

MILITARY SPECIFICATION SHEET
ELECTRON TUBE, CATHODE RAY
TYPE 10VP7

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

DESCRIPTION: Magnetic deflection and focus.

Dimensions and pin connections: See figure 1.

ABSOLUTE-MAXIMUM RATINGS:

Parameter:	Ef	Ec1	Ec2	Eb	Ehk	Rg1	Alt.
Unit:	V	Vdc	Vdc	Vdc	Vdc	Meg	ft.
Maximum:	6.9	0-140 (See Note 1)	450	13,200	±154	1.5	60,000
Minimum:	5.7	---	---	11,000	---	---	---
<u>TEST CONDITIONS:</u>	6.3	Adjust	250	11,000	---	---	---

GENERAL:

Qualification - Required

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (Percent Defective)	INSP. LEVEL OR CODE	SYMBOL	LIMITS		UNIT
						MIN.	MAX.	
1141	<u>Qualification</u> Pressure	---				---	---	
1002	Barometric pressure, reduced	Pressure= 54 mmHg				---	---	
5111	Vibration (cathode-ray tubes)	---			Width	---	2.0	mm
1331	Direct inter-electrode capacitance	Cathode to all g to all			C C	--- ---	5.0 6.0	pF pF
5201	Electrode currents Grid No. 2	E _{c1} =0			I _{c2}	---	25.0	uAdc
5216	Cathode illumination	---				---	---	
1216	Base material insulating quality							
	<u>Quality conformance inspection, part 1</u>							
5201	Voltage breakdown		---	---	---	---	---	
5201	Voltage breakdown (Magnetic types)	E _{c1} Adjust for cutoff-28 to -72 Vdc E _{c2} =250Vdc, E _b =11,000Vdc	---	---	---	---	---	
5206	Gas ratio	---	---	---	Gr	---	0.25	
5106	Blemishes	---	---	---	---	---	---	
5231	Spot position	---	---	---	---	---	18	mm
5236	Zero-bias anode current	---	---	---	---	---	---	
5241	Grid-cutoff voltage	---	---	---	ECL	-33	-77	Vdc
5246	Focusing ampere turns	---	---	---	AT	100	120	
5251	Grid No. 1 leakage current	---	---	---	---	---	---	
---	Resolution, center	I _b =200uAdc; (See Note 4)	---	---	Res.	300	---	lines
5101	Neck straightness	(See Note 2)	---	---	---	---	---	---

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (Percent Defective)	INSP. LEVEL OR CODE	SYMBOL	LIMITS		UNIT
						MIN.	MAX.	
	<u>Quality conformance inspection, part 1</u> (Continued)							
---	Aperture alinement	(See Note 5)	---	---	Distance	---	8.0	mm
5223	Modulation	Ib=200uAdc			ΔE_{c1}	---	55	Vdc
	<u>Quality conformance inspection, part 2</u>							
1101	Base, cap, and insert secureness	---	---	---	---	---	---	
1301	Heater current	---	---	---	If	530	660	mA
5101	Side terminal and base (alinement)	Pin position No. 3	---	---	---	---	---	
5101	Neck and bulb alinement	---	---	---	---	---	---	
5101	Face tilt	---	---	---	---	---	---	
5216	Stray emission	Eb=11,000Vdc Ec2=450Vdc	---	---	---	---	---	
5221	Screen	(See Note 3)	---	---	---	---	---	
5251	Heater-cathode leakage	---	---	---	---	---	---	
5251	Grid No. 2 leakage current	---	---	---	---	---	---	
	<u>Quality conformance inspection, part 3</u>							
---	Life test	Group C; Eb=11,000Vdc; Ec2=450Vdc; Ib=60uAdc;	---	---	t	1000	---	hrs.

METHOD	REQUIREMENT OR TEST	CONDITIONS	AQL (Percent Defective)	INSP. LEVEL OR CODE	SYMBOL	LIMITS		UNIT
						MIN.	MAX.	
---	Life test end points	Resolution, center modu- lation Grid No. 1 leakage current Heater-cathode leakage Grid No. 2 leakage current Stray emission	---	---	Res. ΔEcl	200 ---	--- 55	lines Vdc

NOTES:

1. When Ec2 is greater than 330Vdc, or Ecl is near zero, or both, the effective resistance of the anode and grid No. 3 supply shall be adequate to limit the anode and grid No. 3 input power to 6 watts. The peak grid No. 1 drive from cutoff shall not exceed 65 volts.
2. Neck and base straightness shall be determined by the insertion of the tube neck in a cylinder 5 inches long and 1,500 + .003 inches inside diameter. This cylinder shall move freely between the
- .000
reference line and the base of the assembled tube.
3. The test conditions shall be anode voltage (relative to cathode) 4,000V minimum and beam current 60 uA maximum.
4. Use raster scanning pattern 6 inch by 8 inch composed of 525 lines interlaced and synchronized. With Ecl at cutoff, vary signal from video generator utilizing a 2F21 monoscope from zero to indicated anode current value. Focus for equal horizontal and vertical resolution in the center of the pattern.
5. The distance between the center of the unfocused, undeflected spot at low intensity (Ecl 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 herein. Ecl shall not be held at zero for more than approxi-
mately 10 seconds to prevent damage to the screen.

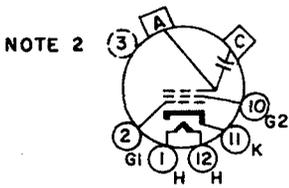
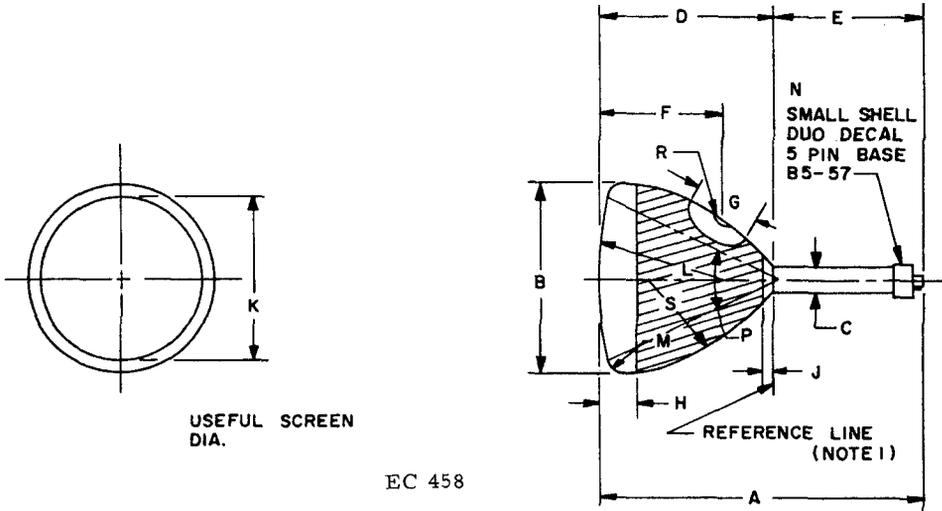
User activities:

Navy - AS, OS, MC, CG, SH

Preparing activity:

Navy - EC

(Project 5960-N824-37)



NOTE 1: REFERENCE LINE IS DETERMINED BY POSITION WHERE JETEC NO. 112 REFERENCE LINE GAUGE WILL SEAT AGAINST BULB.

NOTE 2: VACANT POSITION PIN NO. 3 ALINED WITH ANODE CONTACT CAP (J1 - 21) WITHIN 30 DEGREES.

PIN CONNECTIONS

- 1. HEATER
- 2. GRID 1
- 10. GRID 2
- 11. CATHODE
- 12. HEATER
- CAP ANODE

FIGURE 1. Outline drawing for tube type 10VP7

LTR	QUALIFICATION	
N	BASE: B5-57	
R	CAP: J1-21	
QUALITY CONFORMANCE INSPECTION, PART 2		
LTR	MIN	MAX
A	17.25	18.00
B	10.38	10.63
C	1.38	1.50
D	9.25	9.63
E	8.00	8.38
F	6.87	7.63
G	4.0	4.5
H	2.25	2.75
J	.5	1.0
K	9.13	---
LTR	NOMINAL DIMENSIONS	
L	42R	
M	7/16R	
P	50°	
S	20R	

FIGURE 1. Outline drawing for tube type 10VP7 (cont'd)