

INCH-POUND

MIL-PRF-1/66C
6 July 1999
SUPERSEDING
MIL-E-1/66B
14 January 1975

PERFORMANCE SPECIFICATION SHEET
ELECTRON TUBE, CATHODE RAY
TYPE 7BP7A

This specification is approved 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.

PIN CONNECTIONS AND DIMENSIONS: See figure 1.

ABSOLUTE RATINGS:

Parameter:	Ef	Ec1	Ec2	Eb1	Ehk	Rg1	Alt
Unit:	V	V dc	V dc	V dc	V dc	Meg	ft
Maximum:	6.9	0	770	8,800	-125	note 1	10,000
Minimum:	5.7	-180	---	4,000	---	---	---
Test conditions:	6.3	Adj	250	4,000	---	---	---

GENERAL:

Qualification - Required. See note 2

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TABLE 1. Testing and inspection.

Inspection	Method	Notes	Conditions	Symbol	Limits Min	Limits Max	Unit
<u>Qualification inspection</u>							
Neck and bulb alignment (magnetic types)	5101	---		---	---	---	---
Face tilt	5101	---		---	---	---	---
Cathode illumination	5216	---		---	---	---	---
Direct-interelectrode capacitance	1331	---	Cathode to all Control grid to all Grid No. 2 to all	Ck Cg1 Cg2	---	10 11 12	pF pF pF
Pressure (implosion)	1141	---		---	---	---	---
Vibration	5111	---		Width	---	2	mm
Base material insulating quality	1216	---	Zone 5, minimum	---	---	---	---
<u>Conformance inspection, part 1</u>							
Voltage breakdown	5201	---		---	---	---	---
Voltage breakdown (magnetic types)	5201	---		---	---	---	---
Gas ratio	5206	4		Gr	---	0.25	---
Neck straightness	5101	---		---	---	---	---
Bulb, screen, and faceplate quality	5106	---		---	---	---	---
Modulation	5223	---	I _b = 200 μ A dc	Δ Ec1	---	38	V dc
Spot position (magnetic deflection)	5231	---		---	---	12	mm
Zero bias anode current (magnetic deflection)	5236	---		---	---	---	---
Grid cutoff voltage	5241	---		Ec1	-25	-70	V dc
Grid No. 1 leakage current	5251	---		---	---	---	---
Aperture alignment	---	3		Distance	---	6	mm

See notes at end of table.

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TABLE I. Testing and inspection - Continued.

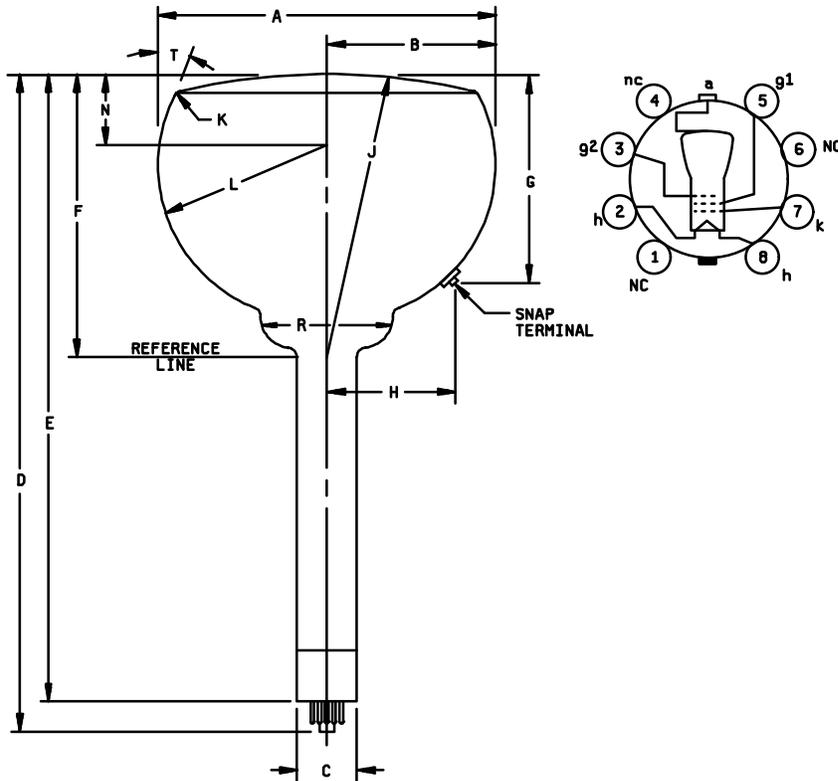
Inspection	Method	Notes	Conditions	Symbol	Limits Min	Limits Max	Unit
<u>Conformance inspection, part 2</u>							
Heater current	1301	---		If	540	660	mA
Electrode current (grid No. 2)	5201	---	Ec1 = 0	Ic2	---	50	μ A dc
Side terminal and base alignment	5101	---	Pin No. 5	---	---	---	---
Stray light emission (conventional types)	5216	---	Eb = 8,800 V dc; Ec2 = 770 V dc	---	---	---	---
Screens	5221	---		---	---	---	---
Line width A	5226	---	Ib = 200 μ A dc	Width	---	0.65	mm
Line width C	5226	---	Ib = 200 μ A dc	Width	---	0.75	mm
Focusing ampere turns	5246	---	Ib = 200 μ A dc D = 2.75 inches	AT	337	459	---
Heater-cathode leakage current	5251	---		---	---	---	---
Grid No. 2 leakage current	5251	---		---	---	---	---
Secureness of base, cap or insert	1101	---		---	---	---	---
Base pin solder depth	1111	---		---	---	---	---
Permanence of marking	1105	---		---	---	---	---
<u>Conformance inspection, part 3</u>							
Life test	---	---	Group C; Eb = 8,800 V dc; Ec2 = 770 V dc; Ib = 60 μ A dc; t = 500 hours (minimum)	---	---	---	---
Life-test end points:	---	---					
Line width A	5226	---	Ib = 200 μ A dc	Width	---	0.75	mm
Line width C	5226	---	Ib = 200 μ A dc	Width	---	0.85	mm
Modulation	5223	---	Ib = 200 μ A dc	Δ Ec1	---	38	V dc

See notes at end of table.

TABLE I. Testing and inspection - Continued.

NOTES:

1. When E_{c2} is greater than 330 V dc, R_{g1} shall not exceed 0.5 Meg. When E_{c2} is less than 330 V dc, R_{g1} shall not exceed 1.5 Meg.
2. A limiting aperture type of gun shall be used. The amount of limiting permitted shall be between 15 percent and 45 percent when $I_b = 200 \mu\text{A}$ dc and the secondary electron current from the screen to the limiting aperture is zero.
3. The distance between the center of the unfocused, undeflected spot at low intensity (E_{c1} near cutoff) and the center of the image of the masking aperture observed at high intensity of the unfocused, undeflected spot shall not exceed the limit specified. E_{c1} should not be held at zero for more than approximately 30 seconds to prevent damage to the screen.
4. This test to be performed at the conclusion of the holding period.



Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Conformance inspection, part 2				
A	6.875	7.125	174.63	180.98
B	See note 1			
C	1.313	1.427	33.35	36.25
D	12.875	13.625	327.03	346.08
F	5.500	6.000	139.70	152.40
G	3.693	4.193	93.80	106.50
Reference dimensions (see note 5)				
E	12.687		322.25	
H	2.625		66.68	
J	24.000 R		609.60 R	
K	.250 R		6.35 R	
L	3.500 R		88.90 R	
N	1.375		34.93	
R	3.125		79.38	
T	5°			

NOTES:

1. The minimum useful screen radius shall not be less than 3.00 inches (76.20 mm).
2. The bulb shall be a J56D or J56R type.
3. Applies to entire length of neck below reference line. The reference line is determined by point where gage 1.430 ± .003 inches (36.32 ± 0.08 mm) inside diameter and 2 inches (50.80 mm) in length will stop against bulb body.
4. The base shall be a medium shell octal 8-pin (B8-11) type or a medium long shell octal 8-pin type (this is identical with the medium shell octal 8-pin type except that the shell is 1.375 inches (34.93 mm) high nominal) or a small wafer octal with sleeve 8-pin (B8-26) type.
5. Reference dimensions are for information only and are not required for inspection purposes.

FIGURE 1. Outline drawing for electron tube type 7BP7A.

Custodians:

Army - CR
 Navy - EC
 Air Force - 11
 DLA - CC

Preparing activity:

DLA - CC

(Project 5960-3470)

Review activities:

Army - CR4
 Navy - AS, CG, MC, OS, SH
 Air Force - 17, 99