other with the exception of the accelerators and pattern adjustment electrodes.

The mono-accelerator feature of this tube assures considerable improvement in general performance without sacrificing spot size, light output, or sensitivity.

For minimizing variation in focus with accelerator voltage variations, a low-voltage electrostatic focus lens is employed which requires only a small fraction of the accelerator voltage for focusing.

The deflection plates and pattern adjustment electrode connections for each gun are brought through the bulb wall in order to minimize lead inductance and capacitance. Astigmatism electrode connection is brought out through the base.

GENERAL CHARACTERISTICS

Electrical Data

Heater Voltage	6.3 Volts
Heater Current	0.6 ± 10% Amperes
Focusing Method	Electrostatic
Deflecting Method	Electrostatic

Phosphor	No. 1	No. 2	No. 7	No. 11
Fluorescence	Green	Green	Blue	Blue
Phosphorescence	--	Green	Yellow	--
Persistence	Medium	Long	Long	Short

Direct Interelectrode Capacitances

Cathode to all other electrodes	4.8 uuf
Grid No. 1 to all other electrodes	4.5 uuf
D1 to D2	2.8 uuf
D3 to D4	1.9 uuf
D1 to all	7.0 uuf
D2 to all	7.0 uuf
D3 to all	6.5 uuf
D4 to all	6.5 uuf

Mechanical Data

Overall Length	18-1/4±1/4 Inches
Greatest Bulb Dimension	4-1/2x5-1/2±1/16 Inches
Minimum Useful Screen Dimension	3-3/4x4-3/4 Inches
Neck Contacts	Pins
Base (Medium Shell Diheptal 12 Pin)	D12-37
Basing	Special

Base Alignment	
D3D4 Trace aligns with Index Key	±10 Degrees
Tube Axis	
Positive voltage on D1 deflects the beam approximately towards Pin No. 4	
Positive voltage on D3 deflects the beam approximately toward Base Key	
Trace Alignment - Side Wall	2 Degrees
Angle between D3D4 and D1D2 trace	90 ± 1 Degrees
Alignment Corresponding Traces	± 2° Degrees

MAXIMUM RATINGS Design Center Values

Accelerator Voltage (Note 1)	3500 Maximum Volts DC
Focusing Voltage	1500 Max. Volts DC
Grid No. 1 Voltage	
Negative Bias Value	200 Max. Volts DC
Positive Bias Value	0 Max. Volts DC
Positive Peak Value	0 Max. Volts DC
Peak Heater to Cathode Voltage	
Heater Negative with respect to Cathode	180 Max. Volts DC
Heater Positive with respect to Cathode	180 Max. Volts DC
Peak Voltage between Accelerator and any Deflection Electrode	900 Max. Volts DC
Peak Voltage between Accelerator and Pattern Adjustment Electrodes	500 Max. Volts DC

TYPICAL OPERATING CONDITIONS

Accelerator Voltage	2500 Volts DC
Astigmatism Electrode	2,350 - 2800 Volts DC
Pattern Electrode Voltage	
Wall	2,500 - 2800 Volts DC
Shield	2,500 - 2850 Volts DC
D1D2 Average D.C. Potential	2,500 - 2800 Volts DC
D3D4 Average D.C. Potential	2,500 - 2800 Volts DC
Focusing Voltage	0 to 400 Volts DC
Grid No. 1 Voltage (Note 2)	-34 to -56 Volts DC
Modulation Factor (Notes 3 and 4)	40 Volts Max. DC
Line Width A (Notes 3 and 4)	.030 Inches Max.
P1 Light Output (Notes 3 and 4)	15 Ft. Long Min.
Deflection Factors	
D1 and D2 (Note 4)	48 to 60 Volts D-C/Inch
D3 and D4 (Note 4)	27 to 35 Volts D-C/Inch
Useful Scan (Note 5)	
D1D2	4-3/4 Inches
D3D4	4-3/4 Inches
Spot Position (Undeflected and focused) (Note 5)	Within a 1/4" Radius Circle

CIRCUIT DESIGN VALUES

Focusing Current for any operating condition	-15 to +15 Microamperes
Grid No. 1 Voltage -13.6 to -22.4 Volts per Kilovolt of Accelerator Voltage	
Grid No. 1 Circuit Resistance	1.5 Max. Megohms
Deflection Factors	
D1 and D2 19.4 to 24.0 Volts D-C/Inch/KV of Accelerator Voltage	
D3 and D4 10.8 to 14.0 Volts D-C/Inch/KV of Accelerator Voltage	
Resistance in any Deflecting-Electrode Circuit (Note 6)	1 Max. Megohms

NOTES

(1) The product of accelerator voltage and average accelerator current should be limited to 6 watts.

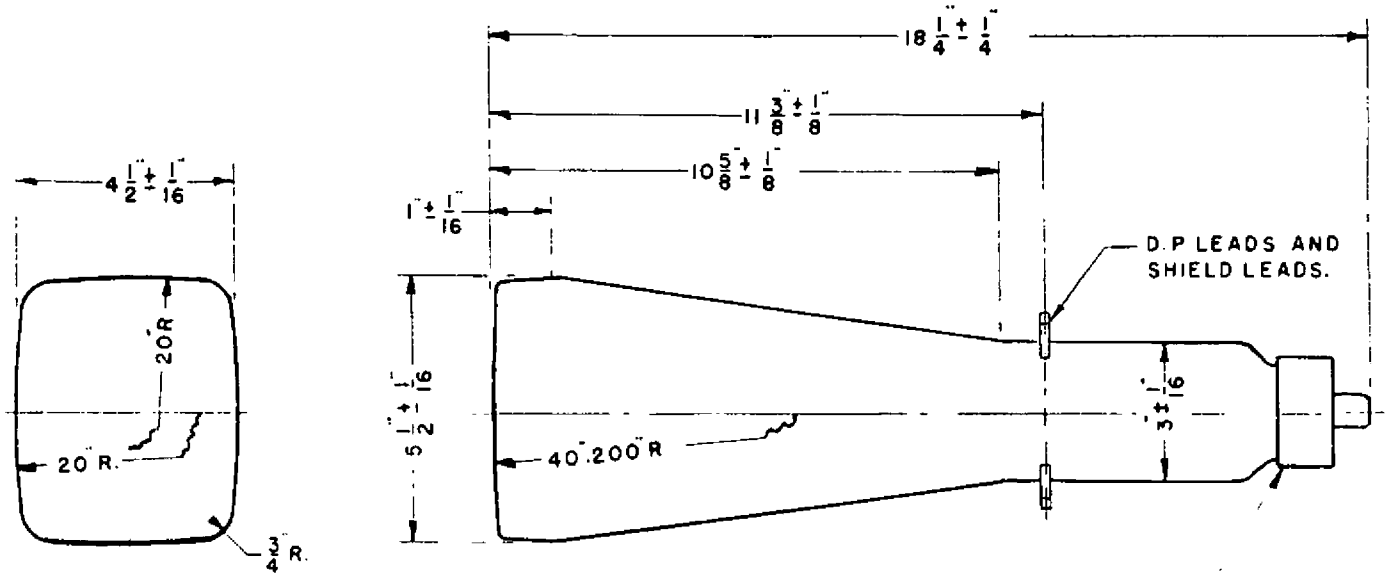
(2) Visual extinction of undeflected focused spot.

(3) Measured in accordance with MIL-E-1 Specifications

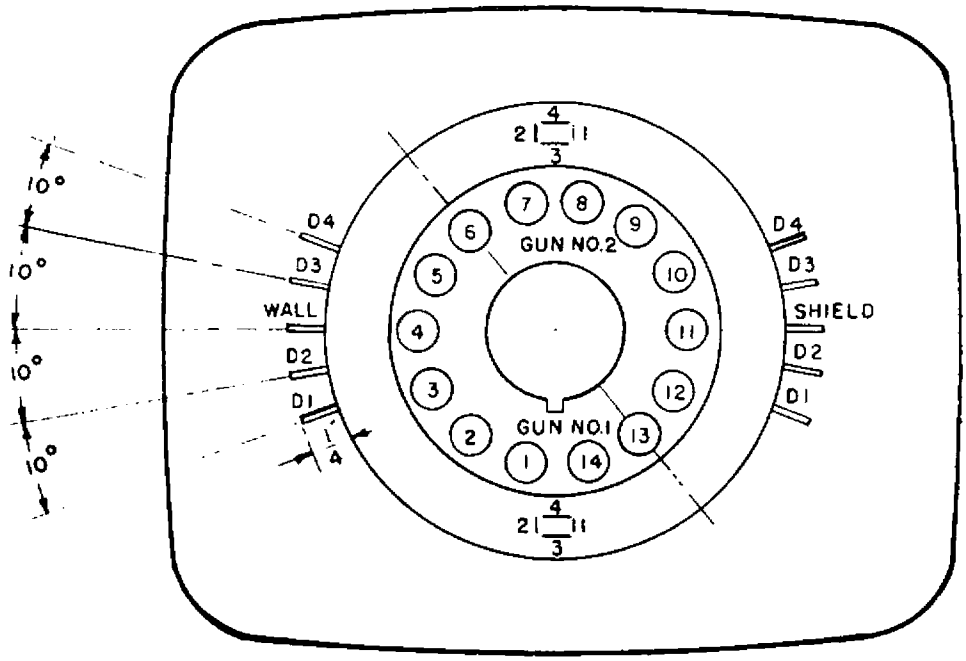
(4) Values given are for balanced deflection voltages. These values are measured with accelerator, astigmatism control, and pattern adjustment electrodes connected together.

(5) Centered with respect to the tube face and tube shielded.

(6) It is recommended that the deflecting electrode circuit resistances be approximately equal.



—14 PIN MED. SHELL DIHEPTAL BASE. B14-38



BOTTOM VIEW OF BASE AND NECK CONNECTIONS.

GUN 1

PIN NO.	ELEMENT
14	HEATER
1	HEATER
2	CATHODE
3	GRID
4	ANODE 1
5	ANODE 2
6	PRE-ACCEL. GUN 1&2

GUN 2

7	HEATER
8	HEATER
9	CATHODE
10	GRID
11	ANODE 1
12	ANODE 2
13	NO CONN.

NOTE:
+102 TOWARDS PIN 11

ELECTRONIC TUBE CORPORATION
PHILADELPHIA, PA.

TITLE
6GP TUBE OUTLINE DRAWING

TOLERANCES DEC.	FRAC. AS NOTED	ANG.
ENG.	DATE 6-6-58.	APP.
DR. H. WARREN	SCALE 1/4" & 3/4"	DRAWING NO.
CKD. H. Warren	REV. WAS 62DRP	A-3362