INCH POUND
MIL-PRF-1/21C
1 July 1997
SUPERSEDING
MIL-E-1/21B
16 June 1972

PERFORMANCE SPECIFICATION SHEET
ELECTRON TUBE, GAS SWITCHING

TYPE 1B23
This specification is approved for use by all Departments and Agencies of the Department of Defense.

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

DESCRIPTION: TR, separate cavity, frequency range 936.5 to 955.5 MHz

ABSOLUTE RATINGS:

Parameter:	Open circuit ignition voltage	Ii	Alt
Unit:	Vdc	μAdc	ft
Maximum:	-1,000	200	10,000
Minimum:	-800	- - -	- - -

PHYSICAL CHARACTERISTICS: See figure 1

TEST CONDITIONS:

Parameter:	F	Ii
Unit:	MHz	μAdc
	950	200

GENERAL:

Qualification - Required

Table 1. Testing and Inspection.

Method	REQUIREMENT OR TEST	NOTES	CONDITIONS	SYMBOL	LIMITS MIN	LIMITS MAX	UNITS
	Quality conformance inspection, part 1						
- - -	Water-vapor content	5		Po2/Po1	- - -	0.55	- - -
4401	Ignitor ignition time	-	Ebb = -800Vdc; R = 3.25 Meg	t		5.0	sec
4406	Ignitor voltage drop	-	Ii = 100µAdc	Eid	375	525	V dc
4416	Insertion loss	3		Li	- - -	1.6	dB
- - -	Tuning	1 , 8		F	936.5	955.5	MHz
4478	High-level protection	4		- - -	- - -	100	%
	Quality conformance inspection, part 2						
4021	Degradation due to vibration	-		- - -	- - -	- - -	- - -
4101	Dielectric material strain	-		- - -	- - -	- - -	- - -
- - -	Ignitor current	2		Ii	- - -	70	µA dc
4421	Ignitor interaction	-	Ii = 200µAdc	ΔLi	- - -	0.2	dB
	Quality conformance inspection, part 3						
- - -	Life test	6	Group C	t	500	- - -	hrs
- - -	Life-test end points						
4421	Ignitor interaction	-	Ii = 200µAdc	ΔLi	- - -	0.2	Db
- - -	Water-vapor content	5		Po2/Po1	- - -	0.8	- - -

NOTES:

1/ This measurement shall be made with the tube mounted in test cavity according to Drawing 162-JAN.

2/ No tube shall require more than the stated maximum ignitor current to prevent relaxation oscillations when tested in the standard circuit.

3/ This measurement shall be made in test cavity according to Drawing 162-JAN. With the cavity calibrator in position, the cavity shall be tuned to resonance and the relative transmitted power level noted. With the tube inserted, the cavity shall then be tuned to resonance and the transmitted power noted. The dB loss in transmitted power due to the insertion of the tube shall not be more than the specified amount.

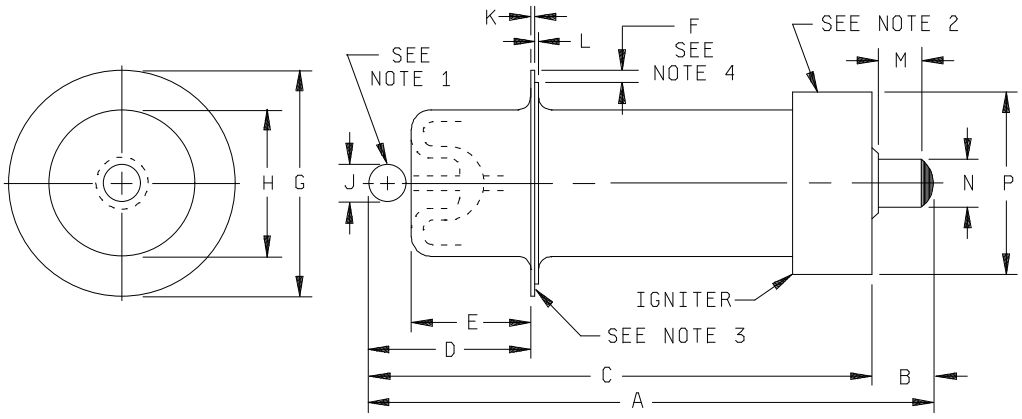
NOTES: - Continued.

4/ When the tube is fired by the application of high power in cavity according to Drawing 162-JAN which is at resonance, the transmitted power obtained shall be less than that of a standard tube fill with pure hydrogen to a pressure of 25 mmHg. The power level at the input shall be sufficient to fire the rf gap of the tube and to insure that the measurement is being made on the flat part of the “power in the gap versus leakage power” characteristic. If the main discharge gap does not fire, it is caused to be fired by a short application of ignitor voltage.

5/ With the tube operating as outlined in note 4, a small portion of the tube envelope shall be cooled by the application of solid C?O The ratio of the minimum reading of the output meter (P?) to that obtained before the application of solid C?(P?) shall be less than the given value, and the final reading shall be less than the initial one.

6/ The specified life is based on ignitor life only. This will be reduced if the tube is operated at full rated rf conditions.

7/ The tube shall be mounted in the specified external cavity and placed between a matched generator and detector. The signal generator frequency shall be varied to obtain the resonant frequency of the tube and cavity as evidenced by a pronounced peck at the output indicator. The value of this resonant frequency shall be within the limits specified.



DIMENSIONS					
	INCHES		MILLIMETERS		
LTR	MIN	MAX	MIN	MAX	NOTES
	Qualification inspection				
A	2.609	2.984	66.27	75.79	
B		.313		7.95	
K		.008		.20	
L		.032		.81	
Quality conformance inspection, part 1					
C	2.297	2.672	58.34	67.87	
D	.906	.969	23.01	24.61	
E	.656	.781	16.66	19.84	
F	.047		1.19		3, 4
Quality conformance inspection, part 2					
G	1.109	1.141	28.17	28.98	
H	.688	.813	17.48	20.65	
J	.185	.189	4.70	4.80	1
M	.220		5.59		
N	.246	.254	6.25	6.45	
P	.896	.930	22.76	23.62	2

NOTES:

1/ The H-F electrode shall be concentric with the disc electrode within .018(.46 mm).

2/ The base shall be concentric with the disc electrode within .040(1.02 mm).

3/ Contact disc external surfaces and H-F electrode shall be gold plated min 10 msi or silver plated 15 msi on external surfaces (edges of disc need not be plated).

4/ Contact portion of disc measured radially which shall be free from splits or tears, shall be smooth and shall be perceptibly flat.

Custodians:
Army - CR
Navy - EC
Air Force - 80

Review activities:
Navy - AS, CG, MC, OS
Air Force - 11, 17, 99

Preparing activity:
DLA - CC

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