

INCH-POUND

MIL-PRF-1/1291G
19 July 1999
SUPERSEDING
MIL-E-1/1291F
7 March 1973

PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, THYRATRON
TYPE 7410

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: Triode, xenon gas.

See figure 1.

Mounting position: Any.

Weight: 5 ounces nominal.

ABSOLUTE RATINGS:

Parameter:	Ef	Ebb	epx	epy	ib	lb	ig	TE	tk	Rg	Rp	F
Unit:	V ac	V dc	v	v	a	A	ma	°C	sec	Ohms	Ohms	Hz
Maximum:	2.6	---	1,700	1,700	6.0	1.5	50	165	---	---	---	425
Minimum:	2.4	---	---	---	---	---	---	-55	15 <u>1</u> /	---	---	---
Test conditions:	2.5	500	---	---	---	---	---	---	30	1,000	5,000	60

See footnotes at end of table I.

GENERAL:

Qualification: Required.

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TABLE I. Testing and inspection.

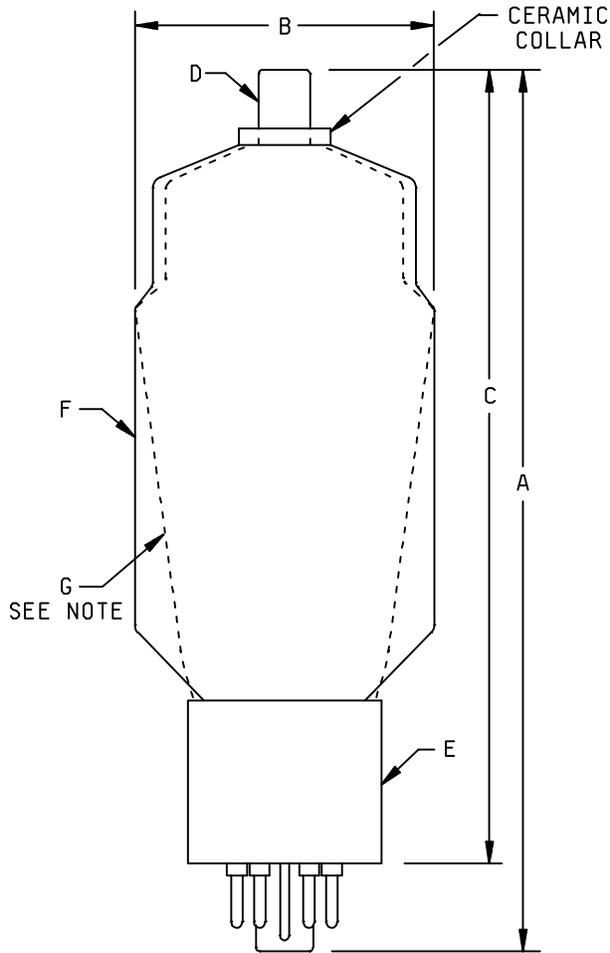
Inspection	Method	Notes	Conditions	Acceptance level	Inspection level or code	Symbol	Limits		Unit
							Min	Max	
<u>Conformance inspection, part 1</u>									
Peak emission by voltage drop	1231	5/	ib = 6.0 a (grid connected to anode)	0.65	II	etd	---	12.0	v
Critical grid voltage for conduction (1)	3201	---		0.65	II	Ecc	-2.2	-5.5	V dc
Critical anode voltage for conduction	3201	---	Ecc = 0	0.65	II	Ebb	10.0	35.0	V dc
Operation (1)	3206	---	epy = ep _x = 1,800 v; R _g = 100,000 ohms	0.65	II	Ecc	-4.0	-13.0	V dc
Operation (3)	---	---	Operate in power supply PP-1160 B/M (FSN 1285-682-9942) at a current of 1.2 amperes	0.65	II	Ripple	---	0.08	v
<u>Conformance inspection, part 2</u>									
Heater current	3241	---		---	---	If	6.25	7.75	A ac
Critical grid voltage for conduction (2)	3201	2/	Ebb = 100 V dc	---	---	ΔEcc	---	2.1	V dc
Variable-frequency vibration	1031	---	No voltage applied; F = 50 to 150 to 50 Hz; 10 G; t = 5 minutes in each of 3 axes: X, Y, and Z (15 minutes total)	---	---	---	---	---	---
Variable-frequency vibration end points:	---	---		---	---	---	---	---	---
Short and discontinuity detection	1201	---		---	---	---	---	---	---
Operation (1)	3206	---		---	---	Ecc	-4	-13	V dc
Peak emission by voltage drop	1231	---		---	---	etd	---	12	v
Grid current	3216	3/	Ep = 220 V ac ± 10%; Rp/lb = 1.5 A dc; Ef = 2.75 V ac; Rg = 1.0 Meg (min)	---	---	Ic	---	5.0	μA dc
High-frequency operation	3214	4/	Epp = 125 V ac; Rp/lb = 1.5 A dc; Cg = 250 pF; Rg = 47,000 ohms; Ecc1 = 22.5 ± 2 V dc; Ecc2 = -45 ± 2 V dc	---	---	F	500	3,400	Hz

See footnotes at end of table.

TABLE I. Testing and inspection - Continued.

Inspection	Method	Notes	Conditions	Acceptance level	Inspection level or code	Symbol	Limits		Unit
							Min	Max	
<u>Conformance inspection, part 3</u>									
Life test	---	---	Group C; Epp = 220 V ac \pm 10%; Rp/lb = 1.5 A dc (min); Ecc = 0; Rg = 10,000 ohms; F = 400 \pm 25 Hz; t = 500 hours	---	---	---	---	---	---
Life-test end points:	---	---							
Peak emission by voltage drop	1231	---		---	---	etd	---	16.0	v
Operation (1)	3206	---		---	---	Ecc	-4.0	-14.0	V dc
Critical anode voltage for conduction	3201	---		---	---	Ebb	---	80.0	V dc
Grid current	3216	---		---	---	Ic	---	5.0	μ A dc
<u>Periodic-check test</u>									
Operation (2)	3206	---	Operation (1), except TA = -40°C	---	---	---	---	---	---

- 1/ The 15-second cathode heating time is the absolute minimum allowable. Values less than this will seriously damage the cathode. For reliable operation and longer life, it is recommended that at least 30 seconds of warmup time be allowed.
- 2/ The difference between the critical grid voltage Ecc at Ebb = 100 V dc and that at Ebb = 500 V dc, shall not exceed the limit specified herein.
- 3/ Tube shall be operated 5 minutes immediately before the test.
- 4/ Test shall be taken between a minimum operating time of 15 seconds and a maximum of 60 seconds.
- 5/ This test is to be the first test performed at the conclusion of the holding period.



Pin connections	
Pin No.	Element
1 and 2	f
3	nc
4	g
5	nc
7 and 8	f
cap	a

Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Conformance inspection, part 2				
A	6.000	6.625	152.40	168.28
B	---	2.063	---	52.40
C	5.410	6.055	137.41	153.80
Conformance inspection, part 3 (periodic check)				
D	Cap: C1-1 with ceramic collar (EIA)			
E	Base: B7-12 (EIA)			
F	Bulb: T16 (JEDEC Pub. 29)			
G	Bulb: ST16 (JEDEC Pub 28)			

NOTE: Alternate configuration ST-16, without ceramic collar, may be used.

FIGURE 1. Outline drawing of electron tube type 7410.

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Custodians:

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

Preparing activity:
DLA - CC

(Project 5960-3554)

Review activities:

Army - AR, MI
Navy - AS, CG, MC, OS
Air Force - 17, 19, 99,