

INCH-POUND

MIL-PRF-1/1428G
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 SUPERSEDING
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PERFORMANCE SPECIFICATION SHEET

ELECTRON TUBE, THYRATRON
 TYPE 7621

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, hydrogen, ceramic-metal.
 See figure 1.
 Mounting position: Any.
 Weight: 2 ounces (56.7 grams) nominal.

ABSOLUTE RATINGS:

Parameter: Unit:	Ef V ac	epy kv	epx kv	Ebb V dc	Ip A ac	egy v	ib a	Ib mA dc	tk sec
Maximum:	6.8	8 <u>1/</u>	8 <u>2/</u>	---	2	---	90	100	---
Minimum:	5.8	---	5% epy	300	---	175	---	---	90
Test conditions:	5.8	8	---	---	---	130	---	---	90

ABSOLUTE RATINGS:

Parameter: Unit:	Pb ---	TA °C	dik/dt a/μs	prf ---	Cooling ---	tj μs	Ecc V dc
Maximum:	2.7 x 10 ⁹	+125	1,000	---	---	0.010	---
Minimum:	---	-65	---	---	---	---	0
Test conditions:	---	Ambient	---	4,000	---	---	0

See footnotes at end of table I.

GENERAL:

Qualification - Required.

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TABLE I. Testing and inspection.

Inspection	Method MIL-STD- 1311	Condition	Acceptance Level <u>13/</u>	Symbol	Limits		Unit
					Min	Max	
<u>Conformance inspection, part 1</u>							
Instantaneous starting	3267	Ef = 6.8 V ac <u>5/ 6/</u>	0.65	---	---	---	---
Operation	3246	t = 300 <u>5/</u>	0.65	---	---	---	---
Heater current	3241	Ef = 6.3 V ac	0.65	If	2.2	3.5	A ac
Pulse emission (method A)	3251	ik = 90 a (min); <u>7/</u> pr = 60 ± 10% tp = 5.0 μs ± 10% tr = 0.5 μs (max)	0.65	egk	---	200	v
DC anode voltage for conduction	3247		0.65	Ebb	---	200	V dc
<u>Conformance inspection, part 2</u>							
Anode delay time	3256	Operation; t = 30	---	tad	---	0.4	μs
Anode delay time drift	3256	Anode delay time <u>8/</u>	---	Δtad	---	0.15	μs
Time jitter	3261	Operation	---	tj	---	0.01	μs
<u>Conformance inspection, part 3</u>							
Life test	---	t = 200 hours <u>5/ 9/</u>	---	---	---	---	---
Life test end points	---		---	---	---	---	---
Operation	3246	egy = 140 v (max)	---	---	---	---	---
DC anode voltage for conduction	3247		---	Ebb	---	250	V dc
Anode delay time	3256	egy = 140 v (max)	---	tad	---	0.5	μs
Operation at elevated ambient temperature	3246	t = 5 hours; <u>5/ 11/ 12/</u> TA = 90°C Ef = 6.8 V ac	---	egy	---	175	v
Variable-frequency vibration	1031	No voltage applied <u>10/ 12/</u>	---	---	---	---	---
Shock, specified pulse	1042	Test condition D <u>12/</u>	---	---	---	---	---
Shock and vibration end points:	---		---	---	---	---	---
Operation	3246		---	egy	---	175	v
DC anode voltage for conduction	3247		---	Ebb	---	250	v
Time Jitter	3261		---	tj	---	0.01	μs

See footnotes at end of table.

TABLE I. Testing and inspection - continued.

- 1/ Instantaneous starting permissible. The maximum permissible epy is 8.0 kv and shall not be attained in less than 0.04 seconds.
- 2/ In pulsed operation, the peak inverse voltage, exclusive of a spike of 0.05 μ s maximum duration, shall not exceed 2.5 kv during the first 25 μ s following the anode pulse.
- 3/ The driver pulse, measured at the tube socket with the thyratron grid disconnected shall have the following characteristics: epy = 175 v (min), tr = 0.25 μ s (max); grid pulse duration tp = 1.0 μ s (min). Impedance of drive circuit = 1,200 ohms (max).
- 4/ Forced-air cooling directed on the anode or envelope is permissible, depending upon operating conditions.
- 5/ The circuit constants shall be chosen under resonant charging conditions so that epy = 8.0 kv; ib = 90 a (min); dik/dt = 1,000 a/ μ s (min); tp = 0.12 ± 0.012 μ s; prr = 4,000 (min). Grid pulse as measured at tube socket with thyratron grid disconnected shall have the following characteristics: tr = 0.25 μ s (max), tp = 1.0 μ s (max), internal impedance of driver: 1,200 ohms (min).
- 6/ The tube shall operate satisfactorily on push button starting within three attempts when the anode voltage (epy) is applied to the tube under test in such a manner as to rise from 0 to 8.0 kv minimum within 0.03 second. Any tube failing to start within three attempts shall be considered a failure.
- 7/ The voltage between grid and cathode shall be measured not more than 2.5 μ s after the beginning of the current pulse.
- 8/ During the interval between 30 and 90 seconds of the anode delay time test, the (Δ tad) relative to the tad value observed on the anode delay time test shall not exceed the specified value.
- 9/ During every 50 ± 8 hour period, the life test shall be shut off for 60 minutes (min) and then tested for life-test end points.
- 10/ There shall be no pronounced resonance in the range specified in MIL-STD-1311, method 1031.
- 11/ The tube shall operate satisfactorily at the ambient temperature specified herein at operation test conditions for a total of 5 consecutive hours. This test shall be performed on a minimum of four tubes on an annual basis.
- 12/ This test shall be performed during the initial production and once each succeeding 12-calendar months in which there is production. An accept on zero sampling plan shall be used, with sample of three tubes with an acceptance number of zero. In the event of failure, the test will be made as part of conformance inspection, part 2, with an acceptance level of 6.5 (see 13/). The "12-calendar month" sampling plan shall be reinstated after three consecutive samples have been accepted.
- 13/ This specification sheet uses accept on zero sampling in accordance with MIL-PRF-1, table III.

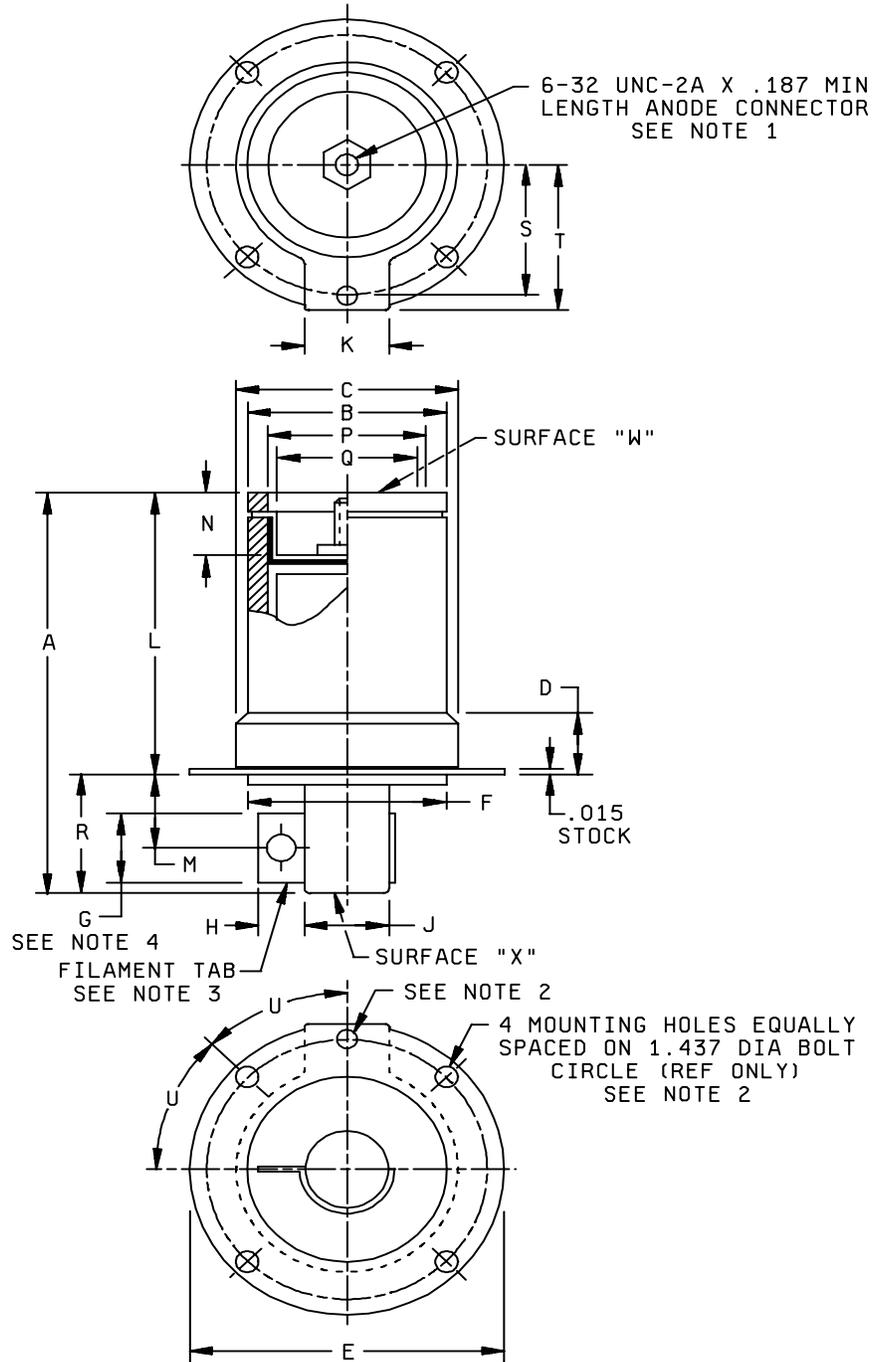


FIGURE 1. Outline dimensions of electron tube type 7621.

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Ltr	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
Conformance inspection, part 2				
A	---	2.355	---	59.82
B	.985 DIA	1.015 DIA	25.02 DIA	25.78 DIA
C	---	1.150 DIA	---	29.21 DIA
D	.295	.340	7.49	8.64
E	1.579 DIA	1.639 DIA	40.11 DIA	41.63 DIA
F		1.015 DIA		25.78 DIA
G	---	.500	---	12.70
H	---	.438	---	11.13
J	---	.469 DIA	---	11.91 DIA
K	.250	.500	6.35	12.70
L	1.500	1.600	38.10	40.64
M	.335	.585	8.51	14.86
N	.250	.360	6.35	9.14
P	.785	.815	19.94	20.70
Q	.650 DIA	.710 DIA	16.51 DIA	18.03 DIA
R	---	.700	---	17.78
Reference dimensions				
S	.670		17.02	
T	.795		20.19	
U	45°			

NOTES:

1. Anode connector shall not extend above surface "W".
2. All mounting holes, including grid and filament tab holes, shall clear No. 4 screws, (.120 inch (3.05 mm) diameter holes).
3. Wrap of filament tab on protector cap optional, right or left side.
4. Tab edge shall not extend beyond surface "X".
5. Grid and filament tabs shall not interfere with cathode flange mounting holes.

FIGURE 1. Outline dimensions of electron tube type 7621 - Continued.

NOTES

Referenced documents. In addition to MIL-PRF-1, this specification sheet sheet references MIL-STD-1311.

Changes from previous issue. The margins of this specification are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

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Preparing activity:
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 (Project 5960-3743)

Review activities:
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 Air Force - 99

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