

INCH-POUND

MIL-PRF-1/1065F
25 June 1999
SUPERSEDING
MIL-E-1/1065E
24 November 1975

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, CATHODE RAY
TYPE 5BCP7

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: Miniaturized, magnetic deflection and focus.

DIMENSIONS AND PIN CONNECTIONS: See figure 1.

ABSOLUTE RATINGS:

Parameter:	Ef	Ec1	Eb1	Ehk	Rg1	Alt
Unit:	V	V dc	V dc	V dc	Meg	ft
Maximum:	6.9	0	11,000	±180	1.5	80,000
Minimum:	5.7	-200	5,000	---	---	---
Test condition:	6.3	Adjust	6,000	---	---	---

See footnotes at end of table I.

GENERAL:

Qualification - Required. 1/

MIL-PRF-1/1065F

TABLE I. Testing and inspection.

Inspection	Method	Notes	Conditions	Symbol	Limits		Unit
					Min	Max	
<u>Qualification inspection</u>							
Vibration	5111	---		Width	---	2.0	mm
Pressure implosion	1141	---		---	---	---	---
Barometric pressure, reduced	1002	<u>2/</u>	20 mmHg	---	---	---	---
Direct-interelectrode capacitance	1331	---	k to all g1 to all	Ck Cg1	---	5.5 5.5	pF pF
Cathode illumination	5216	---		---	---	---	---
<u>Conformance inspection, part 1</u>							
Voltage breakdown	5201	---		---	---	---	---
Voltage breakdown (magnetic types)	5201	---		---	---	---	---
Neck straightness	5101	---	Cylinder length = 4 inches (101.6 mm); ID = .901 inches (22.89 mm) maximum	---	---	---	---
Screen and faceplate blemishes	5106	---		---	---	---	---
Modulation	5223	---	I _b = 200 μ A dc	Δ Ec1	---	34	V dc
Screens	5221	---	E _{b1} = 5,000 V dc; I _{b1} = 48 μ A dc	cB1	640	---	cB
Spot position (magnetic deflection)	5231	---		---	---	6	mm
Zero-bias anode current (magnetic deflection)	5236	<u>3/</u>		---	---	---	---
Focusing coil current	---	<u>4/</u>	I _b = 200 μ A dc D = 2.375 inches (60.33 mm)	---	48	72	mA dc
Grid-cutoff voltage	5241	---		---	-19	-56	V dc
Grid No. 1 leakage current	5251	---		---	---	---	---

See footnotes at end of table.

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	270	330	mA
Side terminal and base alignment	5101	---	Halfway between pins No. 1 and No. 9	---	---	---	---
Neck and bulb alignment (magnetic types)	5101	<u>5/</u>		---	---	---	---
Face tilt	5101	<u>5/</u>		---	---	---	---
Stray light emission (conventional types)	5216	---	Eb1 = 11,000 V dc	---	---	---	---
Screen (P7 type)	5221	---	Eb1 = 5,000 V dc; Ib1 = 48 μ A dc	---	---	---	---
Line width A (magnetic deflection)	5226	<u>6/</u>	Ib = 200 μ A dc	Width	---	0.33	mm
Heater cathode leakage current	5251	---	Ehk = +180 V dc Ehk = -180 V dc	Ihk	---	15	μ A dc
				Ihk	---	15	μ A dc
Astigmatism	---	<u>7/</u>		Ratio	---	1.20	---
Permanence of marking	1105	---		---	---	---	---
<u>Conformance inspection, part 3</u>							
Life test	---	---	Group C; Eb1 = 11,000 V dc; Ib = 60 μ A dc; t = 500 hours	---	---	---	---
Life-test end points:	---	---					
Line width A Modulation	5226	---	200 μ A dc;	Width	---	0.33	mm
	5223	---	200 μ A dc	ΔE_{c1}	---	34	V dc

1/ The following information and materiel shall be made available to the Government representative conducting the qualification inspection measurements with four regular qualification samples:

- (a) The gun drawing with significant dimensions.
- (b) A sample of the gun to be used in manufacturing of the tubes.

2/ Maximum rated voltages are applied to all electrodes connected through the base, and with tube in cutoff conditions.

TABLE I. Testing and inspection - Continued.

3/ The following values are to be used in place of those specified in method 5236:

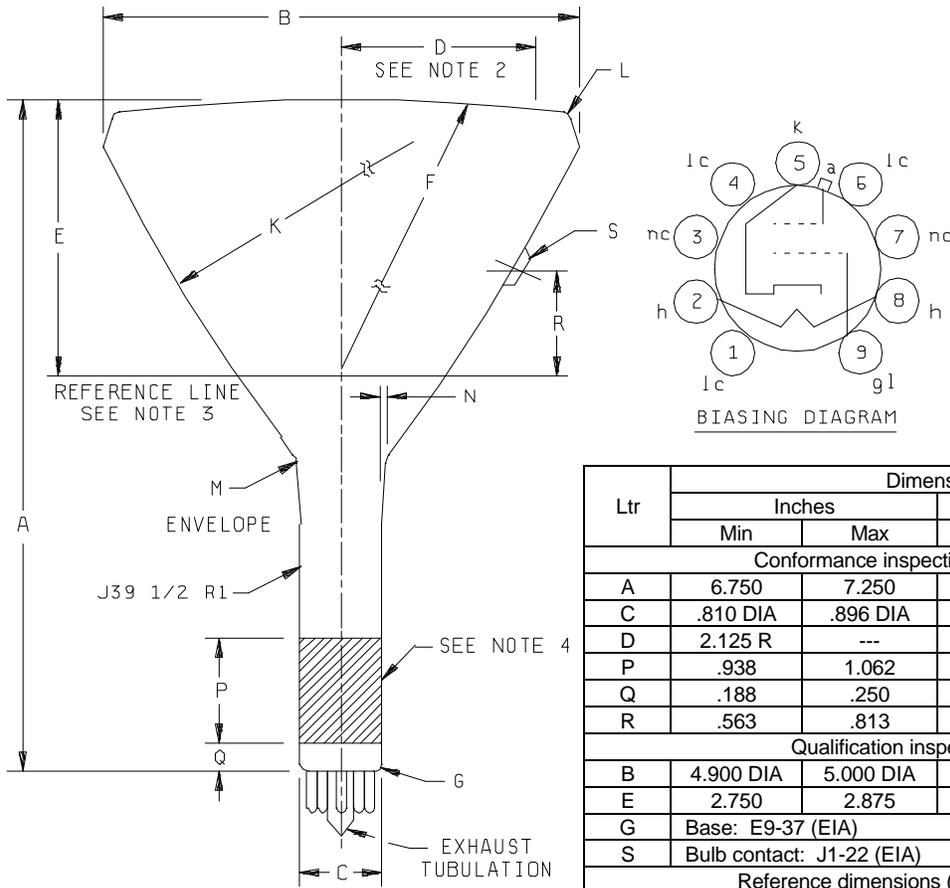
<u>Negative grid cutoff voltage</u>	<u>Minimum O-bias current μA</u>	<u>Negative grid cutoff voltage</u>	<u>Minimum O-bias current μA</u>
19	250	38	480
20	250	39	500
21	250	40	520
22	250	41	540
23	250	42	560
24	250	43	580
25	250	44	600
26	270	45	620
27	285	46	640
28	300	47	660
29	310	48	680
30	335	49	700
31	350	50	725
32	370	51	750
33	390	52	775
34	405	53	800
35	425	54	825
36	445	55	850
37	460	56	875

4/ Use JEDEC No. 127 focus coil, or equal. Focusing coil current shall be determined at the focus setting used in the astigmatism test.

5/ The two sets of neck supports, referenced in method 5101, shall be spaced 1.125 inches (28.58 mm) and 3.375 inches (85.73 mm) below reference plane.

6/ Line width A shall be the maximum line width obtained in the astigmatism test.

7/ With a single line, 4.5 inches (114.30 mm) in length and 1/60-second duration, repeated at a rate of 60 Hz, modulate grid No. 1 with 1-microsecond pulses. Adjust the peak beam current to 200 μA dc and focus for the most circular spot at the center of the screen. Display a partially merged nonlinear raster and note the orientations for greatest and least mergings as the raster is rotated. Maintain this focus and proceed according to method 5226, to determine the line widths for those two orientations. Astigmatism (the ratio of the maximum to the minimum line width) shall not exceed the value specified.



Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Conformance inspection, part 2				
A	6.750	7.250	171.45	184.15
C	.810 DIA	.896 DIA	20.57 DIA	22.76 DIA
D	2.125 R	---	53.98 R	---
P	.938	1.062	23.83	26.97
Q	.188	.250	4.78	6.35
R	.563	.813	14.30	20.65
Qualification inspection				
B	4.900 DIA	5.000 DIA	124.46 DIA	127.00 DIA
E	2.750	2.875	69.85	73.03
G	Base: E9-37 (EIA)			
S	Bulb contact: J1-22 (EIA)			
Reference dimensions (see note 1)				
F	24.000 R		609.60 R	
K	9.660 R		245.36 R	
L	.125 R		3.18 R	
M	.125 R		3.18 R	
J	2°		2°	

NOTES:

1. These dimensions are for information only and are not required for inspection purposes.
2. Useful screen.
3. Determined by point where leading edge of JEDEC reference line gauge G123 will stop.
4. External conductive coating shall be tied to cathode potential (by external application circuitry).

FIGURE 1. Outline drawing of electron tube type 5BCP7.

Custodians:

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

Preparing activity:

DLA - CC

(Project 5960-3527)

Review activities:

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