MIL-E-1/373C
30 June 1971
SUPERSEDING
MIL-E-1/373B
23 February 1954

MILITARY SPECIFICATION SHEET

ELECTRON TUBE, MAGNETRON

TYPE 6002

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

This specification is mandatory for use by all Departments and Agencies of the Department of Defense.

DESCRIPTION: Pulsed, Fixed Frequency, Integral Magnet, Air Cooled.

ABSOLUTE RATINGS:

Parameter:	If	Ef	epy	ib	pi	Pi	tpc	Du	tp
Unit:	A	V	kv	a	kw	W	sec	----	µs
Maximum:	45	4.5	30	40	1200	870	---	.002	5.3
Minimum:	----	---	---	--	----	---	120	----	0.45
	See note 1								

Parameter:	Anode T	Cathode Stem T	Altitude
Unit:	°C	°C	feet
Maximum:	130	270	10,000
Minimum:	---	---	------
	See notes 2 and 3	See note 3	

PHYSICAL CHARACTERISTICS:

Dimensions:	See outline drawing
Weight:	24 pounds
Mounting position:	See note 4
Cathode:	Unipotential

TEST CONDITIONS: See note 6

Paramenter:	Ef	tp	Du	trv	VSWR	epy	rrv	Frequency
Unit:	V	µs	-----	µs	---	kv	kv/µs	MHz
Tolerance:	---	±10%	-----	---	---	1.5	---	±0.1%
Test Condition 1:	3.4	4.9	.001	.15	1.1	----	160	9317
Test Condition 2:	4.0	5.0	.0005	.10	1.1	27.5	160	9317
Test Condition 3:	3.4	2.0	.001	.15	1.1	27.5	160	9317

GENERAL: - Qualification Required

FSC 5960

METHOD	REQUIREMENT OR TEST	CONDITIONS		SYMBOL	LIMITS MIN	LIMITS MAX	UNIT
	Quality conformance inspection, part 1						
4003	Pressurizing	45 Psi; See note 5	-	---	---	---	---
1301	Heater current	Ef = 4.0 V	-	If	36	44	A
1256	Average anode current	See note 7	1	Ib	25	30	mAdc
1256	Average anode current		2	Ib	15	---	mAdc
1256	Average anode current		3	Ib	30	---	mAdc
4250	Power level (output)		1	Po	225	---	W
4250	Power level (output)		2	Po	125	---	W
4250	Power level (output)		3	Po	250	---	W
4308	RF Bandwidth	See note 8	1	BW	---	2	MHz
4308	RF Bandwidth	See note 8	2	BW	---	6	MHz
4315	Stability	VSWR = 1.5:1	1	M.P.	---	1	%
4315	Stability	VSWR = 1.5:1	3	M.P.	---	1	%
	Quality conformance inspection, part 2						
4310	Frequency pulling factor		2	ΔF	---	15	MHz
1031	Low-frequency vibration	No voltages	-	---	---	---	---
4308	RF Bandwidth		3	BW	---	3	MHz
	Quality conformance inspection, part 3						
---	Life test	Group D See note 4	1	t	250	---	hrs

METHOD	REQUIREMENT OR TEST	CONDITIONS		SYMBOL	LIMITS MIN	LIMITS MAX	UNIT
	Quality conformance inspection, part 3 -continued						
	Life test end points						
4250	Power level		1	Po	180	—	W
4308	RF Bandwidth		1	BW	—	2.5	MHz
	Periodic-check tests	See note 10					
1031	High-frequency vibration	G = 10 No voltages	-	—	—	—	—
1011	Humidity		-	—	—	—	—
4302	Frequency change		-	$\Delta F/\Delta T$	—	0.25	$\frac{MHz}{°C}$
----	Low pressure operation	See notes 8 and 9	-	—	—	—	—
4311	Frequency pushing factor	Ib varied 25 to 30 mA	3	ΔF	—	2.5	MHz
1026	Low temperature operation	T = -55°C t = 180 seconds	-	—	—	—	—
1026	High temperature operation	T = 70°C t = 120 seconds	-	—	—	—	—

NOTES:

1. When first applying heater voltage, heater surge current must not exceed 60 A at any time.

2. Air cooling at sea level for operation under Test Condition 1 requires a minimum delivery of air to the radiator duct of 200 cubic feet per minute at a back pressure of 2 inches of water. Maximum ambient temperature must not exceed 70°C.

3. The temperature is to be measured at the point indicated on the attached drawing.

4. To satisfy the minimum limit of 250 hours for this test, the tube must be operated with the mounting plate horizontal.

NOTES: -Continued

5. For operation in excess of 20 peak amperes, means to prevent electrical breakdown in the waveguide must be employed equivalent in effectiveness to the action of 30 lb/sq. in. (absolute) air pressure. Maximum absolute pressure must not exceed 40 lb/sq. in. except as specified for test.

6. The tube shall operate satisfactorily within the specified limits when the heater voltage is varied plus or minus 5%.

7. The average anode current for Test Condition 1 will be stamped on the tube at the place designated on the outline drawing. The current shall be between 25 and 30 mA.

8. This test shall be the first test performed after Holding Period.

9. In an absolute pressure of 22 inches of mercury, the tube should operate satisfactorily, should not change frequency, or should not exceed the limits specified, as indicated under Test Conditions. In addition, there should be no arc-over or harmful corona exhibited.

10. If these tests have been performed previously by the manufacturer and the materials, the manufacturing processes, and the test requirements are the same as when the tests were performed, these tests need not be performed.

Custodians:

Air Force - 80
Navy - EC
Army - EL

Review activities:
Air Force - 11
Navy - SH

User activity:

Army - WC

Preparing activity:

Air Force - 80

(Project 5960-2425-37)

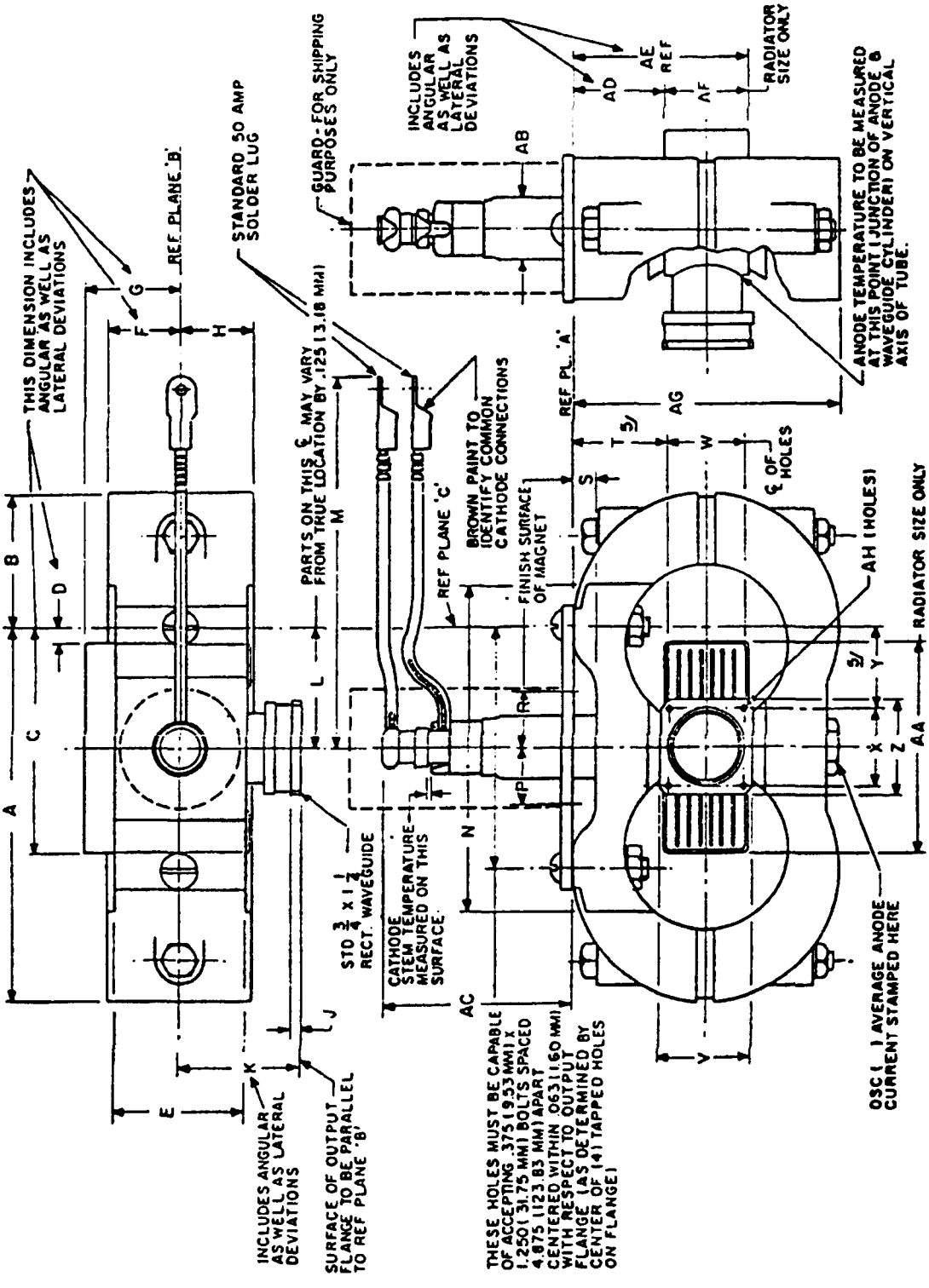

FIGURE 1. Outline Drawing for Tube Type 6002

DIMENSIONS				
LTR	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
QUALITY CONFORMANCE INSPECTION, PART 1				
K	2.361	2.461	59.97	62.51
L	2.437		61.90	
P	1.250	–	31.75	–
R	1.250	–	31.75	–
S	.453	.463	11.51	11.76
T	2.030	2.130	51.56	54.10
V	1.875		47.63	
W	1.344	1.360	34.14	34.54
X	1.466	1.482	37.24	37.64
Y	1.650	1.750	41.91	44.45
AG	–	5.750	–	146.05
AH	8-32 UNC-2B THD			
QUALITY CONFORMANCE INSPECTION, PART 2				
A	–	8.125	–	206.38
B	–	3.250	–	82.55
E	2.506	2.588	63.65	65.76

LTR	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
F	–	1.625	–	41.28
H	–	1.625	–	41.28
M	6.375	7.375	161.93	187.33
N	6.643	6.750	168.73	171.45
AC	–	3.900	–	99.06
QUALITY CONFORMANCE INSPECTION, PART 3				
C	–	4.687	–	119.05
D	.187	–	4.75	–
G	–	2.093	–	53.16
J	.250		.635	
Z	1.875		47.63	
AA	4.000	4.180	101.60	106.17
AB	–	1.215	–	30.86
AD	1.750	–	44.45	–
AE	–	3.750	–	95.25
AF	1.500	1.600	38.10	40.64

NOTES:

1. METRIC EQUIVALENTS (TO THE NEAREST .01 MM) ARE GIVEN FOR GENERAL INFORMATION ONLY AND ARE BASED UPON 1 INCH = 25.4 MM
2. REFERENCE PLANE 'A' IS DEFINED AS A PLANE PASSING ALONG THE FINISHED SURFACE OF THE MAGNET AS SHOWN.
3. REFERENCE PLANE 'B' IS DEFINED AS A PLANE PASSING THROUGH THE CENTERS OF MOUNTING HOLES AT PLANE 'A' AND PERPENDICULAR TO REFERENCE PLANE 'A'.
4. REFERENCE PLANE 'C' IS DEFINED AS A PLANE PASSING THROUGH THE CENTER OF THE MOUNTING HOLE AT PLANE 'A' AND MUTUALLY PERPENDICULAR TO REFERENCE PLANES 'A' AND 'B'
5/ TAPPED HOLE MUST BE PARALLEL TO REFERENCE PLANES WITHIN .030 (.76 MM)
6. PRESSURE TEST WAVEGUIDE FLANGE AT 35 PSI GAGE.