

INCH-POUND

MIL-PRF-1/1072G(NAVY)
25 June 1999
SUPERSEDING
MIL-E-1/1072F(NAVY)
5 September 1975

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, CATHODE RAY
TYPES 22CP7A AND 22CP25A

This specification is approved for use by the Department of the Navy and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the electron tube described herein shall consist of this document and the latest issue of MIL-PRF-1.

DESCRIPTION: Magnetic deflection and focus, aluminized.

DIMENSIONS AND PIN CONNECTIONS: See figure 1.

ABSOLUTE RATINGS:

Parameter:	Ef	Ec1	Ec2	Eb	Ehk	Rg1	Alt
Unit:	V	V dc	V dc	V dc	V dc	Meg	ft
Maximum:	6.9	0	450	18,000	-125	1/	10,000
Minimum:	5.7	-125	---	---	---	---	---
Test condition:	6.3	Adjust	300	15,000	---	---	---

See footnotes at end of table I.

GENERAL:

Qualification - Required. 1/

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TABLE I. Testing and inspection.

Inspection	Method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
<u>Qualification inspection</u>							
Electrode current (grid No. 2)	5201	---	Ec1 = 0	Ic2	---	15	μA dc
Modulation	5223	---	Ib = 200 μA dc	ΔEc1	---	35	V dc
Cathode illumination	5216	---		---	---	---	---
Direct-interelectrode capacitance	1331	---	Cathode to all Control grid to all Grid No. 2 to all	Ck	---	8	pF
				Cg1	---	10	pF
				Cg2	---	10	pF
Pressure (implosion)	1141	---	35 lb/psi	---	---	---	---
Vibration	5111	---		Width	---	2.5	mm
Base material insulating quality	1216	---		---	---	---	---
<u>Conformation inspection, part 1</u>							
Radius of faceplate	---	---		---	140	---	Inches
Voltage breakdown	5201	---		---	---	---	---
Voltage breakdown (magnetic types)	5201	---		---	---	---	---
Gas ratio	5206	---		Gr	---	0.25	---
Neck and bulb alignment (magnetic types)	5101	<u>7/</u>		---	---	0.400	Inch
Face tilt	5101	<u>8/</u>		---	---	0.375	Inch
Neck straightness	5101	---		---	---	---	---
Bulb, screen, and faceplate quality	5106	<u>6/</u>		---	---	---	---
Spot position (magnetic deflection)	5231	---		---	---	25	mm
Zero-bias anode current (magnetic deflection)	5236	<u>4/</u>		---	---	---	---
Grid cutoff voltage	5241	---		Ec1	-33	-77	V dc
Grid No. 1 leakage current	5251	---		---	---	---	---

See footnotes at end of table.

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TABLE I. Testing and inspection - Continued.

Inspection	Method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
<u>Conformance inspection, part 2</u>							
Heater current	1301	---		If	540	660	mA
Stray light emission (conventional types)	5216	---	Eb = 18,000 V dc; Ec2 = 450 V dc	---	---	---	---
Screen (P7)	5221	2/		---	---	---	---
Screen (P25)	---	5/		cBf	600	---	cB
				D0.1(10)	400	---	cB
				D1(10)	325	---	cB
				D1(10)- D10(10)	50	80	cB
Line width A	5226	3/	Ib = 200 μ A dc	Width	---	1.25	mm
Line width C	5226	3/	Ib = 200 μ A dc	Width	---	2.0	mm
Focusing ampere turns	5246	---	Ib = 200 μ A dc; D = 3.25	AT	600	720	---
Heater-cathode leakage current	5251	---		---	---	---	---
Grid No. 2 leakage current	5251	---		---	---	---	---
Base pin solder depth	1111	---		---	---	---	---
Secureness of base, cap, or insert	1101	---		---	---	---	---
Permanence of marking	1105	---		---	---	---	---
<u>Conformance inspection, part 3</u>							
Life test	---	---	Group C; Eb = 14,000 V dc; Ec2 = 450 V dc; Ib = 200 μ A dc	t	500	---	hours
Life-test end points:	---						
Line width A	5226	---	Ib = 200 μ A dc	Width	---	1.35	mm
Line width C	5226	---	Ib = 200 μ A dc	Width	---	2.2	mm
Modulation	5223	---	Ib = 200 μ A dc	Δ Ec1	---	39	V dc

1/ When Ec2 is greater than 330 V dc, Rg1 shall not exceed 0.5 Meg. When Ec2 is less than 330 V dc, Rg1 shall not exceed 1.5 Meg.

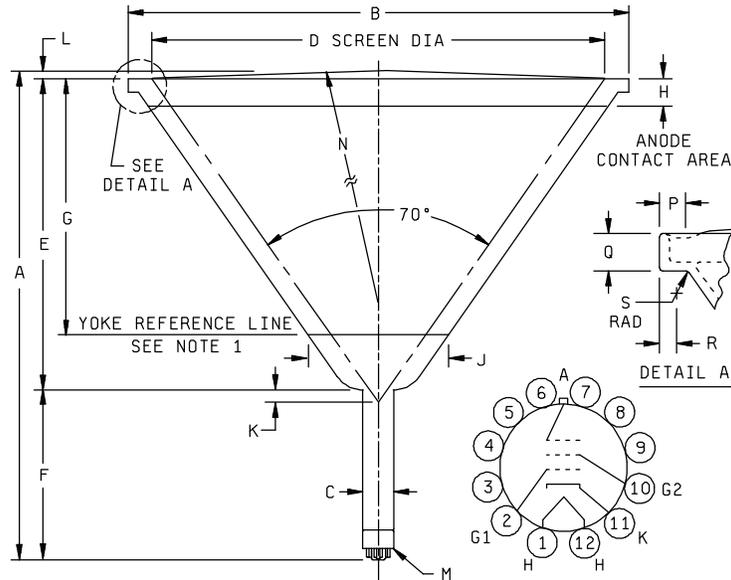
2/ The screen characteristics shall be measured with constant beam energy of 0.24 watt defocused to a spot approximately 0.25 cm in diameter. The test conditions shall be anode voltage (relative to cathode) 4,000 V minimum and beam current 60 μ A maximum. The screen characteristics shall comply with the following minimum limits: cB5 = 400 cB; G5:1 = 4.

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TABLE I. Testing and inspection - Continued.

- 3/ Use focus coil JEDEC No. 109 or No. 122 and 70 degree deflection coil JEDEC No. 118.
- 4/ For P25 phosphor, apply full raster to prevent screen burning.
- 5/ The phosphorescent light intensity observed (t) seconds after completion of the nth raster to the tube is $Dt(N)$. cBf shall be the fluorescent light output under continuous raster excitation. The screen characteristics shall be measured under the following conditions:
- a. Raster size (focused beam) 50 cm^2 with tube defocused to a spot approximately 0.25 cm in diameter.
 - b. Beam current: The tube operated at a current to produce 0.05 watt at the specified test voltage.
 - c. Duration of raster: 1/60 second.
 - d. Distance of raster from axis of calibrated 931VA multiplier tube: 30 cm.
 - e. Red or white light: Sufficient to de-excite the phosphor before build-up measurements so that the results are within 3 cB of those that would have been obtained after total de-excitation.
- 6/ The maximum diameters of "dead" and "color" spots shall be .060 inch.
- 7/ The tube shall be supported vertically on its face and rotated by a suitable adjustable turntable mechanism which will permit the neck to run true to the center of rotation of the turntable. A dial indicator perpendicular to the cone surface and .375 inch above the back of the faceplate metal lip shall be used to determine the amount of neck and bulb misalignment. The variation shall be no greater than the specified limit.
- 8/ With the tube supported as specified in 7/, the face tilt shall not exceed .375 inch.

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Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Qualification inspection				
M	Base: B5-57			
Conformance inspection, part 2				
A	---	22.063	---	560.40
B	21.625	21.875	549.28	555.63
C	1.375	1.500	34.93	38.10
D	20.000	---	508.00	---
E	13.625	14.000	346.08	355.60
F	7.312	7.688	185.72	195.28
H	.875	---	22.23	---
J	---	6.375	---	161.93
L	.188	.438	4.78	11.13
Reference dimensions (see note 2)				
G	11.375		288.93	
K	1.15		29.21	
N	165.00 R		4191.00 R	
P	.312		7.92	
Q	.656		16.66	
R	.438		11.13	
S	.25 R		6.35 R	

NOTES:

1. Reference line determined by position where reference line gauge #110 will rest on glass funnel.
2. These dimensions are for reference only and are not required for inspection purposes.

FIGURE 1. Outline drawing of electron tube types 22CP7A and 22CP25A.

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Custodians:
Navy - EC
DLA - CC

Review activities:
Navy - AS, CG, MC, OS

Preparing activity:
DLA - CC

(Project 5960-N250)